

# DCS GUIDE

# Mig-15BIS



By Chuck

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# PART 1 – CONTROLS SETUP



THESE CONTROLS SHOULD BE MAPPED TO YOUR JOYSTICK AND ARE ESSENTIAL. NAMES ON LEFT COLUMN ARE WHAT YOU SHOULD LOOK FOR IN THE “ACTION” COLUMN OF THE CONTROLS SETUP MENU IN DCS. DESCRIPTION OF ACTION IS ON THE RIGHT COLUMN.

- MICROPHONE BUTTON
- ASP-3N GUNSIGHT TARGET DISTANCE, DECREASE/INCREASE
- ASP-3N GUNSIGHT TARGET WINGSPAN, DECREASE/INCREASE
- AILERON TRIMMER SWITCH, LEFT/RIGHT
- AIRBRAKE SWITCH, CLOSE/OPEN
- ELEVATOR TRIMMER SWITCH, PULL (CLIMB)/PUSH (DESCEND)
- ENGINE START BUTTON – PUSH TO START
- GUNS SAFETY COVER
- LANDING GEAR HANDLE, UP/DOWN
- N-37D CANNON FIRE BUTTON
- NR-23 CANNON FIRE BUTTON
- WINGS FLAPS HANDLE, UP/DOWN
- WEAPONS RELEASE BUTTON
- WHEEL BRAKE ON
- ZOOM IN SLOW
- ZOOM OUT SLOW

ALLOWS YOU TO USE RADIO MENU WHILE FLYING  
DECREASE/INCREASE GUNSIGHT TARGET RANGE  
DECREASE/INCREASE GUNSIGHT TARGET WINGSPAN  
TRIM AILERON LEFT/RIGHT (THERE IS NO RUDDER TRIM)  
OPENS/CLOSES AIRBRAKES  
TRIM ELEVATOR UP OR DOWN  
ENGINE STARTER  
GUNS SAFETY SWITCH  
RAISES OR LOWERS LANDING GEAR  
FIRES 37 MM CANNON  
FIRES 23 MM CANNON  
LOWERS OR RAISES FLAPS BY INCREMENTS  
DROPS BOMBS OR OTHER ORDNANCE  
PUTS ON THE BRAKE (LIKE A CAR BRAKE)  
ALLOWS YOU TO ZOOM IN  
ALLOWS YOU TO ZOOM OUT



# PART 1 – CONTROLS SETUP

ASSIGNING PROPER AXIS IS IMPORTANT. HERE ARE A COUPLE OF TIPS.

The screenshot shows the 'CONTROLS' tab in the game's settings menu. The 'Aircraft' dropdown is set to 'MiG-15bis Real'. The 'Category' dropdown is set to 'All'. The 'Action' column lists various in-game actions, with 'Guns Safety Cover' highlighted. The 'Keyboard' column shows the default keybindings for each action. The 'Saitek Pro Flight Controller', 'Throttle - HOTAS Warthog', and 'Joystick - HOTAS Warthog' columns are also visible. At the bottom, there are buttons for 'MODIFIERS', 'ADD', 'CLEAR', 'DEFAULT', 'AXIS ASSIGN', 'AXIS TUNE', 'FF TUNE', and 'MAKE HTML'. Red arrows point from the 'All' dropdown, the 'Guns Safety Cover' action, and the 'AXIS ASSIGN' button to the text boxes.

Action	Keyboard	Saitek Pro Flight Controller	Throttle - HOTAS Warthog	Joystick - HOTAS Warthog
Glance left	RCtrl + Num4			
Glance right	RCtrl + Num6			
Glance up	RCtrl + Num8			
Glance up-left	RCtrl + Num7			
Glance up-right	RCtrl + Num5			
Guns Safety Cover	LCtrl + Space			LShift + JOY_BTN1
Heading Knob, CCW	LCtrl + K			
Heading Knob, CW	LShift + K			
Hints On/Off	LCtrl + LShift + H			
Hydro Booster Lever, ON/OFF	RAlt + H			
Ignition Switch, ON/OFF	LAlt + LCtrl + 2			
Ignore Current AI Helper Prompt	H			
Info bar coordinate units toggle	LAlt + Y			
Info bar view toggle	LCtrl + Y			
Instruments and Lights Switch, ON/OFF	LAlt + LCtrl + 3			
Isolating Valve Switch, ON/OFF	LAlt + LCtrl + 5			
Join Up Formation	LWin + Y			
Jump into selected aircraft	RAlt + J			
Keep terrain camera altitude	LAlt + K			
Keyboard Rate Fast	LShift + J			
Keyboard Rate Normal	LAlt + J			
Keyboard Rate Slow	LCtrl + J			
Kneeboard Next Page	J			
Kneeboard ON/OFF	RShift + K			

TO ASSIGN AXIS, CLICK ON  
AXIS ASSIGN. YOU CAN  
ALSO SELECT "AXIS  
COMMANDS" IN THE  
UPPER SCROLLING MENU.

TO MODIFY CURVES AND  
SENSITIVITIES OF AXES,  
CLICK ON THE AXIS YOU  
WANT TO MODIFY AND  
THEN CLICK AXIS TUNE



# PART 1 – CONTROLS SETUP

BIND THE FOLLOWING AXES:

- PITCH (DEADZONE AT 5, SATURATION X AT 100, SATURATION Y AT 100, CURVATURE AT 20)
- ROLL (DEADZONE AT 5, SATURATION X AT 100, SATURATION Y AT 100, CURVATURE AT 20)
- RUDDER (DEADZONE AT 0, SATURATION X AT 100, SATURATION Y AT 100, CURVATURE AT 0)
- THROTTLE – CONTROLS ENGINE RPM
- NOTE: THERE ARE NO WHEEL BRAKES ON THE MIG-15. INSTEAD OF TRADITIONAL TOE BRAKES IN WESTERN AIRCRAFT, THE MIG-15 HAS A DIFFERENTIAL BRAKING SYSTEM. YOU BRAKE BY HOLDING THE BRAKE LEVER AND STEER USING YOUR RUDDER PEDALS.

BRAKE LEVER





# PART 2 – COCKPIT AND GAUGES





RSI-6K UHF RADIO  
SEE PART 11 FOR TUTORIAL








CANOPY JETTISON HANDLE  
(SAFETY POSITION)

A close-up photograph of the cockpit's canopy jettison handle. The handle is a red, curved metal piece that is currently in a locked, horizontal position. It is mounted on a grey metal frame. In the background, various cockpit instruments and control knobs are visible, including a multi-colored warning light panel.




CANOPY JETTISON  
HANDLE (CANOPY IS  
JETTISONED)

A close-up photograph of the same canopy jettison handle, but now it is in a vertical position, indicating that the canopy has been successfully jettisoned. The red handle is clearly visible against the grey metal structure of the cockpit.

EJECTION SEAT HANDLE

A close-up photograph of the ejection seat handle, which is a red, curved metal piece located near the canopy jettison handle. It is currently in a horizontal position. The background shows the same cockpit environment with various instruments and controls.



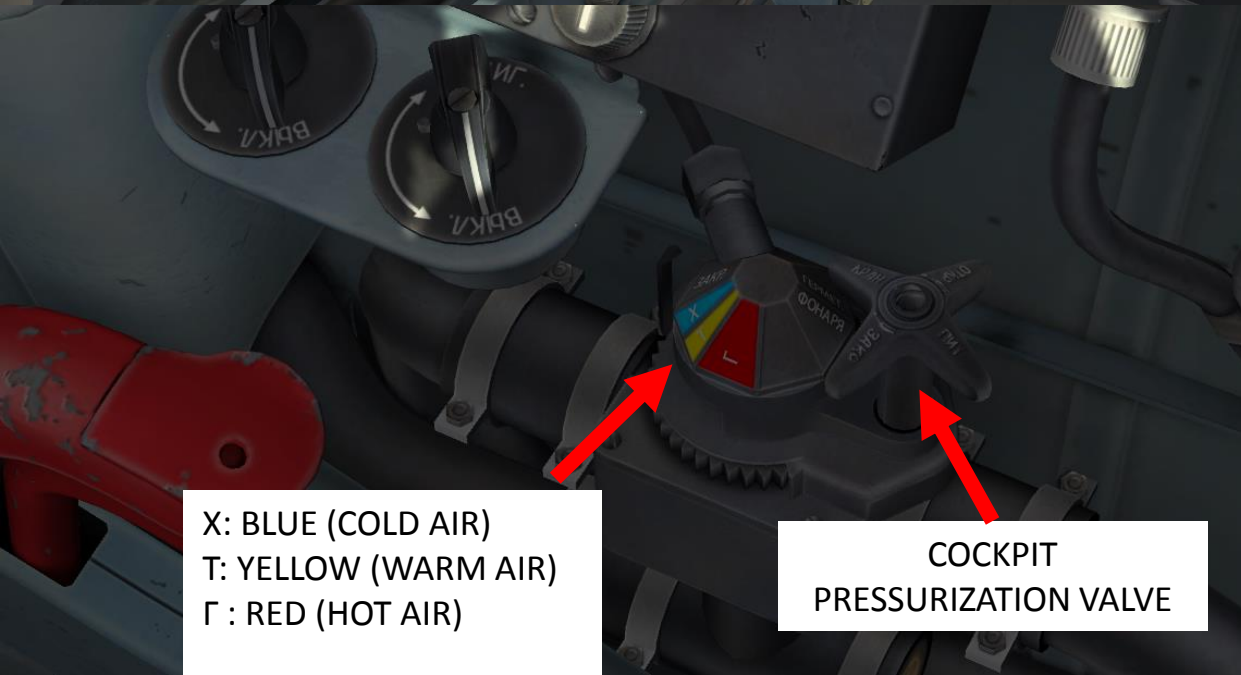
EJECTION SEAT HANDLE  
(PRESS CTRL + E THREE TIMES TO EJECT  
AFTER YOU JETTISONED THE CANOPY)

A side-view photograph of a pilot wearing a blue flight suit and a white helmet, seated in an ejection seat. The seat is tilted back. A red arrow points to the ejection seat handle, which is a red, curved metal piece located on the side of the seat. The background is a clear blue sky.



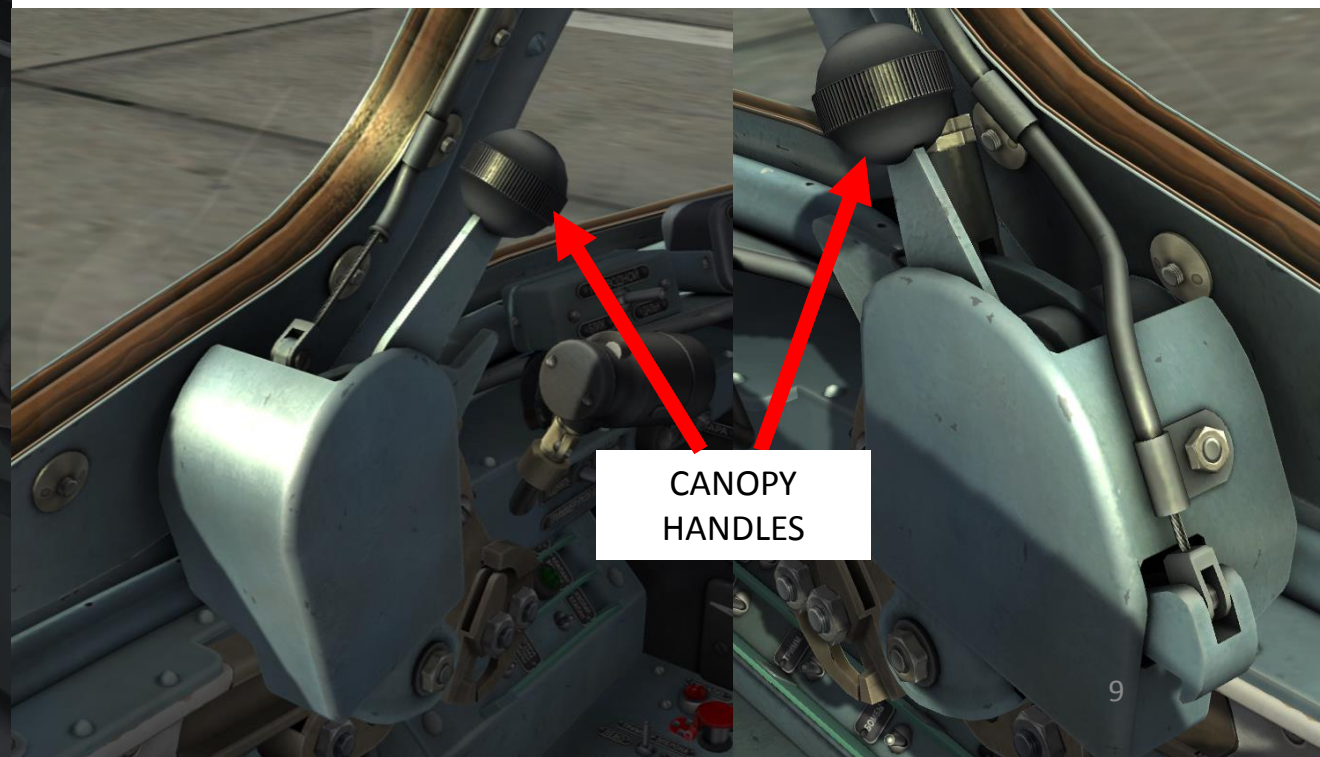
LANDING GEAR  
MECHANICAL  
INDICATOR

WING FENCES (ALSO KNOWN AS BOUNDARY LAYER FENCES OR POTENTIAL FENCES) WING FENCES DELAY, OR ELIMINATE, THE “SABRE DANCE” EFFECT BY PREVENTING THE SPANWISE AIR FLOW FROM MOVING TOO FAR ALONG THE WING AND GAINING SPEED. WHEN MEETING THE FENCE, THE AIR IS DIRECTED BACK OVER THE WING SURFACE.



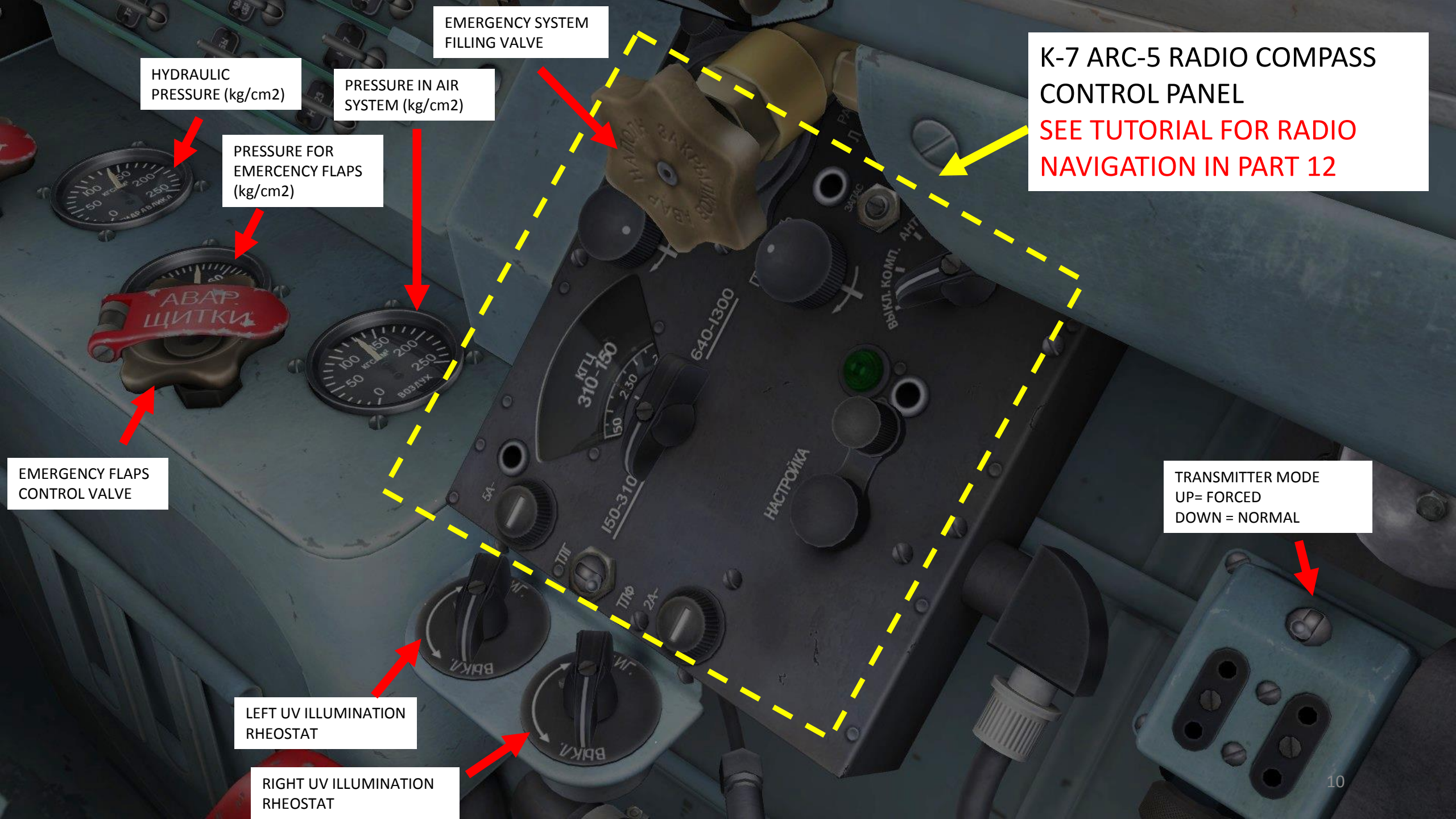
X: BLUE (COLD AIR)  
T: YELLOW (WARM AIR)  
Γ : RED (HOT AIR)

COCKPIT  
PRESSURIZATION VALVE



CANOPY  
HANDLES





EMERGENCY SYSTEM  
FILLING VALVE

HYDRAULIC  
PRESSURE (kg/cm<sup>2</sup>)

PRESSURE IN AIR  
SYSTEM (kg/cm<sup>2</sup>)

PRESSURE FOR  
EMERGENCY FLAPS  
(kg/cm<sup>2</sup>)

K-7 ARC-5 RADIO COMPASS  
CONTROL PANEL

SEE TUTORIAL FOR RADIO  
NAVIGATION IN PART 12



EMERGENCY FLAPS  
CONTROL VALVE

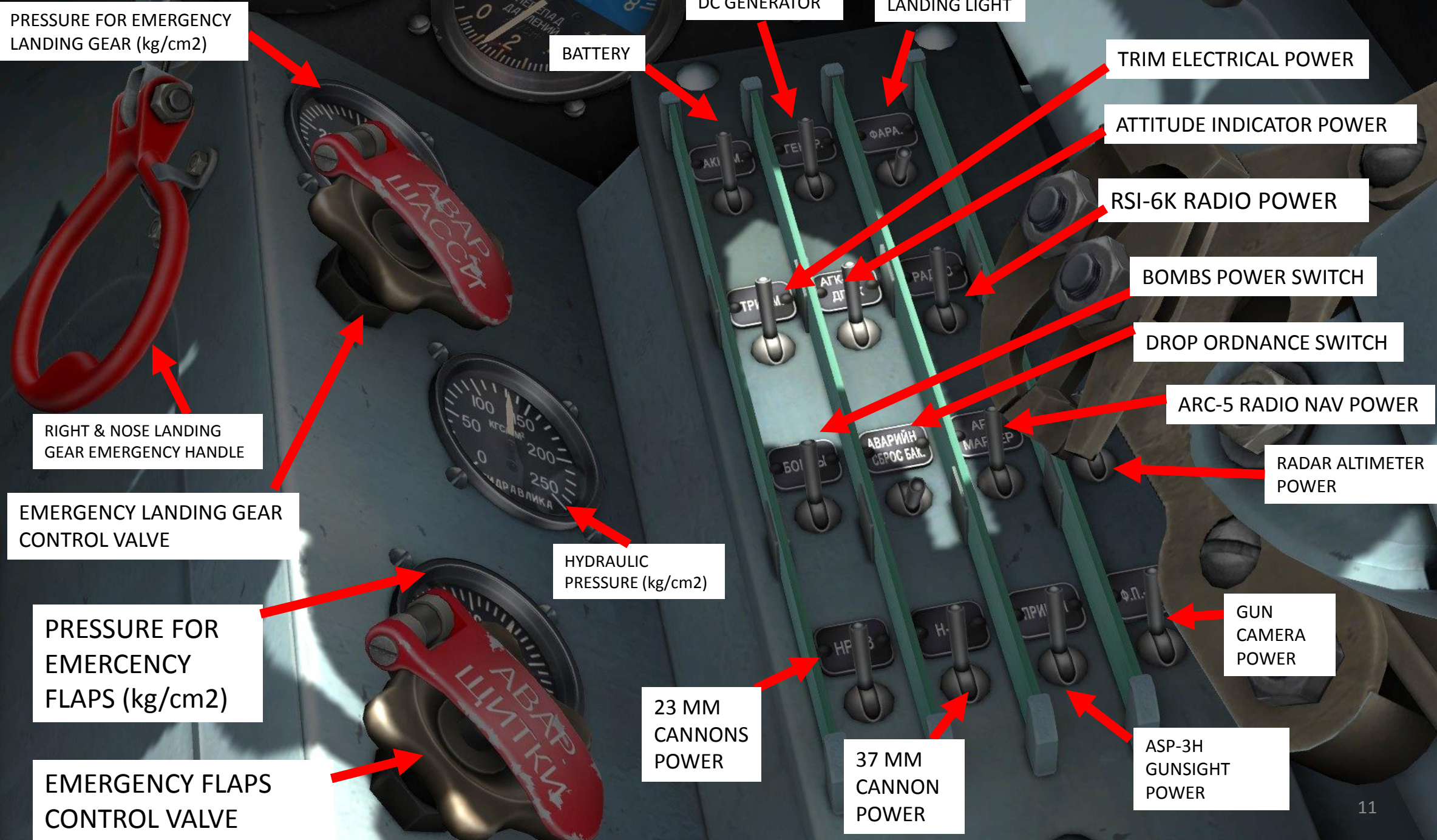


LEFT UV ILLUMINATION  
RHEOSTAT

RIGHT UV ILLUMINATION  
RHEOSTAT

TRANSMITTER MODE  
UP= FORCED  
DOWN = NORMAL







ATTITUDE  
INDICATOR

RADIO COMPASS –  
SEE PART 12

IGNITION WARNING LIGHT (TURN  
IGNITION OFF AFTER TAKEOFF)

