



PACIFIC UNION COLLEGE

ANGWIN (203): 1848' 1E. 38°34. 71'N 122°26. 12'W.

The Angwin Airport, Angwin-Parrett Field (203) on the San Francisco sectional, is located in the scenic upper Napa Valley of California. The Angwin Airport serves as the home of the PUC aviation program in addition to being a community airport. Attended Mon-Thurs 8-5pm and Friday 8-4pm. Closed Saturday & Sundays; other on request (707) 965-6219.

The Aviation program offers a four-year bachelor of science degree in aviation and a two year associates degree, preparing Christ-centered pilots for lives of service throughout the aviation industry and in the mission field. The program also offers ground schools and flight instruction to community members.



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PA44-180 Piper Seminole N2216Y

AIRSPEEDS FOR SAFE OPERATIONS

Max Demonstrated Crosswind	17 Kts
Landing Final Approach Speed	75 KIAS
V_{xse}	82 KIAS
V_{ysc}	88 KIAS
V_x (@ S.L.)	82 KIAS
V_y (@S.L.)	88 KIAS
V_{fe}	111 KIAS
V_a (@ gross weight)	135 KIAS
V_{lr}	109 KIAS
V_{le}	140 KIAS
V_{lo}	140 KIAS

PRE-FLIGHT (inside)

1. Landing gear control.....DOWN position
2. Avionics master.....OFF
3. Magnetos.....OFF
4. Master switch.....ON
5. Landing gear lights.....3 GREEN
6. Fuel quantity.....adequate plus reserve
7. Master switch.....OFF
8. Mixtures.....idle cut-off
9. Cowl flaps.....OPEN
10. Flaps.....check operation
11. Trim indicators.....neutral
12. Flight controls.....free
13. Pitot and static system.....drain
14. Empty seats.....fasten seatbelts
15. Emergency exit.....closed and locked
16. Airworthiness documents.....AROW
17. Accelerate-stop distance.....computed
18. Single-engine climb perform.....computed

PRE-FLIGHT (outside)

1. Fuel sump drains.....drain
2. Right wing, aileron, flap..check, no ice
3. Right wing tip.....check
4. Right leading edge.....check, no ice
5. Right main gear.....no leaks
6. Strut.....check
7. Tire.....proper inflation
8. Fuel cap.....open, check quantity and color, secure
9. Right engine nacelle.....check oil
10. Right propeller.....check
11. Cowl flaps.....OPEN and secure
12. Nose section.....check
13. Nose gear.....extension springs
14. Strut.....check
15. Tire.....proper inflation
16. Tow bar.....removed and stowed
17. Landing light.....clean
18. Windshield.....clean
19. Repeat #2-11 for left wing, engine, and landing gear in reverse order
20. Stall warning vanes.....check
21. Pitot/static mast.....clear, checked
22. Dorsal fin air scoop.....clear
23. Empennage.....check, no ice
24. Stabilator.....free
25. Antennas.....check
26. Baggage door.....latched
27. Chocks.....removed

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BEFORE STARTING ENGINES

1. Seats.....adjusted
2. Seat belts/harnesses.....fastened/adjust
3. Inertia wheel.....check
4. Parking brake.....set
5. Circuit breakers.....in
6. Avionics.....OFF
7. Cowl flaps.....OPEN
8. Carburetor heat.....OFF
9. Alternators.....ON
10. Passenger briefing.....complete

STARTING ENGINES

1. Left fuel selector.....CROSSFEED
2. Right fuel selector.....ON
3. Mixtures.....RICH
4. Propellers.....FORWARD
5. Throttles.....1/4 inch open
6. Magnetos.....ON
7. Anti-collision lights.....ON
8. Master switch.....ON
9. Electric fuel pumps.....ON
10. Fuel pressures.....check
11. Propeller areaclear
12. Primer.....as required
13. Starter.....engage
14. Throttle.....adjust when engine starts
15. Electric fuel pump.....OFF
16. Engine, alt, & vacuum gauges.....check
17. Mixture.....leaned as appropriate
18. **Repeat** for opposite engine
19. Avionics.....ON

STARTING ENGINES WHEN FLOODED

1. Mixture.....idle cut-off
2. Throttle.....open full
3. Propeller.....full forward
4. Master switch.....ON
5. Magnetos.....ON
6. Electric fuel pump.....OFF
7. Starter.....engaged
8. Throttle.....retard
9. Mixture.....advance
10. Oil pressure.....check

STARTING ENGINES IN COLD WEATHER (below 10° F)

