

FIREWILL PRESENTS  
**AIR WEAPON SYSTEM**  
AIRCRAFT OPERATING SYSTEM FOR ARMA3



5th revised edition

by Firewill

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*BEFORE THE READ: F-16 is standard for this manual.(except EA-18G for EWS)*

*other AWS aircrafts have same system.*

## Loadout Dialog

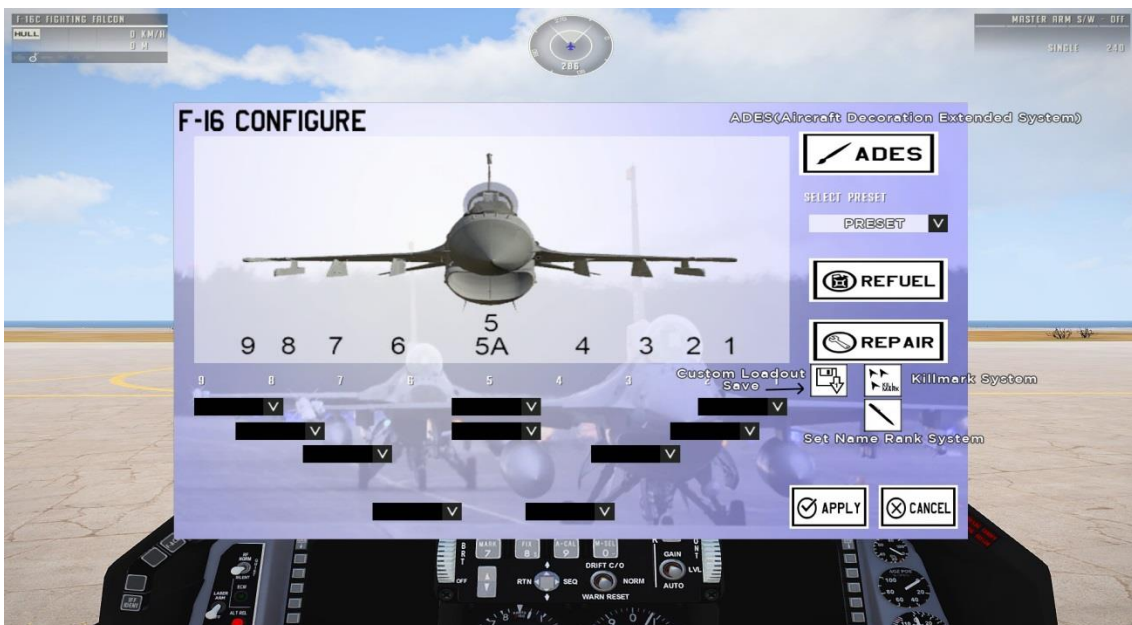
1. place the Aircraft
2. place the HEMTT Ammo Truck / Missile carrier for Rearming object / Huron Ammo Container.





or, just place the aircraft near/in hangar(tent hangar or hangar in altis airport)

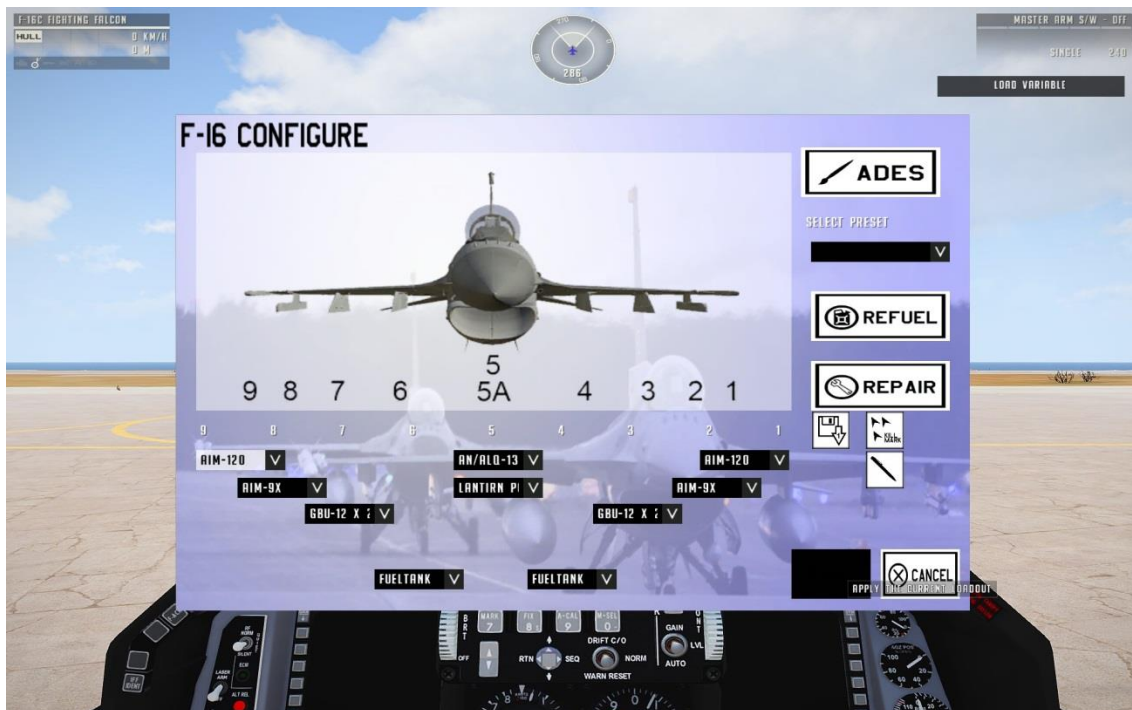




## loadout dialog description

- ADES : decorate your aircraft with skin,decal,roundel,number and insignia.
- PRESET : select the pre-defined preset and 3 custom slots
- REFUEL : Refuel
- REPAIR : Repair
- Custom Loadout Save : save the your custom loadout to custom slot 1~3(must select preset)
- Killmark System : Open Killmark system dialog
- Set Name Rank System : Open Set Name Rank System dialog
- APPLY : equip the weapons from current loadout or pre-defined loadout in PRESET.
- CANCEL : close the loadout dialog



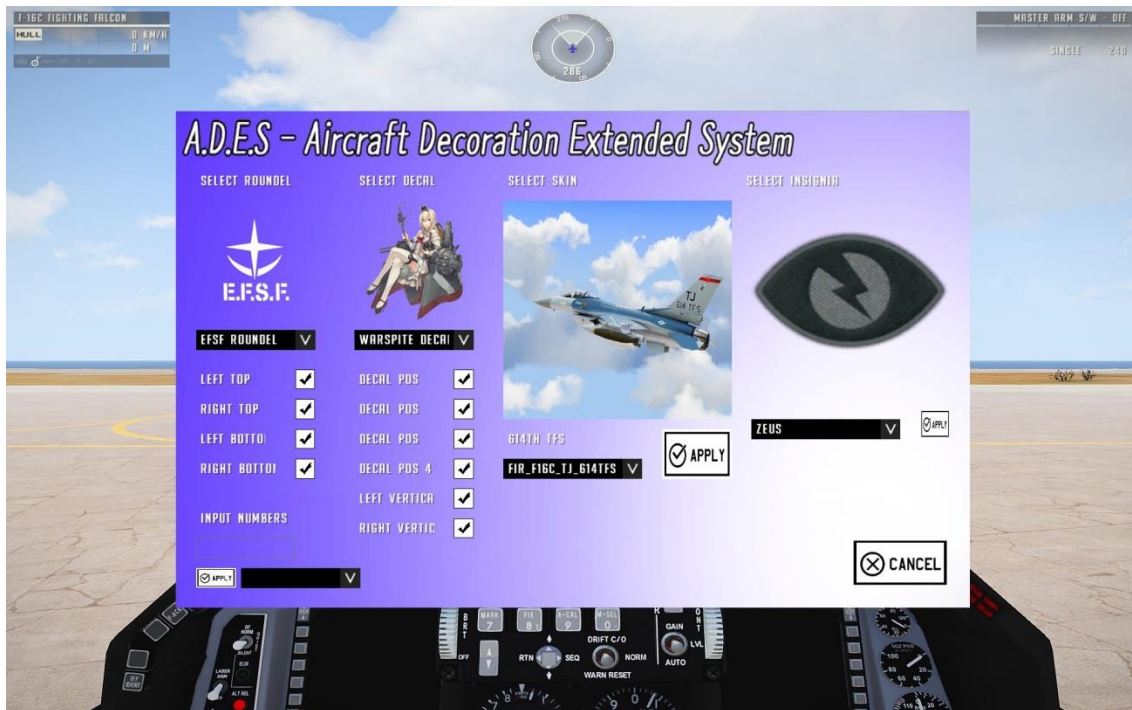


select the weapon in each hardpoint combos, and press APPLY Button for arming.

Result



## PLUS : ADES / Killmark Description



ADES(Aircraft Decoration Extended System)

you can select and decorate the skin,roundel,decal,number and insignia on your aircraft.

also you can make own decal/roundel for ADES(see the ADES custom manual)

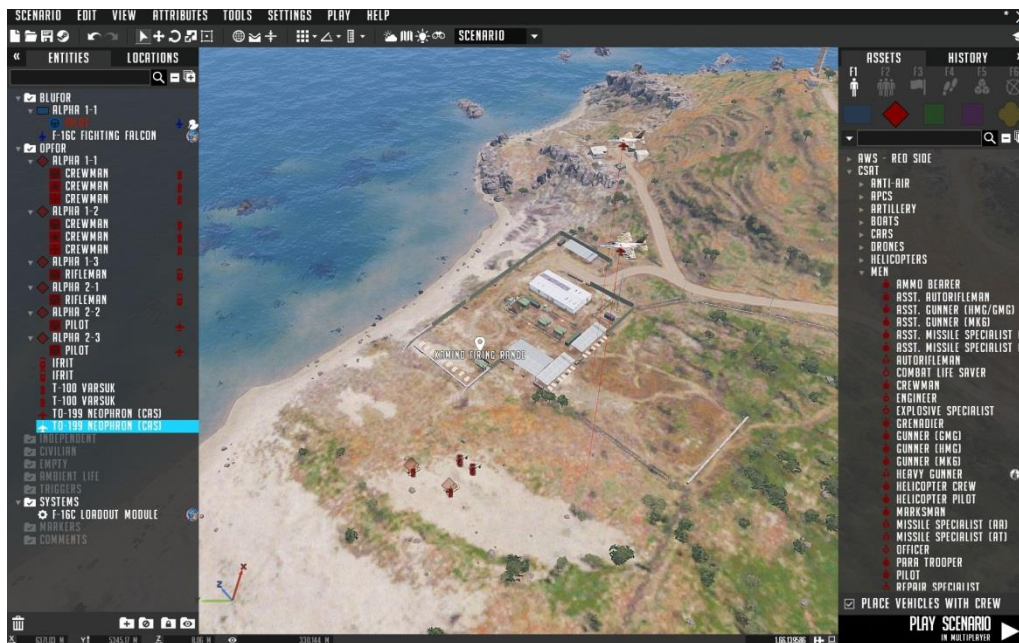


Killmark system(MP ONLY)

killmark system is for decorate the killmark on the aircraft with your score.