ENGINE RPM INDICATOR  
(RPM x1000)

VERTICAL VELOCITY  
INDICATOR (m/s)

EGT (EXHAUST GAS TEMPERATURE)  
(x100 DEG C)

VOLT & AMP METER  
(VOLTS & AMPS)

HEADING INDICATOR

ГЕНЕРАТОР  
ВЫКЛЮЧЕН

300  
ЛИТРОВ

ГЕНЕРАТОР  
АЭРОДРОМА  
АККУМУЛЯТОР

FUEL GAUGE (LITERS)

UPPER: FUEL PRESSURE (kg/cm<sup>2</sup>)  
BOTTOM LEFT: OIL PRESSURE (kg/cm<sup>2</sup>)  
BOTTOM RIGHT: OIL TEMP (deg C)

FAST SLAVE SWITCH (RESETS  
MAGNETIC ERROR ON COMPASS)

FUEL FLOW GAUGE  
(kg/h)

BLUE: CABIN PRESSURE ALTITUDE (Km)  
RED: PRESSURE DIFFERENTIAL (Kg/cm<sup>2</sup>)



OXYGEN FLOW  
INDICATOR

ALTIMETER (km)

AIRSPEED INDICATOR (x10 km/h)

THIN NEEDLE = TRUE AIRSPEED (TAS)  
THICK NEEDLE = INDICATED AIRSPEED (IAS)

ATTITUDE INDICATOR

LANDING LIGHT SWITCH  
UP = ON / DOWN = OFF

OXYGEN PRESSURE  
GAUGE (kg/cm<sup>2</sup>)

LANDING GEAR  
LEVER LOCK

LANDING GEAR  
LEVER  
UP = UP / DOWN = DOWN

LANDING GEAR  
INDICATOR  
RED = UP / GREEN = DOWN

RADAR ALTIMETER

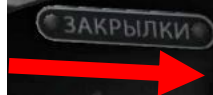
MACH INDICATOR

CLOCK





FLAPS WARNING LIGHT  
(ON WHEN FLAPS FULLY  
DEPLOYED TO 55 DEG)



LANDING GEAR WARNING  
LIGHT



RADIO BEACON ALARM  
WARNING LIGHT



GENERATOR OFF  
WARNING LIGHT



300 L REMAINING FUEL  
WARNING LIGHT



NO. 2 FUEL TANK  
EMPTY WARNING  
LIGHT



FUEL LINE  
WARNING LIGHT  
(CHECK FUEL  
BOOSTER PUMPS)





EXTERNAL FUEL  
TANKS LOADED LIGHT  
GREEN = LOADED

23 MM CANNON  
LOADED LIGHT  
RED = LOADED

23 MM CANNON  
LOADED LIGHT  
RED = LOADED

37 MM CANNON  
LOADED LIGHT  
RED = LOADED

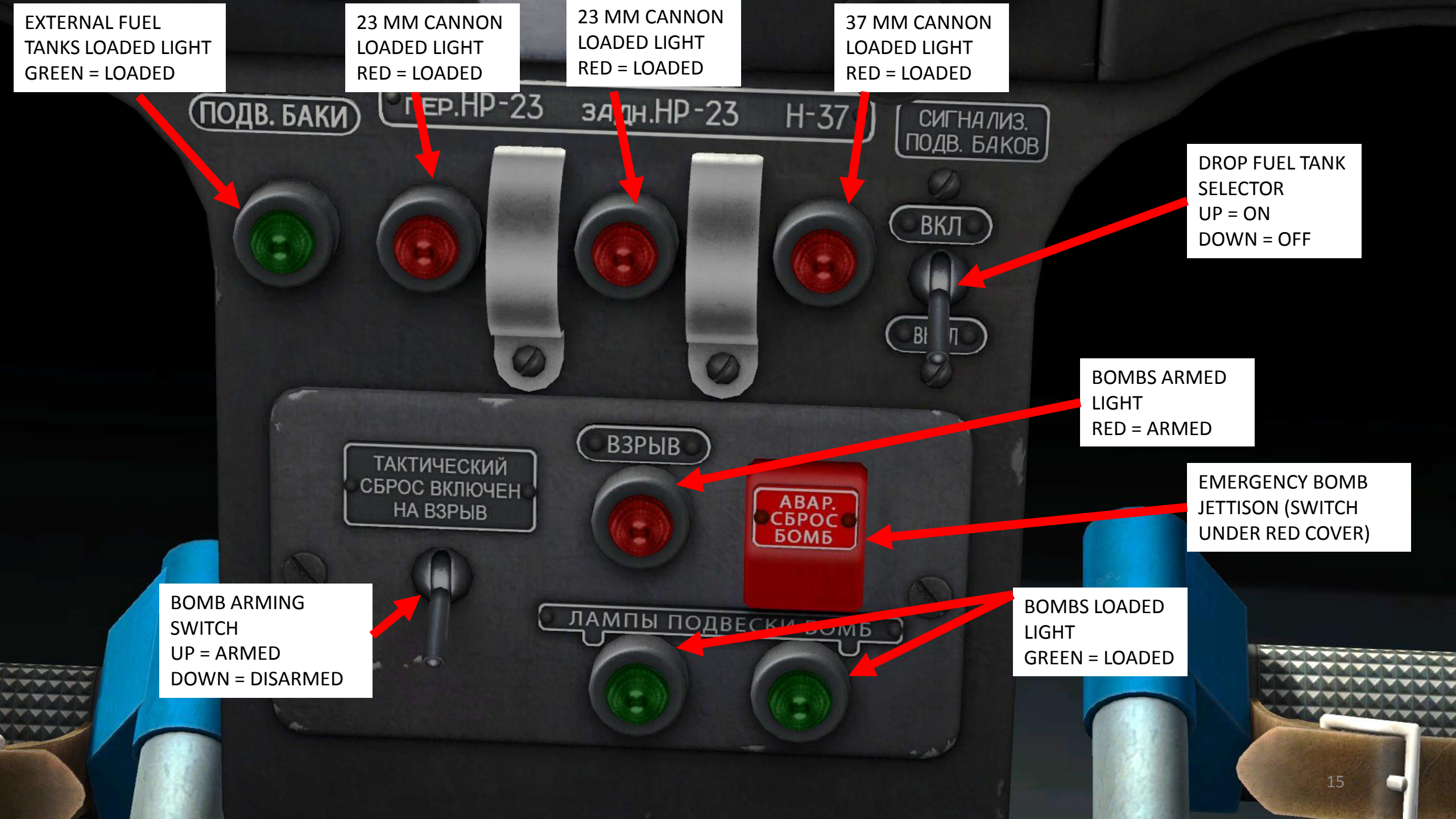
DROP FUEL TANK  
SELECTOR  
UP = ON  
DOWN = OFF

BOMBS ARMED  
LIGHT  
RED = ARMED

EMERGENCY BOMB  
JETTISON (SWITCH  
UNDER RED COVER)

BOMB ARMING  
SWITCH  
UP = ARMED  
DOWN = DISARMED

BOMBS LOADED  
LIGHT  
GREEN = LOADED



GYRO  
COMPASS

ASP-3H GUNSIGHT  
(SEE PART 9 FOR DETAILS)

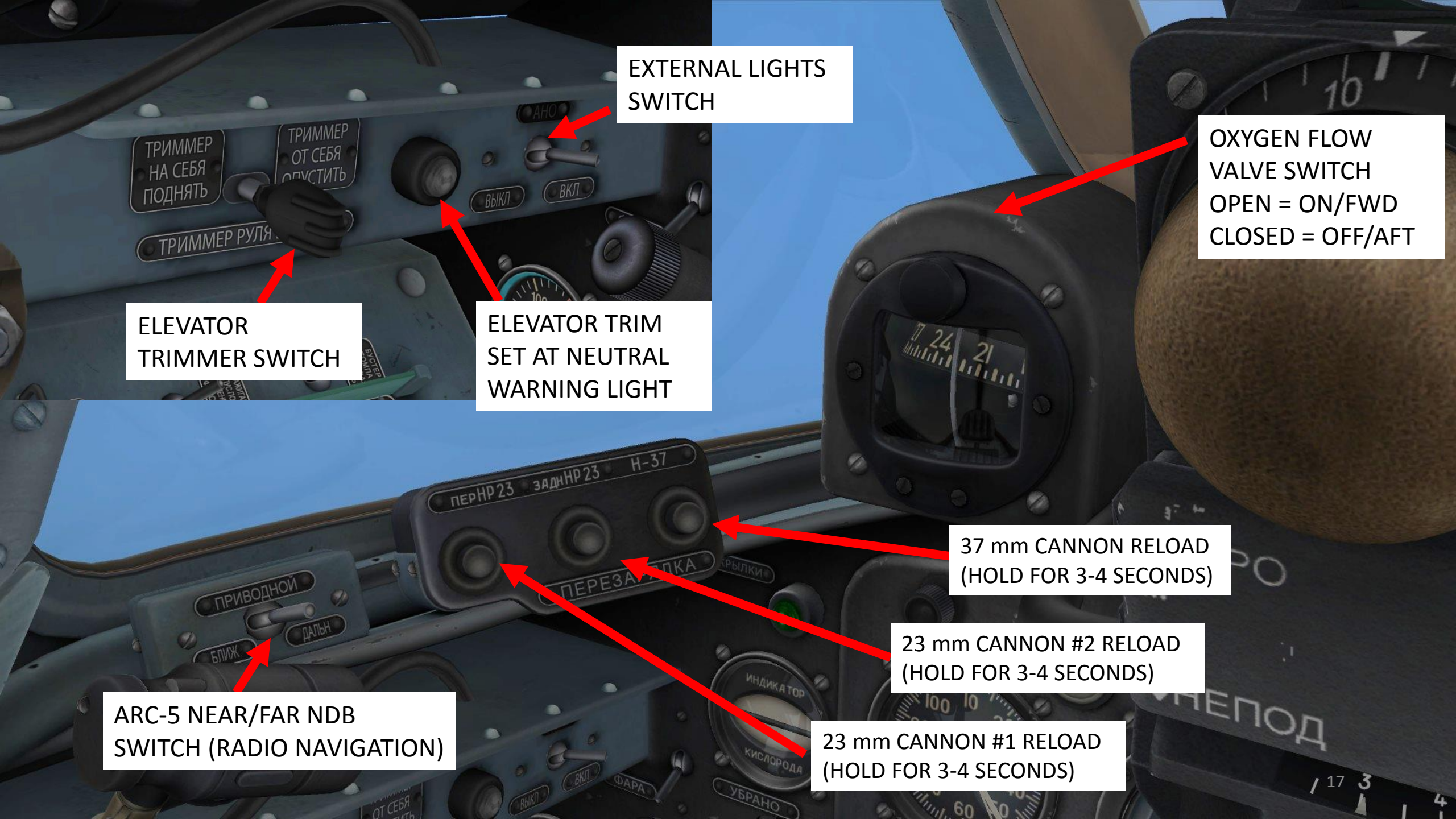
GUNS SAFETY COVER

AIR VENTILATION  
OUTLET

BRAKE HANDLE  
(HOLD TO BRAKE AND USE  
RUDDER PEDALS TO STEER  
THE AIRCRAFT)







EXTERNAL LIGHTS SWITCH

OXYGEN FLOW VALVE SWITCH  
OPEN = ON/FWD  
CLOSED = OFF/AFT

ELEVATOR TRIMMER SWITCH

ELEVATOR TRIM SET AT NEUTRAL  
WARNING LIGHT

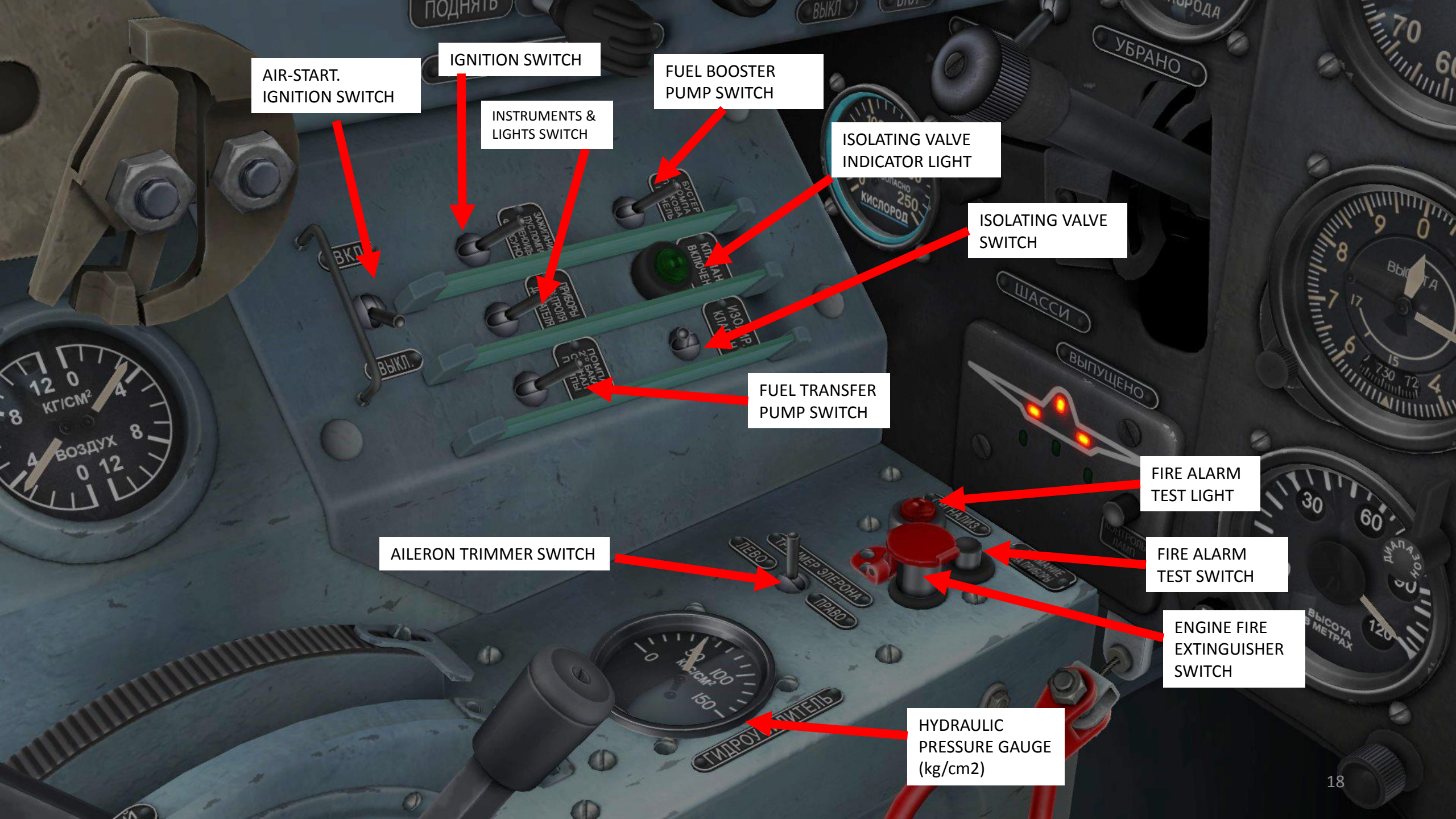
37 mm CANNON RELOAD  
(HOLD FOR 3-4 SECONDS)

23 mm CANNON #2 RELOAD  
(HOLD FOR 3-4 SECONDS)

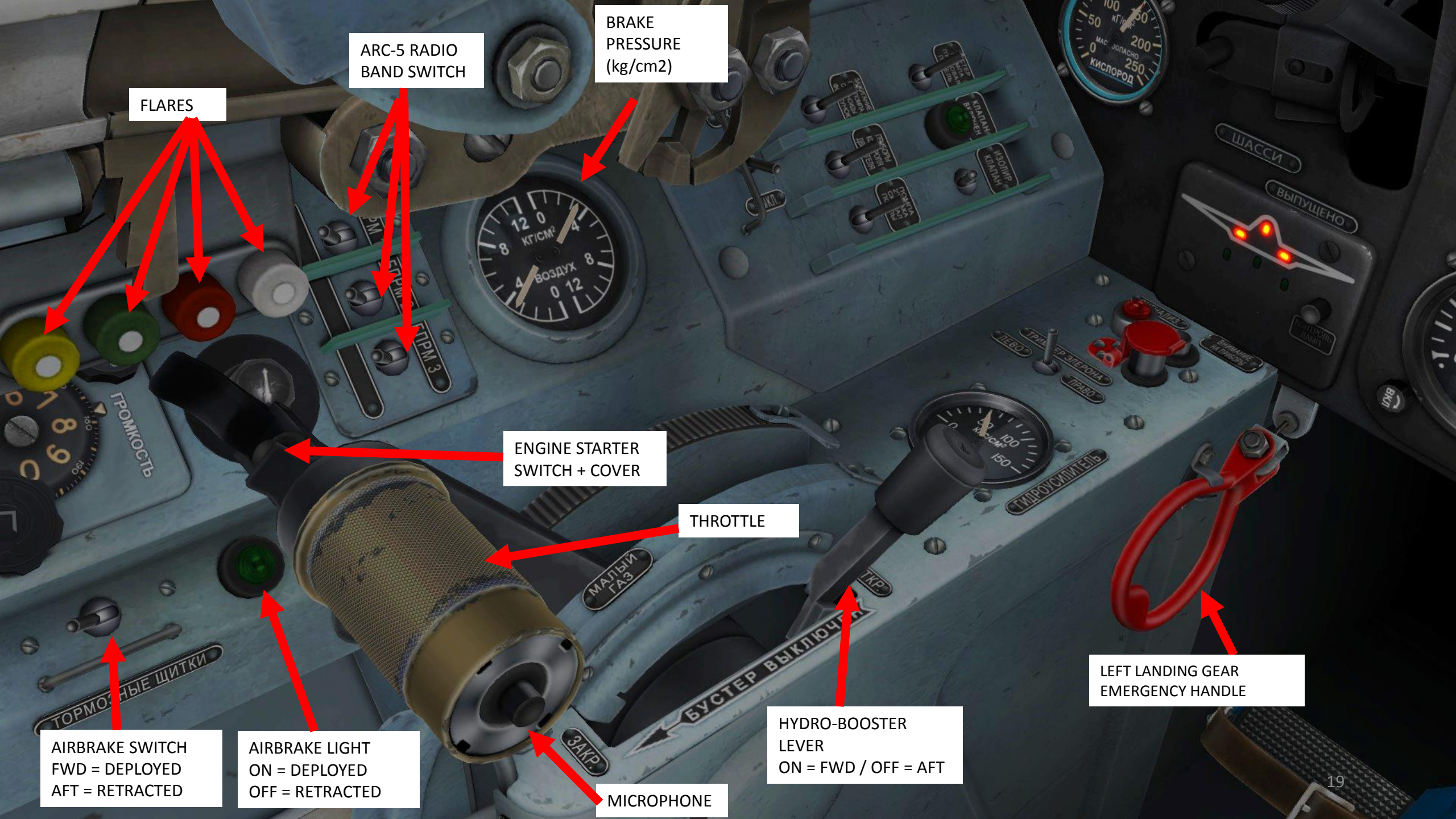
ARC-5 NEAR/FAR NDB SWITCH (RADIO NAVIGATION)

