FOREWORD

Thank you for downloading the Mig-21 Bis for MSFS2020. This is the second project developed by a young team, who set a very challenging task of reconstructing the iconic Mig-21 Bis jet fighter. We do believe two years of development have not been lost labor, and this remarkable aircraft will bring you many hours of enjoyment in the virtual skies.

Mig-21 Bis is an utterly complex aircraft, and implementation of each system and function would take a lot of time. All the gauges and systems were elaborated very carefully based on actual functionality, and almost all were implemented exactly as described in the original MIG-21 BIS Pilot's Manual. Mig-21 "Fishbed" is the most-produced supersonic jet aircraft in aviation history, it flew or is still flying in more than 50 countries in Europe, Asia, Africa and South America. We made a lot of effort to elaborate the visual part of both the interior and exterior of this famous fighter.

Copyright Information

Credits and Acknowledgements

I would like to gratefully acknowledge the development team for their superb work and dedication to this project. Many of you wondered if we would ever get it done, so the day has come.

Features

- Super-maneuverable, powerful, fast, all-weather, front-line fighter MIG-21 BIS was designed to be the best.
- Fly high and fast: above 57,000 feet and 2.1 Mach
- Try full power of Tumansky R25-300 engine which has 8 tones of afterburner thrust.
- Flight model is based on actual performance characteristics at diverse altitudes and speeds, considering overall configuration of aircraft.

Cockpit Systems and Gauges are made with ultimate realism according to the original Mig-21 Bis Pilot's Manual:

1. Fuel Supply System
2. Electrical Power Supply System
3. Landing Gear system
4. Flaps and SPS systems, Aerodynamic Deceleration and Flight Control Systems.
5. Weapon control system (visual part only)
6. The full functional Autopilot with 5 unique modes of flight and navigation.
7. Warning, Caution and Indicator Lamps
8. Lighting System.
9. Communication Equipment
10. Navigation system
11. Fire Extinguishing System

- All systems can be operated according to Normal Procedures set by the original Mig-21 Pilot's Manual

VERSION

- **MiG-21Bus for MSFS2020 v1.3.0**

Recomended Settings

Realism Settings

GKS Mig-21 bis was built with a very high degree of realism and accuracy. Therefore, it was developed using the highest realism settings available in MSFS 2020. The following settings are recommended to provide the most accurate depiction of the flight model. Otherwise the certain features may not work correctly, and the flight model will not perform accurately. The figure below describes the recommended realism settings.

GENERAL OPTIONS Make sure you are using the MODERN flight model

Make sure you are using the metric system

ASSISTANCE OPTIONS To achieve the highest degree of realism, move all sliders to the rightmost position. The model was developed in this manner, thus we cannot ensure the accuracy of the model, if these options are not disabled.

BASIC CONTROLS

MOUSE CONTROLS

The model uses an "Legacy" control system option. Mouse controls are uniform for all switches, buttons, knobs, and work according to the following rules:

1. Left single click – increment forward
2. Right single click – not used
3. Mouse Wheel – controlled forward or backward movement.
4. For switches which contains 3 and more positions Left single click will cycle all positions.

! IMPORTANT

CUSTOM KEY MAPPINGS

! Drag chute and Droppable fuel tanks features are requiring custom key mapping.

Drag chute

Drag chute deployment button is mapped to
RADIO -> ANNUNCIATOR SWITCH ON
It is recommended to map this function to *("[")*

Drag chute jettison button is mapped to
RADIO -> ANNUNCIATOR SWITCH OFF
It is recommended to map this function to *("]")*

Drop fuel tanks

Drop fuel tanks jettison buttons is mapped to
MISCELLANEOUS -> TOGGLE TAIL HOOK HANDLE
It is recommended to map this function to ("|")

You can find the usage description in the following sections of the manual.

However, it can be still controlled corresponding cockpit buttons

Recommended key mappings:

- Gears UP/DOWN
- Flaps
- Air Brakes
- Brakes
- Autopilot master switch
- Autopilot leveling

AUTOPILOT Stabilization and level flight modes of autopilot can be controlled by default keys, however ILS automatic approach and instrumental modes of autopilot are specific and can be set only by switches in Virtual Cockpit.

Known issues

The external model of the cockpit becomes visible

In some cases, the external model becomes visible inside of the cockpit. This is due to the bug of turning on/off the visibility of traffic models. It should be fixed in the next msfs202 update by ASOBO

Basic Video Tutorials

For a quick start, you can turn to the GKS YouTube channel, where you will find video tutorials on all the basic procedures and operations.

GKS YouTube channel https://www.youtube.com/channel/UCRQba_rx2ilDR9bl9_aXyDA

If necessary, you can ask questions on our forum or send an application to the support on our website:

Forum: https://www.aviasimhd.com/community/
Support: https://www.aviasimhd.com/1885-2/

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SHORT HIUSTORIC OVERVIEW

The MiG-21 Bis (NATO reporting name: "Fishbed") is a supersonic front-line jet fighter and interceptor aircraft, designed by the Mikoyan-Gurevich Design Bureau in the Soviet Union. Development of what would become the MiG-21 began in the early 1950s from several prototypes (Ye-1 to Ye-4). First delta wings prototype (Ye-4) made its maiden flight on 16 June 1955 and its first public appearance during the Soviet Aviation Day display at Moscow's Tushino airfield in July 1956.

The MiG-21 was the first successful Soviet aircraft combining fighter and interceptor characteristics in a single aircraft. It was a lightweight fighter, achieving Mach 2 with a relatively low-powered afterburning turbojet. The delta wing, while excellent for a fast-climbing interceptor, meant any form of turning combat led to a rapid loss of speed. However, the light loading of the aircraft could mean that a climb rate of 235 m/s (46,250 ft/min) was possible with a combat-loaded MiG-21bis not far short of the performance of the later F-16A.
Due to its simplicity of design, ease of mastering the piloting technique and excellent indicators of speed and maneuverability, the Mig 21 is widely used in the world.

The MiG-21 «Fishbed» is:

- the most built combat aircraft after World War II
- the most built supersonic aircraft
- the longest built combat aircraft with 57 years of production
- the most widely used combat aircraft and served or serves with about 50 air forces on four continents
- an aircraft built in 20 different versions of four generations.

The MiG-21 flew or is still flying in more than 50 countries in Europe, Asia, Africa and South America. For more than 40 years the MiG-21 has been the backbone fighter of the air forces of former Warsaw Pact countries. When Poland, Czech and Hungary joined the NATO the MiG-21s of these countries continued to serve in the alliance.

General Arrangement Diagram

THE AIRCRAFT.

The MIG-21 BIS aircraft is a front-line (tactical) interceptor fighter powered by one turbojet engine. It is fitted with instruments and electronic equipment ensuring flights by day and at night under fair and bad weather conditions.
The aircraft is an all-metal, cantilever mid-wing monoplane featuring a delta wing, swept-back tail unit and controllable stabilizer.

