TO 1F-15C-1 BMS

FLIGHT MANUAL

F-15C AND F-15D

Ver.: BMS 4.37.4.1

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FOREWORD

PURPOSE AND SCOPE

The Dash-1 covers aircraft systems, normal procedures, emergency procedures, flight characteristics, and operating limitations of the F-15.

The Dash-1 is to be read in complement with the F-15 Dash-34 as well as the F-15 checklists.

Please note that the F-15C in BMS is under development and some systems are incomplete or not yet implemented. This document reflects that process and will be constantly updated. Systems/functions that are not implemented will be marked by the mnemonic *(N/I)* and may be greyed out, awaiting future implementation.

The following manuals supplement this document to establish the complete Falcon BMS F-15C series:

- TO-1F-15C-34-1-1 BMS (Avionics, weapons systems, support equipment and munitions)
- TO-1F-15C-1CL BMS (Checklists for normal procedures and abnormal procedures)
- F-15C Training Manual (Documentation to accompany Falcon BMS F-15C training missions).

These documents are located in the */Docs/02 Aircraft Manuals & Checklists/02 F-15C folder* of your Falcon BMS install.

The default F-15C keyfile "BMS - Full-F15ABCD.key" can be found in the same folder with the manuals.

All changes in this document coming with BMS 4.37.4 and 4.37.4.1 are marked with an **orange** line.

TABLE OF CONTENT

1. The Aircraft

The McDonnell Douglas F-15 Eagle is a high-performance, supersonic, air-superiority fighter. It is capable in all-weather conditions, agile enough to perform at low speed, high AoA as well as Mach 2+, high altitude beyond visual range engagements.
The Eagle's primary role is aerial combat with an arsenal featuring radar and heat-seeking air-to-air missiles, complemented by a 20mm internal cannon. However, its capabilities extend to ground attack missions with general purpose bombs—accurately cued with ranging provided by air-to-ground modes of the powerful radar.
Dual Pratt and Whitney F-100 turbofan engines fuel its power. Noteworthy in appearance, the aircraft boasts a high-mounted swept-back wing, paired with twin vertical stabilizers. A lightweight yet robust structure houses its resilient subsystems. Elevated for enhanced visibility, the cockpit offers a strategic vantage point. Rigorous consideration for maintenance and dependability guided the design and placement of major aircraft systems. Accessories find their place within the airframe-mounted accessory drive (AMAD), while engine ignition self-sufficiency is ensured by the jet fuel starter (JFS). Remarkably, the system configuration eliminates the need for batteries.

Falcon BMS simulates a post Multistage Improvement Program II (MSIP II) F-15C variant.

1.1 Aircraft General Data

- Crew: 1 pilot
- Length: 63.8 feet (19.44 meters)
- Wingspan: 42.8 feet (13.05 meters)
- Height: 18.5 feet (5.6 meters)
- Empty Weight: Approximately 28,000 pounds (12,700 kilograms)
- Maximum Takeoff Weight: Around 68,000 pounds (30,845 kilograms)
- Maximum Speed: Mach 2.5+ (1,650+ mph or 2,655+ km/h)
- Range: Over 3,000 miles (4,800+ kilometers)
- Service Ceiling: 65,000 feet (19,812 meters)
- Engines: Two Pratt & Whitney F100-PW-220 turbofan engines with afterburners

1.2 Armament and Systems

- Hughes (later Raytheon) AN/APG-63 mechanically scanned radar array.
- AIM-120A/B AMRAAM active radar guided missile.
- AIM-9L/M/X Sidewinder IR missile.
- AIM-7 Sparrow semi-active radar guided missile.
- Internally mounted 20mm M61 Vulcan rotary cannon.
- General purpose bombs (Mk-82/84).
- Tactical Electronic Warfare System (TEWS).
    - AN/ALR 56 Radar warning receiver.
    - AN/ALQ-135 Internal countermeasure set (ICS).
    - AN/ALE-45 Countermeasure dispenser (CMD) set
- Joint Tactical Information Distribution System (JTIDS)/Fighter Data Link (FDL)

2. Engine

Pratt & Whitney F100-PW-220:

- Thrust: Approximately 25,000 pounds (111 kN) in afterburner, and around 14,670 pounds (65.2 kN) in non-afterburning mode.
- Bypass Ratio: Around 0.36:1
- Length: Approximately 191 inches (4.85 meters)
- Diameter: Approximately 46 inches (1.17 meters)
- Weight: Approximately 3,750 pounds (1,700 kilograms)
- Features: The F100-PW-220 is a more advanced version of the F100 engine, designed to provide increased thrust and improved fuel efficiency. It is an upgraded version of the -100 and offered enhanced performance for newer F-15 variants.

Key Features:

- The F100 engine family is known for its reliability, high thrust-to-weight ratio, and adaptability to various aircraft platforms.
- These engines incorporate advanced technologies to improve fuel efficiency, reduce emissions, and enhance overall performance.
- The engines are equipped with afterburners, which allow for increased thrust when needed for high-speed operations and combat maneuvers.

2.1 Engine Control

Engine Control System

The F100-PW-220 engine control consists primarily of a hydromechanical main fuel control (MFC), afterburner fuel control (AFC) and a full authority digital electronic engine control (DEEC).

Digital Electronic Engine Control (DEEC)

The Digital Electronic Engine Control (DEEC) houses the operational parameters for automated engine control, spanning from IDLE to MAX A/B. It draws power from the engine alternator. The DEEC orchestrates the engine and afterburner fuel flows, regulates the position of the compressor inlet variable vanes (CIVV) and rear compressor variable vanes (RCVV), manages start bleed position, anti-ice, and nozzle position. The DEEC governs engine performance by modulating fuel flow to regulate airflow and nozzle positioning, ultimately ensuring the control of the Engine Pressure Ratio (EPR), which represents the ratio between engine exhaust and inlet pressures. By fine-tuning airflow and EPR, the DEEC maintains consistent engine performance, even for new or deteriorated engines, until it approaches the FTIT limit. In the event of a failure that hinders safe engine control, the DEEC will automatically switch to its secondary mode, equivalent to turning the ENG CONTR switch OFF. In this mode, afterburner operation is disabled, RPM is capped at around 80%, CIVV remains fully closed, the nozzle is almost completely shut (less than 5% open), and the ENG CONTR light is illuminated. The RCVV, start bleed position, and engine fuel flow are then managed by the Main Fuel Control (MFC). The engine persists in this mode until the issue resolves, and the ENG CONTR switch

is cycled. You can initiate the engine start with the ENG CONTR switch either ON or OFF, although the starting time will be longer in the OFF position.

Main Fuel Control

The primary fuel control (MFC) contains the hydromechanical elements that the DEEC regulates when the ENG CONTR is in the ON mode. In the event that the DEEC shifts to the secondary mode, or the ENG CONTR switch is turned OFF, the MFC takes charge of hydromechanically managing the engine's fuel flow, start bleed position, and RCVV position. It does so in response to throttle movement, inlet static pressure, and engine inlet total temperature.

Engine Monitoring System

The F100-PW-220 engine features an engine monitoring system that comprises the DEEC and the engine diagnostic unit (EDU). These two components, the DEEC and EDU, work in tandem to continuously oversee the electrical control elements and the engine's functioning in order to identify any engine-related issues. Any instances of abnormal engine operation or the occurrence of intermittent or hard failures in its components are detected and marked for maintenance. When abnormal engine operation or component failure is identified, the EDU records relevant engine and aircraft data, aiding in the troubleshooting process during maintenance. Furthermore, the EDU keeps track of the engine's life cycle information. In the event of a fault demanding immediate maintenance attention, an airframe-mounted GO, NO-GO flag, situated on the avionics status panel in the nose wheel well, is activated.

2.2 Engine Limitations

GROUND

CONDITION	FTIT °C	RPM %	OIL PSI	REMARKS
START	680	--	--	--
IDLE	-	-	15-80	--
MIL/AB	960	94	30-80	Notes 2,5 and 6
TRANSIENT	970	94	30-80	Notes 2,5 and 7
FLUCTUA-TION	±10	±1	±10	Notes 2,3 and 4

FLIGHT

CONDITION	FTIT °C	RPM %	OIL PSI	REMARKS
AIRSTART	800	--	--	--
IDLE	-	-	15-80	--
MIL/AB	970	96	30-80	Notes 1 and 2
TRANSIENT	990	96	30-80	Notes 2 and 8
FLUCTUA-TION	±10	±1	±10	Notes 2,3 and 4

NOTES

1. USE OF THE Vmax SWITCH IS PROHIBITED.
2. LIMITATIONS INCLUDE FLUCTUATIONS.
3. IN PHASE FLUCTUATION OF MORE THEN ONE INSTRUMENT, OR SHORT TERM CYCLIC FLUCTUATIONS ACCOMPANIED BY THRUST SURGES, INDICATE ENGINE ENTROL PROBLEMS.
4. NOZZLE FLUCTUATIONS ARE LIMITED TO +- 2% AT MILITARY POWER AND ABOVE. FLUCTUATIONS ARE NOT PERMITTED BELOW MILITARY POWER.
5. FOR ENGINE OPERATION AT MILITARY OR ABOVE, OIL PRESSURE MUST INCREASE 15 PSI MINIMUM ABOVE IDLE OIL PRESSURE.
6. ENGINE NOZZLE POSITION IS LIMITED TO 30% OPEN OR LESS AT MILITARY POWER.
7. MAXIMUM TEMPERATURE LIMITED TO 30 SECONDS.
8. MAXIMUM TEMPERATURE LIMITED TO 10 SECOUDS.

3. Aircraft Systems

3.1 Fire Warning / Extinguishing system

Not yet implemented. See chapter Fire Warning / Extinguishing Panel.

3.2 Aircraft Fuel System

Fuel is stored in various compartments within the aircraft. There are four interconnected fuselage tanks, two internal (wet) wing tanks, and three 600-gallon external tanks. These external tanks are interchangeable and can be mounted on the centerline and inboard wing station pylons.

For F-15C/D aircraft, there's the option to attach conformal fuel tanks (CFT) to the outboard side of each engine nacelle. Each CFT is compartmentalized, and it automatically transfers fuel between compartments to maintain the center of gravity. All these tanks can be refueled on the ground through a single pressure refueling point, and during flight, they can be refueled through the aerial refueling receptacle. The external tanks can also be individually fueled through external filler points.

In the case of internal tanks, the wing tanks and tank 1 serve as transfer tanks. On F-15C/D aircraft, tank 1 comprises one main tank and left and right auxiliary tanks. The tank arrangement ensures that all internal fuel transfers even in the event of transfer pump failure. CFT fuel is transferred by transfer pumps to any internal tank that can accept it. Regulated engine bleed air pressure facilitates fuel transfer from the external tanks to any internal tank capable of receiving it, maintaining a positive pressure in all internal fuel tanks.

Each CFT in F-15C/D aircraft is pressurized by a self-contained ram air pressurization and vent system. Float-type fuel level control valves manage fuel levels during refueling or fuel transfer operations.

During refueling in F-15C/D aircraft, the transfer pump in tank 1 is shut off, causing the interconnect valve between tank 1 and the left auxiliary tank to open. The left and right auxiliary tanks then fill as tank 1 fills. Fuel can only gravity transfer to the auxiliary tanks through a standpipe located near the top of the main tank of tank 1.

All internal, CFT, and external fuel (except for engine feed tanks) can be dumped overboard from an outlet at the trailing edge of the right wingtip. Vent outlets at each wing's trailing edge vent all internal fuel tanks. The external tanks have vent outlets in their individual pylons, and each CFT is vented through an outlet located at the back of the CFT.

The fuel quantity indicating system provides the amount of fuel in pounds for all internal, CFT, and external fuel. Refer to the servicing diagram in this section for information on fuel grade and specifications.

3.2.1 Fuel Feed System

The aircraft employs two distinct fuel feed systems, one for each engine. In standard operating conditions, fuel temperature is meticulously regulated through a process of fuel recirculation into the internal wing tanks. These internal wing tanks serve as heat exchangers, efficiently lowering the fuel temperature before it proceeds to the feed tanks. Within the feed tanks, baffles are strategically positioned to provide a controlled fuel supply for the left and right main boost pumps, particularly during instances of negative G-forces or inverted flight.

Under normal operating conditions, the right main boost pump exclusively provides fuel to the right engine, while the left main boost pump exclusively supplies the left engine. When the total feed tank fuel drops below 1000 pounds, both feed tanks may not simultaneously feed. The main boost pumps are well-equipped to deliver pressurized fuel flow to the engines, consistently catering to their power requirements throughout the entire range of flight conditions.

However, should either or both main boost pumps fail, or if either or both main generators become inoperative, or if both transformer-rectifiers fail, the emergency boost pump comes into play. This, coupled with a system of tank interconnect and crossfeed valves, allows the remaining operational pump(s) to efficiently channel all available fuel from the feed tanks to both engines. When one main boost pump and the emergency boost pump are operational, pressurized fuel is ensured for both engines, even throughout the entire spectrum of non-afterburner power settings. In the case of double boost pump failure (any two), the remaining pump still retains the capacity to supply fuel to both engines, covering all non-afterburner power settings from sea level to an altitude of 30,000 feet.

However, should boost pump failure(s) occur, the reduced fuel flow capacity limits unrestricted afterburner operation. In the event that both main boost pumps and the emergency boost pump are inoperative, the engines rely on suction feed for their fuel supply. In most flight conditions, the engine necessitates pressurized (boosted) fuel to prevent fuel vaporization. Consequently, the loss of both main and emergency boost pumps could lead to a dual engine flameout.

During single-engine operation, the feed tank of the inoperative engine remains inactive until the fuel level in the functioning engine's feed tank falls significantly below the threshold that triggers the FUEL LOW warning light.

3.2.2 Air Refueling System

The air refueling system has a fixed receptacle, a slipway control switch (see Fuel Control Panel), a hydraulically operated slipway door, two slipway lights, a receptacle flood-light, a signal amplifier, a READY light, an air refueling release button, an air refuel pressure switch, end an emergency slipway door actuating system. For CG control, a float switch in tank 1 prevents external tank refueling until tank 1 fuel quantity is above approximately 1,560 pounds.

3.3 Electrical Power System

The aircraft's electrical power supply system is composed of two primary AC generators, two transformer-rectifiers, an emergency AC/DC generator, and a power distribution (bus) network. When on the ground, external electrical power can be connected to the bus system, ensuring power supply. Additionally, during engine starts, the JFS generator contributes electrical power to a section of the bus system without the need for external power sources.

AC Electrical Power

The primary source of electrical power is provided by two AC Generators. The two Generators work under the split bus non synchronized operation principle.

Meaning that when both generators are operating, some buses are being independently supplied by the generators. In case of the failure of one of the two generators, the faulty generator takes itself off the line. The remaining generator will power the buses originally being powered by the faulty or turned OFF generator. It is the generator control unit that removes the faulty generator connection from the buses. Each generator has a built-in protection system for undervoltage and overvoltage. There is also a system that limits the current to avoid one issue on one generator to affect the second one and to shut down both generators at the same time.

Except for the external ECM pod*(N/I)*, one generator is capable of supplying power to the entire electrical system. In single generator operation mode, the ECM pod is automatically put in the standby mode.

When in the ON position, each generator comes online automatically and is connected to its respective buses as soon as the engine reaches 44% RPM.

The ON/OFF switch needs to be cycled to bring the Generator back online once the fault or condition that brought it offline has been resolved/cleared. If the offline condition was underfrequency and that the current frequency is restored in that case the generator comes back online automatically.

To remove a generator from the buses it supplies, simply put the generator switch to the OFF position. The L GEN OUT and R GEN OUT indicator lights will respectively light up on the caution light panel.

The generator control switches are positioned on the Engine Control Panel.

DC Electrical Power

DC Power is provided through two transformer-rectifiers (TR) units. One TR can power the entire DC system.

Note that when there is a single TR providing DC power to the DC electrical system, there is no cockpit warning or indication that one TR has failed.

Emergency Generator

Emergency AC/DC power is provided by a utility hydraulic motor-driven generator. The emergency electrical system is separate from the primary electrical system.

Conditions for emergency generator activation:

- Either one or both main generators fail or are inoperative.
- Both transformer-rectifiers fail.
- A combination of the above.
- Either one or both fuel boost pumps fail.

With either one generator failure or two boost fuel pump failures, the emergency generator activates and powers the emergency/essential buses only.

With both generators inoperative or both TR units' failure, the emergency generator supplies power to the AC/DC buses and to the emergency/essential buses.

During engine starts without external power, the emergency generator performs a self-test of its emergency boost pump. This is achieved by staying online during engine start until 30 seconds after one of the generators comes online, after which it automatically goes offline, provided the emergency generator control switch is in the AUTO position. When doing an engine start with external power, the emergency generator does not come online as long as external power is connected.

EMER BST ON and EMER BST SYS MAL lights come on when on the ground and one of the main generators is offline. The lights go out as soon as the second main generator comes online.

The emergency generator has a 3-position switch:

AUTO: Activates automatically when the conditions are fulfilled.

MAN: Manually activates the emergency generator.

ISOLATE: the emergency power generator supplies power to the following systems only:

- Emergency fuel boost pump.
- Arresting Hook.
- Emergency air refueling switch (for the opening of the slipway door.)
- Engine RPM indicators.

In the event of a complete electrical failure, an attempt to restore the emergency generator may be made by cycling the switch to ISOLATE and back to MAN *(N/I)*.

JFS Generator

The JFS switch provides control over the JFS and its ignition system. The JFS READY light is powered by the JFS itself.

3.4 Hydraulic Power Supply System

The F-15 has three separate hydraulic systems with each divided into two or more circuits. To isolate a hydraulic leak, a Reservoir Level Sensing (RLS) system is employed in all three systems. When a leak is sensed, the RLS shuts off the affected circuit; this method allows the maximum number of circuits to remain operational.

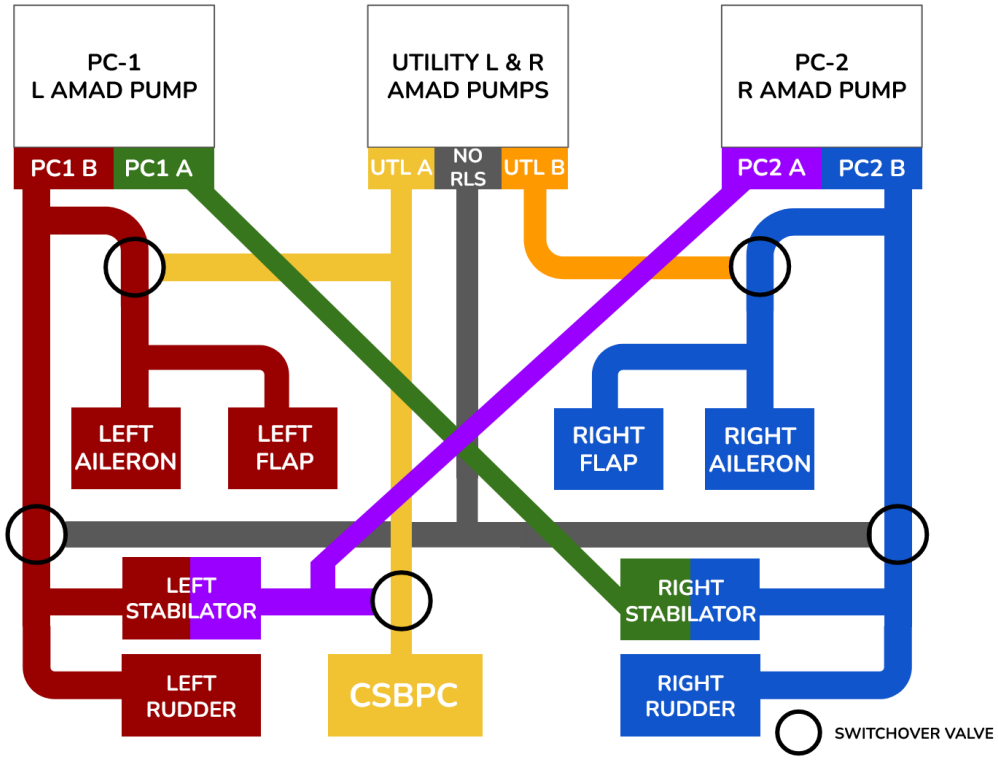
Pressure Compensating (PC) System:
The two main hydraulic systems are labelled PC1 and PC2, these are driven by the left and right AMAD pumps respectfully. Each pump operates at 3000 psi, each PC system is divided into circuit A and B.

Utility System:
There are left and right pumps for the utility system, the left pump is operates at 3000 psi and the right pump operates at 2775 psi, the utility system is divided into an A circuit, B circuit (UTL A, UTL B) and a non-RLS circuit.

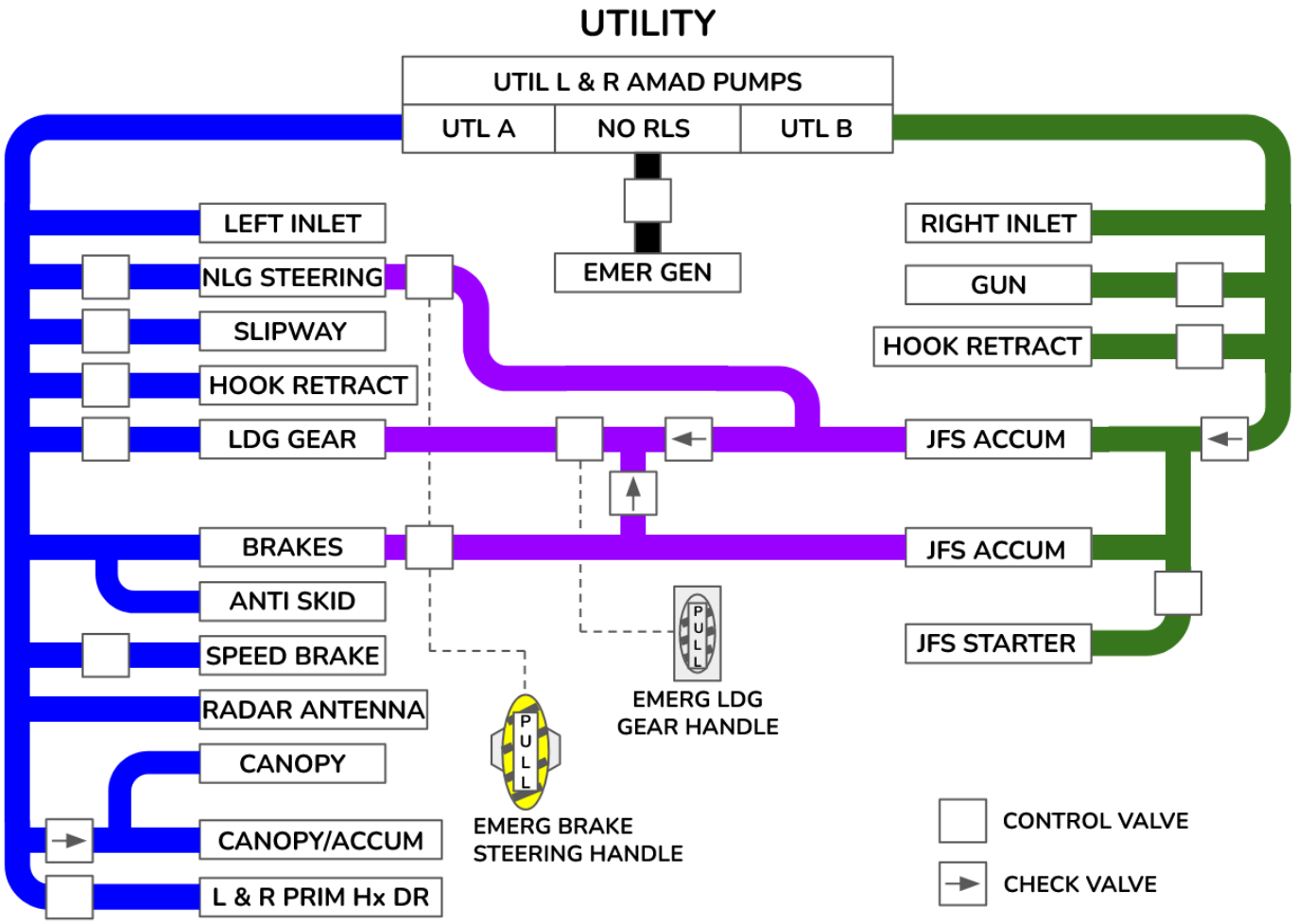
Reservoir Leveling System:
The reservoir leveling system is a system that automatically shuts down/isolates circuits with a leak. As the reservoir level in circuit A of an affected system drops, circuit A is shut off. If the level continues to drop, this indicates the leak is in circuit B and will be shut off, the RLS will automatically restore circuit A.
In the event of a leak in the utility non-RLS circuit, circuit A and B will be shut off and subsequently restored, this will result in ultimate loss of all utility hydraulic power as indicated by zero pressure on the utility hydraulic gauge.

Refer to Hydraulic Pressure Indicators for more information.

3.4.1 HYDRAULIC FLOW DIAGRAM – FLIGHT CONTROLS



3.4.2 HYDRAULIC FLOW DIAGRAM – UTILITY



Note: These illustrations are simplified to show hydraulic flow logic and does not contain all existing components.

3.5 Landing Gear System

Electrically controlled and hydraulically operated. A weight on wheel sensor does not allow the gear to be retracted while on ground with the gear extended. With the main and nose gear extended, the forward doors will close.

Please refer to Landing Gear Control Handle for more information.

3.6 Nose Gear Steering System

The F-15 Nose Wheel Steering (NWS) system operates distinctively compared to the F-16 counterpart. It is configured for automatic engagement upon detecting the presence of weight on the front landing gear (commonly referred to as Weight on Wheels, or WOW), and it disengages promptly once WOW is no longer detected.

This system offers two operational modes: the normal mode and the maneuver mode. In normal mode, the maximum allowable wheel steering angle is capped at 15 degrees. Transitioning into maneuver mode elevates this steering angle limit to 45 degrees, which can be accomplished through the activation of the NWS callback button.

Furthermore, the NWS can be entirely disabled when the aircraft is WOW by simply pressing and holding the paddle switch located on the control stick.

3.7 Brake System

The brakes are positioned on the main wheels and are activated via pressure on the rudder pedals. An anti-skid system is incorporated in the normal braking system. There is no anti-skid protection on the emergency brake system.

3.7.1 Anti-Skid System

The anti-skid system can be manually activated or deactivated by the pilot via an electrically controlled switch. In case of failure of the system, a cockpit warning will indicate to the pilot that the system has failed. It will only be triggered when the gear comes down. ANTI-SKID on the caution light panel and MASTER CAUTION will also come on. There is a touchdown protection system, which prevents brake application on touchdown before the wheels spin up.

Anti-skid and ARI (Aileron Rudder Interconnection) are connected. After touchdown, the ARI will be disengaged by the anti-skid wheel spin up signal.

Anti-skid switch positions:

- NORM: anti-skid is ON when the landing gear handle is down.
- OFF: Anti-skid and ARI are off when landing gear comes down.

Emergency Brake System:
JFS accumulator provides the pressure to the emergency brake system. It is activated by pulling the emergency brake/steering handle. Emergency braking is more sensitive due to the absence of the anti-skid system.

3.8 Arresting Hook System

A retractable arresting hook is located on the underside of the aft fuselage. It is electrically controlled, extended by gravity and a hydraulic dashpot, and retracted by utility hydraulic pressure.

The HOOK light is on the caution lights panel. Any time the arresting hook is not up and locked the MASTER CAUTION and HOOK light come on *(N/I)*.

3.9 Flap System

Each wing has a two-position trailing edge flap. The flaps are electrically controlled and hydraulically operated. When the flaps are down, they are protected from structural damage by a blow up airspeed switch. The switch is set to automatically retract the flaps at approximately 250 knots. At approximately 240 knots, the flaps automatically return to the down position, providing the flap control switch is in the down position.

3.10 Speed Brake System

Hydraulically operated and electrically controlled, a speed brake is located on the upper fuselage just aft of the cockpit. It is raised into the airflow to assist in aircraft deceleration on the ground and in the air.

Below 25 units of angle of attack (AOA) the speed brakes can be extended in any intermediate position from fully retracted to fully extended. Above 25 units of AOA, if the speed brake is extended it will automatically retract. If you are above 25 units of AOA and you extend the speed brakes, the speed brakes will not extend. When the AOA is reduced, provided the switch is still in the extend position, the speed brakes will extend.

Refer to Speed Brake Switch for more information.

The SPD BK OUT light located on the caution light panel illuminates when the speed brake is extended or partially extended position.

3.11 Flight Control System

The aircraft primary flight control surfaces consist of conventional ailerons, twin rudders, and horizontal stabilators. Primary flight controls consist of conventional flight stick and rudder pedals. The rudder pedals are used for nose gear steering and wheel braking on the ground.
The stabilators are capable of symmetrical or differential movement. Hydraulic actuators are used to position the control surfaces via hydromechanical linkages to the flight controls. Flight control inputs are supplemented by electrical Control Augmentation System (CAS). The hydromechanical system and the CAS normally work together, but either system alone is capable of providing sufficient aircraft control for flight. Spring cartridges provide simulated aerodynamic forces to the control stick and rudder pedals. The spring cartridges have trim actuators which actually move the neutral positions and thus the control surfaces.

3.11.1 Longitudinal Control

Longitudinal (forward/aft) stick motion positions the stabilators symmetrically to provide pitch control. The ratio of symmetrical stabilator motion to longitudinal stick motion (pitch ratio) is automatically adjusted for altitude and speed. This provides the same pitch response (constant g) for a given stick deflection regardless of airspeed. The ratio is high (greatest stabilator authority) at low speeds, and low at high speeds at low altitude. If hydraulic pressure is lost the pitch ratio drives to an intermediate position and locks. If the mechanical linkage becomes jammed, mechanical longitudinal control is lost; however, the CAS can provide enough stabilator control for moderate flight maneuvers and landing.

The longitudinal control system includes two types of trim control: a manual trim and an automatic trim. The manual trim is controlled by the pilot using the trim button on the stick. The manual trim actuator changes the neutral position of the longitudinal feel spring cartridge to reposition neutral stick position and thus neutral stabilator position.
When airborne, the flight control system automatically trims the stabilator without affecting stick position to compensate for changes in trim caused by such things as changing speed, operating flaps or speed brake, or store separations. On the ground, the Pitch Trim Compensator (PTC) slowly trims the stabilator to either the extreme forward or aft limit of its authority as the stick is positioned forward or aft of the neutral stick position. This stick positioning can take place by manual stick inputs or by manual trim.
Note, in BMS 4.37.4 the Pitch Ratio switch and indicator are non-functional.

3.11.2 Lateral Control

Lateral stick motion (side-to-side) positions the ailerons, rudders and stabilators to provide roll control. The ratio of aileron/differential stabilator deflection to lateral stick motion (roll ratio) is adjusted automatically for different airspeeds, longitudinal stick position and gear position. This provides the same roll response for a given stick deflection regardless of airspeed. Aileron and differential stabilator deflection are washed out to prevent adverse yaw when longitudinal stick deflection is combined with lateral stick deflection. At subsonic speeds, the roll ratio is high; at supersonic speeds the roll ratio is reduced. Additional roll ratio reductions also occur as the stick is moved forward or aft.
With the landing gear down, full aileron/differential stabilator is available at any longitudinal stick position. If UTL A and PC2A hydraulic pressures are lost or the roll ratio switch is in EMER *(N/I)*, the roll ratio drives to mid-range and locks.
A spin recovery aid provides full lateral control authority, regardless of longitudinal stick position, when the yaw rate exceeds 60° per second. Full lateral authority will be discontinued when the yaw rate is less than 60° per second.

The mechanical aileron rudder interconnect (ARI) adjusts the control system such that lateral stick motion results in varying rudder deflection dependent on longitudinal stick position. With the control stick aft of neutral, lateral stick motion causes rudder deflection in the same direction as stick motion. With the control stick forward of neutral, lateral stick motion causes rudder deflection in the opposite direction of the stick motion. In addition, when the flaps are down, the amount of rudder deflection for lateral input is increased. The ARI is disengaged at supersonic speeds and on landing. If the anti-skid system detects a malfunction, or the landing gear circuit breaker is OUT, the ARI may remain engaged at wheel spin up, adversely affecting crosswind landing characteristics. Turning the antiskid switch OFF or PULSER ensures ARI disengagement. If UTL A and PC2A hydraulic pressures are lost or either the pitch or roll ratio switch is in EMER, the ARI is inoperative. If the mechanical system is inoperative, the differential stabilators (through roll CAS) provide lateral control for moderate maneuvers including landing.

3.12 High AOA Warning Tone

Not Implemented.

3.13 Departure Warning

The departure warning tone provides warning of an impending departure. The required pilot action for excessive yaw rate is to smoothly neutralize controls. A 900 Hz beeping tone sounds when the yaw rate reaches 30°/second. As the yaw rate increases, the beep rate increases, reaching a maximum beep rate at 60°/second yaw rate. The tone sounds with the T/O trim button pressed and the T/O trim light on. The T/O trim beep rate correlates to approximately 45°/second yaw rate. *(N/I)*

3.14 Automatic Flight Control System

The Automatic Flight Control System (AFCS) provides pitch, roll and yaw control augmentation and autopilot pitch and roll modes.

3.14.1 Control Augmentation System (CAS)

Superimposed on the hydromechanical flight control system is a dual channel, three axes CAS. The CAS responds to electrical signals generated by forces applied to the control stick and to rudder pedal position. These signals modify the control surface deflections commanded by the hydromechanical flight control system to provide the desired flying qualities. The CAS also provides increased dampening on all three axes. Since CAS inputs are applied directly to the actuator and the inputs are due to force and require no control motion, with the CAS on, the aircraft is fully controllable with the loss of any or all mechanical linkages. The dual channel design turns any axis off when a failure occurs. The CAS affects stabilator and rudder position only, the ailerons are not controlled by the CAS. A moderate yaw transient may occur and is normal when yaw CAS is disengaged, reengaged, or the landing gear is lowered.

3.14.2 Autopilot modes

All three CAS axes must be engaged and operating satisfactorily to engage the two autopilot modes, pitch/roll attitude hold and altitude hold. Refer to Control Augmentation System (CAS) Control Panel for more information on switches related to the autopilot.

Pitch/Roll Attitude hold

Attitude hold is engaged by placing the attitude hold switch on the CAS control panel to ON. Attitude hold will automatically be disengaged and the attitude hold switch will remain in the ON position when the pitch attitude is greater than ± 45°, or the roll attitude is greater than ± 60°, or control stick steering (CSS) is in effect. Control stick steering will be engaged, and roll attitude hold will be disengaged when a lateral force is applied, and pitch attitude hold will be disengaged when a longitudinal force is applied to the control stick. When stick forces are relaxed, CSS is disengaged, attitude hold is re-engaged, and the aircraft will hold the attitude that existed upon re-engagement. When one of the following conditions exist attitude hold will be disengaged and attitude hold switch will physically move to the OFF position: load factor is greater than +4G or less than zero G, INS attitude signals are not valid, a CAS axis is disengaged (manually or by a fault monitor), the emergency quick release lever is depressed, or the attitude hold switch is manually moved to OFF. To re-engage pitch/roll attitude hold the switch must be placed back to the ON position.

Altitude hold

The attitude hold switch must be on before the altitude hold switch can be engaged. Altitude hold is engaged by placing the altitude hold switch on the CAS control panel, to ON. The altitude at the time of engagement is the reference altitude. With pitch (CSS) in effect, roll attitude is greater than ± 60°, the altitude hold disengages but the altitude hold switch will remain in the ON position. When stick forces are relaxed, CSS is disengaged, and the aircraft will hold the altitude at re-engagement. When one of the following conditions exist altitude hold will be disengaged and altitude hold switch will physically move to the OFF position: an ADC or INS failure, ATT HOLD disengages, vertical velocity exceeds 2000 ft/min. or the altitude hold switch is physically moved to OFF. To reengage altitude hold the switch must be placed back to the ON position.

3.15 Pitot-Static System

The pitot-static system employs multiple pitot and static sources for redundancy and to provide each inlet controller with conditions peculiar to its inlet during asymmetric conditions. There is an airstream pitot-static mast on each side of the forward fuselage and a pitot mast and flush static port in each inlet duct.
The pitot heat switch is located on the ECS panel on the right console.

Refer to Environmental Control System (ECS) Panel for more information.

3.16 Canopy System

The aircraft is fitted with a clamshell type canopy which is fitted with an inflatable seal to retain cockpit pressure.
An accumulator provides hydraulic power for powered operation of the canopy (2-1/2 to 3 cycles) when utility hydraulic pressure is not on the aircraft.

Please refer to Canopy Control Handle for more information.

3.17 Ejection Seat System

The F-15 is fitted with the ACES II fully automatic catapult rocket system ejection seat. ACES II is a third-generation seat capable of ejecting the pilot from zero-zero conditions up to maximum altitude and 600 knots.

Typical ACES II performance for safe ejection:

Aircraft Attitude	Velocity Knots	Altitude Required
0-Deg Pitch, 60-Deg Roll	120	**0**
0-Deg Pitch, 180-Deg Roll	150	**150**
0-Deg Pitch, 0-Deg Roll	150	**116**
10,000-FPM Sink Rate		
-60-Deg Pitch, 0-Deg Roll	200	**335**
-30-Deg Pitch, 0-Deg Roll	450	**497**
-60-Deg Pitch, 60-Deg Roll	200	**361**
-45-Deg Pitch, 180-Deg Roll	250	**467**

Source: www.ejectionsite.com

3.18 Environmental Control System (ECS)

The ECS provides conditioned air and pressurization for the cockpit and avionics, windshield anti-fog and anti-ice, anti-G, canopy seal, and fuel pressurization. The ECS uses engine bleed air from both engines for normal operation. Cooling for the avionics, with the air source knob OFF or the cockpit temperature switch OFF, automatically switches to ram air. Ram air cooling is automatically supplied to the avionics whenever compressor inlet duct pressure drops.

ECS System is WIP, please refer to ECS Control Panel for more information.

3.19 Anti-Icing System

The engine anti-ice system is comprised of the inlet ice detector and the engine anti-ice valve. These two elements are functionally unrelated as the inlet ice detector only senses ice buildup and illuminates the cockpit INLET ICE warning/advisory light (N/I). The ENG HEAT switch, on the ECS panel, controls the engine anti-ice airflow to the engine nose cone and stationary inlet guide vanes. In addition, the F100-PW-220 engine electrically heats the inlet pressure probe. The DEEC automatically shuts off the engine anti-ice when the altitude is above 30,000 feet or the inlet temperature is above 15 degrees C, regardless of switch position.

3.20 UHF Communications System

The F-15 has two UHF radios (Radio 1 and Radio 2), no backup radio. The main communications control panel controls Radio 1 while the integrated communications control panel on the left controls Radio 2, but can also display information about Radio 1.

Both radios have manual and preset modes. Radio 2 has an extra switch (DIS FREQ) to display the real frequency selected for either radio1 or radio2 (which is not the same as the frequency digits if mode is not manual). Press and hold, up displays radio 1, down displays radio 2.

Important note: The F-15C is not equipped with a VHF radio. VHF frequencies listed on the 2D UI briefing and DTC are for reference only. All ATC and Tactical frequencies will have a preset UHF frequency listed and are tunable on both radio 1 and 2.

INTRA-FLIGHT COMMUNICATION - WINGMAN/ELEMENT/FLIGHT COMMANDS:
To enable intra-flight communications with your non-human F-15 flight members, tune either radio 1 or 2 to presets 15-19 (Flight 1 = UHF 15, etc). This works just the same as the F-16s VHF radio presets, only they are using UHF.

3.21 Lighting Equipment

3.21.1 EXTERIOR LIGHTING

The F-15 exterior lighting comprises of position lights, anti-collision lights, formation lights and landing/taxi lights. Position lights are located on each wing tip (starboard green, port red) and the aft side of the left vertical stabilator (white).
Red anti-collision lights are located on the inboard leading edge of each wing and the aft of the right vertical stabilator.
Formation light strips are located on the forward fuselage, wing tips and aft fuselage.
Air refueling receptacle and slipway lights are not implemented.

Please refer to the Exterior Lights Control Panel & Misc Control Panel.

3.21.2 INTERIOR LIGHTING

The Interior lighting control panel is located on the right console, please refer to Interior Lights Control Panel.

3.22 Oxygen System

Please refer to Oxygen Panel for more information.

3.23 Emergency Equipment

3.23.1 Warning/Caution/BIT/Advisory Lights

The warning lights provide indications of system malfunctions and important information to be noted. They illuminate red and are prominently located at or near the top of the instrument panel. Corrective action deenergizes all warning indications. The yellow caution lights also provide indications of system malfunctions and information to be noted. The caution lights are on the caution lights panel on the lower right sub-instrument panel. Cooling circuitry causes the lights to blink if they are illuminated for long periods of time and become overheated.

Note: This panel is WIP, all caution/warning lights are currently displayed in red but not all are functional. Please refer to Caution/Warning Lights Panel for more information.

The MASTER CAUTION light on the upper instrument panel illuminates simultaneously when any caution light comes on, except for the following lights: AV BIT, JFS LOW, SPD BK OUT and the SPARE light. The MASTER CAUTION light extinguishes when it is pressed but, except for the HYDRAULIC and AUTO PLT lights, the caution light on the caution lights panel remains on until the malfunction is corrected.

3.23.2 Overload Warning System

The overload warning system (OWS) provides an aural warning to the pilot of an impending aircraft overstress. The OWS takes stores data from the PACS and ADC/accelerometer input to compute potential overstress situations.
A 900 Hz tone is heard in the headset to give warning that the maximum allowable g is being approached. The tone is first heard at 85% of maximum allowable g and is interrupted at a rate of 4 Hz to produce a beeping sound. At 92% the tone is interrupted at a rate of 10 Hz. At 96-100% the 900 Hz tone is steady, warning the pilot of impending over-g. At 100% the voice warning 'OVER G, OVER G' is heard. The 'OVER G, OVER G' continues until the overload condition of the aircraft is corrected. If the overload condition is relieved in the middle of an OVER G transmission, the transmission will be completed before the voice warning is discontinued. The warning does not repeat unless the overload condition is relieved then is reapplied. Should the overload condition be relieved when the warning is first heard, the full signal will be heard (taking approximately 6 seconds) although the overload is no longer on the aircraft. In flight, OWS operation may be verified by display of both current g and maximum allowable g on the HUD.

3.24 Built-In Test (BIT) System

Not Implemented.

3.25 Central Computer (CC)

The CC is a high speed, stored program, general purpose digital computer that performs mission-oriented computation from data received from control panel and subsystems aboard the aircraft. The computations include A/A and A/G steering and weapon delivery, navigation, flight director and control and display management. The CC provides the pilot with steering and weapon delivery cues, target data, avionic system status, weapons configuration and flight data in the air-to-air attack, air-to-ground attack and ADI modes of operation. The CC computations are controlled by the Operational Flight Program (OFP) stored in the CC memory.

3.26 Air Data Computer (ADC)

The ADC is a digital computer which receives inputs from the pitot-static system, the AOA probes, the left total temperature probe, the altimeter setting knob, the nose landing gear door switch, and the flap switch. The ADC corrects these inputs for sensor error as required, computes various parameters from this data, and furnishes required parameters to aircraft equipment and cockpit displays. The ADC performs validity checks on critical data received by the using equipment or display and actuates appropriate caution lights or warning flags if the data is invalid. Operation of the ADC is entirely automatic; no controls are available to the pilot.

3.27 NAVIGATION

The F-15 Eagle is an IFR capable fighter, equipped for navigation in all weather conditions. An inertial navigation system (INS) provides the foundation of the Eagles navigation capability and is supplemented by TACAN, ADF*(N/I)* and ILS receiving equipment.

Navigation information is presented to the pilot via the HUD, ADI and HSI.

3.27.1 NAVIGATION HEAD-UP DISPLAYS (HUD)

The HUD display presents navigation information to the pilot in multiple forms, refer to images in 3.27.3 – Nav Mode Displays for further information.
In ADI master mode, the velocity vector can be 'caged' by selecting the COOLIE SWITCH – DOWN short. This centers the velocity vector and pitch scale in azimuth for use in crosswind situations. When the HUD is caged, the velocity vector will constantly flash to alert the pilot that the velocity vector is not showing true velocity but only vertical velocity.

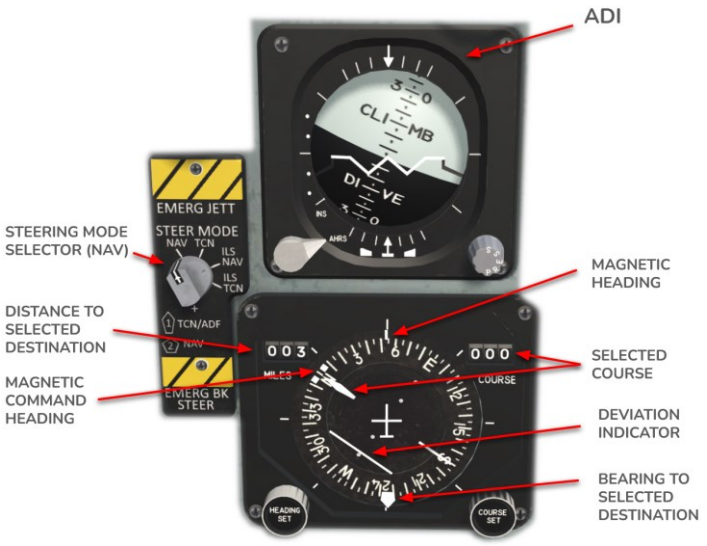
3.27.2 TACAN (TACTICAL AIR NAVIGATION) SYSTEM

The tacan system functions to give precise air-to-ground bearing and distance information at ranges up to approximately 300 NM (depending on aircraft altitude) from an associated ground or shipboard transmitting station. When operating in conjunction with aircraft having air-to-air capability, the A/A mode provides line of sight distance between two aircraft operating their tacan sets 63 channels apart. Up to five aircraft can determine line of sight distance from a sixth lead aircraft in the A/A mode, provided their tacan sets are set 63 channels apart from the lead aircraft. The limit of operation is four times the distance between the lead aircraft and the nearest aircraft. The lead aircraft will indicate distance from one of the other five, but it cannot readily determine which one. Before operating in the A/A mode, the frequencies used by each aircraft must be coordinated. Tacan information except in A/A mode is presented on the HSI, ADI, and the HUD. In A/A mode, both distance and bearing are received if cooperating aircraft (such as refueling tanker aircraft) have bearing transmission capability. The A/A tacan range is an option which can be displayed in HUD window 4 by pressing the IFF button on the throttle. Pressing the IFF button overrides all HUD window 4 displays with the tacan range for 3 seconds *(N/I)*.

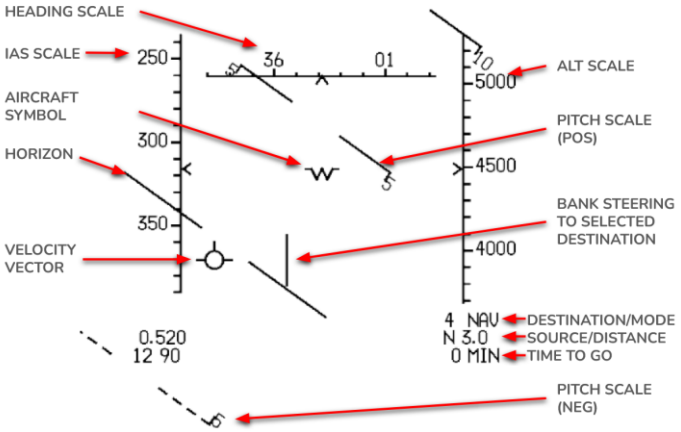
For TACAN controls, refer to ILS/TACAN Control Panel for more information.

3.27.3 NAV Mode Displays (ADI Master Mode, Gear Up)

ADI / HSI

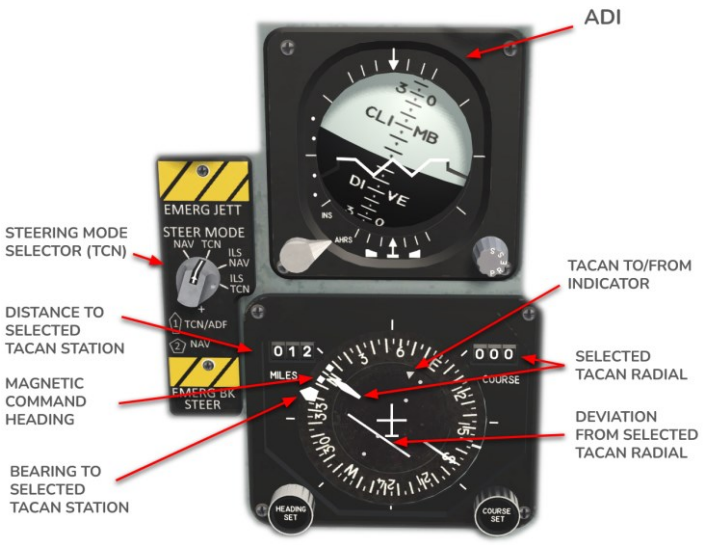


HUD

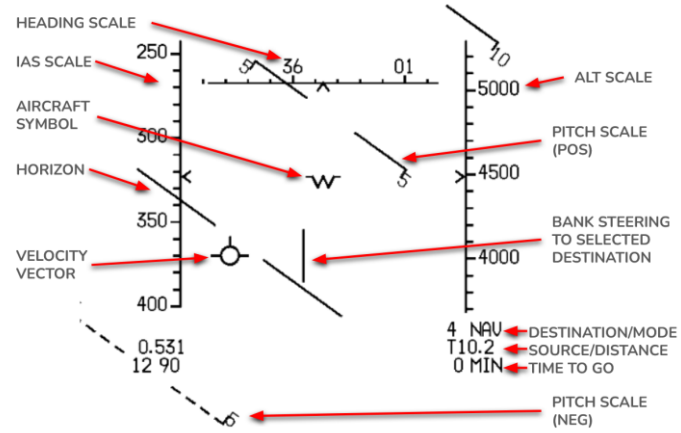


3.27.4 TACAN Mode Displays (ADI Master Mode, Gear Up)

ADI / HSI



HUD



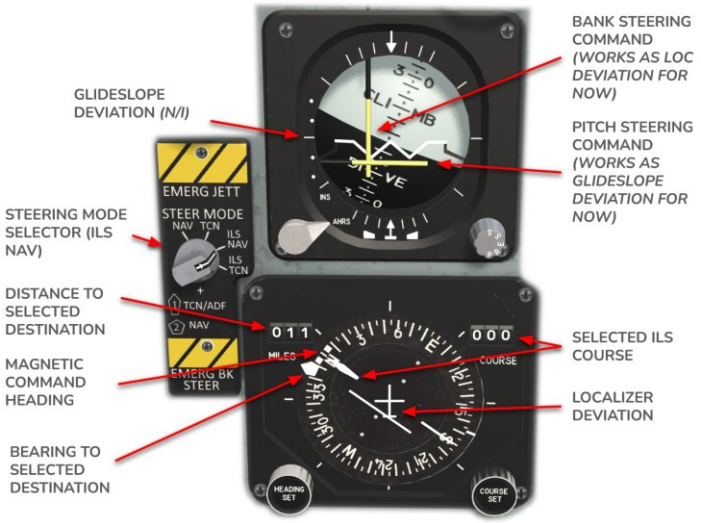
3.28 Instrument Landing System

The instrument landing system provides the capability a precision landing approach in poor weather conditions. The localizer function provides lateral guidance information to position the aircraft on the runway center line during approach. The localizer frequency range is 108.10 to 111.95 MHz. The glideslope function provides vertical guidance information to position the aircraft on the glideslope during the final approach. A warning flag appears on the ADI and/or HSI if glideslope or localizer signal (respectively) becomes unreliable.
Glideslope steering symbols are displayed on the HUD. When the ILS/NAV or ILS/TCN position is selected on the steering mode panel, ILS-N or ILS-T appears on the HUD. At the same time Course Set (CSET) appears on the HUD to remind the pilot to set the final approach course—The CSET symbol flashes for 10 seconds and then disappears *(N/I)*.
When the aircraft reaches a point within approximately 0.6° of the glideslope center, a GSUP or GSDN (glideslope up or glideslope down) symbol appears on the HUD, the ADI glideslope warning flag drops from view, and the ADI glideslope indicator appears on the top dot (for GSUP) which represents an approximate 0.6°. The glideslope symbol which appears on the HUD depends on whether the aircraft is above or below the glideslope center. When the aircraft captures the glideslope center, the GSUP or GSDN symbol disappears, the pitch steering bar appears on the HUD to join with the bank steering bar, and the pitch steering bar appears on the ADI. A beacon light adjacent to the HSI begins flashing when the aircraft passes over a marker beacon. A MKR also flashes on the head-up display indicator. ILS guidance information is displayed on the HSI, ADI, and head-up display.

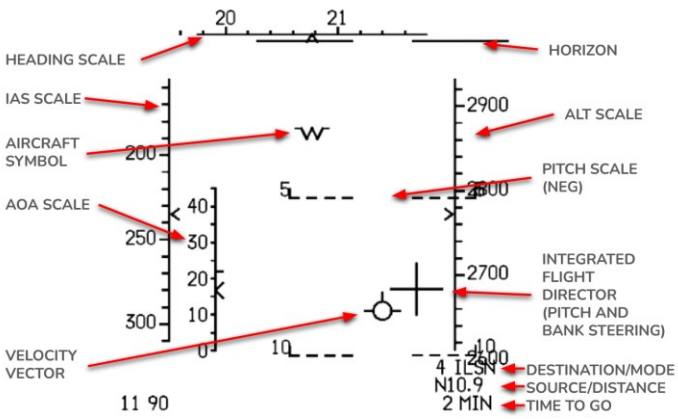
Note: ILS navigation systems are still WIP. In the current implementation, the ADI bank and pitch steering command bars work as if they are glideslope and localizer deviation indicators. The integrated flight director on the HUD shows command steering cues to place the aircraft appropriately on the glideslope and localizer for approach.

3.28.1 ILS/NAV Mode Display (ADI Master Mode with gear selected down)

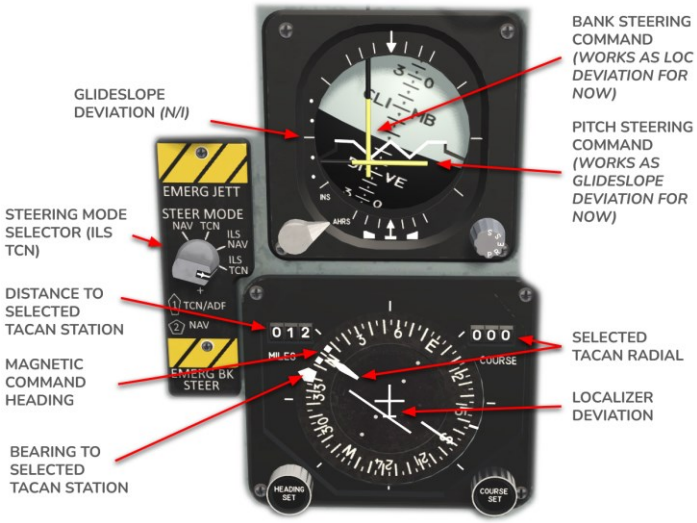
ADI / HSI



HUD



3.28.2 ILS/TCN Mode Display



3.29 Inertial Navigation System (INS)

The Ring Laser Gyro (RLG) INS is a self-contained, fully automatic navigation system which provides continuous present position monitoring and the capability for visual, tacan or radar updating*(N/I)*. Data for twelve destinations (B, 1-11), with offsets, and twelve tacan stations may be inserted for mission requirements. The target mark feature provides an airborne capability to designate and store three target positions (M1-3). The INS supplies the primary attitude reference for the aircraft. In addition, aircraft attitude, heading, velocity and acceleration information are utilized by the central computer, ADI, AHRS, and automatic flight control set.

Note: The INS is not fully implemented yet. For INS controls, refer to Navigation Control Indicator (NCI) for more information.

3.30 Identification System (IFF)

The Identification Friend or Foe (IFF) transponder set provides automatic identifications of the airplane in which it is installed when challenged by surface or airborne interrogator sets. When challenged, it provides momentary Identification of Position (I/P) upon request. The modes provided are mode 1, 2, 3/A, 4, and mode C. Modes 1, 2, and 3/A are Selective Identification Feature (SIF) modes. Mode 4 is used for highest confidence identification (crypto), and mode C is used for altitude reporting. The codes for modes 1 and 3/A can be set in the cockpit. Mode 2 is set using the control box in door 3R and cannot be changed in flight. Mode 4 (A and B) is keyed in door 3R by maintenance personnel and cannot be changed in flight but can be zeroized.

The IFF transponder set is controlled by the IFF Control Panel on the left console, and the upper section of the Main Communications Control Panel on the main instrument panel. The controls consist of the master switch, the mode 1, 2, 3/A, and C selector switches, the mode 1 and mode 3/A code selectors, the mode 4 function switch, the mode 4 indication switch, the mode 4 reply light, and the I/P pushbutton. There is also an IFF mode 4 light on the caution lights panel.

3.31 Miscellaneous Equipment

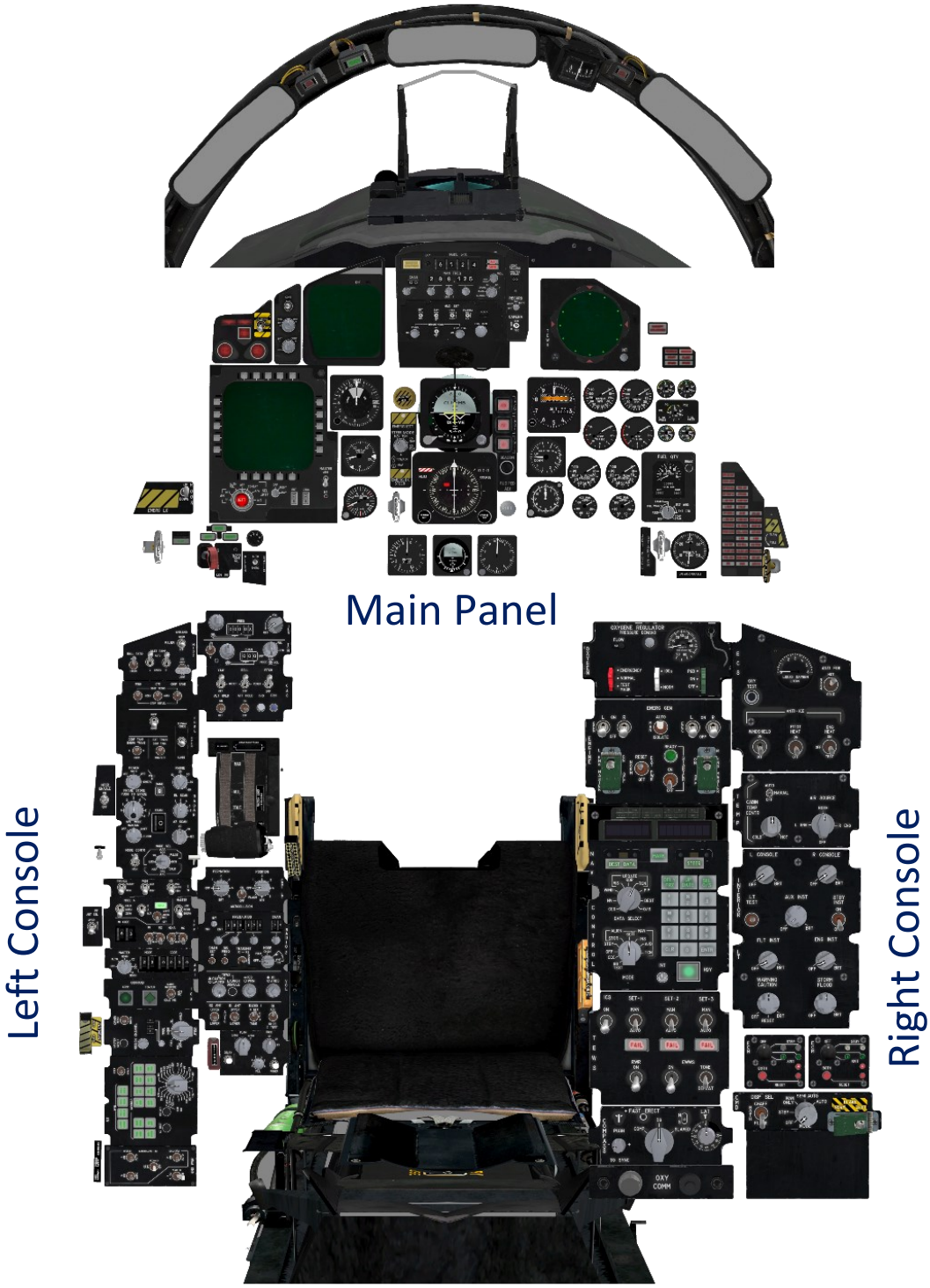
3.31.1 Air-to-air Interrogator Set

Refer to TO 1F-15C-34-1-1 BMS for description and operation of the AAI set.

3.31.2 Joint Tactical Information Distribution System

Refer to TO 1F-15C-34-1-1 BMS for description and operation of the JTIDS/FDL systems.

4. Instruments & Cockpit Layout



4.1 Cockpit Controls and Displays

4.1.1 PHILOSOPHY OF COCKPIT CONTROLS AND DISPLAYS

The F-15C's cockpit controls and displays are underpinned by a well-defined philosophy that aligns with advanced aviation principles. Delving into the intricate design, this philosophy is grounded in maximizing pilot efficacy, situational awareness, and mission success.

The cockpit's ergonomics are meticulously structured to facilitate rapid and intuitive interactions. The placement of controls is a result of extensive human factors analysis, minimizing cognitive load during high-stress scenarios. The integration of HOTAS (Hands-On Throttle and Stick) controls enables pilots to seamlessly manage critical functions without diverting attention from the primary task of flying and combat engagement.

In terms of displays, the F-15C incorporates multi-purpose color display (MPCD), the Vertical Situation Display (VSD) and head-up display (HUD) that provide a comprehensive overview of flight parameters, sensor inputs, and tactical information. These displays are strategically positioned within the pilot's line of sight, ensuring quick access to essential data without requiring undue head movement.

4.1.2 F-15 COCKPIT CONTROLS

Left Console

1- Ground Power Panel

2- BIT Panel

3- JTIDS Mode Control Panel

4- KY-58 Control Panel

5- ICS Control Panel

6- Integrated Communications Control Panel

7- IFF Antenna Selector Switch

8- IFF Control Panel + Interrogator Panel

9- TEWS Panel

10- Exterior Lights Control Panel

11- Seat Adjust Switch

12- Radar Control Panel

13- Non-Cooperative Target Recognition Enable Switch (NTCR)

14- Fuel Control Panel

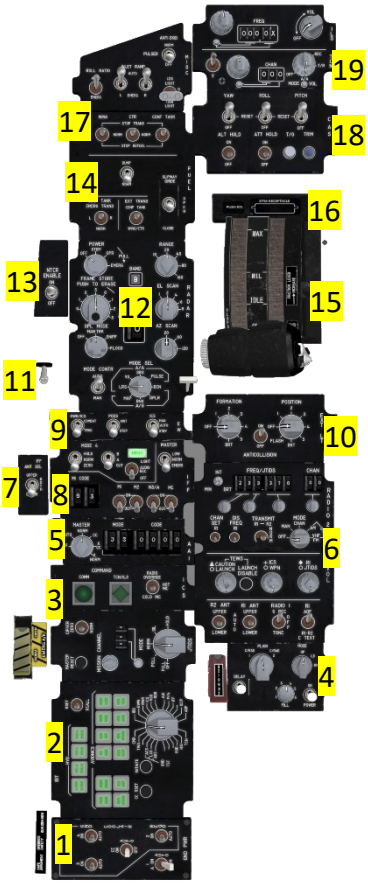
15- Throttle

16- Data Cartridge (DTC)

17- Miscellaneous Control Panel

18- Control Augmentation System Control Panel

19- ILS/TACAN Control Panel



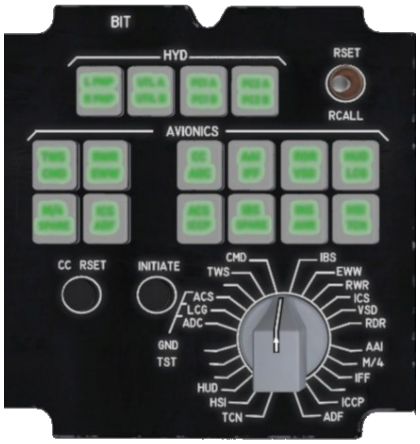
Left Console – F-15C

4.1.2.1.1 Ground Power Panel *(N/I)*

This panel serves no purpose in BMS as none of its functionality is implemented yet.

4.1.2.1.2 BIT Control Panel *(N/I)*

This panel serves no purpose in BMS as none of its functionality is implemented yet.



4.1.2.1.3 JTIDS Control Panel

This panel is WIP.

1- Voice Group

SimF15JtidsA
SimF15JtidsB

2- Cipher Switch

SimF15JtidsZero
SimF15JtidsNorm

3- Mission Channel Knob

SimF15JtidsChannelInc
SimF15JtidsChannelDec

4- Mode Knob

SimF15JtidsInc
SimF15JtidsDec

4.1.2.1.4 KY-58 Control Panel *(N/I)*

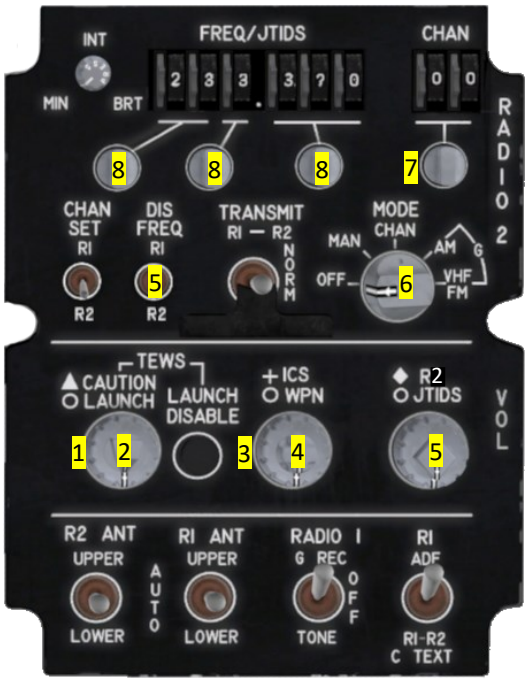
This panel serves no purpose in BMS as none of its functionality is implemented yet.

4.1.2.1.5 ICS Control Panel *(N/I)*

This panel serves no purpose in BMS as none of its functionality is implemented yet.

4.1.2.1.6 Integrated Communications Control Panel (ICCP)

The controls of the ICCP include volume options for the TEWS as well as for Radio 2. In addition, radio antenna and priority options are available. The following features are implemented:



1- **TEWS Threat volume knob** – Controls all RWR Audio

SimF15LaunchVolumeInc
SimF15LaunchVolumeDec

2- **CAUTION volume knob**

SimF15CautionVolumeInc
SimF15CautionVolumeDec

3- **WEAPON volume knob** – Controls AIM-9 seeker audio.

SimF15WpnVolumeInc
SimF15WpnVolumeDec

4- **ICS Intercom Volume Knob**

SimF15ICSVolumeInc
SimF15ICSVolumeDec

5- **Radio 2 (R2) Volume Knob**

SimStepComm2VolumeUp
SimStepComm2VolumeDown

5- **Frequency Display switch** (displayed R1 or R2 channel on the frequency/JTIDS indicators)

SimRadio2DisplayFrequencyR1
SimRadio2DisplayFrequencyR2

6- **Radio 2 Mode selector knob**

OFF Off
MAN Enables R2 manual frequency selection
CHAN Enables R2 preset channel frequency selection

SimRadio2ModeInc
SimRadio2ModeDec

7- **R2 channel select knob** (Channel 01-20)

SimCycleRadio2Channel

8- **Manual Frequency Selector knobs** *(when in MAN mode)*

SimRadio2Freq1Inc
SimRadio2Freq1Dec
SimRadio2Freq2Inc
SimRadio2Freq2Dec
SimRadio2Freq3Inc
SimRadio2Freq3Dec
SimRadio2Freq4Inc
SimRadio2Freq4Dec
SimRadio2Freq5Inc
SimRadio2Freq5Dec

4.1.2.1.7 IFF Antenna Selector Switch

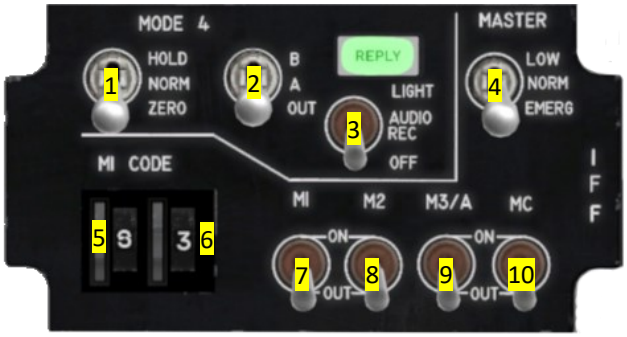
This switch selects between upper, lower or both IFF antennas.

SimAntennaSelectInc
SimAntennaSelectDec

This panel and its functionality is not fully implemented yet.

4.1.2.1.8 IFF Control Panel

The IFF CONTROL PANEL provide multiple options for IFF modifications and IFF backup settings.



1- **Mode 4 Function Switch**

SimF15IFFCypherInc
SimF15IFFCypherDec

2- **Mode 4 Selector Switch**

SimF15IFFModeInc
SimF15IFFModeDec

3- **Mode 4 Indication Switch**

SimF15IFFMonitorInc	**LIGHT**	M4 reply light
SimF15IFFMonitorDec	**AUDIO REC**	Audio feedback

4- **IFF Master Switch**

LOW	System operates with reduced sensitivity.
NORM	System operates in full sensitivity.
EMERG	Selects normal sensitivity emergency operations. Allows the system to respond to interrogations in Modes 1, 2, 3/A, C and 4. The reply for modes 1 and 2 is the code selected on the applicable dials, while code 3/A transmits code 7700.

SimF15IFFMasterInc
SimF15IFFMasterDec

5,6- **M1 Code Selectors**

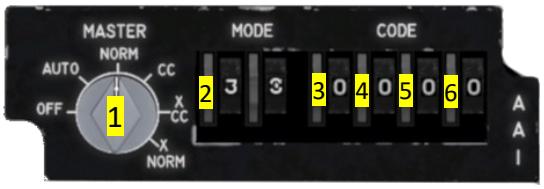
SimF15IFFM1Digit1Inc	SimF15IFFM1Digit2Inc
SimF15IFFM1Digit1Dec	SimF15IFFM1Digit2Dec

7,8,9,10-**Mode Selector Switches**

SimF15IFFM1Inc	M1 on
SimF15IFFM1Dec	M1 off
SimF15IFFM2Inc	M2 on
SimF15IFFM2Dec	M2 off
SimF15IFFM3aInc	M3 on
SimF15IFFM3aDec	M3 off
SimF15IFFMcInc	MC on
SimF15IFFMcDec	MC off

4.1.2.1.9 Interrogator Panel (WIP)

The INTERROGATOR PANEL sets the IFF interrogation code when interrogating other aircraft.



1- **AAI Master Control Knob**

OFF Interrogator set inoperative
AUTO Selects the MODE interrogation sequence preset in the IFF reply evaluator
NORM Mode of interrogation must be selected on the mode thumbwheel.
CC Permits interrogation in MODE selected and only recognizes replies corresponding to the codes selected on the CODE thumbwheels.

SimF15AIFFMasterInc
SimF15AIFFMasterDec

2- **Mode Thumbwheel** (Mode 1, 2, 3, 4a, 4b)

SimF15AIFFModeInc
SimF15AIFFModeDec

3,4,5,6- **Code Thumbwheels**

SimF15AIFFCodeDigit1Inc
SimF15AIFFCodeDigit1Dec
SimF15AIFFCodeDigit2Inc
SimF15AIFFCodeDigit2Dec
SimF15AIFFCodeDigit3Inc
SimF15AIFFCodeDigit3Dec
SimF15AIFFCodeDigit4Inc
SimF15AIFFCodeDigit4Dec

4.1.2.1.10 TEWS Panel

The TACTICAL ELECTRONIC WARFARE SYSTEM (TEWS) control panel provides power to the RWR system. A functional RWR sensor inputs the CMD with threat information and (via Central Computer (CC) periodic updates), the RWR inputs ownship velocity and altitude data to optimize the dispensing patterns. The RWR also communicates with the CMD and updates materiel inventory data for the TEWS BIT display.

1- **RWR/ICS Mode**

SimF15EWRwrIcsCombat
SimF15EWRwrIcsTrng

2- **PODs Selector Switch**

SimF15EWPodsXmit SimF15EWPodsStby

3- **ICS Selector Switch**

SimF15EWIcsInc SimF15EWIcsDec

For more information about radar functionality please refer to the F-15C-34-1-1BMS.

4.1.2.1.11 Exterior Lights Control Panel

1- **Formation Lights OFF/BRT**

SimF15FormationLightsInc
SimF15FormationLightsDec

2- **Anti Collision Light ON/OFF**

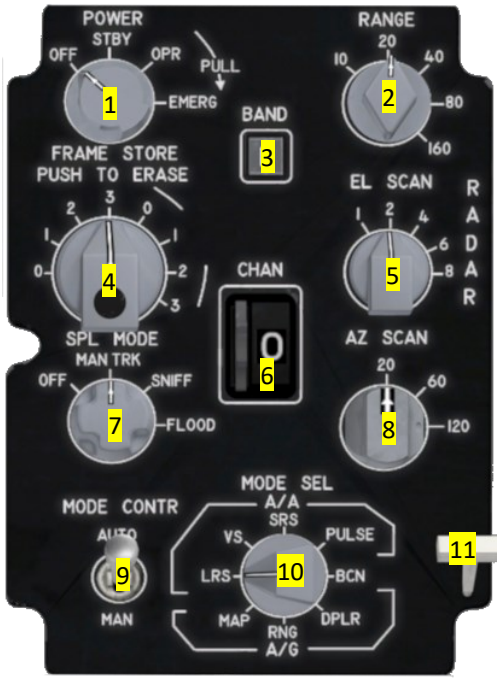
SimF15AntiCollisionOn
SimF15AntiCollisionOff

3- **Position Lights ON/OFF**

SimF15PositionLightsInc
SimF15PositionLightsDec

4.1.2.1.12 Radar Set Control (RSC) Panel

The RSC controls several functions of the APG-63 Radar.



For more information about radar functionality please refer to the F-15C-34-1-1BMS.

1- **Power Knob**

SimF15FCRPowerDec
SimF15FCRPowerInc

2- **Range Knob**

SimF15FCRRangeDec
SimF15FCRRangeInc

3- **Frequency Band Selector**

SimF15FCRBandDec
SimF15FCRBandInc

4- **Frames Switch**

SimF15FCRFramesDec
SimF15FCRFramesInc

5- **Elevation Scan Knob**

SimF15FCRScanDec
SimF15FCRScanInc

6- **Radar Channel Selector**

SimF15FCRChannelDec
SimF15FCRChannelInc

7- **Special Selector**

SimF15FCRSpecialDec
SimF15FCRSpecialInc

8- **Azimuth Scan Knob**

SimF15FCRAzimuthDec
SimF15FCRAzimuthInc

9- **Mode Select Knob**

SimF15FCRModeAuto
SimF15FCRModeMan

10- **Mode Selector**

SimF15FCRModeInc
SimF15FCRModeDec

11- **Flaps Selector**

SimF15FlapsRetract
SimF15FlapsExtend

4.1.2.1.13 Seat Adjust Switch

1- **Increase/Decrease Seat height**

SimSeatUp SimSeatDown

1

4.1.2.1.14 Non-Cooperative Target Recognition Enable Switch (NCTR) *(N/I)*

NCTR switch is not implemented, however, NCTR function still works. Please refer to F-15C-34-1-1BMS.

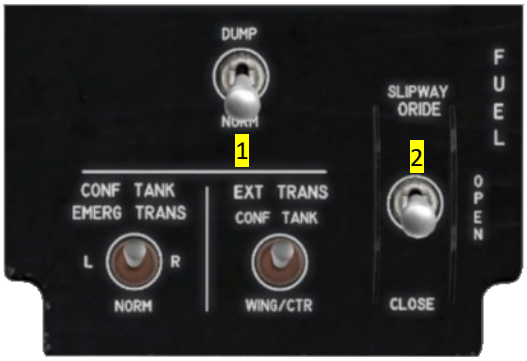
4.1.2.1.15 Fuel Control Panel

1- **Fuel Dump Switch** *(N/I)*

SimFuelDumpDump SimFuelDumpNorm

2- **Slipway Switch** (Air-to-air Refueling door)

SimFuelDoorOpen SimFuelDoorClose



4.1.2.1.16 Throttle

1- Weapon Select Switch

2- BOAT Switch

3- Speedbrake Switch

4- Microphone Switch

5- Multifunction (Coolie) Switch

6- Target Designator Control

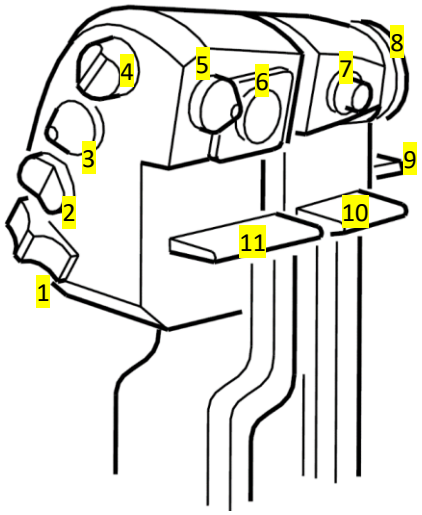
7- SBR Switch

8- Antenna Elevation Control

9- ECM Dispenser Switch

10- Finger Lift Switch Left

11- Finger Lift Switch Right



4.1.2.1.16.1 Weapon Select Switch

The Weapon Select Switch changes between carried ordnance.

GUN (20mm)	SimF15SelectGUN
SRM (Short Range Missiles)	SimF15SelectSRM
MRM (Medium Range Missiles).	SimF15SelectMRM

4.1.2.1.16.2 BOAT Switch

Select and rejects weapons. For MRM, it changes between AIM-7s and AIM-120s. For SRM, it cycles and steps over missiles.

FWD	SimF15BoatSwitchFWD
AFT	SimF15BoatSwitchAFT

4.1.2.1.16.3 Speedbrake Switch

Opens or closes the speedbrake.

FWD	Retracts the speed brake	SimF15SpeedbrakeFwd
AFT	Extends the speed brake	SimF15SpeedbrakeAft
CENTER	Stops speed brake in any intermediate position	

4.1.2.1.16.4 Microphone Switch

VHF and UHF Control.

FWD	SimF15MicrophoneFwd
AFT	SimF15MicrophoneAft

4.1.2.1.16.5 Multifunction (Coolie) Switch

The 'Coolie' switch is a multifunction switch that performs numerous different operations depending on selected radar mode and/or weapon. Please refer to F-15C-34-1-1BMS for more information.

LEFT (Outboard)	SimF15CoolieLeft
RIGHT (Inboard)	SimF15CoolieRight
UP	SimF15CoolieUp
DOWN	SimF15CoolieDown

4.1.2.1.16.6 Target Designator Control (TDC)

The TDC is an 8-way hat switch with Z-axis (press) function. It is used to manipulate the VSD and SIT acquisition cursor as well as the Super Search acquisition mode position-able scan elevation.

The 8-way function can be bound either as an axis via the Flight Control & Avionics launcher tab under 'Cursor X' and 'Cursor Y'. Alternatively, individual call backs are available as follows:

UP	SimF15TargetDesignatorCursorUp
DOWN	SimF15TargetDesignatorCursorDown
LEFT	SimF15TargetDesignatorCursorLeft
RIGHT	SimF15TargetDesignatorCursorRight
UP LEFT	SimF15TargetDesignatorCursorUpLeft
UP RIGHT	SimF15TargetDesignatorCursorUpRight
DOWN RIGHT	SimF15TargetDesignatorCursorDownRight
DOWN LEFT	SimF15TargetDesignatorCursorDownLeft

The Z-axis (press) function commands the mini-raster acquisition scan if the radar is in search. Otherwise it will designate radar track-files as the designated target in TWS radar modes.

PRESS	SimF15TargetDesignatorControl

4.1.2.1.16.7 SBR Switch

Not implemented.

4.1.2.1.16.8 Antenna Elevation Control

Increases/decreases antenna elevation

UP	SimF15RdrElevControlUp
DOWN	SimF15RdrElevControlDown

4.1.2.1.16.9 ECM Dispenser Switch

The ECM Dispenser switch engages manually countermeasures (Chaff/Flare).

UP	(Not used)	SimF15CounterMeasuresDispenserUp
CENTER	(Off)	SimF15CounterMeasuresDispenserCenter
DOWN	(Manual Dispense)	SimF15CounterMeasuresDispenserDown

4.1.2.1.16.10 Finger Lift Switches Left & Right

The finger lift switches engage the JFS to the engines.

LEFT ENGINE	SimF15FingerLiftEngineLeft
RIGHT ENGINE	SimF15FingerLiftEngineRight

For more information, please refer to the F-15C-34-1-1BMS.

4.1.2.1.17 Data Cartridge (DTC)

The F-15C DATA CARTRIDGE is a compact information storage device crucial to the aircraft's mission planning. It securely stores critical data such as flight plans, maps, and software updates. This portable cartridge ensures rapid and accurate data transfer between ground systems and the fighter jet, enhancing operational efficiency.

This panel serves no purpose in 3d. All flight related data will be loaded in the DTC via the DTC tab in the BMS UI.
For more information, please refer to the BMS User Manual, chapter 5.

4.1.2.1.18 Miscellaneous Control Panel

The MISCELLANEOUS CONTROL PANEL consists of Anti-Skid, Inlet Ramp and Roll Ratio options as well nose wheel lighting.

1- **Nose-wheel lighting switch**

LDG LIGHT	Landing light
OFF	Off
TAXI LIGHT	Taxi light
INC	SimLandingLightInc
DEC	SimLandingLightDec

2- **Anti-Skid switch**

NORM	On when the gear is down
PULSER	Turns off normal anti-skid protection, turns on the ANTI-SKID and MASTER CAUTION lights, and activates the brake pulser system.
OFF	Turns off the normal anti-skid and brake pulser systems.
INC	SimF15AntiSkidInc
DEC	SimF15AntiSkidDec

This panel is not fully implemented yet.

4.1.2.1.19 Control Augmentation System (CAS) Control Panel

The automatic flight control system (AFCS) is enhanced by a dual-channel, three-axis control augmentation system (CAS). This system interprets electrical signals from control stick forces and rudder pedal positions to adjust control surface angles for desired flying qualities. CAS ensures controllability even with mechanical linkage loss, with dampening effects. CAS lights indicate failures or disengagement, and CAS switches offer roll, pitch, and yaw control positions.

1- **Altitude hold**

ON	SimF15AltHoldOn
OFF	SimF15AltHoldOff

2- **Attitude hold**

ON	SimF15AttHoldOn
OFF	SimF15AttHoldOff

3- **Takeoff Trim *(N/I)***

TOGGLE	SimF15TOTrimToggle

4- **Yaw Trim**

INC	SimF15YawInc
DEC	SimF15YawDec

5- **Roll Trim**

INC	SimF15RollInc
DEC	SimF15RollDec

6- **Pitch Trim**

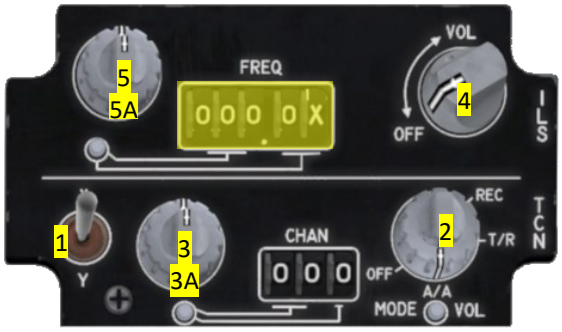
INC	SimF15PitchInc
DEC	SimF15PitchDec

Refer to chapter 3.14.2 of this document for further information about the Autopilot of the F-15C.

This panel and its functionality are not fully implemented yet.

4.1.2.1.20 ILS/TACAN Control Panel

On the left console, the ILS/TACAN CONTROL PANEL houses the controls for the ILS and TACAN. The panel features frequency selector knobs for choosing the ILS operational frequency. The inner knob designates units and tens (08 to 11 in 1-unit increments), while the outer knob adjusts the decimal counter. The hundreds digit is preset. The volume control knob manages the localizer signal's audio. Fully turning the knob counterclockwise deactivates the ILS system.



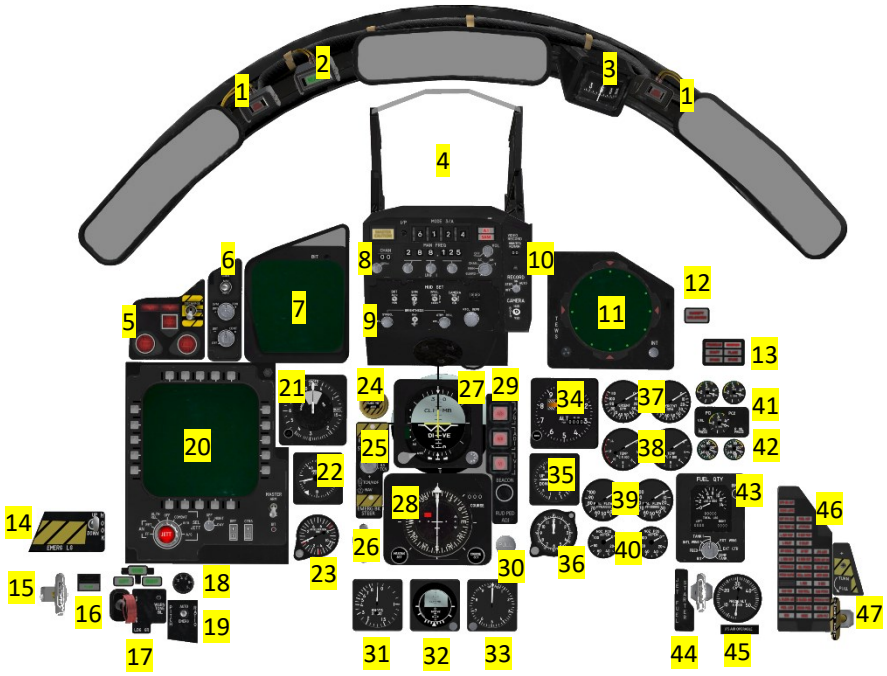
The TACAN channel control knob works in an identical fashion to the ILS frequency selector knob.

NOTE: There is currently a bug in this system where A/A TACAN Mode operates as if the system is in T/R.
A/A Mode is currently not implemented.
T/R mode functions as if the system is OFF.

1-	**TACAN Band switch**	SimCycleBandAuxComDigit	
2-	**TACAN Mode switch**	SimTACANTR	- OFF
		SimTACANAATR	- T/R Transmit/receive mode
3-	**TACAN Inner knob**	SimTacanChannelTensHundredsInc	
		SimTacanChannelTensHundredsDec	
3A-	**TACAN Outer knob**	SimTacanChannelUnitsInc	
		SimTacanChannelUnitsDec	
4-	**ILS Volume**	SimILSUp	SimILSDown
5-	**ILS Frequency Inner**	SimTacanIlsTensUnitsInc	
		SimTacanIlsTensUnitsDec	
5A-	**ILS Frequency Outer**	SimTacanIlsDecimalsInc	
		SimTacanIlsDecimalsDec	

This panel and its functionality is not fully implemented yet.

Main Panel



Main Panel – F-15C

1- Lock/Shoot Lights
2- Air Refueling Ready Light
3- Standby Magnetic Compass
4- Head Up Display (HUD)
5- Fire Warning / Extinguishing Panel
6- VSD Adjustment Controls
7- Vertical Situation Display (VSD)
8- Main Communications Control Panel
9- Head Up Display Control Panel
10- Video Tape Recorder Control Panel
11- TEWS Display Unit
12- Canopy Unlocked Warning Light
13- Countermeasures Dispenser Lights
14- Arresting Hook Control Switch
15- Emergency Landing Gear Handle
16- Flap Position Indicator
17- Landing Gear Control Handle
18- Pitch Ratio Indicator
19- Pitch Ratio Select Switch
20- Multi-Purpose Color Display (MPCD) + Emergency Jettison Control Panel
21- Airspeed/Mach Indicator
22- Angle of Attack Indicator
23- Accelerometer
24- Emergency Jettison Button
25- Steering Mode Panel
26- Emergency Brake/Steering Control Handle
27- Attitude Director Indicator
28- Horizontal Situation Indicator
29- Master Mode Controls/Marker Beacon Panel
30- Rudder Pedal Adjust Release Knob
31- Standby Airspeed Indicator
32- Standby Attitude Indicator
33- Standby Altimeter
34- Altimeter
35- Vertical Velocity Indicator
36- Eight Day Clock
37- Engine Tachometers
38- Fan Turbine Inlet Temperature Indicators
39- Engine Fuel Flow Indicators
40- Engine Exhaust Nozzle Position Indicators
41- Hydraulic Pressure Indicators
42- Engine Oil Pressure Indicators
43- Fuel Quantity Indicator
44- Jet Fuel Starter (JFS) Control Handle
45- Cabin Pressure Altimeter
46- Caution Lights Panel
47- Emergency Vent Control Handle
48- Stick

4.1.2.1.21 Lock/Shoot Lights

The lock/shoot lights are located on the canopy bow and illuminate under the following circumstances:

- Steady ON in STT
- Flashing ON/OFF for MRM between Rtr and Rmin.
- Flashing ON/OFF for SRM between Rmax and Rmin

4.1.2.1.22 Air Refueling Ready Light

The AIR REFUELING READY LIGHT illuminates if the air-to-air refueling door is open.

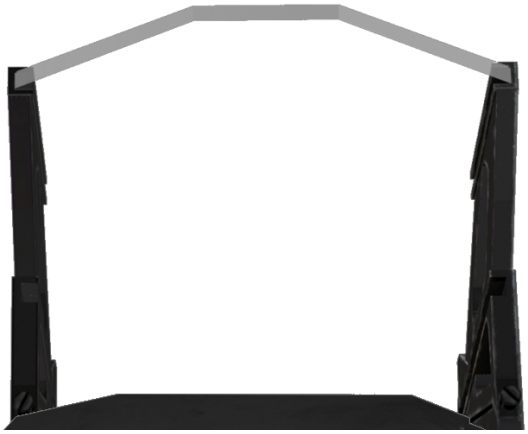
4.1.2.1.23 Standby Magnetic Compass

The STANDBY MAGNETIC COMPASS shows the current magnetic heading in degree.

4.1.2.1.24 Head Up Display (HUD)

The Electro-Optical HUD system generates symbolic flight and attack guidance and projects these symbols into the pilot's Field of View (FOV). Master mode buttons determine HUD display modes. In Air-to-Air master mode, the throttle weapon switch selects MRM, SRM, or GUN attack displays. The HUD provides a circular FOV covering 20° in azimuth and elevation, with the optical axis positioned 4° below the waterline. A standby reticle display on the HUD includes a 2-mil diameter aim dot and a 50-mil diameter circle around the dot, both depressible.

For more information, please refer to the F-15C-34-1-1BMS.



4.1.2.1.25 Fire Warning / Extinguishing Panel *(N/I)*

Panel not yet implemented.

4.1.2.1.26 VSD Adjustment Controls

The purpose of the controls for the VERTICAL SITUATION DISPLAY (VSD) are to adjust brightness, contrast and operating modes of the VSD.

1- **VSD Brightness** SimF15VsdBrightnessDecrease
SimF15VsdBrightnessIncrease

This panel is not fully implemented yet.

4.1.2.1.27 Vertical Situation Display (VSD)

The VSD furnishes tactical situation presentations encompassing all radar modes. The specific display accessible on the indicator relies on the aircraft's operational master mode and the chosen munition.

For more information, please refer to the F-15C-34-1-1BMS.

4.1.2.1.28 Main Communications Control Panel

The MAIN COMMUNICATIONS CONTROL PANEL (UHF 1) is used for operating the UHF 1 radio. The controls on the panel include the main mode selector switch, main manual frequency selector knobs, and the main channel selector knob.

In addition, the IFF backup for Mode 3 as well as the MASTER CAUTION switch are located on the panel.

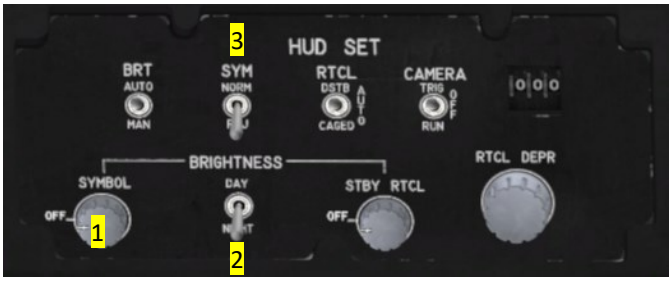
1-	**MAIN CHANNEL SELECTOR**		SimCycleRadioChannel	SimDecRadioChannel
2-	**MAIN MANUAL FREQUENCY SELECTOR KNOBS**		SimBupUhfFreq1Inc SimBupUhfFreq2Inc SimBupUhfFreq3Inc SimBupUhfFreq4Inc SimBupUhfFreq5Inc	SimBupUhfFreq1Dec SimBupUhfFreq2Dec SimBupUhfFreq3Dec SimBupUhfFreq4Dec SimBupUhfFreq5Dec
3-	**MASTER MODE UHF 1**			
	CHAN	(Selected Channel)	SimBupUhfModeInc	SimBupUhfMode
	GUARD	(Guard: 243.000)		
	MAN	Manual selected freq.		
4-	**MASTER CAUTION SWITCH**		ExtinguishMasterCaution	
5-	**IFF Mode 3/A**		SimF15IFFM3Digit1Inc SimF15IFFM3Digit2Inc SimF15IFFM3Digit3Inc SimF15IFFM3Digit4Inc	SimF15IFFM3Digit1Dec SimF15IFFM3Digit2Dec SimF15IFFM3Digit3Dec SimF15IFFM3Digit4Dec
6-	**Volume UHF 1**		SimStepComm1VolumeUp	SimStepComm1VolumeDown

For more information about radio operations, refer to the #UHF Communications System chapter.

4.1.2.1.29 Head Up Display Control Panel

The HUD CONTROL PANEL provide different options to modify HUD symbology and HUD brightness options.

This panel and its functionality is not fully implemented yet.



1- **HUD Symbol Brightness knob** SimSymWheelUp SimSymWheelDown

2- **HUD Day/Night mode switch** SimHUDBritDay SimHUDBritNight

3- **HUD Symbol Reject** SimF15HudSymNorm SimF15HudSymReject

In all navigation steering modes 'SYM – REJ' position, rejects the heading, altitude, airspeed, AOA and pitch scales are removed from the HUD.

This panel is not fully implemented yet.

4.1.2.1.30 Video Tape Recorder Control Panel

The VIDEO TAPE RECORDER CONTROL PANEL enables recording options for the ACMI in BMS.
Please note that the ACMI recording is enabled by default in BMS.

1- **RECORD MASTER MODE** SimAVTRSwitchUp SimAVTRSwitchDown

This panel is not fully implemented yet.

4.1.2.1.31 Tactical Electronic Warfare System (TEWS) Display Unit

The F-15C is equipped with a TACTICAL ELECTRONIC WARFARE SYSTEM (TEWS) designed to detect, identify, and counter threats in the electromagnetic spectrum, enhancing the aircraft's survivability and mission effectiveness.

For more information, please refer to the F-15C-34-1-1BMS.

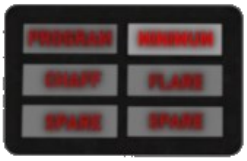
4.1.2.1.32 Canopy Unlocked Warning Light

The light illuminates when the aircraft canopy is unlocked.

4.1.2.1.33 Countermeasures Dispenser Lights

The COUNTERMEASURES DISPENSER LIGHTS indicate the status of internal countermeasures (Chaff/Flare).

For more information, please refer to the F-15C-34-1-1BMS.



4.1.2.1.34 Arresting Hook Control Switch

A retractable arresting hook is in the underside of the aft fuselage of the F-15C. It is electrically controlled, extended by gravity and a hydraulic dashpot, and retracted by utility hydraulic pressure.

1- **ARRESTING HOOK**

SimHookUp
SimHookDown

4.1.2.1.35 Emergency Landing Gear Handle

To initiate emergency gear extension, one needs to pull the EMERG LG handle situated on the left main instrument panel. This action bypasses the standard hydraulic and electrical controls, activating hydraulic release (via the JFS accumulator) for the doors and landing gear. Consequently, the landing gear descends freely into the down and locked configuration. It's important to note that the landing gear doors will stay open. To reset the emergency landing gear handle, rotate it 30° clockwise and then push it in.

1- **EMERGENCY LANDING GEAR HANDLE** AFAlternateGearReset

4.1.2.1.36 Flap Position Indicator

The FLAP POSITION INDICATOR illuminates when flaps status changes. YELLOW indicates the flaps are in transit. A GREEN light indicates the flaps are down.

4.1.2.1.37 Landing Gear Control Handle

The LANDING GEAR CONTROL HANDLE lowers the landing gear and includes the horn silencer.

If the landing gear is fully extended, the three lights “Left”, “Nose” and “Right” will illuminate.

1- **LANDING GEAR HANDLE** AFGearUp
AFGearDown

2- **WARN TONE SILENCER** SimWarnReset

4.1.2.1.38 Pitch Ratio Indicator *(N/I)*

This panel serves no purpose in BMS as none of its functionality is implemented yet.

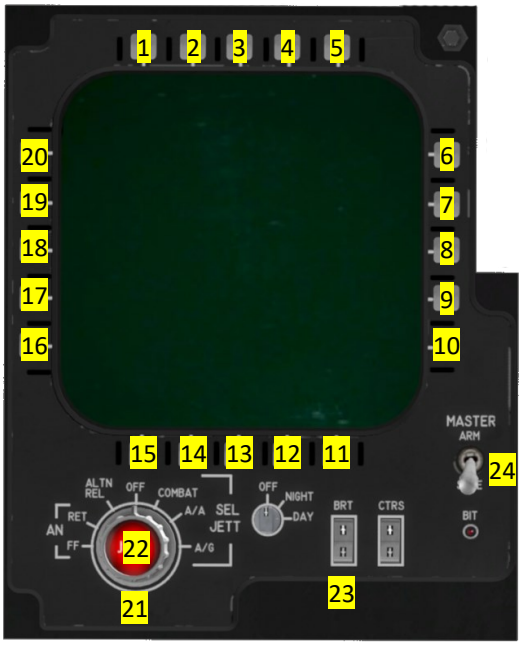
4.1.2.1.39 Pitch Ratio Select Switch *(N/I)*

This panel serves no purpose in BMS as none of its functionality is implemented yet.

4.1.2.1.40 Multi-Purpose Color Display (MPCD) + Emergency Jettison Control Panel

The MULTI-PURPOSE COLOR DISPLAY (MPCD) enables the pilot to observe and manage weapon BIT, armament, or data transfer module systems. The MPCD control panel houses various controls that manage the functional parameters relevant to the MPCD's operation. Activating power involves turning the MPCD power knob to either the NIGHT or DAY position. The MPCD requires around 8 seconds to warm up. When powered up, the MPCD shows the last mode selected before shutdown. Accessing the system menu can be achieved by initiating the MPCD interrupted BIT or pressing the lower right select button on the control panel. Typically, "MENU" is displayed next to the lower right select button, unless the system menu is chosen. Within the system menu, the ARMT, BIT, WPN, and DTM menus can be chosen. For a comprehensive understanding of these menus, consult the appropriate system details in the TO 1F-15C-34-1-1BMS. The MPCD displays incorporate the following colors: green, amber, cyan, and white.

This panel and its functionality are not fully implemented yet.



1-20 - **Push Buttons (PB) 1-20** SimCBEOSB_1R up to SimCBEOSB_20R

21 - **SELECT JETTISON KNOB** SimF15JettSelInc SimF15JettSelDec

	OFF	Weapons cannot be jettisoned.
	COMBAT	Selects programmed selective jettison.
	A/A	Selects air-to-air selective jettison.

22 - **SELECT JETTISON BUTTON** SimF15JettToggle

23 - **MPCD Brightness** SimCBEOSB_BRT_R

24 - **MASTER ARM SWITCH** SimF15MasterArmSwitchOn SimF15MasterArmSwitchOff

	SAFE	Weapons cannot be employed.
	ARM	With the landing gear handle UP or the armament safety switch in OVERRIDE, power is applied to the master arm switch which in turn provides power for weapon release and gun firing. The gun cross is displayed on the HUD.

For more information, please refer to the F-15C-34-1-1BMS.

4.1.2.1.41 Airspeed/Mach Indicator

The AIRSPEED/MACH INDICATOR features a calibrated airspeed and Mach number indicator in combination. This setup involves a stationary airspeed scale, graduated from 50 to 1000 knots, alongside a rotating Mach number scale. These scales are synchronized to maintain their correct correlation throughout all altitudes, allowing a single pointer to indicate both readings. Below 200 knots, only airspeed is shown. For alignment purposes, there is a movable index mark and an index set knob provided. The indicator's functionality relies on electrical signals originating from the air data computer. Windows on the instrument panel will exhibit an "OFF" flag in the event of power loss or if the display data is deemed invalid. Additionally, if the Mach display is not valid, a "MACH" flag will be shown.

4.1.2.1.42 Angle of Attack (AOA) Indicator

The AOA INDICATOR operates based on electrical signals received from the probe. It then presents the indicated AOA in a range spanning from 0 to 45 units. A T-shaped marker is adjusted to align with the optimal landing approach AOA, which typically falls within 20 to 22 units. On the instrument's interface, a window shows an OFF flag in the event of power loss. There's also a triangular index marker situated at the maximum scale, but it remains non-functional.

4.1.2.1.43 Accelerometer

The ACCELEROMETER gauges and exhibits momentary positive and negative normal acceleration "g" loads. It also keeps a record of the highest positive and negative loads experienced since the instrument was last reset. However, it's important to note that the g loads measured by the accelerometer at the instrument are not as precise as the g loads displayed on the Head-Up Display (HUD).

4.1.2.1.44 Emergency Jettison Button

The EMERGENCY JETTISON BUTTON is positioned at the center of the instrument panel, to the left of the ADI (Attitude Director Indicator). When this button is pressed, it triggers the simultaneous jettisoning of all pylons containing cartridges, along with any AIM-120/AIM-7 missiles.

NOTE: In the current BMS version, missiles on stations 3,4,6 & 7 will not be jettisoned.

Although the button is designed to return to its normal position via spring-loading, a mechanism is incorporated to detect if the button becomes jammed in the jettison position. Under standard circumstances, only the black color on the interior edge of the button guard is visible above the button. However, if the button becomes stuck in the jettison position, a yellow color becomes visible in the switch guard beneath the black color.

1- **EMERGENCY JETTISON BUTTON** SimF15EmergJettToggle

4.1.2.1.45 Steering Mode Panel

The STEERING MODE PANEL is adjacent to the ADI. The panel contains a steering mode knob which selects the source of information or mode to be displayed on the HSI (Horizontal Situation Indicator), ADI (Attitude Director Indicator), and HUD (with ADI master mode selected).

1- **STEERING MODE KNOB** SimHSIModeInc SimHSIModeDec

NAV	Navigation Mode
TCN	TACAN Mode

For more information, please refer to the F-15C-34-1-1BMS.

4.1.2.1.46 Emergency Brake/Steering Control Handle *(N/I)*

Provides emergency power for the nose gear steering and brake system. Upon activation (pull) of the handle, JFS accumulator pressure is used to power the nose gear steering and provides both normal and maneuvering nosewheel steering ranges. In this mode, nosewheel steering cannot be disengaged by activating the paddle switch.

If UTL A is operating, the nose gear steering may not completely shift to JFS accumulator pressure which can cause loss of, or reduced steering rate (sluggish) that may appear as a loss of steering. Pressing and holding the paddle switch will remove UTL A from the system and ensure proper JFS accumulator operation. If UTL A available the normal steering system can be restored by resetting the emergency brake/steering control handle. If the JFS LOW light is on, the emergency steering system is not reliable for taxi.

Emergency brake system pressure is also supplied by the JFS accumulator. If UTL B is operating, the accumulator will be continuously replenished. If not, sufficient braking should be available to stop the aircraft. Emergency brakes may feel more sensitive than normal as anti-skid protection is not available. If ULT A pressure is available, normal braking can be restored by resetting the handle. This panel and it's functionality is not yet Implemented.

4.1.2.1.47 Attitude Director Indicator (ADI)

The ATTITUDE DIRECTOR INDICATOR (ADI) consists of the items indicated. The attitude sphere displays pitch and bank. The pitch markings on the sphere are in graduations of 5°, the bank markings are in graduations of 10° with the large markings indicating each 30°. Signals are received from the INS or AHRS attitude reference system. Either system can be selected by placing the attitude reference system selector knob to the desired position *(N/I)*. If bus power to the indicator is lost, the indicator automatically selects AHRS as the source of attitude reference, bypassing the attitude reference selector knob. The pitch trim knob is used to adjust the sphere to indicate zero pitch when the aircraft is pitched to the desired attitude. The pitch and bank steering bars are driven by signals from the Central Computer (CC). The bank steering bar provides command steering information to intercept TACAN radial and navigation computer destinations. The bank steering bar and glideslope indicator are used in conjunction with the instrument landing set (ILS). The course warning flag or

glideslope warning flag appear in view if the bank steering bar or glideslope indicator displays are unreliable because of a lost or weak signal. The ADI provides continuous BIT monitoring. The OFF-warning flag on the indicator comes into view if power to the unit is lost, if there is a loss of synchro signal to the pitch or roll servo, if there exists an excessive servo error, or if the ADI is receiving an invalid signal.

4.1.2.1.48 Horizontal Situation Indicator (HSI)

The HSI provides a horizontal or plan view of the aircraft with respect to the navigation situation. The aircraft symbol in the center of the HSI is the airplane superimposed on a compass rose. The compass card rotates so that the aircraft heading is always under the top of the lubber line. Index marks are provided every 45° around the perimeter of the compass card.

Four modes of navigational operation are displayed on the HSI. These modes are selected by the steering monde knob (see previous chapter).

1-	**HEADING SELECTOR KNOB**	SimHsiHdgInc SimHsiHdgDec
2-	**COURSE SELECTOR KNOB**	SimHsiCrsInc SimHsiCrsDec

This panel and its functionality are not fully implemented yet.

4.1.2.1.49 Master Mode Controls/Marker Beacon Panel

The purpose the MASTER MODE CONTROLS are to change between Air-to-Air and Air-to-Ground master modes.

1-	A/G	Air-To-Ground mode	SimF15AGSwitchToggle
2-	ADI	ADI Mode	SimF15ADISwitchToggle
3-	VI	VI Mode	SimF15VISwitchToggle

For more information, please refer to the F-15C-34-1-1BMS.

4.1.2.1.50 Rudder Pedal Adjust Release Knob *(N/I)*

Not Implemented.

4.1.2.1.51 Standby Airspeed Indicator *(N/I)*

The STANDBY AIRSPEED INDICATOR operates directly from pitot-static pressures. It has a fixed scale of 60-850 knots and a rotation pointer.

This gauge is not yet implemented in BMS.

4.1.2.1.52 Standby Attitude Indicator *(N/I)*

The STANDBY ATTITUDE INDICATOR is a self-contained electrically driven gyro-horizon type instrument. The OFF flag appears if there is a power loss to the indicator or the gyro is caged. The gyro is caged by pulling the knob. Do not turn the knob to lock the gyro in the caged position. The gyro cages to 0° pitch and roll regardless of airplane attitude. The caged position is approximately 4°nose up from the normal ground attitude and the gyro will process 4° nose down after uncaging. Power should be applied to the instrument for at least 1 minute before caging. The indicator displays roll through 360°. Pitch display is limited by mechanical stops at 90° climb and 78° dive. As the aircraft climbs or dives, the pitch attitude changes smoothly until the stop is reached when the gyro tumbles 180° in roll.

This gauge is not yet implemented in BMS.

4.1.2.1.53 Standby Altimeter *(N/I)*

The STANDBY ALTIMETER operates directly from a static pressure source.

This gauge is not yet implemented

4.1.2.1.54 Altimeter

The ALTIMETER is driven by electrical signals from the air data computer (ADC). The indicator is a counter-pointer type. A window on the face of the dial provides a digital readout of altitude in 20-foot increments. An OFF flag will be displayed in this window if electrical power is lost, or the display is not valid.

1- ALTIMETER PRESSURE KNOB SimAltPressInc
SimAltPressDec

4.1.2.1.55 Vertical Velocity Indicator

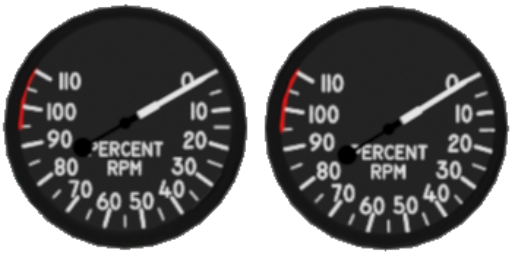
The VERTICAL VELOCITY INDICATOR is driven by electrical signals from the air data computer. A window on the instrument will display an OFF flag if electrical power is lost, or the display is not valid.

4.1.2.1.56 Eight Day Clock

The EIGHT DAY CLOCK indicates the actual Zulu (Z) time in BMS.

4.1.2.1.57 Engine Tachometers

The ENGINE TACHOMETER has a pointer display and the rpm signal is supplied by the engine alternator. RPM is expressed in percent from 0-110.



4.1.2.1.58 Fan Turbine Inlet Temperature Indicators

The FAN TURBINE INLET TEMPERATURE INDICATORS displays the temperature for each turbine from 0-1400°C.

4.1.2.1.59 Engine Fuel Flow Indicators

The FUEL FLOW INDICATOR is a digital indicator which displays the total fuel flow to the engines, including AB, in pph. The indicator has a range of 0-100,000 pph.

4.1.2.1.60 Engine Exhaust Nozzle Position Indicators

The NOZ POS indicator displays the position of the CENC exhaust nozzle drive shafts which are calibrated from 0 percent (closed) to 100 percent (fully open).

4.1.2.1.61 Hydraulic Pressure Indicators

The HYDRAULIC PRESSURE INDICATORS displays the pressure from 0-4000 PSI. An amber HYDRAULIC light on the caution light panel and the MASTER CAUTION light come on when any hydraulic systems caution light on the BIT panel (N/I) comes on. PCI1A, PCI1B, PC2A, PC2B, UTL A and UTL B lights on the BIT panel come on when their respective RLS valve actuates to shut off that circuit. The L PMP or R PMP light comes on when the respective utility hydraulic pump output pressure is low. An indication of a PC pump failure or low pressure is illumination of both the A and B bit lights for that system. When the HYDRAULIC light is illuminated resetting the MASTER CAUTION light also resets the HYDRAULIC light.

4.1.2.1.62 Engine Oil Pressure Indicators

The Engine oil pressure indicators show a scale from 0-100 Pounds Per Square Inch (PSI). An OIL PRESS light on the caution lights panel will come on if oil pressure is low.

4.1.2.1.63 Fuel Quantity Indicator

A combination pointer-counter fuel quantity indicator is on the lower right side of the main instrument panel. The pointer indicates total internal fuel (with readings multiplied by 1000). The upper counter marked TOTAL LBS indicates total internal fuel plus CFT and external fuel. The two lower counters, marked LEFT and RIGHT, and a selector switch provide individual tank monitoring and a check of the indicator. An OFF flag will be displayed if no electrical power is available. Erroneous fuel indications resulting from fuel slosh will occur during and immediately following maneuvering flight.

1- Fuel Selector SimF15FuelSelectDec
SimF15FuelSelectInc

This panel and its functionality is not fully implemented yet.

4.1.2.1.64 Cabin Pressure Altimeter

The cabin pressure altitude is displayed on a 0-50,000 foot pressure altimeter.

Control of the cockpit pressure altitude is automatic and controlled by the cockpit pressure regulator.

4.1.2.1.65 Jet Fuel Starter (JFS) Control Handle

Pulling the handle straight out discharges one JFS accumulator (Start1). Rotating the handle 45° CCW and pulling discharges both accumulators (Start2), or the remaining accumulator if one has already been discharged. The handle is spring loaded to return to its normal position.

These functions are actioned in BMS by left and right clicking the hotspot.

1- JET FUEL STARTER CONTROL HANDLE

Left Click SimF15JfsStart1
Right Click SimF15JfsStart2

4.1.2.1.66 Caution Lights Panel

The CAUTION LIGHTS PANEL provide indications of system malfunctions and important information to be noted. They illuminate red. Corrective action deenergizes all warning indications.

4.1.2.1.67 Voice Warning System *(N/I)*

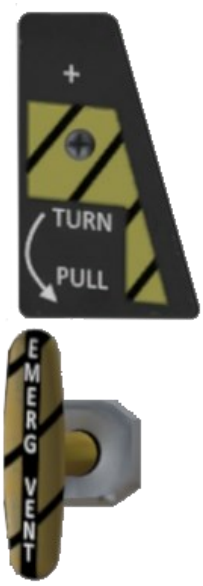
The VOICE WARNING SYSTEM (VWS) provides a warning message, a caution message, or discrete messages. The fixed volume voice message does not blank other audio and, therefore, may not be heard.

This system is not yet fully implemented.

4.1.2.1.68 Emergency Vent Control Handle *(N/I)*

The EMERCENCY VENT CONTROL HANDLE, when turned 45° CCW electrically dumps cabin pressure. Extension of the handle shuts off ECS air in the cockpit, diverts all ECS cooling air to the avionics and allows ram air to enter the cockpit.

This panel is not implemented.



4.1.2.1.69 F-15E Stick Grip

1- Autopilot/Steering Disengage Switch (Paddle Switch)

2- Nose Gear Steering Button

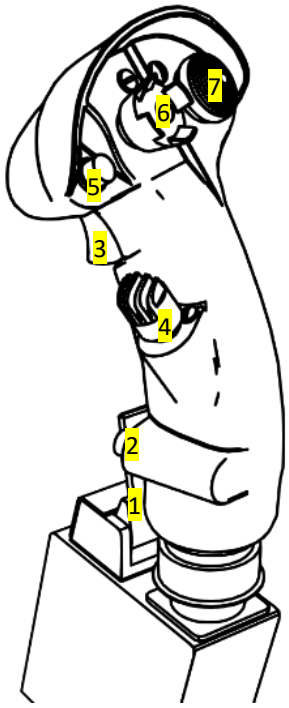
3- Trigger

4- Auto Acquisition Switch/Air Refueling Release

5- Weapon Release Button

6- Castle Switch

7- Trim Button



For more information, please refer to the F-15C-34-1-1BMS.

4.1.2.1.69.1 Autopilot/Steering Disengage Switch (Paddle Switch)

The Paddle Switch is a multi-function switch that operates different systems depending on certain conditions.
- With weight on wheels (WOW) – disable the nose wheel steering as long as switch is held down.
- If any autopilot channel is active – disable the AP.
- If neither of the above conditions are met – dispenses countermeasures program (MAN1) in A/A or A/G master-mode.

Toggle	SimF15PaddleSwitch

4.1.2.1.69.2 Nose Gear Steering Button

- Activates nose gear 'maneuvering' range while WoW is detected.
- In ACM mode, it uncages the AIM-9 missile.

Toggle	SimF15NoseGearSteering

4.1.2.1.69.3 TRIGGER

Second Trigger detent fires the 20mm Gun.

First Trigger Detent	SimF15FirstTriggerIdent
Second Trigger Detent	SimF15SecondTriggerIdent

4.1.2.1.69.4 AUTO ACQUISITION SWITCH/AIR REFUELING RELEASE

The Auto Acquisition switch is a multi-function switch and operates many different functions depending on the currently selected master-mode, radar mode and air-refueling switch position. For more information, refer to TO 1F-15C-34-1-1 BMS.

Fwd
- In search, selects various auto acquisition radar modes (SS, BST, LRBST)
- In space designate (acquisition raster), selects NDTWS (2/3BAR 30AZ HDTWS) *(N/I)*
- In NDTWS, toggles 3 and 4 bar NDTWS. In DTWS, toggles 3B HDTWS, 4B TWS. *(N/I)*
- In STT, toggles 2 and 3 bar D/HDTWS. *(N/I)*

Aft
- In search, selects VTS auto-acquisition radar mode.
- In space designate (acquisition mini-raster), selects Non-designated TWS (NDTWS) radar mode.
- In NDTWS, selects STT on the radar priority target
- In STT, selects designated TWS

Down
- Returns To Search (RTS). It drops all locked tracks and enters the search mode selected on the Radar Control Panel.
- Air refueling receptacle release.

FWD	SimF15AutoAcqSwitchFwd
AFT	SimF15AutoAcqSwitchAft
DOWN	SimF15AutoAcqSwitchDown

4.1.2.1.69.5 WEAPON RELEASE BUTTON

Release the chosen ordnance.

Toggle	SimF15WeaponRelease

4.1.2.1.69.6 CASTLE SWITCH

UP
TDC control to VSD display (Cursor symbol)

Aft ≤ 1sec.
TDC control to SIT display (Cursor symbol)

Right
Last SIT display or toggle self-centered/decentered

Left
Expand selection on SIT page

UP	SimF15CastleUp
DOWN	SimF15CastleDown
LEFT	SimF15CastleLeft
RIGHT	SimF15CastleRight

4.1.2.1.69.7 TRIM BUTTON

The aircraft can be trimmed about all three axes.

UP	SimF15TrimUp
DOWN	SimF15TrimDown
LEFT	SimF15TrimLeft
RIGHT	SimF15TrimRight

Right Console

1- Oxygen Regulator

2- Engine Control Panel

3- Navigation Control Panel

4- TEWS Power Control Panel

5- Compass Control Panel

6- Outlet Panel

7- ECS Panel

8- Temperature Panel

9- Interior Lights Control Panel

10- TEWS Pod Control Panel

11- Countermeasure Dispenser Control Panel

12- Canopy Control Handle

4.1.2.1.70 Oxygen Regulator

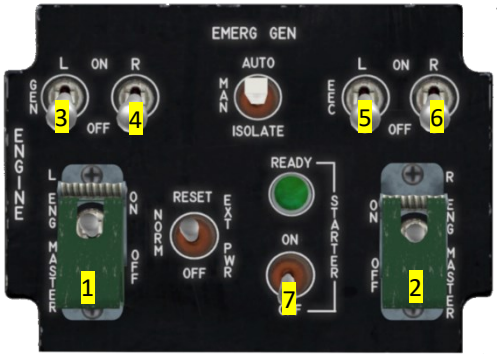
The OXYGEN REGULATOR automatically controls the pressure and flow rate of normal oxygen based on demand and cockpit altitude.

1- **OXYGEN SUPPLY** SimOxySupplyOn
SimOxySupplyOff

This panel and its functions is not fully implemented yet.

4.1.2.1.71 Engine Control Panel

Engine Master Switches



Two guarded engine master switches are located on the engine control panel. Placing either switch to ON (with electrical power available), directs power to the fuel transfer pumps. Each switch directs power to its corresponding airframe mounted engine fuel shutoff valve. The engine master switch must be ON before corresponding engine can be coupled to the JFS. Placing the switch to OFF decouples the engine from the JFS. If engine control/essential power is not available, placing an engine master switch OFF will not shut off its airframe mounted engine fuel shutoff valve.

1- Left Engine Master Switch SimF15EngineMasterSwitchLeftIncrease
SimF15EngineMasterSwitchLeftDecrease

2- Right Engine Master Switch SimF15EngineMasterSwitchRightIncrease
SimF15EngineMasterSwitchRightDecreas

Generator Control Switches

Once activated, the generator control switches enable power to the aircraft.

3- Left Generator Control Switch SimF15GeneratorControlSwitchLeftIncrease
SimF15GeneratorControlSwitchLeftDecrease

4- Right Generator Control Switch SimF15GeneratorControlSwitchRightIncrease
SimF15GeneratorControlSwitchRightDecrease

Engine Control Switches (ENG CONTR)

5- Left ENG CONTR Switch SimF15EecSwitchLeftOn
SimF15EecSwitchLeftOff

6- Right ENG CONTR Switch SimF15EecSwitchRightOn
SimF15EecSwitchRightOff

Jet Fuel Starter (JFS) switch

The jet fuel starter switch is on the engine control panel located on the right console. It has positions of ON and OFF. During engine start, the JFS is automatically shut down after both engines are started; however, it can be shutdown at any time by placing the switch OFF.

