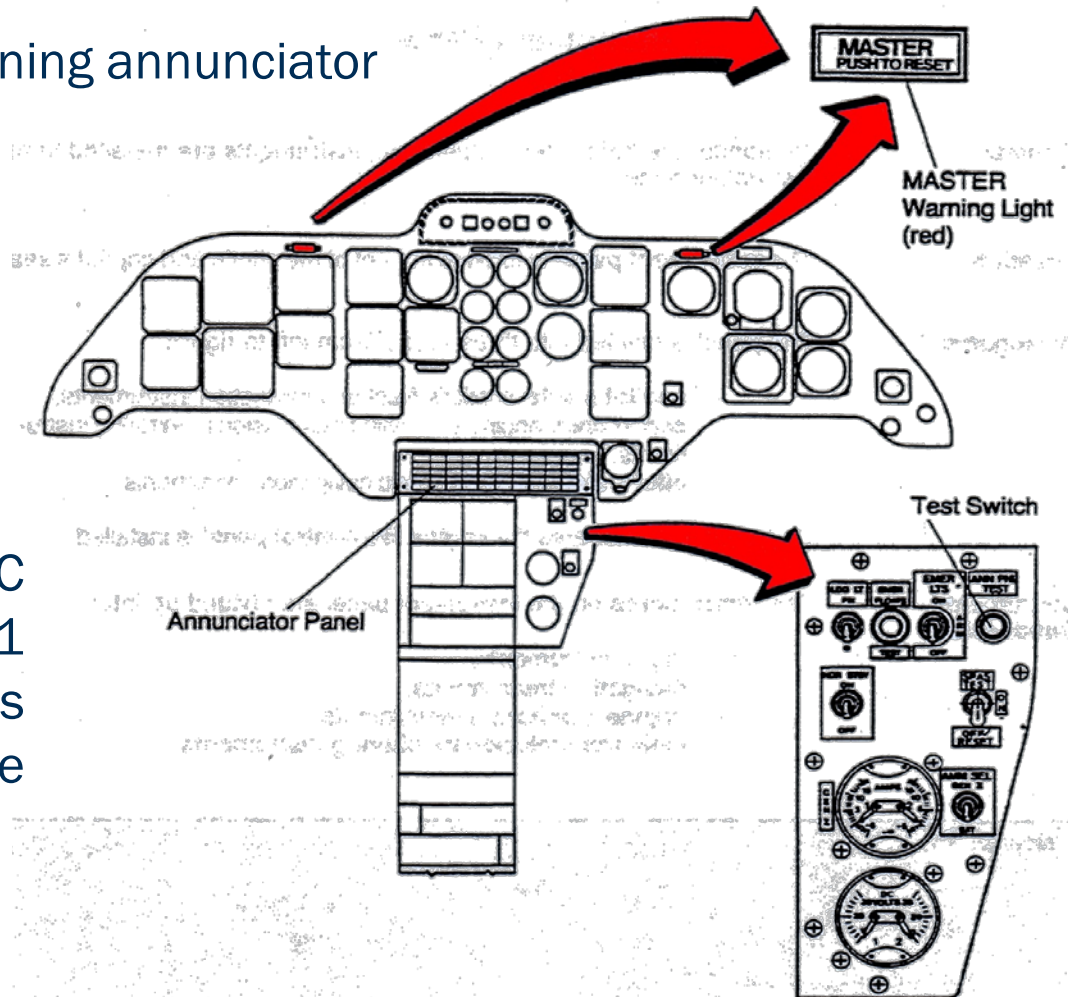


Annunciator System

The advisory, caution and warning annunciator system consists of:

- Annunciator panel
- Lamp test switch
- Master warning light

Power is supplied by 28 VDC from the flight essential bus 1 and 2 via circuit breakers WARN ANN I and II in the overhead console.



Annunciator Panel

Red warning light - A hazard which may require immediate corrective action.

Yellow caution light - Possible need for future corrective action.

Green advisory light - Operation of the respective system.

