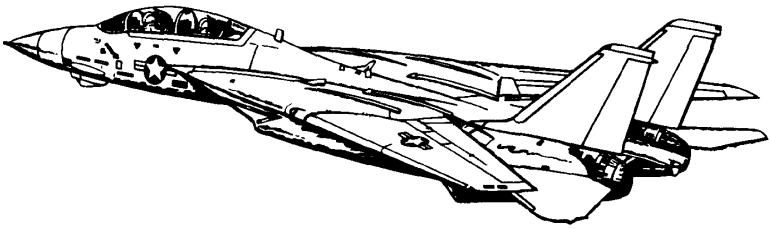
# Pocket Checklist

# F-14A/B AIRCRAFT

**REV: 20210820**



Procedures

Systems

AWG-9
Radar

TCS
LANTIRN

A/G
Weapons

A/A
Weapons

## Contents

# 1 PROCEDURES

## 1.1 PILOT - PRE-START

| | | |
|---|---|---|
| 1. | Parking Break | **ENGAGED** |
| 2. | Ground Power | connected |
| 3. | Compressed Air | connected |
| 4. | ICS | **HOT MIC** |
| 5. | TO RIO | *"Begin Start-Up"* |
| 6. | ICS | **Comm Check** |
| 7. | MASTER TEST Selector | (a) **LTS**<br>• **Warning Lights** ..... checked<br>• **Caution Lights** ..... checked<br>• **Advisory Lights** ..... checked<br>(b) **FIRE DET/EXT**<br>• **L FIRE GO** ..... illuminated<br>• **R FIRE GO** ..... illuminated<br>(c) **INST**<br>• **RPM** ..... 96%<br>• **EGT** ..... 960 C<br>• **FF** ..... 10500 pph<br>• **AOA** ..... 18 $\pm$ 5<br>• **Wing Sweep** ..... 45 $\pm$ 2.5<br>• **FUEL QTY** ..... 2000 $\pm$ 200<br>• **Oxygen QTY** ..... 2 liters<br>• **L&R FF lights** ..... illuminated<br>(d) **OFF** |
| 8. | Ejection Seat | Armed |
| 9. | RIO | Canopy Closed |
| 10. | Oxygen | **ON (FWD)** |
| 11 | Emergency Wing Sweep | **OVERSWEEP** |

## 1.2 PILOT - ENGINE START

| | | |
|---|---|---|
| 1. | AIR SOURCE | **OFF** |
| 2. | Hydraulics | (a) **HYD TRANSFER PUMP** ..... **SHUTOFF**<br>(b) **Emerg. Hyd.** ..... **AUTO (LOW)** |
| 3. | L&R MASTER GEN | **NORM** |
| 4. | **RIO** | *"Ready to Start"* |
| 5. | Right Engine Start-Up | (a) **Engine Crank** ..... **R**<br>(b) **R Eng N2** ..... 20%<br>(c) **R Throttle** ..... **IDLE**<br>(d) **TIT** ..... < 890 C during start<br>(e) **R GEN CAUTION** ..... extinguished |
| 6. | Stabilized Parameters | • **RPM** ..... 62-78%<br>• **TIT** ..... approx 500 C<br>• **Fuel Flow** ..... 950-1400 pph<br>• **NOZ** ..... 5 (100%)<br>• **Oil Pressure** ..... 25-35 psi<br>• **Hyd Pressure** ..... 3000 psi |
| 7. | Left Engine Start-Up | (a) **Engine Crank** ..... **L**<br>(b) **L Eng N2** ..... 20%<br>(c) **L Throttle** ..... **IDLE**<br>(d) **TIT** ..... < 890 C during start<br>(e) **L GEN Caution** ..... extinguished |
| 8. | Stabilized Parameters | • **RPM** ..... 62-78%<br>• **TIT** ..... approx 500 C<br>• **Fuel Flow** ..... 950-1400 pph<br>• **NOZ** ..... 5 (100%)<br>• **Oil Pressure** ..... 25-35 psi<br>• **Hyd Pressure** ..... 3000 psi |
| 9. | HYD TRANSFER PUMP | **NORM** |
| 10. | HYD PRESSURE | 3000 psi |
| 11. | AIR SOURCE | **BOTH ENG** |
| 12. | Ground Power | disconnected |
| 13. | Compressed Air | disconnected |

## 1.3 PILOT - POST-START

| | | |
|---|---|---|
| 1. | **TO RIO** | *"Both Engines Running"* |
| 2. | **Displays Control Panel** | • **VDI** ..... **ON**<br>• **HUD** ..... **ON**<br>• **HSD** ..... **ON**<br>• **HDS MODE** ..... **TID**<br>(monitor INS) |
| 3. | **RIO** | **Select Align Quality**<br>• **INS GO NOW:** shortest but least precise alignment<br>• **INS GO COARSE:** does not meet Launch Criteria for AIM-7 / AIM-54<br>• **INS GO MIN WPN LAUNCH:** allows AIM-7 / AIM-54 launch<br>• **INS GO FINE** fine align (8 min) |
| 4. | **ACM Panel** | • **GUN RATE** ..... as required<br>• **SW COOL** ..... **OFF**<br>• **MSL PREP** ..... **OFF**<br>• **Missile MODE/STP** ..... **NORM** |
| 5. | **Gun Rounds** | **Set** |
| 6. | **ANTI-SKID SPOILER BK** | **OFF** |
| 7. | **Emergency Wing Sweep** | (a) **Handle** ..... **AFT**<br>(b) **Angle** ..... Verify 68 deg |
| 8. | **AFCS Panel - SAS STAB AUG** | • **PITCH** ..... **ON**<br>• **ROLL** ..... **ON**<br>• **YAW** ..... **ON** |
| 9. | **WING/EXT TRANS** | **AUTO** |
| 10. | **UHF 1 Function Selector** | **BOTH** |
| 11. | **TACAN Function Selector** | **T/R** |
| 12. | **ARA-63 ICLS RECEIVER** | **ON** |

| | | |
|---|---|---|
| 13. | **Radar Altimeter** | (a) **Control Knob** ..... one click CW to turn on<br>(b) **Display** ..... 6000 ft (warm up)<br>(c) **Display** ..... 0 ft (ready) |
| 14. | **Standby ADI** | erect at least 2 min before T/O |
| 15. | **KY-28 Crypt. Key** | **Set** (refer to GROUND SETTINGS kb) |
| 16. | **RIO** | set D/L frequency |
| 17. | **Lights** | As desired |

## 1.4 RIO - PRE-START

| | | |
|---|---|---|
| 1. | **Oxygen** | **ON (FWD)** |
| 2. | **PILOT** | • **Ground Power** ..... connected<br>• **Compressed Air** ..... connected |
| 3. | **ICS** | Comm Check |
| 4. | **Lights** | As required |
| 5. | **LTS Test** | Coordinate with Pilot |
| 6. | **Ejection Seats** | **ARMED** |
| 7. | **Canopy** | **CLOSED** |
| 8. | **TO PILOT** | *"Ready to Start"* |