23 mm CANNON #1 RELOAD  
(HOLD FOR 3-4 SECONDS)









ARC-5 RADIO  
BAND SWITCH

BRAKE  
PRESSURE  
(kg/cm2)

FLARES

ENGINE STARTER  
SWITCH + COVER

THROTTLE

AIRBRAKE SWITCH  
FWD = DEPLOYED  
AFT = RETRACTED

AIRBRAKE LIGHT  
ON = DEPLOYED  
OFF = RETRACTED

MICROPHONE

HYDRO-BOOSTER  
LEVER  
ON = FWD / OFF = AFT

LEFT LANDING GEAR  
EMERGENCY HANDLE



FLARE PANEL  
POWER SWITCH  
UP = ON  
DOWN = OFF

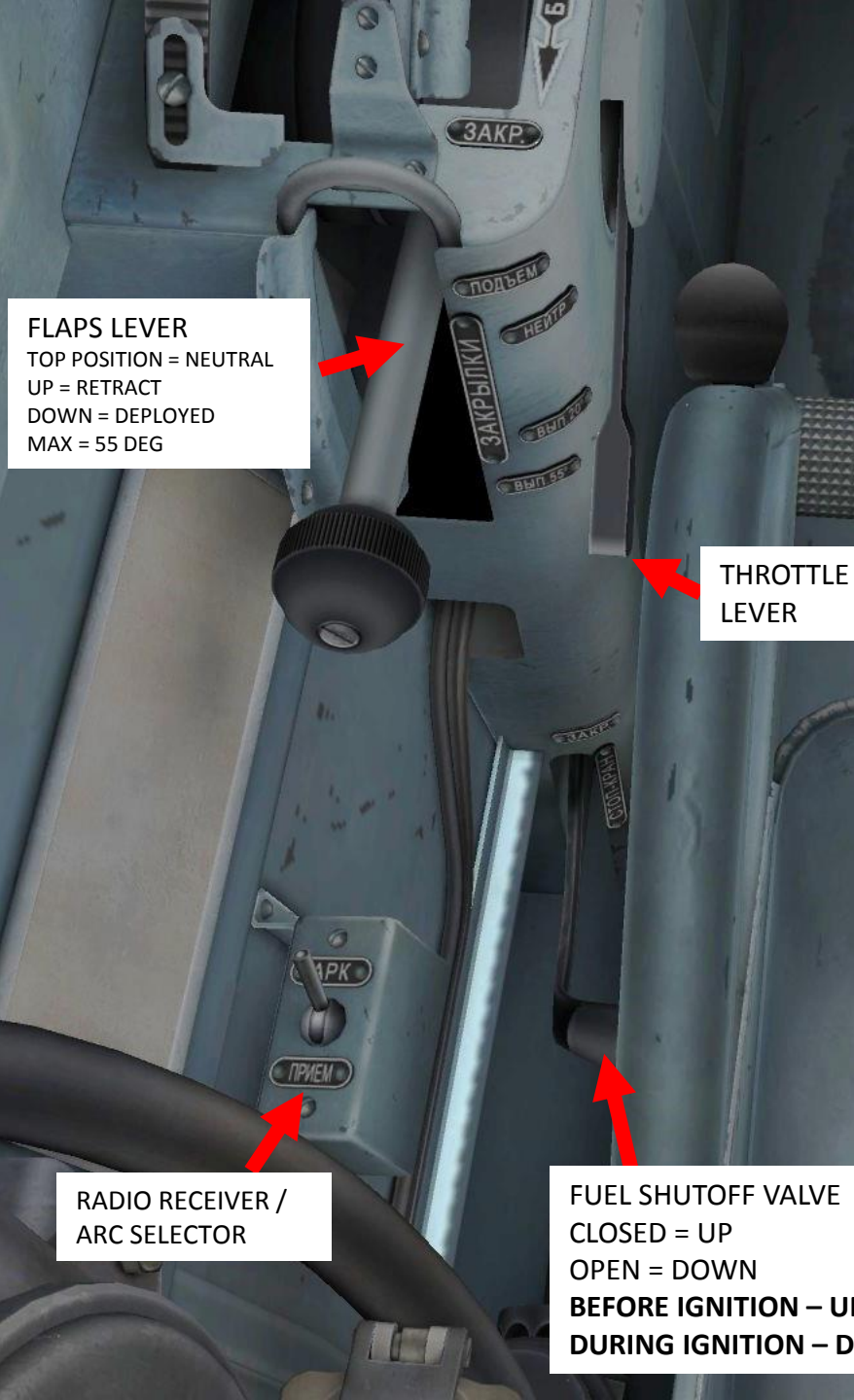
RSI-6K RADIO  
RECEIVER REMOTE  
CONTROL TUNING

RSI-6K RADIO RECEIVER  
WAVE NUMBER  
INDICATOR

RSI-6K RADIO  
VOLUME TUNING

INSTRUMENT  
PANEL LIGHT  
RHEOSTAT



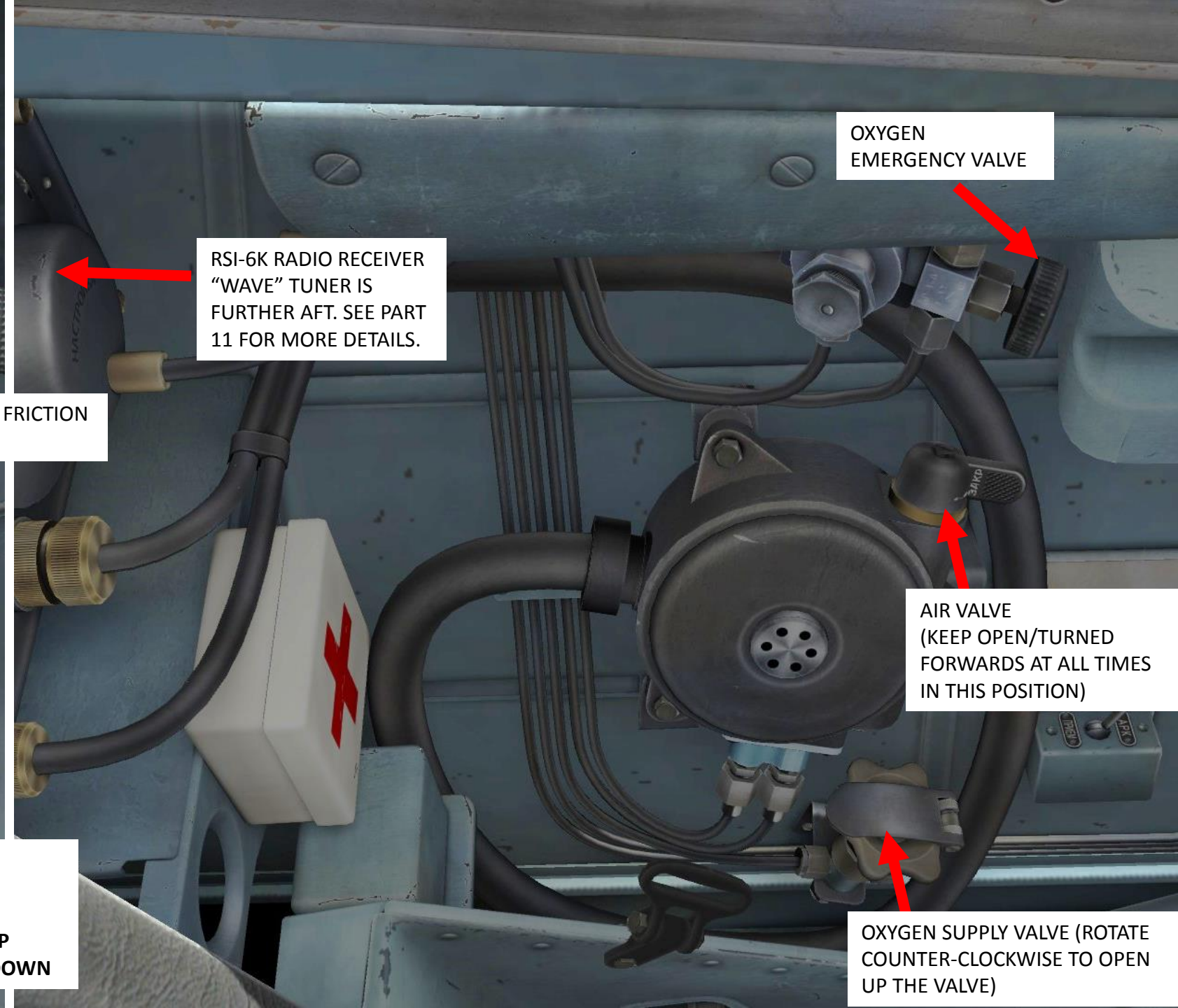


FLAPS LEVER  
TOP POSITION = NEUTRAL  
UP = RETRACT  
DOWN = DEPLOYED  
MAX = 55 DEG

THROTTLE FRICTION  
LEVER

RADIO RECEIVER /  
ARC SELECTOR

FUEL SHUTOFF VALVE  
CLOSED = UP  
OPEN = DOWN  
**BEFORE IGNITION – UP**  
**DURING IGNITION – DOWN**



RSI-6K RADIO RECEIVER  
“WAVE” TUNER IS  
FURTHER AFT. SEE PART  
11 FOR MORE DETAILS.

OXYGEN  
EMERGENCY VALVE

AIR VALVE  
(KEEP OPEN/TURNED  
FORWARDS AT ALL TIMES  
IN THIS POSITION)

OXYGEN SUPPLY VALVE (ROTATE  
COUNTER-CLOCKWISE TO OPEN  
UP THE VALVE)

## HOW TO READ THE ALTIMETER

- 1) KNOB TO SET QFE ALTIMETER SETTING
- 2) ALTITUDE IN 100 M
- 3) ALTITUDE SCALE FROM 10 TO 17 KM
- 4) QFE ALTIMETER SETTING (mm Hg)
- 5) ALTITUDE IN KM
- 6) ALTITUDE SCALE FROM 0 TO 10 KM



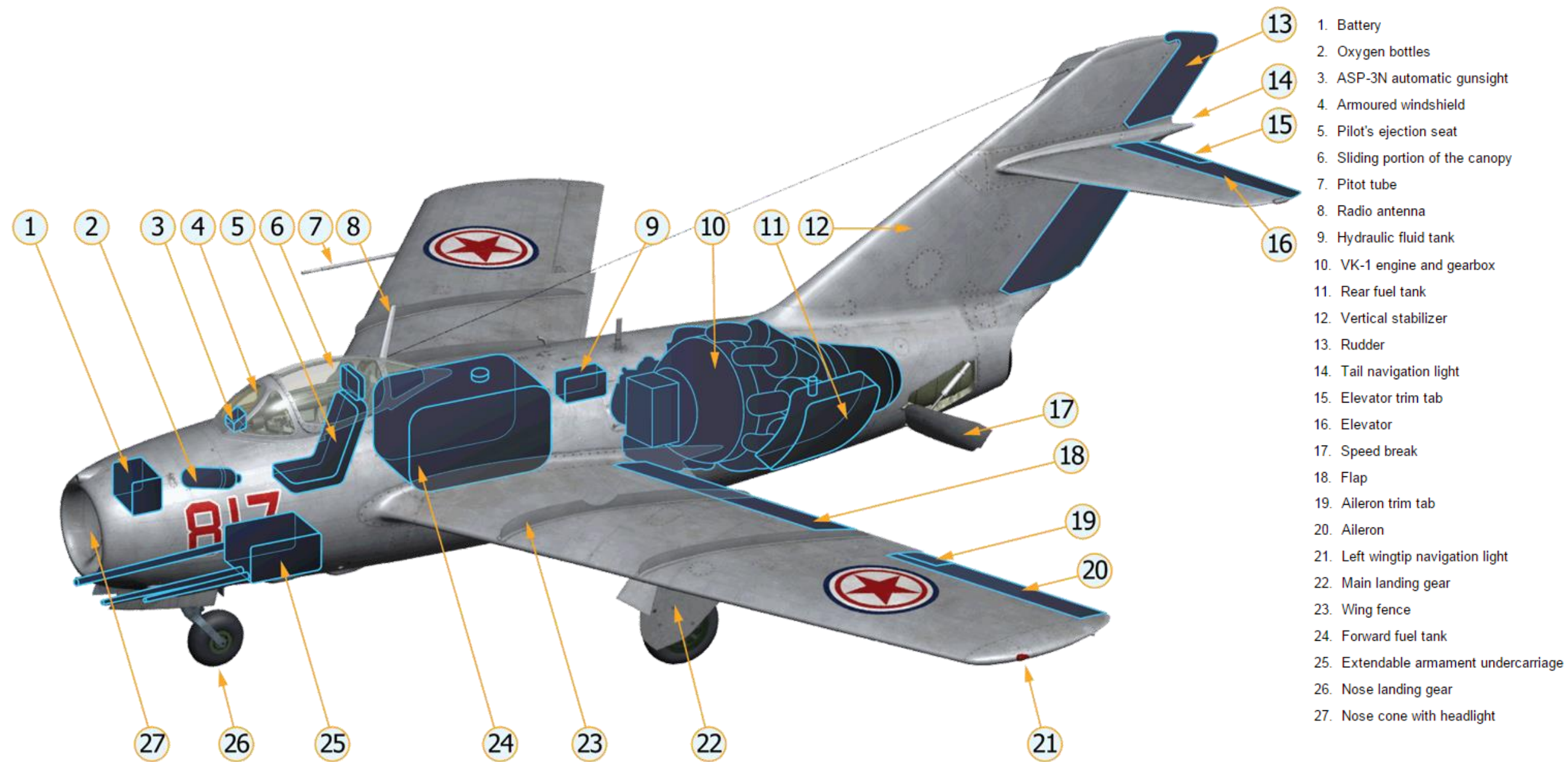


## HOW TO READ THE RADAR ALTIMETER

THE RADAR ALTIMETER GIVES YOU THE HEIGHT ABOVE GROUND IN METERS. IT HAS TWO MEASURING RANGES: 0-120 m AND 100-1200 m.

- 1) PRB-46 SWITCH
- 2) HEIGHT SCALE INDICATOR
- 3) HEIGHT RANGE SELECTOR (0-120 m vs 120-1200 m)





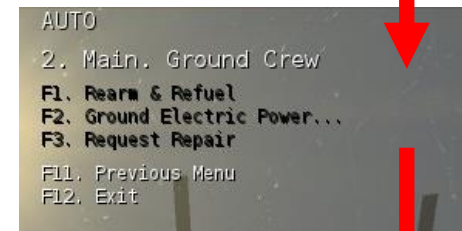
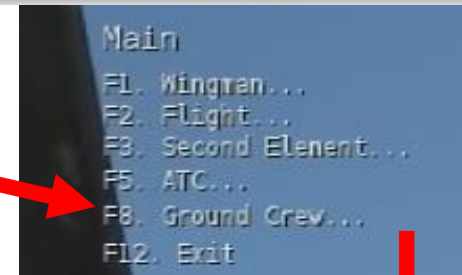


# PART 3 – START-UP

1. AKKYM / BATTERY SWITCH OFF (AFT)
2. GEHEP / GENERATOR SWITCH ON (FWD)
3. SELECT YOUR GROUND CREW BY PRESSING “\” AND F8.
4. SELECT “GROUND ELECTRIC POWER” BY PRESSING F2
5. SELECT “ON” BY PRESSING F1 TO TURN ON GROUND POWER

Generator switch

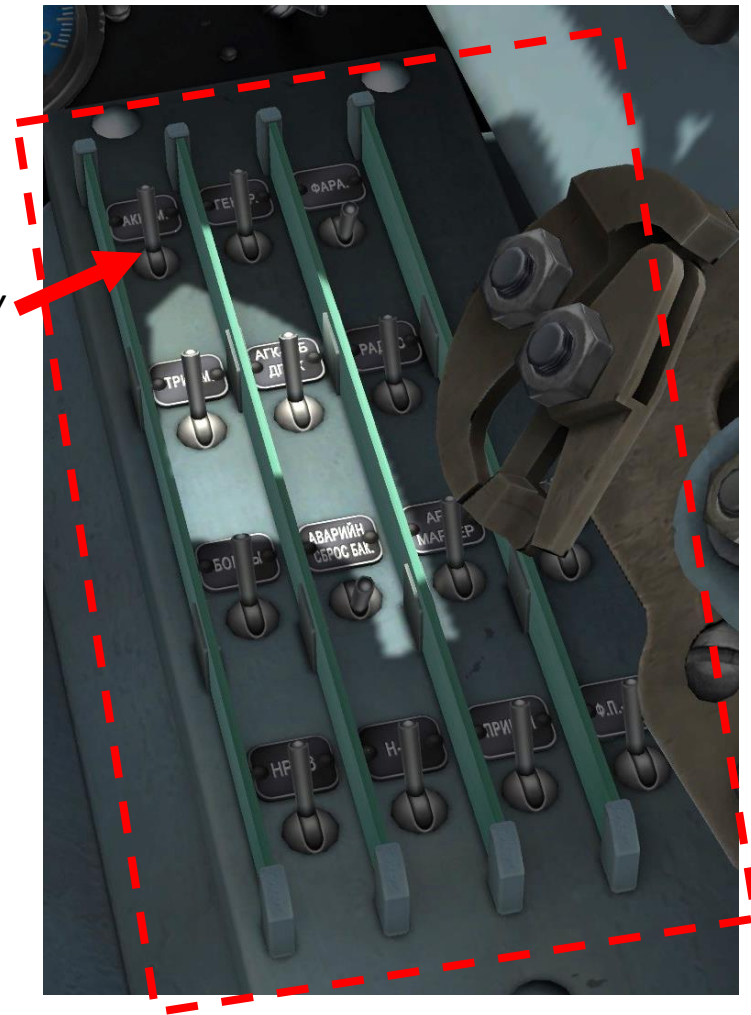
Battery switch





# PART 3 – START-UP

6. TURN ON (FWD) ALL SWITCHES ON RIGHT SWITCH PANEL EXCEPT THE BATTERY (AKKYM).
7. TURN ON (FWD) FUEL AND ENGINE SYSTEMS ON LEFT SWITCH PANEL.





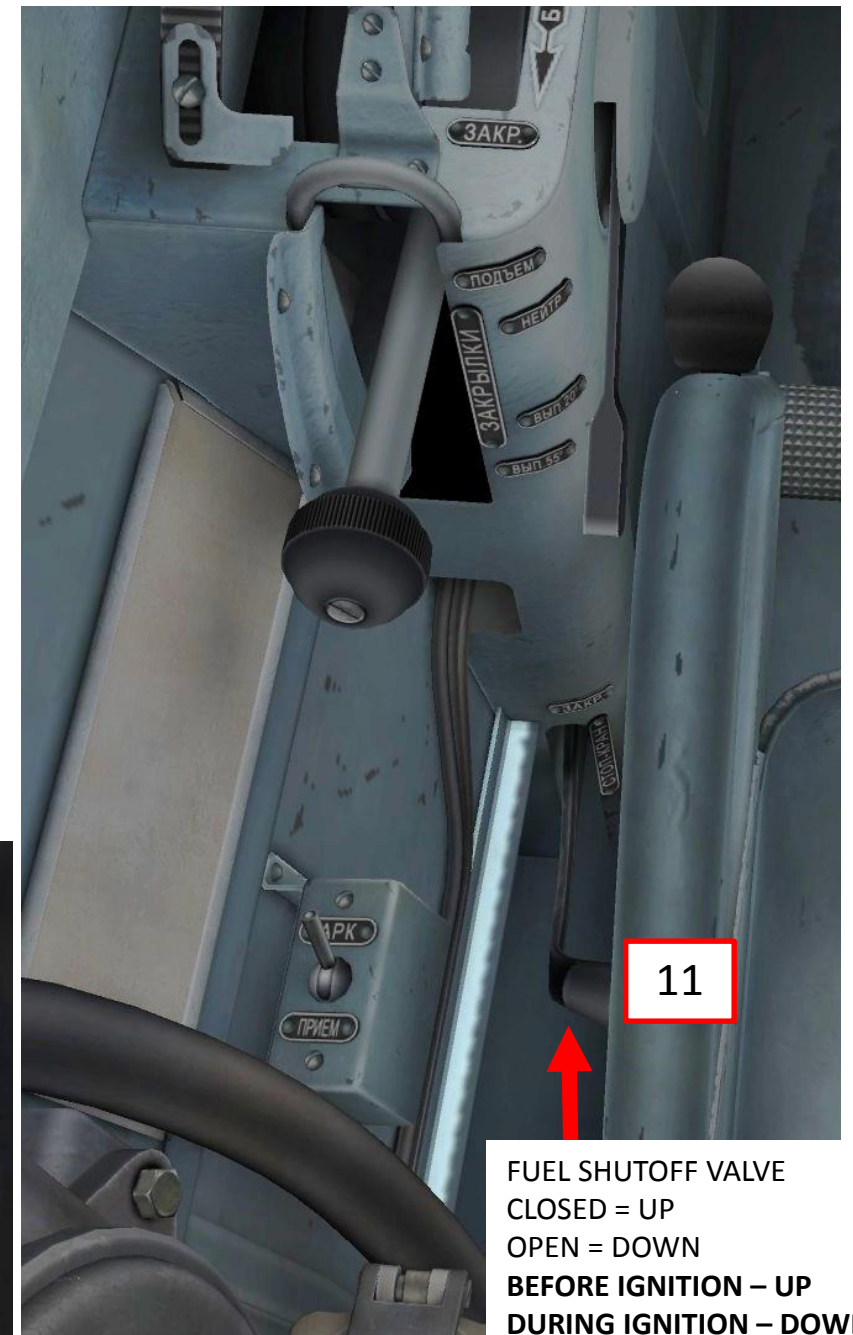
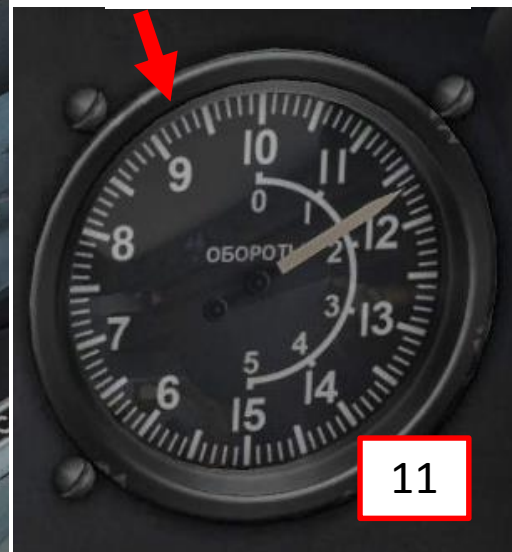
# PART 3 – START-UP

8. SET THROTTLE TO IDLE (FULLY BACK)
9. LIFT THE STARTER SAFETY COVER (LEFT CLICK)
10. HOLD THE STARTER SWITCH FOR 1-2 SECONDS
11. OPEN FUEL SHUTOFF VALVE TO 50 % (HOME KEY) WHEN ENGINE REACHES 600 RPM. WHEN ENGINE REACHES 900-1200 RPM, FULLY OPEN THE VALVE.

