

# Flight1's 441 Conquest II Model 441

## INFORMATION MANUAL



Original Sales Brochure Photo

## **WARNING**

This information manual may be used for general information purposes only. It is intended for Flight Simulation use only, and may not be used in any real world aviation applications. The authors are not responsible for any errors or omissions.

## ***Flight One 441 Conquest II***

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### Cessna 441 Conquest II

The Cessna 441 Conquest II is without doubt, one of the most impressive cabin class twin engine propeller aircraft ever designed.

Anyone that has flown a Conquest II can attest that it is an aircraft that was designed and built ahead of its time. With impressive performance that rivals some jet aircraft, rumor has it that the Conquest II was “too close for comfort” in competing with the Citation jets of the same time period.

The F1 Conquest II has been developed to reproduce the passion and performance of this legendary turboprop. From the elegant and sophisticated styling, to its impressive performance, the F1 Conquest II is the premier twin aircraft for Flight Simulator.

Flight 1's Conquest II continues our tradition and unmatched commitment in offering you the highest level of realism and integration available on the Microsoft Flight Simulator platform.

On behalf of Flight 1 Software and the Conquest II team members, I invite you to experience the F1 Conquest II and thank you for your continued patronage.

Jim Rhoads  
Flight 1 Software

# ***Flight One 441 Conquest II***

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### **Standard Disclaimer**

This software is designed **for entertainment only**. Although we have designed the Flight1 441 Conquest II to resemble and function as close as possible to the real aircraft, it is not designed as a training device. Not all avionics systems have been simulated, and some of those that have been simulated may not be entirely functional or simulated to 100%.

NOT FOR USE IN REAL FLIGHT OR AIRPLANE OPERATION.

## About this manual

Please take a few moments to review the various sections in this manual. The Flight1 441 Conquest uses many avionics and features you will want to know about.

# ***Flight One 441 Conquest II***

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## Credits

Roger Dial – 3D Aircraft Design and Texturing, 3D Virtual Cockpit.

Jerry Beckwith – Aircraft Flight Dynamics

Ed Struzynski – Gauge Design, Graphics

“MeatWater” – Aircraft Sounds

Dave Scofield - Documentation, Tutorial, Configuration Manager

Jim Rhoads – Project Manager, Panel Design -Graphics, Gauge Graphics, Documentation.

Krueter Engineering - 441 Conquest II Owners

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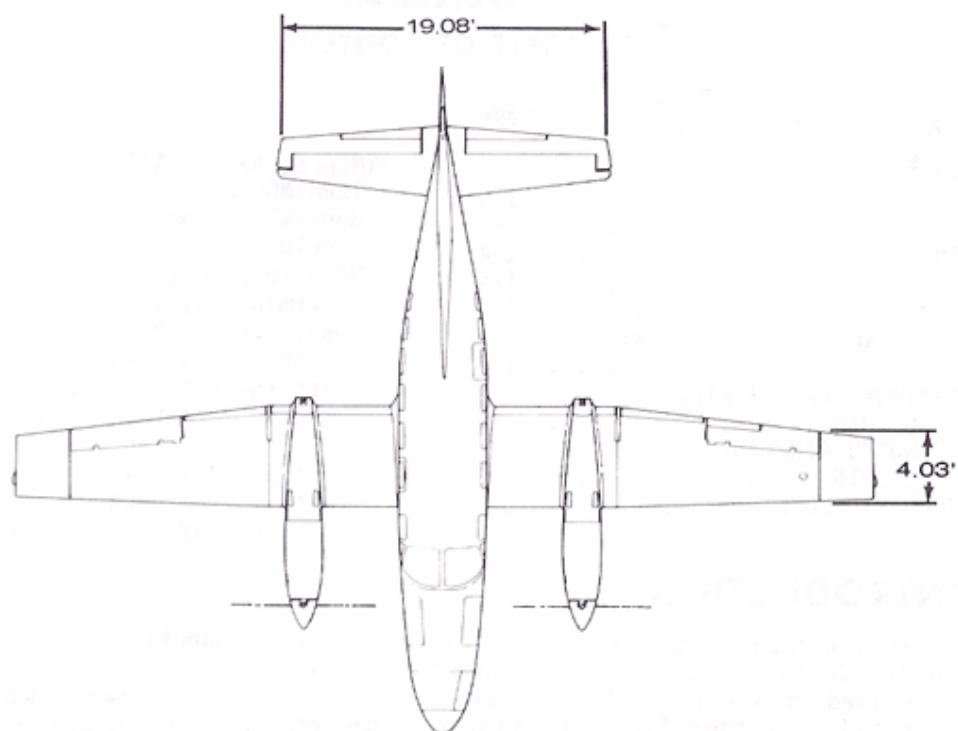
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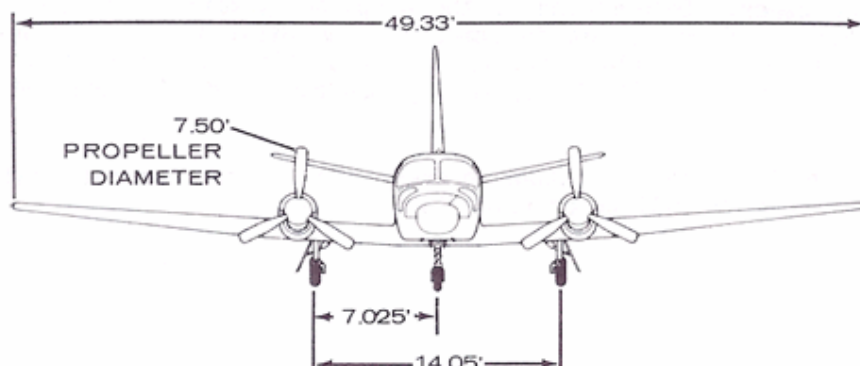
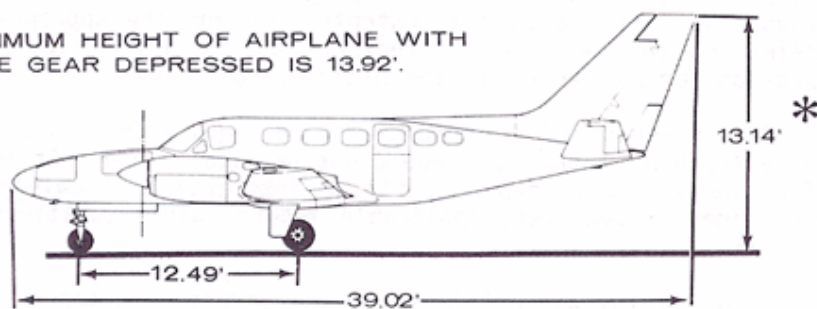
## Introduction

This User's Guide is not intended to be a guide for basic flight instruction or a training manual and should not be used as one. It is not a substitute for adequate and competent flight instruction, knowledge of current airworthiness directives, applicable federal air regulations or advisory circulars.

Assuring the airworthiness of the airplane is the responsibility of the airplane owner. Determining if the airplane is safe for flight is the responsibility of the pilot in command. The pilot is also responsible for staying within the operating limitations as outlined by the instrument markings, placards and the Pilots Operating Handbook and FAA Approved Airplane Flight Manual.



\* MAXIMUM HEIGHT OF AIRPLANE WITH NOSE GEAR DEPRESSED IS 13.92'.



## Engines

Number of Engines	2
Engine Manufacturer	AiResearch Manf. Company
Engine Model Number	TPE331-8-406S
Engine Type	

Garrett AiResearch TPE 331 Turboprop single fixed shaft engine. Each engine incorporates a two-stage centrifugal compressor, a three-stage axial-flow turbine and annular combustion chamber.

### Horsepower Rating and Engine Speed

Flat rated at 635.5 shaft horse power. At 100% RPM, the main shaft turns 41,730 rpm while the propeller turns at 2000 RPM.

## Propeller

Number of Propellers	2
Propeller Manufacturer	Hartzell
Blade Model	9910348-1
Number of Blades	4
Propeller Diameter	7.50'
Propeller Type	

Constant speed, full feathering, reversible and hydraulic actuated.

## Fuel

### JET FUEL ONLY

Fuel Capacity	481.5 U.S. gal.
Unusable Fuel	6.5 U.S. gal.

### Fuel

Fuel, Aviation	Jet A, Jet A-1
----------------	----------------

## Oil

Oil Capacity	7.5 qt. per engine
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## Maximum Weights

Maximum Ramp Weight	9925 lb
Maximum Takeoff Weight	9850 lb
Maximum Landing Weight	9360 lb

## Symbols, Abbreviations and Terminology

The following definitions are symbols, abbreviations and terminology used throughout the handbook, as well as some that may be of operational significance to the pilot.

### **General Airspeed Terminology and Symbols**

CAS	Calibrated Airspeed means the indicated speed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.
KCAS	Calibrated Airspeed in Knots
GS	Ground Speed is the speed of an aircraft relative to the ground

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IAS	Indicated Airspeed is the speed of an aircraft as shown on the airspeed indicator when corrected for instrument error. IAS values published in this handbook assume zero instrument error.
KIAS	Indicated Airspeed in Knots
M	Mach Number is the ratio of true airspeed to the speed of sound
M <sub>MO</sub>	Maximum Operating Limit Speed is the speed limit that may not be deliberately exceeded in normal flight operations. M is expressed in Mach Number.
TAS	True Airspeed is the speed of an aircraft relative to undisturbed air which is the CAS corrected for altitude, temperature and compressibility.
V <sub>FE</sub>	Maximum Flap Extended Speed is the highest speed permissible with wing flaps in a prescribed extended position.
V <sub>LE</sub>	Maximum Landing Gear Extended Speed is the highest speed at which an aircraft can be safely flown with the landing gear extended.
V <sub>LO</sub>	Maximum Landing Gear Operating Speed is the maximum speed at which the landing gear can be safely extended or retracted.
V <sub>MO</sub>	Maximum Operating Speed is the speed limit that may not be exceeded at any time. V is expressed in knots.
V <sub>O</sub>	Maximum Operating Maneuvering Speed is the maximum speed at which application of full available aerodynamic control will not overstress the airplane.
V <sub>R</sub>	Rotation Speed used for takeoff.
V <sub>S</sub>	Stalling Speed or the minimum steady flight speed at which the airplane is controllable.
V <sub>SO</sub>	Stalling Speed or the minimum steady flight speed at which the aircraft is controllable in the landing configuration at maximum gross weight.
V <sub>SSE</sub>	Intentional one engine inoperative speed is a minimum speed selected by the manufacturer for intentionally rendering one engine inoperative in flight for pilot training.
V <sub>X</sub>	Best Angle-of-Climb Speed is the airspeed which delivers the greatest gain of altitude in the shortest possible horizontal

	distance.
$V_Y$	Best Rate-of-Climb Speed is the airspeed which delivers the greatest gain in altitude in the shortest possible time.
$V_{MCA}$	Air minimum controllable airspeed is the minimum flight speed at which the airplane is controllable with the critical engine inoperative.