## 1.5 RIO - POST-START - SHORE

| | | |
|---|---|---|
| 1. | **PILOT** | • **Engines** ..... started<br>• **AIR SOURCE** ..... BOTH ENG |
| 2. | **INS STARTUP** | (a) **LIQUID COOLING** ..... **ON (FWD)**<br>(b) **WCS Switch** ..... **STANDBY**<br>(c) **IR/TV Power** ..... **STBY/IR/TV**<br>(d) **TID/DDD** ..... illuminated after 40 s |
| 3. | **Kneeboard** | Retrieve Coordinates, Elevation, Magnetic Variation from GROUND SETTINGS Page |
| **WARNING** Input Coords **BEFORE** selecting **GND ALIGN** if using ASH | | |
| 4. | **Start INS Align** | (a) **Nav Mode** ..... **GND ALIGN**<br>(b) **CAP**<br>• **Category** ..... **NAV**<br>• **MESSAGE** ..... **OWN AC**<br>(c) **Keyboard**<br>• **CLEAR**, **LAT**, latitude, **ENTER**<br>• **LONG**, longitude, **ENTER**<br>• **ALT**, altitude, **ENTER**<br>(d) **CAP MESSAGE** ..... **MAG HDG VAR**<br>(e) **Keyboard** ..... **HDG**, mag var, **ENTER**<br>(f) **Align Progress** ..... Monitor |
| 5. | **U/VHF Mode** | **T/R G** |

| | | |
|---|---|---|
| 6. | **Datalink** | (a) **Kneeboard** ..... TACTICAL DL<br>(b) **DL Power** ..... **ON (FWD)**<br>(c) **DL Mode** ..... **TAC (AFT)**<br>(d) **DL Freq.** ..... **Set** |
| 7. | **TACAN** | **T/R** |
| 8. | **RWR Panel** | (a) **Display Type** ..... **NORM**<br>(b) **PWR** ..... **ON**<br>(c) **TEST** ..... **SPL**<br>(d) **MODE** ..... **LMT** |
| 9. | **DECM** | **STBY**, then **ACT** |
| 10. | **IFF** | (a) **MASTER** ..... **STBY**<br>(b) **CODE** ..... as required |
| 11. | **Altimeter** | Reset |
| 12. | **CAP** | Enter Data (WP, FP, *etc.*) |
| 13. | **Displays** | • **DDD** ..... Set<br>• **TID** ..... Set<br>• **Multiple Display Indicator** ..... Set |
| 14. | **Hand Control Panel** | Set |
| 15. | **AN/ALE-39** | Set (as required)<br>• **AUTO (CHAFF)/MAN**<br>• **MAN** |
| 16. | **Flare Mode** | **PILOT** |
| 17. | **Complete INS Align** | • **Duration Full Fine** ..... 8 min<br>• **Duration ASH** ..... much faster<br><br>(a) **Align Complete** ..... Caret → Diamond<br>(b) **NAV Mode** ..... **INS NAV** |
| 18. | **Standby ADI** | Erect at least 2 min before T/O |
| 19. | **TO PILOT** | *"Ready to Taxi"* |
| **Once Airborne** | | |
| 20. | **IR/TV Power** | **ON** |
| 21. | **WCS Switch** | **WCS XMT** |

## 1.6 RIO - POST-START - CARRIER

| | | |
|---|---|---|
| 1. | **PILOT** | • **Engines** ..... started<br>• **AIR SOURCE** ..... BOTH ENG |
| 2. | **INS STARTUP** | (a) **LIQUID COOLING** ..... **ON (FWD)**<br>(b) **WCS Switch** ..... **STANDBY**<br>(c) **IR/TV Power** ..... **STBY/IR/TV**<br>(d) **TID/DDD** ..... illuminated after 40 s |
| 3. | **Datalink** | (a) **Kneeboard** ..... TACTICAL DL<br>(b) **DL Power** ..... **ON (FWD)** |
| 4. | **Start INS Align** | (a) **DL FREQ** ..... Set<br>(b) **DL Mode** ..... **CAINS/WAYPT**<br>(c) **Nav Mode** ..... **CVA** |
| 5. | **U/VHF Mode** | **T/R G** |
| 6. | **TACAN** | **T/R** |
| 7. | **RWR Panel** | (a) **Display Type** ..... **NORM**<br>(b) **PWR** ..... **ON**<br>(c) **TEST** ..... **SPL**<br>(d) **MODE** ..... **LMT** |
| 8. | **DECM** | **STBY**, then **ACT** |
| 9. | **IFF** | (a) **MASTER** ..... **STBY**<br>(b) **CODE** ..... as required |
| 10. | **Altimeter** | Reset |
| 11. | **CAP** | Enter Data (WP, FP, *etc.*) |
| 12. | **Displays** | • **DDD** ..... Set<br>• **TID** ..... Set<br>• **Multiple Display Indicator** ..... Set |
| 13. | **Hand Control Panel** | Set |
| 14. | **AN/ALE-39** | Set (as required)<br>• **AUTO (CHAFF)/MAN**<br>• **MAN** |
| 15. | **Flare Mode** | **PILOT** |
| 16. | **Complete INS Align** | • **Duration Full Fine** ..... 9 min<br>• **Duration ASH** ..... much faster<br><br>(a) **Align Complete** ..... Caret → Diamond<br>(b) **NAV Mode** ..... **INS NAV** |

| | | |
|---|---|---|
| 17. | **Datalink** | (a) **DL Mode** ..... **TAC (AFT)**<br>(b) **DL Freq.** ..... **Set** |
| 18. | **Standby ADI** | Erect at least 2 min before T/O |
| 19. | **TO PILOT** | *"Ready to Taxi"* |
| **Once Airborne** | | |
| 20. | **IR/TV Power** | **ON** |
| 21. | **WCS Switch** | **WCS XMT** |

## 1.7 PRE-TAXI

| | | |
|---|---|---|
| 1. | **ANTI-SKID SPOILER BK** | **OFF** |
| 2. | **HOOK BYPASS** | As Required |
| 3. | **Nose Strut** | **RETRACTED** |
| 4. | **HUD MODE** | **TO** |
| 5. | **Parking Brake** | **Released (IN)** |
| 6. | **NWS** | **ENGAGED** |
| 7. | **Path** | verify clear |

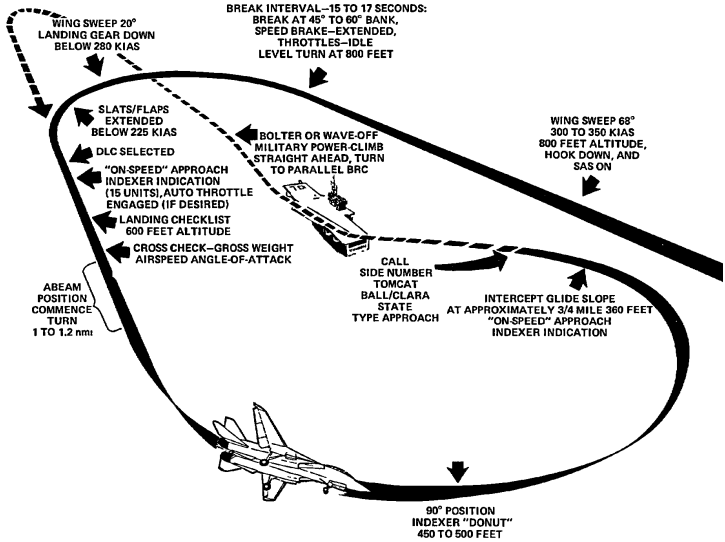
## 1.8 TAKEOFF - SHORE

| | | |
|---|---|---|
| | | **After Lining Up On Runway** |
| 1. | **Wing Sweep** | (a) **EM WING SWEEP** ..... **FWD**, then **IN**<br>(b) **MASTER RESET** ..... **PRESS**<br>(c) **Wings** ..... Verify thumb controller<br>(d) **WING SWEEP** ..... **AUTO**<br>(e) **Wings** ..... Verify at 20 deg |
| 2. | **ANTI SKID SPOILER BK** | **BOTH (UP)** |
| 3. | **FLAPS** | **UP** |
| 4. | **Trim** | 0 deg |
| 5. | **NWS** | **DISENGAGED** |
| 6. | **Takeoff** | (a) **Throttle** ..... **MIL** (90% RPM)<br>(b) **Stick** ..... **Back** at 130 KIAS<br>(c) **Rotation** ..... approx 140 KIAS<br>(d) **GEAR** ..... **UP** < 250 KIAS |

