FIRST FLIGHT PRE-FLIGHT SCRIPT

EQUIPMENT:

Required -1. RPM, oil pressure and temperature gauges (Manifold pressure for constant speed props)
2. Airspeed indicator and altimeter

Desired - 1. Parachute, fire resistant gloves and flight suit
2. Two-way radio for you and your ground observer
3. Someone other than yourself to fly the aircraft, per FA-guided pilot self-determination

PRIOR TO FLIGHT

A Complete all ground testing and FIX all deficiencies before flying

B Fly at least 2 similar aircraft within the past 30 days

NOTE: If you do not fly any familiarization sorties, your ability to determine aircraft deficiencies is limited by when you flew last and your total experience

C Develop a checklist for the following:
— Takeoff, landing, climb, cruise, and descent

D Develop a plan for handling emergencies
— Engine: failure, overheat, vibration, smoke and fire
— Flight controls: out-of-rig, binding, flap problem
— Fuel Starvation, Electrical Failure, etc.

E Discuss your test plans with pilots who have flown first flights
— Listen to their advice
— Adjust your test plan

F Review your first flight test plan (again and again)

G Wait for a good weather day
— Clear sky, early in the morning with calm winds

NEXT: page 2 of First Flight Pre-Flight Script | FF1

CUT ALONG THIS LINE

FIRST FLIGHT PRE-FLIGHT SCRIPT

H Notify airport personnel and emergency crew of your intention to fly a first flight

I Place markers on each side of runway at the abort point

J Brief ground observer on the following:

— Equipment use: -Radio
— Frequency and its use
-Binoculars

— Emergency procedures: -Report anything unusual
— Smoke, fire
— Any part falling off
-Notify emergency crew/fire department

— Takeoff: -Report on radio if not airborne 1/2 way down the runway
-Record takeoff distance

— Up and Away: -Monitor flight with binoculars
-Report anything unusual
-Monitor flight time, remind when it's time to land
-Monitor radio and give assistance as necessary

— Landing: -Monitor flight path
-Report anything unusual
-Report on radio, height above the ground
—"3 feet", "2 feet", "1 foot", "6 inches"
—"Touchdown"
-If touchdown does not occur prior to 1/2 way down the runway, report "Go-Around"
-Record landing distance

— Thoroughly brief entire flight plan

— Any questions from ground observer?

K Ground observer in position, 1/2 way down runway

NEXT: First Flight Scripts and Flight Test Cards | FF2

FIRST FLIGHT CHECKLIST Date:_____

Pilot: _____ Winds:_____

Pressure altitude:_____ Temperature:_____

A	Start engine according to checklist. — ensure engine is operating normally prior to taxing
B	Accomplish before taxi and taxi checklists.
C	Trim set at:_____ Flaps set at:_____
D	Review takeoff data: Takeoff speed:_____ Takeoff distance:_____
E	Lineup on the runway, align with a know reference for takeoff distance measurement.
F	Takeoff using techniques obtained during taxi testing. — Abort, if not airborne at the terminate point.
G	Record TAKEOFF SPEED _____
H	DO NOT REPOSITION GEAR OR FLAPS.
I	Climb at:_____ — First Turn at 400 feet, 180° to downwind — Then, gentle turns to remain within glide distance — Continue climbing until at least 2,000 ft AGL
J	Reduce power slowly and level off. — Maintain airspeed
K	Check Throttle, Prop, Mixture @ level off and check Cowl Flaps Closed
L	Check engine instruments.
M	Check fuel quantity.

NEXT: Control Effectiveness | FF3

CUT ALONG THIS LINE

FIRST FLIGHT TEST CARD
TAKEOFF / CLIMB

A	START ENGINE
B	ACCOMPLISH BEFORE TAXI AND TAXI CHECKLISTS
C	CONFIRM TRIM SET AT TAKEOFF MARK
	CONFIRM FLAPS SET AT _____
D	REVIEW: TAKEOFF SPEED _____ TAKEOFF DIST _____
E	LINEUP ON RUNWAY
F	TAKEOFF - NOTE TAKEOFF SPEED
H	DO NOT REPOSITION GEAR OR FLAPS
I	CLIMB 400 FEET, TURN DOWNWIND
J	LEVEL OFF AT LEAST 2,000 FEET AGL
L	CHECK ENGINE
M	CHECK FUEL

NEXT: CONTROL EFFECTIVENESS | FF3

CONTROL EFFECTIVENESS

Trim aircraft for the following

Test Altitude:_____1.5 Vstall = Test Airspeed:_____

A Small rudder input. (test in both directions)

B Evaluate

BINDING	NONE------LOTS
FREEPLAY	NONE------LOTS
CONTROL MOVEMENT	SMALL-----BIG
CONTROL FORCES	LIGHT------HEAVY
AIRSPEED CHANGE	-5------0 ------+5
ALTITUDE CHANGE	-50---- 0 ------+50

AIRCRAFT RESPONSE

LEFT INPUT: _____

RIGHT INPUT: _____

C Small aileron input. (test in both directions)

D Evaluate

BINDING	NONE------LOTS
FREEPLAY	NONE------LOTS
CONTROL MOVEMENT	SMALL-----BIG
CONTROL FORCES	LIGHT------HEAVY
AIRSPEED CHANGE	-5------0 -----+5
ALTITUDE CHANGE	-50---- 0 -----+50

AIRCRAFT RESPONSE

LEFT INPUT: _____

RIGHT INPUT: _____

E Small elevator input.(test in both directions)

F Evaluate

BINDING	NONE------LOTS
FREEPLAY	NONE------LOTS
CONTROL MOVEMENT	SMALL-----BIG
CONTROL FORCES	LIGHT------HEAVY

AIRCRAFT RESPONSE

FORWARD INPUT: _____

AFT INPUT: _____

G Check engine instruments.

H Check fuel quantity.

NEXT: Power effects | FF4

CUT ALONG THIS LINE

FIRST FLIGHT TEST CARD

CONTROL EFFECTIVENESS

A SMALL RUDDER INPUT, ONE WAY

B EVALUATE RUDDER CONTROL AND A/C RESPONSE - WAIT - REPEAT OPPOSITE

C SMALL AILERON INPUT, ONE WAY

D EVALUATE AILERON CONTROL AND A/C RESPONSE - WAIT - REPEAT OPPOSITE

E SMALL ELEVATOR INPUT, NOSE DOWN

F EVALUATE ELEVATOR CONTROL AND A/C RESPONSE - WAIT - REPEAT NOSE UP

G CHECK ENGINE

H CHECK FUEL

NEXT: POWER EFFECTS | FF4

POWER EFFECTS

Trim aircraft for the following

Test Altitude:_____ Test Airspeed:_____

A	Slowly reduce the power to idle.
B	Record forces required to maintain attitude PITCH FORWARD ----------AFT AILERON LEFT ----------RIGHT RUDDER LEFT ----------RIGHT
C	Increase the power to maximum allowable.
D	Record forces required to maintain attitude PITCH FORWARD ----------AFT AILERON LEFT ----------RIGHT RUDDER LEFT ----------RIGHT
E	Check engine instruments.
F	Check fuel quantity.

NEXT: Near Stall Investigation | FF5

CUT ALONG THIS LINE

FIRST FLIGHT TEST CARD

POWER EFFECTS

A	SLOWLY REDUCE POWER TO IDLE
B	EVALUATE CONTROL FORCES TO MAINTAIN ATTITUDE
C	SLOWLY INCREASE POWER TO MAXIMUM
D	EVALUATE CONTROL FORCES TO MAINTAIN ATTITUDE
E	CHECK ENGINE
F	CHECK FUEL

NEXT: NEAR STALL INVESTIGATION | FF5

NEAR STALL INVESTIGATION

Configuration: _____ (should be the same as T/O)
Trim aircraft for the following:
Test Altitude:_____ Test Airspeed:_____

NOTE: Do not descent below _____' during this evaluation, if necessary climb then continue.

A	Reduce power to idle and start a slow descent. — maintain airspeed
B	Note response to left, then right, rudder input
C	Note response to left, then right, aileron input
D	Note response to small pitch down input, then Note response to small pitch up input.
E	— Note any unusual responses
F	Observe pitch attitude and VVI.
G	Note stick forces. Is trim effective?
H	Take note of any airframe/control buffet.
I	Slowly reduce airspeed by 5 mph/knots.

CAUTION #1: Do not decrease airspeed slower than:
— _____ mph/knots (1.1*Vs1 or Vs1+5,
— Any increasing buffet whichever is higher)
— Full aft stick required
— Any unusual aircraft response

J	Monitor engine instruments and clear engine.
K	Repeat steps B through I. — Until reaching limits found in CAUTION #1
L	Check fuel quantity.
M	Note final airspeed.

CAUTION #2: PRESTALL BUFFET MAY BE NON-EXISTENT AND STALL MAY BE ABRUPT WITH LITTLE/NO WARNING. THE AIR CRAFT MAY DEPART CONTROLLED FLIGHT WITH AN ABRUPT ROLLING OR YAWING MOTION

NOTE: To recover the aircraft apply:
— Smooth, forward stick/yoke
— Roll wings level (use rudder if effective)
— Then add power

NEXT: Accelerate/Climb, change Flap setting	FF6

CUT ALONG THIS LINE

FIRST FLIGHT TEST CARD
NEAR STALL INVESTIGATION

A	SLOWLY REDUCE POWER TO IDLE - DESCEND TO MAINTAIN AIRSPEED
B	RUDDER LEFT - RUDDER RIGHT
C	AILERON LEFT - AILERON RIGHT
D,E	PITCH DOWN - PITCH UP - **RESPONSES?**
F,G, &H	NOTE ATTITUDE - VVI - TRIM - FORCES
I	REDUCE AIRSPEED 5 MPH/KNOTS WITH SLIGHT PITCH UP, AND STABILIZE **CAUTION: NO SLOWER THAN _____ MPH/KTS OR ANY UNUSUAL A/C REACTION**
J	CHECK ENGINE & FUEL
K	REPEAT B THROUGH I UNTIL LIMITS IN **CAUTION**, ABOVE
L	CHECK FUEL
M	NOTE FINAL AIRSPEED

NEXT: ACCELERATE/CLIMB, CHANGE FLAPS	FF6

ACCELERATE/CLIMB, CHANGE FLAP SETTING

Trim aircraft for the following (1.4 * Vs1)
Test Altitude:_____ Test Airspeed:_____

CAUTION: If the aircraft starts to roll or yaw or there is insufficient power for level flight; RETURN THE FLAPS TO POSITION WHERE THOSE CHARACTERISTICS WERE NOT PRESENT.

A	Slowly lower flaps to:_____	(determine flap setting from taxi test or the manufacturer)
B	Note pitch change.	
C	Note any control force changes.	
D	Note trim capabilities.	
E	Check engine instruments.	
F	Check fuel quantity.	

NEXT: Near stall investigation W/ flaps | FF7

CUT ALONG THIS LINE

FIRST FLIGHT TEST CARD
CHANGE FLAP SETTING

TARGET ALTITUDE: _____
TARGET AIRSPEED: _____

A	SLOWLY LOWER FLAPS TO: _____ % TRAVEL
B	NOTE PITCH CHANGE
C	NOTE CONTROL FORCE CHANGES
D	NOTE TRIM CHANGES / CAPABILITY
E	CHECK ENGINE
F	CHECK FUEL

NEXT: NEAR STALL INVESTIGATION W/FLAPS | FF7

NEAR STALL INVESTIGATION WITH FLAPS

Configuration: _____ (flap setting from previous card)
Trim aircraft for the following:
Test Altitude:_____ Test Airspeed:_____

NOTE: Do not descent below _____' during this evaluation, if necessary climb then continue.

A	Reduce power to idle and start a slow descent. — maintain airspeed
B	Note response to left, then right, rudder input
C	Note response to left, then right, aileron input
D	Note response to small pitch down input, then Note response to small pitch up input.
E	— Note any unusual responses
F	Observe pitch attitude and VVI.
G	Note stick forces. Is trim effective?
H	Take note of any airframe/control buffet.
I	Slowly reduce airspeed by 5 mph/knots.