(MOUSEWHEEL OR HOLD RSHIFT+HOME)



ENGINE RPM INDICATOR  
(RPM x1000)

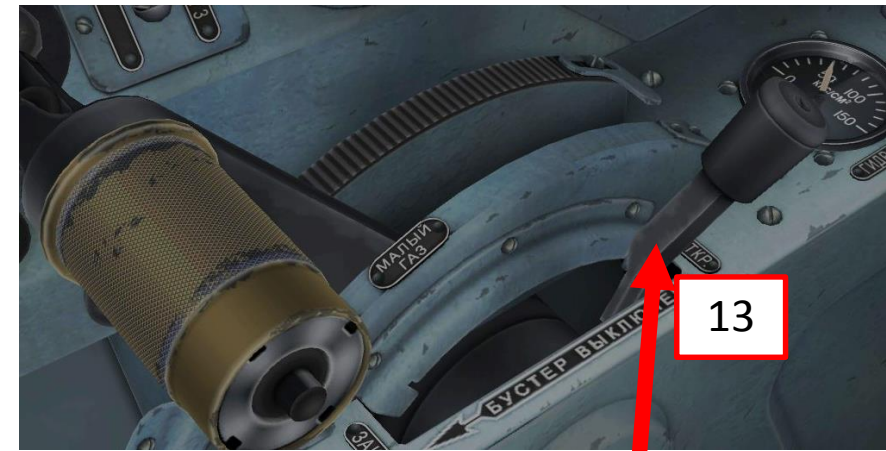


FUEL SHUTOFF VALVE  
CLOSED = UP  
OPEN = DOWN  
**BEFORE IGNITION – UP**  
**DURING IGNITION – DOWN**

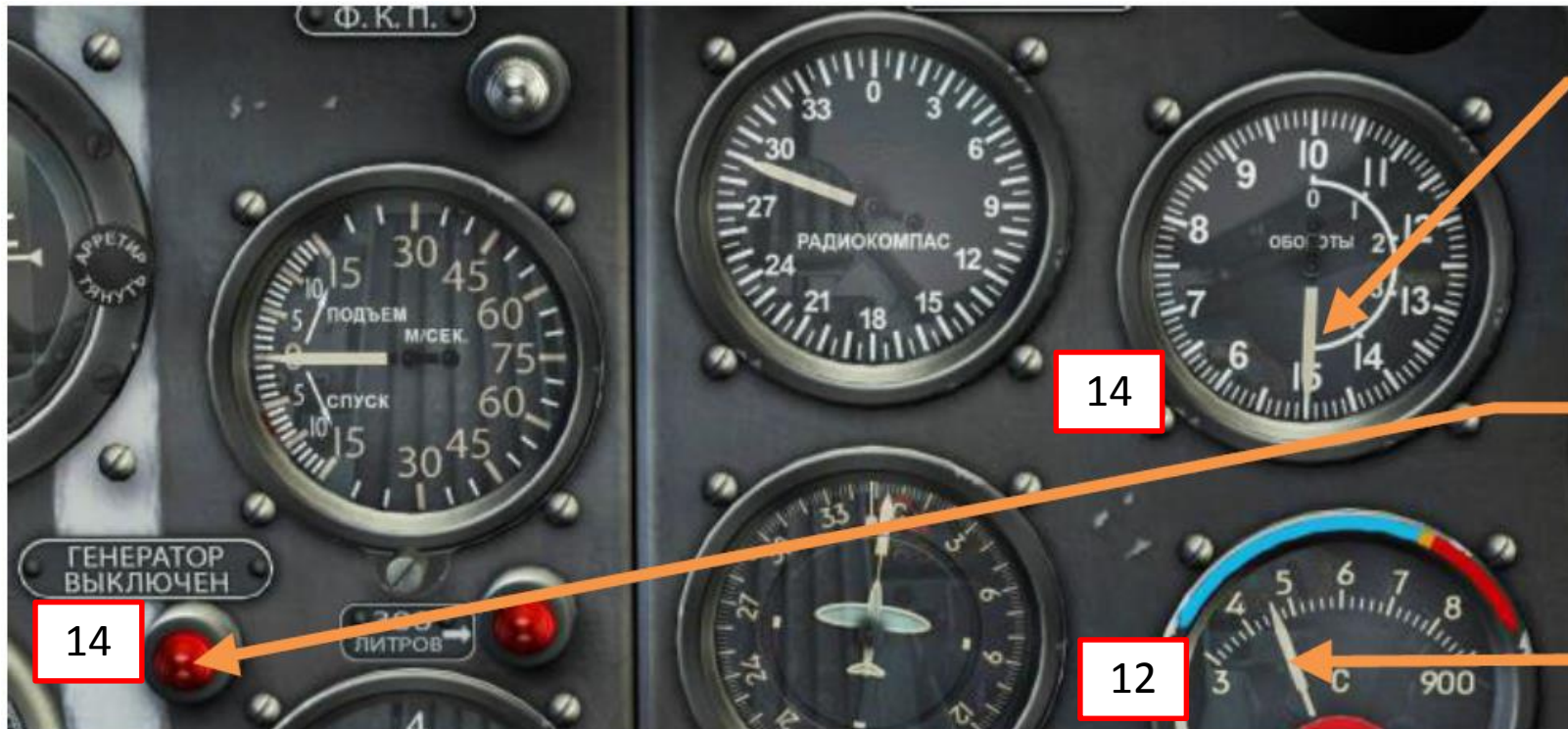


# PART 3 – START-UP

12. WAIT UNTIL IDLE ENGINE RPM STABILIZES AROUND 2400-2600 RPM AND EXHAUST GAS TEMPERATURE (EGT) IS NO GREATER THAN 650 DEG C.
13. MAKE SURE HYDRO BOOSTER LEVER IS SET FORWARD (ON).
14. INCREASE ENGINE POWER TO 5000 RPM.
15. MAKE SURE THE “GENERATOR OFF” (ГЕНЕРАТОР ВЫКЛЮЧЕН) WARNING LIGHT IS OFF ONCE ENGINE REACHES 4500 RPM.



HYDRO-BOOSTER  
LEVER  
ON = FWD / OFF = AFT



5000 RPM

GENERATOR OFF  
light extinguished

EGT



# PART 3 – START-UP

16. TURN OFF GROUND ELECTRICAL POWER AS SHOWN IN STEPS 3 TO 5.
17. AKKYM / BATTERY ON (FWD)
18. CLOSE CANOPY (**LCTRL + C** BY DEFAULT)
19. PRESSURIZE COCKPIT USING PRESS. CONTROL VALVE (INDEX MUST BE SET TO BLUE, YELLOW OR RED).
20. TURN OXYGEN ON BY ROTATING THE VALVE COUNTER-CLOCKWISE.

Generator switch

Battery switch

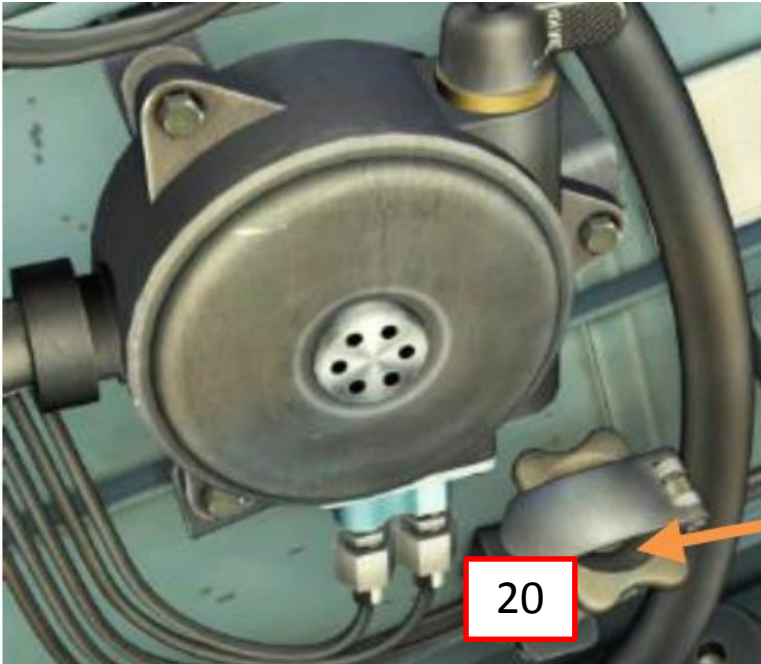
17



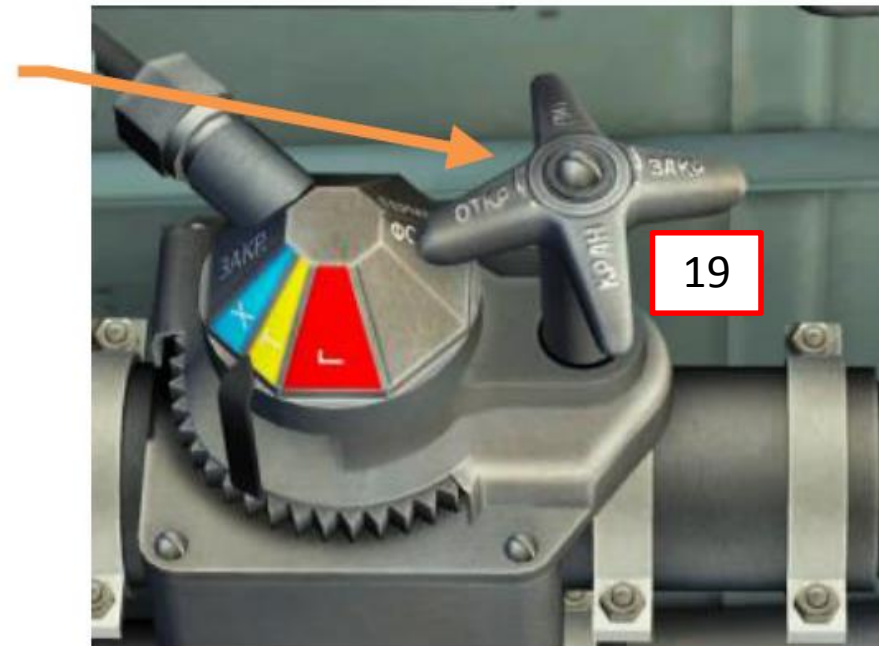
Pressurization control valve (right cockpit side)

Pilot oxygen supply valve (left cockpit side)

20

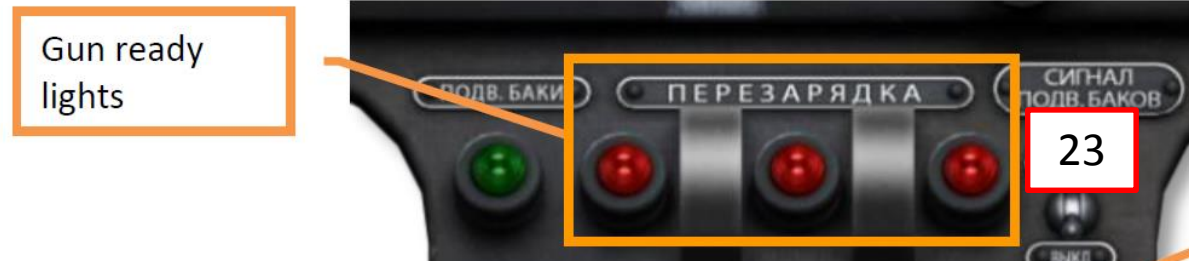


19



# PART 3 – START-UP

21. UNLOCK YOUR LANDING GEAR LEVER
22. ARM YOUR 23 mm AND 37 mm CANNONS BY HOLDING 3-4 SECONDS THE RELOAD SWITCHES.
23. MAKE SURE YOUR “GUNS ARMED” LIGHTS ARE LIT.
24. YOU MAY NOW START TAXIING. USE YOUR BRAKE AND RUDDER TO STEER THE AIRCRAFT.





# PART 4 – TAKEOFF

MANY PEOPLE HAVE THEIR OWN WAY OF TAKING OFF, HERE IS MINE.

1. LINE UP ON THE RUNWAY USING YOUR BRAKE AND RUDDER PEDALS TO STEER THE AIRCRAFT.
2. MAKE SURE YOUR FLAPS ARE UP AND YOUR AIRBRAKES RETRACTED.
3. HOLD BRAKES AND THROTTLE UP TO 8000-9000 RPM.
4. FROM 0 TO 80 km/h, USE YOUR BRAKES & RUDDER PEDALS TO STEER THE AIRCRAFT (YOUR RUDDER ALONE IS INEFFECTIVE AT THESE SPEEDS). USE YOUR RUDDER ALONE WHEN YOU REACH 80 km/h OR HIGHER.
5. PULL YOUR STICK SLIGHTLY BACK WHEN YOU REACH 180-190 km/h.
6. ROTATE AT 220-230 km/h. TAKE SPECIAL CARE NOT TO PULL TOO HARD OR YOU WILL STALL, CRASH, AND BURN.
7. LANDING GEAR UP.
8. ONCE AIRBORNE, MAKE SURE YOUR FLAPS ARE SET TO “NEUTRAL”.
9. MAINTAIN A CLIMB RATE AROUND 7-8 m/s AT A CLIMB SPEED OF 500 km/h.

взлетных. Направление вначале удерживать тормозами, а по мере увеличения скорости — рулем поворота.

30 км/час больше).

Выдерживать самолет с постепенным удалением от земли.

4. На высоте 10—15 м и скорости не более 400 км/час убрать шасси. Уборку проверить по сигнальным лампочкам (загорятся красные), механическим указателям и давлению в гидросистеме (должно быть 120—140 кг/см<sup>2</sup>). Затем кран шасси поставить нейтрально, защелку оставить открытой.

ворот.





# PART 5 – LANDING



# PART 5 – LANDING

MANY PEOPLE HAVE THEIR OWN WAY OF LANDING, HERE IS MINE.

1. DEPLOY AIRBRAKES AND LINE UP ON THE RUNWAY. REDUCE AIRSPEED TO 400-450 km/h.
2. MAKE SURE YOU KEEP THAT AIRBRAKE DEPLOYED. YOU WILL RUN OUT OF RUNWAY IF YOU TRY TO LAND WITHOUT IT.
3. DEPLOY FLAPS TO 20 DEG AND DEPLOY LANDING GEAR ONCE YOU REACH 320-350 km/h. PRESS THE FLAPS SWITCH INCREMENTALLY UNTIL YOU DEPLOY THEM TO 55 DEG.
4. FINAL APPROACH AT 250-270 km/h.
5. SET ENGINE POWER AROUND 7000-9000 RPM. AVOID REDUCING POWER BELOW 6000 RPM AND KEEP YOUR SPEED HIGHER THAN 200 km/h (ANY SLOWER THAN THAT WILL INDUCE A NASTY STALL).
6. TOUCHDOWN AT 200-220 km/h.
7. THROTTLE TO IDLE AFTER TOUCHDOWN.
8. GENTLY HOLD YOUR BRAKE LEVER TO SLOW DOWN.
9. ONCE RUNWAY IS CLEARED, RETRACT FLAPS AND AIRBRAKES.
10. SHUTDOWN AIRCRAFT.



## ЧЕТВЕРТЫЙ РАЗВОРОТ И ДЕЙСТВИЯ ПОСЛЕ РАЗВОРОТА

3401. Четвертый разворот выполнять на скорости ~~не менее~~ ~~800~~ км/час и увеличенных оборотах двигателя.

Вывод из разворота закончить с таким расчетом, чтобы вывести самолет точно на линию посадочных знаков на высоте ~~300~~ м.  $K_{уп} = 0 \pm 4с$ ;  $МК = ПК \pm 4с$



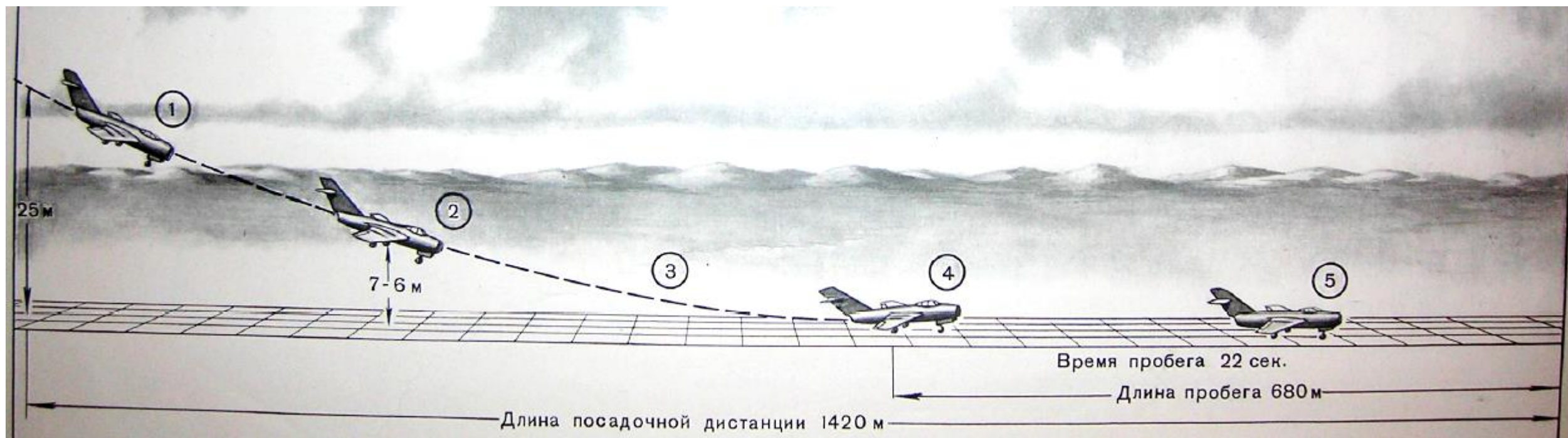
3. До высоты 50—■ м убедиться:

- нет ли препятствий на посадочной полосе;
- точен ли расчет и заход по посадочным знакам;
- нет ли кренов и сносов.

На высоте 30 м проверить скорость по прибору и, сохраняя постоянный угол планирования, перенести взгляд на землю в место снижения самолета.

2. После разворота установить скорость ~~■~~ 270 км/час при оборотах не менее 6000 в минуту, планировать на этой скорости до начала выравнивания.

