



**Manual
by
Radek Koterbski**

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I. INTRODUCTION

The Antonov An-28 (NATO reporting name Cash) is a 2-engined light turboprop transport aircraft, developed from the Antonov An-14M. It was the winner of a competition against the Beriev Be-30 for use by Aeroflot as a short-range airliner. It first flew in 1969. A total of 191 were built and 68 remain in airline service at August 2006.



After a short pre-production series built by Antonov, it was licence-built in Poland by PZL-Mielec. In 1993, PZL-Mielec developed its own improved variant, the PZL M-28 Skytruck.

The An-28 is similar to the An-14 in many of its aspects, including its wing structure and twin rudders, but features an expanded fuselage and turboprop engines, in place of the An-14's piston engines. The An-28 first flew as a modified An-14 in 1969. The next pre-production model did not fly until 1975. In passenger carrying configuration, accommodation was provided for up to 15 people, in addition to the two-man crew. Production was transferred to PZL-Mielec in 1978. The first Polish-built aircraft did not fly until 1984. The An-28 finally received its Soviet type certificate in 1986.

1. An-14A the original Antonov designation for an enlarged, twin-turboprop version of the An-14.
2. An-14M Prototype.
3. An-28 Twin-engined short-range utility transport aircraft, three built.
4. An-28RM Bryza 1RM Search and rescue, air ambulance aircraft.
5. An-28TD Bryza 1TD Transport version.

6. An-28 PT variant with Pratt & Whitney engines first flown 22 July 1993.

1. Civil Operators

Major operators of the 68 Antonov An-28/M-28 aircraft remaining in airline service (2010) to include:



Russia

- Avluga-Trans (11)



Kyrgyzstan

- Kyrgyzstan Airlines (5)



Moldova

- Tepavia Trans (4)



Poland

- Aerogryf (doubtful)



Russia

- Vostok Airlines (5)



Suriname

- Blue Wing Airlines (formerly operated 5 with three lost in crashes on 3 April 2008, 15 October 2009, and 15 May 2010)



Tajikistan

- Tajik Air (8)
- Some 21 other airlines operate smaller numbers of the type.



2. Military Operators



Angola (doubtful)

- Angolan Air Force



Djibouti

- Djibouti Air Force



Peru

- Peruvian Army



Poland

- Polish Air Force
- Polish Navy



Georgia

- Georgian Air Force

3. Former Operators



Soviet Union

- Aeroflot



II. GENERAL CHARACTERISTICS

Crew: 1-2

Capacity: flightcrew of two.

Typical passenger seating: for 17 at three abreast

High density seating: for 20.

Length: 12.98 m (42.57 ft)

Wingspan: 22.00 m (72.18 ft)

Height: 4.6 m (15.08 ft)

Wing area: 39.7 m² (427 ft²)

Empty equipped: 3900kg (8598lb),

Max takeoff: 6500kg (14,330lb).

Max landing weight: 6500kg (14,330lb).

Powerplant: Two PZL Rzeszów built RKBM/Rybinsk (Glushenkov)

TVD10B turboprops driving three blade propellers AW24AN:

- Max power for take-off: 705 kW (960shp)
- Nominal power for cruising: 574 kW (780 shp);

Max speed (V_{MO}): 355 km/h (192 kts)

Economical cruising speed: 335km/h (181 kts).

Manouvering speed (V_A): 244 km/h (132 kts)

Minimal flight speed: 165 km/h (89 kts)

Stall speed (in configuration to start): 123 km/h (66 kts)

Initial climbing speed: 11 m/s (2360 ft/min)

Range with 20 passengers: 510km (274nm),

Range with a full fuel load and 1000kg (455lb) payload: 1365km (736nm).

Wing loading: 146 kg/m² (29.9 lb/ft²)

Power/mass: 250 W/kg (0.15 hp/lb)

Fuel flow rate: 300 (kg/h)

Max fuel capacity: 1960 liters (516 US gallons)

Take-off field length: 270 m (810 ft)

Landing field length: 197 m (591 ft)

Limit operating load factors: $+3 \div -1$ (cruising configuration)

$+2 \div 0$ (landing configuration)

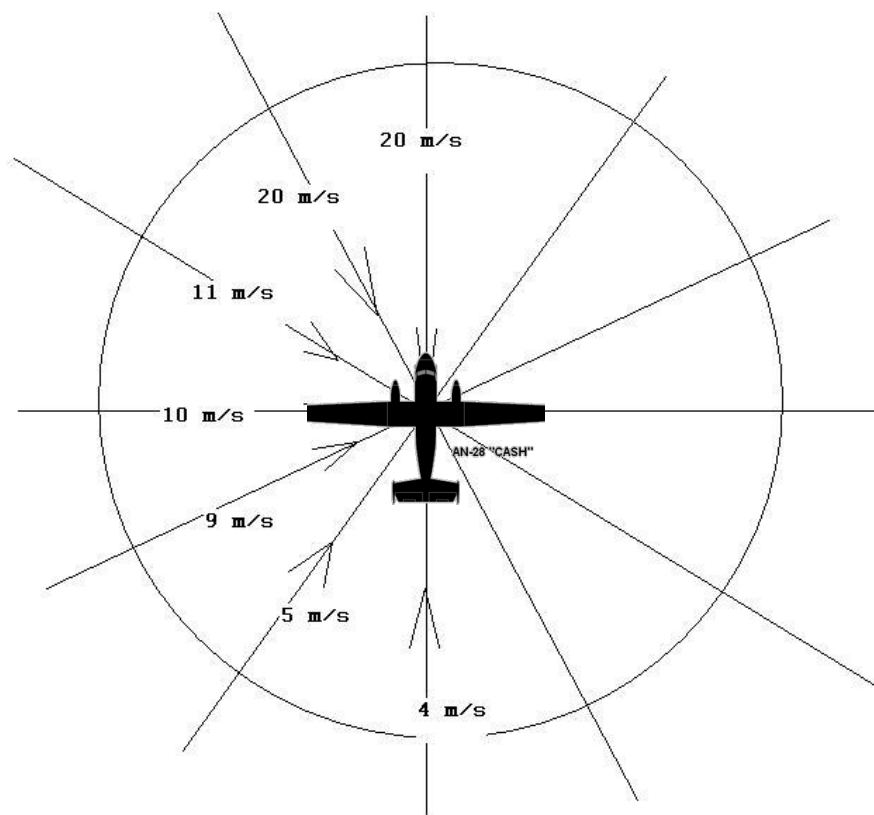
Max. operating altitude: 3000 – 4000 m (9 842 – 13 123 ft)

Service ceiling with oxygen supply: 6000 m (19,700 ft)

Service ceiling, one engine inoperative: 3 750 m (12 136 ft)

OAT range: -40°C to $+50^{\circ}\text{C}$

Max allowable wind speed
for landing (m/s)



III. DESCRIPTION OF THE AIRCRAFT SYSTEMS:

The AN-28 is a multi-purpose airplane, SSTOL class commuter category, adapted for operation from short, unpaved runways, at high-elevation airfields. It is powered by two PZL Rzeszów built RKBM/Rybinsk (Glushenkov) TVD10B turboprops driving combined with three blade propellers synchrophased, automatic-feathering, fully reversible AW24AN propellers

The equipment installed in the airplane provides for VFR and IFR day and night operation in all – weather condition except for severe icing. Short – duration flight in light to moderate unknown icing conditions is permissible.