### **Meteorological Terminology**

ISA	International Standard Atmosphere in which: <ul style="list-style-type: none"><li>1) the air is a dry perfect gas</li><li>2) the temperature at sea level is 15° Celsius (59° Fahrenheit)</li><li>3) the pressure at sea level is 29.92 in. Hg (1013.2 MB)</li></ul>
IOAT	Indicated Outside Air Temperature is the temperature obtained from an indicator and not corrected for instrument error and compressibility effects.
OAT	Outside Air Temperature is the free air static temperature obtained either from in-flight temperature indications or ground meteorological sources, adjusted for instrument error and compressibility effects.
Indicated Pressure Altitude	The number actually read from an altimeter when the barometric subscale has been set to 29.92 in. Hg (1013.2 MB).
Pressure Altitude (P.A.)	Altitude measured from the standard sea-level pressure of 29.92 in Hg by a pressure of barometric altimeter.

**Power Terminology**

Cruise Climb Power	The recommended power for operating the airplane in a cruise climb profile.
Flight Idle Power	The power required to run an engine, in flight, at the lowest speed that will ensure satisfactory engine and systems operation and airplane handling characteristics.
Maximum Continuous Power	The maximum power approved for continuous use.
Maximum Climb Power	The maximum power approved for climb.
Maximum Cruise Power	The maximum power approved for cruise.
Reverse Thrust	The thrust of the propeller directed opposite the usual direction, thereby producing a braking action.
Takeoff Power	The maximum power permissible for takeoff (limited to 5 minutes).



**Engine Controls and Instruments**

Beta Mode	Engine operational mode in which the propeller blade pitch is hydraulically controlled from the cockpit power lever during ground operations only.
Condition Lever	The Cockpit lever provides speed and condition selection to the fuel control computer and mechanically provides emergency fuel shutoff and propeller feathering.
EGT Gauge	Exhaust gas temperature instrument displaying air temperature aft of the third axial flow turbine.
FuelControl Torque Motor	Located within the fuel control unit that receives inputs from the fuel computer to control the engine fuel flow.
Manual ModeOperation	Occurs when the fuel schedule is mechanically set by the pilot. It is the back up mode of operation for normal mode.
Propeller Feather	This is a propeller pitch condition that produces minimum drag in a flight condition.
Propeller Governor	The device that keeps propeller rpm constant through a pitch change mechanism in the propeller hub.
Power Lever	Used to change propeller pitch during beta operation and select engine fuel flow during propeller governing
Tachometer	Indicates speed of engine in % of maximum
Torquemeter	The instrument that indicates torque output of the engine gear box.

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## Airspeed Limitations

SPEED	KIAS
Maximum Operating Speed ( $V_{MO}$ ) Do not exceed this speed in any operation.	245
Maximum Operating Maneuvering Speed ( $V_A$ ) Do not make full or abrupt control movements above this speed.	167
Maximum Flaps Extended Speed ( $V_{FE}$ ) Do not exceed this speed at the given flap setting.	
10° T.O.	200
20° APPR	200
30° LAND	180
Maximum Landing Gear Extended Speed ( $V_{LE}$ ) Do not exceed this speed with the landing gear extended.	180
Maximum Landing Gear Operating Speed ( $V_{LO}$ ) Do not operate the landing gear above this speed	180

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## Airspeed Indicator Markings

MARKING	KIAS	SIGNIFICANCE
Red Line	245 KTS	Maximum Operating Limit ( $V_{MO}$ )
White Line	74 – 180 KTS	Maximum Operating Speed with flaps extended ( $V_{FE}$ )
Blue Line	120 KTS	One engine inoperative best rate of climb speed with flaps in UP position.
Red Line	91 KTS	Air minimum control speed with flaps in T.O. position.

### Engine Limitations

#### Engine

The limits presented in the table below shall be observed. The limitations presented do not necessarily occur simultaneously. Certain values may not be able to be achieved with 100% accuracy in Flight Simulator.

#### ENGINE OPERATING LIMITS

- When engine speed is below 80% RPM, the EGT system reads compensated EGT.
- When operating in manual mode above 80% RPM, the EGT system continues to read compensated EGT.
- When operating in normal mode above 80% RPM, the EGT system reads a calculated single red line EGT.

CONDITION	TIME	TORQUE	MAXIMUM EGT	ENGINE RPM	OIL PRESSURE	OIL TEMPERATURE
Takeoff and Climb	Continuous	1669 Ft Lbs <sup>(6)</sup> at 100% RPM	450°C <sup>(3)</sup>	100% <sup>(4)</sup> Maximum (10)	70 to 120 PSI <sup>(2)</sup>	55 to 110°C
Flight Idle	Continuous	--	--	--	70 to 120 PSI <sup>(2)</sup>	55 to 110°C
Ground Idle And Taxi	Continuous	--	770°C <sup>(5)</sup>		40 to 120 PSI	-40 to 127°C
Maximum Reverse (Landing) <sup>(1)</sup>	Continuous	--	450°C	93% Minimum	70 to 120 PSI	55 to 110°C
Maximum Reverse (Static)	Continuous	--	450°C	94.5% Minimum	70 to 120 PSI	55 to 110°C
Starting <sup>(7)</sup>	--	--	770°C <sup>(8)</sup>	(9)		-40 to 110°C
Windmilling (During NTS Operation)	1 Minute 0 Seconds 5 Minutes 30 Minutes Continuous	-- -- -- -- --	-- -- -- -- --	100 to 28.0% 28 to 18.0%(9) 18 to 10.0% 10 to 5.0% 5 to 0%		
Overspeed Governor Check	5 Seconds	--	--	106.0%	70 to 120 PSI	-40 to 127°C

- (1) Do not use full reverse above 90 KIAS. Position power lever to ground idle until airplane has slowed to 90 KIAS.
- (2) Above 23,000 feet altitude, minimum allowable operating oil pressure is 50 PSI.
- (3) Refer to OAT gage and Figure 2-5 in this section for temperature limits when operating in manual mode.
- (4) 101% maximum continuous.
- (5) EGT limit while taxiing with condition levers in START & TAXI position. Temperature is limited to 1 second duration.
- (6) Maximum cruise torque is 1738 Ft Lbs at 96% RPM.
- (7) Maximum altitude for airstarts is 20,000 feet.
- (8) Temperature is limited to 1 second duration.
- (9) Avoid operation between 18 and 28 percent RPM, except for the transients occurring during start and shutdown.
- (10) Continuous operation at 100.5% RPM on airplanes -0173 thru -0339 except airplanes incorporating SK441-79 and 100.0% RPM on airplanes -0340 and On and -0173 thru -0339 incorporating SK441-79 is authorized with the propeller synchrophaser ON and the condition levers positioned to TAKEOFF, CLIMB AND LANDING.

## Fuel Limitation

Approved Aviation Fuels ..... JET A, JET A-1

Total Capacity ..... 481.5 U.S. gal.

Unusable Fuel ..... 6.5 U.S. gal.

Usable Fuel ..... 475.0 U.S. gal.

Minimum approved fuel quantity for takeoff is 31 gallons in each main tank.

## Weight Limitations

Maximum Ramp Weight ..... 9925 lbs

Maximum Takeoff Weight ..... 9850 lbs

Maximum Landing Weight ..... 9360 lbs

Maximum Zero Fuel Weight ..... 8500 lbs

## Maneuver Limits

This is a Normal Category airplane. No acrobatic maneuvers including spins approved.

## Flight Load Factor Limits

In-flight:

- |               |   |
|---------------|---|
| a. Flaps Up   | -1.44 to 3.6G at 9850 lbs                         |
| b. Flaps Down | T.O. thru land positions 0.0 to +2.0G at 9850 lbs |

Landing:

- |       |   |
|-------|---|
| Flaps | T.O. thru land positions 0.0 to +2.0G at 9360 lbs |
|-------|---|

## Operating Altitude Limitations

Flight above 35,000 feet pressure altitude is not approved.

## Cabin Pressurization Limits

- (a) Maximum cabin differential pressure of 6.3 PSI.
- (b) Pressurized landing not approved.



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## General

This section provides the recommended procedures for handling various emergency or critical situations. All emergency procedures necessary for operation of the airplane as determined by the operating and design features of the airplane are presented.

This section contains the emergency procedure checklists. These checklists provide an immediate action sequence to be followed during emergency or critical situations. Pilots must familiarize themselves with the procedures in this section and must be prepared to take the appropriate action should an emergency situation arise. The procedures are offered as a course of action for handling the particular situation or condition described. They are not substitute for sound judgment and common sense.

### KNOW YOUR AIRCRAFT AND BE THOROUGHLY FAMILIAR WITH IMPORTANT EMERGENCY PROCEDURES

Most basic emergency procedures are a normal part of pilot training. The information presented in this section is not intended to replace this training. This information is intended to provide a source of reference for the procedures that are applicable to this airplane. The pilot should review standard emergency procedures periodically to remain proficient in them.

## Warning Systems

The 441 Conquest II is equipped with a comprehensive annunciator panel located in the upper center instrument panel.