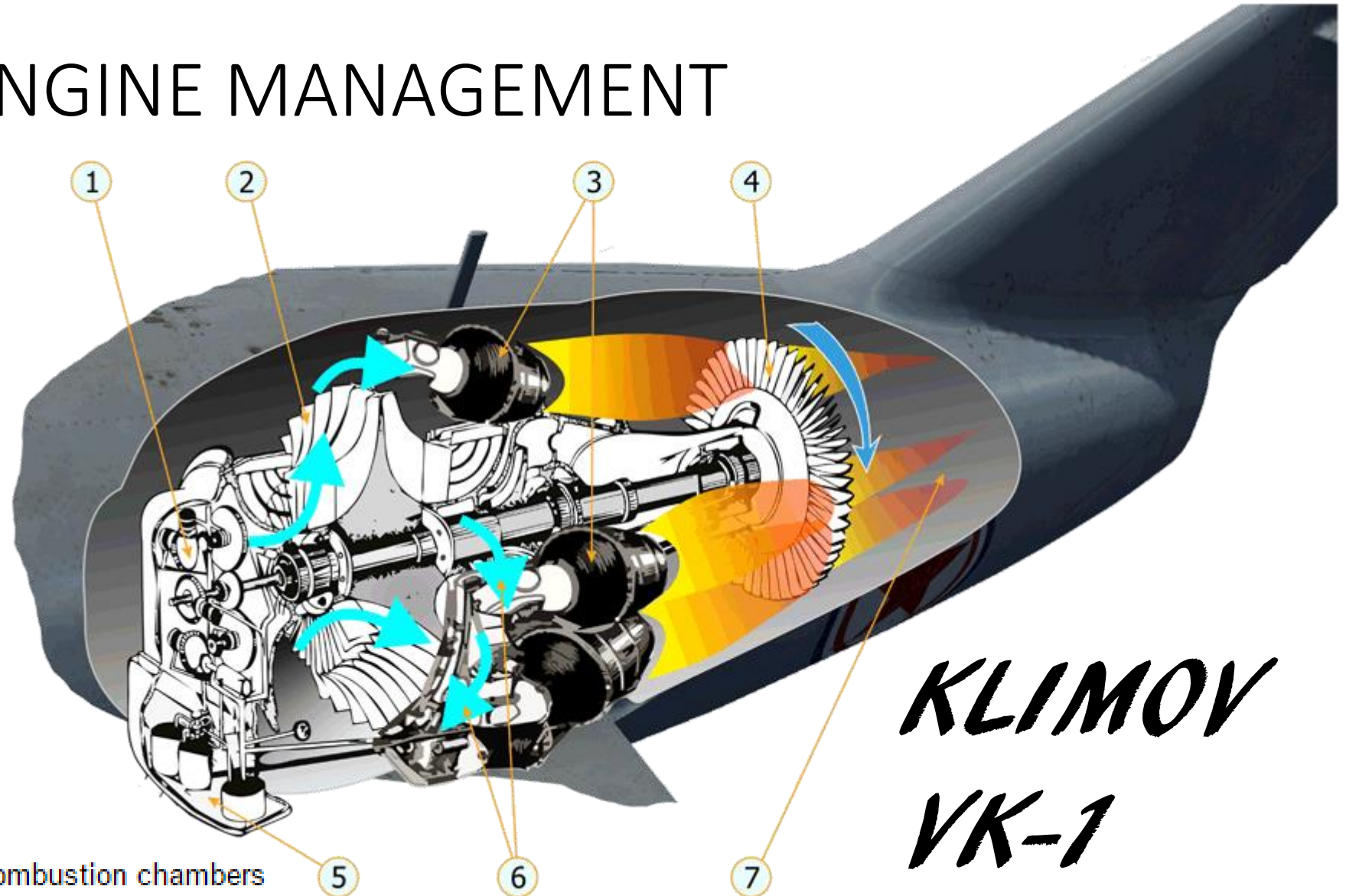
При правильном расчете посадочный знак Т будет проецироваться в бронестекле фонаря кабины так, как показано на рисунке.  $K_{уп} = 0 \pm 4с$ ;  $МК = ПК \pm 4с$





# PART 6 – ENGINE MANAGEMENT

1. Gearbox
2. Centrifugal compressor
3. 9 can combustion chambers
4. Compressor turbine
5. Engine oil system components
6. Compressed air supplied to the combustion chambers
7. Jet pipe and exhaust nozzle (not shown)



# PART 6 – ENGINE MANAGEMENT

- THE **KLIMOV VK-1** WAS THE FIRST SOVIET JET ENGINE TO SEE SIGNIFICANT PRODUCTION AND WAS FIRST PRODUCED BY THE GAZ 116 WORKS. IT WAS DERIVED FROM THE BRITISH ROLLS-ROYCE NENE.
- THE ONLY TEMPERATURE YOU NEED TO KEEP AN EYE ON IS THE EXHAUST TEMPERATURE. MAKE SURE THE TEMPERATURE IS WITHIN SERVICEABILITY & SAFETY LIMITS (BLUE). ENGINE TEMPERATURE CAN ONLY BE CONTROLLED BY REDUCING OR AUGMENTING ENGINE RPM WITH THE THROTTLE.
- MAX ENGINE EXHAUST TEMPERATURE SHOULD BE AROUND **650-700 DEG C** AT ALL TIMES.
- COMPRESSOR STALL MAY OCCUR WHEN YOU MOVE THE THROTTLE TOO QUICKLY. YOU WILL NOTICE A SUDDEN LOSS IN ENGINE RPM. THE VK-1 ENGINE IS SLOW TO RESPOND TO THROTTLE INPUT, SO IT SHOULD BE TREATED GENTLY. IN CASE OF COMPRESSOR STALL, PULL THROTTLE TO IDLE AND SLOWLY THROTTLE UP. MAJOR COMPRESSOR FAILURE MAY RESULT IN AN ENGINE FLAME-OUT.

ENGINE RPM INDICATOR  
(RPM x1000)



EGT (EXHAUST GAS TEMPERATURE)  
(x100 DEG C)



# PART 7 – AIRCRAFT LIMITATIONS

Operational characteristics	Unit	Value
Max allowable gross	lbs / kg	13459 / 6105
Basic weight	lbs / kg	7892 / 3580
Useful load (with pilot 100kg)	lbs / kg	2983 / 1353
Weight with payload for normal mission	lbs / kg	11120 / 5044
Fuel usable capacity internal (0.83 kg/l)	lbs/gal // kg/l	2584/373 // 1172 / 1412
Normal cruise speed (for max range at 10.000m, gross weight 4.600-4.900kg)	indicated air speed (IAS) kts / kmh	243-254 / 450-470
Fuel consumption rate (for loiter at 10.000m, 350 kmh IAS, gross weight 4.600-4.900kg, fuel density 0.83 kg/l)	lbs/h // kg/h	1464 // 664
Maximum speed at sea level, true air speed (TAS)	kts / kmh	581 / 1076
Maximum speed at 10.000m (33.000 feet)	TAS kts / kmh	535 / 990
Service ceiling (for take-off weight 5044kg)	ft / m	51016 / 15550
Time of climb altitude up to 5000m (at 11.560rpm and 680-560 kmh TAS)	m/min	around 2min
Maximum rate-of-climb (at 11.560rpm): at 1000m altitude at 5000m altitude	m/min // maximum lift-to- drag ratio airspeed, TAS kmh	2790 // 710 2100 // 710
Maximum range (w/o drop tank), altitude 10.000m, 450-470 kmh IAS	nm / km	648 / 1200
Maximum range (with drop tank 300L), altitude 10.000m, 460-480 kmh IAS	nm / km	944 / 1749
Maximum range (with drop tank 600L), altitude 10.000m, 440-460 kmh IAS	nm / km	1199 / 2220
Maximum endurance (w/o drop tank): altitude 10.000m, 330-350 kmh IAS altitude 5.000m, 330-350 kmh IAS	hour.min	2.05 1.45
Maximum maneuvering load factor	G	8
Ultimate load factor	G	12

# PART 7 – AIRCRAFT LIMITATIONS

- **SERVICE CEILING**

- 15500 m (50850 ft)

- **MAX AIRSPEED LIMITATIONS**

- @ LOW ALT: 1070 km/h TAS, 1060 km/h IAS
- @ SERVICE CEILING: 720 km/h TAS, 300 km/h IAS

- **MACH NUMBER LIMITATIONS**

- IN LEVEL FLIGHT: 0.919 M
- @ LOW ALTITUDES: 0.866 M
- @ SERVICE CEILING : 0.7 M

- **FLAPS AIRSPEED LIMITATIONS**

- MAX AIRSPEED WITH FLAPS FULLY EXTENDED: 400 km/h IAS

- **LANDING GEAR AIRSPEED LIMITATIONS**

- MAX AIRSPEED WITH FLAPS FULLY EXTENDED: 500 km/h IAS

- **DROP TANKS AIRSPEED LIMITATIONS**

- 200 L DROP TANKS: 820 km/h TAS / 700 km/h IAS @ 3500m, 1015 km/h TAS @ 5000 m
- 600 L DROP TANKS: 990 km/h TAS / 800 km/h IAS @ 4600m

- **AIRBRAKE AIRSPEED LIMITATIONS**

- @ GROUND LEVEL: 750 km/h TAS / 750 km/h IAS
- @ 10000 m: 790 km/h TAS / 482 km/h IAS

- **MINIMUM SPEEDS (STALL)**

- @IDLE POWER, FLAPS + GEAR EXTENDED: 190 km/h
- @IDLE POWER, FLAPS + GEAR RETRACTED: 200-220 km/h BELOW 10000m, 230-240 km/h ABOVE 10000m
- @IDLE POWER, AIRBRAKES DEPLOYED: 200-210 km/h
- @MAX POWER, CLIMBING: 200-210 km/h

**NOTE: TAS MEANS “TRUE AIRSPEED” AND IAS MEANS “INDICATED AIRSPEED”. TO LEARN MORE ABOUT THE DIFFERENCE BETWEEN IAS AND TAS, PLEASE CONSULT THE FOLLOWING LINK:**

<http://en.wikipedia.org/wiki/Airspeed>

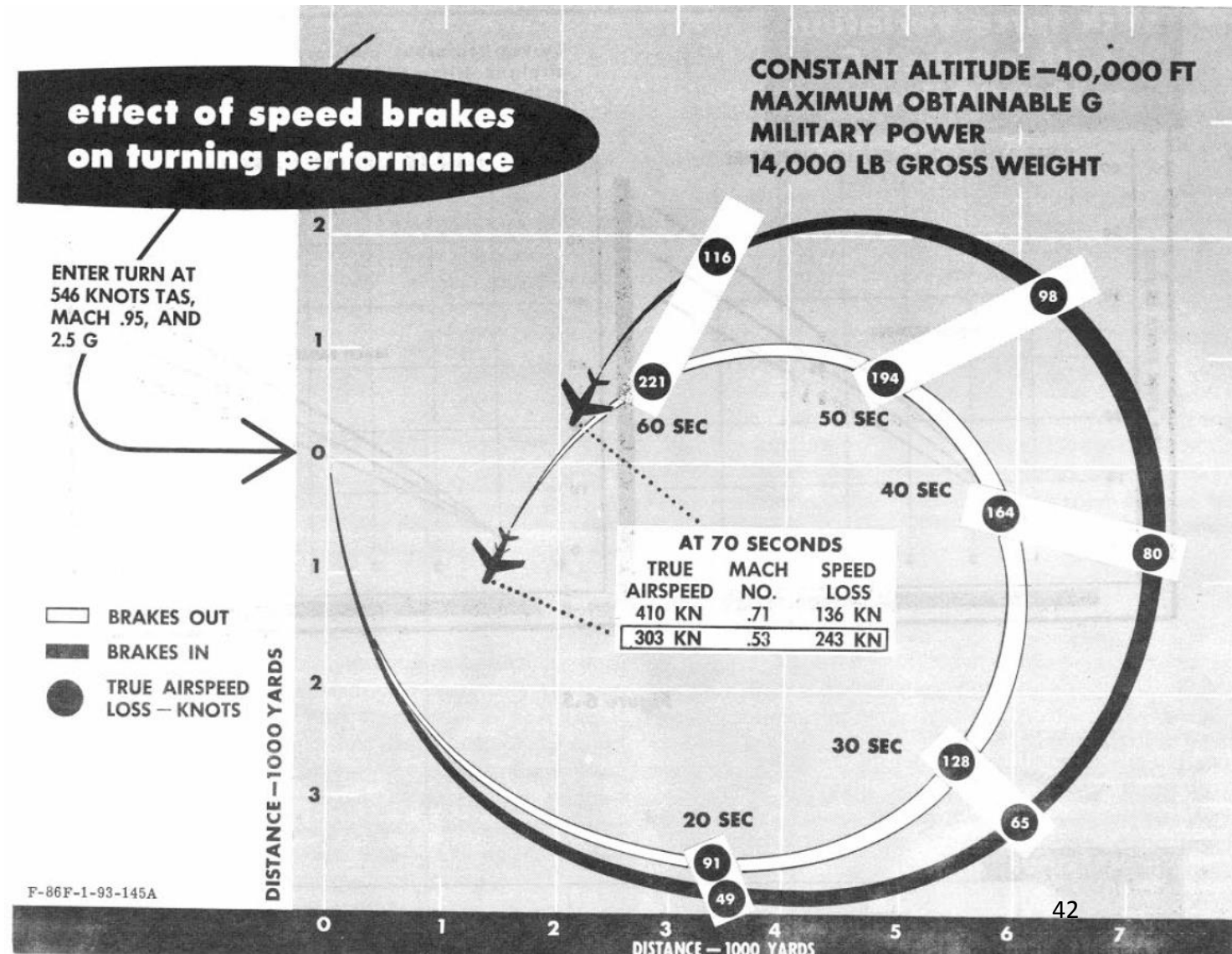


# PART 8 – AIRCRAFT OPERATION

- YOUR AIRCRAFT CAN EASILY GO MORE THAN 600 km/h IN LEVEL FLIGHT, WHICH MEANS THAT YOU CAN VERY EASILY BLACK OUT IF YOU DO NOT PAY ATTENTION TO YOUR SPEED IN TURNING MANOEUVERS. BE GENTLE WITH YOUR AIRCRAFT.
- SPEED IS VERY IMPORTANT IN COMBAT, BUT ALSO DURING LANDING. PAY ATTENTION TO YOUR AIRSPEED TO KNOW WHEN YOU CAN SAFELY DEPLOY YOUR FLAPS AND LANDING GEAR. DEPLOYING THOSE AT HIGH SPEEDS WILL MAKE THEM JAM IN INCONVENIENT POSITIONS.
- DURING A NORMAL PATROL, YOU DO NOT NEED TO GO FULL THROTTLE ALL THE TIME. IT NEEDLESSLY WEARS THE ENGINE DOWN AND CAN CREATE PROBLEMS WITH FORMATION FLYING.
- AT HIGH MACH NUMBERS (BETWEEN MACH 0.86 AND 0.9) YOU CAN LOCK UP YOUR CONTROLS VERY EASILY (ESPECIALLY AILERONS) DUE TO COMPRESSIBILITY EFFECTS. YOU ALSO DEVELOP UNWANTED AERODYNAMIC BEHAVIOURS (LIKE UNCONTROLLED ROLL OR SUDDEN LOSS OF CONTROL IN A DIVE). IF YOU WANT TO REMAIN IN FULL CONTROL OF YOUR PLANE AT ALL TIMES, IT IS BETTER TO FLY A LITTLE BIT SLOWER (MACH 0.7-0.8) BUT KEEP FULL AUTHORITY OVER YOUR CONTROLS.
- USE YOUR AIRBRAKES IF YOU ARE GOING TOO FAST. AIRBRAKES ARE VERY USEFUL TO BLEED OFF AIRSPEED QUICKLY AND CONTROL YOUR DIVING SPEED.

# PART 8 – AIRCRAFT OPERATION

- TYPICALLY IN WORLD WAR II FIGHTERS, FLAPS WERE USED TO MAKE TIGHTER TURNS IN COMBAT. HOWEVER, USE OF FLAPS DURING COMBAT IS STRICTLY PROHIBITED IN THE MIG-15BIS.
- USE OF AIRBRAKES CAN HELP YOU TURN MUCH TIGHTER. THEY COME IN VERY HANDY IN DIVE BOMBING MANOEUVERS AND DEFENSIVE MANOEUVERS, ESPECIALLY WHEN YOU HAVE A SABRE ON YOUR TAIL THAT YOU JUST CAN'T SHAKE OFF. THE CHART SHOWN ON THE RIGHT SHOWS THE GAIN IN TURNING RATE PERFORMANCE DUE TO AIRBRAKES (YES, I KNOW, IT'S A CHART FOR A SABRE... SUE ME.)
- USE AIRBRAKES ONLY WHEN YOU NEED TO. BLEEDING OFF TOO MUCH SPEED IN THE SABRE CAN QUICKLY BECOME FATAL. PLEASE TAKE NOTE THAT:
  1. THE MIG-15 OUTCLIMBS THE F-86.
  2. THE F-86 OUTDIVES THE MIG-15
  3. THE F-86 IS GENERALLY SLIGHTLY MORE MANOEUVERABLE THAN THE MIG-15
  4. THE F-86 IS VERY VULNERABLE AT LOW SPEEDS
  5. THE MIG-15BIS HAS A SLOWER ROLL RATE THAN THE SABRE.





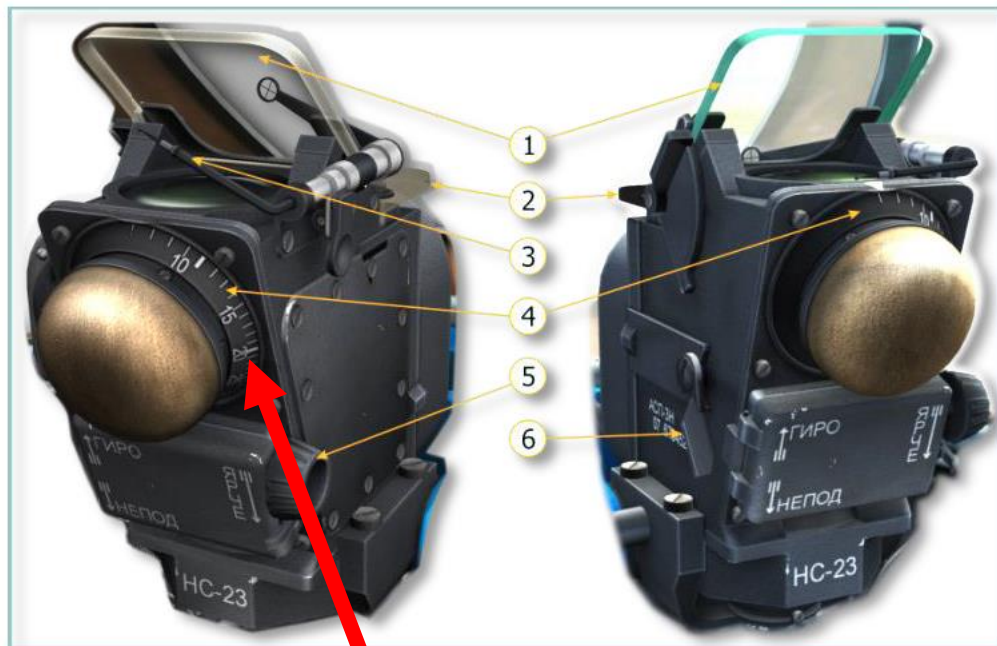
# PART 8 – AIRCRAFT OPERATION

- SOME TIPS WHEN FIGHTING THE SABRE

- GOOD SABRE PILOTS WILL OFTEN USE THEIR SUPERIOR DIVE SPEED TO OUTFRONT YOU. DON'T TAKE THE BAIT: DO NOT FOLLOW THEM TO THE DECK AND MAINTAIN YOUR HIGH ALTITUDE. COMPRESSIBILITY WILL AFFECT YOUR CONTROL SURFACES EARLIER THAN THE SABRE'S, WHICH MEANS THAT YOU CAN ENTER A NASTY SPIN OR DEEP STALL IF YOU TRY TO KEEP UP WITH HIM.
- DO NOT FIGHT A SABRE BELOW 2000 M. HE WILL EAT YOU FOR BREAKFAST. THE MIG-15BIS WAS BUILT TO BE A HIGH-ALTITUDE INTERCEPTOR. THE SABRE EXCELS AT LOW ALTITUDES.
- A GOOD COMBAT SPEED TO MAINTAIN IS ANYTHING HIGHER THAN 400 KM/H. IF YOU GO SLOWER THAN THAT, YOU WILL GET IN TROUBLE.
- GOOD SABRE PILOTS WILL OFTEN USE THEIR SUPERIOR ROLL RATE TO GET YOU INTO SCISSOR FIGHTS. AVOID THEM LIKE THE PLAGUE. THE MIG-15'S ROLL RATE IS SLUGGISH COMPARED TO THE SABRE: IT WAS BUILT TO BE A HIGH-ALTITUDE BOMBER INTERCEPTOR, NOT A DOGFIGHTER.
- ALWAYS USE YOUR AIRBRAKES DURING A DIVE OR A SHARP TURN. THEY WILL PREVENT YOU FROM GOING TOO FAST IF YOU LOSE TRACK OF YOUR AIRSPEED.
- THE MIG-15 HAS VERY LOW AMMO CAPACITY. SHOOT TO KILL: YOU CAN SHOOT DOWN A SABRE WITH JUST 1 CANNON ROUND OR 2.
- USE YOUR SUPERIOR CLIMBING SPEED TO YOUR ADVANTAGE.
- BE VERY WARY OF COMPRESSIBILITY. ALWAYS KEEP AN EYE ON YOUR MACH INDICATOR. IT WILL SAVE YOUR LIFE.
- **VERY IMPORTANT: IF YOU START LOSING CONTROL OF YOUR AIRCRAFT IN A DIVE, DEPLOY AIRBRAKES ASAP** AND THROTTLE BACK (AROUND 50 %). THE AIRBRAKES WILL SLOW YOU DOWN AND MAKE THE AIRCRAFT CONTROLLABLE AGAIN. ONCE YOU GAIN CONTROL, THROTTLE UP AND PULL UP SIMULTANEOUSLY WHILE KEEPING THE AIRBRAKE DEPLOYED.

# PART 9 – HOW TO BE COMBAT READY

## ASP-3H GUNSIGHT

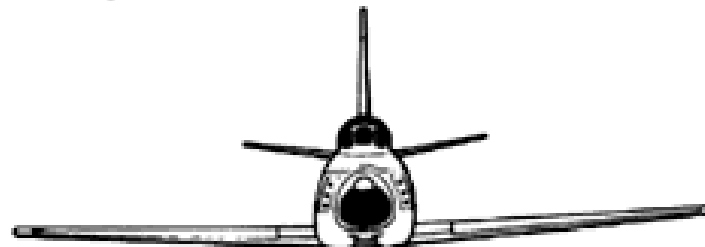


1. Reflector glass
2. Sun filter glass
3. Standby mechanical reticle
4. Target wingspan dial

TARGET WINGSPAN  
(m)

5. Reticle brightness knob
6. Caging lever (down for caged mode, up for gyro mode)

TARGET RANGE  
(X100 m)

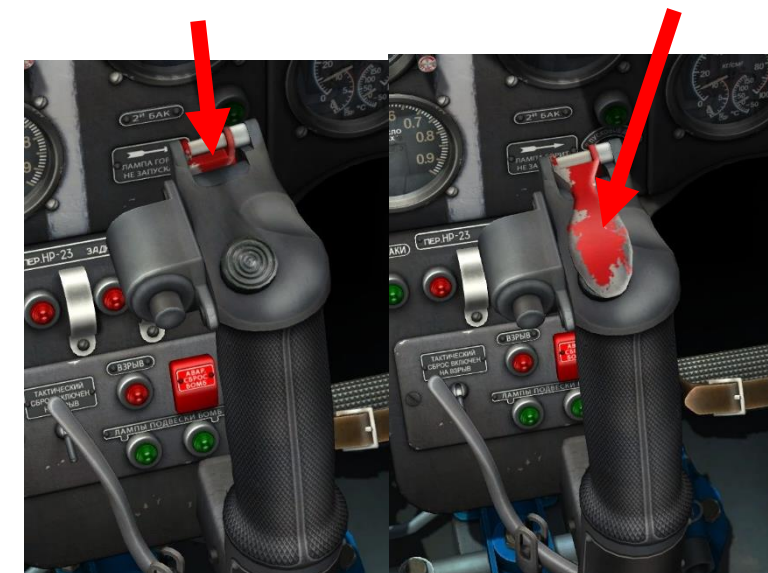


**WINGSPAN OF A F-86F SABRE: 11 m**  
**(VALUE TO ENTER IN GUNSIGHT WINGSPAN)**



GUN SAFETY OFF

GUN SAFETY ON

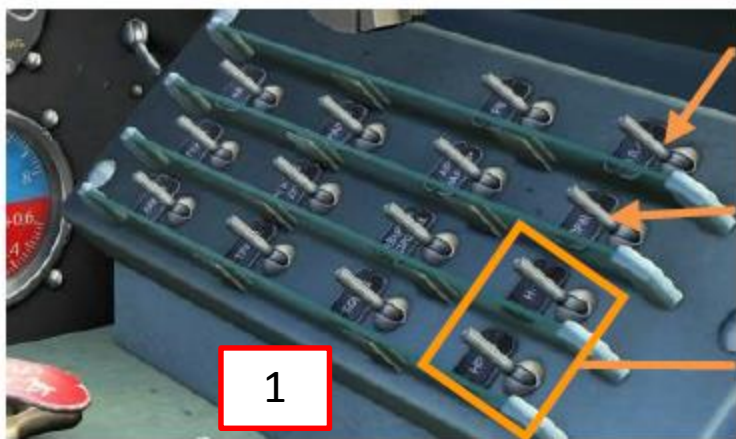




# PART 9 – HOW TO BE COMBAT READY

## FOR GUNS:

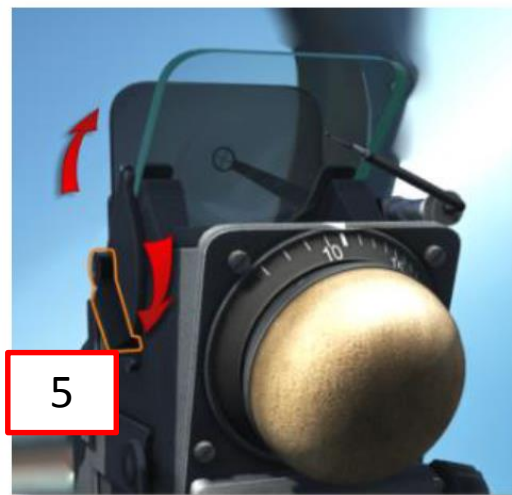
- 1) MAKE SURE GUNSIGHT POWER SWITCH, AND GUN POWER SWITCHES ARE TURNED ON (FWD). GUN CAMERA POWER SWITCH IS OPTIONAL.
- 2) MAKE SURE YOUR GUNS ARE LOADED BY CHECKING THE GUN RELOAD LIGHTS (SHOULD BE DONE ON THE GROUND PRIOR TO TAKEOFF). THE LIGHTS SHOULD BE RED. THE GUNS ARE ARMED WITH THE GUN RELOAD BUTTONS.
- 3) GUN SAFETY OFF. (L-CTRL + SPACE BY DEFAULT)
- 4) SET TARGET RANGE AND WINGSPAN (11 m FOR SABRE) ON GUNSIGHT USING CONTROLS MENTIONED IN PREVIOUS PAGE.
- 5) SET GUNSIGHT TO GYRO MODE (CAGING LEVER IS UP) WHEN YOU HAVE THE TARGET IN SIGHT. OTHERWISE, KEEP GUNSIGHT MODE SET TO FIXED (DOWN).
- 6) FIRE WHEN READY.



Gun camera  
power switch

Gunsight  
power switch

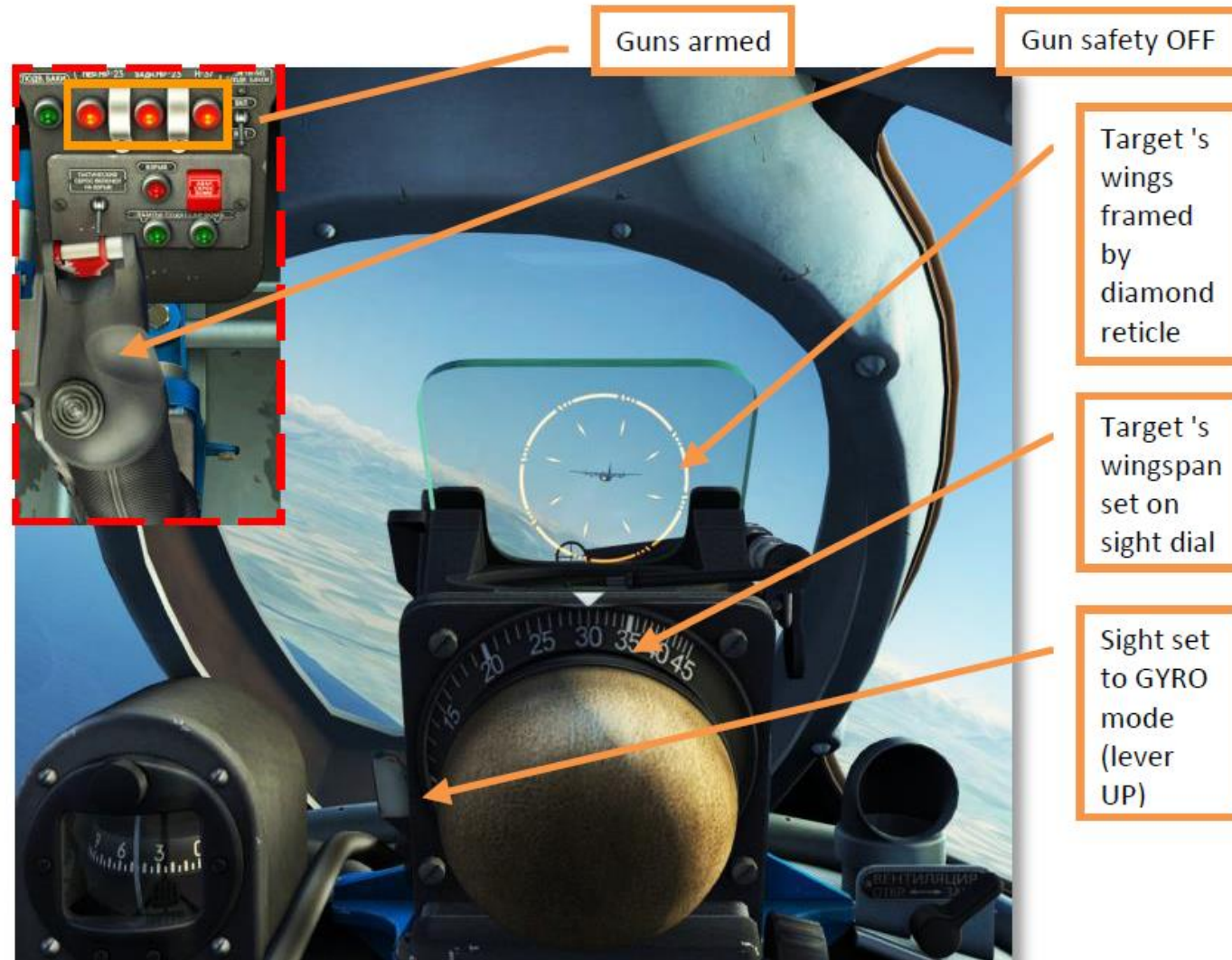
Gun power  
switches



The arming button must be pressed until the corresponding signal lamp on the armament panel, indicating that gun ready to fire, lights on (2-4 seconds).

# PART 9 – HOW TO BE COMBAT READY

FOR GUNS:

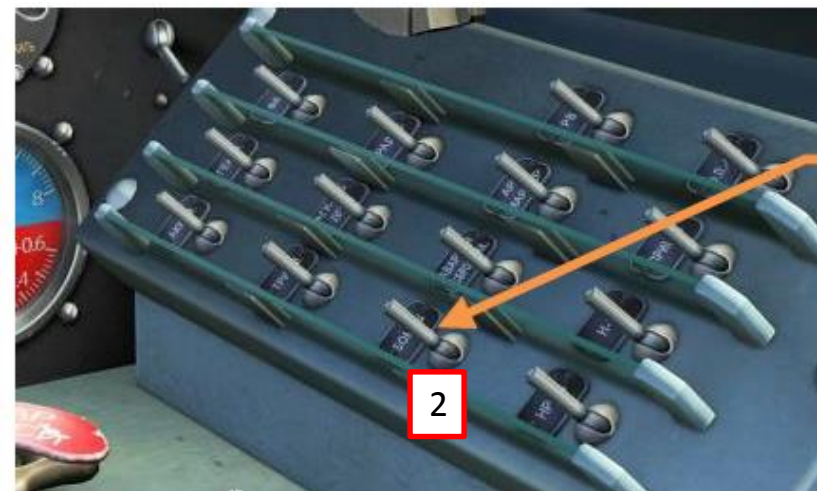




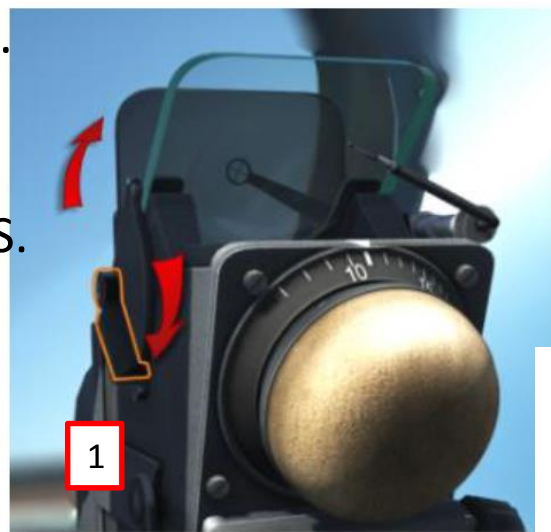
# PART 9 – HOW TO BE COMBAT READY

DIVE **BOMBING** (FROM 2000 M @ 40 DEG DIVE)

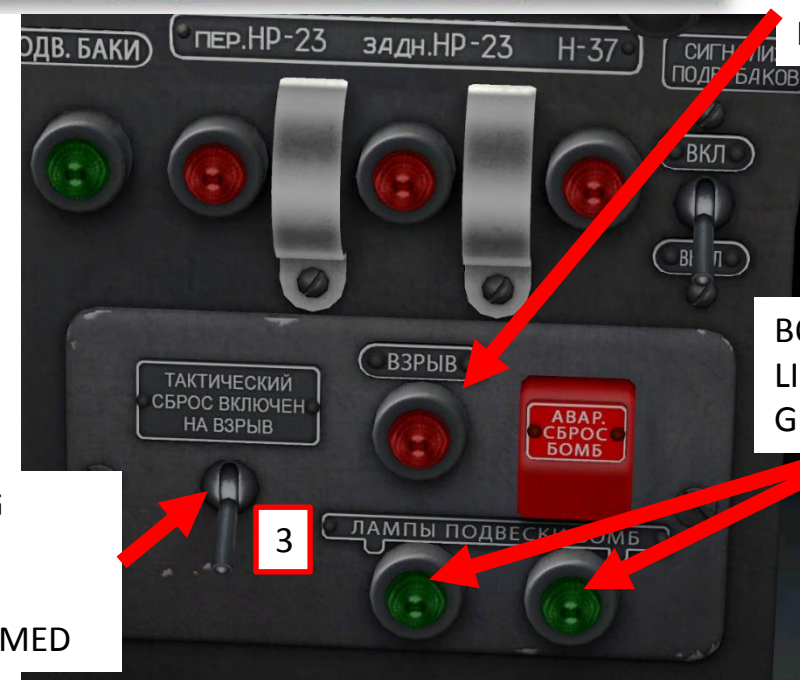
- 1) SET GUNSIGHT MODE TO FIXED (CAGED, SWITCH DOWN)
- 2) SET BOMBS POWER SWITCH TO ON (FWD)
- 3) ARM BOMBS USING THE BOMB ARMING SWITCH (UP). YOU SHOULD SEE A RED LIGHT AND 2 GREEN LIGHTS CONFIRMING THAT THE BOMBS ARE LOADED AND ARMED.
- 4) DEPLOY AIRBRAKES AND SET ENGINE RPM TO 6000 OR LESS.



Bombs  
power switch



BOMB ARMING  
SWITCH  
UP = ARMED  
DOWN = DISARMED



BOMBS ARMED  
LIGHT  
RED = ARMED

BOMBS LOADED  
LIGHT  
GREEN = LOADED

# PART 9 – HOW TO BE COMBAT READY

DIVE **BOMBING** (FROM 2000 M @ 40 DEG DIVE)

- 5) START A 40-50 DEG DIVE.
- 6) RELEASE BOMB AT 800-1200 m USING THE LOWER LINE OF THE SIGHT AS REFERENCE.

Bombs armed

Bombs are on pylons

Dive angle -40°

Altitude 2000 m



AIM HERE!

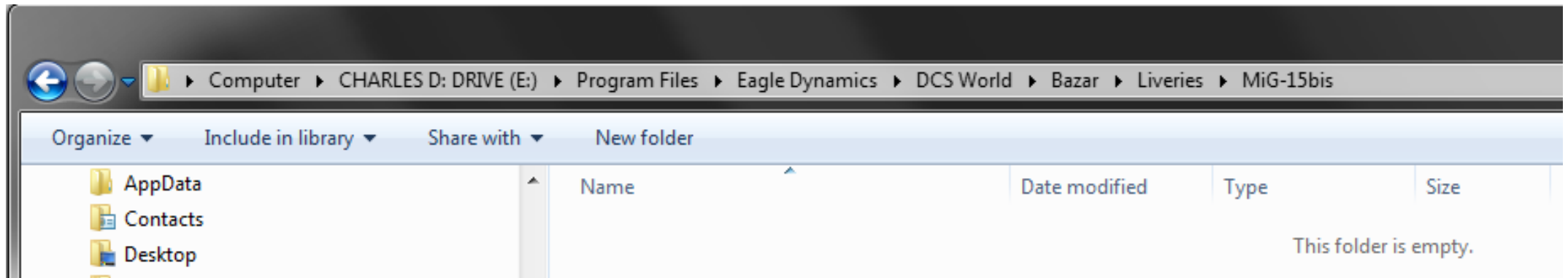
6





# PART 10 – SKINS

- SKINS MUST BE INSTALLED IN THE DIRECTORY SHOWN IN THE PICTURE BELOW.
- SOMETIMES THE FOLDER IS NOT THERE. CREATE ONE MANUALLY CALLED “MiG-15bis” TO BE ABLE TO STOCK THESE SWEET SKINS.



# PART 11 – RSI-6K UHF RADIO TUTORIAL

NOTE: THE TERM “FREQUENCY” USED HERE ACTUALLY REFERS TO THE “WAVE NUMBER” MENTIONED IN THE NEXT SLIDE. THE TERM “FREQUENCY” IS USED FOR THE SAKE OF SIMPLICITY.

1. Radio Transmitter Frequency Scale
2. Radio Transmitter Frequency Tuner
3. Radio Transmitter Frequency Intensity Indicator
4. Radio Transmitter Frequency Selector Lock
5. Antenna Tuner
6. КВАРЦА Jack (not functional in game)
7. Antenna Lock
8. УМФОРМЕРА Converter Cable Jack (not functional in game)



THIS IS THE FREQUENCY WE WILL WANT TO COMMUNICATE ON WITH THE KOBULETI CONTROL TOWER.



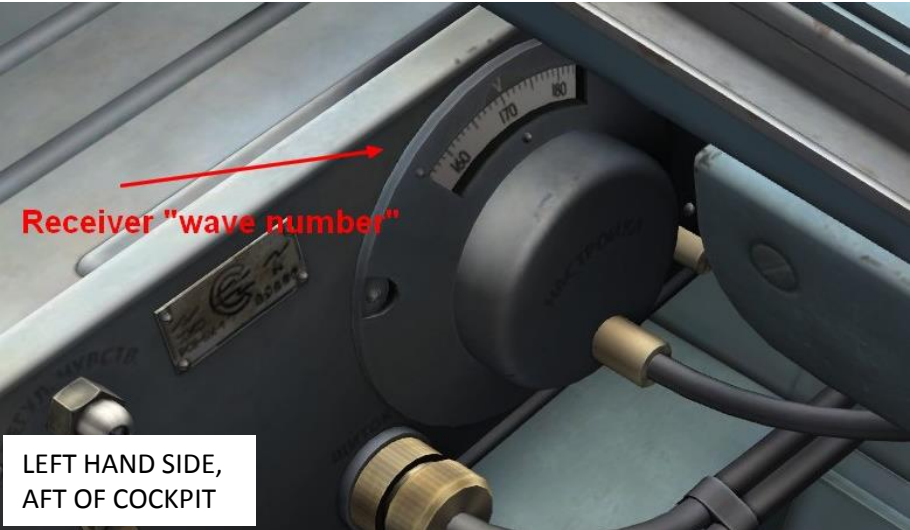


# PART 11 – RSI-6K UHF RADIO TUTORIAL

NOTES:

YOU CAN TUNE THE RADIO TRANSMITTER, RECEIVER AND ANTENNA SEPERATELY.

THE FREQUENCY RANGE OF THE RSI-6 RECEIVER GOES FROM 3.750 MHz TO 5.000 MHz. HOWEVER, WHAT YOU SEE ON YOUR RECEIVER IS NOT THE FREQUENCIES THEMSELVES. THE “WAVE NUMBERS” ARE DISTINCT NUMERICAL ID CODES FOR EACH MHz FREQUENCY GOING FROM 150 TO 200. FOR INSTANCE, 3.750 MHz IS TRANSLATED INTO A WAVE ID CODE OF 150. A WAVE ID CODE OF 151 WOULD MEAN FREQUENCY OF 3.775 MHz (INCREMENT OF 25 KHz), AND 152 WOULD BE 7.780 MHz. THE CONVERSION TABLE IS AVAILABLE ON YOUR RIGHT.