Depending on the equipment installed, the airplane can be operated in the following mission versions:

- passenger transport (19 seats or 18 seats plus toilet),
- cargo transport (2300 kg payload),
- paradrop (17 seats),
- mix version.

In the cargo transport version, the airplane is suited for carriage of cargo boxes, loose or, when liquid, in special container inside the fuselage or in barrels.

1. FUSELAGE

The airplane fuselage is a semi-monocoque all-metal structure. The fuselage forward section contains a cockpit and entry door, center section houses a passenger/cargo cabin, while the aft section features a cargo (paradrop) door, electrical/air-conditioning equipment compartments, pressure (central) refuelling door, and hydraulic system ground service systems.

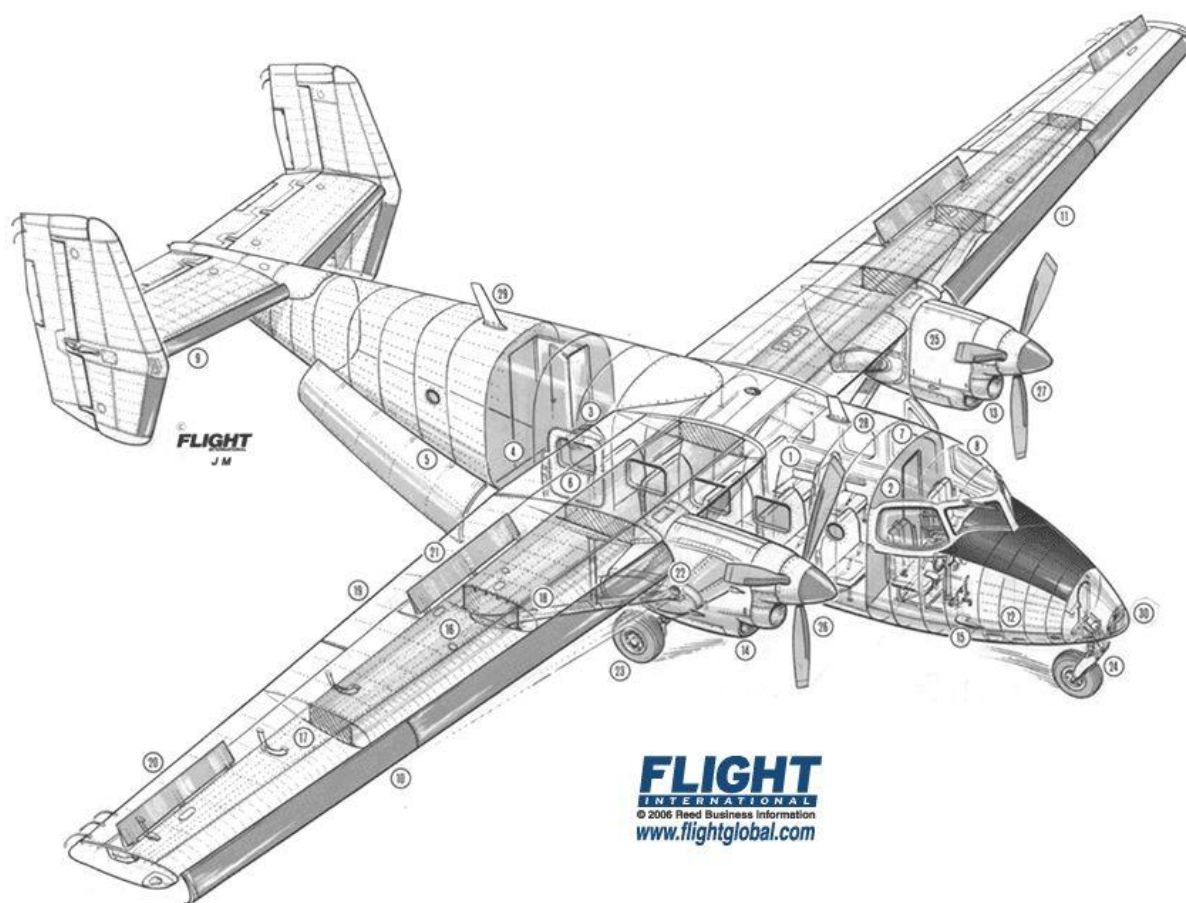
Rear cargo (paradrop) door and side door in a forward section of the fuselage provide for passengers boarding and cargo loading.

The floor and seat beam structure allows for installation of a range of conversion equipment configurations: fixed-type passenger seats, paradrop deployment systems, restraint systems for loose cargo.

The cabin provides for installation of:

- 19 passenger seats, of which 6 are single, 6 are double and one or single benches or toilet compartment (option),
- Benches (8 seats),

The fuselage has got steps to enable climbing up the wing, three (3) emergency exits and, as standard, attach joints for installation of the loose cargo restraint systems.



The seat guideways in the fuselage longerons and the floor (2) ensure quick replacement of the equipment and conversion of the airplane configuration. Cargo loading is facilitated by application of a hoist and a system of rails for cargo transportation inside the fuselage. The hoist is fitted with scales to facilitate location of cargo items of various weight.

2. DOORS

The aft cargo/passenger door provides for installation of two leaves hydraulically openable inside the fuselage on ground and in flight. Two emergency exits are provided in the cabin's rear, each fitted with emergency lighting installed above, and powered from an independent emergency power supply source. The window on the cockpit starboard functions as one of the emergency exits.

3. WINDOWS

On the left side of the cabin there are three (3) and on the right side there are four (4) double windows each fitted with a roller sunshade.

The cockpit windows are provided with shutters and a sunscreen for protection against excessive cockpit heating caused by prolonged parking. On each side of the cockpit there is an additional small hinged window openable inside.

4. WING

The wing of semi-monocoque, two-spar, all-metal split structure consists of the centerwing and two outboard wings. The space between spars is used for integral fuel tanks. The wing is fitted with slats, ailerons, flaps, flaperons and spoilers. All fuel tanks inside the wings are provided with sockets for installation of fuel gauge senders.

5. EMPENNAGE

Cantilever, all-metal, semi-monocoque construction, with twin vertical fins and rudders, a horizontal stabilizer and split elevator. Both rudders and elevator halves incorporate trim tabs. The stabilizer leading edge (nose section) is fitted with a fixed-type slat (vane rake).

6. LANDING GEAR

Tricycle, non-retractable type with a nose wheel steerable for taxi and takeoff. Main wheels are provided with hydraulic brake fitted with anti-skid (ABS) system.

7. FLIGHT CONTROL SYSTEM

The flight control system of cable/pushrod type ensures control for the rudders and elevator, ailerons, flaps, spoilers and trim tabs from both pilots' workstations.

Elevator, rudder-, and aileron trim tabs are electrically controlled, with the elevator trim tab provided with an auxiliary mechanical control system. Wing flaps and spoilers are hydraulically operated.

8. HYDRAULIC SYSTEM

The hydraulic system is used to operate nose wheel steering, wing flap extension and retraction, spoiler deployment, main wheel braking and cargo door opening.

The system is powered from two engine-driven pumps. The emergency hydraulic power source is a hydro-accumulator, which ensures operation of wing flaps, spoilers, wheel braking, cargo door opening and parking brake application.