				#1 ENGINE	XMSN	#2 ENGINE			
PITOT P	BAT 70	CSAS PITCH	FUEL PRESS I	ENG I LOW	ROTOR RPM	ENG II LOW	FUEL PRESS II		DOOR
PITOT CP	BAT 60	CSAS ROLL	FUEL VALVE I	ENG I OIL P	XMSN OIL PRESS	ENG II OIL P	FUEL VALVE II	HYD 2	EPU
ENG I ANTI ICE	BAT DISCH	DG	FUEL LOW I	ENG I CHIP	XMSN OIL TEMP	ENG II CHIP	FUEL LOW II	HYD 1 → 2	ROTOR BRAKE
ENG II ANTI ICE	EXT PWR	INV 1	FUEL FILTER I	OIL FILTER I	XMSN CHIP	OIL FILTER II	FUEL FILTER II	SPAS	PRIME PUMP
	YAW SAS	INV 2	GEN I OVHT	GEN I		GEN II	GEN II OVHT	F. PUMP XFER FWD	F. PUMP XFER AFT



MASTER

The MASTER warning illuminates whenever a warning or caution light has been activated on the annunciator panel.

After a response to the MASTER warning light, push the MASTER segment to reactivate the MASTER warning for further possible emergencies.

If the defective system returns to normal operation, the respective caution or warning light and the MASTER warning light, if not reset, will extinguish.



Main Switch Panel

(Typical)



Fuel Transfer Pumps

The forward and rear transfer pumps are controlled by the XFER FWD and XFER AFT switches on the main switch panel.

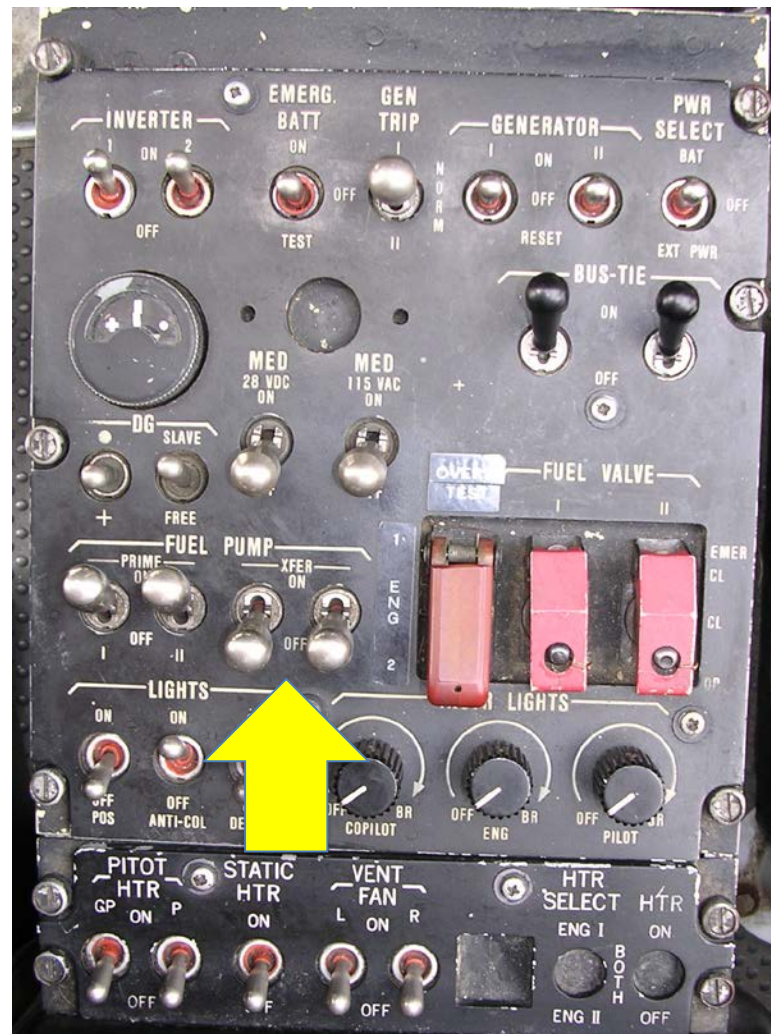
Since both switches must be ON during helicopter operation, the caution lights

F. PUMP
XFER FWD

and/or

F.PUMP
XFER AFT

will be illuminated if the switch(es) are in the OFF position.