RSI-6K FREQUENCY / WAVE NUMBER CONVERSION TABLE					
FREQUENCY MHz	WAVE #	FREQUENCY MHz	WAVE #	FREQUENCY MHz	WAVE #
3.750	150	4.250	170	4.750	190
3.775	151	4.275	171	4.775	191
3.800	152	4.300	172	4.800	192
3.825	153	4.325	173	4.825	193
3.850	154	4.350	174	4.850	194
3.875	155	4.375	175	4.875	195
3.900	156	4.400	176	4.900	196
3.925	157	4.425	177	4.925	197
3.950	158	4.450	178	4.950	198
3.975	159	4.475	179	4.975	199
4.000	160	4.500	180	5.000	200
4.025	161	4.525	181		
4.050	162	4.550	182		
4.075	163	4.575	183		
4.100	164	4.600	184		
4.125	165	4.625	185		
4.150	166	4.650	186		
4.175	167	4.675	187		
4.200	168	4.700	188		
4.225	169	4.725	189		

**MiG-15bis Default ATC Channel List (Russia)**

<b>Airfield</b>	<b>ATC Stations (MHz)</b>	<b>ATC Wave Number</b>	<b>NDB Stations (Inner)</b>	<b>NDB Stations (Outer)</b>
Anapa	3.75	150	215.0 kHz	443.0 kHz .. ..
Beslan	4.75	190	250.0 kHz	1050.0 kHz ... ..
Gelendzhik	4.00	160		
Krasnodar-C	3.80	152	303.0 kHz	625.0 kHz --- ---
Krasnodar-P	4.10	164	240.0 kHz	493.0 kHz .. ..
Krymsk	3.90	156	830.0 kHz	408.0 kHz .. ..
Maykop	3.95	158	591.0 kHz	288.0 kHz ... ..
Min Vody	4.45	178	283.0 kHz	583.0 kHz .. ..
Mozdok	4.55	182	1065.0 kHz	525.0 kHz ... ---
Nalchik	4.50	180	350.0 kHz	718.0 kHz -- ....
Sochi	4.05	162	761.0 kHz	761.0 kHz ... ---

**MiG-15bis Default ATC Channel List (Georgia)**

<b>Airfield</b>	<b>ATC Stations (MHz)</b>	<b>ATC Wave Number</b>	<b>NDB Stations (Inner)</b>	<b>NDB Stations (Outer)</b>
Batumi	4.25	170		
Gudauta	4.20	168	395.0 kHz	395.0 kHz .... -...-
Kobuleti	4.35	174	490.0 kHz	870.0 kHz ..- -
Kutaisi	4.40	176	477.0 kHz	477.0 kHz - .. -..-
Senaki	4.30	172	129.0 kHz	156.0 kHz - ..
Soganlug	4.65	186		
Sukhumi	4.15	166	489.0 kHz	489.0 kHz .. ....
Tbilisi	4.60	184	435.0 kHz	211.0 kHz .. ..
Vaziani	4.70	188		

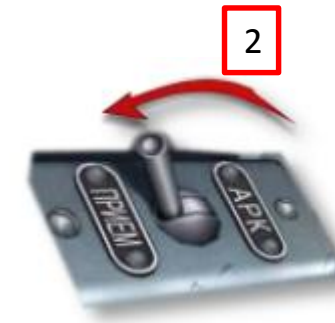
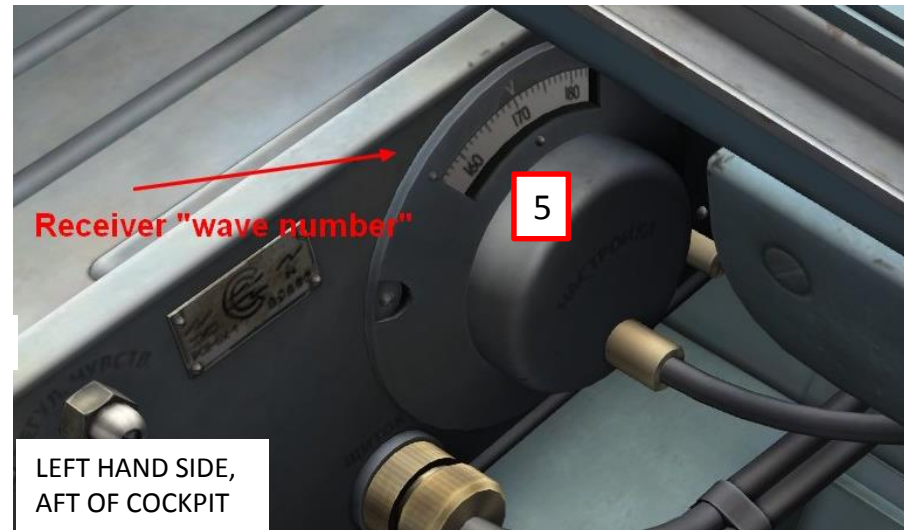
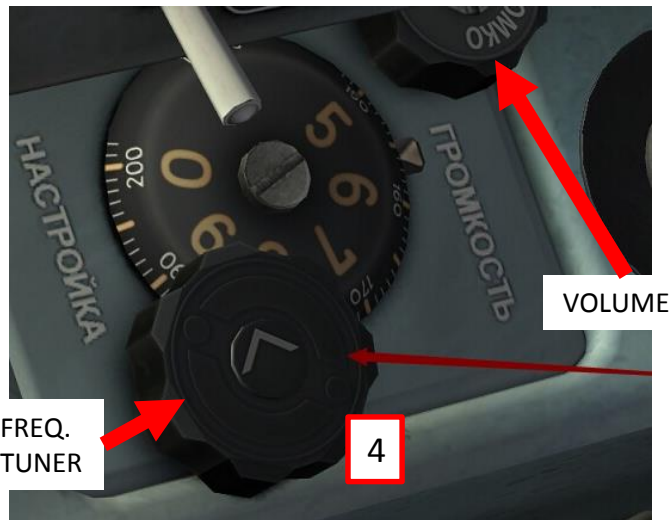
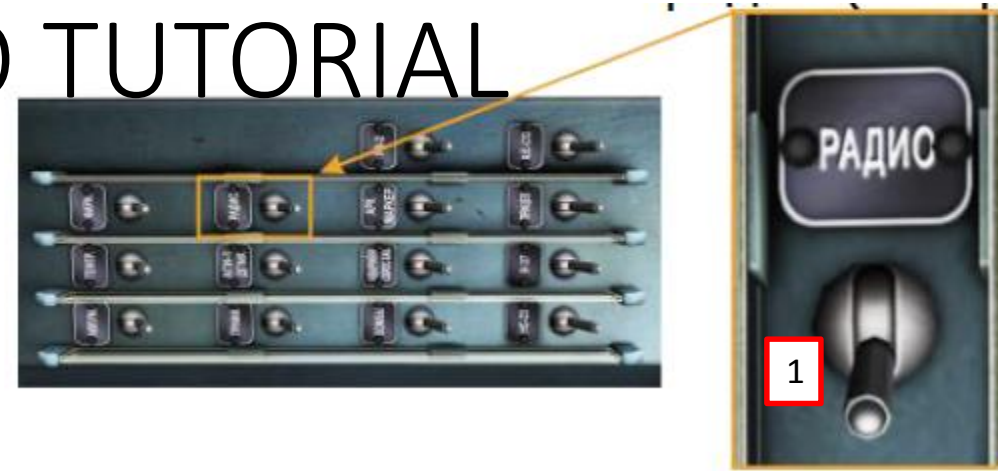
**LIST OF AIRFIELD AIR TRAFFIC CONTROLLER (ATC) FREQUENCIES AND WAVE NUMBERS. THANKS, UBOATS!**

<http://forums.eagle.ru/showthread.php?t=139775>



# PART 11 – RSI-6K UHF RADIO TUTORIAL

1. TURN ON THE RADIO SWITCH (FWD).
2. SET THE RADIO SELECTOR SWITCH TO ПРИЕМ / “RECEIVER” (AFT)
3. USE CONVERSION TABLE TO FIND CORRECT WAVE NUMBER SHOWN IN THE PREVIOUS CONVERSION TABLE. FOR EXAMPLE, KOBULETI HAS A FREQUENCY OF 4.35 MHz, WHICH GIVES A WAVE NUMBER OF 174.
4. TUNE RECEIVER TO DESIRED RADIO FREQUENCY USING RECEIVER KNOB ON THE COCKPIT LEFT HAND SIDE NEXT TO THE FLARE BUTTONS.
5. YOU CAN CHECK RECEIVER “WAVE NUMBER” USING THE INDICATOR.
6. EXCELLENT! YOU CAN NOW RECEIVE TRANSMISSIONS FROM KOBULETI OR WHOEVER IS TRANSMITTING ON THIS FREQUENCY! HOWEVER, YOU CAN’T TRANSMIT ANYTHING YET... HOLD ON, WE’LL COME TO THAT IN A SECOND.

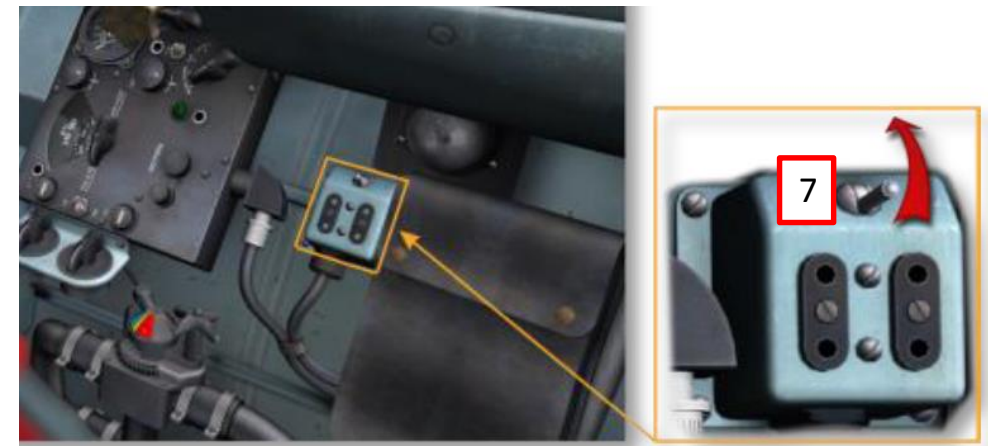
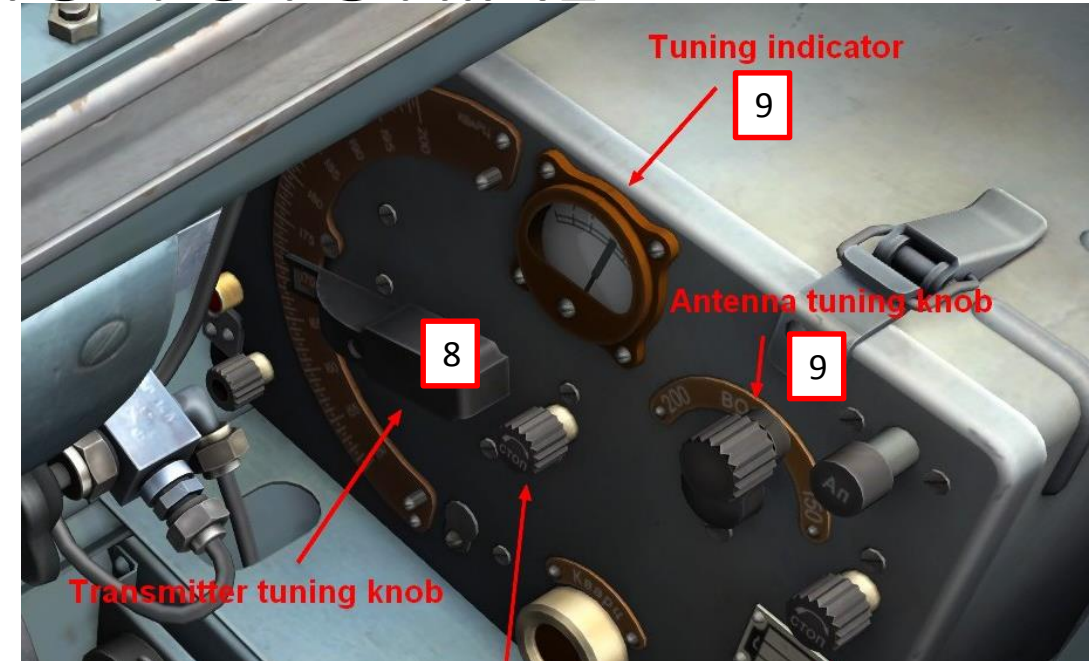


RADIO RECEIVER /  
ARC SELECTOR



# PART 11 – RSI-6K UHF RADIO TUTORIAL

7. CHOOSE BETWEEN “NORMAL” (DOWN) AND “FORCED” (UP) TRANSMITTER MODE. “FORCED” TRANSMITTER MODE WILL GIVE YOU EXTRA TRANSMITTING RANGE, BUT YOU RISK DAMAGING YOUR EQUIPMENT. I RECOMMEND YOU STICK TO “NORMAL” MODE.
8. SET YOUR TRANSMITTER TUNING KNOB TO THE DESIRED TRANSMITTING FREQUENCY. GENERALLY YOU USE THE SAME WAVE NUMBER (FREQUENCY ID THAT YOU SET IN STEP #3) THAT YOU RECEIVE ON IF YOU WANT TO COMMUNICATE WITH, SAY, A TOWER.
9. HOWEVER, YOU NEED TO TUNE YOUR ANTENNA IN ORDER TO MAKE SURE YOU ARE TRANSMITTING IN THE RIGHT DIRECTION IN RELATIONSHIP TO WHOEVER YOU ARE TRANSMITTING TO. USE YOUR ANTENNA TUNING KNOB TO GAIN A MAXIMUM INTENSITY ON THE TUNING INDICATOR. IT’S JUST LIKE THE OLD-SCHOOL RADIOS WHERE YOU NEEDED TO UNFOLD THE ANTENNA AND TOY WITH IT DURING HOURS TO BE ABLE TO RECEIVE ANYTHING.
10. ONCE YOU HAVE AN ACCEPTABLE TUNING INTENSITY, YOU CAN LOCK THE ANTENNA AND TRANSMITTER KNOBS. HOWEVER, THIS IS NOT MANDATORY.
11. YOU CAN NOW TRANSMIT USING THE “MICROPHONE” SWITCH ON YOUR THROTTLE. CONGRATULATIONS!





# PART 12 – K-7 ARC-5 RADIO NAVIGATION

- WE WILL USE A “NDB” (NON-DIRECTIONAL BEACON) FOR RADIO COMPASS NAVIGATION. THESE NDBS ARE LOCATED AT VARIOUS AIRFIELDS AND CERTAIN PLACES. TAKE NOTE THAT THEY ARE HARDCODED IN THE MAP.
- A NDB FREQUENCIES LIST IS AVAILABLE IN THE NEXT PAGE.
- NDBS TRANSMIT A MORSE CODE ON A SET FREQUENCY THAT CAN BE HEARD WITH THE AN/ARN-6 RADIO COMPASS. THE SOURCE OF THE SIGNAL CAN BE DETECTED WITH THE RADIO COMPASS ON THE MAIN INSTRUMENT PANEL (ITS ARROW WILL TELL YOU WHERE THE SIGNAL YOU ARE RECEIVING IS COMING FROM).
- THERE CAN BE MANY NDBS TRANSMITTING AT FREQUENCIES THAT ARE VERY CLOSE TO ONE ANOTHER, SO IT CAN BE EASY TO FOLLOW ANOTHER SIGNAL BY MISTAKE.
- RADIO TUNING IS VERY PRECISE AND SENSITIVE. THE ONLY RELIABLE WAY TO KNOW IF YOU ARE TRACKING THE GOOD SIGNAL IS TO LISTEN TO THE MORSE CODE SIGNAL EMITTED BY THE BEACON AND SEE IF IT MATCHES.
- ALL BEACONS AND THEIR RESPECTIVE MORSE CODES ARE LISTED IN **LINO GERMANY’S BEACON MAP** AVAILABLE HERE:

LINK: [http://www.digitalcombatsimulator.com/en/files/588673/index.php?PAGEN\\_2=2](http://www.digitalcombatsimulator.com/en/files/588673/index.php?PAGEN_2=2)

DIRECT DOWNLOAD: [https://dl.dropboxusercontent.com/u/20586543/Lino\\_Germany%C2%B4s\\_DCS\\_Beacon\\_Map\\_Version\\_1.31.zip](https://dl.dropboxusercontent.com/u/20586543/Lino_Germany%C2%B4s_DCS_Beacon_Map_Version_1.31.zip)

**MiG-15bis Default ATC Channel List (Russia)**

<b>Airfield</b>	<b>ATC Stations (MHz)</b>	<b>ATC Wave Number</b>	<b>NDB Stations (Inner)</b>	<b>NDB Stations (Outer)</b>
Anapa	3.75	150	215.0 kHz	443.0 kHz .. ..
Beslan	4.75	190	250.0 kHz	1050.0 kHz ... ..
Gelendzhik	4.00	160		
Krasnodar-C	3.80	152	303.0 kHz	625.0 kHz --- ---
Krasnodar-P	4.10	164	240.0 kHz	493.0 kHz .. ..
Krymsk	3.90	156	830.0 kHz	408.0 kHz .. ..
Maykop	3.95	158	591.0 kHz	288.0 kHz ... ..
Min Vody	4.45	178	283.0 kHz	583.0 kHz .. ..
Mozdok	4.55	182	1065.0 kHz	525.0 kHz ... ---
Nalchik	4.50	180	350.0 kHz	718.0 kHz -- ....
Sochi	4.05	162	761.0 kHz	761.0 kHz ... ---

**MiG-15bis Default ATC Channel List (Georgia)**

<b>Airfield</b>	<b>ATC Stations (MHz)</b>	<b>ATC Wave Number</b>	<b>NDB Stations (Inner)</b>	<b>NDB Stations (Outer)</b>
Batumi	4.25	170		
Gudauta	4.20	168	395.0 kHz	395.0 kHz .... -...-
Kobuleti	4.35	174	490.0 kHz	870.0 kHz ... -
Kutaisi	4.40	176	477.0 kHz	477.0 kHz - ...-
Senaki	4.30	172	129.0 kHz	156.0 kHz - ..
Soganlug	4.65	186		
Sukhumi	4.15	166	489.0 kHz	489.0 kHz .. ....
Tbilisi	4.60	184	435.0 kHz	211.0 kHz ... -
Vaziani	4.70	188		

**LIST OF AIRFIELD AIR TRAFFIC CONTROLLER (ATC) FREQUENCIES AND WAVE NUMBERS. THANKS, UBOATS!**

<http://forums.eagle.ru/showthread.php?t=139775>




# PART 12 – K-7 ARC-5 RADIO NAVIGATION

- IN THE FOLLOWING EXAMPLE, I WILL FLY FROM THE WEST OF THE AIRFIELD AT KUTAI SI (WHICH ALREADY HAS 2 NDBS NEXT TO IT TRANSMITTING OTHER SIGNALS ON THEIR OWN FREQUENCIES)
- THE SIGNAL I WILL TRACK IS A NDB NEAR THE SMALL TOWN OF KUTAI SI. THE BEACON MAP TELLS ME THAT THE BEACON IS TRANSMITTING ON A FREQUENCY OF 477.00 MHz AND THE MORSE CODE IS – .. – – .
- I CAN ASSOCIATE THE MORSE CODE WITH ONE LONG BEEP, FOLLOWED BY A PAUSE, FOLLOWED BY TWO SHORT BEEPS, FOLLOWED BY A PAUSE, FOLLOWED BY TWO LONG BEEPS AND FOLLOWED BY A SHORT BEEP.
- TAKE NOTE THAT IF YOU FLY UNDER 6000 FT THERE MIGHT BE INTERFERENCES FROM GROUND CLUTTER.




# PART 12 – K-7 ARC-5 RADIO NAVIGATION




682

NDB (Non Directional Beacon)  
with corresponding frequency in kHz  
and morse code.



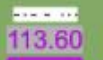
761

Combination of NDB and inner or outer  
marker. NDB with corresponding  
frequency in MHz and morse code.




110.30  
126°

ILS (Instrument Landing System)  
with corresponding frequency in MHz,  
direction of the runway and morse  
code.




113.60

VOR (VHF Omnidirectional Radio  
Range) with corresponding frequency  
in Mhz and morse code.