Variable-output hydraulic pumps are supplied with working fluid from a tank pressurized by propeller slipstream air.

9. POWER PLANT

The airplane is powered by two PZL Rzeszów built RKBM/Rybinsk (Glushenkov) TVD10B turboprops driving all-metal, three-blade constant-speed propellers with thrust reverse and feathering capability

Capability for manual propeller feathering from any power and RPM setting, automatic electronic feathering system active at speeds exceeding 91% Ng, light annunciation of automatic feathering system READY. Propeller minimum blade angle annunciation through control lever position. Mechanical lock (stop) for reverse setting, light and aural (Horn not implemented yet) warning for in-flight thrust reverse lock removal. Light annunciation of maximum torque (43.3 psi) warning (picked up at propeller shaft) – not implemented yet.

Propeller electrical anti-ice system is a part of airplane standard equipment.

10. OIL SYSTEM

Oil system is an integral part of each engine. The airframe portion of the system consists of two oil coolers fitted with thermostats and power supply systems for the automatic prop feathering pressure and propeller shaft maximum torque warning.

11. FUEL SYSTEM

Main fuel tanks, together with two electric fuel feed pumps and fuel gauge senders are located in the outboard wings each. Auxiliary fuel tanks are those located in outboard wing tips and in centerwing.

The fuel tanks have the following capacities:

- Main tanks in outboard wings - 1320 l. (348 US gal.)
- Auxiliary tanks in centerwing: - 580 l. (153 US gal.)
- Auxiliary tanks in outboard wings - 378 l. (100 US gal.)

Total capacity of the fuel system amounts to 2278 liters (600 US gal.; 1765 kg).

The main tanks in outboard wings and auxiliary fuel tanks in centerwing can be replenished either through fillers or pressure-filled. Auxiliary fuel tanks in outboard wings can be replenished through fuel fillers or by means of the electric fuel pumps in the main tanks, whose primary function is to pump fuel into main tanks during their refuelling. Double protection system is provided for tanks against overfilling when pressure refuelling, with a provision for manual control of tank filling. System provides for cross feeding (each engine can be feed from each main tank).

12. FIRE-PROTECTION SYSTEM

The fire protection system for each engine consists of an automatic fire detection unit built up of nine (9) sensors located inside the engine nacelle, and of a combined visual (light)/aural (Horn) annunciation in the cockpit. Each nacelle is equipped with a halone-type fire extinguisher, manually activated in two stages. Both fire extinguishers can be applied for fighting fire inside one of the engine nacelles. Each fire extinguisher is fitted with a pressure gauge and a thermal-type safety provision. Each engine nacelle features fireproof steel fire walls for fire containment.

13. ANTI-ICING SYSTEM

The airplane is equipped with an electrical icing protection system for propeller blades, cockpit windshields and pressure probes (pitot tubes), and with a heat-type system using engine exhaust gases for anti-icing protection of the engine air intakes. Engine air inlet ducts are further protected by installation of inertial separators. Icing warning is provided from an annunciator light in the cockpit and a visual icing indicator externally mounted on the fuselage.

14. HEATING AND VENTILATION

The heating system uses engine bleed air, and is provided with both automatic and manual selection/control of the cabin air temperature. Warm air is distributed through floor-level outlets in cabin and cockpit, and additionally through two air outlets directed onto cockpit side windows. Passenger cabin ventilation system is supplied with cold air from airscoops on the engine nacelles. Cool air is distributed through overhead ducts to individual airblow ports provided for each passenger seat and installed in the cabin ceiling sections. Cockpit is ventilated with air scooped from two intakes on both sides of the fuselage nose, and ducted to floor-installed outlets. The cockpit is also equipped with two ventilation fans.

15. ELECTRICAL SYSTEM

The basic source of electrical power are two starter-generators of 28V D.C. and 12 kW power output each (operating in the generator mode), supplying power in parallel to a single bus, from which all electric loads are powered and the batteries charged. The emergency power supply source are two Nickel-Cadmium batteries of 26Ah capacity each, which can be also used for engine starting. In addition, the electric power system includes two voltage regulator and generator protection units, and a ground power connection.

The secondary electric power supply sources are two transistor converters of 200/115V, 400Hz output and 1500 VA capacity each, supplying power to the cockpit windshield icing protection systems, two 250 VA converters, and a transformer unit to ensure power supply of 115V AC, 36V AC, 26V AC voltage (avionics, hydraulic system pressure gauging system).

The power output of a single generator is sufficient to cover electric power requirement from all loads installed onboard the airplane. During normal operation, all electric power sources (batteries and generators) operate in parallel and supply power to a single bus.

With both generators failed, the batteries energize the emergency power supply bus, which supplies power to the primary electrical loads, systems affecting flight safety and flight/navigation instruments.

A standard ground power unit (GPU) connection has been installed in the forward fuselage section to ensure external power supply for ground maintenance and air-conditioner operation with engines OFF.

16. LIGHTS

The cockpit and instrument panel lighting has been effected by a combination of internal instrument illumination and spot lights with light intensity regulation capability. General cabin illumination is provided from deflectable ceiling panels, while the cockpit light comes from a ceiling-installed lamp. A lamp provided in the aft fuselage illuminates the cargo compartment and stairs or ramp.

External lighting includes position and anti-collision lights. Landing and taxi lights are installed in the fuselage forward section.

17. FLIGHT / NAVIGATION INSTRUMENTS SUPPLY

Flight instruments are supplied with total and static pressure from Pitot tubes (PWD-5 probes) installed on both fuselage sides. The Pitot tube on the port side supplies total pressure data to the flight/navigation instruments at the pilot-in-command station, while that on the starboard to the corresponding instruments at the co-pilot station. Static pressure data for the flight/navigation instruments are provided from static pressure receivers installed inside the fuselage.

The connected chambers of the static pressure receivers of both Pitot tubes constitute a stand-by static pressure source, with the RH (starboard) Pitot tube functioning as a stand-by source of total pressure information.

When the „STATIC” valve on the LH vertical control panel is switched from the „PRIMARY” to „STAND-BY” position, the flight/navigation instruments at the pilot-in-command station receive static pressure data

from the stand-by source. The flight instruments are switched over to stand-by source data supply by means of static and total pressure valve levers. The starboard Pitot tube supplies also the airspeed information to the flight data recorder.

Pitot heads are fitted with an electric anti-icing system.

18. FLIGHT INSTRUMENTATION, COCKPIT INSTRUMENTS AND CONTROL PANELS

The set of instruments arranged on the cockpit panels provides for IFR/VFR (instrument and visual) flying capability, day and night. The center forward cockpit features a classic-style, T-configuration instrument panel.

The LH and RH instrument panels, located directly in front of each pilot's station, incorporate flight and navigation instruments. The center panel features navigation and communication unit clusters, as well as all engine operation monitoring instruments and fuel gauge indicators.

The anti-glare screen mounted over the instrument panel incorporates a built-in center control panel including automatic pilot controls and annunciator lights of the primary failure-, fire-, and limit torque exceedance warning system.

The center support of the instrument panel is provided by the center control panel unit featuring engine control levers, and trim tab/flap position indicators. The upper (overhead) control panel contains an array of annunciator lamps, combined with verbal warning, and sets of switches for engine starting, fuel system control, and master switches for power supply and avionics.

