WAIKERIE GLIDING CLUB

AEROTOWING OPERATIONS MANUAL

5 elements, useless to a Tow Pilot
The Air in the tanks
The fuel in the bowser
The runway behind you
The sky above you
A broken tow rope

The intent of this manual is to supplement the GFA Aerotowing Manual (OPS0008) with procedures and practices that are specific to Waikerie Gliding Club, particularly in terms of t**ow patterns and PA25 Pawnee operation**. It does not attempt to cover material already covered in the GFA manual. Therefore both this manual and the GFA Manual should be read in conjunction with each other.

Waikerie Gliding Club

TOW PILOT REQUIREMENTS

Waikerie Gliding Club Tow Pilots are required to maintain the following in order to be entitled to exercise the privileges of flying the Club's Piper Pawnee tow plane;

a) Hold a valid Private Pilot (or higher category) License, endorsed with "TAIL DRAGGER", of a type with significant performance.

b) Hold a current Medical Certificate.

c) Have satisfactorily completed a "BI-ANNUAL FLIGHT REVIEW within the preceding two (2) years and which is formally recorded in your personal Logbook.

d) Hold a valid, current Aerotowing Towing Endorsement.

e) Be in current aerotowing practice; ie
- have completed 10 aerotows in the preceding 6 months **and**
- have completed 3 normal take-offs and landings in the preceding 90 days.

Tow Pilots are required to provide updates of Medical Certificates, Bi-annual Flight Review and currency to the Tug Master as soon as is practicable after any change in status or validity.

Most of the requirements described above will also be required should a CASA Representative visit to conduct a "*RAMP CHECK".*

There are no circumstances where a Tow Pilot can exercise the towing privileges **if any of the above is not current.**

"Current" and "Approved" tow pilots are listed on the ***"Currently Approved Tow Pilot List"*** which is displayed in the Briefing Room and the Office.

Contents

PART 1

RESPONSIBILITY

As a tow pilot with Waikerie Gliding Club, you are subject to the direction of the Club's ***Training Panel***, which consists of the Clubs CFI, current gliding instructors, Coaches and Tug Pilots. The aero-towing policies and procedures of the Club's Training Panel are enforced through the Tug Master or his/her deputy, the Chief Flying Instructor (CFI) or Duty Instructor of the day in matters of flying discipline and standards. Your attendance at Training Panel meetings provide the opportunity to input to the procedures and flying operations of the Club.

The high standards required are in accordance with the Club's expectations, this Operations Manual and the GFA Aerotowing Manual. These 2 manuals expand on the minimum requirements for operations and standards as are laid down by the Civil Aviation Safety Regulations and Orders and the GFA.

Tow pilots are immediately responsible to the Tug Master (or Deputy) for the conduct of safe flying and maintenance of high standards. All tow pilots may be subject to checks of procedures and practices, as applies to all other flying members of the Club. The currency requirements and qualifications are described in Parts 2 and 3 of the GFA Aerotowing Manual and in Appendix D of this Manual. Copies of records of the required information are to be provided to and held by the Tug Master (or his deputy) or CFI at the Gliding Club in accordance with Appendix C. It is the individual Tow Pilot's responsibility to ensure that all records remain current. Some towing activities may be in relation to passenger carrying operations and as such it is a requirement under the CASR's that the records of qualifications and validity be retained by the Club. Failure to do this will result in the withdrawl of the Towing permission at Waikerie. ***Under no circumstances are aerotowing activities to be conducted unless all requirements and documentation are current (See Currency, Appendix D)***

A notice left prominently in the aircraft or in the aircraft Maintenance Release will show urgent information about towing operation or aircraft serviceability.

It is a Tow Pilot's responsibility to notify the Duty Instructor of the day together with the Tug Master or his/her deputy of any accident, incident, or any other significant event which occurs while you are the Pilot in Command of a club Tug. In respect to incidents and accidents, a written report to the CFI is required in addition to the normal reporting requirements to GFA and ATSB. Incident to be reported include the items listed in Appendix L.

It is the Tow Pilot's responsibility to satisfy themselves that all procedures are safe. Tug Pilot's must refuse to be a party to any operation where safety may be compromised - <u>Always err on the side of safety</u>.
The aerotow environment is a very ***low discipline*** environment and as such, Tow Pilots must exercise rigid self-discipline to ensure all checks are completed every time, completely and thoroughly and that high standards are established and maintained.

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Part 2
NORMAL OPERATIONS

2.1 Flight Notification

All VFR aircraft are exempt from flight notification and reporting for individual flights, provided that:
1. The aircraft remains outside controlled airspace (OCTA)
2. A listening watch is maintained on the VHF area frequency, or CTAF as appropriate.
The airspace around Waikerie aerodrome is a CTAF. It is necessary to travel a relatively long distance (or climb to high altitude) before Controlled Airspace is encountered. During aerotow retrieves, it is a requirement that the Duty Instructor is aware of the outlanding location and approves of the retrieve. This will allow a local SAR watch to be maintained. The specific requirements for paddock retrieves, as listed in Appendix XXXX must also be considered.

2.2 Preparation

2.2A Check your Licence and Towing Permit validity and recency.

While a Pilots License is permanently valid unless withdrawn, the Medical Certificate is not. Pilot's are not permitted to exercise the privileges of the license unless the Medical Certificate is valid. It is also a requirement to have undertaken a Biannual Flight Review within the preceding 2 years and have this recorded in your Log Book.

The recency requirements as laid down in the GFA Ops and Appendix D of this manual are also required to be satisfied.

In addition to the CASA and GFA recency requirements, tow pilots with outlanding retrieve approval are also subject to WGC recency requirements. Outlanding retrieve approved pilots must have carried out at least one paddock retrieve within the preceding 2 years or have completed a paddock retrieve refresher course as detailed in Appendix 2 within the preceding 2 years or be approved by the Tug Master, if you have recent relevant experience in paddock operations (eg. Outlanding in a glider). This mandatory gliding club requirement is intended to maintain pilots familiarity and be safe with the abnormal environment encountered during this type of operation.

If a Tow Pilot's License, Medical Certificate, Bi-annual Flight Review or towing recency is not current, a pilot is not permitted to fly the Tug **under any circumstances.**

If the need arises to renew the tug rating or if recency is out of date, contact the Tug Master.

2.2B CASA RAMP CHECKs, Refer Appendix G1.

2.2C Daily Inspection, PA-25 Pawnee - see Appendix A

Additional Daily Inspection Items

2.2D Check fuel contents and sample - It is a Club requirement to always land with a minimum of 45 minutes fixed reserve of fuel. This equates to approx 45 litres. **There is no acceptable excuse for contravention of this requirement**. There must be at least 45 litres fuel plus the tow fuel required for the aerotow, before takeoff. The tug should be completely filled at the end of the days flying and refilled during the day as required. Experience has shown that for the Pawnee 235, useful methods of keeping track of fuel burn include:

- deducting 1 litre per 300 ft of climb. Eg. A 2000 ft launch would use 6.66 litres (round it up to 7 litres).
- deducting 1 litre for each minute of tow time.

D*o not however rely only on one method of fuel management!* If there is a fuel leak or the engine is using an abnormal amount of fuel, this must be known by the pilot. This can be achieved by using a combination of mathematical and visual methods

- Maintain a fuel log **(this is a mandatory requirement).**
- Regularly monitor the fuel gauges.
- Count the number of launches.
- Determine the theoretical refueling quantity prior to refueling.
- Physically dip the tanks (A dipstick is located in a pocket behind the pilots seat..