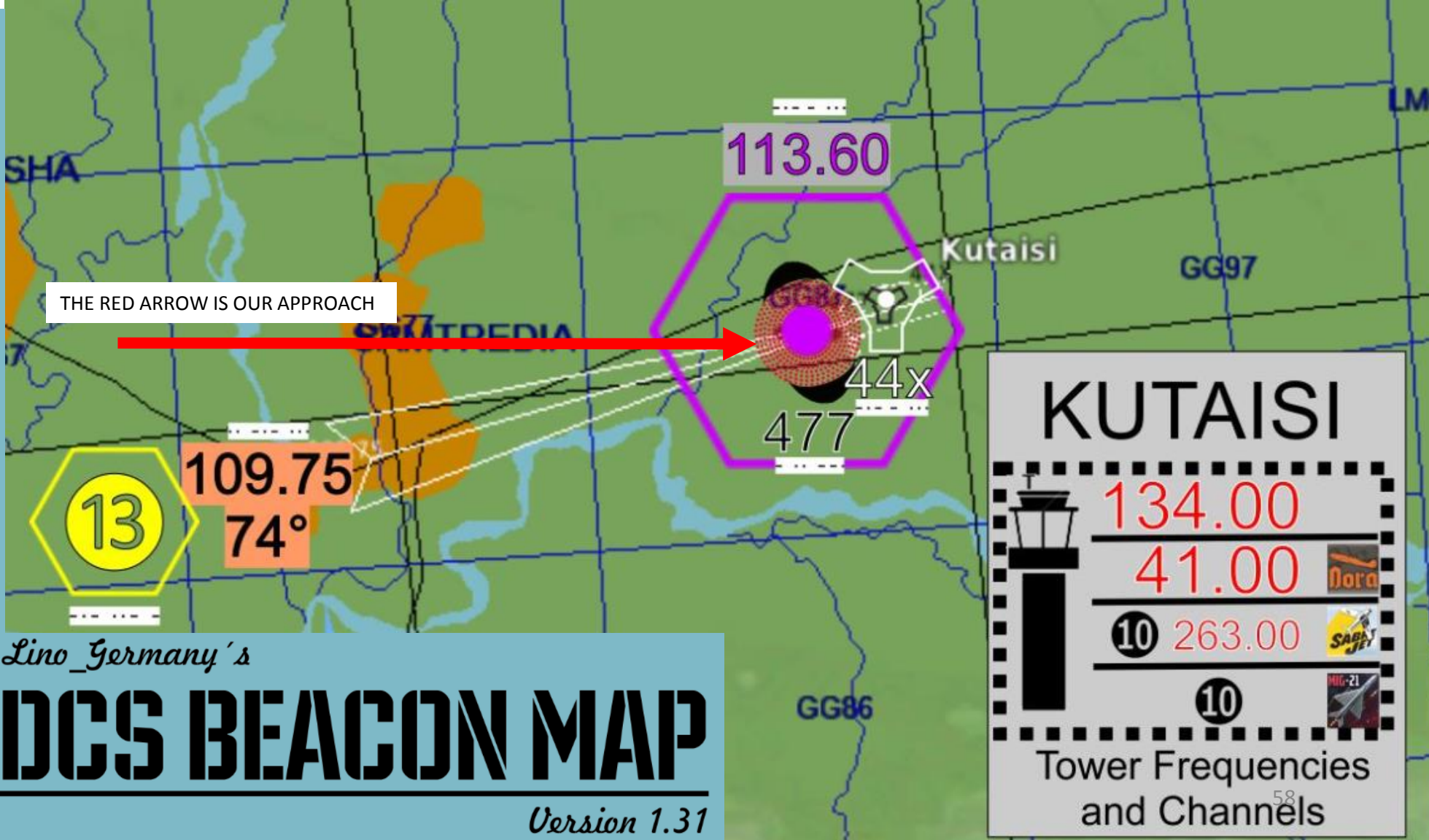
67x

TACAN (Tactical Air Navigation)  
with corresponding channel and  
morse code.



1

RSBN (VOR) and PRMG (ILS)  
Channel with corresponding morse  
code.





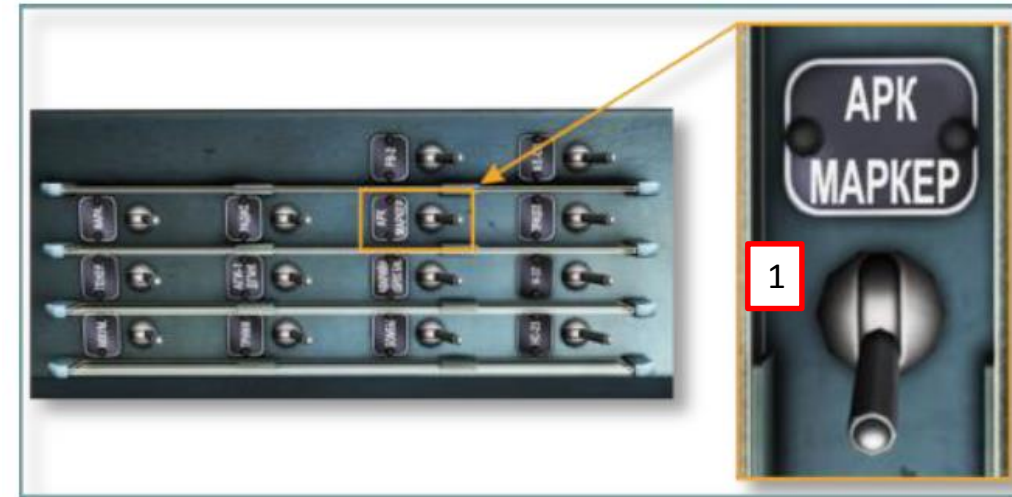
1. Receiver Mode Switch  
ТЛГ-ТЛФ/TLH-STA
2. 3-position frequency range selector switch
3. Frequency Range Indicator
4. Panel illumination dimmer
5. Volume knob
6. Frequency Intensity Indicator
7. Antenna Mode
8. Radio Compass Mode Selector  
КОМП = COMP (Auto Compass mode)
9. ARC-5 ON/OFF Light
10. Frequency Fine Tuning Handle

## ARC-5 PANEL OVERVIEW



## MANUAL RADIO NAVIGATION (NO PRESET NDBS)

1. TURN ON THE ARC-5 POWER SWITCH (FWD).
2. SET THE ARC-5 NEAR/FAR NDB SWITCH TO THE APPROPRIATE RANGE (NEAR = AFT, FAR = FWD). YOU MUSE USE “FAR” IN THIS CASE.
3. SET THE ARC/RECEIVER SWITCH TO “ARC”.
4. SET THE ANTENNA MODE TO AHT (ANT).
5. SET THE ТЛГ-ТЛФ (TLH-STA, OR TELEGRAPHY-TELEPHONY) RECEIVER MODE TO TELEPHONY (ТЛФ) MODE (AFT). NO NDBS IN DCS REQUIRE THE ТЛГ/TELEGRAPHY MODE.





## MANUAL RADIO NAVIGATION (NO PRESET NDBS)

6. ADJUST VOLUME AS REQUIRED.
7. SET THE NDB RANGE ACCORDING TO THE NDB FREQUENCY WE ARE LOOKING FOR (IN OUR CASE, WE WANT 477.0 KHz, WHICH IS IN THE 640-310 KHz range. THE RANGES GO FROM 150-310 KHz, 310-640 KHz and 640-1300 KHz.
8. FINE TUNE THE FREQUENCIES AND FIND THE GOOD FREQUENCIES BY CONSULTING THE SIGNAL INTENSITY NEEDLE (6) AND BY LISTENING TO THE AUDIO TONE. YOU SHOULD KEEP TUNING UNTIL YOU HEAR THE CORRECT MORSE CODE BEEPS. BE CAREFUL, AS MANY NDBS WITH FREQUENCIES CLOSE TO EACH OTHER MAKE IT HARD TO FIND THE CORRECT ONE.



150–310kHz



310–640khz



640–1300khz



## MANUAL RADIO NAVIGATION (NO PRESET NDBS)

9. ONCE YOU FOUND THE CORRECT FREQUENCY (GOOD INTENSITY + CORRECT AUDIO MORSE CODE), SWITCH YOUR RADIO COMPASS MODE TO "AUTO" BY SELECTING "КОМП"/COMP.
10. (FACULTATIVE) TEST THE ANTENNA "COMP" MODE BY HOLDING THE "ANTENNA LOOP" SWITCH (7) LEFT OR RIGHT. THIS WILL MAKE THE ANTENNA TWIST LEFT OR RIGHT. LOOK TO THE REAR TO YOUR RIGHT AND MAKE SURE THE ANTENNA COMES BACK WHEN YOU RELEASE THE LOOP SWITCH.
11. FOLLOW THE NEEDLE ON THE RADIO COMPASS INDICATOR AND YOU WILL HEAD TOWARDS THE NDB.





NDB Station: 477.0

Good signal

Compass

477.0

0°

MiG-15bis Default ATC Channel List (Georgia)

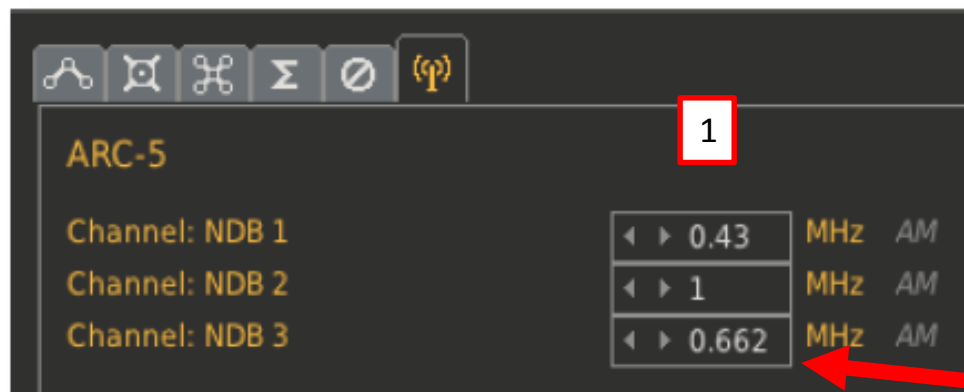
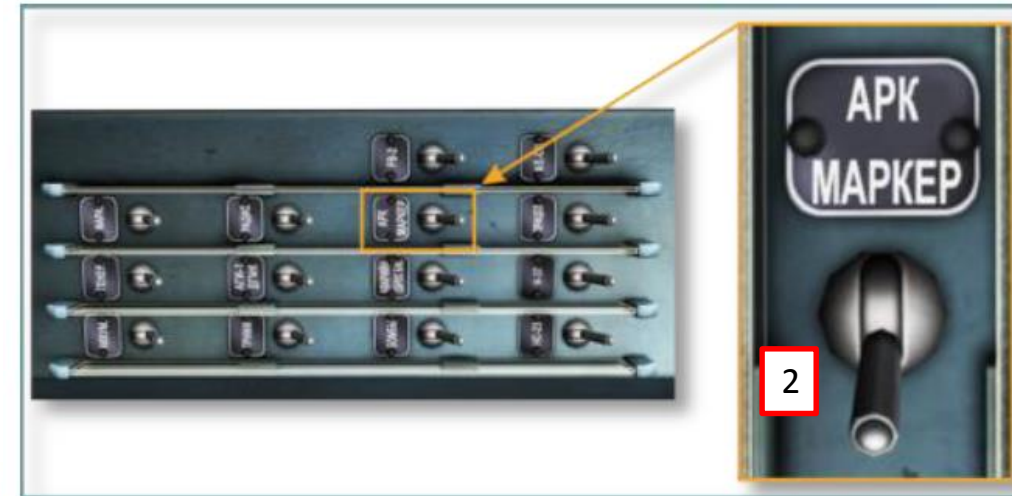
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Kutaisi	4.40	176	477.0 kHz	477.0 kHz
Senaki	4.30	172	129.0 kHz	150.0 kHz
Soganlug	4.65	186		
Sukhumi	4.15	166	489.0 kHz	489.0 kHz
Tbilisi	4.60	184	435.0 kHz	211.0 kHz
Vaziani	4.70	188		

Morse code

## RADIO NAVIGATION WITH PRESET NDBS

YOU CAN ALSO FOLLOW NDBS THAT ARE PRESET IN YOUR ARC-5, A BIT LIKE PRESET RADIO FREQUENCIES IN WW2-ERA FIGHTERS. HOWEVER, THESE PRESET NDB FREQUENCIES MUST BE SET IN THE MISSION EDITOR

1. IN THE MISSION EDITOR, MAKE SURE YOU HAVE PRESET NDB FREQUENCIES THAT ARE ACTUAL NDB FREQUENCIES... OR YOU WILL BE LOOKING FOR NDBS THAT DO NOT EXIST.
2. TURN ON THE ARC-5 POWER SWITCH (FWD).
3. SET THE ARC-5 NEAR/FAR NDB SWITCH TO THE APPROPRIATE RANGE (NEAR = AFT, FAR = FWD). YOU MUST USE “NEAR” IN THIS CASE.
4. SET THE ARC/RECEIVER SWITCH TO “ARC”.



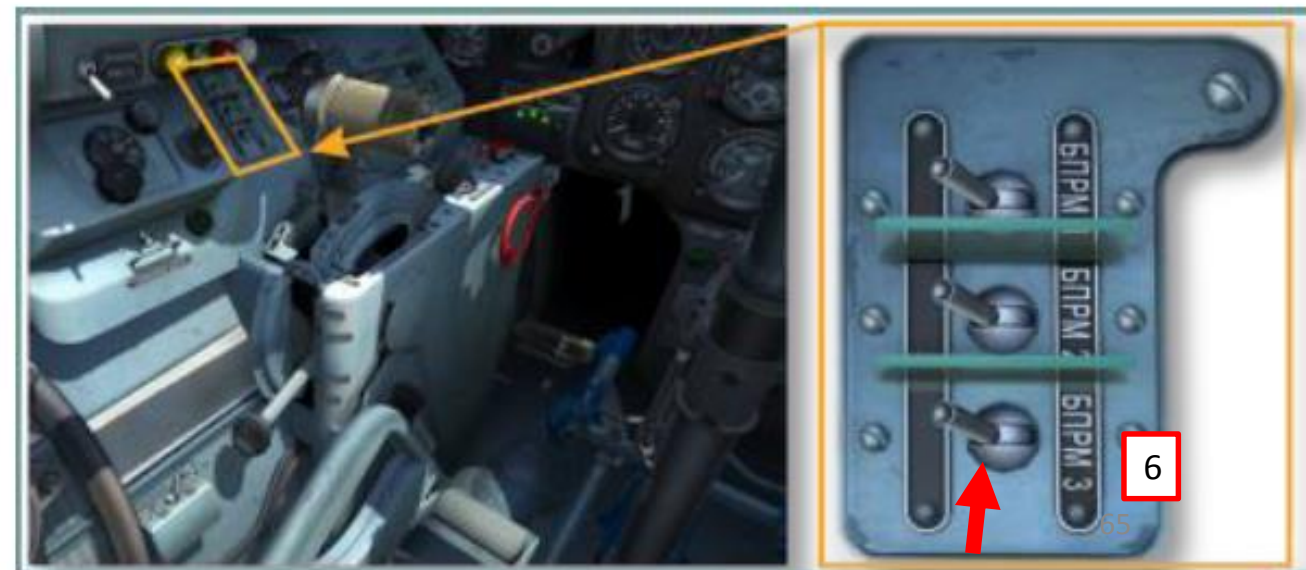
IN OUR EXAMPLE, NDB #3 WILL HAVE THE 477.0 KHz FREQUENCY (0.477 MHz)





## RADIO NAVIGATION WITH PRESET NDBS

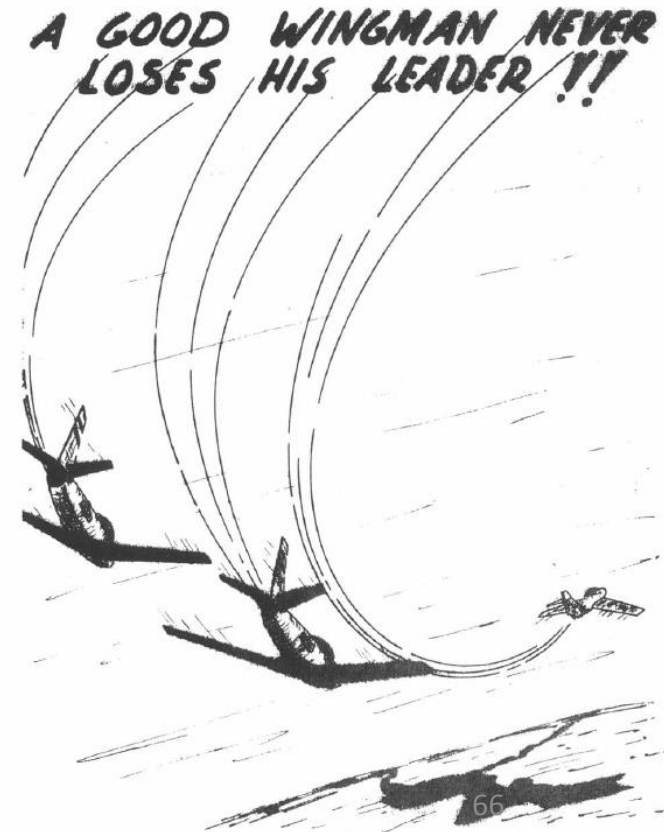
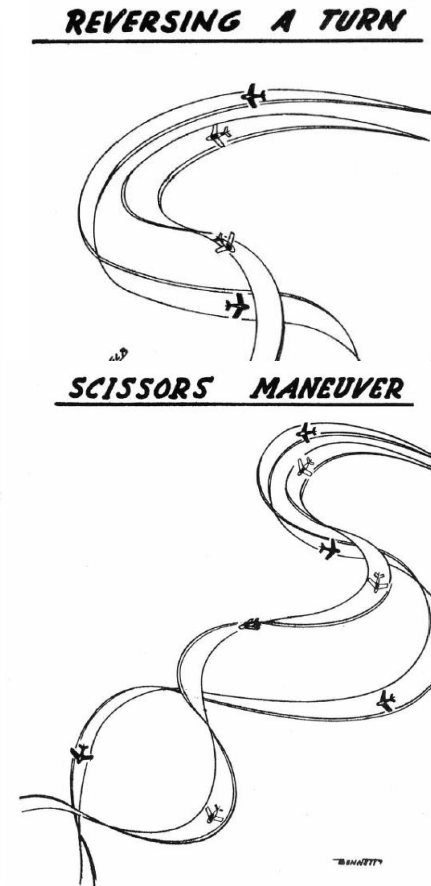
5. SET THE ТЛГ-ТЛФ (TLH-STA, OR TELEGRAPHY-TELEPHONY) RECEIVER MODE TO TELEPHONY (ТЛФ) MODE (AFT). NO NDBS IN DCS REQUIRE THE ТЛГ/TELEGRAPHY MODE.
6. FLIP THE PRESET NDB SWITCH (FWD) THAT HAS THE FREQUENCY YOU ARE LOOKING FOR (WHICH HAS BEEN PREVIOUSLY SET IN THE MISSION EDITOR). FOR EXAMPLE, IF PRESET NDB FREQUENCY #3 IS 477.0 KHz (WHICH IS THE ONE WE ARE LOOKING FOR), THEN FLIP THE NDB SWITCH 3 UP AND THE RADIO COMPASS WILL START LOOKING FOR IT BY ITSELF.
7. NOTE: NEVER E-V-E-R FLIP MORE THAN 1 NDB SWITCH AT ONCE. IF YOU DO, YOU WILL FRY THE COMPUTER.
8. NOW, YOU JUST NEED TO FOLLOW THE WHITE RABB... RADIO COMPASS NEEDLE LIKE YOU DID IN THE MANUAL RADIO NAV TUTORIAL.



# PART 13 – TACTICS AGAINST THE F-86F SABRE

YOU SHOULD CONSULT “**NO GUTS, NO GLORY**”, AN EXCELLENT TEXTBOOK WRITTEN BY USAF MAJOR GENERAL FREDERICK C. BLESSE (RET). IT HAS EXCELLENT INSIGHT ON HOW THE SABRE SHOULD BE FLOWN IN COMBAT SCENARIOS. IT IS ALSO APPLICABLE TO THE MIG-15 AS IT GIVES YOU TRICKS ON WHAT TO EXPECT FROM COMPETENT SABRE PILOTS. THE RULES OF WINGMANSHIP STILL APPLY ALL THE SAME.

LINK: <https://dl.dropboxusercontent.com/u/20586543/NO%20GUTS%20NO%20GLORY%20-%20A%20GUIDE%20TO%20SABRE%20COMBAT.pdf>





# PART 14 – OTHER RESOURCES

- BUNYAP SIMS YOUTUBE CHANNEL
  - MAIN CHANNEL: <https://www.youtube.com/user/4023446/videos>
- LINO\_GERMANY BEACON MAP
  - [http://www.digitalcombatsimulator.com/en/files/588673/index.php?PAGEN\\_2=2](http://www.digitalcombatsimulator.com/en/files/588673/index.php?PAGEN_2=2)