The LH side control panels contain controls for cockpit and instruments lighting, flight data recorder, entry door operation and hydraulic system monitoring, pressure setting and flight/navigation instruments power supply switches.

The RH side control panels include circuit breakers for primary and emergency electric power supply, air-conditioning and anti-ice system ON/OFF switches, etc.

All controls and test system elements have been designed in compliance with FAR 23, while ensuring minimum pilot workload.

19. RADIO / NAVIGATION EQUIPMENT

Radio/navigation equipment provides radio communication and working out of the radio/navigation data. Standard equipment of the airplane consists of three systems:

- VHF communication system,
- Active response system,
- Navigation system:
 - VOR/LOC/GS/MKR,
 - ADF,
 - Gyro compass.

20. COMMUNICATIONS

The VHF system operates based on two KTR 908 (COMM1,COMM2) radios. Internal communication and radio beacon signals monitoring are effected by means of two KMA24H-70 audio selectors. The airplane is fitted with an emergency locator transmitters (ELT) EBC 502 operating at a rescue frequencies 121.5, 243 MHz.

21. ACTIVE RESPONSE

The system operates based on the MST 67A transponder (mod A, C and Mod S TCAS Compatible), operating in conjunction with a digital air data computer, in communication with ground air traffic control. Besides the code, the system automatically transmits airplane altitude information.

22. NAVIGATION

VOR/LOC/GS/MKR system based on two KNR 634A (NAV1, NAV2) navigation receivers providing for standard VOR navigation.

The system output is displayed on the EFIS 50 Electronic Horizontal Situation Indicator (EHSI) (LH & RH instrument panels). The navigation data developed by the system are supplied to the automatic pilot. The KNR 634A navigation system is provided with a localizer (LOC), glide slope (GS) and marker receivers.

The data displayed on the EFIS 50 Electronic Horizontal Situation Indicator include:

- magnetic course of a typical compass card (course marker),
- airplane heading (radial),
- lateral deviation from the course (cross-track angle),
- radio beacon or waypoint TO/FROM indications,
- radiocompass (ADF) indications,
- glide slope; and
- marker information

The LCR 92S12 laser platform provides magnetic course information signal, which is displayed on both EFS 50 Electronic Horizontal Situation Indicators (LH & RH instrument panels). The platform features a magnetic correction switch-off provision, which can be used when magnetic course correlation function is disengaged, and navigation is continued based on the gyroscopic course. The laser platform also supplies roll and pitch data for both EFS 50 Electronic Attitude Director Indicators (EADI) (LH & RH instrument panels).

The reserve 520 10B Artificial Horizon is installed on central instrumental panel. For regions of poor VOR-station coverage, the airplane will feature a KDF 806 radio-compasses (ADF1) whose input is displayed on both EFS 50 Electronic Horizontal Situation Indicators (LH & RH instrument panels).

23. MONITORING / RECORDING AND WARNING SYSTEMS

The SAS warning system provides for:

- annunciation of status information (green lamps)
- warning information (yellow lamps)
- failure/emergency warning (red lamps)

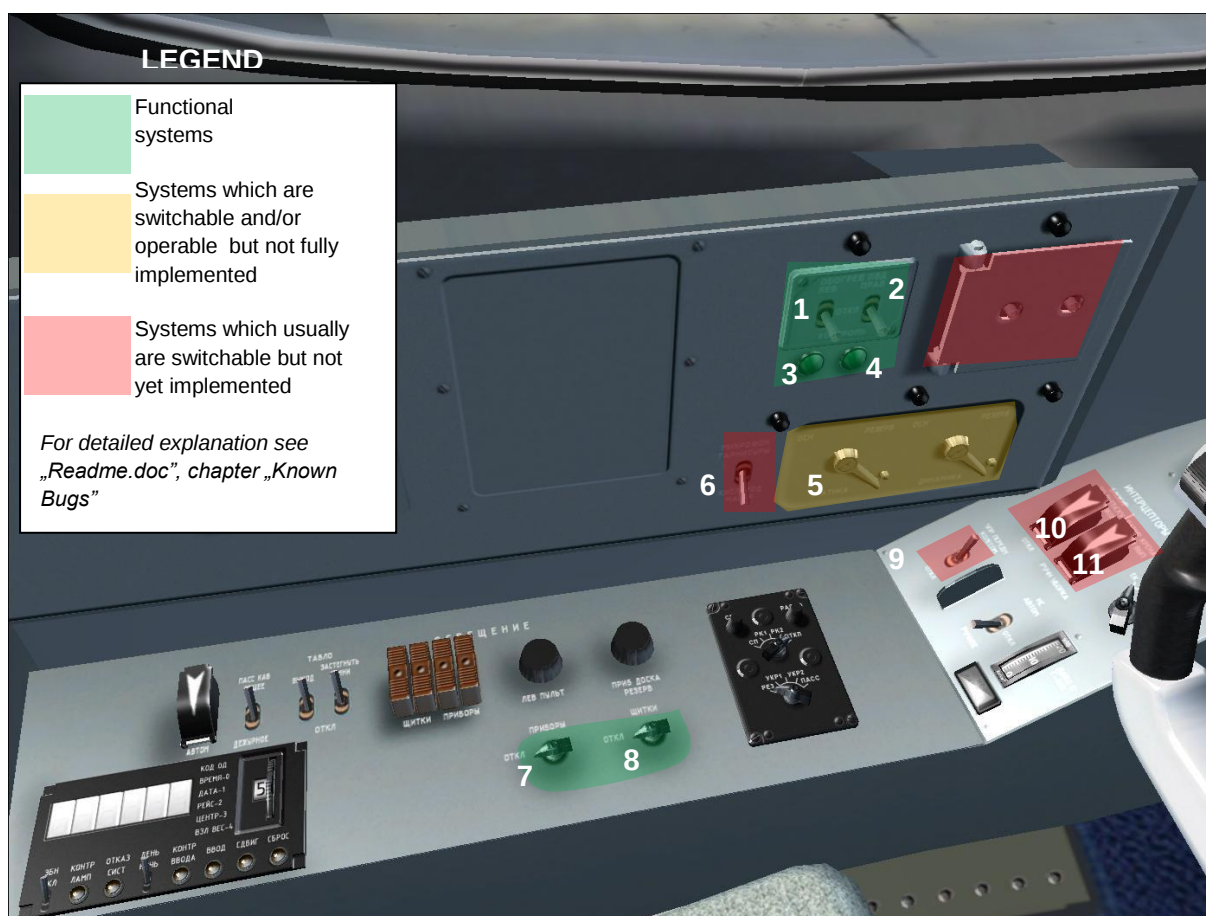
The latter indicator light, i.e. red lamps, give warning of:

- exhaust gas temperature limit exceedance
- limit torque exceedance
- minimum oil pressure
- engine fire

and furthermore, they provide warning of:

- stalling speed approach (light and aural warning)
- maximum operating speed (aural warning).