**Red Warning Annunciators** are those annunciators that may require immediate corrective action.

**Amber Caution Annunciators** are those annunciators that advise of the possible need for future corrective action.

**Green Advisory Annunciators** are those annunciators that indicate a system is selected and is functioning.

Warning and Caution annunciators will remain illuminated as long as the initiating condition exists, while advisory annunciators remain illuminated as long as a particular system is selected.

The 441 Conquest II Annunciator system is modeled after its real world counterpart. Many of the systems are modeled accurately but not all systems may work exactly as in the real aircraft given certain limitations with the Flight Simulator platform.



Left Side



Right Side

**Annunciator Description**

**L. and R. Eng Start** Illuminate during engine start and go out when the start is completed.

**L. and R. GEN OFF** Advises generator switch off or generator malfunction.

**L. and R. FUEL SHUTOFF** Advises fuel flow has terminated.

**L. and R. AUX BOOST PUMP** Illuminates when pump switch is positioned to AUX or cross-feed when operating opposite tank. The light will also illuminate if the main boost pump fails.

**HYD PRESS ON** Advises pressure is being applied to the landing gear or wing flap retraction or extension.

**L. and R. HYD FLOW** Advises insufficient flow exists for normal system operation.

**L. and R. FUEL LEVEL LOW** Advises between 150 and 250 pounds of fuel remaining in fuel tank.

**L. and R. BETA** Advises the propeller is capable of being reversed.

**L. and R. ENGINE ANTI-ICE** indicates bleed air is flowing to the engine inlet.

**SURFACE DE-ICE** illuminates when the de-ice boots inflate.

**L. and R. OIL PRESSURE** indicates engine oil pressure is below 40 psig.

**ENGINE FIRE** indicates an over temperature condition in the engine compartment, possibly due to fire. Pressing the fire button will arm the fire extinguishers. Further, pressing the white L. and R. BOT switch will discharge the fire extinguishers.

**DOOR NOT LOCKED** indicates the cabin door is not properly closed and latched.

**CABIN ALTITUDE** indicates the cabin altitude is 11,500 feet or above.

**GEAR WARN** illuminates when the gear is in transit; when all three gear are not fully down and locked, when the gear is not fully up with the gear doors closed, in flight when the power lever is retarded to idle and the landing gear are not down and locked, in flight when the flaps are extended beyond 10° and the landing gear are not down and locked.

### Aural Warnings

Aural warnings are provided to warn:

- When in Vmo/Mmo over speed condition (fast pulse).
- When approaching a stall (steady tone).
- When the landing gear is not extended during an approach to landing (steady tone).
- Autopilot disconnect (warble tone).

### Overriding Considerations

In all emergencies, the overriding consideration must be to:

- Maintain Airplane Control.
- Analyze the situation.
- Take the proper action.

### Terminology

Many emergencies require some urgency in landing the aircraft. The degree of urgency varies with the emergency: therefore the terms “land as soon as possible” and “land as soon as practical” are employed:

**Land as soon as possible:** a landing should be accomplished at the nearest suitable airfield considering the severity of the emergency, weather conditions, field facilities and ambient lighting.

**Land as soon as practical:** emergency conditions are less urgent and although the mission is to be terminated, the emergency is such that an immediate landing at the nearest suitable airfield may not be necessary.

## Airspeeds for Emergency Operations

### Stall Speeds

9850 lbs (Flaps T.O.) ..... 91 KIAS

### Operating Maneuvering Speeds

9850 lbs ..... 167 KIAS

### Best Glide

9850 lbs (Gear UP, Flaps 0°) ..... 121 KIAS

## Rejected Takeoff

Power Lever ..... IDLE

Braking ..... AS REQUIRED

Reverse ..... AS REQUIRED

### **If insufficient runway remains for a safe stop:**

Condition Lever ..... CUTOFF / FEATHER

Battery Switch ..... OFF

### **After the aircraft has stopped - EVACUATE**

## Engine Failure

### Engine Failure Before Rotation

Power Lever ..... IDLE  
Braking ..... AS REQUIRED

STOP STRAIGHT AHEAD.

**If insufficient runway remains for a safe stop:**

Condition Lever ..... EMER SHUT-OFF  
Battery Switch ..... OFF

Maneuver as necessary to avoid obstacles.

**After the aircraft has stopped - EVACUATE**

### Engine Failure Immediately After Takeoff below VMCA

Power Lever ..... RETARD AS REQ. TO STOP TURN  
Condition Lever ..... EMER SHUT-OFF  
Aileron and Rudder ..... As required toward operative engine to maint straight flight.

Pitch Attitude ..... LWR NOSE AND ACCEL. ABOVE 91 KIAS  
Accomplish VMCA Procedures ..... SPEED ABOVE VMCA

**After the aircraft has stopped - EVACUATE**



**Engine Failure in flight**

Oxygen..... AS REQUIRED  
Power Lever.....ADJ. AS REQ.  
Condition Lever .....EMER SHUT-OFF  
Remaining Fuel.....CHECK  
Air Start .....Refer to Air Start procedure in this section

**If above the air start envelope, descend into the envelope and make an air start per this section. Use oxygen as required. Perform a normal descent or emergency descent as appropriate.**

**If engine air start is not successful, proceed with the power off landing procedure.**

**Air Start – Starter Assist**

Oxygen..... AS REQUIRED  
EGT..... Below 200 C if sufficient time exists  
Engine Start Button..... PUSH  
EGT Rise .....CHECK  
Ignition ..... IGN. LIGHT ON  
Condition Lever ..... TAKE-OFF (At 60% rpm)  
Power Lever..... IDLE  
Generator..... RESET, THEN ON  
Fuel Pump..... CYCLE OFF, THEN MAIN

**Oil Pressure**

**Indication: Crosscheck annunciator light with pressure gauge.**

**Low Oil Pressure, below 40 PSI**

Condition Lever..... EMER SHUT OFF  
Generator..... OFF  
Operative Engine ..... ADJUST  
Electrical Load..... REDUCE  
Fuel Cross feed Selector..... As Req to Maintain Balance

***Land as soon as possible.***

Emergency Descent – Maximum Rate

Autopilot ..... OFF  
Power Lever ..... FLIGHT IDLE  
Wing Flaps ..... APPR Below 200 KIAS  
Wing Flaps ..... Land At 180 KIAS  
Landing Gear ..... Below 180 KIAS, DOWN  
Airspeed ..... 180 KIAS

Glide

Landing Gear / Flaps ..... UP  
Propellers ..... FEATHERED  
Airspeed ..... AS SCHEDULED  
9850 lbs - 121 KIAS  
9000 lbs - 115 KIAS  
8000 lbs - 109 KIAS  
7000 lbs - 102 KIAS  
6000 lbs - 94 KIAS

## Landing without Power

### **Best Gliding Airspeed as Scheduled**

Condition Lever ..... TAKE OFF / CLIMB / LANDING  
Propeller ..... VERIFY FEATHERED  
Boost Pumps ..... OFF  
Seats and Seat Backs ..... UPRIGHT & LOCKED IN POSITION  
Seat Belts and Harness ..... FASTEN / TIGHT – CHECK INERTIA REEL  
Passengers ..... BRIEF

### **When committed to landing:**

Landing Gear ..... DOWN: 3 GREEN  
Flaps ..... APPR

### **If landing site is not suitable for gear down landings:**

Landing Gear ..... MAINTAIN UP

Final Approach Speed ..... 104 KIAS  
Battery ..... OFF  
Landing ..... NOSE HIGH ATTITUDE  
After the aircraft has stopped ..... EVACUATE

## Gear Up Landing

Fuel Cross feed Selector ..... OFF  
Landing Gear ..... DOWN  
Flaps ..... LAND  
Engine Stop Buttons ..... PUSH  
Battery Switch ..... OFF  
Passengers ..... BRIEF  
Seats and Seat Backs ..... UPRIGHT & LOCKED IN POSITION  
Seat Belts and Harness ..... FASTEN / TIGHT – CHECK INERTIA REEL

### **After Touchdown:**

After the aircraft has stopped ..... EVACUATE

## Landing Without Flaps

Proceed as for normal approach

Landing Gear ..... DOWN, 3 GREEN  
Final Approach Speed ..... 100 - 110 KIAS  
Landing ..... NORMAL  
Braking ..... AS REQUIRED  
Reverse ..... AS REQUIRED

## Fuel System

Indication Red “**FUEL PRESS LOW**” annunciator illuminated.

1. Maintain coordinated flight at all times.
2. Do not allow pitch attitude to exceed + or - 10 degrees.
3. During level coordinated flight only, begin cross feed operation  
(From the operative side) before fuel level on the inoperative side reaches 150 pounds
4. Land as soon as practical.

## Pressurization / Environmental System Malfunctions

### Cabin Altitude Above 11,500 feet

Indication: RED “**CABIN ALTITUDE**” annunciator illuminated

Cabin Alt Control.....MAINTAIN ALT BELOW 11,500’  
Cabin Pressure Switch.....ON  
Cabin Vent Control.....PUSH IN

### If Not Corrected

Supplemental Oxygen..... INITIATE

**Descend as soon as practical.**

## Anti-Ice / De-Ice system Malfunctions

### Pitot /Static System Failure

1. Pitot / Static Heat Switches ..... CHECK ON
2. Pilot and Copilot Instruments - Determine which are functioning normally.
3. Complete flight on operative instruments.
4. Affected Engine - Adjust fuel flow and torque to match the values shown on the normally functioning engine.

### Windshield Over Temp

1. Verify windshield bleed air flow is automatically terminated
2. If windshield airflow does not automatically terminate or if the system cycles on and off twice after initial turn on:
  - a. Windshield anti-ice switch.....OFF
3. Affected Engine - Adjust fuel flow and torque to match the values shown on the

## Door Not Secured

Indication: Red “**DOOR Not Locked**” annunciator illuminated

### On the Ground:

Door Latching..... CHECK AND VERIFY

### In Flight:

Reduce Airspeed and Land as soon as practical.