## 1.9 TAKEOFF - CARRIER

| | | |
|---|---|---|
| | **Lineup** | • Wait behind JBD until Catapult is clear<br>• Follow Taxi Directors Instructions to line up on Catapult |
| 1. | **Wing Sweep** | (a) **EM WING SWEEP** ..... **FWD**, then **IN**<br>(b) **MASTER RESET** ..... **PRESS**<br>(c) **Wings** ..... Verify thumb controller<br>(d) **WING SWEEP** ..... **AUTO**<br>(e) **Wings** ..... Verify at 20 deg |
| 2. | **FLAPS** | **DOWN** |
| 3. | **Launch Bar Preparation** | (a) **Nose Strut** ..... **KNEEL** when directed<br>(b) **Throttle** ..... **UP** when directed<br>(c) **Taxi** ..... launch bar into shuttle<br>(d) **Throttle** ..... **IDLE** when directed |
| 4. | **Trim** | 2-3 deg nose up |
| 5. | **Speed Brakes** | **IN** |
| 6. | **Final Checks** | (a) **Throttle** ..... **MIL** when directed<br>(b) **Control Wipeout**<br>• Stick Full Forward<br>• Stick Full Aft<br>• Stick Full Left<br>• Stick Full Right<br>• Rudder Full Left<br>• Rudder Full Right<br>(c) **Eng. Inst.** ..... **Checked**<br>(d) **Caution/Warnings** ..... **None** |
| 7. | **Catapult Shot** | (a) **Salute** ..... **CAT SHOT**<br>(b) **Gear** ..... **UP** < 250 KIAS<br>(c) **Flaps** ..... **UP** < 225 KIAS |
| 8. | **Clearing Turn** | |

## 1.10 LANDING - OVERHEAD PATTERN




| | | |
|---|---|---|
| 1. | **Initial Approach** | • **WING SWEEP** ..... **68 deg**<br>• **HOOK** ..... **DOWN**<br>• **SAS** ..... **ON**<br>• **HUD** ..... **LDG**<br>• **Airspeed** ..... **300-350 KIAS**<br>• **Altitude** ..... **800 ft** |
| 2. | **Initial Break** | • **Break Interval** ..... **15-17 s**<br>• **BANK** ..... **45-60 deg**<br>• **SPEED BRAKE** ..... **EXTEND**<br>• **Throttle** ..... **IDLE**<br>• **G** ..... **3-4 G**<br>• **Altitude** ..... **800 ft** |
| 3. | **Break Turn** | • **Wing Sweep** ..... **AUTO** < 280 KIAS<br>• **Landing Gear** ..... **DOWN** < 280 KIAS<br>• **FLAPS** ..... **DOWN** < 225 KIAS |
| 4. | **Downwind** | • **DLC** ..... **Selected** once flaps out<br>• **AOA** ..... **ON-SPEED**<br>• **LANDING CHECKLIST**<br>• **Altitude** ..... descend to **600 ft** |

| | | |
|---|---|---|
| 5. | Final Turn | 180 Deg Position<br>• Abeam Pos. ..... 1-1.2 nmi<br>90 Deg Position<br>• AOA ..... DONUT<br>• Altitude ..... 400-500 ft |
| 6. | Intercept Glides-lope | • Distance ..... 3/4 Mile<br>• Altitude ..... 360 ft<br>• AOA ..... ON-SPEED |

## 1.11 LANDING - CHECKLIST

| | | |
|---|---|---|
| 1. | Wing Sweep | 20 deg AUTO |
| 2. | Wheels | • Lights ..... 3 DOWN<br>• Transition Light ..... OUT |
| 3. | SAS | ON |
| 4. | FLAPS | DOWN |
| 5. | DLC | Checked |
| 6. | Hook | • HOOK ..... DOWN<br>• Transition Light ..... OUT |
| 7. | Harness | Locked |
| 8. | Speedbrakes | EXT |
| 9. | Brakes | Check |
| 10. | Fuel | Check |

## 1.12 AIRSTART

| | |
|---|---|
| • **Spooldown** | Before significant spooldown<br>(a) **Non-Running ENG** .... **IDLE** or above<br>If no relight occurs<br>(b) **Non-Running ENG** ... **OFF** then **IDLE**<br>If still no relight occurs<br>(c) **ENG MODE** ..... **SEC**<br>(d) **Non-Running ENG** ... **OFF** then **IDLE** |
| • **Cross-Bleed Restart** | With one ENG running, if Spooldown fails<br>(a) **Non-Running ENG** ..... **OFF**<br>(b) **FUEL SHUT OFF** .....check<br>(c) **Running throttle** .....80%+<br>(d) **BACK UP IGNITION** ..... **ON**<br>(e) **ENG CRANK** ..... non-running eng<br>(f) **Non-Running ENG** ..... **IDLE**<br>If no start occurs<br>(g) **Non-Running ENG** ... **OFF** then **IDLE**<br>If still no start<br>(h) **ENG MODE** ..... **SEC**<br>(i) **Non-Running ENG** ... **OFF** then **IDLE** |
| • **Windmill Restart** | (a) **Airspeed** ..... >450 kts<br>(b) **Throttle** .....IDLE or above<br>(c) **BACK UP IGNITION** ..... ON<br>If no relight occurs<br>(d) **Throttle** .....OFF then IDLE<br>If still no relight<br>(e) **ENG MODE** ..... SEC<br>(f) **Throttle** .....OFF then IDLE |
| • **Post Restart** | (a) **BACK UP IGNITION** .....OFF<br>(b) **ENG MODE** ..... PRI |

# 2 SYSTEMS

## 2.1 AFCS - SAS

| | |
|---|---|
| • **SAS** | • **Stability Augmentation System**<br>– **Not Fly-by-Wire**<br>– Automatic control surface commands generated by analog computer to improve stability |
| • **Control** | • **Three individual channels (Pitch, Roll, Yaw)** |
| • **Autopilot Emergency Disengage Paddle** | • **Paddle on Stick**<br>– **Disengages Autopilot Modes**<br>– **Deactivates Pitch, Roll SAS Channels** |