support air kill/ground kill /mixed types, customizable kill mark texture and manage your score.(for the customization of kill mark texture, see the ADES custom manual)





for the test, 2 tanks, 2 cars and 2 planes on the map and unarmed.



in Multiplayer, you can see the scoreboard when press the score key(i)





and kill some enemies

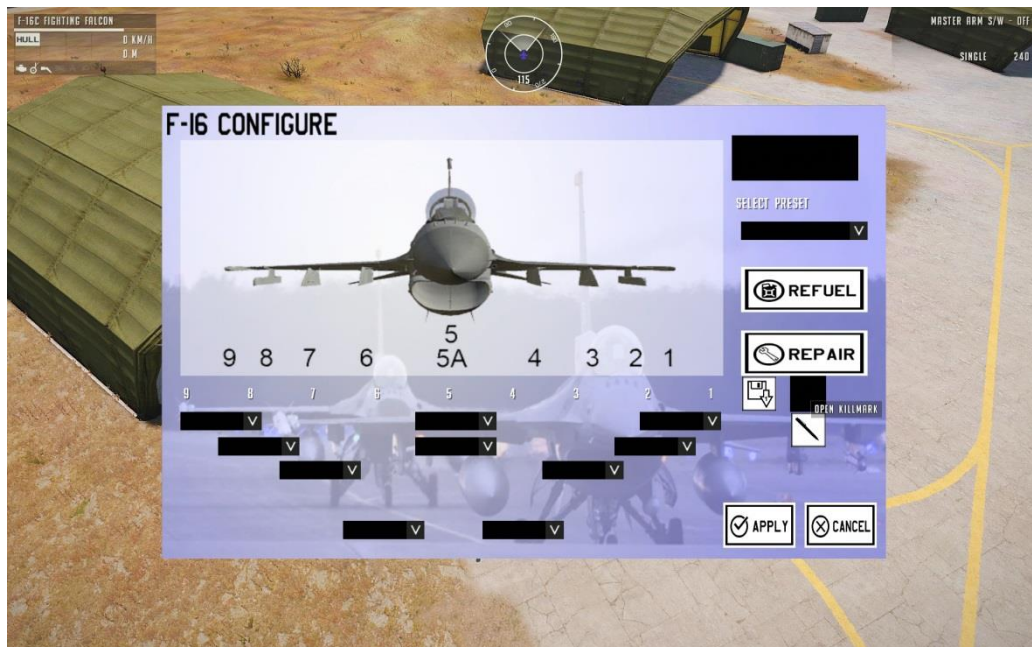


press the score button, you've got a 2 tanks, 2 cars and 2 planes.



RTB, and close to the hangar and press [Open Dialog](#) Button





press the [killmark](#) button



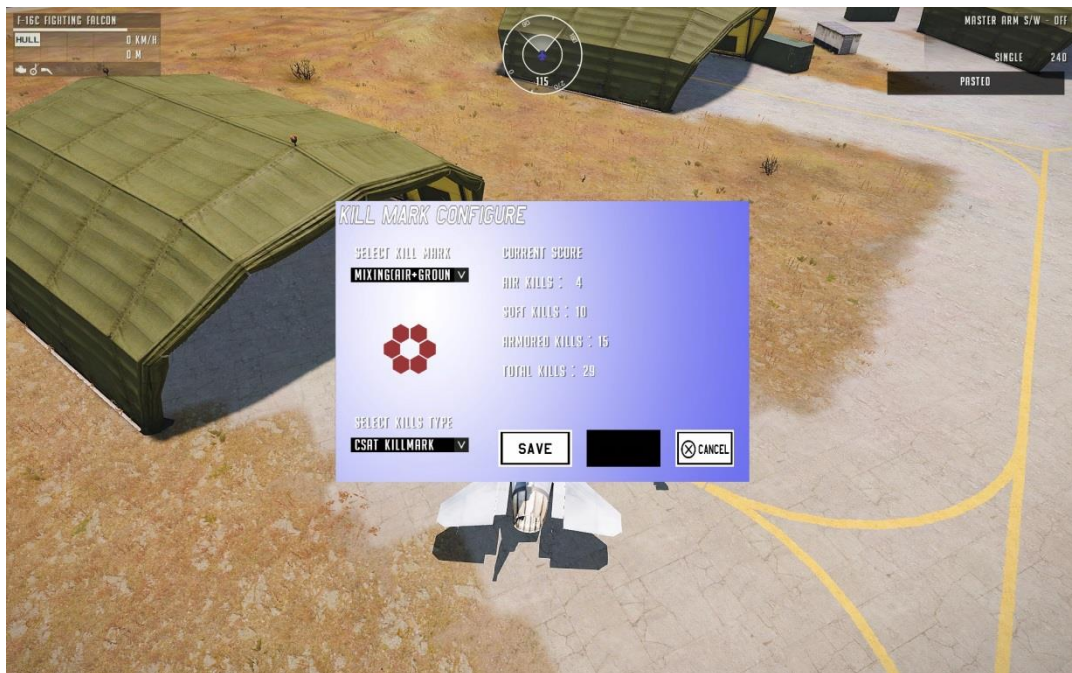
(already I have some score)

press the [SAVE](#) button.





if can see the hint “[saved](#)”, your score is saved very well. also, each score increased(+2)

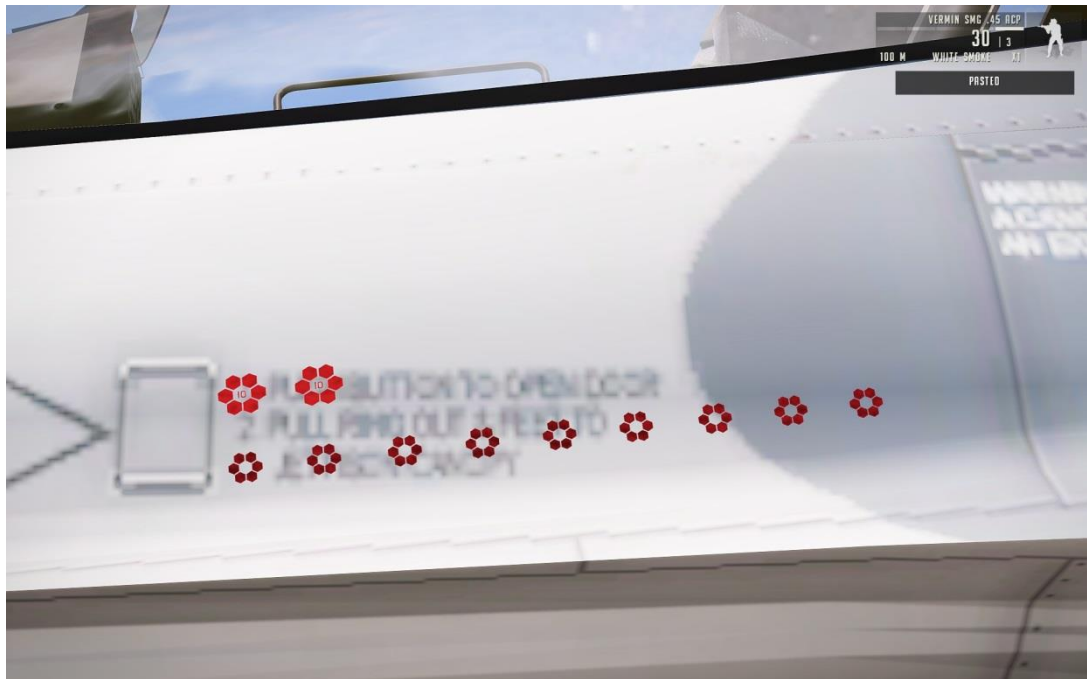


(there some placement error - select kill mark and select kills type is need to switch each other)

select the kill mark type(air only / ground only / air+ground), I've select mixing.

and select the killmarks, select CSAT killmark.

and press [APPLY](#) button. appear hint “[pasted](#)”, mean killmark have been placed.



so here is my killmark

29 kills total(air+ground) - two 10 marks and 9 marks



after score saved, total score has removed(beware : not remove each score)





when press the save button without total score, you can see error message like “[SAVE FAILED : NO SCORE](#)”





# I-TGT

I-TGT(Integrated-TarGeTing system) is provide the precise ground-attack capabilities for aircrafts. support GPS/INS, Dual mode, Map Click and 8/10 digits coordinates.



## I-TGT panel Description

1. DGN(Designation) : (map click only) save the location coordinate from map click, and send to the memory slot.  
default slot is no.1, 5 slots provided.
2. SEL(Select) : (map click / digits) get the data from memory slot, send to FCS. want to using GPS weapon, must press it.(see the example)
3. CLR(Clear) : (map click / digits) remove the target data in FCS. if you want select another location, must press it.
4. DEL(Delete) : (map click / digits) delete the location coordinate from memory slot.
5. MODE : change GPS guide mode. There is two mode, GPS only and Dual mode. GPS only is only using GPS signal when guiding GPS bomb even support the dual mode. Dual mode is using terminal guidance for “dual-mode supported” bombs.
6. SLOT(up and down) : change memory slot 1 to 5
7. digits box : grey input box. input the digits coordinate in here.
8. memory slot : black combo. select the memory 1 to 5.
9. ENT(Enter) : (digits only) save the location coordinate from digits box. same function with DGN but only different is doesn't click the map.

10. 8(8 digits) : select the 8 digits mode.

11. 10(10 digits) : select the 10 digits mode.

## Example : How to use the I-TGT

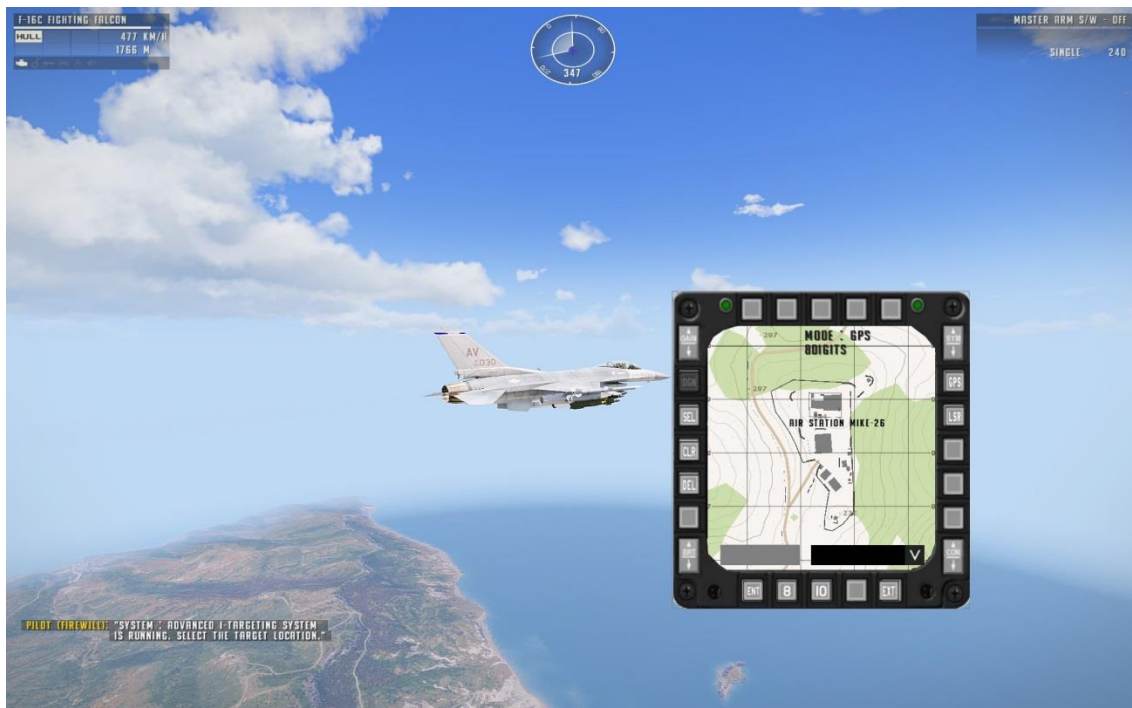
### 1. GPS/INS



for example, destroy the radar installation with using I-TGT.



click the open I-TGT System



press the DGN, and click on the map you want.



TGT POS 1 have been placed. so, memory slot 1 have tgt pos 1 location data. if you select other memory slot, will save to other slot.





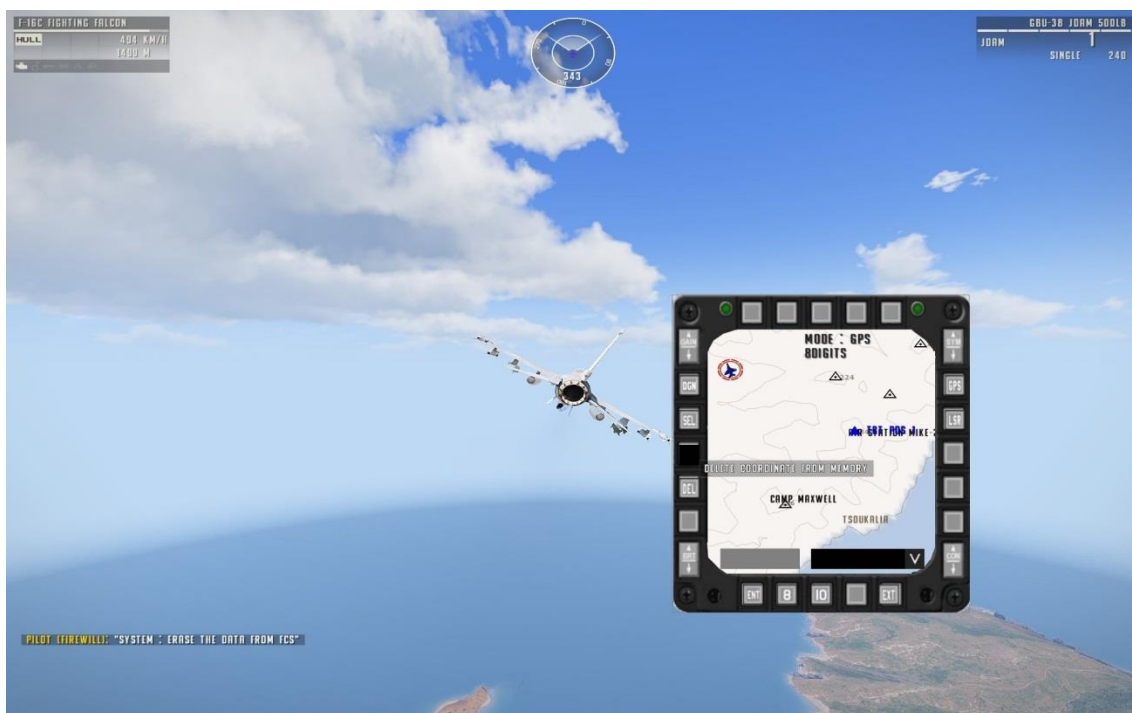
press the SEL button. if appear the blue attack marker(mean GPS data), its mean your aircraft FCS have the data, and ready to drop.



GBU-38(500lbs GPS/INS guided bomb) is on the way



Bingo!



remove the data from FCS, press the CLR button. so no data in FCS, can't use the GPS Bomb.





press the DEL button for delete the location in memory slot. TGT POS 1 deleted.

## 2. Dual mode

Some bombs, like GBU-54 LJDAM and EGBU-12 Enhanced Paveway II are support Dual-mode. it's mean bomb will using separate guidance during drop, like GPS guide for mid-course, Laser guide for terminal guidance.



Open the I-TGT and press MODE for change GPS mode.



Make sure mode display is “DUAL” in screen, and just doing like GPS bomb drop sequence(DGN->SEL->DROP)

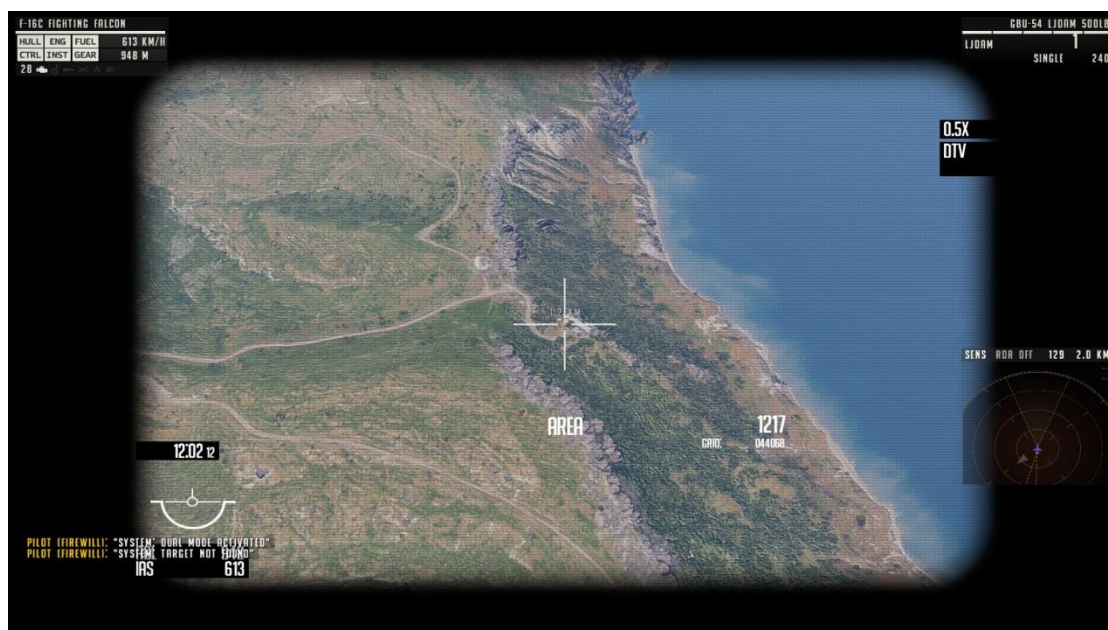


And during drop, turn on the laser and marking on any location or target. If laser target in specific scan area, dual mode bomb will tracking specific target, not GPS signal. If you can see dual mode activated message in screen, it's mean working well.





Waypoint is actually hit area with dual mode, and you can see bomb doesn't hit the TGT POS 1.



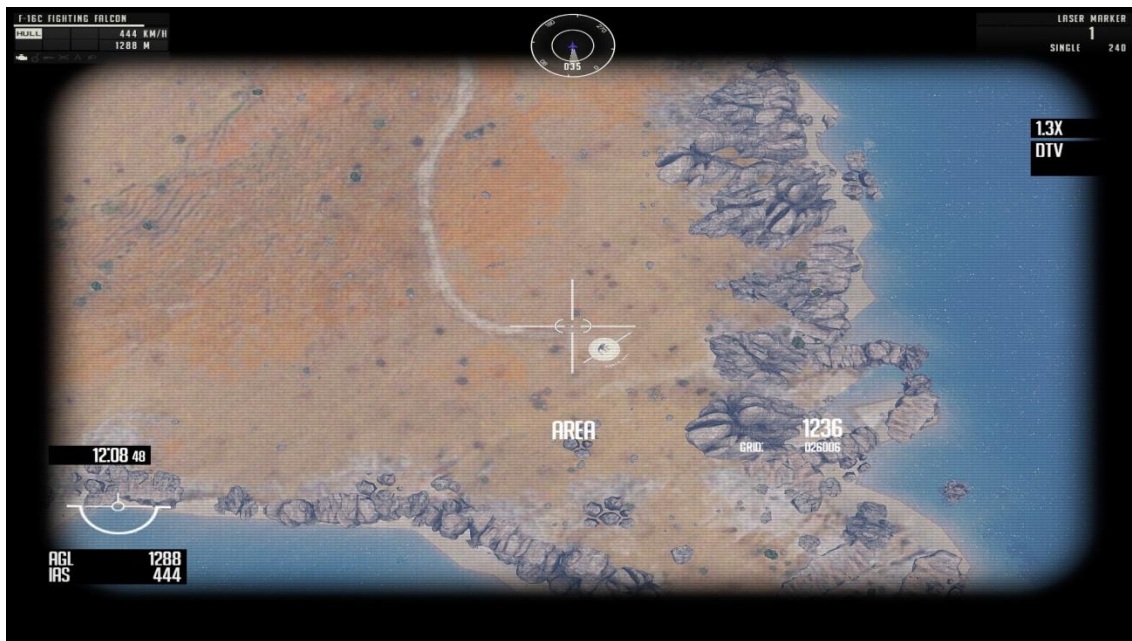
If no specific target in scan area, system will display the message “target not found” and bomb will keep following GPS signal.

### ***3. Visual Targeting(LASER MARKER)***

after virtual targeting pod upgrade, pilotcamera can use the laser marker.

already my Aircrafts support the pilot camera with laser marker. however, some aircrafts need to equip the targeting pod for visual targeting.

this section make you understand how to use the laser marker for ground attack.



this screen is pilotcamera.

Left Ctrl + RMB is open the Pilotcamera

Left Ctrl + T is lock the camera on the Area, Object.



select the laser marker, and press fire key for use laser designator.

if laser is enable, you can see laser icon(red laser) on the screen.





lock on the target, check the fully lock on and drop the bomb(this photo is after the drop so lock on is disable)



Hit.

#### *4. Digits coordinates for GPS*

for advanced user or Multiplayer gaming-specially with the JTAC, I-TGT support the digits coordinates system,  
mean input the 8/10 digits from map grid.

little difficult, but make more realistic than map-click and give some little job for JTAC.



we want to drop the bomb on LZ Conner with digits. however, arma3 support 6 digits only. so need to convert to 8/10. but not a difficult!

just simple : 6 digits is 100m, 8 digits is 10m, 10 digits is 1 m.



LZ conner grid is 029018. mean x : 2900 / y : 1800, 2km 900m and 1km 800m.

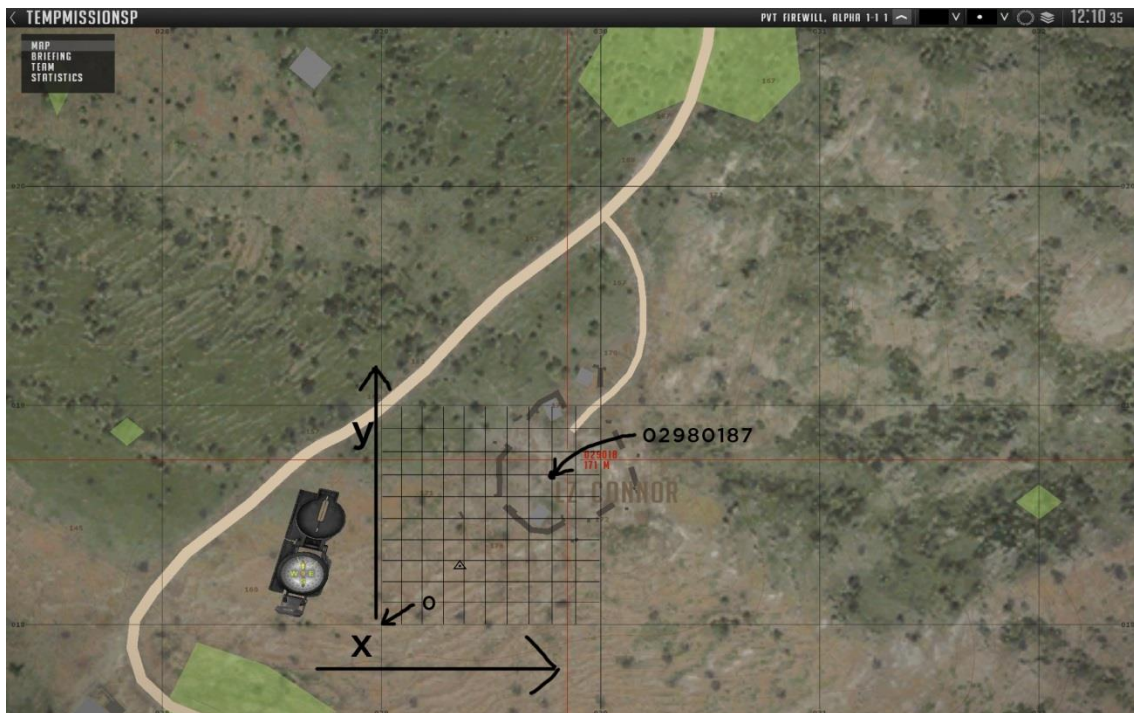
with 6 grids, possible the make error for precise attack because 6 grid is 100m. we need to change to 8 digits(10m)

x is left is 0 to the right, y is bottom is 0 to the top. and draw the line on the map like below(just imagine!)





all coordinate is always vertex from left/bottom like below.



so, we get the 8 digits coordinates, **02980187**

and open the I-TGT.



input the coordinates in grey input box, and press the ENT button. default is 8 digits, so if you got 10 digits, must press 10 button for switching 10 digits.



press SEL button for select the target location.





after bomb release, JDAM hit on the LZ conner.

## SEAD

SEAD is a key to Air Operation against Enemy Anti-Air.

After Jet DLC update, AGM-88 and Kh-25MPU Require for Passive radar aircraft sensor.

It is very simple, tracking enemy active radar signal, lock on and pull the trigger.

## EWS

EWS, Electronic Warfare System is the new feature since EA-18G Growler Update. As Electronic Warfare Aircraft,

EWS is provided the various solution for jamming and protect the allies.



first, press "EWS OPEN" action in action menu.



EWS menu is similar with I-TGT but has different buttons.

1. HI-RIS: High-risk Radar Interrupt System. create the radar decoys on your position. that's why "High-Risk" because you'll need to close the hornet's nest for this system. however, this system is longer operation times, shorter cool times than another system, called LO-RIS.

click the HI-RIS button to execute HI-RIS.

basic operation time: 60 seconds + 30sec per ALQ-99 pod(max 5 for EA-18G).

basic cool time: 60 seconds - 10sec per ALQ-99 pod(max 5 for EA-18G).

maximum operation time: 210 seconds

minimum cool time: 10 seconds

2. LO-RIS: Low-risk Radar Interrupt System. Create the radar decoys on your "map clicked" position like I-TGT click. So more safe than HI-RIS(because you don't need close to enemy position). But this system is shorter operation times, longer cool times than another system, called HI-RIS. And limitation of maximum range(your position to



clicked position) is 10km.  
click the LO-RIS button to execute LO-RIS.

Basic operation time: 40 seconds + 10sec per ALQ-99 pod(max 5 for EA-18G)

basic cool time: 100 seconds - 5sec per ALQ-99 pod(max 5 for EA-18G)

maximum operation time: 90 seconds

minimum cool time: 75 seconds

3. S-J: Sensor-Jammer is jamming the enemy active radar sensor when they in jamming range.

when jamming, enemy will not using active radar for scanning, targeting, and can't use ARH missile during jamming. However, it doesn't mean you are perfectly safe because they still have several sensors like IR/Visual.

4, 5. ESM ON/OFF

ESM, Electronic Support Measures is protect the allies from ARH(active radar homing) missile attack in range. when you click the button, ESM automatically checks the allies in range. this system running consistently until the turn-off, crashed.

6. Increase/Decrease Range

increase/decrease the range for HI-RIS and LO-RIS.

minimum range: 1km

maximum range : 10km

7. Increase/Decrease Altitude

increase/decrease the altitude for HI-RIS and LO-RIS.

minimum altitude: 500m

maximum altitude: 10km

8. decoys combo menu

select the radar decoys for HI/LO-RIS. F-16 and F/A-18F for initial system, will be more to add.

9. Status texts

you can see current decoy type, altitude and range for HI/LO-RIS.

10. Exit button : are you sure want to know how to this button working?

**IMPORTANT: don't be carelessness during combat even EWS working. Stay sharp always!**

# Weapon Reference

*all description from Wikipedia*

## Air to Air Missile



Name : AIM-9L/M Sidewinder

Type : Short-Range Air to Air Missile

Guidance : IR

Range(in config value) : min 10 / max 5000m

Description : The subsequent AIM-9M ("Mike") has the all-aspect capability of the L model while providing all-around higher performance. The M model has improved capability against infrared countermeasures, enhanced background discrimination capability, and a reduced-smoke rocket motor. These modifications increase its ability to locate and lock-on to a target and decrease the chance of missile detection. Deliveries of the initial AIM-9M-1 began in 1982.





Name : AIM-9X Sidewinder

Type : Short-Range Air to Air Missile

Guidance : IR

Range(in config value) : min 10 / max 5000m

Description : The AIM-9X Sidewinder, developed by Raytheon engineers, entered service in November 2003 with the USAF (lead platform is the F-15C; the USN lead platform is the F/A-18C) and is a substantial upgrade to the Sidewinder family featuring an imaging infrared focal-plane array (FPA) seeker with claimed 90° off-boresight capability, compatibility with helmet-mounted displays such as the new U.S. Joint Helmet Mounted Cueing System, and a totally new three-dimensional thrust-vectoring control (TVC) system providing increased turn capability over traditional control surfaces. Utilizing the JHMCS, a pilot can point the AIM-9X missile's seeker and "lock on" by simply looking at a target, thereby increasing air combat effectiveness. It retains the same rocket motor, fuze and warhead of the 9-"Mike", but its lower drag gives it improved range and speed.



Name : AIM-120 AMRAAM

Type : Mid-Range Air to Air Missile

Guidance : Active Radar homing

Range(in config value) : min 700 / max 15000m

Description : The AIM-120 Advanced Medium-Range Air-to-Air Missile, or AMRAAM (pronounced "am-ram"), is a modern beyond-visual-range air-to-air missile (BVRAAM) capable of all-weather day-and-night operations. Designed with 7" diameter instead of 8" diameter form-and-fit factors, and employing active transmit-receive radar guidance instead of semi-active receive-only radar guidance, it is a fire-and-forget upgrade to the previous generation Sparrow missiles.



Name : AIM-7 Sparrow

Type : Mid-Range Air to Air Missile

Guidance : Semi-active radar homing

Range(in config value) : min 1000 / max 13000m

Description : The AIM-7 Sparrow is an American, medium-range semi-active radar homing air-to-air missile operated by the United States Air Force, United States Navy and United States Marine Corps, as well as other various air forces and navies. Sparrow and its derivatives were the West's principal beyond visual range (BVR) air-to-air missile from the late 1950s until the 1990s. It remains in service, although it is being phased out in aviation applications in favor of the more advanced AIM-120 AMRAAM. NATO pilots use the brevity code Fox One in radio communication to signal launch of a Semi-Active Radar Homing Missile such as the Sparrow.





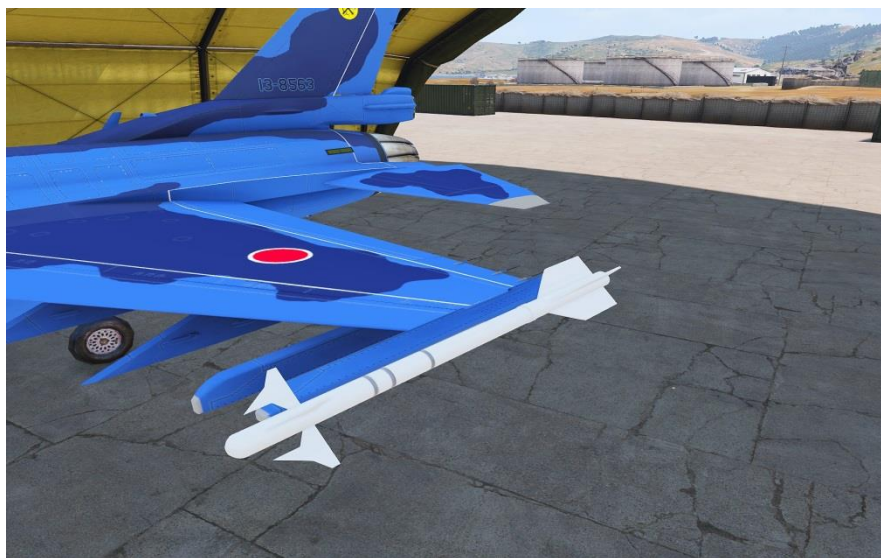
Name : AIM-54 Phoenix

Type : Long-Range Air to Air Missile

Guidance : Active radar homing

Range(in config value) : min 2000 / max 100000m

Description : The AIM-54 Phoenix is a radar-guided, long-range air-to-air missile (AAM), carried in clusters of up to six missiles on the Grumman F-14 Tomcat, its only operational launch platform. The Phoenix was the United States' only long-range air-to-air missile. The combination of Phoenix missile and the AN/AWG-9 guidance radar was the first aerial weapons system that could simultaneously engage multiple targets. Both the missile and the aircraft were used by the United States Navy and are now retired, the AIM-54 Phoenix in 2004 and the F-14 in 2006.



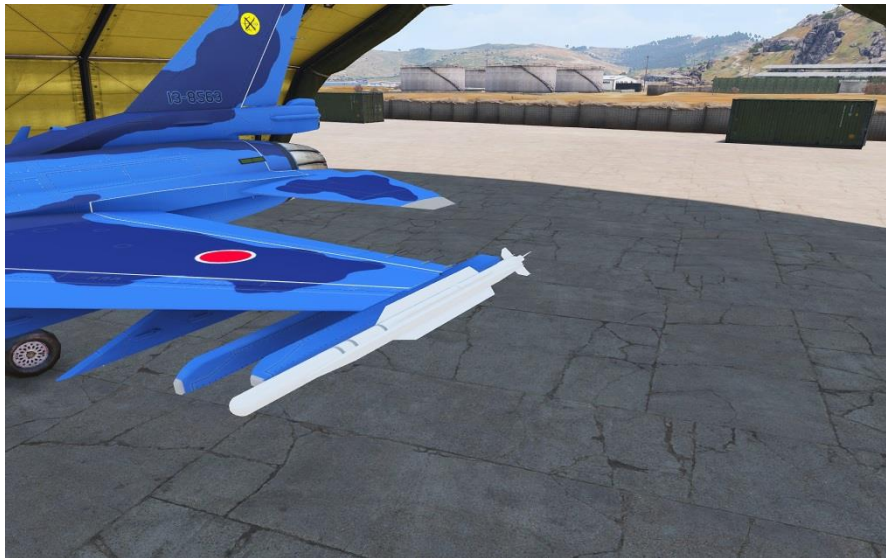
Name : AAM-3

Type : Short-Range Air to Air Missile

Guidance : IR

Range(in config value) : min 10 / max 5000m

Description : The Mitsubishi AAM-3 (Type 90 air-to-air missile, 90式空対空誘導弾) is a short-range air-to-air missile developed in Japan. It has been officially operated since 1991, and is expected to ultimately replace the US AIM-9 Sidewinder.



Name : AAM-5

Type : Short-Range Air to Air Missile

Guidance : IR

Range(in config value) : min 10 / max 5000m

Description : The Mitsubishi AAM-5 (Type 04 air-to-air missile, 04式空対空誘導弾) is a short-range air-to-air missile developed and produced by Mitsubishi Heavy Industries for the Japan Air Self-Defense Force. Development of the missile as a replacement for the AAM-3 (Type 90) missile commenced in 1991 and it has been operational since 2004.



Name : AAM-4

Type : Mid-Range Air to Air Missile

Guidance : Active radar homing

Range(in config value) : min 1000 / max 15000m

Description : The Mitsubishi AAM-4 (Type 99 air-to-air missile, 99式空対空誘導弾) is a medium-range active radar homing air-to-air missile, considered as modern beyond-visual-range missile developed in Japan and intended to replace the semi-active radar homing AIM-7 Sparrow missile in service. It has been operational since 1999. The main contractor is Mitsubishi Electric.



Name : Vympel R-73

Type : Short-Range Air to Air Missile

Guidance : IR

Range(in config value) : min 50 / max 5000m

Description : The Vympel R-73 (NATO reporting name AA-11 Archer) is a short-range air-to-air missile developed by Vympel NPO that entered service in 1984.

The R-73 is an infrared homing (heat-seeking) missile with a sensitive, cryogenic cooled seeker with a substantial "off-boresight" capability: the seeker can "see" targets up to 40° off the missile's centerline. It can be targeted by a helmet-mounted sight (HMS) allowing pilots to designate targets by looking at them. Minimum engagement range is about 300 meters, with maximum aerodynamic range of nearly 30 km (19 mi) at altitude. The weapon is used by the MiG-29, MiG-31, Su-27, Su-34 and Su-35, and can be carried by newer versions of the MiG-21, MiG-23, Sukhoi Su-24, and Su-25 aircraft. India is looking to use the missile on their HAL Tejas. It can also be carried by Russian attack helicopters, including the Mil Mi-24, Mil Mi-28, and Kamov Ka-50/52.





Name : Molniya R-60M

Type : Short-Range Air to Air Missile

Guidance : IR

Range(in config value) : min 10 / max 5000m

Description : The Molniya (now Vypel) R-60 (NATO reporting name: AA-8 "Aphid") is a short-range lightweight infrared homing air-to-air missile designed for use by Soviet fighter aircraft. It has been widely exported, and remains in service with the CIS and many other nations.

An upgraded version, the R-60M (NATO reporting name: "Aphid-B"), using a nitrogen-cooled seeker with an expanded view angle of  $\pm 20^\circ$ , was introduced around 1982. Although its seeker is more sensitive than its predecessor, the R-60M has only limited all-aspect capability. Minimum engagement range was further reduced, to only 200 m (220 yd). The proximity fuzes had improved resistance to ECM, although both optical and radar fuzes remained available (radar-fuzed R-60Ms with the Kolibri-M fuze are designated R-60 km). The R-60M is 42 mm (1.7 in) longer, and has a heavier, 3.5 kg (7.7 lb) continuous-rod warhead, increasing launch weight to 45 kg (99 lb). In some versions the warhead is apparently laced with about 1.6 kg (3.5 lb) of depleted uranium to increase the penetrating power of the warhead.



Name : Vypel R-27ER/ET

Type : Mid-Range Air to Air Missile

Guidance : Semi-Active Radar homing(ER) / IR(ET)

Range(in config value) : min 1000 / max 13000m

Description : The Vypel R-27 missile (NATO reporting name AA-10 Alamo) is a medium-to-long-range air-to-air missile developed by the Soviet Union. It remains in service with the Russian Air Force and air forces of the Commonwealth of Independent States.



Name : Vympel R-77

Type : Mid-Range Air to Air Missile

Guidance : Active Radar homing

Range(in config value) : min 1000 / max 15000m

Description : The Vympel NPO R-77 missile (NATO reporting name: AA-12 Adder) is a Russian medium range, active radar homing air-to-air missile system. It is also known by its export model designation RVV-AE. It is the Russian counterpart to the American AIM-120 AMRAAM missile.



## Air to Ground/Surface Missile



Name : AGM-65 Maverick

Type : Air to Surface Missile

Guidance : IIR(D/G) / Laser(L) / CCD EO(H/K)

Range(in config value) : min 50 / max 6000m

Description : The AGM-65 Maverick is an air-to-ground tactical missile (AGM) designed for close air support. It is the most widely produced precision-guided missile in the Western world, and is effective against a wide range of tactical targets, including armor, air defenses, ships, ground transportation and fuel storage facilities.

Originally designed and built by Hughes Missile Systems, development of the AGM-65 spanned from 1966 to 1972, after which it entered service with the United States Air Force in August 1972. Since then, it has been exported to more than 30 countries and is certified on 25 aircraft. The Maverick served during the Vietnam, Yom Kippur, Iran-Iraq, and Persian Gulf Wars, along with other smaller conflicts, destroying enemy forces and installations with varying degrees of success.

Since its introduction into service, numerous Maverick versions had been designed and produced, using electro-optical, laser, charge-coupled device and infra-red guidance systems.