IV. VIRTUAL COCKPIT TOUR



Pic 1. Pilot's left panels

1. Left pitot heat switch
2. Right pitot heat switch
3. Left pitot heat lamp
4. Right pitot heat lamp
5. Main / alternate static source lever
6. Pilot mic operating switch
7. Left panel flood light switch
8. Pilot indicators' lighting switch
9. Nose Wheel lock switch
10. Spoilers lock switch
11. Spoilers automation switch



Pic 2. Pilot's main panel

1. Airspeed Indicator (ASI - kph)
2. ADI
3. Altimeter (feet)
4. Horizontal situation indicator (HSI)
5. Vertical speed indicator (VSI)
6. Altimeter (meters)
7. Backup ADI
8. Radar altimeter (meters)
9. Left engine warning lamp (fire, reverse, inoperable)
10. Warning lamp (dangerous banking)
11. Markers lamps
12. Antiskid switch
13. Antiskid lamps
14. CRS knob
15. HDG knob
16. Left engine warning lamps
17. Rudders pedals
18. Engine vibration indicator



Pic 3. Pedestal

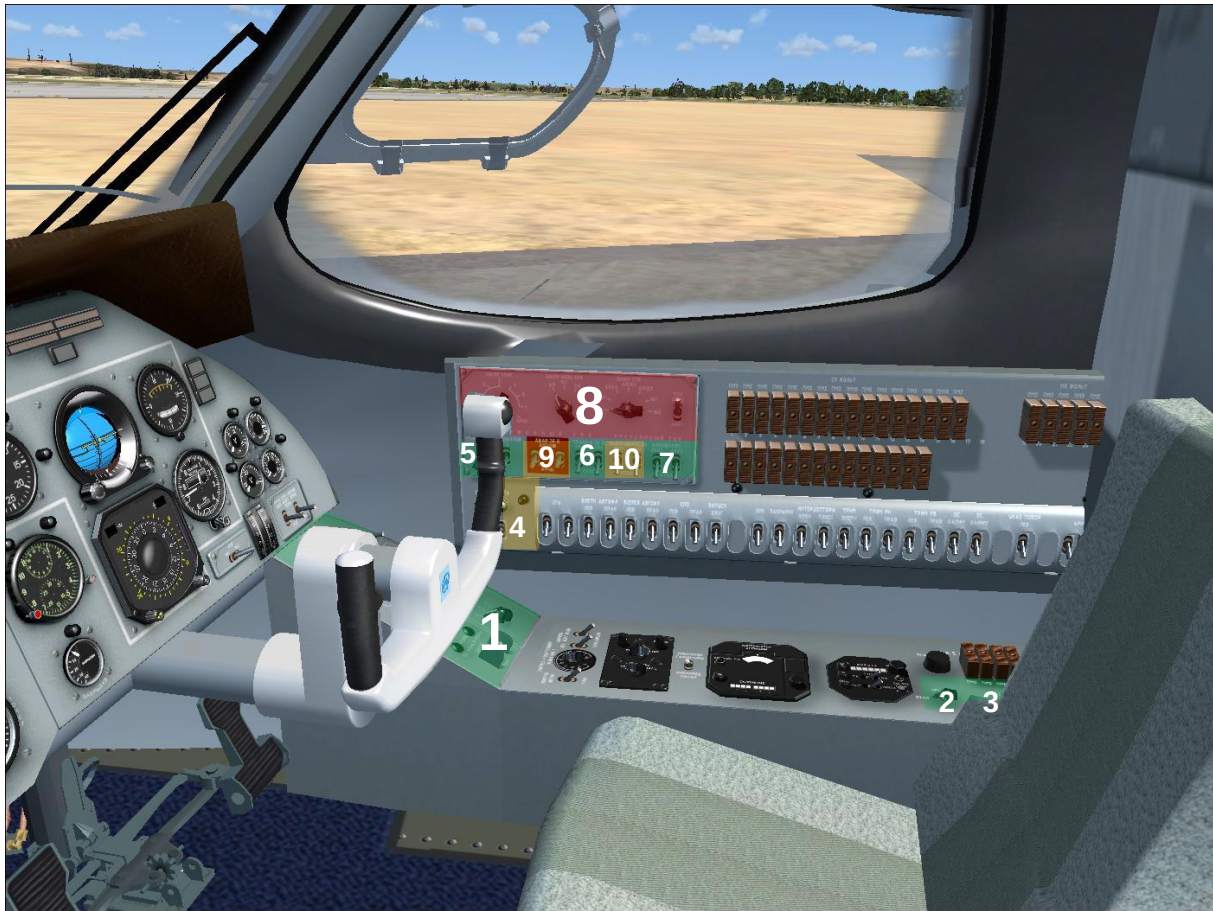
1. Engines throttle levers
2. Reverse throttle levers
3. Propellers levers
4. Mixture lever
5. Spoilers lever
6. Flaps lever
7. Autopilot console
8. Autopilot alt rocker switch
9. Autopilot alt indicato
10. Aileron trimmers lever
11. Rudder trimmers lever
12. Fuel tanks selector lever
13. Trimmers lamps



Pic 4. Center console

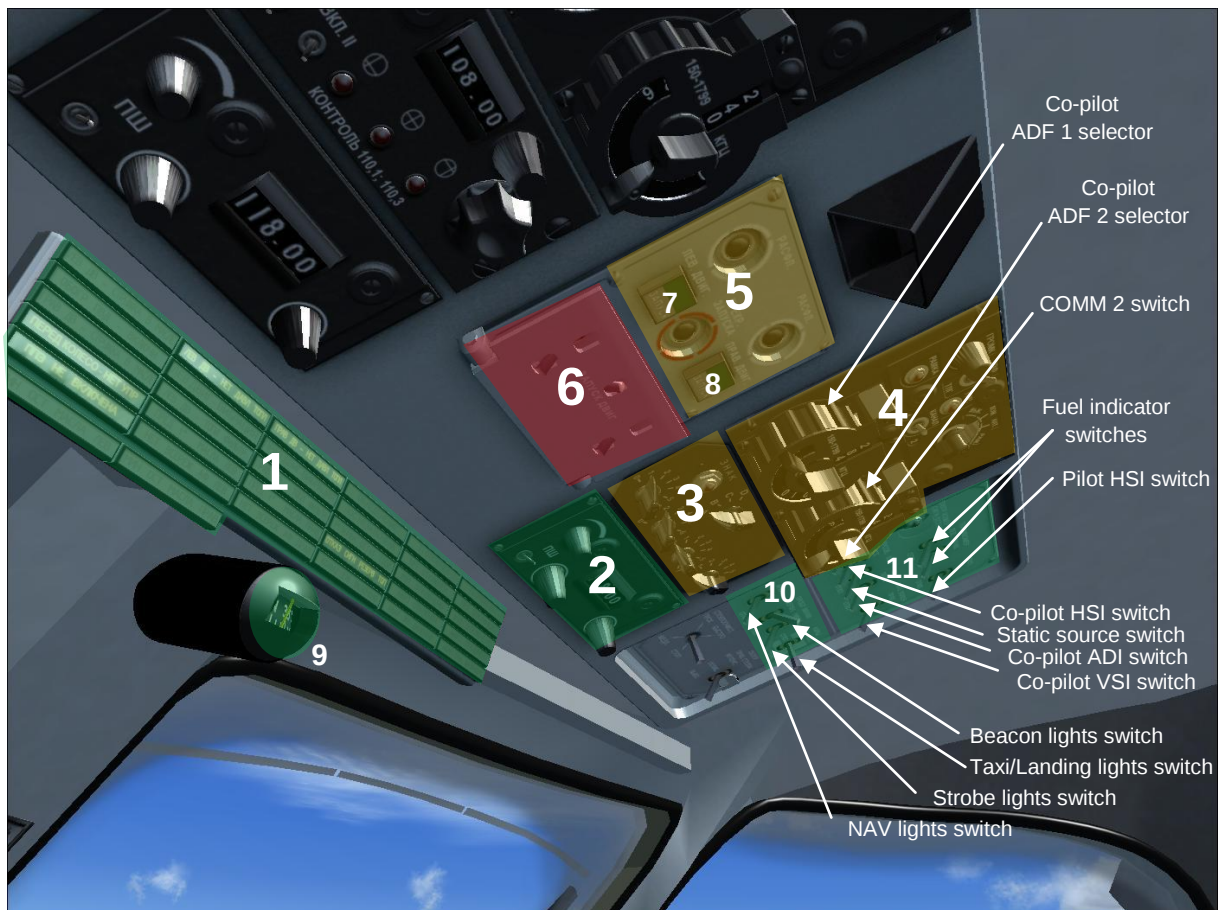
1. Engines RPM N1/N2 indicators
2. Fuel flow indicator
3. EGT indicators
4. Ext fuel tank quantity indicator
5. Main fuel tank quantity indicator
6. Copilot ASI indicator
7. Flaps indicator
8. Electric buses indicators
9. Left engine warning lamps
10. Right engine warning lamps
11. Oil / hydraulic systems indicators
12. Warning lamps
13. Fire extinguishers buttons
14. Fire fuel cut-off valves
15. Fire fuel cut-off valves lamps
16. Fuel cross feed push button
17. Fuel pumps push buttons

