Cessna Citation Encore
CE-560 Study Guide Notes
AIRCRAFT GENERAL

AIRSPEEDS

VMO	292 KIAS
MMO	.755 M
VFE 15o	200 KIAS
VFE 35o	173 KIAS
VLO extending	250 KIAS
VLO retracting	200 KIAS
VLE	250 KIAS

Maximum Operating Altitude 45,000 feet

WEIGHTS

Max ramp weight	16,830 lbs
Max take off weight	16,630 lbs
Max landing weight.	15,200 lbs
Max zero fuel weight	12,600 lbs
BEW	10,055 lbs

Dimensions and structures

Wingspan	54ft 3in
Length	48ft 11in
Tail height	15ft 3 in

Passenger seats 9 /belted potty

16 boundary layer energizers per wing

LIMITATION
All 16 must be present for takeoff

LIGHTING

CABIN LIGHTS
ENTRY – entry lights are wired to the hot battery bus
OVRHD – variable intensity overhead indirect fluorescent cabin lights

Overhead indirect fluorescent lighting
REFRESHMENT CENTER
• LIGHT – illuminates refreshment center
• OVRHD – controls cabin indirect fluorescent lights
REFRESHMENT CENTER LIGHTING
Recognition lights
Outer – landing lights
Inner – recognition lights

AUTOMATIC PULSELITE SYSTEM
• Both landing lights must be selected to the REC/TAXI position and the aircraft must be airborne to activate the pulselite system
• Selecting either landing light to ON or the left main squat switch sensing aircraft on the ground will disable the pulse lights
• GND ON activates pulselites on the ground
• NORM ON system operates normally

Master warning lights – illuminate with
Dual generator failure
Thrust reverser ARM light illuminating

Thrust reverser UNLOCK light illuminating
BATT O'TEMP >160O
CAB ALT
AC FAIL
LO OIL PRESS

CAUTION ANNUNCIATORS
WING O'HEAT L/R – temperature in the wing bleed air purge passageway exceeds 160O F, respective wing PRSOV automatically closes

WING ANTI-ICE L/R – temperature of bleed air in duct low
Engine and wing anti-ice low temp warnings illuminate after a 1 minute delay. If ignored they will eventually trigger the master warning lights to illuminate after
• Engine anti ice 2 minute delay
• Wing anti-ice 4 min 45 sec delay

FIRE DET SYS L/R – failure of the respective engine fire warning system, (fire warning light will not illuminate in the event of an engine fire)

L/R FUEL GAUGE – fault in respective fuel gauging system detected, check bit lights in aft cabin after landing

AFT J BOX LMT – failure of 225 amp current limiter

AFT J BOX CB – left or right start CB on aft J Box popped

TL DEICE FAIL L/R inadequate pressure to inflate the tail de-ice boot sensed

BAGAGE DOOR L/R warning light designates witch door is not KEY LOCKED

DOOR SEAL door is closed and seal will not inflate or has lost pressure

STBY P/S HTR – system selected off or failure of the standby pitot static heater system

AOA HTR FAIL – system selected OFF or loss of electrical power
P/S HTR FAIL L/R – system selected off or loss of power to one or more Components

CHECK PFD 1/2 – a fault in the information being displayed on the PFD compared to the IAC (integrated avionics computer) (wrap
around failure)

NOSE AVN FAN – nose avionics compartment fan failure. EFIS ground operation limited to 30 min, VFR flight only

L/R LO FUEL LEVEL – indicates 180 lbs +/-20 fuel remaining

L/R OILPRESS – flashes, oil pressure below 20 psi

IC HOT – displayed on MFD – takeoff prohibited

ADVISORY LIGHTS(white)
GND IDLE – aircraft on ground and the ground idle switch is set to NORM, extinguishes after takeoff.
Illumination in flight, indicates a ground idle fault detected

ENG VIB L/R – engine vibration has exceeded a preset level

TL DEICE PRESS L/R – adequate pressure sensed

ROTARY TEST
FIRE WARN
Both red ENG FIRE switches illuminate

• FIRE DET SYS L/R annunciator flashes
• F/W SHUTOFF L/R annunciator flashes

STICK SHAKER
• Stick shaker operates
• Angle-of-attack needle goes past the red arc
• Indexer lights flash

OVER SPEED
• Over speed warning horn sounds
• PFD's indicate Vmo (262 kt below 8,000')
• PFD's indicate .400 Mach
• PFD's show a 2,000 fpm climb

Power plant
Power plant PW535A
Bypass ratio 2.55 to 1
Thrust 3,400 lbs

LIMITATIONS
Max N1 100% 102% transient 20 sec
Max N2 100% 102% transient 20 sec
ITT max cont 700o C
Max cruise 700o C
Start 740o C < 5 sec
Max take off 700o C (5 min)

Engine sync must be OFF for takeoff, landing, or large power changes

Engine indicating
• ANNU test – engine displays show 1888
• IGN – green ignition on lights either side of ITT
• N2 over boost lights – flash red over 100%

Ground idle
• NORMAL – 49.1% N2
• HIGH – 52.9% N2
Select to high for cross generator start

• Flight idle – 52.9% N2

• Inflight with gear up – selecting engine anti-ice ON, resets the flight idle from 52.9% N2 to 65.0 N2

• When the gear is selected down with the engine anti-ice ON – flight idle resets back to 52.9%

Bleed Off Valve
Bleeds off P2.8 bleed air to prevent engine surging, pneumatically operated

Accessory Gear Box – Drives
Fuel control and pump
Oil pressure and scavenge pumps
Hydraulic pump
Starter generator

Bleed Air continuously heats
Nose cone
T1 thermo couple
First 2 sets of compressor inlet guide vanes

Fuel/oil heat exchanger

• Each engine has a fuel oil heat exchanger between LP engine driven fuel pump and HP fuel pump which utilizes warm oil to heat the fuel before entering the fuel filter

• The FOHE eliminates the need for premixed, anti-ice inhibitors in the fuel

CHIP DETECTOR
• Detects ferrous metal particles in the oil
• No cockpit indication
• Press switch down to the test light
• Press up to check for chip indication. Illumination indicates metal particles detected

Emergency shutoff valve
Through mechanical linkage, decoupling of the LP spool closes the fuel emergency shutoff valve, shutting down the affected engine

IGNITION
• SEC position for the ignition switch – provides an alternate power source for the exciter box through systems buses. Green igniter ON lights are on either side of the ITT gauge

Fire protection
Heat sensing loop – electrical resistance decreases with temp increase – 500o F
Fire detect malfunction indicator

FIRE DET SYS L/R – indicates failure of the respective engine fire warning system.

NOTE respective fire warning light will not illuminate in the event of an engine fire

LH/RH ENGINE FIRE –pressing switch
Arms both fire bottles
Closes fuel shutoff valve
Closes hydraulic shutoff valve
Opens generator field relay
Disables thrust reverser through isolation valve

Electrical

Battery in EMERG position provides 30 minutes power for

Emergency Bus Items
L/R N1 indication
L/R ignition
Standby flight display
Standby HSI
Standby radio control head
Standby pitot static heaters
Landing gear control and indication
Flap control
Comm 1
Nav 1
DG 1
RMU 1
Overhead flood lights
Pilot’s and copilot’s audio panels
Interior entry lights

Generator LIMITATIONS
On ground
125 amps ground idle NORMAL
225 amps ground idle HIGH

transients of 300 amps permitted up to 4 min

In Flight
225 amps at flight idle
300 amps above flight idle
450 amps over load 4 min

START LIMITATIONS
• Starter/generator – 3 starts in 30 minutes with 90 sec rest
• Battery – 3 battery starts per hour

• 2nd engine start – before start set ground idle to HIGH and the load on the operating generator should be below 200 amps

J-BOX ANNUNCIATORS

• AFT J BOX LMT – failure of 225 amp current limiter

• AFT J BOX CB – left or right start CB on aft J Box popped

BATT Disconnect switch
DISC – Disconnects the battery from the electrical system

NOTE
• Only use as directed by the checklist
• Continued use will the drain battery

INTERIOR MASTER switch
• Interior master switch located on captains left arm rest panel
• Shuts off power to the cabin accessory items, refreshment center, and AC outlets

Inverters
• Avionics switch – select ON, to power both inverters, the AC buses are normally split.

• Inverter switch – is normally left the NORM position which powers both inverters simultaneously, each inverter powers two buses (splits bus).

• Selecting INV1 or INV2 will allow that inverter to power all four AC buses.

FUEL
Max fuel capacity 5,440 lbs(806 gal)
• Max normal fuel imbalance 200 lbs
• Max emergency imbalance 600 lbs
• Avgas NO

SINGLE POINT REFUELING

LIMITATIONS
• refueling
Minimum 10psi
Maximum 50 psi
• defueling
max -10 psi

SINGLE POINT REFUELING pre Check
• Pull out precheck lever.
• Full flow must slow to 0-6 gpm within 30 sec.
• This check ensures that the shutoff valves will close when the tanks are full
• Tanks may be individually filled by pulling opposite individual precheck lever

BOOST PUMPS
ON – continuous operation

OFF – cannot activate
NORM – activates for engine start, LO FUEL PRESS, crosssfeed
• If the engine is shutdown in flight and windmills for more than 15 minutes without the boost pumps ON, the engine driven fuel pump must be inspected

FUEL/OIL HEAT EXCHANGER

• Each engine has a fuel oil heat exchanger between LP engine driven fuel pump and HP fuel pump which utilizes warm oil to heat the fuel before entering the fuel filter

• The FOHE eliminates the need for premixed, anti-ice inhibitors in the fuel

Four ejector pumps in each wing
Primary ejector feeds engine driven pump and transfer ejectors
3 transfer ejector pumps move fuel to the sump

Motive flow valve closes on side receiving fuel during cross feed

LANDING GEAR AND BRAKES
Brakes and Anti-skid system
• Landing gear is trailing link
• Anti-skid does not have to be off for taxi
• When selected from OFF to ON aircraft must be stopped and anti-skid test completed for system to be active.

Trailing Link
Emergency gear extension

FLIGHT CONTROLS
Flaps
• Flaps are hydraulically powered

• 7o position added

• When selecting flaps to 15o-25o the pitch trim resets to counter pitch changes

ICE AND RAIN PROTECTION
Wing bleed air heat system
When WING/ENGINE ant-ice is selected ON
• Stator valve opens, bleed air heats the engine stator vanes
• PRSOV opens to heat the engine nacelle inlet lip
• Ignition activates
• Flight idle increases to 65%
• Bleed air is routed to picolo tubes in the wing leading edge
• WING ANT-ICE L/R illuminates till wing temp reaches 300o F
• ENG ANT-ICE L/R illuminates till the engine inlet temperature exceeds 70o F

• Wing ram air inlets at each wing root, allow air to flow through a secondary chamber separating the heated leading edge and the forward wall of the fuel cell. Purge air exhaust through louvers at the bottom of the wing tip

ICE AND RAIN PROTECTION
Wing bleed air heat system
• All anti-ice systems are activated in visible moisture and RAT below +10o C

• Before entering icing conditions select WING/ENGINE ON

• WING XFLOW switch – for single engine operation or other abnormal conditions
ICE AND RAIN PROTECTION

Tail de-ice system
• Normally operated in AUTO position

• Uses 23 psi air to inflate left and right horizontal stabilizer boots.

• 6 sec left boot inflates, 6 sec suction, 6 sec right boot inflates, 3 minute rest

• After selecting AUTO, allow boots to cycle for 18 sec before selecting OFF

• When utilizing MANUAL mode hold switch down 6 to 8 seconds, both boots inflate simultaneously, repeat every 3 to 5 minutes

Tail de-ice system
LIMITATION

Do not activate the tail deice boots under the following conditions

• Airspeeds at or above 150 KIAS and RAT less than or equal to -35o C
• Airspeeds below 150 KIAS and RAT less than or equal to -40o C

W/S heat control
• Windshield ice protection lights – activate when the battery master is selected on
• A red spot on the windshield illuminates at night when ice starts to form on the windshield

A/I in-flight idle
• Inflight selection of engine anti-ice on will reset flight idle to 65.0% N2

• flight idle will reset to 53.9% N2 If engine anti-ice is selected OFF or the landing gear is exteded