By cross-referencing all of the above a good "situational awareness" of the remaining fuel can be maintained.

Do not ever be forced into a launch if you are concerned about the fuel status or fly within the 45 minutes Fixed Reserve.

Always maintain a *Fuel Log this* is a Club requirement of flying the Tug.
There never has never been or will be a suitable reason for fuel exhaustion - It is entirely the Tow Pilots responsibility.

2.2E Check the condition of the Tow rope - Tow ropes are generally of manufactured fibres such as polypropylene, polyethylene, etc. **Steel cables or wire must never be used**. The Gliding Federation of Australia recommended rope length for aerotow is 55 metre, and at no time in normal circumstances will the ropes be less than 40 metres long. Special consideration may be given to shorter rope lengths than 55 metres for purposes such as paddock retrieves and double towing.
A short rope is identified and available for paddock retrieves but make sure the glider pilot is experienced enough to cope with the short rope. If in doubt, use the normal rope.

It is strongly recommended that Tug Pilots are competent in how to build or repair a tow rope.

2.2F Check the release mechanism, make sure it operates at all angles. (AD/Supp/ 8 inspection) - Approved release installations will enable the pilot to release the tow rope while it is carrying a load up to the weak link specification, and since the sailplane may, under some conditions, reach extreme positions in relation to the tug, the release installation must be operable with this load applied in any direction up to 20 degrees from the normal towing direction. Tow pilot's must satisfy themselves they can easily reach the tow release lever and obtain full movement. A Release check is to be carried out prior to the first flight of the day.

2.2G Check the Tow Rope including weak link rope - If the breaking strength of the rope is more than 750kg, a weak link with a breaking strength not greater than 750kg must be interposed between the rings and the rope at the tug end, or the weak link specified in the sailplanes or tug's Flight Manual must be used. When a weak link is used it shall be placed at the tug end so that it NEVER drags on the ground - it must be as short as practical so as not to drag on the ground. No evident visible deterioration in the condition of the weak-link is acceptable.

An adequately inspected tow rope <u>will not fail during normal towing operations</u>. The aerotow rope should be checked as part of the Daily Inspection.

The published Piper PA25 "Pawnee" aerotow rope "weak link" rating is 750 Kg. All other glider Tugs have a maximum "weak link" rating of 450 Kg.
The glider may (is likely to have) a different "weak link" rating.
The "weak link" may be provided by the use of "rope" of the desired rating or "Tost" manufactured weak links.

2.2H Check rear vision mirrors - The tug is fitted with mirrors adjusted so that the tug pilot can see the sailplane at all times when the sailplane is in a normal relationship to the tug. It is recommended to have the **left** mirror up so the glider can be seen "on the ground" and the **right** mirror down so the glider can be seen in the low-tow position. This allows you to see the launch person on the left wing-tip on the ground and the glider in flight on the right-hand mirror.

2.2I Starting and Radio Operation.

Starting

Ensure the following before getting into the cockpit.

- Fuel sufficient and fuel caps secure.
- Cowls and Nose locker door secure
- Chocks removed.
- Paperwork and Headset aboard. Maintenance Release – Completed.

Switch Fuel to the desired tank (left or right)
Master Switch ON
Set mixture control – Full Rich
Electric Fuel Pump – ON
Throttle – 3 Pumps.
- Set approx 1000 RPM

Control Column – held fully back (or wind trim fully NOSE UP).
Magneto **LEFT** ON
Starter Button – PRESS until engine fires.
Magneto **RIGHT** - ON
RPM – Set 1000 RPM
Oil Pressure – Rising.
Battery – Charging,
Radio Master - ON

Check operation of radio – Make a *"Radio Check Call"* to confirm the radio equipment is serviceable. All club gliders are fitted with VHF radios. Short meaningful communications allows essential information to be provided (particularly in an emergency), and provide situational awareness to other pilot's in the area.

It is recommended that tugs make an all stations call on the CTAF frequency (126.7) just prior to takeoff and when joining the circuit.

Alerted see and avoid is a very important part of gliding operations. Failure to follow this technique has been a factor in previous mid air collisions. As an enhancement to this procedure it is recommended to also announce the general location of the tow pattern – an example – *All stations Waikerie, Whiskey Golf Charlie lining up runway 26 Waikerie with glider on tow, climbing north west after take-off.*

2.2J Warm up - Shock cooling of the engine during descent may cause enormous damage - shock heating may be just as damaging. It is not the actual temperature of the engine that is of concern (within normal limits), it is the rate at which temperatures change that causes the damage. Large temperature variations within the engine may cause damage such as cracked cylinders, stretched crankcase through bolts and stuck valves. A warm-up may also be required if some time has elapsed since the last tow.
It is recommended that the warm-up be conducted over a hard surface – on the apron, taxiway or sealed runway – to avoid picking up stones and soil erosion.

2.2K Check Circuit

It was once operational practice to conduct a Check-circuit prior to the first launch each day. Several years ago, it was determined that this practice achieved little in terms of operational or procedural safety.
Accordingly, the Check circuit was removed from aerotow procedures at Waikerie in the interests of cost and unnecessary wear and tear of the Tug.

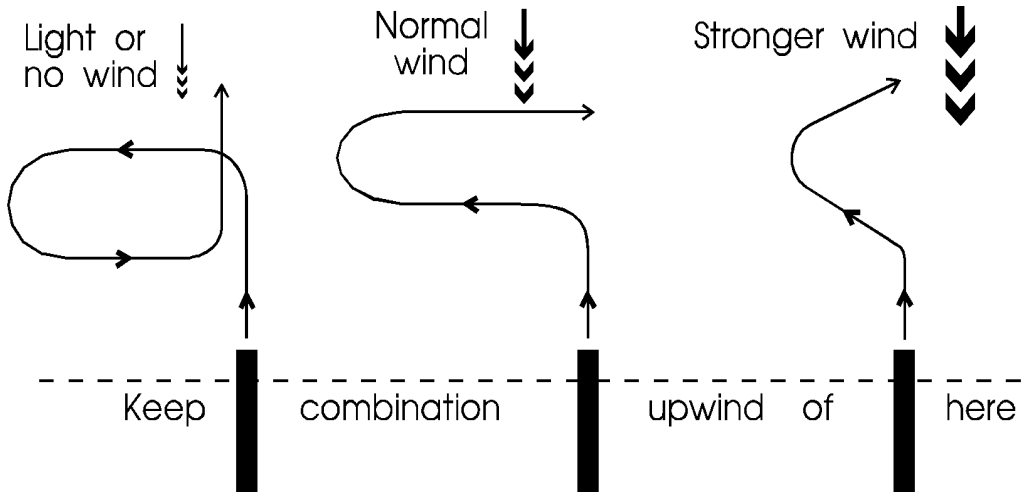
2.3 Towing Procedure

The standard ground signals are used at Waikerie as detailed in the GFA aerotowing manual. The radio may be used to eliminate any confusion during the launch signals.
Give an "All Stations" runway line up radio call. After taking up slack in the rope and being given the "all out" signal ease the throttle forward to maximum R.P.M., maintain a straight take off path and wait for the aircraft to lift off (do not force the aircraft off the ground before it is ready to fly) and establish a towing airspeed of 70 kts - unless the sailplane pilot requests a different speed.