REFER to POH

STARTING ENGINES WITH EXTERNAL POWER

REFER to POH

WARM-UP

Throttles.....1,000 to 1,200 RPM

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TAXIING

1. Taxi area.....clear
2. Parking brake.....OFF
3. Throttles.....apply slowly
4. Brakes.....test
5. Steering.....check
6. Instruments.....check
7. Heater and defroster.....check
19. Throttles.....2000 RPM
20. Mixtures.....set
21. Propellers.....check governor
22. Carburetor heat.....check
23. Magnetos.....check, max drop 175 RPM
max diff drop 50 RPM
24. Alternator output.....check
25. Gyro suction gauge.....4.8 to 5.3 in Hg
26. Engine gauges.....in the green
27. Throttles.....1000 RPM
28. Quadrant friction.....adjusted

BEFORE TAKEOFF-

GROUND CHECK

1. Parking brake.....ON
2. Clock.....set
3. Attitude indicator.....set
4. Altimeter.....set
5. Annunciator panel.....press-to-test
6. Transponder.....ALT
7. HSI.....set
8. Flight controls.....free, full travel
- * 9. Cowl flaps.....OPEN
- * 10. Wing flaps.....set
- * 11. Trim.....set
- * 12. Seat backs.....erect
13. Left fuel selector.....ON
14. Right fuel selector.....CROSSFEED
15. Mixtures.....FORWARD
16. Propellers.....FORWARD
17. Throttles.....1500 RPM
18. Propellers.....check feathering
500 RPM max drop
- * 29. Fuel selectors (both).....ON
- * 30. Electric fuel pumps.....ON
- * 31. Mixtures.....set
32. Landing light.....as required
33. Strobes/ nav lights.....as required
34. Pitot heat.....as required
- * 35. Doors.....latched
- * 36. Takeoff briefing.....complete

* Blue items to be completed before every takeoff.

CAUTION— *Fast taxi turns immediately prior to takeoff run should be avoided.*

Adjust mixture prior to takeoff from high elevations. Do not overheat. Adjust mixture only enough to obtain smooth engine operation.

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NORMAL TAKEOFF (flaps up)

1. Flaps.....UP
2. Accelerate to 75 KIAS
3. Control wheel.....rotate to climb attitude
4. Accelerate to 88 KIAS
5. Gear.....UP

SHORT FIELD TAKEOFF (flaps up)

1. Flaps.....UP
2. Stabilator trim.....takeoff range
3. Brakes.....set
4. Full power before brake release
5. Accelerate to 70 KIAS
6. Control wheel.....firmly rotate to attain 75 KIAS through 50 ft
7. Accelerate to best angle of climb speed (82 KIAS) for obstacle clearance OR best rate of climb speed (88 KIAS) for no obstacle
8. Gear.....UP

500 FEET CLIMBOUT

1. Power.....25 inches/2500 RPM
2. Fuel pumps.....OFF one at a time
3. Fuel pressures.....check
4. Vent fan.....OFF
5. Cruise climb.....105 KIAS or greater

CRUISING

Reference performance charts

1. Power.....as per power table
2. Mixture controls.....adjust
3. Cowl flaps.....CLOSED

DESCENT

1. Mixtures.....adjust with descent
2. Throttles.....reduce on inch per minute
3. Cowl flaps.....CLOSED

APPROACH and LANDING

1. Gas- fuel selectors & fuel pumps.....ON
2. Undercarriage.....DOWN, 140 KIAS max
3. Mixture controls.....enrich
4. Prop controls.....full FORWARD
5. Flaps.....set, 111 KIAS max
6. Cowl flaps.....as required
7. Seat backs.....erect
8. Seat belts and harnesses.....fasten/adjust
9. Approach speed.....75 KIAS or above

GO AROUND

1. Power.....maximum available
2. Establish positive rate of climb
3. Flaps.....retract
4. Gear.....UP
5. Cowl flaps.....adjust

AFTER LANDING

1. Clear runway
2. Flaps.....retract
3. Cowl flaps.....fully OPEN
4. Electric fuel pumps.....OFF
5. Vent fan/ heater.....as required

SHUTDOWN

1. Throttles.....idle
2. Avionics.....OFF
3. Magnetos.....check grounding
4. Throttles.....1200 RPM
5. Mixtures.....idle cut-off
6. Magnetos.....OFF
7. Master switch.....OFF
8. Electrical panel switches.....OFF
9. Vent fan/ heater.....OFF
10. Air vents.....both closed

PARKING

1. Wheel chocks.....in place
2. Tie downs.....secure
3. Pitot tube cover.....in place
4. Tach sheet.....completed
5. Doors.....locked

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Emergency Procedures

AIRSPEEDS FOR SAFE OPERATIONS

One engine inop air minimum control	56 KIAS
One engine inop best angle of climb	82 KIAS
One engine inop best rate of climb	88 KIAS
V _a (@ gross 3800 lbs.)	135 KIAS
Never exceed speed	202 KIAS

ENGINE FAILURE DURING TAKEOFF BELOW 75 KIAS

If adequate runway remains:

Throttles.....CLOSE both immediately
Stop straight ahead

If inadequate runway remains to stop:

Throttles.....CLOSED
Brakes.....apply max braking
Master switch.....OFF
Fuel selectors.....OFF
Continue straight ahead.