- Crew: 1
- Length: 15.0 m (with Pitot) (49 ft 2.5 in)
- Wingspan: 7.154 m (23 ft 5.66 in)
- Height: 4.125 m (13 ft 6.41 in)
- Wing area: 23.0 m2 (247.3 ft2)
- Empty weight: 5,339 kg (11,770 lb)
- Gross weight: 8,725 kg (19,235 lb)
- Powerplant: 1 x Tumansky R25-300, 44 kN static thrust dry, 71 kN static thrust with afterburner

Performance

- Maximum allowed speed: 2350km/h TAS, 1300km/h IAS
- Maximum allowed Mach: 2.05M
- Range: (internal fuel) 1,210 km (751 miles)
- Service ceiling: 17,500 m (57,415 ft)
- Rate of climb: 225 m/s (44,280 ft/min)
- Take-off speed: 340-370km/h IAS
- Touchdown speed: 260-270km/hIAS
- Cruise speed: 800km/h TAS

Technical data

- Wheel base: 4.71m
- Track width: 2.69m
- Wing load: 385kg/m2
- Plane empty weight: 5339kg
- Normal takeoff weight: 8725kg
- Max takeoff weight: 10,400kg
- Nosecone movement: max 200mm
- Flaps angles:
  - Take off: 25°
  - Landing: 45°
- Ailerons angles: ±20°
- Air-brake angles:
  - Front flaps 35°
  - Rear flap 40°
- Horizontal stabilizer (tail) angles: +7.5°/ -15.7°

  Rudder angles: ±25°

Fuel capacity

- Main: 2850l = 2225kg
- Drop tanks: 490l = 382kg (+52kg tank weight)
- Drop tanks: 800l = 625kg (+57kg tank weight)

l/kg ratio: 1kg = 1.279l; 1l = 0.781kg

Typical Fuel consumption

- 100% on ground 3.2l/s (2.5kg/s)
- AFB1 sea level: 4.2l/s (3.3kg/s)
- CSR2 sea level 5.5l/s (4.3kg/s)
- AFB M1.06 6.4l/s (5.0kg/s)
- CSR M1.06 8.8l/s (6.9kg/s)
- Taxi: 80l
- Take-off: 250l (~2min ~25km)
- Level flight: 1485l (550km)
- Landing circle (school pattern): 200l
- Recommended fuel for landing (including reserve fuel for two landing attempts): 700l

Under the maximum-range flight conditions, variation of the aircraft weight by 10% result in a corresponding change in the per-kilometer fuel consumption:

- by 10% at an altitude of 10,000 - 11,000m
- by 5% at an altitude of 5000m
- by 0.5% at an altitude of 500m

Front Instrumental Panel

Front Panel is the main pilot-aircraft information interface. Here the pilot reads most of the information needed to fly the plane, perform combat operations and manage the airplane's weapon system.

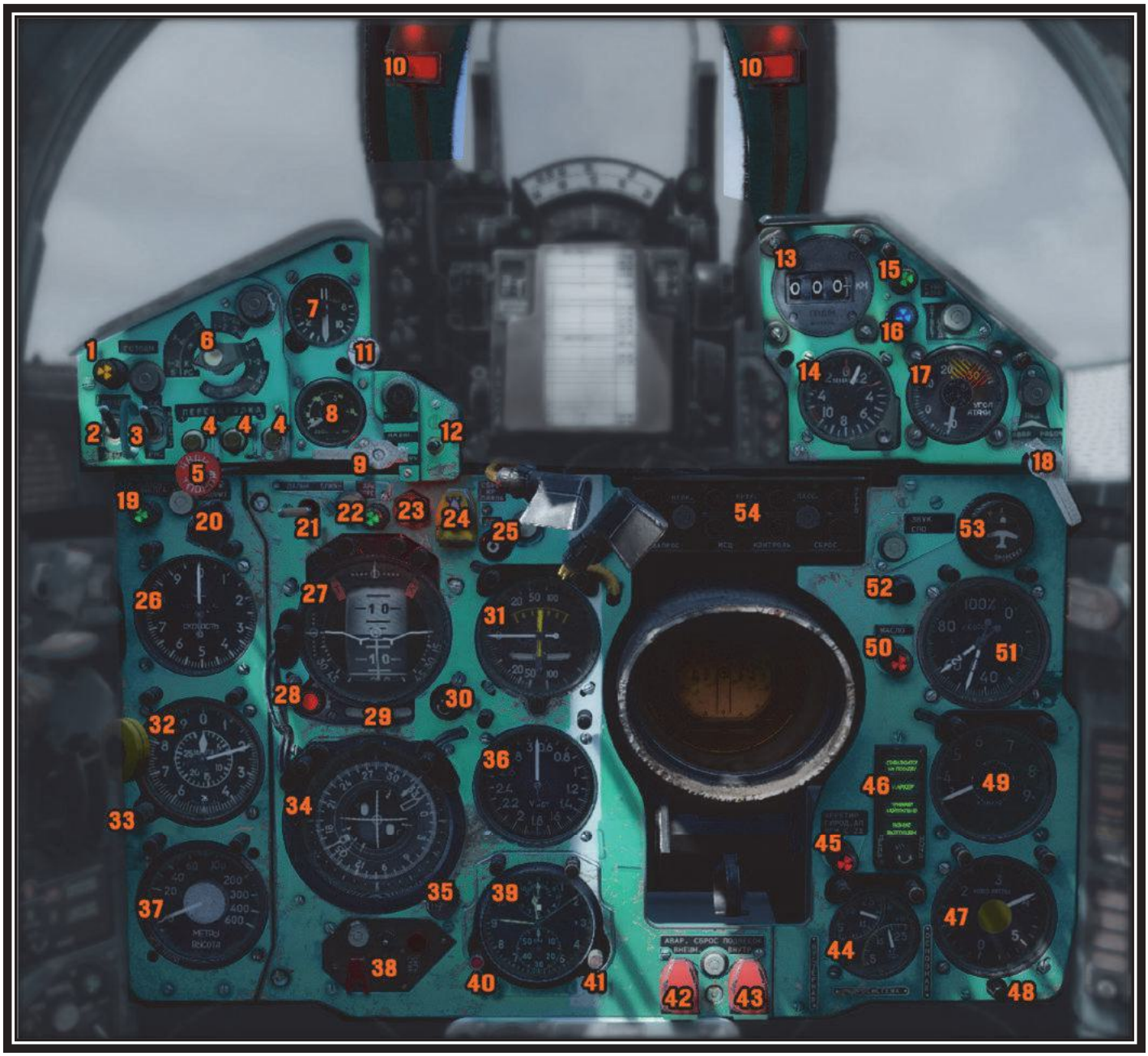


Image 1.1: *Front Instrumental Panel. Grouped switches are numbered from left to right, top down. This image is available for hi-resolution print (GKS\MiG-21BIS\Doc\Manual Images).*

1. **Gun ready** light
2. **Air-2-Air & Air-2-Ground weapon mode** select switch
3. **AA missile type (Radar guidance / Infrared guidance) select** switch
4. **Gun load**/reload buttons
5. **Emergency brakes** lever
6. **Pylon** and **weapon** type **selector** knob
7. **ARU**-3VM gauge
8. **Nosecone position** gauge and emergency **manual control**
9. **Nose Gear** brake lever
10. **SUA** (high **AoA** light **warning** system)
11. **Anti-icing** system lever (deicing front cockpit)
12. **RSBN**/PRMG operating **mode** selector switch (descend, navigation, landing)
13. **RSBN distance** indicator
14. **Accelerometer (G-meter)** with reset button
15. **Autopilot control** signal lamp
16. Transponder **SOD-57 emission** indicator light
    In MSFS2020 used for Autopilot control indicator
17. **UUA-1** (**AoA**) gauge
18. **Pitot tube** selector lever (**main**, **auxiliary**)
19. **Low altitude** warning **light**
20. **SPRD** rocket boosters **start** button
21. **Far-near** landing **NDB** switch
22. **Far-near** landing NDB frequency **self--adjustment** indication **light**
23. **SORC** - **main warning** light button/light
24. **Fuel tanks jettison** button
25. **NPP** course magnetic **SYNCHRONISATION** button
26. **Indicated Air Speed** instrument
27. **Attitude Director Indicator (ADI/KPP)** gauge
28. **Slip** indicator
29. **KPP gyro reset** button
30. **Horizontal adjustment knob**
31. **Combined vertical velocity** - **slip** and **turn** gauge (**DA-200)**
32. **Barometric altimeter**
33. **Atmospheric pressure set** knob
34. **Horizontal Situation Indicator (NPP** course system) gauge
35. **Course set** knob
36. **Mach** and **True Air Speed** indication gauge
37. **Radio altimeter** gauge
38. **Radar control panel**
39. **Clock**, stopwatch, time-of-flight stopwatch gauge
40. **Time-of-flight** – start/stop/reset knob
41. **Stopwatch** – start/stop/reset knob
42. External stores **emergency jettison** button - **outer** (pylon 3-4)
43. External stores **emergency jettison** button - **inner** (pylon 1-2)
44. **Hydro pressure** gauges (command and main hydro systems)
45. **Gyro reset** indication light (for SAU, NPP and radar gyros)
46. **Warning lights** group/test and backlight control knob - **control systems**
47. **Fuel consumption** gauge + setting knob
48. **Fuel quantity** setting knob
49. **Engine** exhaust **temperature** gauge
50. **Low oil** pressure light
51. **Engine RPM** gauge (tachometer**)**
52. **SPO-10 volume/mute** knob
53. **SPO-10 (**radio emission direction indicator)
54. **Radar control panel - In MSFS2020 is replaced by standard radio stack and can be turned on/of**

Left Side Instrumental Panel

Left side Instrumental Panel holds the engine management interface along with engine nozzle controls, gears/flaps/brakes controls, RSBN/PRMG control panel, and emergency engine controls.

***Image 1.2**: Left Side Panel. This image is available for hi-resolution print (GKS\MiG-21BIS\Doc\Manual Images).*

1. **Left Electric Bus No.1** circuit breaker
2. **Engine emergency O_2** pressure gauge
3. **Engine start-up** button
4. **Engine start-up mode** switch (start-up / cold start (bow out))
5. **Engine O_2 pressure MAX** button
6. **Engine O_2 pressure MIN** button
7. **Life support-100% O_2** switch
8. **Life support- emergency O_2** switch
9. **Life suppor**t - **helmet ventilation** switch
10. **Ejection seat up/down** set switch
11. **Emergency nozzle** 2 position switch (maximal and afterburner)
12. **Cockpit air-conditioning** 4 positional switch
13. **SPS (BLC)** switch (system of blowing of the boundary air layer of the flaps)
14. **Transponder SOD-57 identification** button
15. **ARU-3VM operating mode** selector switch (automatic/manual)
16. **Missile lock sound** volume knob
17. **ARU-3VM control** switch (HI-speed/LOW-speed) (has affect in manual mode only)
18. **Opening drag chute** button
19. **Engine** compressor **anti-surge doors control** switch (automatic/manual)
20. **Nose cone control** switch (automatic/manual)
21. **RSBN sound** control knob (for Morse NDBs codes)
22. **RSBN Channel 1 signal light**
23. **RSBN Channel 2 signal light**
24. **RSBN azimuth & distance correction** switches
25. **Hermetic helmet glass fast heating** button
26. **Hermetic helmet glass heating** mode switch (automatic/manual)
27. **RSBN (NAV1) navigation channel 1** selector **knob**
28. **RSBN (NAV2) navigation channel 2** selector **knob**
29. **RSBN/ARC (NAV/ADF) mode** selector switch
30. **Jettison** drag **chute** button
31. **FLAPS position** buttons
32. **RSBN test** button
33. **Gear ABS** brake system switch
34. Afterburner and 100% RPM (“maximal”)
35. **In-flight engine start-up** system switch (100% O_2 engine supply)
36. **Engine Master Ignition system** switch
37. **Fire extinguisher system** switch
38. **Throttle engine-stop** and **locking** lever
39. **Throttle movement locking** lever
40. **SPRD** rocket boosters **jettison** button
41. **Canopy lock** lever
42. **Cockpit pressurization** lever
43. **Pilot O_2 level** gauge (also breathing indication)
44. **Aircraft lights** (landing, taxi, retracted/off)
45. **Landing gears** lever (up, neutral, down)
46. **Engine fire extinguisher** button
47. **Landing gear warning** light
48. **Landing gears up / down** lights
49. **Flaps out** light
50. **Airbrakes out** light
51. **Autopilot level hold** button-light
52. **Autopilot OFF** button
53. **Pilot's O_2 pressure** gauge
54. **Autopilot landing** mode **directional** button-light
55. A**utopilot landing** mode **automatic** button-light
56. **Autopilot stabilization** button-light
57. **Autopilot low altitude** mode switch
58. **Ailerons hydro boosters** switch
59. **Afterburner Second Stage** (emergency) on/off switch

Right Side Instrumental Panel

Right side Panel contains interface for turning on/off all the airplane systems. Along with that, RV segment contains main radar control panel, radio station channel selector and ARC station selector.

Image 1.3: Right Side panel. This image is available for hi-resolution print (GKS\MiG-21BIS\Doc\Manual Images).

1. ARK (ADF) frequency table
2. Radio (COM) frequency table
3. **Cockpit white-lights** control knob
4. **Emergency gears** extraction lever
5. **Warning lights** group/test and backlight control knob - **Engine/Main systems**
6. **Warning lights** group/test and backlight control knob - **Fuel systems**
7. Aircraft transponder **SOD-57** power switch
8. Aircraft distance transponder **SOD-57 channels** (wave) selector switch
9. **SOD-57 Main/ Auxiliary** channel switch
10. **Type 81 IFF transponder** switch
11. **SPO-10** Radar Illumination Warning System power switch
12. **ARC mode** switch (COMPASS / ANTENNA)
13. **ARC (ADF) sound** volume knob
14. **Aircraft distance transponder SOD-57 interrogation** button
15. **Aircraft transponder SOD-57 modes** panel
16. **RP-22 radar error light**
17. **RP-22 radar low altitude light**
18. **RP-22 radar fixed beam light**
19. **RP-22 radar main mode** switch
20. **RP-22 radar low altitude / side-beam compensation** switch
21. **RP-22 radar fixed beam** switch
22. **Red-floodlights** control
23. **ARC (ADF) reset channel** button
24. **ARC channels** selector buttons
25. **Radio (COM) noise squelch** switch
26. **Radio (COM) station** volume control knob
27. **Radio (COM) current channel** window
28. **Radio channel selector** knob
29. **Main** and **auxiliary air pressure** gauge
30. **Nose cone** power switch
31. **Hydro pump** switch
32. **Trimmer** power switch
33. **Radio (COM) station** power switch
34. **ARC (ADF)** power switch
35. **Radio altimeter** power switch
36. **RSBN/PRMG (NAV1/2)** power switch
37. **KPP (Gyro Systems) main/aux** power switch
38. **NPP (HIS)** power switch
39. **Autopilot** power switch
40. **Autopilot pitch channel** power switch
41. **Heating** of **missiles** and **Gun Camera**
42. IR/SARH **missiles master arm** power switch
43. **Pylons 1-2 power** switch
44. **Pylons 3-4 power** switch
45. **Formation lights** switch
46. **SARPP-12 Flight data recorder** switch
47. **Gun** Gsh-23 power switch
48. **ASP-PFD optical sight** switch
49. **Gun-camera** power switch
50. **Transponder SRZO-2** (**IFF**) power switch
51. **Transponder SRZO-2** (**IFF**) light **emitter on**
52. **Transponder SRZO-2** (**IFF**) light **code on**
53. **Transponder SRZO-2** (**IFF**) light **decipher on**
54. **ARC (ADF) frequency** range selector knob
55. **Emergency Transponder** + **SR**ZO-2 (**IFF**) **self-destruction** switch (Mayday code)
56. **Transponder SRZO-2** (**IFF**) channel selector
57. **Electric Bus No.2 circuit breaker**
58. **Dispense fuel** tank **pump** switch
59. **1st fuel** tanks group **pump** switch
60. **3rd fuel** tanks group **pump** switch
61. **Emergency** current **converter** power switch
62. **Gyros for DA-200, NPP, SAU** switch
63. **Gyros for NPP, SAU, radar and KPP** switch
64. **DC generator** switch
65. **Battery** switch
66. **AC (External) generator** switch
67. **SPRD** boosters **jettison power** supply switch
68. **SPRD** boosters **starter power** supply switch
69. **Instruments** red **backlights** control
70. **Disengaging** the **ailerons boosters**
71. **Panel-text** red **backlights** control
72. Electric current converter **PO-750 No 1** switch
73. Electric current converter **PO-750 No 2** switch
74. **Battery heating** switch
75. **Fuses/circuit breakers** box
    In MSFS2020 used for panels switching
76. **PVU-1** and **PVU-2** control block **test** buttons
    In MSFS2020 **PVU-1** ***used for drag chute reload on ground***
77. **Canopy air conditioner** open/close handle

***Image 1.4**: Bottom Panel. This image is available for hi-resolution print (GKS\MiG-21BIS\Doc\Manual Images).*

Bottom Instrumental Panel

Bottom Instrumental Panel mainly holds the secondary system's information

1. **Oil pressure** gauge
2. **Tactical release** switch (for bombs only)
3. **Main Pitot** tube, mirror, AoA sensor **heater** switch
4. **Auxiliary Pitot** tube **heater** switch
5. **Voltmeter** gauge
6. **Emergency** A-A **missiles launch** button
7. **Tactical release** "bombs armed" warning **light**
8. **Radio** altimeter **low altitude** selector knob
9. **Warning lights** group/test and backlight control knob - **UB pods**
10. **Warning lights** group/test and backlight control knob - **weapons**
11. **Cockpit** altitude and **pressure** gauge
12. **Magnetic declination setter** ZMS-2
13. **Gear brakes** air **pressure** gauge (left and right main gears)

Top Nuclear armament Control Panel

Top panel holds Nuclear armament Controls and information

Image 1.5: *Top Nuclear armament Control Panel. This image is available for hi-resolution print (GKS\MiG-21BIS\Doc\Manual Images).*

In MSFS2020 can be turned On / Off (see Image 1.3)

1. **EQUIPPED** (attached) light
2. **ARMED** light
3. **SAFE light** (not armed)
4. **EMERGENCY DROP** switch
5. **ARMED** (up) or **NOT ARMED** (down) for EMERGENCY DROP only
6. **COMBAT DROP** switch
7. **Weapon selector**, Nuclear (UP) Conventional (Down)
8. **Bomb brake parachute** switch
9. **GROUND** (down) / **AIR** (up), **selector** for surface or aerial explosion

Pilot's stick

The Pilot's stick holds weapon and SAU management switches

Image 1.6*: Pilot's stick. This image is available for hi-resolution print (GKS\MiG-21BIS\Doc\Manual Images).*

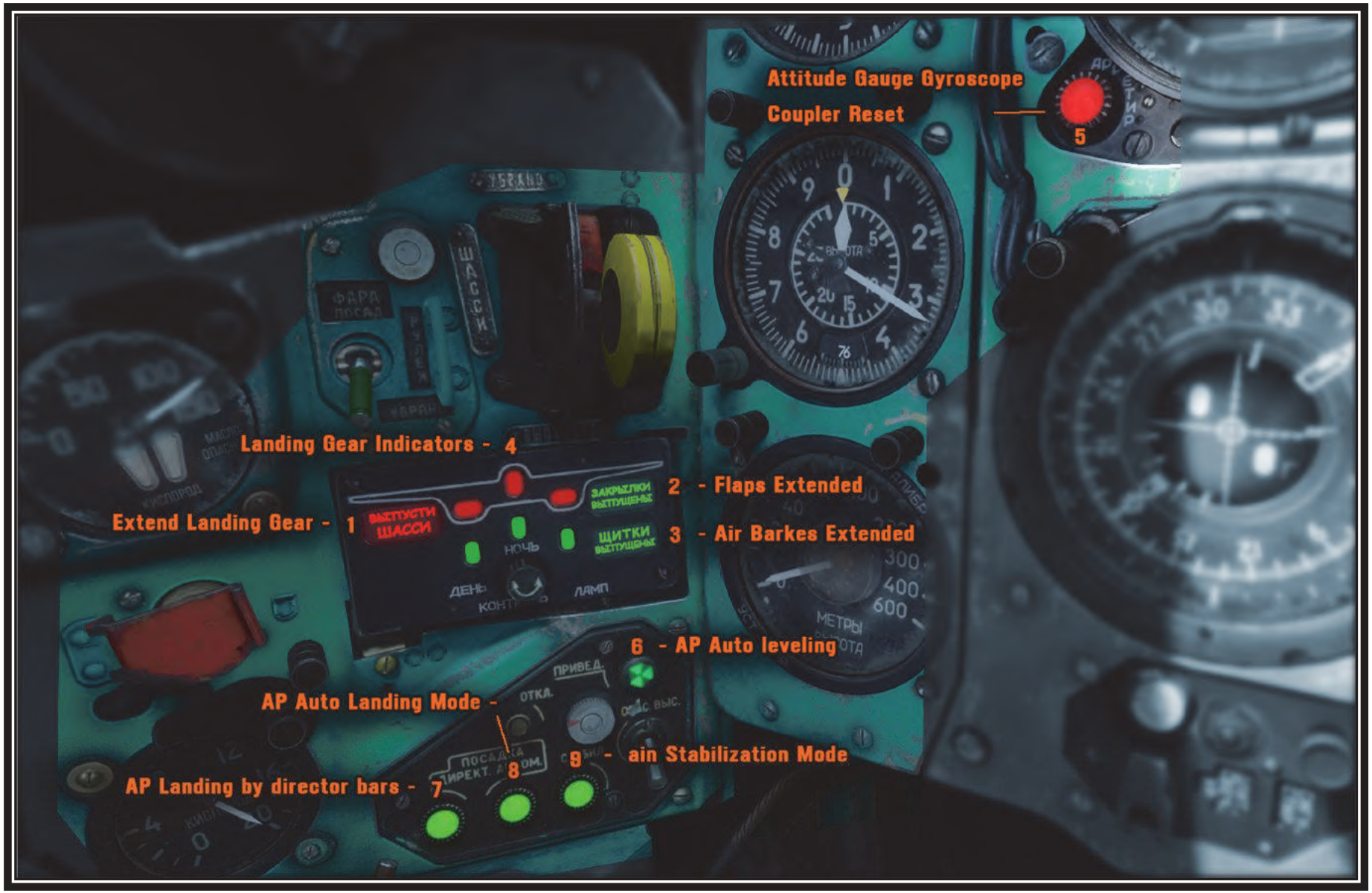
1. **Autopilot disengage** button
2. **Autopilot "recovery"** (wings leveler) mode engage button
3. **Bomb**, **rockets**, **missiles fire** button (under visible red cap)
4. **Radar lock-on** button
5. **Gear brake** lever
6. **Fuselage** (center) **fuel tank jettison** button
7. **Gun trigger**

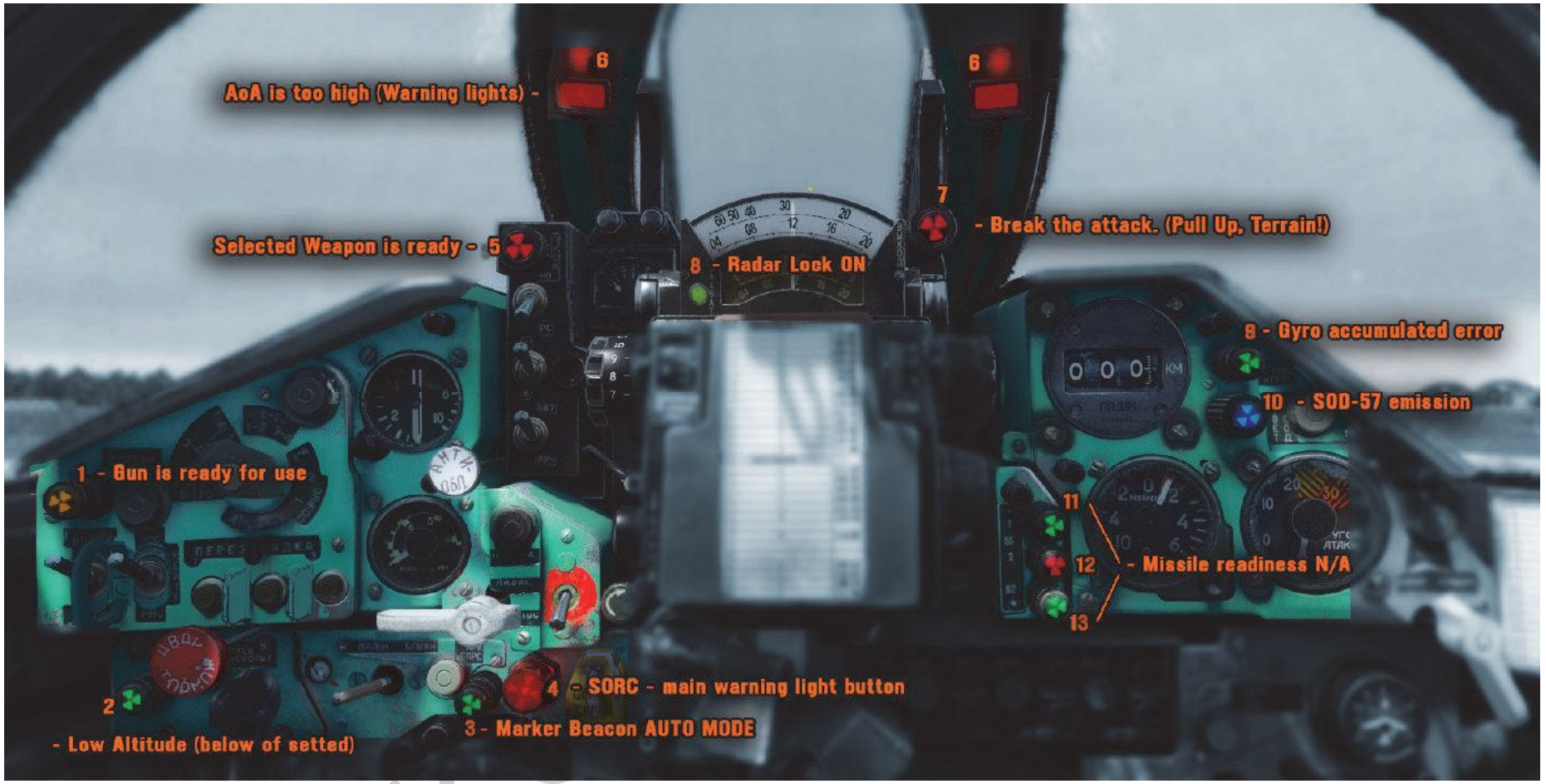
Image 1.7: *Optical aiming sight - ASP PFD. This image is available for hi-resolution print (GKS\MiG-21BIS\Doc\Manual Images).*

Optical aiming sight - ASP PFD

1. **ASP-PFD launch authorized** light
2. **ASP-PFD gun/rocket-missiles** switch
3. **ASP-PFD firing/bombing** switch
4. **ASP-PFD auto/manual** switch
5. **ASP-PFD missile** launch **distance** scale
6. **ASP-PFD target** size **knob**
7. **ASP-PFD missiles / gyro** pipper movement pattern switch
8. **ASP-PFD scale backlight** control knob
9. **ASP-PFD fixed-net light** control knob
10. **ASP-PFD Aim reticle** (Pipper)
11. **ASP-PFD Fixed aiming grid**
12. **ASP-PFD Distance scale**
13. **ASP-PFD Angular scale**
14. **ASP-PFD Lock On** indicator light
15. **ASP-PFD break-off** attack light
16. **ASP-PFD target** size **scale**
17. **NAV (RSBN)** frequency table (* see Channels Setting Panel)
18. **ASP-PFD angular correction scale**
19. **ASP-PFD angular correction** knob
20. **ASP-PFD piper (Aim reticle)** brightness control knob
21. **ASP-PFD piper (Aim reticle) On/Off** switch
22. **ASP-PFD Fixed aiming grid On/Off** switch
23. **REPLACED by – Drag chute is installed**
24. **REPLACED by – Drag chute is deployed**
25. **REPLACED by – Drag chute is jettisoned**

INDICATORS AND WARNING LAMPS


Attitude Gauge Gyroscope
Coupler Reset
5
Landing Gear Indicators - 4
Extend Landing Gear - 1
2 - Flaps Extended
3 - Air Barkes Extended
6 - AP Auto leveling
AP Auto Landing Mode -
AP Landing by director bars - 7
8
9 - ain Stabilization Mode

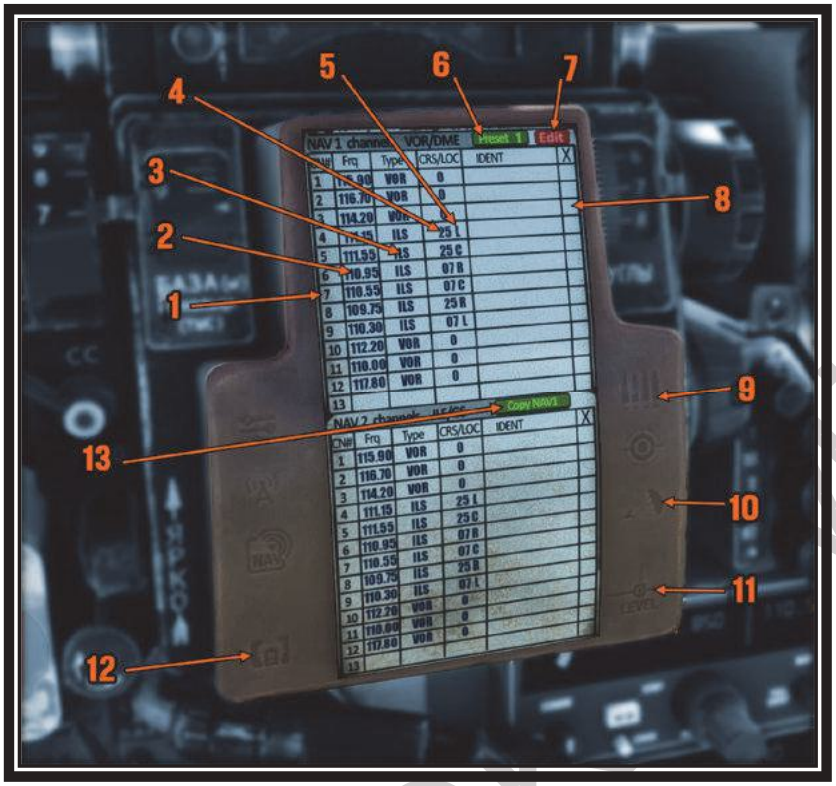


**Missile readiness control lamps are replaced by drag chute indicators*

- 11 - Drag chute is installed
- 12 -Drag chute is deployed
- 13 -Drag chute is jettisoned

PANELS

RADIO CHANNELS - NAV / COM / ADF / CHANNELS PRESETS



The radio notepads panels allow to set and store up to 99 unique channels to use it with NAV / COM / ADF cockpit radio gear.

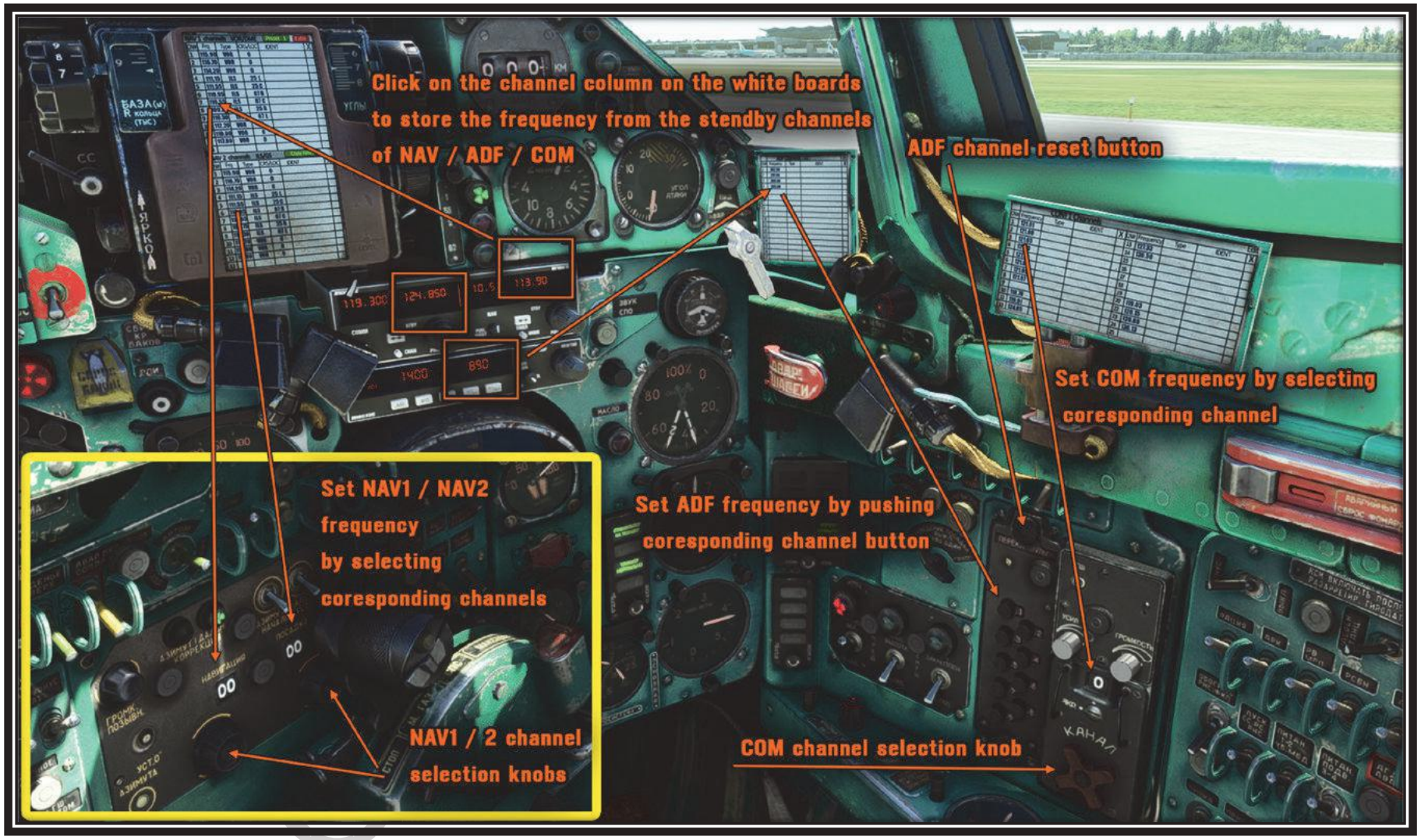
1. **Channel Number**
2. **Frequency – (settable) Left click to set NAV1 standby frequency**
3. **Type of radio station (VOR / DME / VOR-DME / ILS) - settable / left click**
4. **CRS – course (settable) mouse wheel UP/DN, left klick increments +/- 20**
5. **Landing runway indicator (Left / Right / Center) settable**
6. **Preset button (active in edit mode) – selecting of preset number**
7. **Edit button – activates EDIT mode**
8. **Clear current channel data**

Clickable optional functions

9. **Weapon options**
10. **Chute – Deployment / Jettison**
11. **Autopilot leveling mode**
12. **Joystick hide/unhide**
13. **Copy all data from NAV1 to NAV2 Preset**

! The Same type gauges are used for setting and storing ADF / COM information

RADIO CHANNELS - NAV / COM / ADF / CHANNELS PRESETS USAGE



IMPORTANT! To use the radio stack directly, set the all channel selection knobs to channel 0 (for ADF, press the reset button).

RADIO CHANNELS PRESETS FILES EDIT

! FOR ADVANCED USERS

For advanced users, we provide the ability to edit channel preset files.

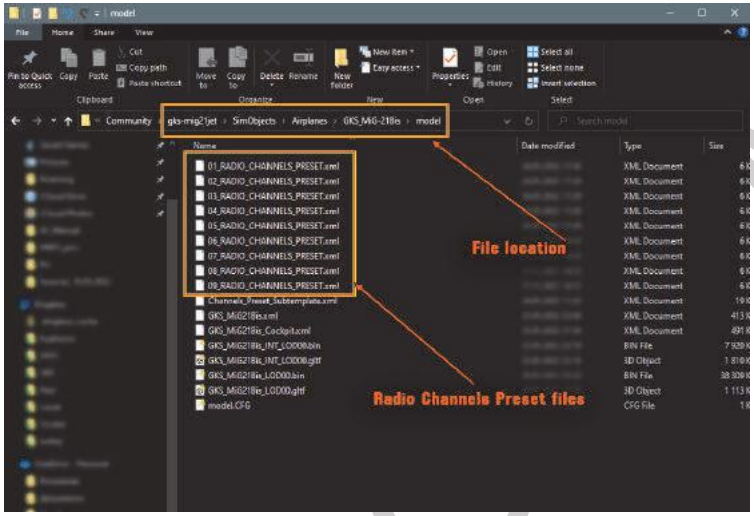
The package includes 9 files with presets of radio channels that can be filled in before the flight to use navigation on the preset NAV/ADF/COM channels

Same principals as TACAN

To do this, you need to edit the xml files of the corresponding preset

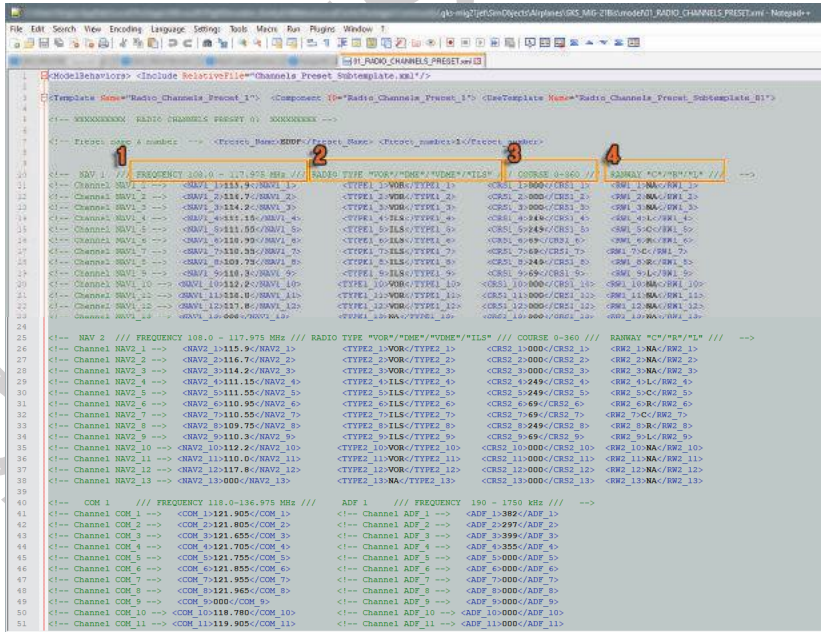
Preset files are located in the airplane model folder

.. \gks-mig21jet\SimObjects\Airplanes\GKS_MiG-21Bis\model



xml files are designed in such a way that it would be easy to insert the necessary frequencies into the corresponding cells.

For editing, we recommend using the NOTEPAD++ (freeware program)



1. Frequency **(NAV 108.0 - 117.975MHz / COM 118.0-136.975MHz / ADF 190 - 1750kHz)**
2. Radio Type **("VOR"/"DME"/"VDME"/"ILS")**
3. Course **(0-360)**
4. Runway Indicator **("C"/"R"/"L")**

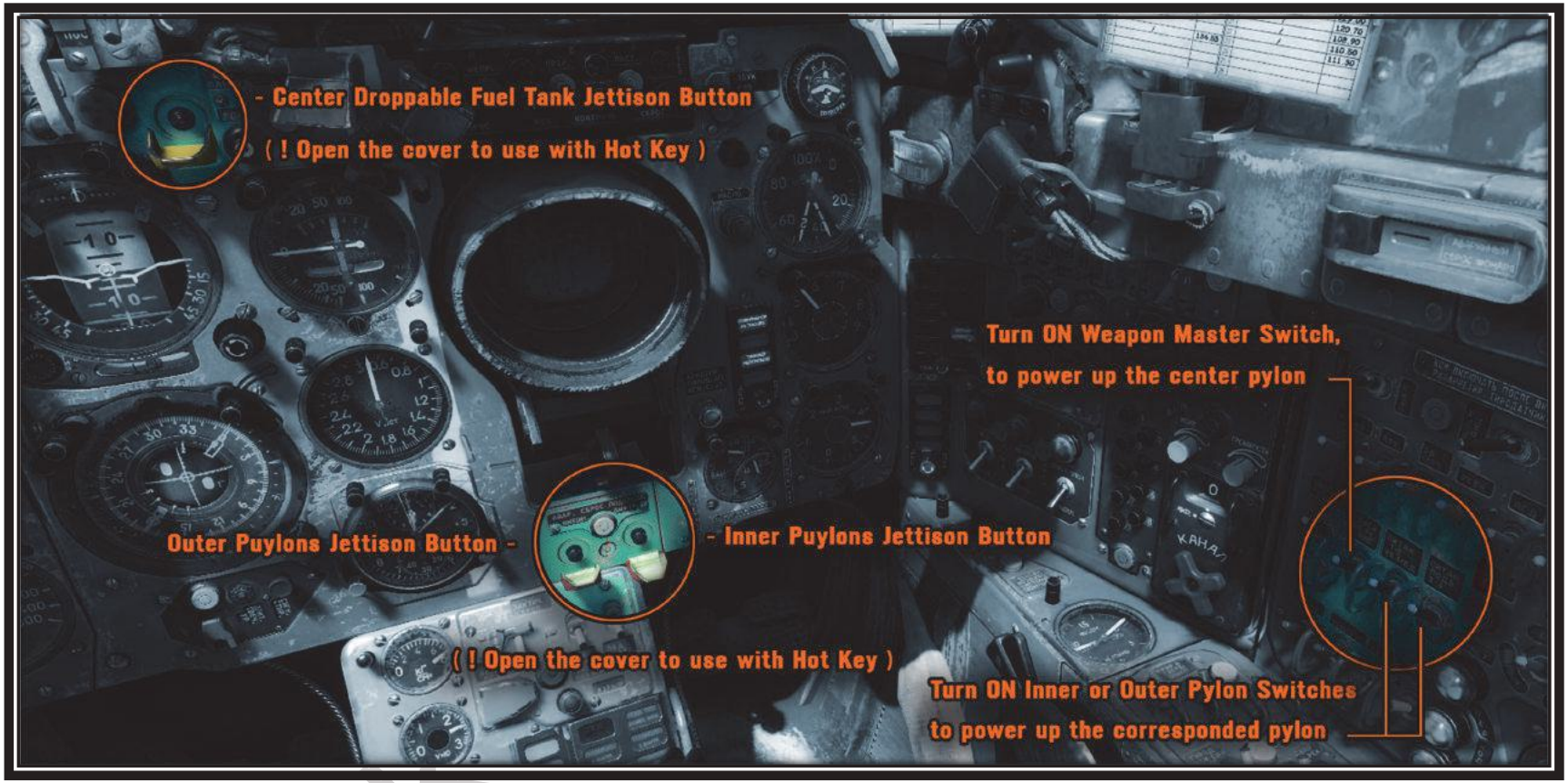
There are several pre-filled pre-sets in the delivery

- Preset 1 - **EDDF** (Frankfurt international airport)
- Preset 2 – **KSFO** (San Francisco international airport
- Preset 3 – **KJFK** (New York international airport)
- Preset 4 – UKBB (Kyiv/ Borispol international airport)

rest of the presets are blank

DROPPABLE FUEL TANKS AND DRAG CHUTE JETTISON SYSTEM

***** Jettison function is working in all versions of P3D (Extended Edition is required).***



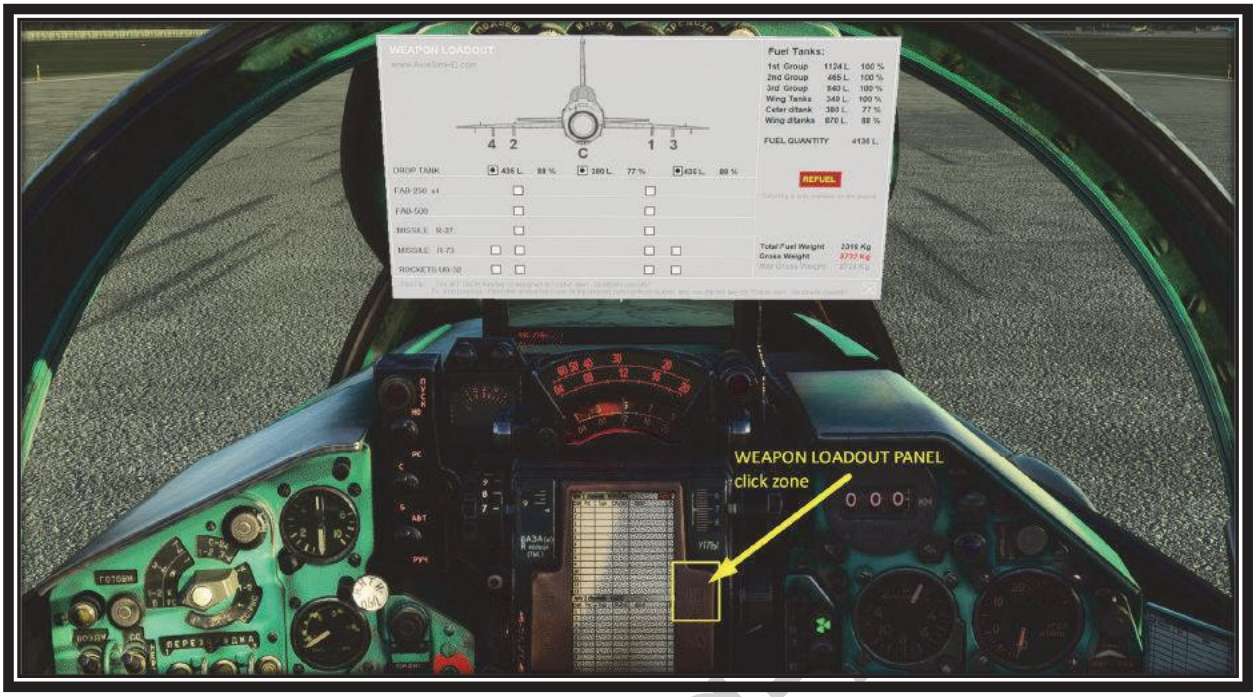
***** To make it easier to use the JETTISON system, we recommend assigning hot key for "TOGGLE TAIL HOOK HANDLE" for payload jettison function.***

1. ***Turn ON weapon master switch***
2. ***Turn ON Outer and Inner Pylons power switches***
3. ***Open cover of a required pylon jettison button***
4. ***For jettison use hotkey "TOGGLE TAIL HOOK HANDLE" or press a corresponded button***

Drag chute as well as payload jettison system can also be activated by using corresponding cockpit buttons and switches

WEAPON PANEL

Click zone for control panel



Weapon control panel description