2.4 Towing Pattern

Tugs towing sailplanes should comply with the normal rules of the air and circuit procedures where possible, climbing straight ahead after take-off to 500 feet before making a turn to the left. A modified pattern may be desirable depending on the suitability of the overshoot area for glider landing due to rope break or tug emergency, the position of the sun, wind etc. Some suggested tow patterns are illustrated below. It is desirable to keep the sailplane within gliding distance of the airfield or a suitable landing area and should not be towed downwind unless requested by the glider pilot. With inexperienced sailplane pilots, turns should be made gently and at reasonable bank angles. Remember to look for sources of lift (thermal, wave etc) whilst towing. Only attempt to circle in thermal lift if it is you know the capabilities of the sailplane pilot you are towing and if there are no other aircraft in near proximity. Remember to keep a good lookout for other gliders and aircraft. (Remember alerted see and avoid).

Consider the takeoff point – which is usually made from the centre of the irrigated grass pads. This position however is at least 1/3 of the way down the runway. Consider the weight of the glider being towed, the current temperature and wind, the available over run area and the landing options available if the tug should have an engine failure. There are virtually no suitable emergency landing areas off runways 26 and 02 in the event of an engine failure below 400 to 500 ft. If not comfortable with any of the conditions, push the glider back and start the takeoff run from the beginning of the runway. While the glider pilot/s may object and claim it is unnecessary, consider that an engine failure situation off 26 or 02 the glider will almost certainly be able to return to the field. Discuss it with the Duty Instructor and use the full length if you deem necessary.



Remember to fly neighbourly - avoid flying over Waikerie Township and directly over houses. If the object of the glider flight is a scenic look flight over the township, tow to a point abeam the township and after a normal release, track away from the township. WGC has a good relationship with the local community (which we want to preserve) and noise complaints are taken seriously.

2.5 Release of Sailplane

Establish positively that the sailplane has RELEASED the rope, LOOK OUT to the left, turn LEFT and gradually reduce POWER to 2300 RPM to avoid engine overspeed and commence DESCENT. Establish a descent SPEED of 103kts. Do not carry out any "aerobatic" maneuvers in the descent phase (ie angles of bank should not exceed 60 degree).

2.6 Descent

Consider the effects of thermal shock on the engine whilst on descent. Maintain 2300 RPM during the descent with gentle power reductions during the latter stages of the descent. Maintain a good lookout for other gliders and aircraft, which may be difficult to see while descending. Plan to enter the circuit at around 700 to 1000 ft.

2.7 Circuit Pattern

Observe other aerodrome traffic and establish adequate separation.
Conform with the pattern established by other traffic. Complete the pre-landing checks and make the circuit joining radio call.
Maintain a vigilant lookout and listening watch for other aircraft.

Gliders are difficult to see when approached from the rear and the tug speed may be 30-40 knots faster than gliders. The tug rate of descent may be higher and it is possible to descend on top of a glider. SEE and AVOID has many physical limitations due to the inability of the eyes to focus at the correct distance and because the eyes usually only see things that are in relative movement. If a glider is approached from the rear it may appear stationary in the field of view and probably won't be seen. ALERTED SEE and AVOID builds situational awareness and will assist in seeing the glider.

A close in base leg is acceptable providing the approach of other aircraft is not compromised. REMEMBER, there may be aircraft being flown by student pilots or pilots unfamiliar with gliding operations, or both.
A simulated rope break is carried out to train or check a pilot. If the glider has released in a simulated or real rope break, give the glider right of way. Depart from the circuit if necessary.

Keep a careful look out for sailplanes or other aircraft conducting non-standard circuits. Look out for gliders on long final.

2.8 Landing

Ensure the landing area is clear of obstructions, use normal approach speeds for "final" (60-65kts). Remember the rope.

Use Flap as required. Remember the tow rope trails below the flight path so ensure it clears obstructions (fences, vines , etc) on approach. Only use wheel brakes when necessary and then only when all three wheels are firmly on the ground.
Do not turn in front of a tug and sailplane combination in the process of launching. Turn off to tow another sailplane or to park when reaching walking pace. Endeavour not to taxy over the tow rope.

2.9 Taxiing

When taxiing near sailplanes, Pie-cart etc always be conscious of

- the proximity of the moving propeller to people, particularly visitors to the airfield - children and others often don't know to look!
- The propeller wash - glider canopies, dust, etc.
- Do not leave the tug's engine running unnecessarily.
- Of where the tow rope is. Do not drag it over other gliders or around people.

Irrigation sprinklers are laid out across or stored near runway markers on both the inactive runway and on the active runway early in the morning and late afternoons. The sprinkler wires that pull the sprinklers along are a particular hazard and can easily be caught in the main or tail wheels. Taxiing or taking off over the wires is forbidden.

Exercise extreme care when turning or taxying downwind.

2.10 Shut down Procedure

Turn off the radio and allow the engine temperatures to stabilize before setting the mixture control to idle cut-off. Turn both Magneto's and the Master switch OFF. Remove the rope from the landing area.

2.11 Rope Dropping

It is normal practice for the tug to land with the tow rope attached. It is essential that the approach be made in such a manner that there is no possibility of the rope causing any damage to persons or property or becoming entangled in a fence or obstruction.
CATCHING THE ROPE/RINGS ON THE FENCE IS A PUBLIC DISPLAY OF POOR JUDGEMENT & AIRMANSHIP

2.12 Double Towing

Towing of two sailplanes by one tug aircraft may be carried out under the conditions laid down in the GFA aerotowing manual section 5.3. by appropriately rated TOW and glider pilots.

2.13 VH-WGC – Operation & Engine Management .

ADDITIONAL NOTES

Refer to APPENDIX E for additional notes in respect of the operation and care of the Club's Tug aircraft.

PART 3
EMERGENCY PROCEDURES

All emergency procedures are in accordance with the GFA Aerotowing Manual with the following additional information.

3.1 Engine failure, Loss of Power, Control problems, etc during ground roll

During the ground "take off" run if the tug suffers either complete loss, partial loss of power or the sailplane becomes dangerously out of station etc. - Release the tow rope (if the sailplane has not already done so).

Reduce power (if still available) and stop gradually straight ahead.
Note - In some circumstances when near flying speed has been attained and with full power available, providing the sailplane has been released, it may be prudent to continue with the "take off" and conduct a normal circuit and landing.

If the sailplane gets out of station vertically prior to tug lift off and pulls your tail up the tug pilot should release the sailplane IMMEDIATELY he/she feels this condition is STARTING TO DEVELOP. There should be no delay – with full back pressure required on the control column to maintain attitude the tug will not lift off and if the sailplane does release at this point the tug will certainly cartwheel and finish on its back. This is an EXTREMELY DANGEROUS emergency and you MUST RELEASE the sailplane IMMEDIATELY you feel this situation starting to develop.

2 After Lift Off and Below 500 Feet A.G.L.

If for any reason, continuation of a tow is hazardous, WAGGLE WINGS to signal sailplane to release. If sailplane does not release, the tug must do so IMMEDIATELY.. If the emergency is an engine malfunction, do NOT adjust power prior to release and if possible substitute speed for height (but maintain a safe speed) to enable a safe forced landing. If the malfunction is total engine failure, lower the nose to maintain safe air speed, waggle wings, release and land straight ahead or within 15 – 20 degrees either side of heading if possible.

The options during an engine failure at Waikerie are not great because of the gradual build up of houses and fences around the airfield. If faced with this situation, the best outcome will be achieved if control of the aircraft is maintained until after touch down. If severe or erratic maneuvers are attempted or airspeed is lost, it is likely loss of control of the aircraft will result.

