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18 June 2024

MEMORANDUM FOR RECORD

FROM: CAWG/CC

SUBJECT: Nondirective Publication Disclaimer – CAWGP 70-1-9

1. Attached to this memorandum is California Wing Pamphlet 70-1-9. This pamphlet is a nondirective publication, as that term is defined on page 18 of CAPR 1-2.
2. Compliance with this pamphlet is not mandatory. Any requirements or procedures explained in this pamphlet are either directed by other, directive publications or are provided as suggested methods, techniques, and/or best practices.
3. To the extent that the requirements or procedures explained in this pamphlet exceed the requirements and procedures directed by Civil Air Patrol, Pacific Region, or California Wing directive publications or by applicable law, a failure to comply with the requirements or procedures explained in this pamphlet shall not constitute a discrepancy for purposes of a Compliance Inspection or Subordinate Unit Inspection, nor shall they be grounds for termination of membership under CAPR 35-3.
4. Any directive language used in this pamphlet to describe a requirement or procedure which exceeds the requirements and procedures directed by Civil Air Patrol, Pacific Region, or California Wing directive publications or by applicable law, shall be interpreted as nondirective.

A handwritten signature in blue ink, appearing to read "C E Newton".

CRAIG E. NEWTON, Col, CAP
Commander

Attachment:
CAWGP 70-1-9, 18 Jun 24

California Wing Pamphlet 70-1-9

Tow Pilot Training Guide

18 June 2024

OPR: DOV



1. The purpose of this document is to provide suggested resources for the training of Civil Air Patrol Tow Pilots:

1.1. A per-flight training syllabus in the form of a checklist for tow pilot initial qualification for CAWG airplanes towing gliders.

1.2. A preflight briefing checklist for the glider and airplane tow pilot.

1.3. A daily log template for the tow pilot to record information about each of the day's tows.

2. Airplane tow pilot initial training and currency must meet the requirements of FAA regulation 61.69 and CAPR 70-1 paragraph 4.4.4. Before starting training, an airplane tow pilot candidate should also:

2.1. Review local glider towing procedures and hazards through publications and by consulting an instructor.

2.2. Review the pertinent parts on airplane towing from [chapter 7](#) from the FAA's glider flying handbook.

2.3. Review tow pilot emergencies and aerotow upset accidents. [Here](#) is a suggested source.

2.4. Review [CAPM 60-1G](#), CAP glider program procedures manual.

2.5. Complete the course and final exams for: (1) [SSF/CAP Wing-runner online course and quiz](#) and (2) [SSF/CAP Tow pilot online course and quiz](#) (required by CAPR 70-1 4.4.4.1.6).

3. It is suggested that the tow pilot candidate participates in at least one day as a ground crew for glider operations to gain familiarity.

4. Instructional tows should include a minimum of:

4.1. Tow plane and glider signals.

4.2. Tow speed limitations.

4.3. Radio procedures.

- 4.4. Simulated rope-break.
 - 4.5. Climb to a minimum of 2,000' under tow.
 - 4.6. Tow plane handling during box-the-wake maneuvers.
 - 4.7. Simulated landing with glider in tow.
 - 4.8. Proper altitude and engine management for avoiding overheating and shock cooling during climb and following release.
 - 4.9. When not in tow, simulated tow airplane upset (tail rise) by using the trim and simulating pulling the release handle.
5. Discussion items should include a minimum of:
 - 5.1. Tow pilot and glider pilot pre-flight coordination.
 - 5.2. Aborted take-off under tow.
 - 5.3. Partial and full power loss on take-off and climb.
 - 5.4. Situations that would require immediate release.
6. The three glider flights required by FAR 61.69 can be accomplished in any order, but it is suggested that they are complete after all ground school preparation and before instructional tows. Also note that CAP does not have currency requirements above and beyond FAR 61.69.
 7. The following three attachments contain a suggested template for tow pilot flight training records, a preflight checklist, and a daily log.