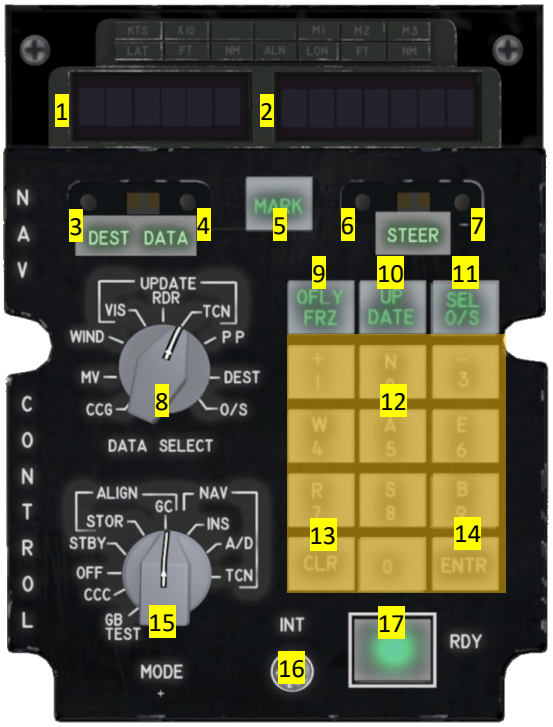
The JFS ready light is on the engine control panel located on the right console. The light indicates the, JFS is ready to be engaged. The light goes out when the JFS shuts down.

7- JFS Switch On/Off/Toggle — SimF15JfsStarterSwitchOn, SimF15JfsStarterSwitchOff, SimF15JfsStarterSwitchToggle

This panel is not fully implemented yet.

4.1.2.1.72 Navigation Control Indicator (NCI) Panel

The NCI contains most of the controls necessary to operate the INS.



1- Latitude coordinates display

2- Longitude coordinates display

3- Destination Data Counter dec. — SimF15NciDestDataDec

4- Destination Data Counter inc. — SimF15NciDestDataInc

- B — Takeoff Airbase
- 1-11 — Steerpoints
- M1-3 — Markpoints *(n/i)*

5- Mark Button *(n/i)* — SimF15NciMark

6- Steer Counter decrease — SimF15NciSteerDataDec

7- Steer Counter increase — SimF15NciSteerDataInc

8- Data Select Knob — SimF15NciDataSelectDec, SimF15NciDataSelectInc

- CCC- Allows the programming and readout of CC (Central Computer) data. Entry of tacan channel, latitude, longitude, magnetic variation and altitude is performed in this mode. *(N/I)*
- WIND- Selects wind data for entry (n/i) and display from the CC.
- VIS- Allows a visual overfly present position update when a valid CC signal is present. If the CC signal is invalid, then allows an INS visual overfly update if the INS postion is selected with the mode selector knob. *(N/I)*
- PP- Selects present position latitude and longitude entry (n/i) and display.
- DEST- Allows entry (n/i) and display from the CC of latitude, longitude, and altitude for any of the 12 destinations or three mark positions selected on the destination data counter.

O/S- Allows the entry and display from the CC of offset distances in feet north-south and east-west, or offset range in miles and tenths and bearing with respect to the destination selected on the destination data counter, or the corresponding altitude of the offset point. *(N/I)*

9- Overfly Freeze Button *(n/i)* SimF15NumpadOFly

10- Update Button *(n/i)* SimF15NumpadUpdate

11- Select Offset Button *(n/i)* SimF15NumpadSel

12 - Keyboard Buttons 0-9 SimF15NciNumpad0 up to SimF15NciNumpad9

13 - Keyboard Button Clear SimF15NciClr

14 - Keyboard Button Enter SimF15NciEntr

15- Mode Selector Knob SimF15NciModeDec SimF15NciModeInc

OFF- Power is removed from the INS

GC- Gyrocompass alignment enables the INS to achieve a high alignment accuracy. Approximately 3 minutes after placing the mode selector knob to GC, the INS is coarse aligned to best available true heading (BATH).

INS- Primary navigation mode. In this mode, the INS solves the navigation problem by sensing aircraft accelerations, applying appropriate corrections and determining aircraft velocity and position. Steering to destination is computed in the CC based on inertially derived present position.

16- NCI Light Intensity SimF15NciLightIntensityDec SimF15NciLightIntensityInc

17- NCI Ready Button SimF15NciRdy

Please refer to the BMS F-15 checklists (After Engine Start procedures) for the Alignment process.

This panel and its functionality is not fully implemented yet.

4.1.2.1.73 TEWS Power Control Panel

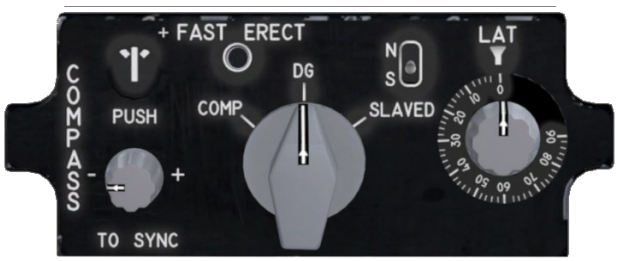
The TEWS CONTROL PANEL supplies power to the RWR (Radar Warning Receiver) system, ICS (Internal Countermeasures Set) and EWWS (Electronic Warfare Warning System).

For more information, please refer to the F-15C-34-1-1BMS

1-	RWR POWER ON	SimF15TEWSRwrPwrOn	SimF15TEWSRwrPwrOff
2-	EWWS POWER ON	SimF15TEWSEwwsPwrOn	SimF15TEWSEwwsPwrOff
3-	EWWS TONE/DEFEAT	SimF15TEWSEwwsDefeat	SimF15TEWSEwwsTone
4-	ICS POWER ON	SimF15TEWSIcsPowerOn	SimF15TEWSIcsPowerOff
5-	SET 1	SimF15TEWSSet1Man	SimF15TEWSSet1Auto
6-	SET 2	SimF15TEWSSet2Man	SimF15TEWSSet2Auto
7-	SET 3	SimF15TEWSSet3Man	SimF15TEWSSet3Auto

4.1.2.1.74 Compass Control Panel *(N/I)*

This panel serves no purpose in BMS as none of its functionality is implemented yet.



4.1.2.1.75 Outlet Panel *(N/I)*

This panel serves no purpose in BMS as none of its functionality is implemented yet.

4.1.2.1.76 Environmental Control System (ECS) Panel

The ENVIRONMENTAL CONTROL SYSTEM (ECS) provides conditioned air and pressurization, for the cockpit and avionics, windshield anti-fog and anti-ice, anti-G, canopy seal, and fuel pressurization. The ECS uses engine bleed air from both engines for normal operation. Cooling for the avionics, with the air source knob OFF or the cockpit temperature switch OFF, automatically switches to ram air. Ram air cooling is automatically supplied to the avionics whenever compressor inlet duct pressure drops.

1- ANTI ICE SimAntiIceInc SimAntiIceDec

This panel is not fully implemented yet.

4.1.2.1.77 Temperature Panel

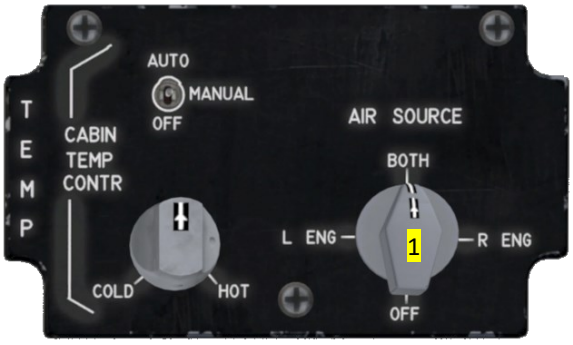
1- Air Source knob SimF15AirSourceToggle

OFF- Shuts off bleed air from both engines.

L ENG- Shuts off bleed air from the right engine.

R ENG- Shuts off bleed air from the left engine.

BOTH- Supplies bleed air from both engines.

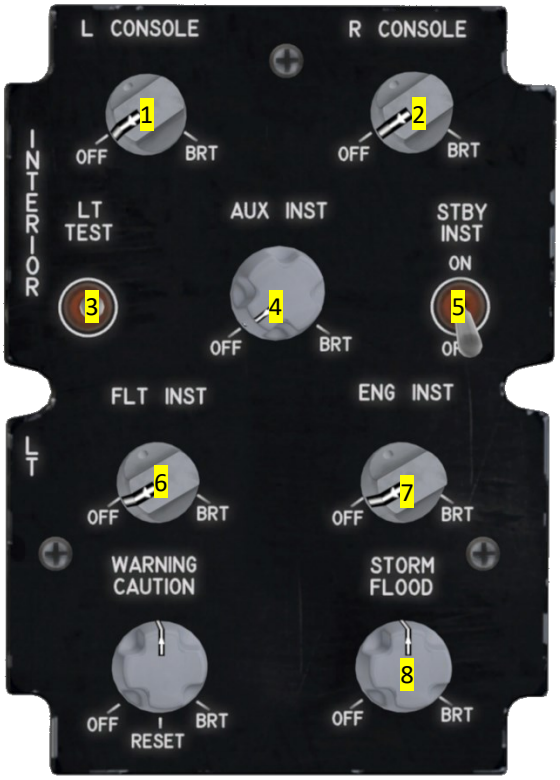


This panel is not fully implemented yet.

4.1.2.1.78 Interior Lights Control Panel

The INTERIOR LIGHTS CONTROL PANEL controls all cockpit lighting.

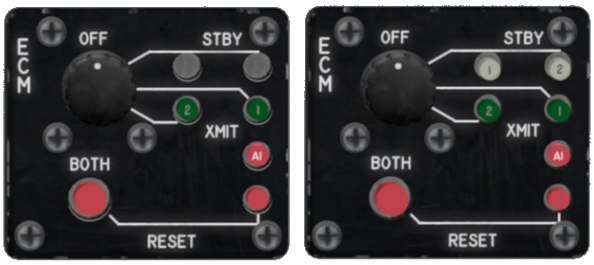
This panel and its functionality is not fully implemented yet.



1-	Left Console Light	SimF15LightLeftConsoleDec SimF15LightLeftConsoleInc
2-	Right Console Light	SimF15LightRightConsoleDec SimF15LightRightConsoleInc
3-	Light Test switch *(N/I)*	SimF15LightTestPress
4-	Auxiliary Light	SimF15LightAuxInstrDec SimF15LightAuxInstrInc
5-	Standby Instrument Light	SimF15LightStbyInstOff SimF15LightStbyInstOn
6-	Flight Instrument Light	SimF15LightFlightInstrDec SimF15LightFlightInstrInc
7-	Engine Instrument Light	SimF15LightEngInstDec SimF15LightEngInstInc
8-	Flood Light	SimF15FloodLightDec SimF15FloodLightInc

4.1.2.1.79 TEWS Pod Control Panel *(N/I)*

This panel serves no purpose in BMS as none of its functionality is implemented yet.



4.1.2.1.80 Countermeasures Dispenser Control Panel

The COUNTERMEASURES DISPENSER CONTROL PANEL purpose is to enable certain modes to the ALE-45 dispenser set.

For more information, please refer to the F-15C-34-1-1BMS.

1-	**DISPENSER SELECTION**	SimF15Ale45DispSelInc	SimF15Ale45DispSelDec
2-	**DISPENSER MODE**	SimF15Ale45ModeSelInc	SimF15Ale45ModeSelDec
3-	**FLARE JETTISON**	SimF15Ale45FlareEmergJettInc	SimF15Ale45FlareEmergJettDec

4.1.2.1.81 Canopy Control Handle

The CANOPY CONTROL HANDLE opens or closes/locks the canopy.

There is a single click spot to toggle the canopy open/closed.

1-	**CANOPY**	AFCanopyToggle

5. Normal Procedures

This section is planned to provide the actions required for normal operation of the F-15 aircraft in future BMS versions. Amplification is included only when special considerations or techniques should be observed. A complete knowledge of Section EMERGENCY PROCEDURES, and Section OPERATING LIMITATIONS, is required prior to flight.

For normal procedures (Ramp Start, Taxi, Takeoff, Landing, etc.) please refer to the BMS F-15 checklist TO1F-15C-1CL-1 BMS, “SECTION N” for further details.

This section will be improved in further BMS versions.

6. Air Refueling Procedures

Work in progress.

7. Emergency Procedures

Work in progress.

8. Glossary

A

A/A – Air-to-Air

AAI – Air-to-Air Interrogator

AB – Afterburner

AC – Alternating current

ACS – Armament control system

A/D – Air data

ADC – Air data computer

ADF – Automatic Direction Finding

ADI – Attitude director indicator

AFCS – Automatic flight control system

A/G – Air-to-Ground

AHRS – Attitude heading reference system

AIC – Air inlet controller

AIM – Air intercept missile

AMAD – Airframe mounted accessory drive

AMI – Airspeed Mach indicator

AOA – Angle of attack

ARCT – Air refueling control time

ARI – Aileron rudder interconnect

ARIP – Air refueling initial point

ASP – Avionics status panel

AUX – Auxiliary

B

BATH – Best available true heading

BCN – Beacon

BCP – BIT control panel

BINGO – Return fuel state

BIT – Built in test

BST PMP – Boost pump

C

CC – Central computer

CCC – Central computer complex

CCP – Cockpit control panel

CCW – Counterclockwise

CAS – Control augmentation system
Calibrated airspeed

CG – Center of gravity

CGB – Central gearbox

CIVV – Compressor inlet variable vanes

CMD – Countermeasure dispenser

COMM – Communications

CRT – Cathode ray tube

CSBPC – Control stick boost/pitch compensator

CSD – Constatn speed drive

CSS – Control stick steering

CTR – Centerline. Center

CU – Cockpit Unit

CW – Clockwise

D

DART – Drogue aerial retrievable target

DC – Direct current

DEEC – Digital electronic engine control

DG – Directional gyro

DRD – Data readout display

E

EAS – Equivalent airspeed

ECCM – Electronic counter-countermeasures

ECS – Environmental control system

EDU – Engine diagnostic unit

EEC – Engine electronic control

EPR – Engine pressure ratio

EWW – Electronic warfare warning

EXCDNCE CNTR – Exceedence counter

EXT – External

F

FDL – Fighter data link

FF – Fuel flow, free fall

FPM – Feet per minute

FTIT – Fan turbine inlet temperature

G

G – Unit of acceleration of gravity

GCA – Ground control approach

GPM – Gallons per minute

H

HMD – Helmet mounted display

HOBS – High Off-boresight

HRC – Helmet release connector

HSI – Horizontal situation indicator

HUD – Heads up display

HVI – Helmet vehicle interface

HYD – Hydraulic

HZ – Hertz

I

IAS – Indicated airspeed

IBS – Interference blanker set

ICS – Intercommunication system
Internal countermeasure set

IDG – Integrated drive generator

IFF – Identification friend or for

ILS – Instrument landing system

INS – Inertial navigation system

INU – Inertial Navigation Unit

I/P – Identification of position

IRC – Inline release connector

J

JFS – Jet fuel starter

JHMCS – Joint helmet mounted cueing system

K

KT – Knot(s)

L

LCG – Lead computing gyroscope

LDG GR – Landing gear

LE – Leading edge

LOX – Liquid oxygen

LRS – Long range search

M

MAC – Mean aerodynamic chord

MAX – Maximum

MBL – Manual boom latch

MIL – Military

MHz – Megahertz

MPCD – Multi purpose color display

MRM – Medium range missile

MRU – Magnetic receiver unit

MSIP – Multi-staged improvement program

MTU – Magnetic transmitter unit

M/V – Magnetic variation

N

NCI – Navigation Control Indicator

NCTR – Non cooperative target recognition

NM – Nautical mile(s)

NOZ POS – Nozzle position indicator

N_1 – Fan speed (first stage, low speed engine spool)

N_2 – Fan speed (high compressor, high speed engine spool)

O

OAT – Outside air temperature

OMNI – Omnidirectional range (VOR)

ORIDE – Override

O/S - Offset

OWS – Overload warning system

P

PACS – Programmable armament control set

PBG – Positive Breathing Gas

PC – Power control

PC1, PC2 – Power control hydraulic system

PMG – Permanent magnetic generator

PP – Present position

PPH – Pounds per hour

PPM – Pounds per minute

PRESS – Pressure

PRCA – Pitch/roll channel assembly

PRF – Pulse repetition frequency

PSI – Pounds per square inch

PTC – Pitch trim compensator

Q

Q – Dynamic or impact pressure

QDC – Quick disconnect connector

QTY - Quantity

R

RADAR – Radio detection and ranging

RCVV – Rear compressor variable vanes

RLS – Reservoir level sensing

RPM – Revolutions per minute

R/T – Receiver transmitter

RWR – Radar warning receiver

RZ – Rendezvous

S

SAI – Standby atttiude indicator

SDR – Signal data recorder

SIF – Selective indentification feature

SOL – Solenoid

SPD BK – Speed brake

SPS – Seat position sensor

SRM – Short range missile

SRS – Short range search

STA/JETT – Station jettison

STBY - Stanby

STBY ATTD – Standby attitude indicator

T

TAS – True airspeed

TCN – TACAN. Tactical air navigation

TDC – Throttle designator control

TE – Trailing edge

TEWS – Tactical electronic warfare suite

T/O – Takeoff

TR – Transformer rectifier(s)

TRANS - Transfer

U

UC – Unified control

UHF – Ultra high frequency

UTL – Utility hydraulic system

V

VAC – Volts alternating current

VDC – Volts direct current

VHF – Very high frequency

VI – Visual identification

Vmax – Maximum speed

VS – Velocity search

VSD – Vertical situation display

VSI – Vetical speed indicator

VORTAC – Very high frequency – omni range and tactical air navigation