3.3 On Tow Above 500 feet A.G.L.

Tug to Sailplane - "Release now" - tug pilot waggles the wings vigorously. On seeing this signal the SAILPLANE pilot MUST RELEASE IMMEDIATELY whether in high or low tow and having seen the tow rope go, the sailplane should (except where circumstances do not permit) execute a clearing turn to the right. If the sailplane does not do so immediately, operate the tug release lever to release the sailplane from the tug. If the emergency is a total engine failure, carryout normal forced landing procedures.

GENERAL:

Seek the co-operation of gliding Instructors to practice these emergencies as often as possible, BUT, note the following carefully:-
-Any emergency which has not been prearranged between tow and sailplane pilots, IS A REAL event.
-Every practice must be clearly and specifically prearranged between sailplane and tow pilots. In any flight, if ONE emergency procedure is prearranged, the SECOND one is a REAL event.
-During landing on Tow practice, prearrangement MUST identify clearly it is to be either:-
FULL STOP landing or,
TOUCH AND GO.

Take nothing for granted in practicing emergency procedures.

PART 4
OPERATIONS AT WAIKERIE AIRFIELD

Gliding operations may be conducted from the separate glider runways parallel to but outside the main runways. These glider runways meet the required ALA standards and are marked by orange gable markers. Although gliders occasionally land outside these areas for various reasons, glider launching may also take place outside the designated glider runways.

Normally, circuits to both the normal power runways and the glider runways are standard left-hand circuits. Contra circuits are not operated at Waikerie. Minimum separation standards exist as per OPS 46.2. The parallel power and glider runways are to be treated as a single runway for separation minima.
IE. the tug should not land or takeoff in parallel with another aircraft on the bitumen strip.

Beware of sprinklers and their associated wires which may be laid out across the glider runways particularly in the morning or afternoon.

The tug and glider shall use the CTAF frequency (126.7) during the entire launch and within 10km of the airfield. Taxiing broadcasts prior to takeoff are required (OPS 47.2). A listening watch can be maintained on two frequencies in the Clubs Pawnee. It is requirement to give a circuit joining call.

Remember the tow rope is trailing below the tug on approach. Be particularly careful on approach to runway 20, the grapevines are surprisingly close to the threshold.

PART 5
OPERATIONS AWAY FROM WAIKERIE AIRFIELD
(Including Paddock Retrieves)

All operations away from Waikerie airfield must be authorised by either the Duty Instructor or Tug Master. A Tug Pilot may only undertake a paddock retrieve if holding the appropriate rating. A briefing about the glider pilots level of skill, history and details about the paddock are required with the Duty Instructor before undertaking any paddock retrieve.

The tug pilot is in charge of and has prime responsibility for the safety of the operation whilst away from Waikerie airfield. **It must be noted that glider retrieves <u>are not permitted from paddocks</u> if the prevailing wind strength is in excess of the demonstrated crosswind component for the aircraft, in this case (for the Pawnee) 15 Kts or on Fire Ban days..**

The landing and launch area must meet the requirements of an ALA. The pilot in command is responsible for determining if the paddock or area meets the requirements and authorising the use of that area.
Remember, if it is necessary to consult the aircraft "P" Charts, the area is too small.
Tow pilots <u>must</u> have the ability to refuse to tow if there is any doubt about the landing / take-off area.

Radio communication is usually carried out on either the CTAF frequency or a gliding frequency. If you use the gliding frequency during the takeoff be sure to change to area and then CTAF frequency as required.
See the Paddock Retrieve Briefing Sheet at Appendix C

It is mandatory to carry the following equipment during a retrieve.

- Emergency Locator Transmitter
- Water
- Glider tail dolly.
- A spare rope (Short rope is available in the hanger and identified as such)
- Map.

PART 6
MAINTENANCE and DEFECTS

Apart from items normally inspected as part of the Daily Inspection (eg Oil level, Tyre pressures, brake linings, etc) all maintenance is carried out at scheduled intervals and normally does not require pilot input.
The aircraft is fitted with an hour meter and this should be used for recording the flight hours on the Maintenance Release (not Tacho time). Ensure that the Maintenance Release is valid and current for the flight and that any recorded defects have been assessed and that no items of planned maintenance fall due during the intended flight/s.

Most pilots are reluctant to write in the Maintenance Release. Pilots should understand their obligations are and how to write up entries in the Maintenance Release.

At the completion of each flight the pilot in command is required to enter any known defects or damage on part 2 of the maintenance release (CAR248).

Defects are categorised as either Minor or Major Defects or Damage. CAR 2(1) defines a Major Defect or Damage as "a defect or damage of such a kind that it may affect the safety of the aircraft or cause the aircraft to become a danger to persons or property".

No formal definition of minor defects or damage is given but it is assumed that any defects or damage not classed as Major may be classed as Minor Defects and Damage.

The Pilot in Command, the Chief Pilot and the Registered Operator have the authority (CAR 50) to decide whether a defect or damage will be classed as Major or Minor. The definition of major defects and damage given by CASA is very broad and therefore further advice from the Tug Master, a maintenance organisation or a LAME may be prudent. Some specific items are automatically classed as Major and are listed below, while other items still require considered opinion. The following is a guide to assist in the evaluation.

Items of equipment that are required for flight under CAO 20.18 "Aircraft Equipment-Basic operational requirements" are considered mandatory. Therefore if an item required by this CAO is unserviceable, it is considered a Major Defect. This CAO lists the minimum equipment required for a day VFR flight in Appendix 1 of the CAO, which in summary requires

- An airspeed indicator
- An Altimeter
- A Compass
- A time piece
- A Turn Co-ordinator

There are additional requirements for night VFR but normally will not apply to towing. Pilots should have a detailed knowledge of CAO 20.18.

Mandatory instruments that are listed in Section 5 of the aircraft Flight Manual are in a similar position to those required under CAO 20.18. Therefore if an item listed as mandatory in the Flight Manual is unserviceable, it is considered a Major defect.

Abnormal flight or ground loads are also classed as major damage. An abnormal load is one is which the pilot considers the aircraft was subjected higher "G" loads than the aircraft is certified for. This is almost certainly the case if severe turbulence has been encountered. Abnormal ground loads are not just related to heavy landings. High speed turns or ground loops may certainly result abnormal loads. Even very strong winds against a parked and tied down aircraft could result in damage to controls or landing gear.

Other defects or damage that could be classed as Major include defects or damage that could cause

- A primary structure failure (including passenger seats)
- A control system failure
- An engine failure
- A fire

After it has been determined what category of defect exists (Minor/Major), follow the following steps.

Minor Defects or Damage-
If the Pilot in Command determines that a particular defect is classed as Minor, the following procedure applies.

- Enter the defect in part 2 of the Maintenance Release. It is important to make the statement "Not Major Defect" or "Not Major Damage" as part of the entry.
- Continue the days operation unless it is considered operationally better to discontinue or alter the intended operation.
- Report the defect to the Tug Master.

Major defects or Damage-
If the Pilot in Command determines that a particular defect is classed as Major, the following procedure applies.

- Enter the defect in part 2 of the Maintenance Release. It is important to make the statement "Aircraft is Unairworthy" as part of the entry.
- Immediately report the defect or damage to the Tug Master who will arrange repairs to the aircraft. Also place a large note in the cockpit of the aircraft so that it is plainly visible to any pilot who may be preparing the aircraft for flight.
- DO NOT continue the planned flight or intended operation.

To maintain the tugs as valuable assets pilots are encouraged to wash and clean the tug if there is spare time (ie between launches). This simple and regular activity will extend the life of the fabric and provides an indication of care and attention to visitors.

There is a small stock of basic spares such as tyres and oil located in the main hanger. If able to competently replace these items, please do so to maintain the operation of the day. However do nothing if not comfortable carrying out the required repair.

APPENDIX A
PREFLIGHT INSPECTION PA25-235

This is a suggested preflight inspection based on the PA25 Owners Handbook. This list is an expansion on the Owners Manual with some additional items that should be checked. It may not be a complete list of all items worthy of inspection and additional items you feel are important may certainly be included at your discretion.

- Check the cockpit area and instruments for general condition and operation. Check seat belt attachments and operation of inertia reel.
- Check operation of all controls - flight, engine and electrical.
  Remember to turn the Master and Magneto switches OFF after inspection.
- Extend the flaps in preparation for the outside check.
- Check the condition and cleanliness of the windscreen and windows.
- Check operation of access door latches and hinges.
- Inspect the L/H wing and struts, top and bottom. Check aileron and flap attachments. Check condition of fabric for tears, holes or detaching strips, particularly under the wing where most of the damage is done. Check that all access covers under the wing are in place. Carry out a fuel check for water. Check the fuel level visually.
- Check the L/H Gear, including the attachment bolts and the brakes. The bolts virtually never fail but the attachment fittings that the bolts go through may crack. The brakes wear rapidly and must be checked every day! Some pads have a wear indicator slot in the edge of the pad - when the slot has disappeared, the pad is worn and requires replacing. .
- Open the engine cowls and inspect inside - oil or fuel leaks, broken wires, broken ignition leads, missing bolts, etc. Check the oil level. The engine normally holds 9 Lts on the dipstick. Add oil if the level gets below 8 lts.
- Check the prop for stone damage - cracks around the spinner attachment screws. Check the air inlet filter. After a paddock retrieve this may be full of grass. Check that all the cowl screws along the top front and back are in place they may vibrate out. Carry out the fuel drain.. Check the fuel level. Secure the fuel tank caps.
- Inspect the R/H gear as described previously.
- Inspect the R/H wing as described previously. Check the fuel level.
- Inspect fuselage side and bottom. The underside is difficult to look at but that is where there will be damage if any. Check fabric similar to wings.
- Check tail surfaces. Check fabric particularly underneath. This area regularly gets holes and tears from stones. Check bracing wires for tension and attachment. Check the Tail Wheel. Check the spring leaves for cracks and separation. Grease the tail wheel IF REQUIRED. Check the Tost release.
- Inspect the L/H side and bottom of the fuselage.

Check the Maintenance Release for previous defects entered. Sign the Daily Inspection, recording any Oil added.

APPENDIX B
OUTLANDING RETRIEVE REFRESHER COURSE

This course is intended to review the procedures and considerations of carrying out an outlanding retrieve and then to fly a simulated outlanding to put into practise what has been revised. This refresher is to be carried out with an Approved Check and Training Person.

An outlanding retrieve approved pilot is required to undertake this refresher if that pilot has not carried out a paddock retrieve during the preceding 2 yrs, or has not been given approval by the Tug Master to carry out paddock retrieves. An outlanding approved tug pilot can apply to the Tug Master to waive the requirements of this course if he can demonstrate that he has relevant, similar experience. An example of this may be outlandings in a glider during cross country flights, agricultural pilots who regularly land in off airfield locations, etc. The intent of this club-enforced requirement is to maintain pilots familiar and safe for these operations.

Theory

Section 7 of the GFA Aerotowing Manual (page 38) provides a syllabus for the topics to be covered during this refresher. Additionally a review of Part 5 of the WGC Aerotow Operations manual should be covered, in particular the list of equipment required to be carried and the briefings to be undertaken.

Flight Review

The scope of the flight review is to be decided by the Approved Check and Training Person but must include demonstration of the following:

- Preparation of the tug for the simulated outlanding retrieve.
- The safe inspection of the intended landing area by fly past at progressively lower altitudes. The last flyby should be at a maximum of 50 ft AGL.

It is NOT a requirement to actually land in the paddock. In fact it is discouraged because it puts the tug and pilots at unnecessary risk. An alternative to the paddock landing it is suggested to land on the Waikerie airfield near the windsock area. This area has a slight hill and will simulate landing on an undulating surface.

APPENDIX C
OUTLANDING RETRIEVE BRIEFING CHECKLIST

Day:…… Date: …../…../……

Tug Pilot: …… Glider Pilot:……

Tug: VH-…… Glider: ……VH-……..

T/O Area: Length ……..Metres, **Slope**: Level – Up-slope – Downslope

Direction .....Deg (M)

Surface Hard - Firm - Soft Long Dry grass Long wet grass

Short dry grass Short wet grass

Conditions: **Wind** ……../…… (Note max 15 Kts wind)

Temperature:……C (Density Altitude)

Density Altitude: ……..Ft

Obstructions On the ground In the area (circle)

Fences Stones Stock SWER Lines

Power Lines Dust Towers Erosion Gullies

Other: …….

Radio Frequencies T/O …… **Cruise** …….. **CTAF** (10 Km) 126.7
122.5, 122.7, 122.9, 124.3, 126.7

T/O Signals: Radio **Airbrake** - Open = Take up slack Close = all out

Climb Speed: …….Kts **Cruise:** …….Kts Altitude: ……Ft

Retrieve Times: (Hour Meter)
Tug T/O Time: YWKI: ……Hrs **Land:** …… Hrs ……..Mins
Tug T/O Time: ….....Hrs **Land**: ……Hrs ……..Mins

NOTES: ……
…….....**.....**
…….
…….
…….

Retrieve Approved – Briefing Completed – De-Briefing

APPENDIX D

TUG PILOT DOCUMENTATION REQUIRED BY WGC.

The following information is required to be presented to the Tug Master to allow Club records to be updated / maintained;

Copies of: a) Pilot License, showing Class and ARN.
b) Aviation Medical Certificate, showing any restrictions.
c) Logbook page showing most recent Bi-annual Flight Review date.

Tow Pilot's ARE NOT PERMITTED to operate the Club's Towing aircraft ;

a) unless these three documents are current / valid
b) Currency requirements are fully satisfied.

The Tug Master or CFI may also request to view the Tug Pilot's Logbook to review recency, aerotowing experience, etc.

Currency Requirements

In order to be considered "in current flying practice", Tow Pilot's must

a) Hold a valid Medical Certificate.
b) Have completed a "Bi-annual Flight Review" within the preceding 2 years.
c) Be able to demonstrate 3 normal take-off's and landings in the preceding 90 days (3 months).
d) Have completed 10 normal aerotows within the preceding 6 months to retain the Aerotow Rating.
e) Have completed at least 1 paddock retrieve within the preceding 2 years to retain the "Outlanding Retrieve" Rating.

APPENDIX E
VH-WGC – OPERATION & ENGINE MANAGEMENT
ADDITIONAL NOTES

Tug Operation

These additional notes for Tug Pilots have the objective of enhancing the operation, care and appearance of the Club's Tug aircraft at the same time defining the Tug Pilots responsibilities. All Tug Pilots are requested to conduct their towing operations with these Notes in mind.