Attachment 1: Tow Pilot Flight Training Record

Date(s): _____

Candidate Name and CAP ID Number: _____

Instructor Name and CAP ID Number: _____

Tow Pilot Trainer Name and CAP ID Number: _____

<p>Tow Plane Flight #1 Actual Tow with Glider</p>	<p>Instructor Demonstrates: Takeoff, bank angles, airspeed, use of mirror, tow pattern, engine management, airborne signals, release and let down procedures, traffic pattern and proper approach procedures.</p>	<p>Candidate follows thru and observes instructor's demonstrations only. Candidate lands.</p>	<p>Candidate recognizes importance of angles of bank, airspeed control, proper let down procedures and awareness or towrope below glide path.</p>
<p>Tow Plane Flight #2 Actual Tow with Glider</p>	<p>Proficiency Flight Instructor simulates takeoff emergencies, power loss/failure during climb out, and the glider exceeding tow planes critical pitch angles. Note: For safety perform the glider exceeding critical pitch angles above 1,000'AGL. Instructor reviews all areas of 1st flight procedures, simulates a glider on tow, evaluates candidates let down and approach procedures.</p>	<p>Candidate performs proficiency with smooth acceleration, uses proper let down procedures. Candidate lands.</p>	<p>Candidate recognizes tow plane operating below performance levels and makes an immediate decision to release the glider only after the critical pitch angles have been exceeded. Candidate demonstrates airborne signals, proper let down procedures, is vigilant to tow rope hanging below glide path.</p>
<p>Tow Plane Flight #3 Actual Tow with Glider</p>	<p>Instructor Evaluates all areas of 1st flight noting glider will be demonstrating the Boxing of the Wake and Slack Line procedures. Instructor to assist as needed.</p>	<p>Candidate performs the actual tow using proper procedures while the glider is on tow. Candidate lands.</p>	<p>Candidate reviews and Instructor critiques Flight #3 once on the ground while awaiting the next tow. Candidate prepares for next tow.</p>
<p>Tow Plane Flight #4 Actual Tow with Glider</p>	<p>Instructor Evaluates all areas of 1st flight noting glider will be demonstrating the increase and decrease airspeed airborne signals, starting at 600' AGL, followed by the glider boxing the wake the remainder of the tow. Instructor assists as needed.</p>	<p>Candidate performs the actual tow using proper procedures while the glider is on tow and recognizes the airborne glider signals only. No action is required Candidate lands.</p>	<p>Candidate reviews and Instructor critiques Flight #4 once on the ground while awaiting the next tow. Candidate prepares for next tow.</p>

Tow Plane Flight #5 Actual Tow with Glider	Instructor Evaluates all areas of 1 st flight noting just after liftoff the glider will be applying maximum drag while on tow until the tow plane signals a problem with the glider followed by the glider boxing the wake the remainder of the tow. Instructor assists as needed.	Candidate performs the actual tow using proper procedures while the glider is on tow and recognizes a problem with the glider and signals back to the glider until problem is resolved . Candidate lands.	Candidate reviews and Instructor critiques Flight #5 once on the ground while awaiting the next tow. Candidate prepares for next tow.
Tow Plane Flight #6 Actual Tow with Glider	Instructor Evaluates all areas of 1 st flight. Upon reaching a safe altitude above 400' AGL depending on weather conditions. Instructor will advise candidate of some type of simulated emergency problem until the glider responds properly. Instructor assists as needed.	Candidate performs the actual tow using proper procedures while the glider is on tow and recognizes a problem with the tow plane. Candidate will perform the Wave Off signal until glider release. Candidate lands.	Candidate reviews and Instructor critiques Flight #6 once on the ground while awaiting the next tow. Candidate prepares for next tow.
Tow Plane Flight #7 Actual Tow with Glider	Instructor Evaluates all areas of 1 st flight. Instructor assists as needed.	Candidate performs the actual tow using proper procedures during tow. Candidate lands.	Candidate reviews and Instructor critiques Flight #7 once on the ground while awaiting the next tow. Candidate prepares for next tow.
Tow Plane Flight #8 Actual Tow with Glider	Instructor Evaluates all areas of 1 st flight. Instructor assists as needed.	Candidate performs the actual tow using proper procedures during tow. Candidate lands.	Candidate reviews and Instructor critiques Flight #8 once on the ground while awaiting the next tow. Candidate prepares for next tow.
Tow Plane Flight #9 Actual Tow with Glider	Instructor Evaluates all areas of 1 st flight. Instructor assists as needed. Student should complete tow unassisted.	Candidate performs the actual tow using proper procedures during tow. Candidate lands.	Candidate reviews and Instructor critiques Flight #9 once on the ground while awaiting the next tow. Candidate prepares for next tow.
Tow Plane Flight #10 Actual Tow with Glider	Instructor Evaluates all areas of 1 st flight. Instructor assists as needed. Student should complete tow unassisted.	Candidate performs the actual tow using proper procedures during tow. Candidate lands.	Candidate reviews and Instructor critiques Flight #10 once on the ground while awaiting the next tow. Candidate prepares for next tow.