## Spin Recovery

Power Levers ..... FLIGHT IDLE IMMEDIATELY  
Ailerons ..... NEUTRALIZE  
Rudder ..... FULL OPPOSITE TO DIRECTION OF ROTATION  
Control Wheel ..... FULL FORWARD WHILE NEUTRALIZING AILERONS  
Rudder (when rotation stops) ..... NEUTRAL  
Control Wheel ..... AS REQUIRED TO SMOOTHLY  
REGAIN LEVEL FLIGHT ATTITUDE



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## General

This section provides the normal operating procedures for the Flight1 Conquest II airplane. All of the normal operating procedures necessary for operation of the airplane as determined by the operating and design features of the airplane are presented.

These procedures are provided to supply information on procedures that are not the same for all airplanes and as a source of reference and review. Pilots should familiarize themselves with these procedures to become proficient in the normal operation of the airplane. The Normal Procedure Checklists supply an action – reaction sequence for normal operating procedures.

## Airspeed for Safe Operations

The following airspeeds are significant to the safe operation of the airplane. These figures are for standard airplanes flown at maximum weight under standard sea level conditions.

Performance for a specific airplane may vary from published figures depending upon the condition of the engine, atmospheric conditions and piloting technique.

Air Min Control Speed with Wing Flaps in T.O Position .....	91 KIAS
Rotation Speed with Wing Flaps in T.O Position.....	98 KIAS
Obstacle Clearance with Wing Flaps in T.O Position .....	110 KIAS
All Engines Best Rate of Climb Wing Flaps in T.O Position .....	130 KIAS
All Engines Best Rate of Climb Wing Flaps in UP Position .....	140 KIAS
Maximum Operating Speed .....	245 KIAS
Maneuvering Speed .....	167 KIAS
All Engines Landing Approach Wing Flaps in Land Position.....	99 KIAS
Speed for Transition to Balked landing Conditions.....	99 KIAS
Maximum Demonstrated Crosswind Velocity.....	20 KTS

## Preflight Checklist

### Cockpit

Landing Gear Handle .....DOWN  
Control Wheel ..... RELEASE RESTRAINTS  
Parking Brake..... SET  
All Switches.....OFF  
Primary Flight Controls..... PROPER OPERATION  
Battery Switch .....ON  
Fuel Gauges ..... CHECK QUANTITY & IMBALANCE  
Annunciator Panel Lights ..... PUSH TO TEST  
Landing Gear Warning Horn Mute Switch .....PRESS / VERIFY ILLUMINATES  
Landing Gear Indicator Lights ..... THREE GREEN  
Stall Warning System..... TEST  
Elevator and Rudder Trim ..... NEUTRAL  
Flaps .....EXTEND  
Exterior Lighting Switches ..... ON, CHECK OPERATION, THEN OFF  
Pitot Heat ..... ON, CHECK OPERATION  
(Amber pitot heat annunciator extinguished, Monitor volt/ammeter for voltage drop)  
Pitot Heat ..... OFF  
Battery Switch .....OFF  
All Lighting Switches .....OFF  
Empty Seats..... SEAT BELT SNUGLY FASTENED  
Windows .....CHECK CLEAN  
Required Papers ..... CHECK ON BOARD  
Baggage..... STOW and SECURE

## Before Starting Engine

Preflight..... COMPLETE  
Door ..... LATCH and SECURE  
Control Locks ..... REMOVE  
Seats..... ADJUSTED and LOCKED in position  
Seat Belts and Harness ..... FASTEN / ADJUST – CHECK INERTIA REEL  
Parking Brake..... SET  
Switches / Circuit Breakers ..... SET  
Battery Switches ..... ON  
Passenger Advisory Lights..... ON  
Landing Gear Switch..... CHECK DWN / GREEN LIGHTS ON  
Annunciator Panel..... PRESS TO TEST  
Oxygen Quantity ..... CHECK  
Pilot / Copilot Oxygen Masks ..... CHECK FLOW, COCK and STOW  
Pressurization Source Selector..... OFF  
Power Levers ..... FLIGHT IDLE  
Condition Levers ..... START / TAXI

## Engine Start

Left Engine First  
Battery Switch ..... ON  
Voltmeter..... CHECK 24 to 26 VOLTS  
Prop Area..... CLEAR  
Fuel Boost Pump..... AUX - CHECK ANNUNCIATOR  
Left and Right Fuel Pump Annun. .... ILLUMINATED  
Engine..... START  
Engine Instruments ..... CHECK  
Generator..... ON  
Pressurization Source Selector..... LEFT  
Flaps ..... UP  
Repeat Steps for Right Engine  
Pressurization Source Selector..... BOTH or GND

## Before Taxiing

Passenger Briefing..... COMPLETE  
Ground Speed Idle.....65% - 70%  
Avionics..... AS REQUIRED

## Taxiing

Taxi Area..... CLEAR  
Power Lever..... ADVANCE SLOWLY  
Brakes..... CHECK  
Steering..... CHECK  
Flight Instruments..... CHECK

## Before Takeoff

Parking Brakes..... SET  
Fuel Low Pressure Lights..... CHECK OFF  
Fuel Boost Pumps..... OFF  
EGT / Torque Limit Switches..... CHECK AUTO  
Annunciator Panel..... CLEAR  
Flight Controls..... FREE & PROPER TRAVEL  
Flight Instruments..... CHECK  
Engine Instruments..... CHECK  
Radios / Avionics..... AS REQUIRED  
Fuel Quantity and Balance..... CHECK  
Cross feed..... CYCLE, THEN OFF  
Trim..... SET  
Pressurization Source Selector..... BOTH  
Pressurization..... SET  
Flaps..... TAKEOFF POSITION  
Seat Backs..... UPRIGHT  
Seats..... ADJUSTED & LOCKED IN POSITION

Anti Collision Lights.....	ON
Ice Protection .....	AS REQUIRED
Power .....	SET FOR TAKEOFF
Engine Instruments .....	CHECK
Rotation and Liftoff ( $V_R$ ).....	98 KIAS
Obstacle Clearance Speed .....	110 KIAS

Landing Gear .....	UP
Airspeed .....	115 KIAS
Flaps .....	UP
Recommended Climb Speed .....	140 KIAS

Power Lever .....	SET
Condition Lever .....	AS DESIRED
Ice Protection Equipment .....	AS REQUIRED
Climb Speed (best rate) .....	140 KIAS TO 16,000 FEET
	130 KIAS TO 24,000 FEET
	118 KIAS TO 35,000 FEET

**FLIGHT1**  
SOFTWARE



## Cruise

Power Levers ..... MAINTAIN 1738 ft lbs - 450 C EGT Whichever Occurs First.  
96% - RPM Do Not Exceed 245 KIAS  
Engine Fuel Instruments ..... MONITOR  
Aircraft Heading ..... CROSS CHECK  
Ice Protection Equipment ..... AS REQUIRED

## Descent

Ice Protection Equipment ..... AS REQUIRED  
Power Lever ..... AS REQUIRED for DESIRED Rate of DESCENT  
Altimeter & Standby Altimeter ..... CHECK  
Passenger Advisory Lights ..... ON  
Cabin Pressure Controller ..... SET (field elev. + 500 ft)  
Cabin Comfort Controls ..... AS REQUIRED  
Aircraft Heading ..... CROSS CHECK  
Seats ..... ADJUSTED & LOCKED IN POSITION  
Belts / Harness ..... FASTEN & ADJUSTED

## Before Landing

### Landing Check

Ice Protection Equipment ..... AS REQUIRED  
Fuel Quantity and Balance .....CHECK  
Flaps .....T.O and APPR Below 200 KIAS  
Landing Gear ..... DOWN Below 180 KIAS  
Landing and Taxi Lights ..... AS REQUIRED  
Condition Levers ..... TAKEOFF, CLIMB AND LANDING  
Pressurization ..... SET  
Flaps .....LAND Below 180 KIAS  
Approach Speed ..... 100 at 9360 pounds  
Power Levers .....RETARD for DESIRED RATE of DESCENT  
Power Levers ..... FLIGHT IDLE at TOUCHDOWN  
Power Levers .....GRND IDLE AFTER TOUCHDOWN  
Power Levers ..... REVERSE AS REQUIRED

## Landing

### Normal Technique

Landings are conventional in every respect. A power approach is used down to 50 feet above ground level using power as required to stabilize the approach speed and attitude with wing flaps fully extended, landing gear extended and airspeed of 99 KIAS. A decision must be made at the 50-foot point to complete the landing or initiate a bailed landing climb using the appropriate procedure. The landing is completed by further retarding the power levers while passing the 50-foot point and initiating a flare into the landing attitude.

Normally, the power levers are continuously retarded to FLIGHT IDLE throughout the landing flare while allowing the airplane to touchdown, main wheels first, slightly above stall speed. The nose is then gently lowered to the runway, power levers are positioned to GRND IDLE and brakes applied as required. At low altitudes, an abrupt power reduction at five feet altitude could result in a hard landing if the airplane is near stall speed. When landing at airports at high field elevations, abrupt power reduction will not present a problem as the normally high propeller drag associated with flight idle power is greatly decreased due to the decrease in air density. Short field landings on rough or soft runways are done in a similar manner except that the nose wheel is lowered to the runway at a lower speed to prevent excessive nose gear loads.

Maximum braking effectiveness is obtained by applying full even pressure to the toe brakes without locking the wheels and applying full back pressure to the control column. This procedure is recommended only for emergency stops as excessive brake pad and tire wear will occur. Maximum brake wear occurs at high speed. This brake wear can be reduced using aerodynamic braking supplemented with the use of wheel brakes. Maximum aerodynamic braking occurs with the wing flaps fully extended and control wheel held aft to keep the nose off the runway as long as possible.

Do not exceed the maximum reverse power limits shown in Section 2. Discontinue reverse power when airspeed decreases to 40 KIAS or if engine speed falls below 93% RPM. Maximum effective braking is initiated immediately while continuing to hold the control wheel full aft.

Crosswind landings are performed by using either the wing—low, crab or combination method. Differential thrust may be used to assist in the wing—low approach during landings in strong crosswinds. Use a minimum flap setting for the field length. The nose wheel is lowered to the runway immediately after touchdown. A straight course is maintained with the steer-able nose wheel and occasional braking or differential thrust if necessary.

## Balked Landing (Go-Around)

Power Lever ..... ADVANCE FOR TAKE-OFF POWER  
Climb Airspeed ..... 100 KIAS  
Flaps ..... TAKE-OFF POSITION  
Landing Gear ..... RETRACT  
Flaps ..... UP - OBSTACLES CLR and ABOVE 115 KIAS

## After Landing

Flaps ..... UP  
Ice Protection Equipment ..... OFF  
Power Levers ..... GRND IDLE AT LEAST 3 MIN PRIOR TO SHUTDOWN  
Condition Levers ..... START AND TAXI  
Anti Collision Lights ..... AS REQUIRED  
Landing / Taxi Lights ..... AS REQUIRED  
Pressurization Source Selector ..... BOTH OR GRND

## Shutdown

Flaps ..... SET FOR TAKE-OFF POSITION  
Fuel Boost Pumps..... OFF  
Avionics Bus ..... OFF  
Engine Stop Buttons ..... PUSH AND HLD 5 SEC.  
Condition Lever ..... GUARD UNTIL ENGINE STOP BUTTONS TERMINATE ENG.  
Power Levers ..... GRND IDLE AFTER PROPS STOP  
All Other Switches..... OFF  
Parking Brake..... SET  
Flight Controls ..... SECURED

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Performance

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NORMAL TAKEOFF DISTANCE ..... 2

MAXIMUM RECOMMENDED CRUISE POWER..... 3

WIND COMPONENT ..... 4

### STALL SPEEDS

#### CONDITIONS:

1. Power Levers - Flight Idle.
2. Forward Center of Gravity.

#### EXAMPLE:

Weight	9700 Pounds
Landing Gear	Down
Flaps	T.O.
Angle-of-Bank	0°
Stall Speed	81.7 KIAS
	83.7 KCAS

#### NOTE:

1. Maximum altitude lost during a conventional stall is approximately 400 feet.
2. Maximum nose down pitch attitude and altitude loss during recovery from an engine inoperative stall is approximately 18° below the horizon and 480 feet respectively.

WEIGHT Pounds	Configuration		ANGLE OF BANK							
			0°		20°		40°		60°	
	Flaps	Gear	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
9850	UP	UP	89	90	92	93	102	103	128	128
	T.O.	DN	82	84	86	87	95	96	120	119
	APPR.	DN	77	79	80	82	89	90	114	112
	LAND.	DN	74	76	78	79	87	87	111	108
9360	UP	UP	87	88	90	91	100	101	125	125
	T.O.	DN	81	83	84	86	94	95	118	117
	APPR.	DN	77	79	79	81	90	90	113	111
	LAND.	DN	73	75	75	77	85	85	109	106
8300	UP	UP	84	85	86	87	96	97	120	120
	T.O.	DN	77	79	80	82	90	91	112	112
	APPR.	DN	72	75	74	77	85	86	107	106
	LAND.	DN	68	71	70	73	80	81	102	100
6800	UP	UP	79	80	81	82	90	91	112	112
	T.O.	DN	72	74	74	76	82	84	104	104
	APPR.	DN	65	69	67	71	75	78	97	97
	LAND.	DN	61	65	63	67	72	74	91	91

### NORMAL TAKEOFF DISTANCE

#### CONDITIONS:

1. Power Levers - Takeoff Power Before Brake Release.
2. Condition Levers - Takeoff, Climb and Landing.
3. Wind Flaps - T.O.
4. Level, Hard Surface, Dry Runway.
5. Rotate - 98 KIAS.

#### NOTE:

1. If full power is applied without brakes set, distances apply from point where full power is applied.
2. Decrease distance 6% for each 10 knots headwind.
3. Increase distance 3% for each 2 knots tailwind.
4. With windshield and engine inlet anti-ice systems on, at altitudes below 5000 feet, increase total takeoff distance and ground roll by 1%. At altitudes above 5000 feet, increase total takeoff distance by 18% and ground roll by 9%.
5. With optional dual anti-ice windshield and engine inlet anti-ice systems on, at altitudes below 5000 feet, increase total takeoff distance by 2% and ground roll by 1%. At altitudes above 5000 feet, increase total takeoff distance by 24% and ground roll by 13%.

#### EXAMPLE:

Weight 9700 Pounds  
OAT 16°C  
Pressure Altitude 2400 Feet  
Headwind Component 19 Knots  
Ground Run (Approximation Method) 2230 Feet  
(1976 Feet With Wind Correction)  
Total Distance Required (Approximation Method) 3070 Feet  
(2720 Feet With Wind Correction)

WEIGHT - POUNDS	TAKEOFF TO 50-FOOT OBSTACLE SPEED - KIAS	PRESSURE ALTITUDE - FEET	-20°C		-10°C		0°C		10°C		20°C		30°C		40°C		50°C	
			GROUND ROLL - FEET	TOTAL DISTANCE TO CLEAR 50-FOOT OBSTACLE	GROUND ROLL - FEET	TOTAL DISTANCE TO CLEAR 50-FOOT OBSTACLE	GROUND ROLL - FEET	TOTAL DISTANCE TO CLEAR 50-FOOT OBSTACLE	GROUND ROLL - FEET	TOTAL DISTANCE TO CLEAR 50-FOOT OBSTACLE	GROUND ROLL - FEET	TOTAL DISTANCE TO CLEAR 50-FOOT OBSTACLE	GROUND ROLL - FEET	TOTAL DISTANCE TO CLEAR 50-FOOT OBSTACLE	GROUND ROLL - FEET	TOTAL DISTANCE TO CLEAR 50-FOOT OBSTACLE	GROUND ROLL - FEET	TOTAL DISTANCE TO CLEAR 50-FOOT OBSTACLE
9850	110	Sea Level	1440	2000	1530	2120	1630	2260	1730	2390	1840	2540	1950	2700	2080	2870	2290	3200
		1000	1520	2120	1630	2250	1730	2390	1840	2540	1960	2700	2080	2870	2250	3110	2490	3500
		2000	1620	2240	1730	2390	1840	2540	1960	2710	2090	2880	2220	3060	2440	3390	-----	-----
		3000	1720	2380	1840	2540	1960	2710	2090	2890	2230	3070	2380	3280	2650	3720	-----	-----
		4000	1830	2530	1960	2700	2100	2890	2240	3080	2380	3290	2580	3570	2910	4120	-----	-----
		5000	1960	2700	2090	2880	2240	3080	2390	3290	2560	3520	2810	3920	3200	4600	-----	-----
		6000	2090	2880	2240	3080	2400	3300	2560	3530	2770	3830	3080	4340	3490	5100	-----	-----
		7000	2230	3080	2400	3300	2570	3530	2750	3790	3030	4220	3390	4850	-----	-----	-----	-----
		8000	2390	3290	2570	3540	2750	3800	2980	4120	3320	4680	3740	5460	-----	-----	-----	-----
		9000	2570	3530	2760	3800	2980	4120	3270	4560	3650	5230	4140	6180	-----	-----	-----	-----
		10,000	2750	3790	2970	4090	3250	4510	3600	5110	4030	5890	4570	7050	-----	-----	-----	-----
		11,000	2970	4090	3240	4500	3570	5030	3970	5730	4460	6680	5050	8070	-----	-----	-----	-----
		12,000	3220	4430	3570	4990	3950	5640	4390	6440	4940	7610	-----	-----	-----	-----	-----	-----
		13,000	3520	4860	3930	5540	4370	6310	4860	7270	5490	8720	-----	-----	-----	-----	-----	-----
		14,000	3890	5430	4350	6200	4840	7100	5400	8270	6120	10,120	-----	-----	-----	-----	-----	-----
8800	105	Sea Level	1270	1570	1360	1660	1440	1760	1540	1870	1630	1980	1730	2100	1840	2220	2030	2460
		1000	1350	1660	1440	1760	1530	1870	1630	1980	1740	2100	1840	2230	1990	2400	2200	2670
		2000	1440	1750	1530	1860	1630	1980	1740	2100	1850	2230	1970	2370	2160	2600	-----	-----
		3000	1530	1860	1630	1980	1740	2100	1850	2240	1970	2380	2110	2530	2350	2840	-----	-----
		4000	1630	1970	1740	2100	1860	2240	1980	2380	2110	2530	2280	2740	2570	3120	-----	-----
		5000	1730	2100	1850	2240	1980	2380	2120	2540	2260	2710	2490	2990	2820	3440	-----	-----
		6000	1850	2230	1980	2380	2120	2540	2270	2710	2450	2930	2720	3280	3090	3780	-----	-----
		7000	1980	2380	2120	2540	2270	2720	2430	2900	2680	3210	3000	3630	-----	-----	-----	-----
		8000	2120	2540	2270	2720	2440	2910	2630	3140	2930	3530	3300	4030	-----	-----	-----	-----
		9000	2270	2720	2440	2910	2640	3140	2890	3450	3220	3890	3650	4490	-----	-----	-----	-----
		10,000	2440	2910	2630	3130	2870	3420	3180	3820	3550	4330	4030	5010	-----	-----	-----	-----
		11,000	2630	3120	2870	3420	3160	3780	3510	4240	3930	4820	4440	5600	-----	-----	-----	-----
		12,000	2840	3380	3150	3770	3490	4200	3870	4710	4350	5410	-----	-----	-----	-----	-----	-----
		13,000	3110	3700	3470	4160	3850	4660	4280	5260	4830	6090	-----	-----	-----	-----	-----	-----
		14,000	3440	4090	3830	4610	4260	5190	4750	5890	5380	6890	-----	-----	-----	-----	-----	-----



### MAXIMUM RECOMMENDED CRUISE POWER

#### CONDITIONS:

- Both engines operating in normal mode.
- Condition Levers - 96% RPM.
- Landing Gear - UP.
- Wing Flaps - UP.
- Fuel Used - JET A.
- Windshield Anti-Ice - OFF.

#### NOTE:

- Power is limited by airspeed, torque or EGT as indicated below.
  - EGT Limited (450°C).
  - Airspeed Limited (V<sub>MO</sub> = 245 KIAS).
  - Torque Limited (1738 Foot-Pounds).

#### EXAMPLE:

Altitude 18,000  
 OAT -31°C (ISA -10°C)  
 Weight 9700 Pounds  
 Airspeed (Approximation Method) 293 KTAS (230 KIAS)  
 Fuel Flow 654 Lbs/Hr

PRESSURE ALTITUDE FEET		TEMPERATURE °C		POWER	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED					
							6850 LBS		8350 LBS		9850 LBS	
							KIAS	KTAS	KIAS	KTAS	KIAS	KTAS
ISA -30°C	Sea Level	-15	-9	TORQUE LIMITED	413	826	V <sub>MO</sub> LIMITED	230	V <sub>MO</sub> LIMITED	230	V <sub>MO</sub> LIMITED	230
	2000	-19	-13	↓	403	806	↓	236	↓	236	↓	236
	4000	-23	-16		393	786		243		243		243
	6000	-27	-20		383	766		250		250		250
	8000	-31	-24		374	748		257		257		257
	10,000	-35	-27		366	732		264		264		264
	12,000	-39	-31		359	718		272		272		272
	14,000	-43	-35		353	706		280	244	280	243	278
	16,000	-47	-38		347	694	243	287	242	286	240	284
	18,000	-51	-42	EGT LIMITED	342	684	241	294	240	292	238	290
ISA -20°C	Sea Level	-5	1	TORQUE LIMITED	408	816	V <sub>MO</sub> LIMITED	234	V <sub>MO</sub> LIMITED	234	V <sub>MO</sub> LIMITED	234
	2000	-9	-3	↓	398	796	↓	241	↓	241	↓	241
	4000	-13	-6		388	776		247		247		247
	6000	-17	-10		379	758		255		255		255
	8000	-21	-14		370	740		262		262		262
	10,000	-25	-17		362	724		270		270		270
	12,000	-29	-21		355	710		278		278	243	277
	14,000	-33	-25		349	698	243	285	242	284	240	282
	16,000	-37	-28		344	688	241	291	240	289	238	287
	18,000	-41	-32	EGT LIMITED	336	672	238	296	236	295	235	292
	20,000	-45	-36		323	646	234	301	233	299	230	296
	22,000	-49	-39		304	608	228	302	226	300	224	297
	24,000	-53	-43		285	570	221	303	219	301	217	297

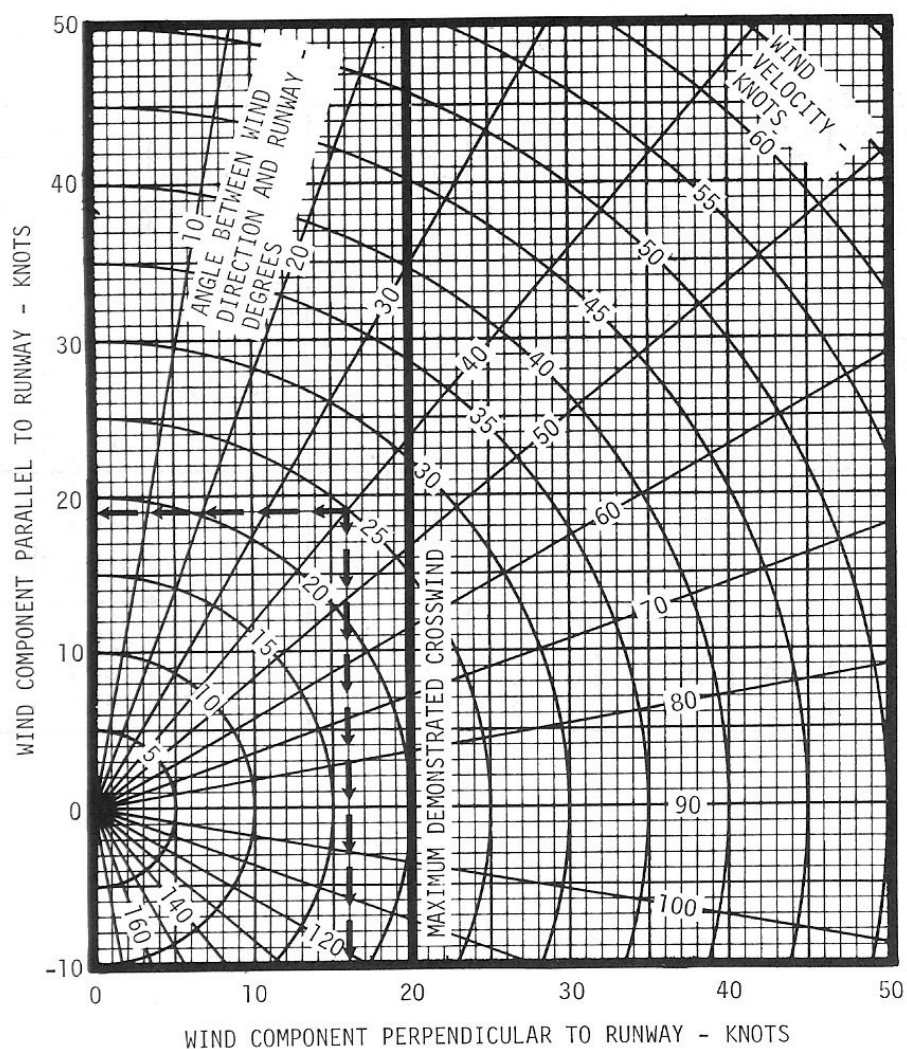
### WIND COMPONENT

#### EXAMPLE:

Angle Between Wind and Direction of Runway	40°
Wind Velocity	25 Knots
Wind Component Parallel to Runway	19 Knots
Wind Component Perpendicular to Runway	16 Knots

#### NOTE

Maximum Demonstrated Crosswind Velocity is 20 Knots  
(not a limitation).



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Weight and Balance

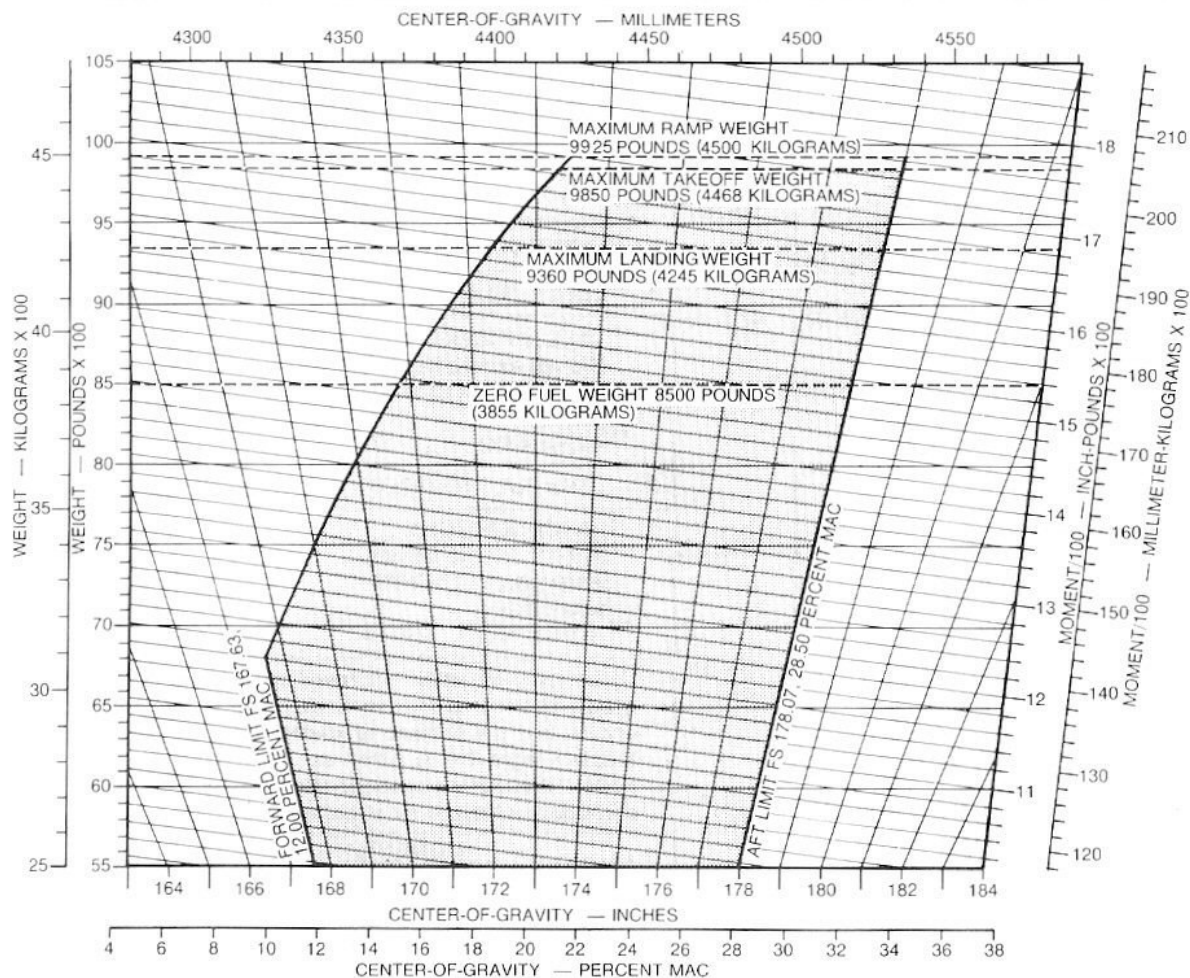
SAMPLE WEIGHT AND BALANCE FORM ..... 1

CENTER OF GRAVITY LIMIT GRAPH ..... 2

## SAMPLE WEIGHT AND BALANCE COMPUTATION FORM

PAYLOAD COMPUTATIONS				ITEM	WEIGHT (POUNDS)	MOMENT/ 100
ITEM OCCUPANTS	ARM	WEIGHT (POUNDS)	MOMENT/ 100	1. BASIC EMPTY WEIGHT	5862	10,007.40
				2. PAYLOAD	1583	3117.70
SEAT 1	137.00	170.00	232.90	3. ZERO FUEL WEIGHT (sub-total) (Do not exceed maximum zero fuel weight of 8500 pounds) ** Airplane CG = 176.29	7445 ***	13,125.10
SEAT 2	137.00	170.00	232.90			
SEAT 3	178.00	170.00	302.60			
SEAT 4	178.00	170.00	302.60			
SEAT 5	209.00	170.00	355.30	4. FUEL LOADING	2480	4522.10
SEAT 6	209.00	170.00	355.30	5. RAMP WEIGHT (sub-total) (Do not exceed maximum ramp weight of 9925 pounds)	9925	17,647.20
SEAT 7	249.00	170.00	423.30	6. LESS FUEL FOR TAXIING	75	135.00
SEAT 8	249.00	170.00	423.30	7. *TAKEOFF WEIGHT (Do not exceed maximum takeoff weight of 9850 pounds) ** Airplane CG = 177.78 ***	9850 ***	17,511.70
SEAT _						
SEAT _						
SEAT _						
TOILET				8. LESS FUEL TO DESTINATION	2000	3634.40
CARGO AVIONICS	32.00			9. *LANDING WEIGHT (Do not exceed maximum landing weight of 9360 pounds) ** Airplane CG = 176.78 ***	7850 ***	13,877.30
NOSE	71.00	79.00	56.10			
AFT CABIN FLOOR	281.00					
BAY A	301.00	144.00	433.40			
BAY B	317.00			*Totals must be within approved weight and center-of-gravity limits. It is the responsibility of the operator to ensure that the airplane is loaded properly. The Basic Empty Weight CG is noted on the Airplane Weighing Form. If the airplane has been altered, refer to the Weight and Balance Record for information.		
CABINET CONTENTS				** Airplane CG = $\frac{\text{MOMENT}/100}{\text{WEIGHT}} \times 100$		
				***Enter on the Center-of-Gravity Limits Envelope Graph to check if within approved limits (shaded area).		
PAYLOAD		1583.00	3117.70			

## CENTER-OF-GRAVITY LIMITS ENVELOPE GRAPH



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## General

### Conquest Panel Windows

The primary Conquest panel has been designed to display the gauges and controls you'll need most during normal flight operations. Several sub-panels are available as "pop-up" panels, and provide access to the remainder of the aircraft's systems. Sub-panels can be opened either by using keyboard shortcuts, or by using the Panel Manager control. The Panel Manager can be shown and hidden using the Panel Manager switch located in the lower left corner of the main panel.

### Realism vs. Simulator Limitations

The Flight1 Cessna 441 Conquest has been designed to simulate the actual aircraft in every way possible, given the limitations of the Flight Simulator platform. In some cases, aircraft controls have been included on panels even though Flight Simulator does not support these systems. In other cases, the system may be partially supported by the simulator. In order to help you recognize which controls actually affect the simulator, and to what degree, you will see a special designator next to the descriptions of some systems. The designators used are:

- (None) Indicates that the system is fully supported within the limitations of the simulator, and matches the real aircraft as closely as possible.
-  PS Indicates that the system is partially supported, and has some affect on the simulation, but is not completely accurate given the limitations of the simulator.
-  MS Indicates that the control is included for visual accuracy, but the system it represents is not supported in the simulator.

### Panel Manager

The Panel Manager provides access to several of the Conquest's sub-panels.



Click to show/hide the Side Console panel, which contains controls such as battery, generators, and engine starting.

Click to show/hide the Lighting panel, which contains both interior and exterior lighting controls.



Click to hide/show the Power panel, which contains throttles, condition levers, and trim controls.

Click to show/hide the Lower Panel, which contains controls such as landing gear and flaps.

Click to show/hide the standard FS2004 GPS.

Click to show/hide the Avionics panel, which contains COM and NAV radios, and the autopilot.

Click to show/hide the large Annunciator panel.

Click to show/hide the standard FS2004 checklist window.

\* Note - Several of the sub panel features can be accessed from the main panel window by clicking on the “hot spots”.

Radios - Click on the edge of the radio stack in the main panel screen to open, click on the black display area to close.

Engine Instruments - Click on the face of any gauge to open, click again to close.


Annunciator - Click on annunciator to open, click again to close.

Altitude Alerter Indicator - Click on the top edge to open, click again to close.

## Main Panel



1. Autopilot Disengage Warning. Illuminated when the autopilot is not in use.
2. Outer/Middle/Inner Marker Lights. Indicate which marker beacon you are passing during the approach phase of a landing.
3. Marker Beacon Test. Press to test the marker beacon lights.
4. Altitude Alert Indicator. Illuminates when the aircraft is approaching the altitude indicated by the Alt Alert control.
5. Master Warning Light. Illuminates during a stall or other condition that requires pilot notification. Also see Annunciator Panel. Press to reset.
6. Annunciator Panel. See Annunciator Panel section below.
7. Alt Alert Control. See *Using the Autopilot* later in this chapter.
8. Airspeed Indicator. Shows airspeed as reported by the pitot static system. Click on the gauge to also display a digital readout. Markings on the gauge:
  - Red line (91 KIAS) – Air minimum control speed with flaps in T.O. position.
  - White arc (74 to 180 KIAS) – Operating speed range with flaps in LAND position. Lower limit is maximum weight stall speed in landing configuration. Upper limit is maximum speed permissible with flaps in LAND position. Transition from narrow band to wide band is the stall speed with flaps in UP position.

- Blue line (120 KIAS) – One engine inoperative best rate-of-climb speed with wing flaps in UP position.
  - Red/white barber pole (245 KIAS) – Maximum operating speed.
9. Attitude Indicator.
  10. Altimeter.
  11. Engine Gauges. Click on the engine gauges to display a larger popup panel with more detailed gauges.
  12. Prop De-ice Gauges. Displays operation of the propeller de-ice system. 
  13. Clock/Timer. OAT/Volts button toggles between the outside air temperature (in Celsius then Fahrenheit, and the current voltage being supplied to the electrical system. The Select button toggles the lower display between Local Time (LT), Universal Time (UT) and the stopwatch. In stopwatch mode, the Control button resets the timer to 0.
  14. Turn/Bank Indicator.
  15. Horizontal Situation Indicator (HSI). If DME is being received on NAV1, clicking the gauge will display a distance to the originating station, as well as an ETA to the station given the current ground speed. [Accuracy]
  16. Vertical Speed Indicator. Click to display the current vertical speed digitally
  17. Outside Air Temperature (OAT) Gauge.
  18. NAV2 OBI.
  19. RMI.
  20. Radio Altimeter. Displays altitude above ground, in 100's of feet. The yellow arrow indicates the Decision Height value, and the knob in the lower-right corner can be used to change the DH value. An audible warning will sound when the DH value is reached.
  21. Engine Start Annunciators.
  22. Panel Manager, AP Master, and GPS/NAV Switches. The Panel Manager switch toggles the visibility of the Panel Manager, which appears along the upper-right edge of the screen. The AP master switch controls whether the autopilot system is engaged (up) or disengaged (down). The GPS/NAV switch determines whether NAV mode on the autopilot is driven from the NAV1 radio or the GPS system.
  23. Autopilot Mode Indicators. Displays the currently engaged autopilot modes.

## Side Console Panel



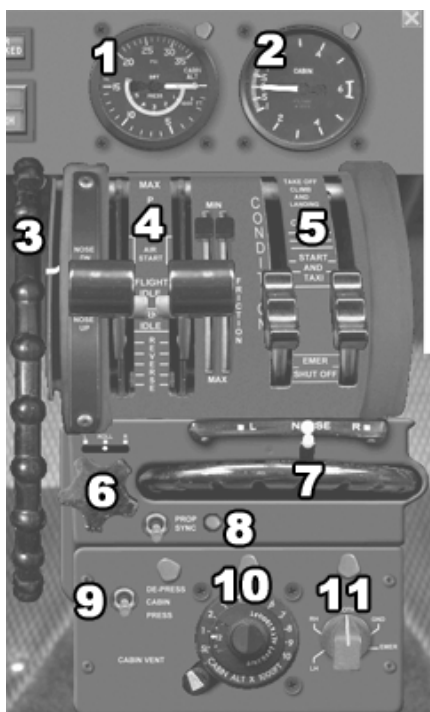
1. Ignition Override switches. **MS**
2. L/R Generator switches.
3. L/R Battery switches.
4. L/R Engine Start switches.
5. L/R Engine Stop switches.
6. Fuel Boost switches. **MS**
7. Torque/EGT Limit switches. **MS** These switches enable or disable the onboard Torque and EGT limiting computer. In this simulation, the computer is always enabled.
8. De-Ice/Anti-Ice switches:
  - Surface boots
  - Windshield **MS**
  - Propeller (L/R)
  - Stall Vane **MS**
  - Engine Inlet
  - Pitot/Static
9. Gyro Inverter **MS**.
10. Avionics Bus switches.

### Lighting Panel



1. Day/Night lighting switch. Controls panel lighting.
2. Landing light. Extends and illuminates the two wing-mounted landing lights, as well as the nose gear landing light.
3. Taxi light. Illuminates the nose gear taxi light.
4. Nav lights.
5. Anti-collision lights.
6. De-ice lights. Illuminates the wing de-ice boot lights.

### Power Panel



1. Cabin Altitude and Pressure Differential.
2. Cabin Altitude change rate. **PS**
3. Vertical trim.
4. Throttle levers. See *Power Management* later in this chapter.
5. Condition levers. See *Power Management* later in this chapter.
6. Aileron trim.
7. Rudder trim.
8. Prop sync switch.
9. Cabin Pressurization Dump Toggle Valve.
10. Cabin altitude control. **NS**
11. Pressurization source control. **NS**

### Lower Panel



1. Volt and Amp meters.
2. Fuel cross feed selector. MS
3. Landing gear handle.
4. Landing gear indicators.
5. Flaps


### Avionics Panel



1. COM1/NAV1 radio. See *Using The Radios* later in this chapter.
2. COM2/NAV2 radio. See *Using The Radios* later in this chapter.
3. Transponder.
4. Autopilot. See *Using the Autopilot* later in this chapter.
5. ADF.