## 2.2 AFCS - AUTOPILOT

| | |
|---|---|
| • **Attitude Hold** | • **Basic Attitude Hold**<br>– Maintains existing pitch & roll<br>– Attitude can be changed with stick input<br>– If engaged outside limits will automatically move within range<br>• **Limits**<br>– Pitch: 30 deg<br>– Roll: 60 deg<br>• **Engagement**<br>(a) **SAS Switches** ..... **ON (FWD)**<br>(b) **Alt. Hold Mode** ..... **OFF**<br>(c) **VEC/PCD/ACL** ..... **OFF**<br>(d) **Heading Mode** ..... **OFF**<br>(e) **Autopilot Switch** ..... **ENGAGE (FWD)** |

| | |
|---|---|
| • **Altitude Hold** | • **Barometric Altitude Hold**<br>– Maintains current barometric altitude<br>• **Limits**<br>– Vertical velocity: < 100 ft/s<br>• **Engagement**<br>(a) **SAS Switches** ..... **ON (FWD)**<br>(b) **Autopilot Switch** ..... **ENGAGE (FWD)**<br>(c) **Alt. Hold Mode** ..... **ALT (FWD)**<br>(d) **A/P REF Light** ..... Wait until appears<br>(e) **NWS Button** ..... **Press** |
| • **Heading Hold** | • **Magnetic Heading Hold**<br>– Maintains current magneatic heading<br>• **Limits**<br>– Bank angle < 5 deg<br>• **Engagement**<br>(a) **SAS Switches** ..... **ON (FWD)**<br>(b) **Autopilot Switch** ..... **ENGAGE (FWD)**<br>(c) **Heading Mode** ..... **HDG (FWD)** |
| • **Ground Track** | • **Autopilot follows ground track**<br>– Similar to heading hold<br>– Compensates for wind drift<br>– Uses INS data instead of magnetic bearing<br>• **Limits**<br>– Bank angle < 5 deg<br>• **Engagement**<br>(a) **SAS Switches** ..... **ON (FWD)**<br>(b) **Autopilot Switch** ..... **ENGAGE (FWD)**<br>(c) **Heading Mode** ..... **GT (AFT)**<br>(d) **A/P REF Light** ..... Wait until appears<br>(e) **NWS Button** ..... **Press** |
| • **VEC/PCD** | • **Datalink Vector / Precision Course Direction**<br>– Allows Link 4 controller to remotely direct the aircraft<br>– **Not Modelled in DCS** |

| | |
|---|---|
| • ACL | • **Automatic Carrier Landing**<br>– See relevant section |
| • Autopilot Emergency Disengage Paddle | • **Paddle on Stick**<br>– **Disengages Autopilot Modes**<br>– **Deactivates Pitch, Roll SAS Channels** |

## 2.3 APC / AUTOTHROTTLE

| | |
|---|---|
| • APC | • **Approach Power Compensator**<br>– Automatic throttle control<br>– **Maintains ON SPEED AoA** |
| • Conditions | Engagement is inhibited / APC is disengaged if conditions not met<br>• **Throttles** ..... 75%-90% RPM<br>• **Landing Gear Handle** ..... **Down**<br>• **Weight on Wheels** ..... **No** |
| • Engage | • **Throttle Mode** ..... **AUTO (FWD)** |
| • Disengage | • **Cage/Seam Button** |

## 2.4 ACLS

## 2.5 WING-SWEEP

| | |
|---|---|
| • Overview | • **In Flight Limited between 20 deg & 68 deg**<br>• **On Ground can Oversweep to 75 deg**<br>• **Hydromechanically Controlled**<br>– Automatically through CADC<br>– Manually with emergency wing-sweep handle<br>• **15 deg / s at 1 g loading**<br>• **Mechanically linked to ensure symmetry** |
| • CADC Modes | • **AUTO**<br>– CADC controls wing position as function of current Mach via wing-sweep program<br>• **MAN**<br>– Pilot manually chooses desired wing sweep angle with thumb controller<br>• **BOMB**<br>– Sets wing sweep to **55 deg** or further aft |

| | |
|---|---|
| • **Emergency Mode** | • **Emergency Wing-Sweep Handle**<br>– Moved with wing sweep program by spider detent under normal operation<br>– Can be forced out of spider detent and moved manually |
| • **Oversweep** | • **Selected via Emergency Wing-Sweep Handle**<br>(a) **Em. Wing-Sweep** ..... **68 deg**<br>Wait for wing-seal airbags to deflate<br>(b) **HZ TAIL AUTH** ..... **Illuminated**<br>(c) **Em. Wing-Sweep** ..... **75 deg** |
| • **Return to CADC Control** | • **After Emergency Mode / Oversweep**<br>(a) **Em. Wing-Sweep** ..... **Spider Detent**<br>(Fwd on startup)<br>(b) **MASTER RESET** ..... **Press** |

| Indicated Mach | Max Forward Wing Position |
|---|---|
| 0.4 | 20 deg |
| 0.7 | 25 deg |
| 0.8 | 50 deg |
| 0.9 | 60 deg |
| 1.0 | 68 deg |

## 2.6 NAVIGATION

## 2.7 COMMUNICATION

## 2.8 DATALINK / IFF

## 2.9 RWR THREAT SYMBOLOGY

| SHIPS | |
|---|---|
| **AB** | Arleigh Burke |
| **AK** | Admiral Kuznetsov |
| **GR** | Grisha 5 (Albatros) |
| **HP** | Oliver Hazard Perry |
| **J2** | Type 054A Frigate, “Jiangkai II class" |
| **KK** | Krivak 3 (Rezky) |
| **KV** | Kirov (Pyotr Velikiy) |
| **L1** | Type 052B Destroyer, “Luyang I class" |
| **L2** | Type 052C Destroyer, “Luyang II class" |
| **N** | *Ship with Nav Radar* |
| **NE** | Neustrashimy |
| **NZ** | Nimitz (Vinson, Stennis) |
| **SV** | Slava (Moscow) |
| **TC** | Ticonderoga |
| **TT** | Tarantul 3 (Molniya) |
| **TW** | Tarawa |
| **YU** | Type 071 Amphibious Transport Dock, “Yuzhao class" |

| AIRCRAFT | |
|---|---|
| **14** | F-14A/B |
| **15** | F-15C/E |
| **16** | F-16C |
| **17** | JF-17 |
| **18** | F/A-18C |
| **19** | MiG-19 |
| **21** | MiG-21bis |
| **23** | MiG-23MLD |
| **24** | Su-24M/MR |
| **25** | MiG-25PD |
| **29** | MiG-29A/G/S<br>Su-27<br>Su-33<br>J-11A |
| **30** | Su-30 |
| **31** | MiG-31 |
| **34** | Su-34 |
| **37** | AJS-37 |
| **39** | Su-25TM |
| **50** | A-50 |
| **52** | B-52 |
| **AN** | AN-26B<br>AN-30M |
| **AP** | AH-64D |
| **B1** | B-1B |
| **BE** | Tu-95<br>Tu-142M |
| **BF** | Tu-22M3 |
| **BJ** | Tu-160 |
| **E2** | E-2D |
| **E3** | E-3C |
| **F4** | F-4E |
| **F5** | F-5E |
| **HX** | Ka-27 |
| **IL** | IL-76MD<br>IL-78M |
| **KC** | KC-135 |

| | |
|---|---|
| **KJ** | KJ-2000 |
| **M2** | Mirage 2000-C<br>Mirage 2000-5 |
| **S3** | S-3B |
| **SH** | SH-60B |
| **TO** | Tornado |
| **TR** | C-130<br>C-17A |

**AIR DEFENSE**

| | |
|---|---|
| **2** | S-75 TR SNR (SA-2) “Fan Song" |
| **3** | S-125 TR SNR-125 (SA-3) “Low Blow" |
| **6** | Kub SA-6 |
| **7** | HQ-7 TR |
| **8** | OSA (SA-8) |
| **10** | S-300PS 30N6 TR (SA-10) |
| **11** | Buk (SA-11) |
| **12** | S-300V |
| **15** | Tor 9A331 (SA-15) |
| **19** | Tunguska 2C6M (SA-19) |
| **A** | Gepard<br>M-163 Vulcan<br>ZSU-23-4 Shilka |
| **BB** | S-300PS 64H6E SR (SA-10/Big Bird) |
| **BF** | Rapier Blindfire TR |
| **CS** | S-300PS 5N66M SR (SA-10/Clam Shell) |
| **DE** | Sborka (Dog Ear) |
| **FF** | S-125 P-19 SR (SA-3/Flat Face) |
| **GR** | Roland SR |
| **HA** | Hawk SR |
| **HK** | Hawk TR |
| **HQ** | HQ-7 SR |
| **PT** | Patriot |
| **RO** | Roland |
| **RP** | Rapier SR |
| **S** | 1L13 55G6 EWR |
| **SD** | Buk TR (SA-11/Snow Drift) |
| **SN** | PRW-11 (Side Net) |

**MISSILES**

| | |
|---|---|
| **M** | AIM-54<br>AIM-120<br>MICA-EM<br>R-37<br>R-77<br>SD-10 |

**ATC**

| | |
|---|---|
| **T** | Airport ATC Radar |

# 3 AWG-9 RADAR

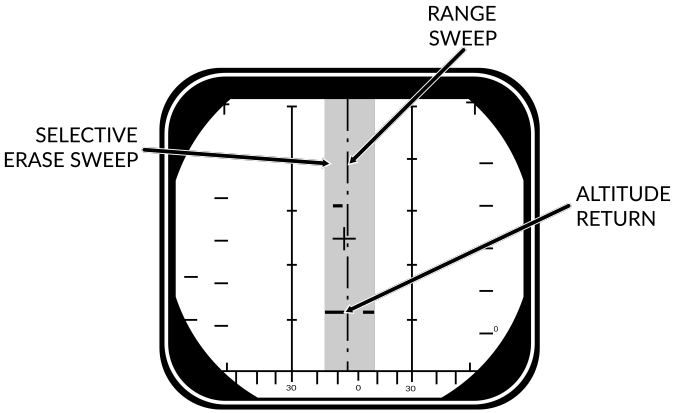
## 3.1 MAIN MODES - OVERVIEW

| | Pulse | | Pulse Doppler | | | |
|---|---|---|---|---|---|---|
| | **Pulse Search** | **P-STT** | **PD Search** | **RWS** | **TWS** | **PD-STT** |
| **Range** | 60 nm | 50 nm | 110 nm | 90 nm | 90 nm | 90 nm |
| **AIM-7** | BRSIT | CW | BRSIT | | - | PD |
| **AIM-54** | BRSIT | ACT | BRSIT | | Multi TGT | PD/ACT |

## 3.2 MAIN MODES

- **Pulse**
  - **Basic Pulse w/o doppler filtering**
    - Cannot be notched
    - Ground Clutter
    - Rudimentary Ground mapping
  - **Pulse Sub-Modes**
    - **Pulse Search**
    - **Pulse-STT**
- **Pulse Doppler**
  - **Doppler filter –> no ground returns**
    - Susceptible to notching
    - No ground clutter
    - Greater range
    - Advanced sub modes
    - AIM-54 Guidance
  - **Pulse Doppler Sub-Modes**
    - **PD Search**
    - **RWS**
    - **TWS**
    - **PD-STT**

## 3.3 PULSE MODE - PULSE SEARCH

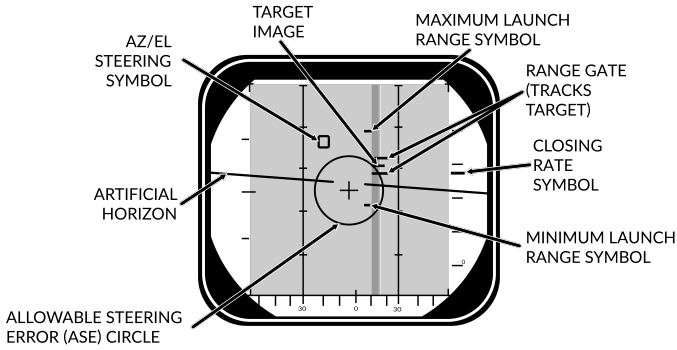



SEARCH (±10° SCAN)



| | |
|---|---|
| • **Pulse Search** | Basic Mode, AWG-9 does not use pulse doppler filtering<br>• **Advantages**<br>– All aspect target detection<br>– Cannot be notched<br>– Rudimentary ground mapping<br>• **Disadvantages**<br>– Cannot discern ground returns and targets<br>– Lower range |
| • **DDD** | • **Range/Azimuth**<br>• Visual representation of radar and erase sweeps |
| • **TID** | • **No Information from Pulse**<br>• **Cannot guide AIM-54** |

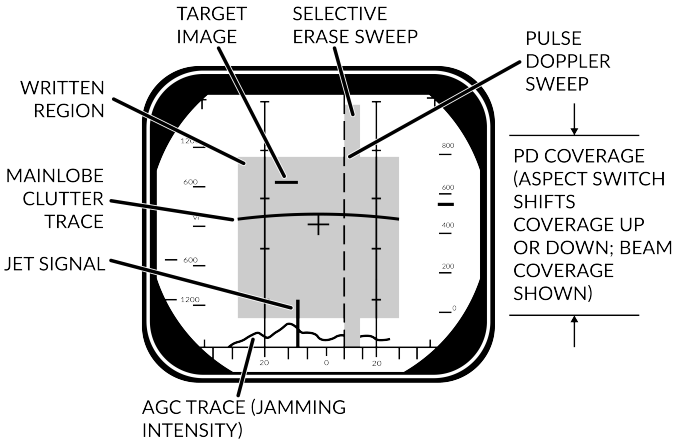
## 3.4 PULSE MODE - PSTT




SINGLE TARGET TRACK

| | |
|---|---|
| • **Pulse STT** | Lock Target w/o doppler filtering<br>• **Advantages**<br>– Cannot be notched<br>• **Disadvantages**<br>– Susceptible to ground clutter |
| • **Lock Target** | • **Conditions**<br>– Pulse Search Mode selected<br>– RDR HCU Mode selected<br>• **Lock Target**<br>(a) Hold HCU Half-action<br>(b) Slew to desired Target<br>(c) HCU Full-Action to lock<br>• **Unlock Target**<br>(d) HCU Half-action |
| • **DDD** | • **Track Indications**<br>– ANT TRK light<br>– RDROT light<br>– Tracking gates<br>– Closure rate<br>– Attack Symbology |

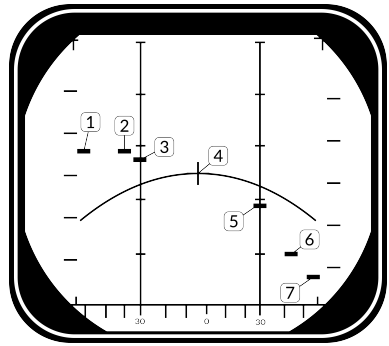
## 3.5 PULSE DOPPLER MODE - PULSE DOPPLER SEARCH




SEARCH (±40° SCAN)

| | |
|---|---|
| • **Pulse Doppler Search** | **"Early Warning" Mode**, Longest Range, cannot display range<br>• **Advantages**<br>– Longest Range<br>– Doppler Filtering<br>– **"Look Down Shoot Down"**<br>• **Disadvantages**<br>– Can be notched<br>– No range information |
| • **DDD** | • **Closure Rate/Azimuth**<br>• Visual representation of radar and erase sweeps |
| • **Doppler Filters** | • **Main Lobe Clutter (MLC) Filter**<br>– **Own GS +/- 133 knots**<br>– Removes main ground return<br>– Source of notching<br>• **Zero Doppler Filter**<br>– **Negative own GS +/- 100 knots**<br>– Removes Radar reflection from ground directly beneath own AC |

| | |
|---|---|
| • **MLC Switch** | • **IN:** Enables MLC filter<br>• **AUTO:** Enables MLC filter if look-up angle less than 3 deg<br>• **OUT:** Disables MLC filter |
| • **Vc Switch** | Changes closure rate DDD scale<br>• **X-4:** -800 to 4000 knots<br>• **NORM:** -200 to 1000 knots<br>• **VID:** -50 to 250 knots |
| • **ASPECT Switch** | Changes closure rate processing scale<br>• **NOSE:** -600 to 1800 knots<br>• **BEAM:** -1200 to 1200 knots<br>• **TAIL:** -1800 to 600 knots |




| | Look Angle | Line of Sight Rate | Target Heading |
|---|---|---|---|
| **1** | 60 deg | 1490 | 180 deg |
| **2** | 45 deg | 1500 | 120 deg |
| **3** | 30 deg | 1428 | 100 deg |
| **4** | 0 deg | 1200 | 90 deg |
| **5** | 30 deg | 672 | 80 deg |
| **6** | 45 deg | 210 | 60 deg |
| **7** | 60 deg | -300 | 0 deg |

## 3.6 PULSE DOPPLER MODE - RWS

| | |
|---|---|
| • **Range While Search** | **FM Ranging**, used for getting good A/A picture before selecting TWS<br>• **FM Ranging**<br>– Pulse Doppler with ranging<br>– TID shows momentary tracks with ranges<br>– Processing reduces max range<br>• **Advantages**<br>– Long Range<br>– Doppler Filtering<br>– **“Look Down Shoot Down”**<br>– Signal Processing<br>• **Disadvantages**<br>– Can be notched |
| • **DDD** | • **Closure Rate/Azimuth**<br>• Visual representation of radar and erase sweeps |
| • **TID** | • **Momentary Tracks**<br>• Max concurrent tracks: 48<br>• **Cannot lock targets from TID** |
| • **Filtering** | **Same as Pulse Doppler Search** |

## 3.7 PULSE DOPPLER MODE - TWS

| | |
|---|---|
| • **Track While Scan** | **Builds Track Files**, high situational awareness, multi-target AIM-54 launch<br>• **Track Files**<br>– AWG-9 builds Trackfiles for contacts<br>– Can launch multiple AIM-54<br>– Processing reduces max range<br>– Can lock targets from TID<br>• **FM Ranging**<br>– Pulse Doppler with ranging<br>– TID shows momentary tracks with ranges<br>– Processing reduces max range<br>• **Advantages**<br>– Doppler Filtering<br>– **Multi-Target AIM-54**<br>• **Disadvantages**<br>– **Lowest Range**<br>– Can be notched |
| • **DDD** | • **Closure Rate/Azimuth**<br>• Visual representation of radar and erase sweeps |
| • **TID** | • **Tracksfiles**<br>• Max concurrent tracks: 24<br>• Max displayed tracks: 18 |
| • **Filtering** | **Same as Pulse Doppler Search** |
| • **Scan Volume** | Trackfiles require update every 2.5 s –><br>• 20 deg 4 bar (if selected)<br>• 40 deg 2 bar (else) |
| • **TID Mode Selector** | • **GND STAB:** Ground Stabilized, True North is up on TID<br>• **A/C STAB:** Aircraft Stabilized<br>• **ATTAK:** same as A/C STAB with superimposed attack steering symbology<br>• **TV:** Displays TCS on TID, dispays LANTIRN on TID if equipped |

| | |
|---|---|
| • **TID Display Selector Buttons** | • **RID DISABLE:** Not simulated<br>• **ALT NUM:** Enables display of track altitudes on left side of track symbols<br>• **SYM ELEM:** Enables display of all supplementary symbology of tracks and waypoints<br>• **DATA LINK:** Enables display of D/L contacts<br>• **JAM STROBE:** Enables display of jam strobes<br>• **NON-ATTK:** enables/disables display of targets not possible to engage (friendlies)<br>• **LAUNCH ZONE:** Enables display of weapon launch zones<br>• **VEL VECTOR:** Enables display of velocity vectors |
| • **Track Hold & Collision Steering** | • **TRACK HOLD**<br>– Normally: Tracks maintained for 14 s after last observation<br>– Track Hold: maintained for 2 min after last observation<br>• **CLSN Button**<br>– begins collision steering to currently tracked target<br>– enables Steering Centroid if in TWS<br>– LD CLSN presents azimuth steering only<br>– CLSN presents both azimuth and elevation steering |
| • **TWS AUTO / MAN** | • **TWS MAN:** Manual azimuth/elevation control, target designation by RIO<br>• **TWS AUTO:** Automatic prioritization of targets and azimuth elevation control |

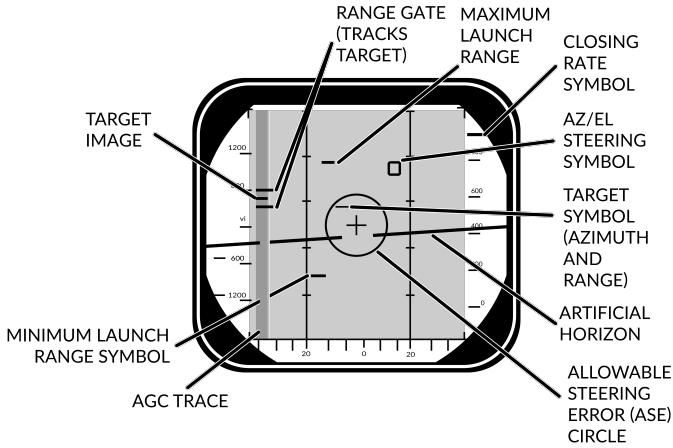
## 3.8 PULSE DOPPLER MODE - TWS MAN

| | |
|---|---|
| • **TWS MAN** | • **Target Selection:** Manual<br>• **Scan Azimuth/Elevation:** Manual |
| • **Target Selection** | • **Conditions**<br>– TWS MAN Radar Mode selected<br>– TID CURSOR TID Mode selected<br>• **Hook Target**<br>(a) Hold HCU Half-Action<br>(b) Slew TID Cursor over desired Tgt<br>(c) HCU Full-Action to select Tgt<br>• **TID Symbology**<br>– Range (**RA**)<br>– Bearing (**BR**)<br>– Altitude (**AL**)<br>– Magnetic course (**MC**)<br>• **Lock Target**<br>(d) Press **PD STT** or **Pulse STT** buttons<br>• **Deselect Target**<br>(e) press HCU Half-Action |
| • **AIM-54 Launch** | • **Automatically selects TWS AUTO**<br>• **Prevents selection of TWS MAN** |