ENGINE FAILURE DURING TAKEOFF ABOVE 75 KIAS

If adequate runway remains:

Throttles.....CLOSE both immediately
Land, if airborne, and stop straight ahead.

If inadequate runway remains:

Decide whether to abort or continue.
If continuing, maintain heading and establish
88 KIAS
Flaps.....retract
Landing gear.....retract
Inoperative engine.....feather
(see Feathering Procedure)

ENGINE FAILURE DURING FLIGHT BELOW 56 KIAS

Rudder.....apply toward operative engine
Throttles (both).....retard to stop turn
Lower nose to accelerate above 56 KIAS
Increase power as airspeed reaches 56 KIAS
If altitude permits, a restart may be attempted. If restart fails OR if altitude does not permit restart, see Feathering Procedure.

DETECTING DEAD ENGINE

Loss of thrust
Nose of aircraft will yaw in direction of dead engine (with coordinated controls).

ENGINE FAILURE DURING FLIGHT ABOVE 56 KIAS

Minimum control speed.....56 KIAS
One engine inop best rate of climb..88 KIAS
Maintain direction & airspeed above
82 KIAS
Mixture control.....forward
Propeller control.....forward
Throttle control.....forward
Flaps.....retract
Landing gear.....retract
Identify inoperative engine
Throttle of inop engine.....retard to verify

ATTEMPTING TO RESTORE POWER

Mixtures.....as required
Fuel selectors.....ON
Primers.....locked
Magnetos.....left or right only
Electric fuel pumps.....check ON
Carburetor heat.....ON

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Emergency Procedures

FEATHERING PROCEDURE

Prop control inop engine.....feather before
RPM drops below 950
Mixture of inop engine.....idle cut-off
Trim.....as required
(Raise the dead engine by 2.4° of bank & 1/2 ball)
Electric fuel pump of inop engine.....OFF
Magnetos of inop engine.....OFF
Cowl flaps.....CLOSED on inop engine
OPEN on operative engine
Alternator on inop engine.....OFF
Electrical load.....REDUCE
Fuel selector.....OFF inop engine
Consider crossfeed
Electric fuel pump operative engine.....OFF

ONE ENGINE INOPERATIVE LANDING

Inop engine prop.....feather
When certain field is made:
Landing gear.....extend
Wing flaps.....lower
Maintain additional altitude and speed
Final approach speed.....90 KIAS
Wing flaps.....25°

ONE ENGINE INOPERATIVE GO-AROUND (SHOULD BE AVOIDED IF AT ALL POSSIBLE)

Mixture.....forward
Propeller.....forward
Throttle.....open slowly
Flaps.....retract
Landing gear.....retract
Airspeed.....88 KIAS
Trim.....set
Cowl flap operating engine.....as required

AIR START

(UNFEATHERING PROCEDURE)

Fuel selector inop engine.....ON
Electric fuel pump inop engine.....ON
Prop control.....forward to cruise RPM
Position
Mixture.....RICH
Throttle.....two full strokes and then
open 1/4 inch
Magneto switches.....ON
Starter.....engage until prop windmills
Throttle.....reduce power until engine is warm
If engine does not start, prime as required.
Alternator.....ON
Fuel pump.....OFF

ENGINE FIRE ON GROUND

If engine has not started:

Mixture.....idle cut-off
Throttle.....open
Starter.....crank engine

If engine is running:

Continue operating to pull the fire
into the engine. If fire continues,
extinguish with best available means.

If external fire extinguishing is to be applied:

Fuel selectors.....OFF
Mixture.....idle cut-off

ENGINE FIRE IN FLIGHT

Affected engine:

Fuel selector.....OFF
Throttle.....close
Propeller.....feather
Mixture.....idle cut-off
Cowl flap.....OPEN
If terrain permits, land immediately

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Emergency Procedures

PROPELLER OVERSPEED

Throttle.....retard
Oil pressure.....check
Prop control.....full, DECREASE RPM
Then set if any control available
Airspeed.....reduce
Throttle as required to remain below 2700 RPM

FUEL MANAGEMENT DURING ONE ENGINE INOPERATIVE OPERATION CRUISING

When using fuel from tank on the same side as the operating engine:

Fuel selector operating engine.....ON
Fuel selector inop engine.....OFF
Electric fuel pumps.....OFF