1. The Tug Pilot is responsible for the Tug from when it comes out of the hangar continuously until it has been returned to the hangar.
2. It is a requirement to maintain a written FUEL LOG. Fuel Logsheets are stored in the northern drawer of the Briefing Room desk.
3. A 45 minute FIXED RESERVE of fuel is required at all times. Flight fuel required is therefore 45 minutes plus the fuel required for the flight.
4. It is a requirement to complete the Maintenance Release each day, recording the following – Daily Inspection, any Oil Uplift, Inspection of the Tost Release, Hours and landings flown.
   All Oil Usage will be noted on the Oil Usage Logsheet, located near the spare oil in the Office.
5. A spare Tow Rope will be always be carried in the Nose Locker
6. Engine Operation.
   - Engine run-ups to are to be performed over a hard surface – on the apron, sealed taxiway or sealed runway to minimise soil erosion.
   - All engine power changes are to be undertaken smoothly.
   - Climb speed to be 70 Kts unless the glider pilot requests differently.
   - Descent is to be conducted at 2300 RPM (don't allow engine to overspeed) to 500 Ft to prevent shock cooling.
7. The aircraft will be parked with the Radio Master OFF, both Magneto's selected to OFF and the Master Switch OFF.
8. At the end of each days flying
   - The aircraft will be refueled and the fuel selected to OFF.
   - The Radio Master, Magneto's and Master Switch will be selected to OFF
   - The Solar Charger is to be connected to the Tug battery.
   - The Maintenance Release will be completed.
   - The aircraft will be chocked at both main wheels.
   - The aircraft will be cleaned of all bugs, dust, oil etc.
   - Club headsets, knee-boards etc will be returned to the Tug Equipment drawer in the Office.
9. All incidents (incidents, accidents, near hits, Human Factor event will be reported in writing to the Flying Operations Panel. Incidents include any rope

break or failure (actual, caught on obstruction etc), aborted launch, events involving unplanned glider wave-off etc.

10. Any / all items of "Pilot Maintenance" are to be noted and attached to the Daily Flight Sheets.
11. Tug pilot's are encouraged to
    a) develop and display high levels of Airmanship , and
    b) consider "Human Factors" in all aspects of towing operations,

    at all times while operating the Club's Tug.

An Accident or Incident is "ANY UNPLANNED OR UNWANTED EVENT".

Tow Pilots are always able to display high standards of aviation professionalism in every aspect of flying operations – at no cost or inconvenience. Lets do it.

APPENDIX F

PAWNEE 235 VH-WGC – OPERATION & MANAGEMENT

HUMAN FACTORS

Pilot Preparation

- Pilot documentation not complete or valid. (See Appendix D)
- Pilot not current. (See Appendix D).
- Pilot not fit to fly.

Aircraft Preparation

- Daily Inspection - not done or is incomplete or not Signed Out..
- Tow rope not thoroughly inspected.
- Windscreen not made scrupulously clean.
- Maintenance Release not completed before flying.
- Fuel contents not checked.
- Fual water check not completed.
- Mirrors not correctly adjusted.

Tug Operation

- Not complying with all recognized procedures.
- Not maintaining a good LOOKOUT.
- Not making the appropriate radio calls.
- Not keeping windscreen scrupulously clean.
- Not cleaning the aircraft at the end of the day's flying
- Conducting the engine run-up on the grass.
- Flying too fast / slow.
- Fuel burn / reserve not monitored / maintained.
- Fuel Log not maintained.
- Weak-link at the wrong end of the tow rope.
- Towing into the sun.
- Towing downwind of the airfield.
- Allowing the engine to overspeed at the top of descent.
- Poor airmanship
- Taxying too fast.

Appendix G/1

CASA RAMP CHECKS & DRUG TESTING

Under the Civil Aviation Safety Act (CASA) and Civil Aviation Safety Regulations (CASR), the Civil Aviation Safety Authority (CASA) are entitled to conduct RAMP CHECKS and / or Drug tests on any aerodrome / airfield at any time.

A RAMP check reviews the operational compliance of the aircraft and pilot with the regulatory requirements. The checklist below covers the issues which may be addressed.

A DRUG test is just that, looking for alcohol and other illegal drugs.

Under the CASA and CASRs, it is an individual pilot responsibility (Tug Pilots and Glider Pilots alike) to satisfy the appropriate requirements (of both a RAMP check and a Drug Test). There is nothing the Club can do to assist a pilot confronted with either check/test.

The Club will do all it can to ensure the Tug aircraft remains airworthy with no outstanding maintenance items.

CHECKLIST

1. **Aircraft Maintenance Release**
   - on board the aircraft,
   - current (Date and Hours)
   - signed before flying.
   - No items of scheduled maintenance outstanding.

2. Class of operation **Private** **Category:** Normal
3. Flight Manual / Pilot operating Handbook on board.
   Not required for PA25, See next page. Previous manual in seat rear pocket..
4. Operating Checklist (On Fuel Log) and cockpit placards.
5. Fuel Log (written FUEL LOG required by WGC), on board.
6. Maps, if intending cross country flight
7. ERSA if intending cross country flight
8. Evidence of Met Briefing, if intending cross country flight..
9. **Pilot Licence – carried in the aircraft**
10. AVID current – for AVID applicable airfields.
11. Endorsed for aircraft (Taildragger, Fixed Pitch Prop, < 5,700kg)
12. Endorsed for operation (glider towing, tailwheel)
    Current (> 10 tows in the preceding 6 months).
13. Medical Certificate – **Carried, valid**.
14. Any medical restrictions complied with (second pair of glasses)

John Hudson

Tug Master

Appendix G / 2

Downloaded from CASA Website

Aircraft NOT required to have an Aircraft Flight Manual (AFM) under Regulation 54 of CAR 1988

Piper PA25 PA25	US- FAA	2A10	25-03 through 25-731 ?(Restricted Category)
Piper PA25 PA25-235	US FAA	2A10	25-2000 through 25-5521, 25-7305522 through 25-8156024, (Restricted Category)
Piper PA25 PA25-260	**US FAA**	2A10	25-4415 through 25-5521 25-7305522 through 25-8156024, ?(Restricted Category)

Appendix G / 3

Waikerie Gliding Club

PIPER PA-25-235 PAWNEE

Piper PA25-235, VH-WGC **Serial No:** 25-3010 **YOM:** 1965
Caregory: Normal. **C of A No**: **C of R No**.
Type Cert: 2A10
Engine: Lycoming 0-540 – A1D5, 250 HP
Propellor: McCauley Dia: 84.0 inches Full Throttle Max RPM <2580 (Static)
At 70 Kts 2600 RPM
Fuel: 100 Low Lead

Capacity.	Max: 2 X 84 Litre tanks	**Total**	160 Litres
	Un- usable 3 US Gall, 11.3 Ltr/Tank	**Total**	22.6 Litres
	Useable Total		2 X 73 Litres
	WGC Fixed Reserve - 45 Mins		**45 Litres**
	Total Usable Endurance,		**115 Litres**
	At Towing Fuel Burn – 1 Litre / Min		**115 minutes**

Oil Shell W100 Sump Capacity 11.4 litres,
Fill to **9** – on the Dip Stick

Speeds

Vne	130 Kts	**Normal Operating Limit**	104 Kts
Manoeuvring	**101 Kts**	**Max, Flap Extended**	92 Kts
Max X/Wind	15 Kts	**T/O Safety Speed**	67 Kts

Weights

Empty Weight 665 Kg (inc unusable fuel and undrainable oil).
Max T/O Weight: 1315 Kg **Max Landing Weight**: 1315 Kg
C of G Fwd Limit 2245mm aft of the datum at 1315 Kg
2174 mm aft of the datum at 813 Kg or less.
(Linear between 1315 Kg and 813 Kg)
Rear Limit 2294 mm aft of the datum.

VH-WGC, Full Fuel, 9 Ltr Oil, 82 Kg Pilot = 872 Kg

Appendix G / 4

Waikerie Gliding Club

PIPER PA-25-235 PAWNEE

Note 1: Total Fuel Capacity, 168 Litres. Unusable 22 Litres
Usable Fuel Capacity 146 Litres
Towing Fuel Burn 1 Litre per minute
Endurance: 146 Litres or 146 Minutes.
Minimum fuel reserve: 45 minutes for all operations.
Maximum Towing End 101 minutes
Normal Maximum Fuel Uplift: 101 litres.

Note 2: It is a requirement to maintain a written FUEL LOG for all operations (Blank Fuel Logs in Briefing Room desk drawer) or develop your own – but maintain a written Fuel Log.

Note 3 Stall Warning is inoperative when MASTER SWITCH is OFF.

Note 4 : Maximum weak link in Tow Rope, 750 Kg. Normally 600 Kg.

Note 5 : Aerobatics are not permitted, Max 60^0 angle of bank in turns.

Note 6 : Take-off and Climb - Full power @ 70 Kts unless glider pilot requests another speed.

Note 7 : For the descent from release height to 500 Ft – set 2300 RPM, with Flap fully retracted, descend at (Max) 104 Kts IAS.

Note 8 : Keep windscreen clean at all times to aid LOOKOUT.

Note 9 : Flying operations during towing should be consistent with other airfield operations, ie circuits, circuit direction, etc.

Appendix H

TOST WEAK LINK SYSTEM

The recognized “weak link” rating for the various Tug aircraft are,

Piper PA-25 235 “Pawnee”	750 Kg
All other Tug aircraft	450 Kg.

The “Tost” weak link system consists of two (2) manufactured “elements” which may be used separately or together. One of the elements has a round hole at each end, while to other has elongated holes.

The elements are colour coded for “strength”, as indicated in the Table below.
Each element has a published “fatigue life” of 200 cycles (launches).

If used separately, an element of the desired “strength” is fitted. Should an over-load occur, the element will fail (and a “rope break” is experienced). If used together, an ‘element” of each type (1 with round holes, 1 with elongated holes – of the same “strength” – ie same colour) are used. Should the primary element (with the round hole) fail due to fatigue (rather than overload), the element with the elongated hole will take up the load. Should the primary element fail due to overload, it is likely the secondary element will also fail (and a rope break will be experienced).

The Tug is protected by the “weak link” at the Tug end of the rope.
The glider is protected by the “weak link” at the glider end of the rope.

Colour Coded Weak-links

Colour	**Breaking Strain Kg**
Green	300 + / - 30
Yellow	400 + / - 40
White	500 + / - 50
Blue	600 + / - 60
Red	750 + / - 75
Brown	850 + / - 85
Black	1000 + / - 100.

Appendix I

BATTERY ACID LEAK

The Pawnee is fitted with a “wet” cell battery, which means a battery acid leak may occur during the operation of the aircraft. The leak may result from topping-up/over-flowing the battery electrolyte or a battery boil-over during operation. Both these events are uncommon.

Should a battery acid leak occur, it is important that the acid be neutralized and flushed away to prevent damage – particularly to aluminum components.

A battery acid leak is able to be readily identified by a white, fluffy build-up around the leak area or where the acid has spilt. Battery acid will relatively quickly dissolve aluminum. A good look at the area in and around the battery or on the underside aircraft skin – for damaged paint or the white fluffy compound (resulting from aluminum breakdown) at the Daily Inspection provides evidence of a battery acid leak.

Neutralising Battery Acid
To neutralize battery acid, it is suggested that ***Bi-Carbonate of Soda*** be mixed in warm water (a handful in a bucket of warm water), which is then poured over the spilt acid.

It is important that the neutralized mixture be flushed from the aircraft.

Flushing
This is best achieved using clean, cool water. Simply pour the clean water over the area of the spilt acid.

Waikerie Gliding Club

OPERATIONAL PROCEDURE – Appendix H
JUMP STARTING PIPER PAWNEE - VH-WGC

It may be necessary to jump-start the Club's Pawnee, VH-WGC. This should only be undertaken on a "last resort" basis.
Other "options" include;

- Connecting a battery charger to the aircraft's battery – and waiting. This should only be done if the charging can be closely monitored.
- Remove the battery from the aircraft for charging.

It must be recognized that jump-starting is a hazardous procedure and should only be undertaken when the following conditions can be satisfied,

a) The aircraft is chocked at both main wheels.
b) The trim is wound <u>fully</u> nose-up.
c) Jumper leads are available to enable the "jumped" source to be located <u>behind</u> the aircraft wing. (The Club leads will reach behind the wing).
d) A competent Pilot remains at the controls throughout the jump -start procedure.
e) A detailed Briefing is conducted, involving <u>all</u> those assisting, by the Competent Pilot, using this procedure as the basis of the Briefing and carrying out the jump-start.
f) <u>All</u> onlookers remain at least a wing-span from the aircraft.

THE PROPELLOR CAN INFLICT FATAL INJURIES

Procedure

a) Park the aircraft clear of the hangar, other aircraft and all obstacles. The "prop-wash" area behind the Tug should be clear.
b) Chock the main wheels.
c) Set the aircraft trim <u>fully</u> nose-up.
CONDUCT A DETAILED BRIEFING FOR ALL INVOLVED, using this procedure.
d) Locate the power source (car) behind the wing.
e) Lay the Jumper Leads across the wing, separate +ve and –ve.
f) Connect the Jumper Leads to the respective terminals on the Tug battery.
g) Place an obstruction (rag) in the nose locker door.
h) Locate a "competent" pilot in the aircraft.

- Apply the aircraft wheel brakes.
- Set mixture "rich".
- Turn "Fuel" to selected tank. Ensure there is sufficient fuel on-board.
- Ensure the "Alternator" Circuit Breaker is engaged (not open).

- Turn "Master Switch" ON
- Run electric "Fuel Pump", exercise throttle to prime engine.
  Turn fuel pump "OFF".
  Set Throttle, 1000 RPM
  Set Left magneto to "ON".

i) Instruct assistant/s to connect Jumper Leads to power source (car), as follows,
   a) Connect +ve lead to (car) battery +ve terminal.
   b) Connect –ve lead to a point on the car engine.

j) Allow 2 – 5 minutes to elapse, the allow the source battery to place some charge into the aircraft battery.
   NOTE – That if item **(h)** above cannot be completed due to the lack of power in the battery, this should be completed now.

k) Ensure the propeller area is clear. Call "***Clear Prop".***

l) Engage the starter until the engine fires.
   When the engines starts, switch "Right Magneto" to ON.
   Run the engine at 1000 RPM.
   Ensure the ammeter indicates a charge of 20 – 30 amps.

m) Signal the assistant to disconnect the –ve lead from the (car) battery.

n) Run the aircraft engine at 1000 RPM for 5 - 10 minutes.
   Observe the charge rate to the battery progressively decline.

o) Shutdown the aircraft engine.
   Switch Master Switch OFF.

p) Disconnect the jumper leads from the source (car) battery.
   Ensure +ve and –ve leads always remain separated.

q) Disconnect jumper leads from the aircraft battery and secure battery box lid.

r) Close the nose locker door.

s) Remove the power source (Car).

t) Ensure all is clear around the aircraft,
   Start and Run for 10 minutes at 1000 – 1200 RPM

At no time, should any person proceed to or be at the nose locker while the propeller is spinning.