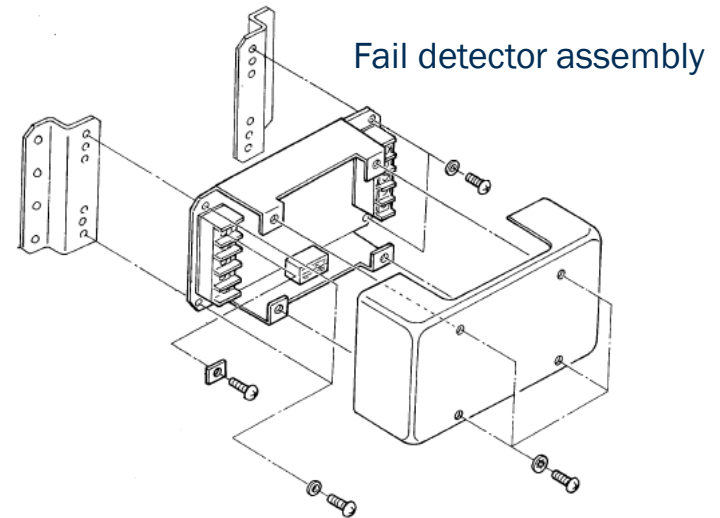
Fuel Transfer Pumps

A Fail detector located on the LH cockpit side below the floor, measures the current consumption of the transfer pump.

If the current is 1.5 amps or less or 6 amps or more, the detector closes the circuit and the F PUMP XFER caution light will illuminate.

Caution

Transfer pump should not be run dry for more than 15 minutes.
(MM chapter 92)



F. PUMP
XFER FWD

and/or

F.PUMP
XFER AFT

Conditions/Indications

Failure of forward or aft fuel transfer pump in main tank.

Procedure

1. FUEL PUMP XFER circuit breaker - Check in
2. FUEL PUMP XFER switch - Check ON
- If light remains on:
3. Affected FUEL PUMP XFER sw - OFF

The following fuel capabilities cannot be transferred from main tank to supply tanks in the event of failure of a fuel transfer pump;

FWD pump
failure: 6.9
gallons

AFT pump failure:
9.1 gallons

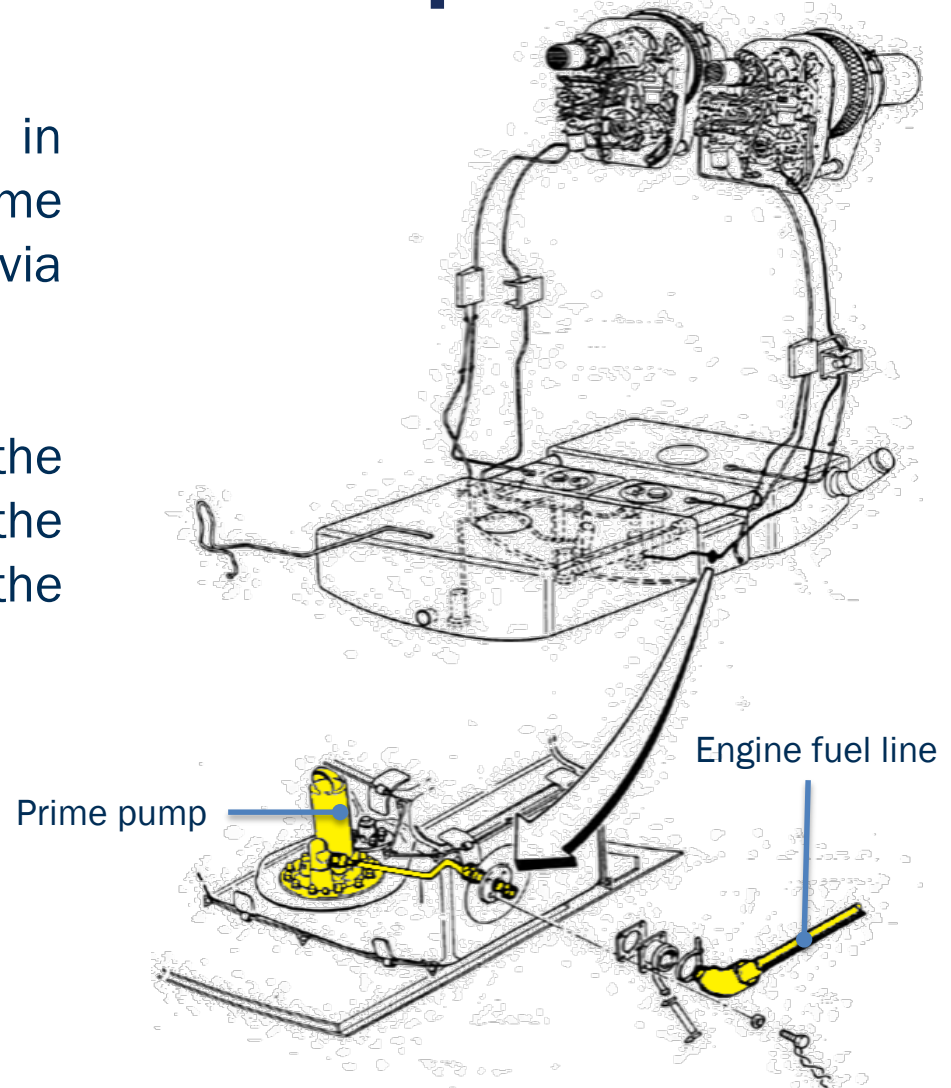
NOTE Each fuel transfer pump is capable of feeding more fuel than both engines will consume.