Tow Pilot Trainer Comments:

Attachment 2: Tow Pilot and Glider Pilot Preflight Briefing Checklist

- Ground crew/cadet safety
 - Ground crew does not enter runway without glider
 - Ground crew monitors radio/traffic before pushing glider onto runway
 - No caps on runway
 - Ground crew minds tow rope and tow plane propeller as tow plane pulls on to runway
 - Ground crew retrieves glider from runway as soon as possible after glider comes to rest, but does not enter runway, or stand in front of glider, until glider is stopped
 - Park/stow golf cart and loose items (backpacks, cooler, etc.) off taxiway
 - Discuss designated tow rope drop area clear of people, runways and taxiways (if necessary due to an emergency or if it's routing operation per local procedures)
 - Discuss tow rope retrieval with ground crew
 - All ground crew except wing runner and trainer exit runway quickly and safely when glider is ready
 - Wing runner does not raise glider wing until thumbs up from glider pilot, AND no persons in front of glider
 - Wing runner confirms with glider pilot prior to giving takeoff signal, again ensures no-one in front of glider
- Emergencies
 - Aborted takeoff point
 - Discuss point at which if not off by, takeoff will be aborted
 - Aborted takeoff procedure
 - Release, tow plane left, glider right
 - Tow plane engine failure, upset, etc.
 - Tow plane immediate release, avoid release below 200 feet if safely possible
 - Rope break procedures
 - Tow plane offset to left, glider conduct procedure appropriate to altitude and position from field, radio call
 - Tow plane and glider unable to release procedures
 - Glider assume low tow. Long shallow approach, glider lands first, tow plane and glider slow to a stop together
 - Tow plane go around
 - Offset non taxiway side of runway, drop tow rope clear of runway, taxiways, persons, and property
 - Other emergency (electrical, etc)
 - Fly low over agreed rope drop area, release rope avoiding people, runway, taxiway, etc

- Comms/Signals
 - On the ground
 - Engine start – circle arm in air in the horizontal plane
 - Entering runway – Glider and Tow plane make radio calls
 - Take up slack – Wing raised, arm swinging down, optional radio call
 - Hold – Arms out horizontal
 - Ready for takeoff – arm around in vertical circle, glider rudder wag, tow plane rudder wag, optional radio call
 - Abort/release/shutdown - move hand across neck
 - Emergency Stop – arms waving in air
 - In the air
 - Emergency – Tow plane rocks wings, glider and tow plane release, avoid release below 200 feet if safely possible
 - Unable to release – glider goes left and rocks wings, tow plane yaws, or radio call
 - Speed up – glider wags wings, or request on radio
 - Slow down – glider yaws, or request on radio
 - Turn left – glider pull tow plane tail, or request on radio
 - Turn right – pull tow plane tail, or request on radio
 - Boxing the wake maneuver – glider requests on radio
- Desired tow(s) for the day
 - Departure direction/landmarks/minimum altitudes
 - Airspeed (typical 60-65kts)
 - Maximum bank angle (15-20 degrees is typical)
 - Release altitude and location

Attachment 3: Tow Pilot Daily Log

DATE:	MISSION:	SORTIE:
FRO:	FRO PH#:	

PERFORMANCE (verify with POH)			
AIRCRAFT	ROTATE SPEED	CLIMB SPEED	MAX TOW SPEED
TOW	55		
BLANIK		62-65	81
ASK		65-67	95

TOW	TACH	HOBBS	GLIDER	ATL	TIME
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

FUEL AMOUNT:	FUEL COST:	RECEIPT NUMBER: