Fighter Weapons School

for the Aerges Mirage F1

by Don Rudi

Overview

This mission set is designed for players that are new to the Mirage F1 by Aerges Engineering and shall serve as a means to introduce them to the different weapons and weapon delivery modes. It will lead to quick results and therefore fun in the Mirage. Players familiar with the module might want to use it to refresh their skills or simply to practice alternative weapons delivery methods.

With currently all flights set to take place in Cyprus, flight times are kept to the necessary minimum, in order to focus on weapon delivery. Once the air refuelable variants become available, there will also be longer missions against the mainland included.

Assistance

For the bombing tasks, the player will be provided with flight parameters and sight depressions that have given the author reproduceable results. Feel free to experiment with your own parameters and depressions though - that's what this sandbox is for.

Target points will be provided as TACAN offsets, with already included magnetic declination of the map, thus the values can be entered as presented. As some players might be new to this form of navigation, an introductory task will explain how to enter and use the TACAN offset.
For the "Exam" air-to-ground tasks, the player will have to calculate his own TACAN Offset point.

> **Note**: *when using your own offset points, keep in mind TACAN signals are line of sight. So when flying low over the center of the island, the aircraft will not receive the signals of TACAN stations on the southern coast due to the mountains!*
> *The magnetic declination of the map is 5°, meaning that 5 degrees must be subtracted from any bearing taken on the F10 map.*

Tasks

As the cold start of the Mirage takes less than two minutes, all slots will be cold and dark. Slots 1 to 11 and 17 have loadout restrictions, as they serve a specific training purpose. Joker slots 15 and 16 are unrestricted.

Please refer to this manual for more detailed descriptions of the tasks and to learn about the relevant attack parameters, sight depressions and sight pictures.

Note: the parameters presented in this manual are not THE parameters. They are easy to use parameters that ,allow reproducible results, but there sure are other ways to bring a bomb to the target.

List of tasks

Introduction

Slot #1: T-Scramble!

Slot #2: TACAN Offset

Air to ground

Slot #3: Rockets and guns

Slot #4: Bombs (high drag)

Slot #5: Bombs (low drag)

Slot #6: Durandals (anti runway)

Slot #7: Toss bombing

Slot #18: Pop up attack

Slot #17: Laser guided bombs

Slot #8: Maritime strike

Air to Air

Slot #9: Intercept (easy)

Slot #10: Intercept (medium)

Slot #11: Intercept (hard)

Exam

Slot #12: SEAD

Slot #13: CAS

Slot #14: A-Scramble!

Joker

Slot #15 + 16: Joker

Difficulty

Via radio commands, the player can select, if the enemy ground targets will fire back at him or not. Sea and air targets will always fire back.
Labels are not disabled by default. As this set of missions targets all skill levels, the author leaves it up to the player, to use labels or not.
Targets are not hidden on the maps, except for the targets of the three Exam grade tasks.

In air to ground tasks, the player will receive an additional F10 - Other radio option, to mark his target with smoke.

Adaptability

The player may add additional targets to his liking.
However do not remove any of the existing targets, as the large amount of triggers is dependent on both Unit and Group names of the existing assets.

Future

Once the Mirage F1 module evolves and new weapons or variants become available, these will be included in the sandbox.

Task descriptions

Introduction

#1 T-Scramble

Intercept an incoming bogey, approaching the island from the south west.
You have five minutes to cold start the aircraft, locate and intercept the bogey.

Initial vectors will be provided after take off.

The bogey in this training scramble is a friendly Mirage F1B, so no weapons are carried.
After the successful intercept, the bogey will follow you back to base.

Please refer to Appendix C for the expedited cold start procedure.

#2 TACAN offsets

As all ground target positions in the following tasks will be provided as TACAN offsets, based on Paphos or Nikosia TCN, this task is a navigation flight, where the player has to overfly relevant waypoints. If overflying the points was accurate, an aerial photo of the overflown "target" will be displayed.
Two points need to be overflown. Point 3 will lead you back onto the ILS for Akrotiri air base.

See Appendix A or the kneeboard for the relevant waypoint data.

Air to ground

#3 Rockets and guns

Attack a lightly armored convoy.
The Mirage will be loaded with four rocket pods and internal 30mm guns.

Gunsight depressions

For a shallow dive use a depression of 30 (milli radians aka mrads) for rockets and a depression of 0 mrad for the gun.
Place the reticle on the target and fire at about 1000 feet.

#4 High drag bombs - low level

Low level attack against missile launchers using SAMP 250 parachute retarded bombs.

Set up your attack run at or below **500 feet** with a speed of around 500 knots. Set the depression to **100** and pickle, when the reticle is on the target.

Dive bombing attack against an ammunition depot using SAMP 400 low drag bombs.
Set up your attack run at **10,000ft** AGL with a speed of **400 knots**. Set the depression to **50**.

Position the target slightly left (or right) off your nose. When the target is in the forward corner of your main canopy frame, roll in and slightly throttle back.
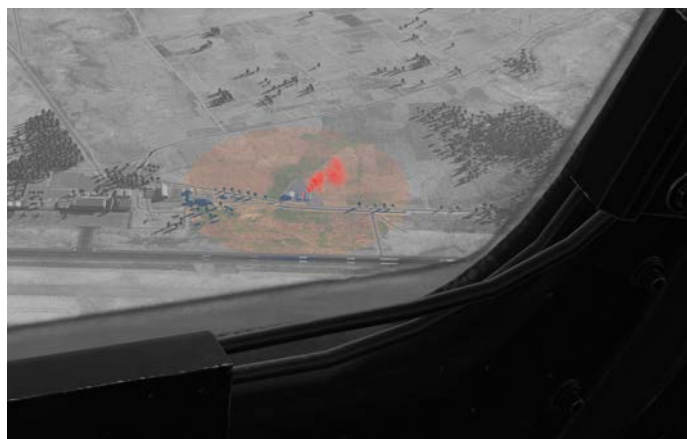
This will bring you into a stable dive of **30°** at about 450 knots. The reticle will be below the target initially. Walk the reticle over the target and pickle when it is right on target.

Low level anti runway attack using a full load of Durandal anti runway bombs.
You will be provided with a TACAN offset point that will lead you to an initial point west of the runway, to give an ideal line up with the runway.

Approach the runway at 500 - 1000 feet and 500 knots or more. No gunsight depression is needed. As the Durandal is parachute retarded, do not release them before the flight path marker points at the far end of the runway.
Due to the quick interval in salvo release, you might want to set the release mode to single and pickle multiple times manually.

Low level toss bombing attack against an air defense site using Belouga cluster bombs. Set up your attack run at **500 feet** or below and **500 knots**. **2.5 miles** to the target hit full afterburner and pull up and release the bombs at **40°**.

For this task you will be provided with two TACAN offset points:

1) The target position, if you want to plan your own attack. Use the distance displayed on the HSI to plan your pull up.
2) IP 10 miles west of the target. Flying this route will enable a set of smoke markers to assist in lining up the target and when to pull up. Align these smoke markers and you will be optimally aligned for the target.
   Smoke markers are orange: initial line up, green: pull up into a 40° climb and red: target

When at 2.5 miles to the target (or the green marker) pull up and release bombs when reaching 40°.

Note: when using SAMP 250 or BR series bombs, set the pull up point at 4 miles to the target.

This is a variant of the dive bombing attack from task #5.
Low level pop up attack against a radar site in the north west of the island with 500kg BR 500 low drag bombs.
The TACAN offset will lead you to an IP where you initiate your pop up maneuver.

Perform your run in at 500 feet and 500 knots, set the gunsight depression to 50. At 2,5 NM to the target, with the target being about 45° off your nose, hit full afterburner and pull up into a 40° climb.
(Note: as we intend to perform a 30°, the pull up shall be 10 degrees more than the intended dive angle.)
At about 6000 feet AGL, the target should now be roughly 90° off our nose - roll in and throttle back to maintain around 450 knots in the 30° dive. Walk the reticle over the target and release the bombs when it is over the target.
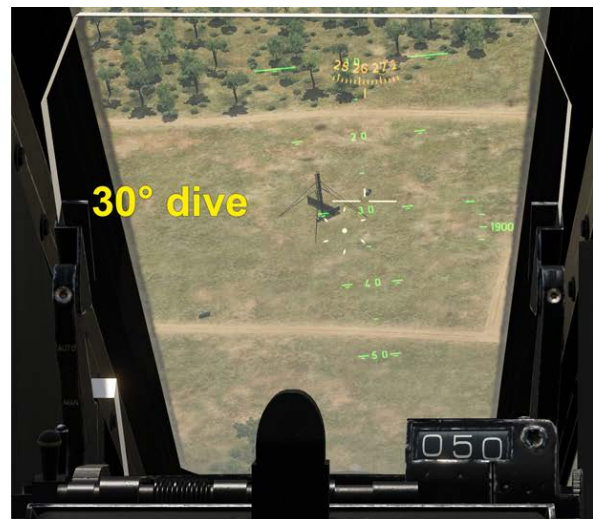
#17 Laser guided bombs with 3rd party laser

Attack an enemy building with a GBU-10 using a 3rd party laser (drone).
Plan your attack run at 10,000ft and 400-450 knots. The communication with the drone operator/JTAC will begin automatically. Lasing of the target starts at the end of the dialogue.

Release the GBU-10 at between 4 to 3.5 miles to the target. An onscreen *"Drop drop drop"* message will appear. There will be no feedback in the cockpit, if the LGB has locked on to the laser beam.

Low level attack against enemy shipping using high drag SAMP 400 bombs.
For this task you can choose between three difficulty levels via the F10 - Other communication window:

- easy: target is the Seawise Giant travelling at low speed
- medium: target is an El Combatante patrol boat traveling at medium speed
- hard: target is an Oliver Perry class Frigate

If no selection is made, the task will use the Seawise Giant as default.
Only initial vectors will be provided for the ship's location, so use your air to ground radar to find the vessel.

The attack parameters for the high drag bombs are equal to those from task #4 and should be familiar by now.

When attacking the ship's broadside, you will not want to drop all four bombs at once. Due to the release interval at least two bombs will drop behind the ship.

You can either switch the bomb release mode from salvo to single:

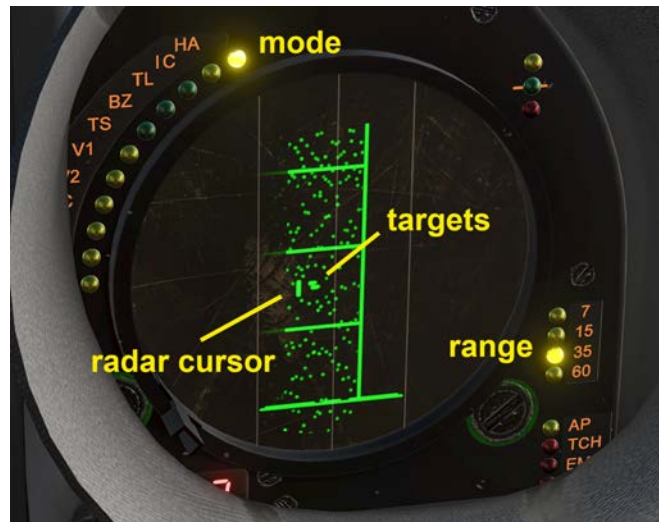Or you can select inboard (IN) and outboard (EX) pylons seperately:

Air to air

#9 Intercept (easy)

Intercept a Tupolev Bear bomber approaching from the east and shoot it down with semi active radar homing Matra R.530 EM missiles.
You will receive initial vectors after take off. Use your radar to find the intruder.

Maximum detection range of your Cyrano IV radar is 60 nautical miles.
The distance markers are increments of 2 miles for a scale of 7 miles, 5 miles for a scale of 15 miles,10 miles for a scale of 35 miles and 20 miles for a scale of 60 miles.

You can roughly judge the relative altitude of a target, by the direction of the sweep that displays the target. If the sweep goes from left to right, the target is above you, if the target is displayed in a sweep that goes from right to left, it is below you.
For more detailed information, please refer to the official Aerges manual.

When a target is within 35 miles, move your radar cursor ("alidae"/"strobe") over the left edge of a target and press target lock for around one second to lock the target.

Once the target is locked, you will receive information about the distance and closure rate.
The higher the small bar is, the higher the closure rate.

When a target is locked, the fire control computer will display steering cues in the HUD to bring your Mirage into an optimal firing position.
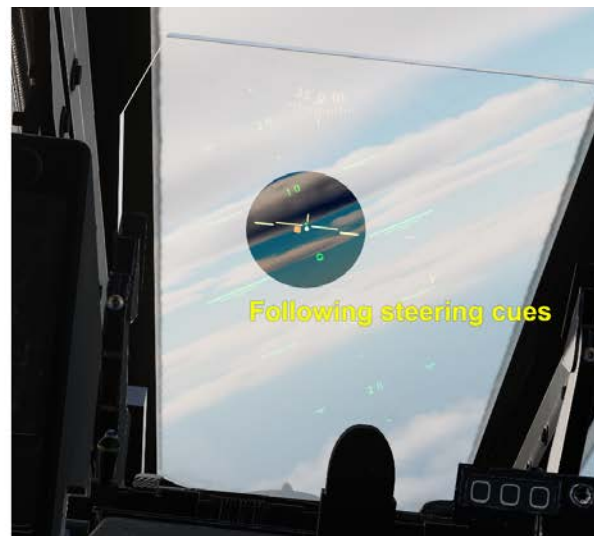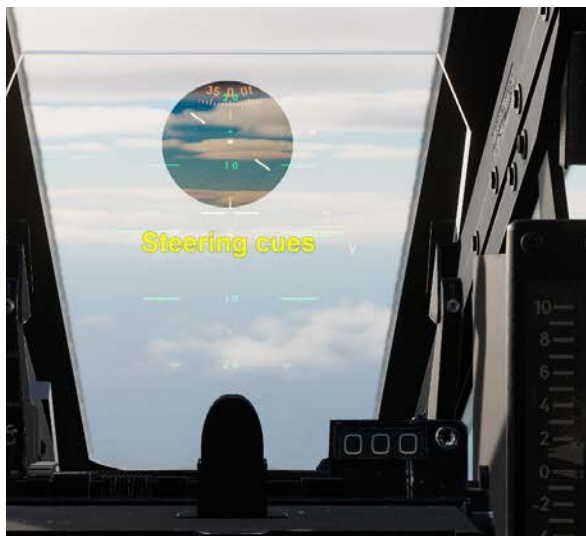
Let's take a closer look at the information displayed on the HUD.

Always follow the steering cues for a successful missile shot. A big green dot will appear in the center of the HUD, when the R.530's launch parameters are met. Do not launch before the green dot is displayed.

For additional assistance you can call your GCI callsign *WIZARD* on channel RED 3.

#10 Intercept (medium)

This time you will intercept a pair of Sukhoi 24 recce planes, both armed with a pair of IR guided R-60 missiles.
Your armament will consist of a pair of radar guided R.530 EM and a pair of rear aspect Magic I heat seeking missiles.

Select the R.530s on your armament panel and use the (C + M or SW)R *(Canon and Magic or Sidewinder Rapid = dogfight mode)* switch located on the left wall, to quickly switch back and forth between guns + heaters and radar guided missiles.
The dogfight mode is marked by a green light on the right side of the HUD frame.

For additional assistance you can call your GCI callsign *WIZARD* on channel RED 3.

#11 Intercept (hard)

If you want things a bit more challenging, this task will serve you well. You will intercept a pair of MiG-21s, equipped with radar guided and rear aspect heat seeking missiles.
Your armament will consist of a pair of radar guided R.530 EMs and a pair of all aspect AIM-9 JULI (AIM-9J with seekerhead of AIM-9M).

For additional assistance you can call your GCI callsign *WIZARD* on channel RED 3.

Exam

Unlike the preceding tasks, there is no loadout restriction in place for the following three tasks. Choose whatever ordnance you like. But also unlike the preceding tasks, no waypoints are given and have to be created by the player himself. The targets are hidden on the map, but their area is marked.
Attention - do not forget to include the magnetic declination of 5° of the map in your waypoint calculation!

#12 SEAD

Your task is to attack a SA-6 SAM site on the north eastern end of the island. The position is marked on the map and you will have to create your own TACAN offset point, to navigate to the target.
Stay low, as the area is protected by several SA-8 SAMs. Recommended attack profiles would be either a pop up attack or a toss bombing attack. But the choice is up to you.

#13 CAS

Troops in contact! A platoon of friendly LAV-25s has come under fire by hostile IFVs. The location is marked on the map. Find them and neutralize the enemy vehicles.

#14 A-Scramble

Air defense radar reports two incoming contacts. Select your air-to-air loadout and scramble to intercept the bogies.
Bogies are a pair of angry MiG-23s, equipped with medium range SARH and IR missiles, as well as short range IR missiles. If you only see one on the radar, be assured, they are two.

For additional assistance you can call your GCI callsign *WIZARD* on channel RED 3.

Additional slots

#15 JOKER1 and #16 JOKER2

These slots are intended either for coop missions or for free f(l)ight taskings. The aircraft are not loadout restricted.
As soon as a JOKER slot is used, a series of additional targets will be activated.

Appendix A

Relevant target data

Slot #	Target	TCN offset*	QFE
#2	WP1 WP2 WP3	107X, 348°, 20.5 NM 101X, 120°, 11 NM 107X, 103°, 14 NM	
#3	Convoy	101X, 272°, 17 NM	1016.7
#4	Rocket artillery	101X, 144°, 7 NM	995.2
#5	Ammo depot	101X, 89°, 11.5 NM	1009.6
#6	Runway IP	101X, 68°, 12 NM	1015
#7	AD Site IP	101X, 264°, 12.5 NM	995.6
#7	AD Site	101X, 264°, 2.8 NM	995.6
#18	EWR Radar IP	101X, 289°, 15.5 NM	1017.4
#17	Building	101X, 007°, 7.5 NM	995.2

*) magnetic declination already included

Slot #	Target	initial bearing, distance, angels
#1	Bogey	220° for 20, angels 18
#8	Ship	250° for 25
#9	Heavy bomber (single)	095° for 80, angels 20
#10	Medium bomber (pair)	030° for 75, angels 12
#11	Fighter (pair)	320° for 55, angels 25

Appendix B

Relevant navigation data

Aerodrome	TACAN	VOR	ILS	QFE
Paphos	79X PHA	117.90 PHA	108,90 / 290°	1018.7
Akrotiri	107X AKR	n/a	109,70 / 287°	1017.8
Nikosia	101X NIK	n/a	n/a	n/a

Relevant communication data

Station	Type	Channel
Paphos	TWR	GREEN 1 (VHF) GREEN 2 (UHF)
Akrotiri	TWR	GREEN 3 (VHF) GREEN 4 (UHF)
WIZARD	GCI	RED 3

Appendix C

Expedited Cold Start

based on Red Kite's excellent YouTube tutorial:
▶ DCS: Mirage F1CE Expedited Cold Start Tutorial

1) Close canopy
2) lock canopy

3) Switch on batteries (up)
4) Check inverters are set to AUTO
5) Switch on VERT.SON. (warning panel)
6) silence warning horn

7) Switch on main fuel cock and close cover
8) switch on left and right fuel pumps
9) open starter cover and wait for 1-2 seconds for the pressure to build up
10) press starter button for 1-2 seconds

11) Switch on master valve control (M)
12) Switch on gyroscopic system (GM)
13) Switch on backup system (M)
14) Gyro will be ready when the horizon is steady
15) uncage backup horizon

16) Reset servos
17) Switch on remaining switches in top row
18) Reset inverters
19) Switch on HUD (VIS to M)
20) Set radar to Standby (middle position)

21) Push button to set air intake cone to AUTO
22) Push button to set nose wheel steering gain to high (if desired)
23) Remove ejection seat safety pin

Set radios and navigation as desired. You are now ready to taxi.

Appendix D

Radio

The Mirage F1 has two radios:

Green radio: VHF + UHF, with frequencies selectable either manually or as presets. Located on the front left side panel.

Red radio: UHF only, frequencies selectable as presets. Located on the rear left panel.

Which radio will be used, is selected by a green (3) and red (4) pushbutton just aft of the green radio.

Your Mirage F1 will be pre-configured with all necessary frequencies. Please refer to Appendix B or your kneeboard for more details.

Example: how to select channel "**Green 2**"

1) set mode switch to **P** to select a preset channel
2) set desired channel (**2**)
3) push green button to select green radio as active
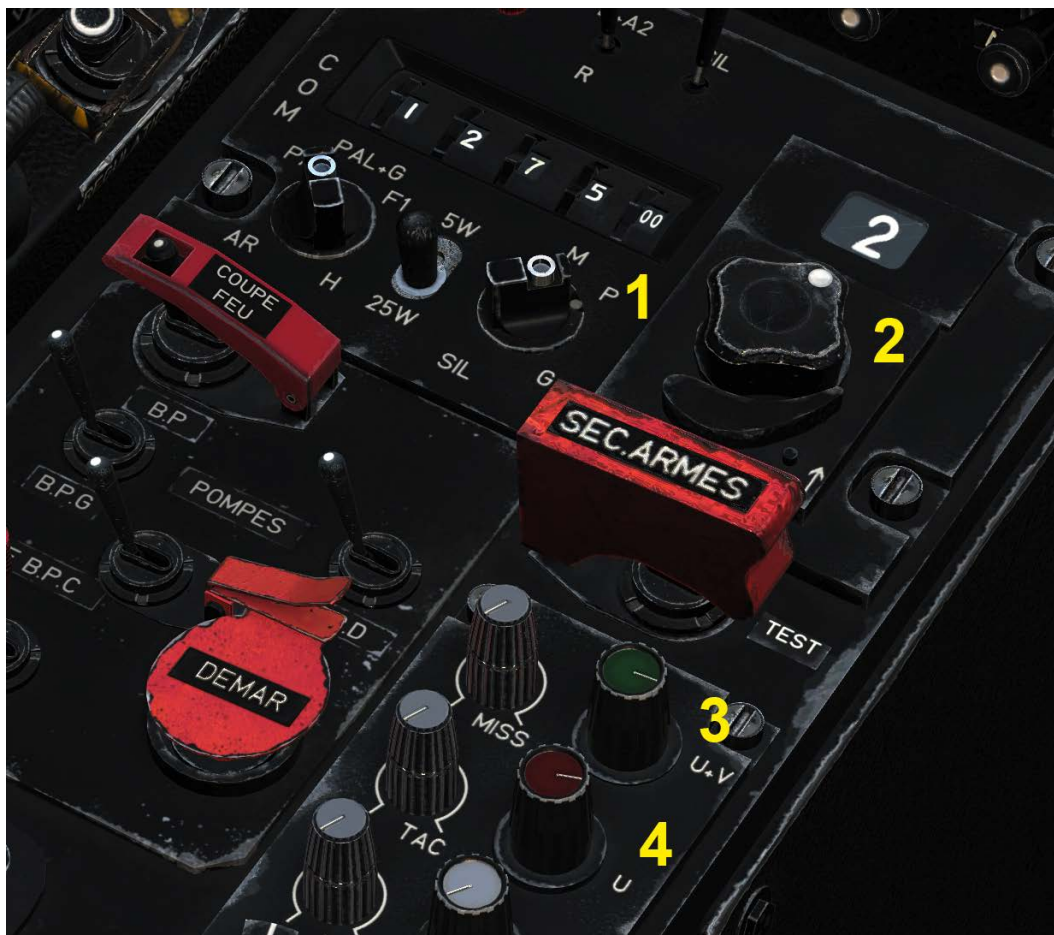
Appendix E

TACAN offset

A short introduction into creating a way- or target point by using a TACAN offset.
As an example we will create the following point:

*CHN **107X**, bearing from TACAN **120°**, distance from TACAN **25** nautical miles*

First tune the TACAN station on your right hand console and make sure the mode is set to T/R (transmit/receive), so we can receive distance information.

Next create the offset on HSI on the front panel.

1) switch mode to TT (TACAN/RADAR). Alternatively you can use VT (VOR/TACAN).
2) switch mode to VECT.ADD.
3) enter bearing from TACAN using the dial below the display (120°).
   Beware the bearing is magnetic, so you need to correct any readings from the map by including the map's magnetic declination!
4) right click the switch to change to distance input
5) enter the distance from the TACAN station (25 miles)

The thick needle will now point to your newly created offset point. Beware TACAN signal is line of sight, so a TACAN station behind a mountain chain will not be received by the plane.

Imprint

A huge "Thanks!" especially to my beta testers Guillermo and Vincent, their input really contributed to polishing this mission set.

If you liked this mission, please check out my other ones as well:
https://www.digitalcombatsimulator.com/en/files/filter/user-is-Don%20Rudi/apply/

Constructive feedback is always welcome. You can reach me through the offical forum or on the DCS: Mirage F1 Pilots group on Facebook
https://www.facebook.com/groups/745252046441786/

Enjoy!

Change log

| V 1.0 | 11.08.2022 | initial release |
| V 1.0.1 | 13.08.2022 | fixed no gun ammo for A2A slots, corrected mag var |