Three AGM-65D on LAU-88 Triple Rack



AGM-65G on LAU-117 Single Rail



AGM-65L on LAU-117 Single Rail



AGM-65K on LAU-117 Single Rail



Name : AGM-88 HARM

Type : Air to Surface Anti-Radiation Missile

Guidance : Passive radar homing

Range(in config value) : min 100 / max 15000m

Description : The AGM-88 High-speed Anti-Radiation Missile (HARM) is a tactical, air-to-surface missile designed to home in on electronic transmissions coming from surface-to-air radar systems. It was originally developed by Texas Instruments as a replacement for the AGM-45 Shrike and AGM-78 Standard ARM system.





Name : AGM-84H SLAM-ER

Type : Long-Range Precision Cruise Missile

Guide Type : GPS/INS / Terminal : IR

Description : The AGM-84H/K SLAM-ER (Standoff Land Attack Missile-Expanded Response) is a precision-guided, air-launched cruise missile produced by Boeing Defense, Space & Security for the United States Armed Forces and their allies. Developed from the AGM-84E SLAM (Standoff Land Attack Missile) (itself developed by Boeing Integrated Defense Systems from the McDonnell Douglas Harpoon antiship missile), the SLAM-ER is capable of attacking land and sea targets at medium-to-long-ranges (155 nautical miles/250 km maximum). The SLAM-ER relies on the Global Positioning System (GPS) and infrared imaging for its navigation and control, and it can strike both moving and stationary targets.



Name : ASM-2

Type : Anti-Ship Missile

Guidance : IIR

Range(in config value) : min 50 / max 20000m

Description : The Type 93 Air-to-Ship Missile (93式空対艦誘導弾, ASM-2) is an Air-to-ship missile developed in Japan.

This missile is used by the Japan Air Self-Defense Force.



Name : Kh-29

Type : Air-To-Surface Missile

Guidance : Laser(L) / Passive homing TV(T)

Range(in config value) : min 50 / max 20000m

Description : The Kh-29 (Russian: X-29; NATO: AS-14 'Kedge'; GRAU: 9M721) is a Soviet air-to-surface missile with a range of 10-30 km. It has a large warhead of 320 kg, has a choice of laser, infrared, active radar or TV guidance, and is typically carried by tactical aircraft such as the Su-24, Su-30, MiG-29K as well as the "T/TM" models of the Su-25, giving that craft an expanded standoff capability.



Name : Kh-25

Type : Air-To-Surface Missile

Guidance : Laser(ML) / Passive radar homing(MPU)

Range(in config value) : min 100 / max 15000m

Description : The Kh-25/Kh-25M (Russian: X-25; NATO:AS-10 'Karen') is a family of Soviet lightweight air-to-ground missiles with a modular range of guidance systems and a range of 10 km. The anti-radar variant (Kh-25MP) is known to NATO as the AS-12 'Kegler' and has a range up to 40 km. Designed by Zvezda-Strela, the Kh-25 is derived from the laser-guided version of their Kh-23 Grom (AS-7 'Kerry'). It has now been succeeded by the Kh-38 family, but the Kh-25 remains in widespread use.





Name : 9K121 Vikhr

Type : Air-To-Surface Missile

Guidance : Laser

Range(in config value) : min 50 / max 6000m

Description : The 9K121 Vikhr (Russian: Вихрь, English: Whirlwind; NATO reporting name: AT-16 Scallion) is a Russian laser guided anti-tank missile. "9K121" is the GRAU designation for the missile system. The missile is launched from ships, Ka-50, Ka-52 helicopters and Su-25T aircraft. It was first shown publicly at the 1992 Farnborough Airshow.

# Bomb



Name : Mk 82

Type : 500lb General Purpose Bomb

Guide Type : Unguided

Description : The Mark 82 (Mk 82) is an unguided, low-drag general-purpose bomb, part of the U.S. Mark 80 series. The explosive filling is usually tritonal, though other compositions have sometimes been used.



Mk 82 Snakeye - high-drag "Snakeye" tailfins used for low-altitude release.



Name : Mk 84

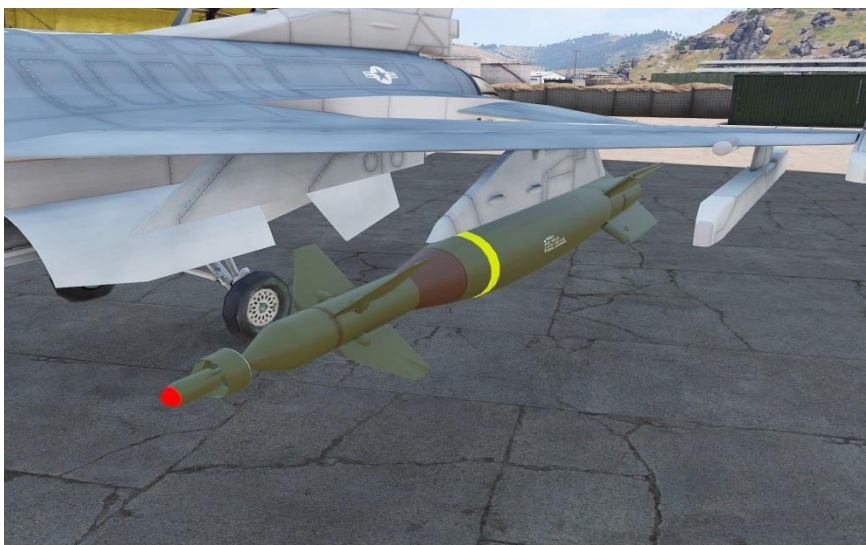
Type : 2000lb General Purpose Bomb

Guide Type : Unguided

Description : The Mark 84 or BLU-117 is an American general-purpose bomb, it is also the largest of the Mark 80 series of weapons. Entering service during the Vietnam War, it became a commonly used US heavy unguided bomb (due to the amount of high-explosive content packed inside) to be dropped.

The Mark 84 has a nominal weight of 2,000 lb (907.2 kg), but its actual weight varies depending on its fin, fuze options, and retardation configuration, from 1,972 to 2,083 lb (894.5 to 944.8 kg). It is a streamlined steel casing filled with 945 lb (428.6 kg) of Tritonal high explosive.

The Mark 84 is capable of forming a crater 50 feet (15.2 m) wide and 36 ft (11.0 m) deep. It can penetrate up to 15 inches (381.0 mm) of metal or 11 ft (3.4 m) of concrete, depending on the height from which it is dropped, and causes lethal fragmentation to a radius of 400 yards (365.8 m).



Name : GBU-10 Paveway II

Type : 2000lb Guided bomb



Guide Type : Laser-Guided

Description : American Paveway-series laser-guided bomb, based on the Mk 84 general-purpose bomb, but with laser seeker and wings for guidance. Introduced into service c. 1976. Used by USAF, US Navy, US Marine Corps, Royal Australian Air Force and various NATO air forces.

The GBU-10 has been built in more than a half-dozen variants with different wing and fuse combinations.

Weight depends on the specific configuration, ranging from 2,055 lb (934 kg) to 2,103 lb (956 kg).

Laser-guided bombs are often labeled as "smart bombs", despite requiring external input in the form of laser designation of the intended target. According to Raytheon's fact sheet for the Paveway 2, 99 deliveries of guided munitions will yield a circular error probable (CEP) of only 3.6 feet (1.1 m), compared to a CEP of 310 feet (94 m) for 99 unguided bombs dropped under similar conditions.



Name : GBU-12 Paveway II

Type : 500lb Guided Bomb

Guide Type : Laser-Guided

Description : The GBU-12 Paveway II is an American aerial laser-guided bomb, based on the Mk 82 500-pound general-purpose bomb, but with the addition of a nose-mounted laser seeker and fins for guidance. A member of the Paveway series of weapons, Paveway II entered into service c. 1976. It is currently in service with the Royal Australian Air Force, Royal Saudi Air Force, U.S. Air Force, US Navy, US Marine Corps, Royal Canadian Air Force, Colombian Air Force, Swedish Air Force, and various NATO air forces.

Laser-guided bombs are often labeled "smart bombs" because they are able to follow a non-ballistic trajectory when laser designation of the intended target is undertaken. According to Raytheon's fact sheet for the Paveway 2, 99 deliveries of guided munitions will yield a circular error probable (CEP) of only 3.6 feet, versus a CEP of 310 feet for 99 unguided bombs dropped under similar conditions.



Name : GBU-24 Paveway III

Type : 2000lb Guided Bomb

Guide Type : Laser-Guided

Description : GBU-24 Paveway III or simply GBU-24 is a family of laser-guided bombs, a sub-group of the larger Raytheon Paveway III family of weapons. The Paveway guidance package consists of a seeker package attached to the nose of the weapon, and a wing kit attached to the rear to provide stability and greater range.

Warhead options consist of:

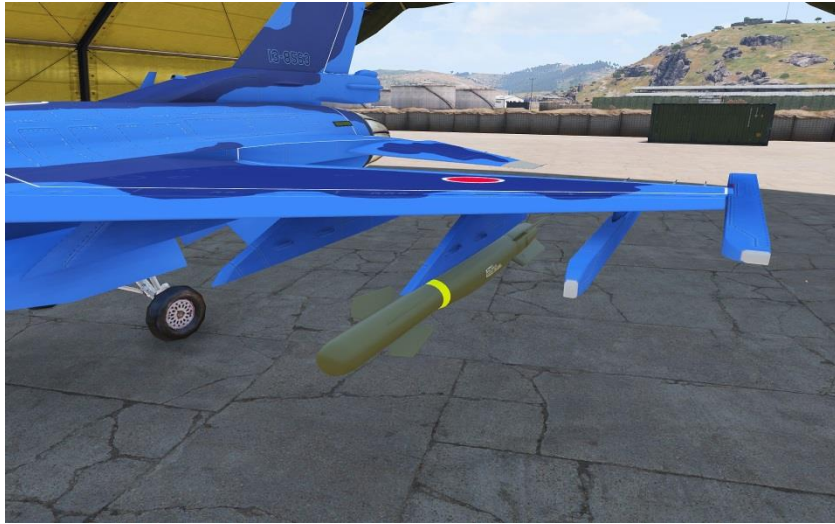
Mk. 84 - 910 kilograms (2,000 lb) General Purpose

BLU-109 - 910 kilograms (2,000 lb) Penetrator

BLU-116 - Advanced Unitary Penetrator

CPE-800 - Used in the BPG-2000, a similar, indigenous Spanish weapon

Compared to the GBU-10 family, or the Paveway II family, the GBU-24 glides farther as a result of more efficient guidance technology. The Paveway III guidance kit is more expensive, however, making the GBU-24 suitable against well-defended, high-value targets. It was introduced into service c. 1983. This weapon is in service with the USAF, US Navy, US Marine Corps, and various NATO air forces.



Name : GCS-1

Type : 500lb Guided-Bomb

Guide type : Laser-Guided

Description : GCS-1(Type 91 Bomb Guidance System,91式爆弾用誘導装置) is a laser-guided / anti-ship bomb for JASDF, using Mk 82 500lb bomb.







Name : GBU-31/32/38 JDAM

Type : Guided-Bomb

Guide Type : GPS/INS

Description : The Joint Direct Attack Munition (JDAM) is a guidance kit that converts unguided bombs, or "dumb bombs", into all-weather "smart" munitions. JDAM-equipped bombs are guided by an integrated inertial guidance system coupled to a Global Positioning System (GPS) receiver, giving them a published range of up to 15 nautical miles (28 km). JDAM-equipped bombs range from 500 pounds (227 kg) to 2,000 pounds (907 kg). When installed on a bomb, the JDAM kit is given a GBU (Guided Bomb Unit) nomenclature, superseding the Mark 80 or BLU (Bomb, Live Unit) nomenclature of the bomb to which it is attached.

The JDAM is not a stand-alone weapon; rather it is a "bolt-on" guidance package that converts unguided gravity bombs into Precision-Guided Munitions, or PGMs. The key components of the system consist of a tail section with aerodynamic control surfaces, a (body) strake kit, and a combined inertial guidance system and GPS guidance control unit.

The JDAM was meant to improve upon laser-guided bomb and imaging infrared technology, which can be hindered by bad ground and weather conditions. Laser seekers are now being fitted to some JDAMs.

GBU-31 : 2000lb

GBU-32 : 1000lb

GBU-38 : 500lb



Name : CBU-87 CEM / CBU-89 GATOR / CBU-97 SFW / CBU-103 WCMD

Type : Cluster Bomb

Guide Type : Unguided(87,89,97) , GPS/INS(103)

Description : The CBU-87 Combined Effects Munition is a cluster bomb used by the United States Air Force, developed by Aerojet General/Honeywell and introduced in 1986 to replace the earlier cluster bombs used in the Vietnam War. CBU stands for Cluster Bomb Unit. When the CBU-87 is used in conjunction with the Wind Corrected Munitions Dispenser guidance tail kit, it becomes a precision-guided weapon, and is designated CBU-103. Each CBU-87 consists of an SUU-65B canister, a fuze with 12 time delay options and 202 submunitions (or bomblets) designated BLU-97/B Combined Effects Bomb. Each bomblet is a yellow cylinder with a length of 20 centimeters and a diameter of 6 centimeters. The BLU-97/B bomblets are designed to be used against armour, personnel and softskin targets and consist of a shaped charge, a scored steel fragmentation case and a zirconium ring for incendiary effects. The CBU-87 can also be equipped with an optional FZU-39/B proximity sensor with 10 altitude selections.

The GATOR mine system is a US system of air-dropped anti-tank and anti-personnel mines developed in the 1980s to be compatible with existing cluster dispensers. It is used with two dispenser systems—the Navy 230 kg (500 lb) CBU-78/B and the Air Force 450 kg (1,000 lb) CBU-89/B.

The Air Force CBU-89/B is a 450-kilogram (1,000 lb) cluster munition containing 72 antitank and 22 antipersonnel mines, consists of an SUU-64 Tactical Munitions Dispenser with an optional FZU-39 proximity sensor. The TMD is the same general configuration used for the CBU-87/B Combined Effects Munition. This commonality allows for high-rate, low-cost production of the dispenser.

The CBU-97 Sensor Fuzed Weapon is a United States Air Force 1,000-pound (450 kg)-class non-guided (freefall)

Cluster Bomb Unit (CBU). It was developed and produced by Textron Defense Systems. The CBU-97 in conjunction with the Wind Corrected Munitions Dispenser guidance tail kit, which converts it to a precision-guided weapon, is designated CBU-105.

The CBU-97 consists of an SUU-66/B tactical munition dispenser that contains 10 BLU-108 submunitions. Each submunition contains four hockey-puck-shaped sensor-fused projectiles called Skeets. These detect target vehicles, such as tanks, armored personnel carriers, trucks and other support vehicles, and fire a kinetic energy penetrator downwards at them.



Name : GBU-39 SDB

Type : 250lb Guided-Bomb

Guide Type : GPS/INS

Description : The GBU-39 Small Diameter Bomb (SDB) is a 250 lb (110 kg) precision-guided glide bomb that is intended to provide aircraft with the ability to carry a higher number of more accurate bombs. Most US Air Force aircraft will be able to carry (using the BRU-61/A rack) a pack of four SDBs in place of a single 2,000 lb (907 kg) bomb.





Name : GBU-53 SDB II

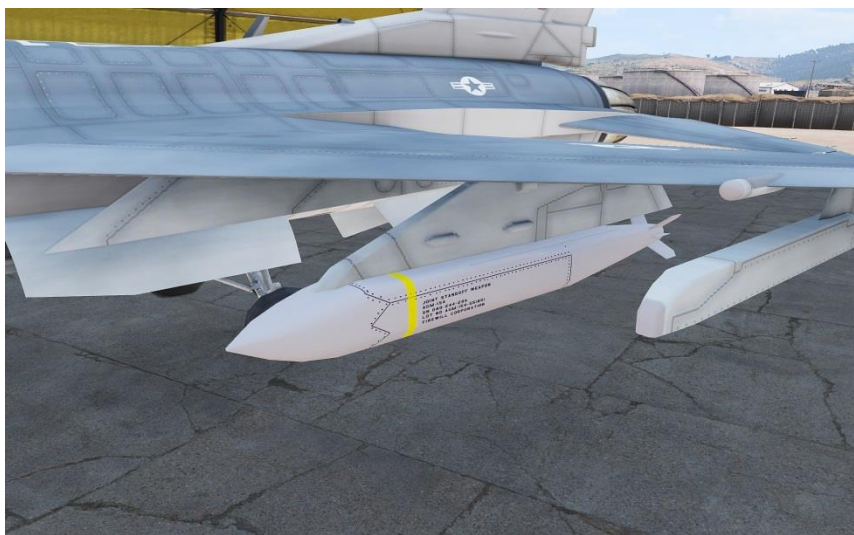
Type : 250lb Guided-Bomb

Guide Type : GPS/INS + IIR + Semi-Active Laser + Millimeter wave Active Radar

Description : The GBU-53/B Small Diameter Bomb II is an American air-launched, precision-guided glide bomb.

Development was started in 2006 for a 250 pounds (113 kg) class bomb that can identify and strike mobile targets from standoff distances in all weather conditions. It will be integrated on the F-15E and F-35 fighters. The bomb uses GPS/INS system to guide itself into the general vicinity of a moving target during the initial search phase, with any necessary course correction updates provided using a Link 16 or UHF data link. The bomb has three modes of target acquisition: millimeter-wave radar, Infrared homing based on uncooled imaging infrared, and semi-active laser. The weapon is capable of fusing the information from the sensors to classify the target and can prioritize certain types of targets as desired when used in semi-autonomous mode.

The shaped charge warhead in the bomb has both blast and fragmentation effects, which makes it effective against infantry, armor (including MBTs), unhardened structures and buildings, as well as patrol craft sized boats and other soft targets. The bomb would be the first purpose-built no-drive zone enforcement weapon.



Name : AGM-154A/A-1 JSOW

Type : Glide Bomb

Guide Type : GPS/INS

Description : The AGM-154 Joint Standoff Weapon (JSOW) is the product of a joint venture between the United States Navy and Air Force to deploy a standardized medium range precision guided weapon, especially for engagement of defended targets from outside the range of standard anti-aircraft defenses, thereby increasing aircraft survivability and minimizing friendly losses.

addition, the AGM-154A-1 configuration is under development by Raytheon for FMS sales. This version replaces the submunition payload of the AGM-154A with a BLU-111 warhead to enhance blast-fragmentation effects without the unexploded ordnance (UXO) concerns with the BLU-97/B payload.



Name : Durandal

Type : Anti-Runway Bomb

Guide Type : Unguided

Description : Named for a mythical medieval French sword, the Durandal is an anti-runway penetration bomb developed by the French company Matra (now MBDA), designed to destroy airport and airfield runways and exported to a number of countries worldwide. As a simple crater in a runway could be just filled in, the Durandal deliberately utilizes two explosions in order to displace the concrete slabs of a runway, damage that is far harder to repair.



Name : KAB-250

Type : Guided bomb

Guide Type : Laser(L)

Description : The KAB-250L is a laser semi-active homing 250 kg guided bomb. It is the smallest laser guided bomb manufactured by Russian industry.

The weapon uses the Azov 27N or later 27N1 semi-active laser homing seeker using an annular airfoil and optical design similar to the Paveway I/II series. It will provide similar characteristics to the baseline Paveway I/II seeker.

The cited CEP is 3 to 10 metres which is consistent with this size of bomb, style of seeker and the bang-bang control loop technology involved.







Name : KAB-500

Type : Guided bomb

Guide Type : Laser(L)/ Satellite guidance(S-E) / EO TV guide(Kr)

Description : The KAB-500L is a laser-guided bomb developed by the Soviet Air Force. It remains in service with the CIS and post-Soviet Russian Air Force.

The KAB-500L is analogous to the U.S. Paveway series: it is a standard FAB-500 general-purpose bomb, which has a nominal weight of 500 kg (1,100 lb), fitted with a semi-active laser seeker and guidance fins, turning it into an unpowered guided bomb.

KAB-500S-E is a Precision-Guided Munition (PGM) whose guidance system is based on GLONASS. The weapon can be dropped from aircraft flying at an altitude from 500 meters to 5000 meters and with an airspeed of 500-1150 km/h. The CEP is 7-12 meters. These bombs were used for the first time in the Russian military intervention in the Syrian Civil War in September 2015.

The KAB-500Kr series are Electro-Optical guided bombs. The seeker employs a gimballed daylight television imaging sensor under a wide angle glass dome. Unlike the earlier US GBU-8 HOBOS and AGM-65 Maverick which employed contrast lock technology, the -Kr series guidance system employs Scene Matching Area Correlation technology more akin to the US Navy DAMASK seeker or Tomahawk DSMAC. This results in the ability to attack low contrast targets by exploiting the contrast of nearby terrain features or objects. IOC was achieved in 1984.



Name : FAB-250

Type : General purpose bomb

Guide Type : unguided

Description : FAB-250 is Russian un-guided general purpose bomb.



Name : RBK-250

Type : Cluster

Guide Type : unguided

Description : RBK-250 is Russian un-guided cluster bomb.

# Rocket



Name : Hydra 70 / APKWS

Type : 2.75-inch Rocket

Guide Type : Unguided / Laser(APKWS)

Description : The Hydra 70 rocket is a 2.75-inch fin-stabilized unguided rocket used primarily in the air-to-ground role. It can be equipped with a variety of warheads, and in more recent versions, guidance systems for point attacks. The Hydra is widely used by US and allied forces, competing with the Canadian CRV-7 which is physically interchangeable. And Advanced Precision Kill Weapon System (APKWS) also known as Laser, infrared Guided Rocket (LiGR) is a design conversion of Hydra 70 unguided rockets with a laser guidance kit to turn them into precision-guided munitions (PGMs).

LAU-131 : 7-tube rocket launcher

J/LAU-3 : 19-tube rocket Launcher

Support warhead

HEPD / APERS / Smoke / WP



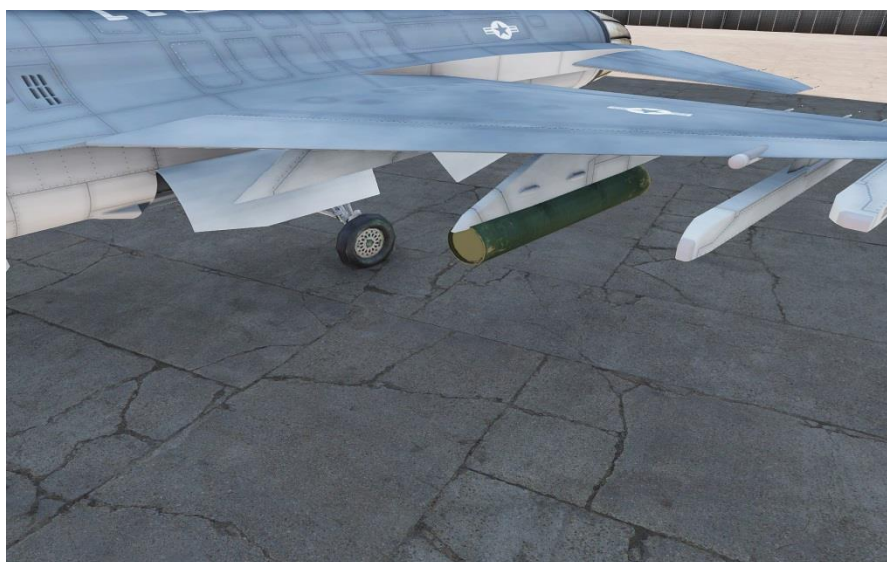


Name : Zuni

Type : 5-inch Rocket

Guide Type : Unguided

Description : The Zuni 5-inch Folding-Fin Aircraft Rocket (FFAR), or simply Zuni, is a 5.0 in (127.0 mm) unguided rocket deployed by the United States armed forces. The rocket was developed for both air-to-air and air-to-ground operations. It can be used to carry various types of warheads, including chaff for countermeasures. It is usually fired from the LAU-10 rocket pod holding four rockets.



Name : SUU-25F/A Flare Dispenser

Type : Flare

Guide Type : Unguided

Description : The SUU-25 F/A is a flare dispenser that holds 8 illumination rounds (two per tube). It is primarily used by the U.S. Air Force.



Name : S-8

Type : Rocket

Guide Type : Unguided

Description : The S-8 is a rocket weapon developed by the Soviet Air Force for use by military aircraft. It remains in service with the Russian Air Force and various export customers.

Developed in the 1970s, the S-8 is an 80 mm (3.1 in) rocket used by fighter bombers and helicopters. The system entered service in 1984 and is produced in a variety of subtypes with different warheads, including HEAT anti-armor, high-explosive fragmentation, smoke, and incendiary, as well as the specialized S-8BM runway-destroying munition and the S-8DM fuel-air explosive variants. Each rocket is between 1.5 meters (4 ft 11 in) and 1.7 meters (5 ft 7 in) long and weighs between 11.3 kg (25 lb) and 15.2 kg (33.5 lb), depending on warhead and fuse. Range is 2 to 4 kilometers (1.3 to 2.6 mi).

Support warhead

HEAT/Flechette



Name : S-13

Type : Rocket

Guide Type : Unguided

Description : The S-13 is a 122 mm calibre unguided rocket weapon developed by the Soviet Air Force for use by military aircraft. It remains in service with the Russian Air Force and some other countries.

Support warhead

HEAT



## Misc



Name : AN/ALQ-131 ECM Pod

Type : ECM Pod

Description : The AN/ALQ-131 Electronic Countermeasures (ECM) pod is the most successful ECM system ever built. Northrop Grumman has fielded more than 1,600 ALQ-131 pods, which used state-of-the-art technology to successfully protect aircrews and aircraft in every conflict since becoming operational in the 1980s.



Name : AN/ALQ-184 ECM Pod

Type : ECM Pod

Description : The ALQ-184 is a self-protect electronic countermeasures (ECM) electronic warfare (EW) pod used on U.S. Air Force tactical aircraft. Its computer-controlled multibeam receivers and mini-TWT amplifiers operate in both receive and transmit modes to selectively direct high power jamming against multiple emitters. The system

provides instantaneous RF signal processing that is wide open in angle and frequency. Features such as a high sensitivity multibeam receiver, continuous wave, pulse and pulse Doppler allow a 100 percent probability of threat detection.



Name : AN/ASQ-213 HTS(HARM Targeting System)

Type : HARM Targeting pod

Description : The AN/ASQ-213 HARM Targeting Systems (HTS) Pod has opened up a whole new mission for the F-16. With HARM/HTS, the F-16 picked up the demanding mission of suppression of enemy air defenses (SEAD), once performed primarily by the F-4G Wild Weasel aircraft. The F-16 is truly a multirole unit in addition to the primary SEAD mission, it also flies air superiority, defense counter air, and air interdiction missions. Originally developed by Texas Instruments under a program to provide new modular targeting systems for USAF aircraft, it is the key to USAF's effort in SAM hunting now and in the 21st century. The pod is 8 inches in diameter, 56 inches long and weighs 85 pounds. Most important of the HTS' capabilities is the ability to rapidly generate ranges to target radars, as well as to provide greater discretion between different types of enemy radars.



Name : AN/AAQ-13 + AN/AAQ-14 LANTIRN System

Type : Targeting Pod

Description : Low Altitude Navigation and Targeting Infrared for Night, or LANTIRN, is a combined navigation and targeting pod system for use on the USAF's premier fighter aircraft — the F-15E Strike Eagle and F-16 Fighting Falcon (Block 40/42 C & D models). LANTIRN significantly increases the combat effectiveness of these aircraft, allowing them to fly at low altitudes, at night and under-the-weather to attack ground targets with a variety of precision-guided weapons.



Name : AN/AAQ-33 Sniper XR / Sniper ATP

Type : Targeting Pod

Description : The Lockheed Martin Sniper is a targeting pod for military aircraft that provides positive target identification, autonomous tracking, GPS coordinate generation, and precise weapons guidance from extended standoff ranges.

The system has been designated AN/AAQ-33 in U.S. Military Service as the Sniper Advanced Targeting Pod (ATP).

Further variants are the Sniper Extended Range (XR), as well as the PANTERA export derivative of the Sniper XR.

The Lockheed Martin F-35 Lightning II is built with the equivalent of the Sniper XR in its onboard sensors.





Name : AN/AAQ-28 LITENING

Type : Targeting Pod

Description : The AN/AAQ-28(V) LITENING targeting pod is an Israeli-designed precision targeting pod system currently operational with a wide variety of combat aircraft. LITENING significantly increases the combat effectiveness of the aircraft during day, night and under-the-weather conditions in the attack of ground and air[1] targets with a variety of standoff weapons (i.e., laser-guided bombs, conventional bombs and GPS-guided weapons).



Name : AN/AAQ-33 + AN/ASQ-213 Set

Type : HARM Targeting Pod + Targeting Pod

Description : its Combined Package of Sniper and HTS.



Name : LEGION

Type : IRST Pod

Description : Legion Pod is a multi-function sensor system that supports collaborative targeting operations in radar-denied environments. Flexible by design and production-ready, Legion Pod is set to serve as the next sensor system of choice for fixed-wing aircraft. Housed in a 16-inch diameter structure, Legion Pod's baseline configuration includes an IRST21 sensor and advanced processor for high-fidelity detection and tracking of air-to-air targets. Also Legion Pod has a common interface, meaning it's easily integrated onto any aircraft without affecting that aircraft's operational flight program.



Name : Fueltank

Type : ~~Food Storage~~ Fueltank

Description : Aircraft. need. the. Fuel.

Guidance List

**LASER**

GBU-10 Paveway II

GBU-12 Paveway II

GBU-24 Paveway III

GCS-1

GBU-53 SDB II

GBU-54 LJDAM

EGBU-12 Enhanced Paveway II

Paveway IV

APKWS Rocket

Laser Zuni

**GPS/INS**

GBU-31 JDAM

GBU-32 JDAM

GBU-38 JDAM

GBU-39 SDB

GBU-53 SDB II

GBU-54 LJDAM

EGBU-12 Enhanced Paveway II

Paveway IV

KGGB

AGM-84H SLAM-ER

AGM-154 JSOW

CBU-103 WCMD

CBW-105 SFW WCMD



### **Dual mode**

EGBU-12 Enhanced Paveway II(Mid-course: GPS + Terminal: Laser)

Paveway IV(Mid-course: GPS + Terminal: Laser)

GBU-54 LJDAM(Mid-course: GPS + Terminal: Laser)

GBU-53 SDB II(Mid-course: GPS + Terminal: IR)

AGM84H SLAM-ER(Mid-course: GPS + Terminal: IR)



Thanks the using my mods!