Fuel Prime Pumps

A **fuel prime pump** is installed in each of the supply tanks. The prime pumps deliver fuel to the engines via the feed lines during engine start.

With both engines running, the engine mounted fuel pumps draw the fuel from the supply tanks, thus the prime pumps will be shut off.



Fuel Prime Pumps

The left and right prime pumps are controlled by the PRIME I and II switches on the main switch panel.

Both switches must be ON for starting the helicopter. When either switch is placed ON, a relay closes the circuit and the

PRIME
PUMPS

caution light will illuminate. Illumination of the caution light does not ensure the pump is working.





PRIME PUMPS

Conditions/Indications

Prime pump(s) in operation.

Procedure

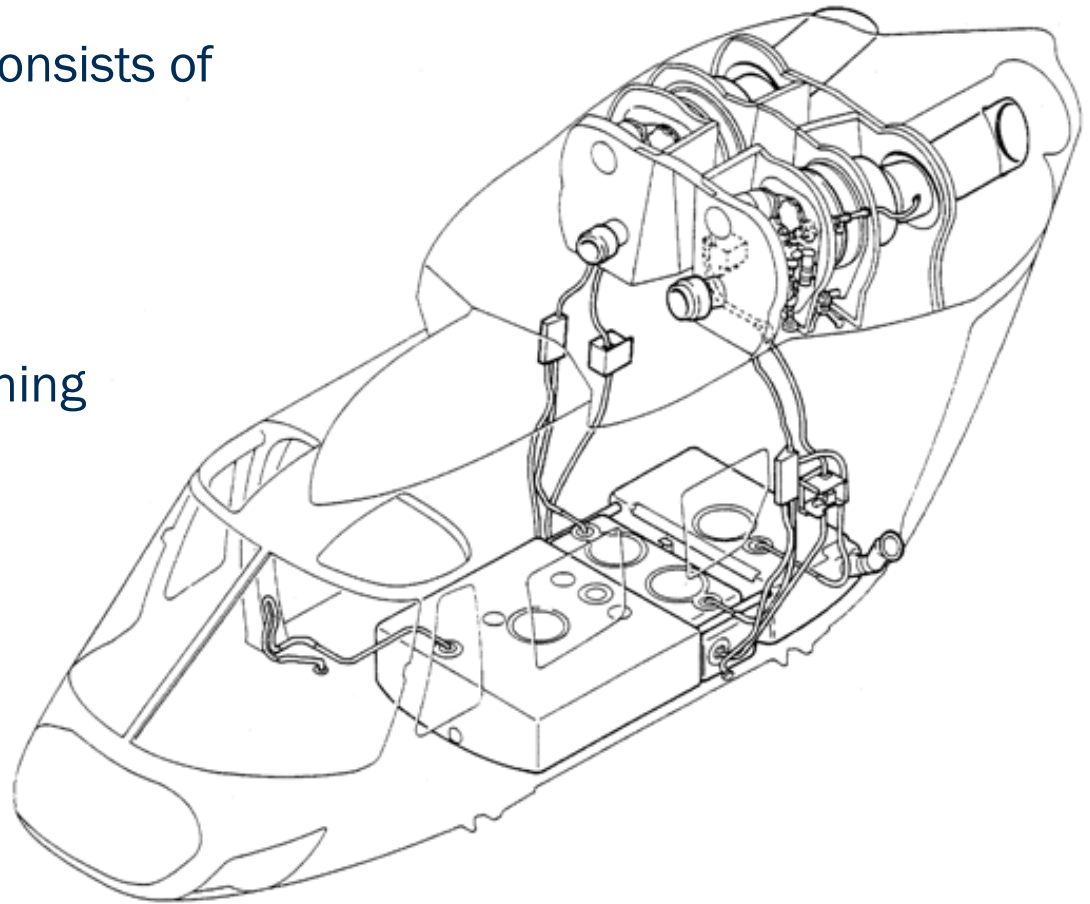
None (normal operation during starting engines.)