18. Hydraulic pumps push buttons
19. Right engine warning lamp (fire, reverse, inoperable)
20. Warning lamp (dangerous banking)
21. Warning lamps
22. Markers lamps
23. Engines starter lamp



Pic 5. Co-pilot's right panel

1. Anti-ice systems panel
2. Co-pilot indicators lighting switch
3. Right panel flood light switch
4. A3P 200/115 and 27V buses switches/lamps
5. Engine generators switches
6. Alternators switches
7. Main battery cells switches
8. Electrical panel
9. Emergency 36V battery switches
10. Alternators switches



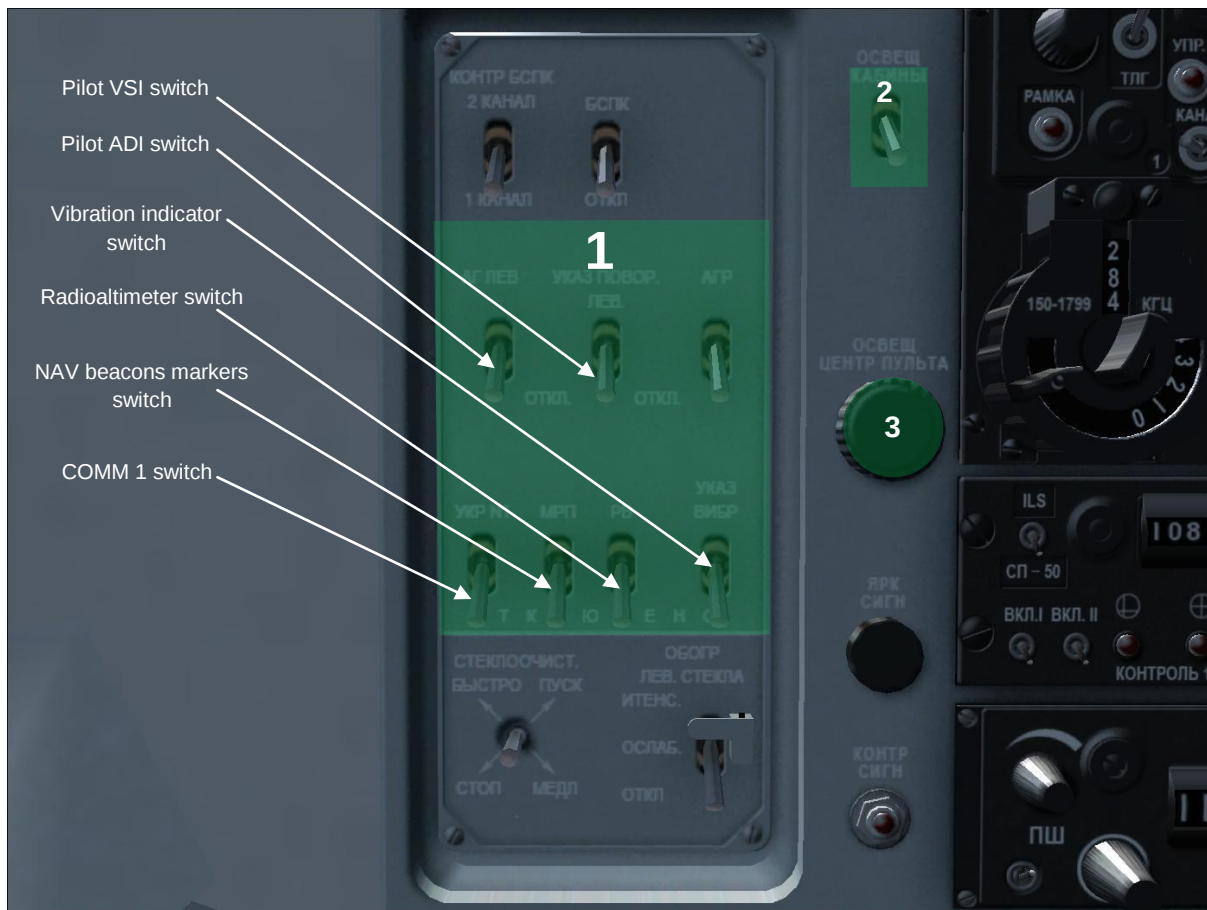
Pic 6. Right and center overhead panels

1. Annunciator panel
2. COMM 2 panel
3. XPNDR panel
4. ADF 2 navigation panel
5. Engines ignition panel
6. Engines start panel
7. Left engine ignition push button
8. Right engine ignition push button
9. Compass
10. External lighting switches
11. Systems / indicators switches



Pic 7. Left and center overhead panel

1. COMM 1 panel
2. NAV panel
3. Pilot ADF 1&2 panel
4. Cockpit light switch
5. Main panel flood light rotary switch



Pic 8. Left overhead panel

1. Indicators/systems power switches panel
2. Cockpit light switch
3. Main panel flood light switch

NOTE that every clickable switches, push buttons and levers can be operated via either mouse left / right buttons click or mouse wheel.

HOVERING mouse cursor over a switch/lever/indicator usually pop up its name banner.

DO NOT FORGET to switch systems/indicators switches to ON position on overhead panel.