## 3.9 PULSE DOPPLER MODE - TWS AUTO

| | |
|---|---|
| • **TWS AUTO** | • **Target Selection:** prioritizes contacts based off range, aspect, closure<br>• **Scan Azimuth/Elevation:** Geometric center of targets in scan volume |
| • **Centroid / Steering Cues** | • **Steering Centroid**<br>– facilitates steering cues<br>– HUD, VDI, TID, DDD<br>– Appears as **X** on TID<br>– Takes Gimbal limits into account<br>– Weights individual Tracks based on parameters<br>• **Illumination Centroid**<br>– **Not Visible**<br>– Controls azimuth and elevation of scan pattern<br>– Takes scan volume into account |
| • **Pilot Steering Cues** | • **Conditions**<br>– A-A HUD Mode selected<br>– Master Arm ON (UP)<br>– AIM-54 or AIM-7 selected<br>– TWS-AUTO selected |

## 3.10 PULSE DOPPLER MODE - PDSTT



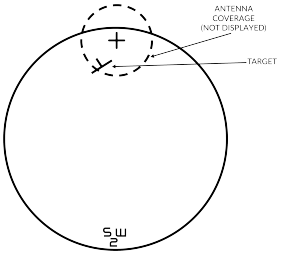

SINGLE TARGET TRACK

| | |
|---|---|
| • **Pulse Doppler STT** | Lock Target with doppler filtering<br>• **Advantages**<br>– Ground Clutter filtering<br>• **Disadvantages**<br>– Susceptible to notching |
| • **Lock Target** | • **Conditions**<br>– Pulse Doppler Mode selected (PD Search, RWS, TWS)<br>– RDR HCU Mode selected<br>• **Lock Target**<br>(a) Hold HCU Half-action<br>(b) Slew to desired Target<br>(c) HCU Full-Action to lock<br>• **Unlock Target**<br>(d) HCU Half-action |
| • **DDD** | • **Track Indications**<br>– ANT TRK light<br>– RDROT light<br>– Tracking gates<br>– Closure rate<br>– Attack Symbology |

## 3.11 ACM MODES - OVERVIEW

| | PLM | VSL | PAL | MRL |
|---|---|---|---|---|
| **Range** | 5 nm | 5 nm | 15 nm | 5 nm |
| **Description** | Boresight | Vertical | Horizontal | RIO |
| **Weapons** | Gun + All Missiles | | | |

- **PLM**
  - **Pilot Lockon Mode**
  - **Highest Priority ACM**
  - **Search Pattern**
    - Small Boresight
    - Range: 5 nm




- **VSL**
  - **Vertical Scan Lockon**
  - **HI Search Pattern**
    - Width: 5 deg
    - Vertical: +15 to +55 deg
    - Range: 5 nm
  - **LO Search Pattern**
    - Width: 5 deg
    - Vertical: -15 to +25 deg
    - Range: 5 nm
  - **RIO/PILOT Controlled**
- **PAL**
  - **Pilot Automatic Lockon**
  - **Search Pattern**
    - Width: +/- 20 deg
    - Vertical: 8-bar
    - Range: 15 nm
- **MRL**
  - **Manual Rapid Lockon**
  - **RIO Controlled**
  - **Search Pattern**
    - HCU Controlled
    - Range: 5 nm

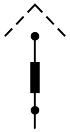
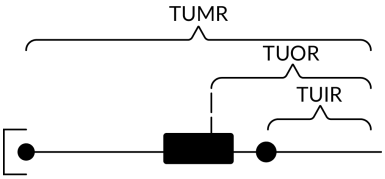
## 3.12 TID SYMBOLOGY

| | | |
|---|---|---|
| **GENERAL** | | |
| **Center Dot** |  | • **Basic Component of Symbols**<br>– Marks coordinates of symbol |
| **Own AC** |  | • **Symbol representing own aircraft**<br>– Ground Stabilized: Moves<br>– Aircraft Stabilized: Stationary<br>– Outside TID: line drawn from TID center towards symbol |
| **TID Cursor** |  | • **Hook Cursor**<br>– Controlled by **HCU** in **TID mode**<br>• **Half-Action**<br>– Enables display of symbol<br>– Enables HCU stick to move cursor<br>• **Full-Action**<br>– Hooks closest symbol<br>– If no symbol near, cursor dropped at location |
| **TWS Steering Centroid** |  | • **Steering centroid of TWS tracks**<br>– Selected by WCS for weapons engagement |
| **ONBOARD SENSORS** | | **Symbol Above Dot** |
| **Unknown** |  | • **Unknown Sensor Track**<br>• **All Returns in RWS** |
| **Hostile** |  | • **Sensor Track designated Hostile by RIO** |
| **Friend** |  | • **Sensor Track designated Friendly by RIO** |
| **Angle-Tracked Radar Target** |  | • **Radar Angle Tracking**<br>– Jamming Target |

| | | |
|---|---|---|
| **Angle-Tracked Radar Target with Altitude Difference Ranging** |  | • **Radar Angle Tracking**<br>– Jamming Target<br>– Alt. diff. ranging |
| **TCS-Angle Tracked Target** |  | • **TCS Angle Tracking** |
| **TCS-Angle Tracked Target with Altitude Difference Ranging** |  | • **TCS Angle Tracking**<br>– Alt. diff. ranging |
| **D/L TARGETS** | | **Symbol Below Dot** |
| **Unknown** |  | • **D/L Track designated Unknown by Source** |
| **Hostile** |  | • **D/L Track designated Hostile by Source** |
| **Friendly** |  | • **D/L Track designated Friendly by Source** |
| **MANUAL REF POINTS** | | |
| **Home base** |  | • **Waypoint Representing**<br>– Home Base<br>– Carrier<br>– Airfield |
| **Waypoint** |  | • **Nav Waypoint**<br>• **Supplanted by Number**<br>– 1, 2, or 3 |
| **Defended Point** |  | • **Waypoint to Defend** |
| **Fixed Point** |  | • **Generic Waypoint** |
| **Hostile Area** |  | • **Waypoint Indicating Hostile Area** |
| **Surface Target** |  | • **Waypoint Indicating Surface Target** |
| **IP** |  | • **Initial Point**<br>– Waypoint for A/G engagement |
| **D/L REF POINTS** | | |
| **Home Base** |  | • **D/L Waypoint Representing Home Base** |