Fuel Monitoring System

The **fuel monitoring system** consists of the following systems:

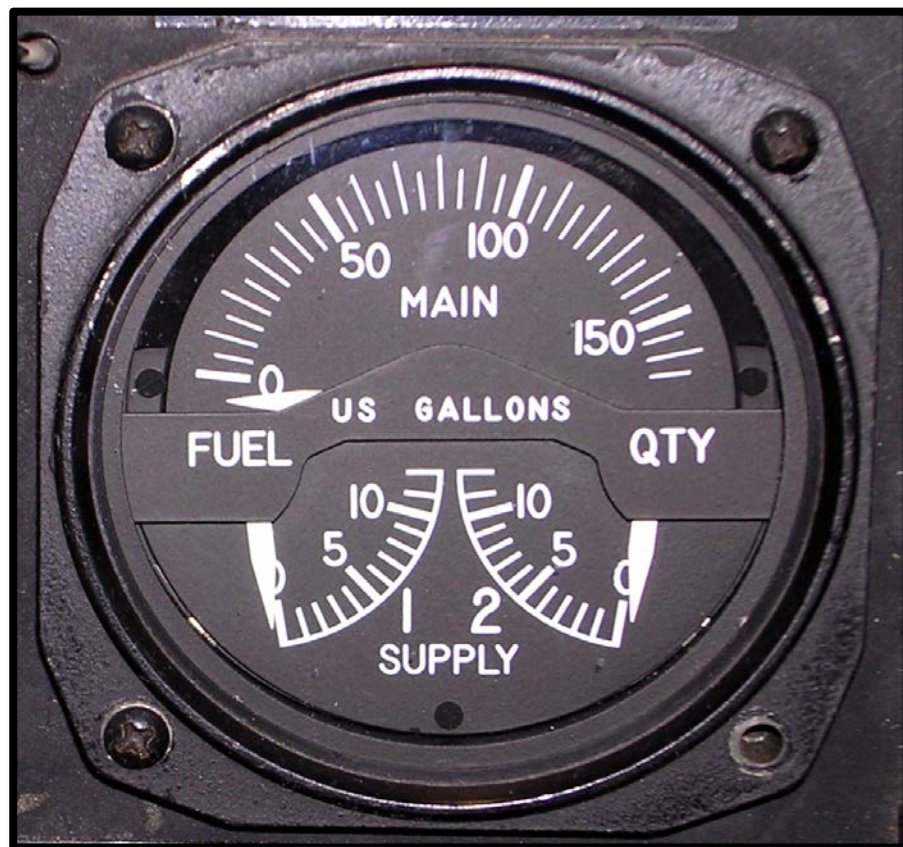
1. Fuel quantity indication
2. Low fuel warning
3. Fuel pump pressure warning
4. Fuel filter contamination warning



Fuel Quantity System

The fuel quantity indication system consists of:

1. 4 Fuel quantity transmitters
2. Triple fuel quantity gauge

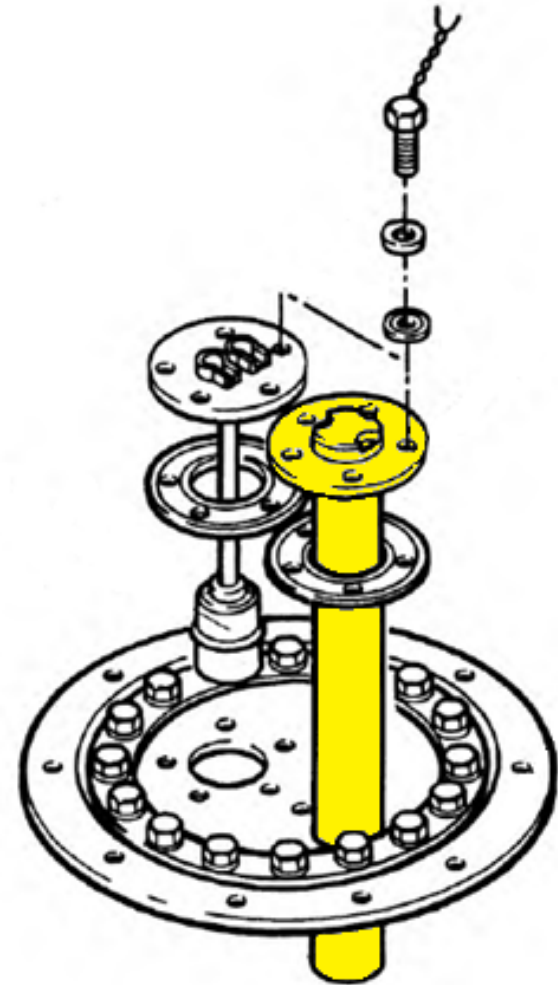


Fuel Quantity Transmitter

There is one **fuel quantity transmitter** located in each supply tank, One in the forward main tank and one in the 80kg auxiliary tank.

The transmitter consists of 2 concentric tubes which form a capacitor.

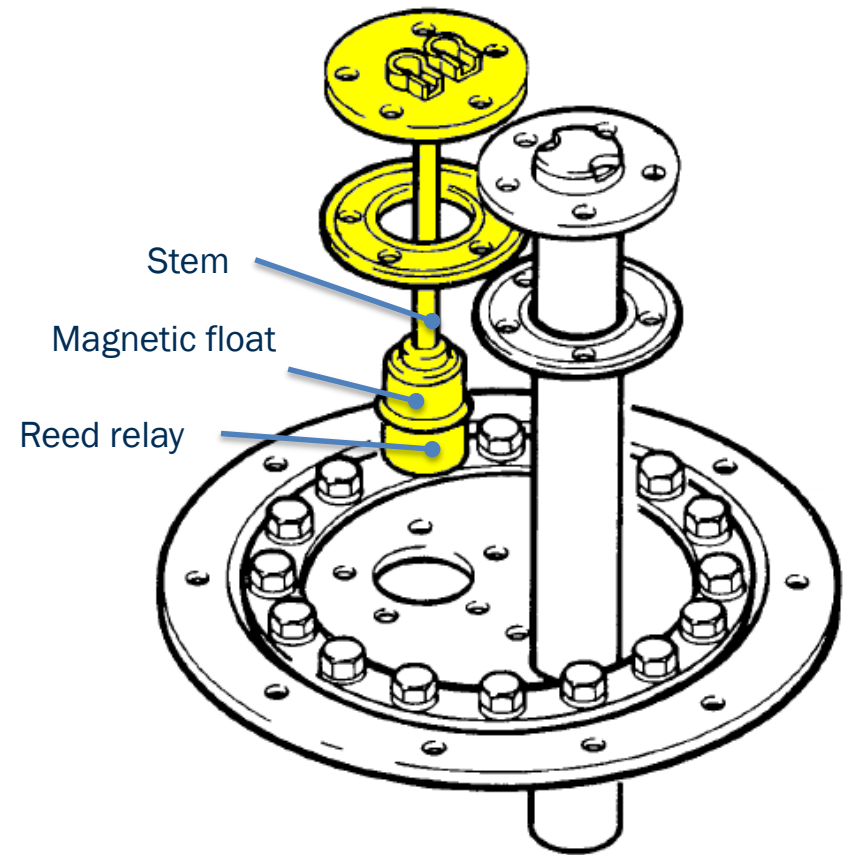
As the fuel level changes, the amount of fuel between the tubes changes. This changes the value of the dielectricum, thereby varying the capacity of the transmitter.



Low Fuel Warning

Each supply tank contains a **low level warning** system. Its main part is a reed relay in the stem activated by a magnetic float.

When the fuel level drops below 23kg (7.5 gallons), the lowered float activates the relay and causes the FUEL LOW caution to illuminate.



FUEL
LOW I

and/ or

FUEL
LOW II

Conditions/Indications

Failure of both fuel transfer pumps, or
Main tank empty

- Relevant supply tank fuel quantity below 23 +/- 3 kg

Procedure

- | | | | |
|----|--|---|----------|
| 1. | Supply tank fuel level | - | Check |
| 2. | Main tank fuel level | - | Check |
| 3. | Both FUEL PUMP XFER circuit breakers (FWD and AFT) | - | Check in |
| 4. | Both FUEL PUMP XFER switches (FWD and AFT) | - | Check ON |

If **both** FUEL LOW caution lights remain on:

5. LAND WITHIN 10 MINUTES

If **one** FUEL LOW caution light remains on:

5. Expect single engine failure

3/1/2016 Revision 1

NOTE

If the main tank is empty the FUEL PUMP XFER switches should be turned OFF to avoid dry running of the pumps.



Limitations of Night Vision

- Dark adaptation – takes time
 - No color vision
 - Night blind spot
 - Loss of visual acuity – difficult to identify hazards
 - Depth perception – safe landings
 - Loss of visual cues



Night Unaided / Aided Viewing

- Scanning Techniques
 - Off-center vision (peripheral vision)
 - NVG Scan
 - Instrument Scan



Night Unaided Viewing

- Scanning
 - Stop-turn-stop-turn technique remaining in one spot no longer than 2-3 seconds
 - 10 degree overlap allows use of peripheral vision & decreases effect of night blind spot
 - Continual movement prevents photochemical equilibrium from occurring in rod cells



Night Aided Viewing

- Instrument Scanning
 - Developed by the individual while learning to fly with NVG's
 - Must be able to split attention between looking externally (aided) and internally (unaided)
 - Proper instrument lighting is a key to scanning instruments



Protection of Night Vision (continued)

- Aircraft Interior Lighting
 - Only lighting approved for NVG flight to be used when flying with NVG's
 - If medical compartment does not have NVG compatible lighting, use a cabin curtain
 - Must maintain light discipline in the aircraft



Visual Illusion Sensitivity

- Factors that can increase sensitivity to illusions
 - Inexperience
 - Lack of currency
 - Fatigue
 - Improper NVG adjustment
 - High task loading
 - Preflight preparation
 - Mission-imposed stresses
 - NVG malfunctions



Visual Illusion Sensitivity (continued)

- Inexperience
 - NVG flight training must be realistic, practiced, and must always continue to be challenging
 - If not challenged, the user can become complacent and overconfident



General Operations Manual

- General: Applicable to all HNVGO conducted under Title 14 CFR Parts 91 & 135
 - Aircraft must have an approved STC
 - Aircraft lighting
 - Internal lighting authorized by STC to be used
 - External lighting cannot be modified. Lights must be used (exception to anti collision light)



Duty Position Responsibilities

- NVG is appropriate for the flight (route of flight)
- NVG functions properly (maintenance)
- NVG properly focused
- Aircraft NVG lighting functions properly
- Favorable environmental conditions
- Crew are physically / mentally fit
- Preflight and brief – aircraft, NVG, flight
- Documentation is complete and correct



Duty Position Responsibilities

- NVG's Appropriate for the Flight
 - Not all night flights to be an NVG flight
 - Short flights in a large metropolitan area or other high illuminated area may not be suitable