V. NORMAL FLIGHT CHECKLISTS

AN-28 NORMAL FLIGHT CHECKLISTS

PREPARING TO FLIGHT

G/T means "greater then"

VATSIM/NETWORK	LOG IN
WEATHER	CHECK
FLIGHT	PLAN
FLIGHT PLAN	FILL / CHECK
FLIGHT PLAN	SEND

PREPARING THE AIRCRAFT

FIRE CUT OFF VALVES	CUT OFF AND GUARDED
HYDRAULIC PUMPS	OFF
FUEL SELECTOR	CUT OFF
OAT	CHECK

BEFORE ENGINE START

BATTERY CELLS	ON
PARKING BRAKE	ON
NAV LIGHT	ON
CABIN LIGHTING	AS REQUIRED
BEACON LIGHT	ON
CONDITION LEVER	MINIMAL
COMM1/COMM2 SWITCHES	ON
ATIS/WEATHER/PRESSURE	READ
TOWER FREQ	SET
RADIO CHECK	AS REQUIRED
FLIGHT CLEARANCE	OBTAIN
ENGINES START CLEARANCE	OBTAIN
XPNDR CODE	SET
FUEL SELECTOR LEVER	BOTH
FIRE CUT OFF VALVE (LEFT/RIGHT)	ON
FUEL PUMPS (LEFT/RIGHT)	ON
HYDRAULIC PUMPS (LEFT/RIGHT)	ON
PROP BLADES ANGLE	FEATHER

ENGINES START

ENGINE NO 2:	
START BUTTON	PRESS ONCE
TURBINE RPM N1	CHECK
ELECTROSTARTER LIGHT	CHECK
EGT < 535 DEG. CELSIUS	CHECK
AIR VALVE OPEN	CHECK
ENG RPM N2 BELOW 110%	CHECK
FUEL PRESSURE G/T 5KG/CM	CHECK
OIL TEMP BELOW 110 DEG. CELSIUS	CHECK
ENG GENERATOR	ON
115V BUS VOLTAGE	CHECK
45V BUS VOLTAGE	CHECK
OIL PRESSURE	CHECK
REPEAT ALL STEPS FOR ENGINE NO 1	

TRANSFORMATORS	ON
SYSTEMS SWITCHES	AS REQUIRED

BEFORE TAXI

NAV/COMM FREQS	AS REQUIRED
TAXI CLEARANCE	OBTAIN
TAXI LIGHTS	ON
ANTISKID	ON
PITOT HEAT	AS REQUIRED
PARKING BRAKE	OFF
PROP DE-ICE	AS REQUIRED
ENGINES DE-ICE	AS REQUIRED
STRUCTURE DE-ICE	AS REQUIRED

TAXI

SPEED BELOW 20 KTS	MAINTAIN
BRAKES	CHECK
SPACE AROUND THE A/C	MONITOR
SITUATIONAL AWARENESS	MAINTAIN

BEFORE TAKE OFF

TAKE OFF CLEARANCE	OBTAIN
STROBE LIGHT	ON
LANDING LIGHTS	ON
XPNDR "C" MODE (SB4/FSINN ONLY)	SET
FLAPS 15 DEGREES	SET
SPOILERS	OFF
CONDITION LEVER	FULL
ENGINES AT 80% N2	STABLE
PROP BLADES ANGLE	FWD

AFTER TAKE-OFF / CLIMBING

FLAPS RETRACTED	AS REQUIRED
///DON NOT EXCEED 215 KPH W/ FLAPS AT 15 DEG!!!	
POSITIVE CLIMB RATE	CHECK
THROTTLE SETTINGS	AS REQUIRED
RPM N2 BELOW 100%	MAINTAIN
ANTISKID	OFF
LANDING LIGHTS, ABOVE FL100	OFF
PROP BLADES ANGLE	AS REQUIRED

CRUISING

FUEL PUMPS	AS REQUIRED
CRUISE THROTTLE SETTINGS (90%)	SET
SPEED BELOW 195 KTS	MAINTAIN
INDICATORS	CHECK FREQUENTLY
ANNUNCIATORS/WARNING LAMPS	CHECK FREQUENTLY

DESCENDING

COMM FREQ	AS REQUIRED
SPOILERS	AS REQUIRED
FUEL PUMPS	AS REQUIRED
FLAPS	AS REQUIRED
THROTTLE SETTINGS	AS REQUIRED

LANDING LIGHTS, BELOW FL100 ON

APPROACHING

ANTISKID	ON
COMM W/ TOWER	ESTABLISHED
LANDING CLEARANCE	OBTAIN
THROTTLE SETTINGS	AS REQUIRED
SPOILERS	AS REQUIRED
FUEL PUMPS	ON
FLAPS 15 DEG. BELOW 215 KM/H	SET
///DON NOT EXCEED 15 DEG BANK W/ FLAPS RELEASED///	
FLAPS 25 DEG. BELOW 200 KM/H	SET
FLAPS 40 DEG. BELOW 180 KM/H	SET
RPM N1 G/T 70% W/ DE-ICE ON	MAINTAIN

TOUCH DOWN

BEETWEN 150 - 130 KPH	TOUCH DOWN
ENGINE REVERSE	AS REQUIRED
SPOILERS	AS REQUIRED
BRAKES	AS REQUIRED (AVOID TO OVERUSE THEM)
PROP DE-ICE	OFF
ENGINES DE-ICE	OFF
STRUCTURE DE-ICE	OFF
NEAREST TAXIWAY	TAXI TO
XPNDR "C" MODE (SB4/FSINN ONLY)	OFF / AS REQUESTED BY TOWER
STROBE LIGHTS	OFF
LANDING LIGHTS	OFF
TAXI LIGHTS	ON
TAXI CLEARANCE	OBTAIN

TAXI

SPEED BELOW 20 KTS	MAINTAIN
SPACE AROUND THE A/C	CHECK

STAND AND SHUT DOWN

PARKING BRAKES	ON
ANTISKID	OFF
PITOT HEAT	OFF
CABIN LIGHTING	AS REQUIRED
SYSTEMS SWITCHES	AS REQUIRED
TRANSFORMATORS	OFF
ENG NO 1 GENERATOR	OFF
ENG NO 2 GENERATOR	OFF
FUEL PUMPS	OFF
HYDRAULIC PUMPS	OFF
FUEL SELECTOR	CUT OFF
INDICATORS / WARNING LIGHTS	CHECK
BEACON LIGHT	OFF
COMM W/ TOWER	CLOSE FLIGHT PLAN
NAV LIGHTS	OFF
SYSTEMS SWITCHES	OFF

VI. EMERGENCY CHECKLISTS

AN-28 EMERGENCY CHECKLISTS

ENGINE FIRE

IF POSSIBLE VISUALLY	CONFIRM
EGT ABNORMALS	CHECK
FUEL PUMP	OFF
FIRE CUT OFF VALVE	CLOSE
FIRE EXTINGUISHER BUTTON	PRESS
PROP BLADES ANGLE	FEATHER
3 X MAYDAY	ANNOUNCE
ON NEAREST AIRFIELD/AIRSTRIP	LAND