PNEUMATICS

AIR CONDITIONING
Vapor cycle air
• Compressor automatically shuts down above 18,000 ft
• Discharges cold air from forward and aft vents in the dropped aisle
• The acm ejector is replaced by a fan

PRESSURIZATION
Electronic pressurization controller
• Normal operation – set landing field elevation
• requires No. 2 ADC

• Yellow light illuminated – isobaric mode – press FL to set flight level and field Elevation

• Red light – system failure – select manual pressurization

• EXER – ground test mode only

High altitude and auto EMER PRESS modes

• Setting an airport elevation greater than 8,000 in the SET ALT window will set the pressurization controller to the high altitude mode. This adjust the climb schedule. Cabin altitude will climb to 7,800 ft during cruise.
• EMER PRESS mode selected– bleed air from the left engine directly into cabin. Shuts down both ACM's
• Automatic with ACM O'HEAT or cabin altitude above 14,500 ft
PRESSURIZATION
Max cabin differential 8.9 psid

EMER DUMP toggle switch – opens both out flow valves, at 14,500 emergency pressurization valve opens, drives cabin to 12,000'

OXYGEN
Control
• CREW ONLY – O2 is only supplied to the crew mask. passenger mask are blocked.
• NORMAL (armed) – if DC power is available passenger mask will drop at cabin altitude 14,500 ft +/- 500
• MANUAL DROP – will manually drop passenger masks if DC power is lost
•
• Crew mask (EROS)
• Settings
– EMER – enables pressure breathing
– 100% – 100% O2
– NORM – diluter demand breathing

• After cold soaking (2 hours or more at -10 Co) cabin temperature must be at or above 0o C for 15 minutes prior to take off to ensure proper deployment of passenger mask
OXYGEN

• Must be stowed in container to qualify as quick donning

AVIONICS

• Primus 1000 integrated avionics system – 3 tube EFIS system consisting of pilots and copilots Primary flight displays (PFD) and a central multi function display (MFD)

• PFD failure – (black tube) turn the PFD dim knob to OFF on the failed display, PFD information is displayed on the MFD

• EFIS or IAC failure – RED X on PFD and/or MFD – turn the MFD mode knob to SG1 or SG2(all 3 displays will be driven by the selected signal generator)

• HDG REV – changes heading source on PFD
• ATT REV – changes Attitude source on the PFD
• ADC REV – changes air data computer source on the PFD
LIMITATION
• P-1000 system must be verified operational by the preflight test in the normal procedures
• Dual PFD SG reversion to the MFD is prohibited

UNS1-C Universal FMS

AUTOPILOT
• BANK LIMIT – engaging limits bank to 14o. Automatically engages climbing through 34,000 ft, disengages at 33,750 ft.

• DN/UP – illuminates with sustained request for trim

• If the autopilot is engaged and VS selected on flight director panel, the pitch trim wheel can be used to change target vertical speed rate on the PFD

Standby instruments
Meggitt Standby Flight Display(SFD)
• 24V battery in the nose provides 30 min of power to the secondary flight display.
• Displays airspeed and altitude from it’s own stand alone source, attitude from solid state inertial sensors and VOR/ILS indication from Nav. 1
• Also powers lighting for ITT, N1 & standby HSI displays.
• Must allow 180 sec. for start up.

• Standby horizontal situation indicator – powered by the emergency bus

Single mode controller
• Pressing APR button cycles through

- LOC/GS
- BC back course
- Non ILS format

• Standby gyro system must be preflight tested and operational before takeoff

SAFEFLIGHT N1 REMINDER
• Indicates approximate N1 for take off, climb, and cruise, with or without anti-ice ON
• 888 indicates successful self test
• – indicates failed test or no data

• Preflight
- Select ant-ice – AS REQUIRED
- Place switch in the TO/GA position
- Set air temperature by depressing switch and turning
- Read takeoff power on display

Selecting TO/GA below 10,000 will display go around N1

Noise at 16,630 lbs
• Takeoff 70.0
• Sideline 89.8
• Approach 90.5
Forced mixer nozzles on the encore reduce noise

1st hour 1,500 lbs
2nd hour 1,100 lbs
Climb 247 KIAS/.62 M