CAUTION #1: Do not decrease airspeed slower than:
— _____ mph/knots (1.1*Vs1 or Vs1+5,
— Any increasing buffet whichever is higher)
— Full aft stick required
— Any unusual aircraft response

J	Monitor engine instruments and clear engine
K	Repeat steps B through I. — Until reaching limits found in **CAUTION #1**
L	Check fuel quantity.
M	Note final airspeed.

CAUTION #2: PRESTALL BUFFET MAY BE NON-EXISTENT AND THE STALL MAY BE ABRUPT WITH LITTLE/NO WARNING. THE AIRCRAFT MAY DEPART CONTROLLED FLIGHT WITH AN ABRUPT ROLLING OR YAWING MOTION

NOTE: To recover the aircraft apply:
— Smooth, forward stick/yoke
— Roll wings level (use rudder if effective)
— Then add power

NEXT: Practice Approach/Landing/Go-Around | FF8

CUT ALONG THIS LINE

FIRST FLIGHT TEST CARD
NEAR STALL INVESTIGATION WITH FLAPS

A	SLOWLY REDUCE POWER TO IDLE - DESCEND TO MAINTAIN AIRSPEED
B	RUDDER LEFT - RUDDER RIGHT
C	AILERON LEFT - AILERON RIGHT
D,E	PITCH DOWN - PITCH UP - **RESPONSES?**
F,G, &H	NOTE ATTITUDE - VVI - TRIM - FORCES
I	REDUCE AIRSPEED 5 MPH/KNOTS WITH SLIGHT PITCH UP, AND STABILIZE **CAUTION: NO SLOWER THAN _____ MPH/KTS OR ANY UNUSUAL A/C REACTION**
J	CHECK ENGINE & FUEL
K	REPEAT B THROUGH I UNTIL LIMITS IN **CAUTION**, ABOVE
L	CHECK FUEL
M	NOTE FINAL AIRSPEED

NEXT:PRACTICE APPROACH | FF8

PRACTICE APPROACH/LANDING/GO-AROUND

Trim aircraft for the following (1.2 * Vs1)
Test Altitude:_____ Test Airspeed:_____

NOTE This is just an operational look at the landing characteristics

A	Reduce power to establish a 500 ft/min descent
B	Note power setting, trim setting and pitch.
C	Simulate a flare to no slower than:_____ mph/knots (1.1 * Vs1)
D	Add power and simulate a Go-Around.
E	Note ANY ABRUPT AIRCRAFT MOTION ? Y / N CAN YOU CLIMB/ACCELERATE ? Y / N

NOTE: If you encounter any adverse characteristics increase airspeed by 5 mph/knots and repeat steps A through E.

F	Check the fuel remaining.
G	Practice approaches at altitude until you are confident in the aircraft and its performance
H	Accomplish landing checks (GUMP)
I	Inform ground crew that you are going to land.
J	Fly a Straight-In approach to a landing. — Use the airspeeds that you just practiced. — Don't get slow, especially in landing.

WARNING: If the approach doesn't look good, Go-Around.
Don't plan on a perfect landing, just a safe one.

NOTE: Ground effect will make you float.

K	With a BIG SMILE, taxi to parking.
L	Accomplish shutdown checklist.
M	Thoroughly inspect aircraft.

NEXT: GO TO THE BAR! | FF9

CUT ALONG THIS LINE

FIRST FLIGHT TEST CARD
PRACTICE APPROACH / GO AROUND, AND RETURN TO AIRPORT

A	AT ALTITUDE, REDUCE POWER FOR 500 FT/MIN DESCENT
B	NOTE POWER SETTING, TRIM, PITCH
C	SIMULATE FLARE **NO SLOWER THAN** _____ MPH/KTS (from previous card)
D,E	SIMULATE GO AROUND - CHECK CONTROL AND CLIMB
F	CHECK FUEL
G	PRACTICE A-E UNTIL READY TO RETURN TO AIRPORT
H	ACCOMPLISH LANDING CHECKS
I	INFORM MISSION MONITOR OF RTB
J	FLY STRAIGHT-IN AND LAND JUST LIKE PRACTICE
K-M	TAXI BACK, SHUTDOWN, INSPECT A/C

NEXT: GO TO THE BAR! | FF9