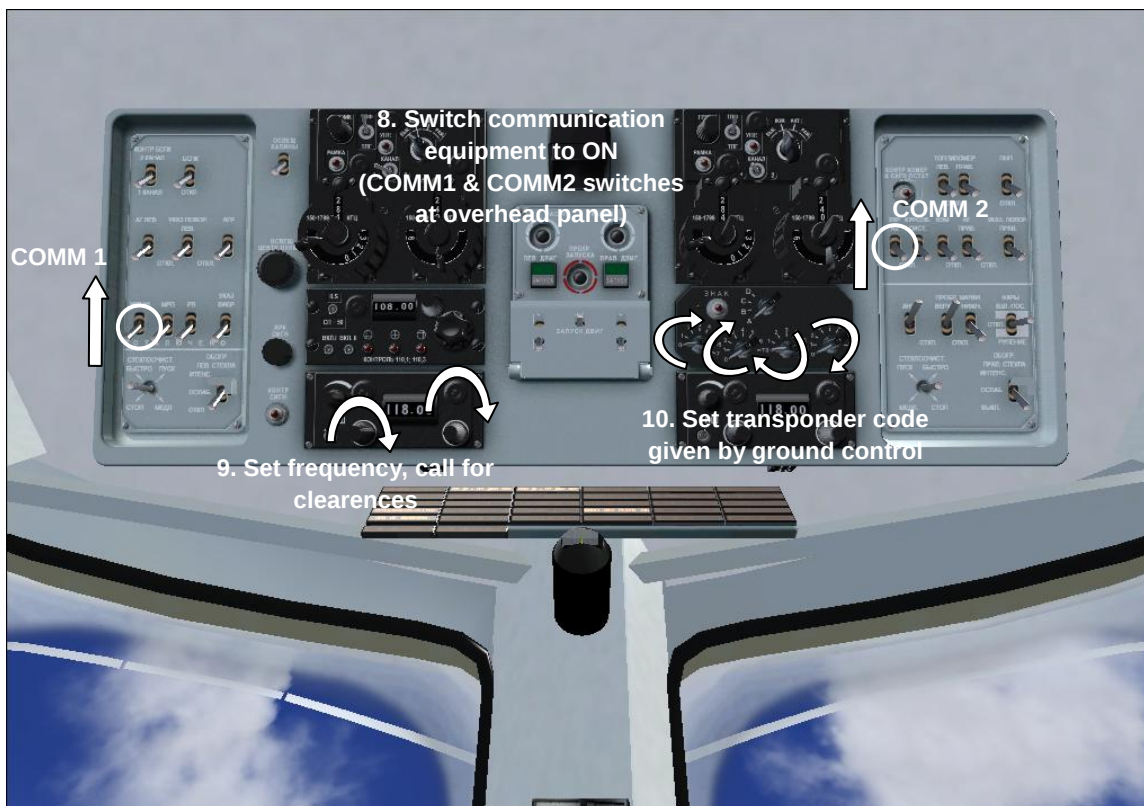
ICING

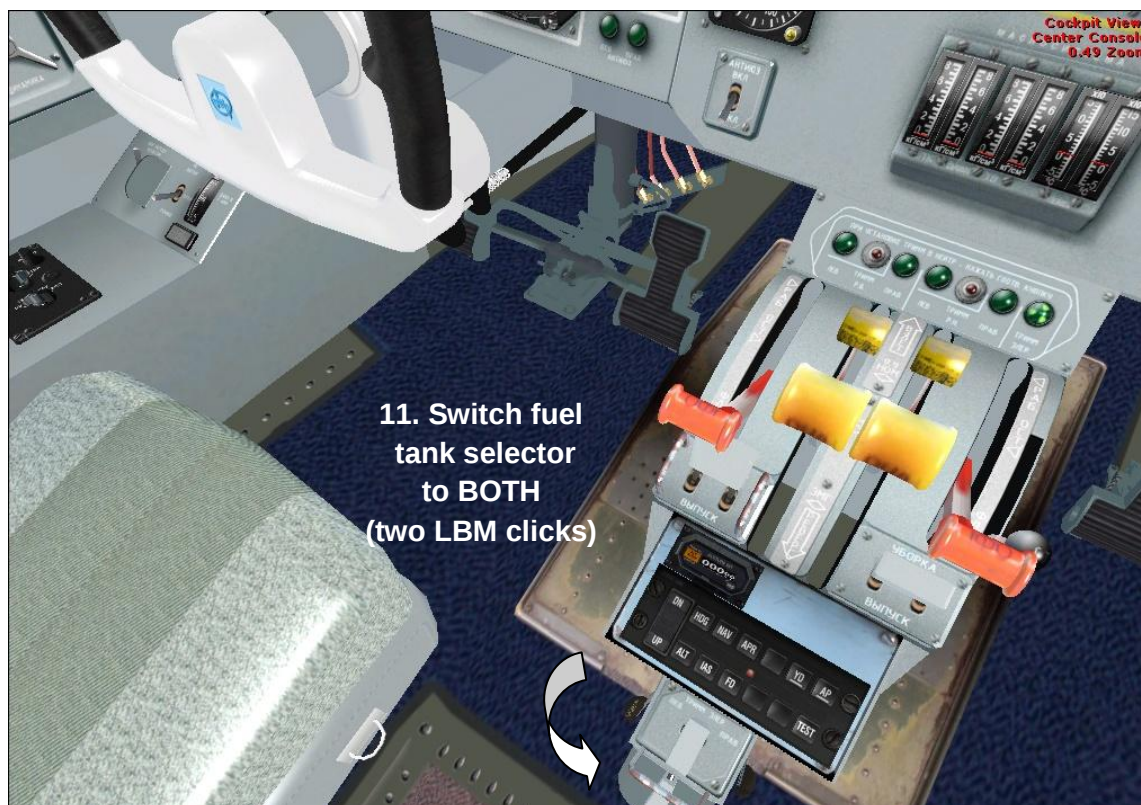
IF POSSIBLE VISUALLY	CONFIRM
DE-ICE SYSTEMS	ON
A/C BEHAVIOUR	CHECK FREQUENTLY
DESCENDING	AS REQUIRED
GOING OUT OF ICING AREA	IMMEDIATELY

ENGINE RESTART IN-FLIGHT

CONDITION LEVER	MINIMAL IF POSS
PROP BLADES ANGLE	FEATHER
START ENG BUTTON	PRESS ONCE
NOTE: THERE ONLY THREE ATTEMPTS CAN BE EXECUTED IN-FLIGHT DUE TO BATTERY CELLS CAPACITY	











17. Repeat steps 12-16 for the engine number one (left).



I wish you happy flying!

APPENDIX: VARIOUS SCREENSHOTS



An-28B Bryza-1R during its engines starting up



Cockpit night lightning



An-28B Bryza-1R during night-time taxiing at Military Airport Balice-Cracow, Poland (EPPK)



An-28 in BAT-811 livery is starting up of engine no 1.



PZL An-28 in polish private livery (warsaw aeroclub)



An-28 in russian airline Alrosa livery (original DPL's model with some minor changes)



PZL An-28 Djibuti Air Forces livery



PZL An-28 Peru Armed Forces livery (811 Battalion of Air Transport)



PZL An-28 Georgia Air Forces livery (unfinished texturing)



PZL An-28 in Blue Wing airline livery (tex bugs on a tail)



PZL An-28TD Bryza in Polish Navy livery (tex bugs on wheels)



PZL An-28B Bryza-1R in historical camouflage associated with the 60th Anniversary of the Battle of Atlantic.



An-28 in rusian Aeroflot airline livery (late). First tries of converting and texturing.



Modeling and texturing tries of PZL M28B Bryza-1R with PZL10S engines and 5-bladed Hertzels props. Not included in the package.



Working on a cockpit...



... and its night lightning at the very beginning.



PZL An-28TD in camouflage of Polish Air Forces (unfinished, not included in the package).



Render from 3D Studio Max 7. This specific sub-version (and livery) of the A/C isn't included in the package as well.



Render from 3D Studio Max 7.



Render from 3D Studio Max 7. Opened door under a tail section and fully released flaps/slots/spoilers are shown here.



FM's test in game. M28B at Oksywie Military Airbase (EPOK) during foggy night.



Tests of rain effects on a windshield in game.