## Annunciator Panel



1. Annunciator lights.
2. Fire control system.  In case of an engine fire, the red FIRE button will illuminate. Pressing the FIRE button will shut down the engine on that side, and will illuminate the white BOT ARMED button. Pressing the BOT ARMED button will discharge the fire extinguisher.
3. Annunciator Test button

## Power Management

### Overview

The Conquest is equipped with an intelligent fuel control system, coupled with a Torque/EGT limiting computer. These systems greatly reduce the pilot's workload, and serve to protect the engines from damage. Due to limitations in the FS2004 turboprop model, the Conquest has been designed such that the fuel control system is always in "automatic" mode, and the Torque/EGT limiting computer is always enabled. Despite restrictions imposed by the simulator, the Flight 1 Conquest achieves a very high degree of accuracy when compared to the actual aircraft. Power management is accomplished by means of the throttle and condition levers. The throttle levers control the engine torque, which is monitored on the Torque meters at the top of the engine instrument stack. The condition levers control the engine RPM, which is monitored by the dual analog/digital RPM meters.

### Propeller Control

The propellers operate in one of two modes: Beta and propeller governor. In the real aircraft, Beta mode is used for ground operations, where the throttle controls the propeller blade angle. FS2004 does not support a true beta mode, so the propeller governor always controls the propellers. The propeller governor controls blade angle using the fuel control unit, which is affected by the position of the condition levers. The governor senses and handles 3 different conditions: under-speed, on-speed, and over-speed. It then automatically adjusts the blade angle to maintain the on-speed condition. In the Flight 1 Conquest, since the propeller governor controls the propeller, the pilot does not need to manually control prop pitch at any time.



**Taxi**

During ground operations, the condition levers can be anywhere between the START AND TAXI position, and the TAKE OFF CLIMB AND LANDING position. The throttles are used to maintain between 65 - 75% RPM for taxi.

**Takeoff**

For takeoff, the condition levers are to be moved to the full-forward position, and the RPM gauges should be checked to ensure at least 69% RPM. The throttle levers are then advanced to the full position.

**Climb**

During climb, the throttle and condition levers should remain at the full-forward position.

**Cruise**

The Conquest's TPE331 engines are designed to be operated continually at 100% RPM, but a 4% reduction is allowed for passenger comfort (reduced noise and vibration). When cruise altitude is reached, the throttles should be pulled back to produce an EGT reduction of approximately 15 degrees. Next, the condition levers are moved to the CRUISE position, allowing the RPM to drop to 96%. Lastly the throttle levers can be moved forward to produce the desired cruise EGT. RPM below 96% is not permitted while airborne.

**Descent**

Descent rate is controlled by moving the throttles toward FLIGHT IDLE until the desired rate is achieved. Before landing, the condition levers should be advanced to TAKE OFF CLIMB AND LANDING.

**After Landing**

After landing, the throttles should be moved to the FLIGHT IDLE position. Between 90 and 40 KIAS, the throttles may be moved into the REVERSE range to aid in slowing the aircraft down, and save wear on the brakes.

## Using the Radios

### Audio Panel



The Audio Panel enables or disables sounds from the various radios. In the case of COM1 and COM2, it also controls which COM radio you are using to transmit. The BOTH setting allows you to hear both COM1 and COM2, but you will still only transmit on COM1.

### COM Radio



1. Active frequency
2. Standby frequency
3. On/Off switch
4. Frequency Swap button.
5. Standby frequency adjust knob.

The Conquest comes equipped with two Bendix/King KX 165A NAV/COM radios, operating as NAV/COM 1 and NAV/COM 2.

To operate the COM radios, use the knob to select the desired frequency into the Standby position, then click the Frequency Swap Button to move the Standby frequency into the Active position.

Adjusting the Standby frequency can be done either by clicking in the designated click spots, or by rolling the mouse wheel.

Click spots:



1. Increase whole number.
2. Decrease whole number.
3. Increase fractional number.
4. Decrease fractional number.

### Mouse wheel



1. Rotate wheel away from you to increase whole numbers, rotate towards you to decrease whole numbers.
2. Rotate wheel away from you to increase fractional numbers, rotate towards you to decrease fractional numbers.

### NAV radio



Standby frequency mode



Localizer mode



VOR TO mode



VOR FROM mode

1. Active frequency
2. Standby frequency (or various mode displays).
3. Ident knob. Click to enable this radio on the Audio Panel.
4. Frequency swap button.
5. Cycle Mode button. (Display modes are described below)
6. Standby frequency adjust knob.

To operate the NAV radios, use the knob to select the desired frequency into the Standby position, and then click the Frequency Swap Button to move the Standby frequency into the Active position.

Adjusting the Standby frequency can be done either by clicking in the designated click spots, or by rolling the mouse wheel.

Click spots:



1. Increase whole number.
2. Decrease whole number.
3. Increase fractional number.
4. Decrease fractional number.

Mouse wheel:



1. Rotate wheel away from you to increase whole numbers, rotate towards you to decrease whole numbers.
2. Rotate wheel away from you to increase fractional numbers, rotate towards you to decrease fractional numbers.

### Display Modes

- Standby frequency mode. Shows the frequency, which is adjustable by using the knob.
- Localizer mode. When the NAV radio is receiving a localizer signal, a vertical bar (similar to a CDI on an OBS gauge) displays the aircraft's relative position to the signal. If no signal is being received, the word "FLAG" appears in the display.
- VOR TO mode. When the NAV radio is receiving a VOR signal, this mode displays the heading required to fly towards the VOR station on the current radial. Note that you are actually inbound on the reciprocal radial of the displayed heading. E.g. flying a heading of 270 to the VOR means you are tracking the 090 radial.
- VOR FROM mode. When the NAV radio is receiving a VOR signal, this mode displays the heading required to fly away from the VOR station on the current radial.

## Using the Autopilot

The Conquest contains two interfaces to the standard FS2004 autopilot. The first is the KAP140 Autopilot located on the Avionics panel, and the second is the Alt Alert control, located on the Main panel.

### KAP140 Autopilot

The KAP140 is *dual-axis* autopilot, meaning it is capable of controlling both LNAV (lateral navigation) and VNAV (vertical navigation). LNAV can be driven either by the GPS or by the NAV1 radio, as determined by the GPS/NAV switch on the main panel.

Note: Certain liberties have been taken in the implementation of the KAP140 in order to conform to the limitations imposed by the simulator.

Below is a description of the KAP140 as it appears in the Conquest.



1. Autopilot Master switch (duplicated on Main panel)
2. Lateral mode (roll mode) annunciator.
3. Vertical mode (pitch mode) annunciator.
4. Altitude pre-select display.
5. Vertical speed pre-select display.
6. Vertical speed buttons.
7. Altitude knob.
8. Mode buttons.

### Autopilot Mode Buttons:

HDG – Toggles between HDG, ROL, and OFF modes. HDG turns the aircraft to the heading specified by the heading bug on the HSI. ROL is a wing-leveler.

NAV – Causes the autopilot to track either the next GPS waypoint, or the NAV1 radio, as determined by the GPS/NAV switch on the Main panel.

APR – Used to capture and track an ILS (will track both a localizer and a glide slope signal).

REV – Used to capture and track a back-course ILS signal.

ALT – Used to capture the selected altitude, at the selected vertical speed.

The altitude pre-selection is adjusted using the Altitude knob, either by clicking in the appropriate click spots, or by using the mouse wheel.

Click spots:



1. Decrease by 1000 feet.
2. Decrease by 100 feet
3. Increase by 100 feet
4. Increase by 1000 feet.

Mouse wheel:



1. Rotate wheel away from you to increase by 100 feet, rotate towards you to decrease by 100 feet.

## Pre-selecting Values

It is possible to pre-select a target altitude and desired vertical speed, before engaging the autopilot. This is useful in scenarios such as an IFR clearance, where you are given an initial altitude while still on the ground. Enter the altitude and the desired initial climb rate into the autopilot. Then, when you are airborne, and have established a climb attitude, press the AP master button to engage the autopilot, and then the ALT button to engage the selected climb profile. See the Alt Alert section below for an alternative method of capturing a predetermined altitude.

## Alt Alert



1. Target altitude proximity lights.
2. Target altitude selector digits.
3. ARM button.

The Alt Alert control is a very fast and convenient way to select and capture a desired altitude. Enter the desired altitude into the selector digits, enable the Master Autopilot switch, and press the ARM button. The Alt Selector will direct the aircraft to the selected altitude (either up or down) at the default rate of 1500 feet per minute. The Alt Alert can also be used as an alerter device, without commanding a vertical navigation mode from the autopilot. Enter the desired altitude into the selector digits. The Alt Alert will signal proximity to the selected altitude with an audible notification, as well as the proximity lights on the left of the unit. Notifications occur at 1000 and 300 feet from target altitude.

## Miscellaneous Procedures

### Propeller Feathering

In the event on an in-flight engine failure (due to malfunction, or fire), the propeller for the dead engine should be fully feathered to reduce drag and increase the efficiency of the remaining engine. To feather a propeller:

1. Pull the condition lever for the dead engine all the way back to EMER SHUT OFF.
2. Reduce the throttle for the dead engine all the way into full reverse.

## Performance Considerations

### Aircraft Texture Format

The Conquest ships with DXT3 textures by default. This texture format provides for greater performance on slower systems. If you have a fast system, or are willing to make a tradeoff of frame rate for visual quality, you can use 32-bit textures instead. You can create either texture format by using the Text-o-matic utility, which is provided as part of the Conquest package. To use Text-o-matic:

1. Start the Text-o-matic utility, which is located in the Start menu, under Flight One Software, 441 Conquest II, Textomatic.exe.
2. Select either "Flight One Conquest 441 (32bit textures)" or "Flight One Conquest 441 (DXT3 textures)" and click Select Aircraft.
3. Click Load Template File.
4. Click on "F1\_441.bmp" and select Load Template from the popup menu.
5. Enter the "variation" – a name that appears in the Variation drop-down list in the Select Aircraft screen in Flight Simulator, and describes the particular texture. An example name would be "Burgundy and White(32-bit)"
6. Enter a unique ID. This value is used as the texture folder name. For 32-bit textures, an example name would be "32BIT".
7. Click Create Aircraft.
8. When the process is finished, click Exit Text-o-Matic.

The newly created aircraft will now be listed along with the default Conquest.



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