(except in case of engine-driven fuel pump failure, electric fuel pump on operating engine side must be used)

When using fuel from tank on the side opposite the operating engine:

Fuel selector operating engine.....
CROSSFEED

Fuel selector inop engine.....OFF
Electric fuel pumps.....OFF
(except in case of engine-driven fuel pump failure, electric fuel pump on operating engine side must be used)

NOTE: Use crossfeed in level cruise flight only

LANDING

Fuel selector operating engine.....ON
Fuel selector inop engine.....OFF

ELECTRICAL OVERLOAD

(ALTERNATORS OVER 30 AMPS ABOVE KNOWN ELECTRICAL LOAD)

ALT switches.....ON
BAT switch.....OFF

If alternator loads are reduced, this indicates a malfunction of the battery and/or battery wiring.

Electrical loads.....reduce to minimum
Land as soon as practical. The alternator (s) is the only source of electrical power.

NOTE: Due to increased system voltage and radio frequency noise, operation with ALT switches ON and BAT switch OFF should be made only when required by an electrical failure.

If alternator loads are NOT reduced:

ALT switches.....OFF
BAT switch.....as required
Electrical loads.....reduce to minimum
Land as soon as practical. The battery is the only remaining source of electrical power. Anticipate complete electrical failure.

WARNING: *Compass error may exceed 10 degrees with both alternators inoperative.*

NOTE: If the battery is depleted, the landing gear must be lowered using the emergency gear extension procedure. The gear position lights will be inoperative

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Emergency Procedures

ELECTRICAL FAILURES

ALT annunciator light illuminated
Ammeter...check to determine inop alternator

If one ammeter shows zero:

Inop ALT switch.....OFF
Reduce electrical loads to minimum
ALT circuit breaker check & reset as required
Inop ALT switch.....ON

If power is not restored:

Inop ALT switch.....OFF
Electrical loads....re-establish to 60 amps max

If both ammeters show zero:

ALT switches.....both OFF
Reduce electrical loads to minimum
ALT circuit breakers..... check & reset
as required
ALT switches.....ON one at a time
Determine ALT showing LEAST (not zero) amp
ALT switches.....least load ON, other OFF
Electrical loads....re-establish to 60 amps max

If alternator outputs are NOT restored:

BAT switch.....OFF
ALT switches.....ON one at a time

If one or both alternator outputs are restored:

Electrical loads.....reduce to minimum
Land as soon as practical. The alternator (s)
is the only remaining source of electrical power

If alternator outputs are NOT restored:

ALT switches.....OFF
Electrical loads.....reduce to minimum
Land as soon as practical. The battery is the
only remaining source of electrical power. An-
ticipate complete electrical system failure.

*WARNING: Compass error may exceed 10 degrees
with both alternators inoperative.*

*NOTE: If the battery is depleted, the landing
gear must be lowered using the emergency gear
extension procedure. The gear position lights
will be inoperative*

*NOTE: Due to increased system voltage and
radio frequency noise, operation with ALT
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ure.*

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Emergency Procedures

LANDING GEAR UNSAFE WARNINGS

Red light indicates gear in transit
Recycle gear if indication continues
Light will illuminate and gear horn sounds when the gear is not down and locked if throttles are at low settings or wing flaps are in 2nd or 3rd notch position

MANUAL EXTENSION OF LANDING GEAR

Check following before extending gear manually:

Circuit breakers.....check
Master switch.....ON
Alternators.....check
Navigation lights.....OFF (daytime)

To extend, proceed as follows:

Airspeed.....reduce 100 KIAS max
Gear selector.....GEAR DOWN
LOCKED position
Emergency gear extend knob.....pull
Indicator lights.....3 green
Leave emergency gear extension knob out

ENGINE-DRIVEN FUEL PUMP FAILURE

Electric fuel pump.....ON

GYRO SUCTION FAILURES

Suction below 4.5 inches Hg.
RPM.....increase to 2700
Altitude.....decrease to maintain 4.5 in Hg.
Use electric turn indicator to monitor Directional Indicator and Attitude Indicator performance.

SPIN RECOVERY

(intentional spins prohibited)

Throttles.....retard to idle
Rudder.....full opposite to direction of spin
Control wheel.....release back pressure
Control wheel.....full forward if nose doesn't drop
Ailerons.....neutral
Rudder.....neutralize when rotation stops
Control wheel.....smooth back pressure to recover from dive

OPEN DOOR

(entry door only)

Slow the airplane to 82 KIAS
Cabin vents.....close
Storm window.....open
If upper latch is open.....latch
If latches are open.....latch side then top

EMERGENCY EXIT

Remove thermoplastic cover
Pull handle forward
Push window out