NOTES RE JUMP STARTING:

a) A "Competent Pilot" in this case is a pilot familiar with this procedure, jump starting and Piper Pawnee operation.
b) Keep Jumper leads separated by attaching +ve lead clamp to insulated –ve lead.
c) There is a risk of a hydrogen explosion when connecting the jumper leads to the batteries, hence the order for connecting the leads.
d) If the pilot is not competent in carrying out this procedure, another option must be selected.

John Hudson
Tug master

Appendix J

Waikerie Gliding Club

PA25, VH-WGC
ENGINE OIL and OIL FILTER CHANGE, STEP BY STEP PROCEDURE

The Waikerie Gliding Club PA-25 “Pawnee” VH-WGC requires an oil change and Oil Filter change at Calendar intervals described in the Maintenance Release. The oil and filter change is described as “Pilot Maintenance” for appropriately trained Pilots.
This step-by-step procedure is described here in detail.

1. The current ***Maintenance Release*** for the aircraft dictates the timing of the change.
2. Confirm a new **OIL FILTER** is available.
   Spare OIL FILTERS are stored in the Tug Drawer in the Office.
   The OIL FILTER in current use is a “CHAMPION” Filter, No. **CH48110-1 or CH48110-2**.
   New FILTERS are available from AeroService Ltd at Parafield.
3. Confirm at least 9 bottles (9 Quarts) of new **SHELL W100** oil is available. Shell Oil, Grade W100 is available from our fuel supplier, Stark Aviation (Parafield Refuelling) at Parafield.
4. Confirm the “NORBAR” Tension Wrench and crows foot Ring Spanner attachment are available. This is stored in the **Tug Drawer** in the Office.
5. Arrange Safety Tie-wire and Tie-wire pliers.
6. Locate the Oil Drain attachment, which is stored at the **Tug Cupboard** in the main hangar.
7. Arrange a supply of clean rags.
8. Source a suitable container to take the drained oil. (A drum for this purpose is located near the Air Compressor in the Main hangar.
   The used oil may be disposed of at the Waikerie Dump (for a small fee).
   NOTE: If any one of the above items are not available, the oil / filter change should not proceed.
9. It is preferable that the oil is warm – Caution is required when working on/near a hot engine and hot oil.
   Connect the OIL DRAIN attachment to the bayonet action drain fitting on the bottom of the engine sump (using the short chains provided on the drain attachment). Direct the Oil Drain attachment

into the container to receive the old oil. Suggest allow 15 – 20 minutes for the oil to drain.
OPEN the bayonet fitting (push up and turn) on the bottom of the sump to commence draining the oil. Monitor the draining.

a. Take specific NOTE where the safety Tie-wire is tied-off too on the filter and on the engine.
Cut the safety tie-wire on the installed oil filter and remove it.
Pack the area under the installed Oil Filter with clean rags to collect any oil which may spill from the filter as it is removed.
Using the Tension Wrench and crows-foot attachment, undo the installed Oil Filter until the filter can be turned by hand. Remove the Tension Wrench.
Undo the filter until it's central thread dis-engages. Turn the filter such that the central thread points up – this will minimise oil spillage.
Note the position of the Tie-wire Tab on the Old Oil Filter and set up the new filter accordingly.

10. ***CONFIRM the Oil Filter O'Ring remains on the old filter***.
11. Clean the area where the new oil filter will be installed.
12. "Oil" the O'Ring and central thread on the new Oil Filter, being careful not to allow any dirt, dust etc into the new filter. Locate the filter on the central thread and screw in until hand tight.
Using the Tension Wrench and crows-foot fitting, set the Tension Wrench to 16 – 18 Foot Pounds (not Newton Metres). Tighten the new Oil Filter to this setting. Confirm the setting of 16 – 18 Foot/Pounds.
13. Locate a length of safety tie-wire as in Step 9 above.
It is important that the Safety Tie-wire is located such that there is no slack – which may allow the filter to undo. Safety tie off the new Filter, using the anchor points identified in Step 9a above .
Remove the rags placed under the oil filter.
14. Remove the Oil Dip Stick from its location. Clean the dipstick.
15. **Close** the Bayonet fitting on the oil sump drain fitting.
Clean the Oil Drain hose attachment and relocate it to its storage location.
    a. Add 2 bottles of new W100 oil, using a cut-off Plastic W100 Oil bottle screwed into the Dip Stick hole, as a funnel.
Check the Bayonet fitting on the Oil Sump Drain – ensure no leaks.
16. Add another 6 more bottles (6 Quarts) of new oil.

Note: 8 bottles will raise the sump level to a about 8 Quarts on the dipstick.

17. Re-install the Dip-stick.
    Clean up the areas around the engine where any oil may have spilt – ie under the oil filter, under the sump drain fitting, on cowls, hoses, and Air lines etc
18. Return all items used to their normal storage location.
19. Start and run the engine for a few minutes, observe oil pressure build to normal.
20. Shut-down the engine,
    - Check for oil leaks.
    - Check Oil Level on the dipstick, top up to 9 Quarts (no more) as required.

    Sign out this particular Oil / Filter change on the Maintenance Release.

John Hudson
Jan 2017.

Waikerie Gliding Club

SCOTT Model 3224-A Tailwheel Assembly

Spare unit for PA-25 Pawnee, VH-WGC.

Waikerie Gliding Club holds a complete, fully serviceable SCOTT TAILWHEEL Assy (This unit, See Note 1 below). This Assy was fully rebuilt in December 2016 by AeroServices at Parafield.

Notes Re Tailwheel Assy

1. **Tailwheel Bearings**

   The tailwheel bearings have been fitted with new meta/plastic grease seals at each end of the axle. The axle is equipped with a small grease nipple. It is vital that the axle is not over-greased due to the pressure that will be exerted on the grease seals causing premature failure.

2. **Tailwheel Swivel**

   The tailwheel swivel mechanism is equipped with a small grease nipple to enable the swivel to be greased.

   a) The overhaul of the tailwheel Assy began because the grease nipple had been broken off (I suggest when removing the grease Gun fitting from the nipple – with who-ever was removing the Grease Gun fitting likely to be unaware of the nipple failure). Care is required when disconnecting the Grease Gun from the Nipple.

   b) The swivel mechanism includes a grease Seal (identical to that on the axle). Generally the swivel mechanism tends to be over-greased (it is not necessary to grease the swivel every day).

   After greasing, any excess grease on the grease nipple or which has squeezed out of the swivel mechanism should be wiped clean (the major components of the swivel mechanism are made of Brass – any grease-sand mix becomes a grinding paste.

3. **Installing Rebuilt Tailwheel Assy onto Aircraft**

   When (if) this Tailwheel unit (located in the Igloo Tug Spares cupboard) is reinstalled onto the aircraft, it is necessary to check the tension on the ¾ inch “castleated” Nut (accessible from the under-side of the swivel mechanism)

4. After installing the tail-wheel Assy, check that the nut is sufficiently tight enough to firmly align the components. Tighten / loosen the Castleated nut accordingly.

5. Install a cotter pin (located loosely in the “castleated Nut) to prevent the nut from turning in-service (Cotter pin provided attached to Tailwheel assy)

Note 1: A copy of this Notes is attached to the rebuilt Tailwheel Assy.

John Hudson
27.12.16

Appendix L

Waikerie Gliding Club

INCIDENTS /ACCIDENTS TO BE FORMALLY REPORTED

Events

- A non-arranged launch abort.
- A Tow-rope break (regardless of the cause).
- Any flying in the 45 minutes Fixed Reserve.
- Any flat tyre.
- Any significant deviation in glider position above or below the Tug.
- Any “Wave-off” of the glider being towed.
- Any uplanned Maintenance of the Tug.
-
-