| | | |
|---|---|---|
| **Waypoint** |  | • **D/L Generic Waypoint** |
| **Data Link Fixed Point** |  | • **D/L Waypoint Representing Fixed Point** |
| **Surface Target** |  | • **D/L Waypoint Representing a Surface Target** |
| **POS SYMB MODIFIERS** | | |
| **Mandatory Attack** |  | • **Additional Symbology on TWS Track**<br>– Horizontal bar through center dot<br>• **Selected by RIO**<br>– Only 1 target can be designated<br>– Guaranteed WCS priority number |
| **Data Link Destroy** |  | • **Additional Symbology on D/L Track**<br>– Horizontal bar through center dot<br>• **Selected by Source**<br>– No effect on WCS prioritization |
| **Do Not Attack** |  | • **Additional Symbology on TWS or D/L Track**<br>– Vertical bar through center dot<br>• **If Set by RIO**<br>– Removes WCS prioritization |
| **Multiple Targets** |  | • **Additional Symbology on TWS or D/L Track**<br>– Horizontal bar on left side of symbol<br>• **Indicates Multiple Targets** |

| | | |
|---|---|---|
| **Data Link Challenge** |  | • **Additional Symbology on D/L Track**<br>– Small **V** with center at center dot<br>• **Command to Visually Identify** |
| **Track Extrapolated** |  | • **Additional Symbology on TWS or D/L Track**<br>– Small **X** with center at center dot<br>• **No Update within 8 seconds**<br>– Track deleted after 14 seconds<br>– Or after 2 min if track hold |
| **Altitude Numerics** |  | • **Altitude to Nearest Ten Thousand**<br>– example: 35000-45000 |
| **Firing Order Numerics** |  | • **Indicates AIM-54 Prioritization**<br>– Numbers 1-6<br>– Only in TWS |
| **Time-to-Impact (TTI)** |  | • **After AIM-54 Launch**<br>– Prioritization replaced with estimated TTI<br>• **Flashes after Pitbull** |
| **Velocity Vector** |  | • **Additional Symbology from center Dot**<br>– Direction represents track heading<br>– Length represents speed<br>• **Varies with Mode**<br>– Ground Stabilized: true heading and ground speed<br>– Aircraft Stabilized: relative heading and velocity |

| | | |
|---|---|---|
| **Launch Zone Vectors** |  |  <br>• **Additional Symbology for AIM-54**<br>– Selected manually by RIO<br>– Or 60 seconds from max launch<br>• **TUMR**<br>– Time-Until-Minimum-Range<br>– Max: 180 seconds, 1.5 inches<br>• **TUOR**<br>– Time-Until-Optimal-Range<br>– Start of bar is 8 seconds from optimum<br>• **TUIR**<br>– Time-Until-In-Range |
| **Jamming Strobe** |  | • **Line from own AC towards Jammer** |
| **Radar Antenna Scan Pattern Azimuth Limits** |  | • **Limits of Current Scan Azimuth**<br>• **Single Line in STT** |
| **Data Link Jamming Strobe** |  | • **Line from D/L point towards Jammer** |
| **Data Link Pointer** |  | • **Additional Symbology on D/L Track**<br>– Circle<br>– Indicates operator concern |
| **Data Link Priority Kill** |  | • **Additional Symbology on D/L Track**<br>– Square<br>– Indicates target must be destroyed<br>– No effect on WCS prioritization |

## ATTACK DISPLAY SYMBOLOGY

| | | |
|---|---|---|
| **Artificial Horizon** |  | • **Represents Pitch and Roll** |
| **Steering Guidance Symbol** |  | • **Represents Steering Error**<br>– Should be placed as near as possible to center of ASE circle |
| **Allowable Steering Error Circle** |  | • **Indicates Allowable Steering Error for Missile Launch**<br>• **Size Varies with Geometry, Mode, Missile** |
| **Breakaway Indication** |  | • **Appears when Target Range Less than Minimum for Selected Weapon** |

# 4 TCS/ALQ-100

# 5 LANTIRN

# 6 A/G WEAPONS

## 6.1 M61 GUN

| | | |
|---|---|---|
| 1. | **Pilot Conditions** | (a) **MASTER ARM** ..... **ON**<br>(b) **HUD** ..... **A/G**<br>(c) **WEAPON SELECTOR** ..... **GUNS**<br>(d) **Stations** ..... verify selected<br>(e) **Wing Sweep** ..... **BOMB** |
| 2. | **Employment** | (a) **Dive** ..... 20-30 deg<br>(b) **Pipper** ..... on target<br>(c) **TRIGGER** ..... **FIRE** |
| • | **Note: TCS** | • TCS slaved to radar impact point<br>• Rio can select **NAR** or **WIDE** |

## 6.2 ZUNI ROCKETS

| | | |
|---|---|---|
| 1. | **RIO Conditions** | (a) **WPN TYP** ..... **LAU-10**<br>(b) **Attack Mode** ..... **Pilot Attack**<br>(c) **Deliver Mode** ..... **RPL-SGL**<br>• **STP-SGL** single rocket per press<br>• **STP-PRS** single pair per press<br>• **RPL-SGL** set number of rocket per press<br>• **RPL-PRS** set number of pairs per press<br>(d) **Mechanical Fuze** ..... **NOSE**<br>(e) **Electronic Fuze** ..... **INST**<br>(f) **Delivery Options** ..... set<br>• **INTERVAL** ..... 050 msec<br>• **QTY** ..... 04<br>(g) **Stations** ..... **Armed** |
| 2. | **Pilot Conditions** | (a) **MASTER ARM** ..... **ON**<br>(b) **HUD** ..... **A/G**<br>(c) **WEAPON SELECTOR** ..... **OFF**<br>(d) **Stations** ..... verify selected<br>(e) **Wing Sweep** ..... **BOMB** |
| 3. | **Employment** | (a) **Dive** ..... 20-30 deg<br>(b) **Pipper** ..... on target<br>(c) **TRIGGER** ..... **FIRE** |

## 6.3 UNGUIDED BOMB - CCIP

| | | |
|---|---|---|
| 1. | **RIO Conditions** | (a) **WPN TYP** ..... **MK-82**<br>(b) **Attack Mode** ..... **Pilot Attack**<br>(c) **Deliver Mode** ..... **STP-PRS**<br>• **STP-SGL** single bomb per press<br>• **STP-PRS** single pair per press<br>• **RPL-SGL** set number of bomb per press<br>• **RPL-PRS** set number of pairs per press<br>(d) **Mechanical Fuze** ..... **NOSE**<br>(e) **Electronic Fuze** ..... **INST**<br>(f) **Delivery Options** ..... set<br>• **INTERVAL** ..... 010 msec<br>• **QTY** ..... 01<br>(g) **Stations** ..... **Armed** |
| 2. | **Pilot Conditions** | (a) **MASTER ARM** ..... **ON**<br>(b) **HUD** ..... **A/G**<br>(c) **WEAPON SELECTOR** ..... **OFF**<br>(d) **Stations** ..... verify selected<br>(e) **Wing Sweep** ..... **BOMB** |
| 3. | **Employment** | (a) **Dive** ..... 40 deg<br>(b) **Pipper** ..... on target<br>(c) **STORE RELEASE** ..... **Press and Hold** |

## 6.4 UNGUIDED BOMB - CCRP

| | | |
|---|---|---|
| 1. | **RIO Conditions** | (a) **WPN TYP** ..... **MK-82**<br>(b) **Attack Mode** ..... **Target Attack**<br>(c) **Deliver Mode** ..... **STP-PRS**<br>• **STP-SGL** single bomb per press<br>• **STP-PRS** single pair per press<br>• **RPL-SGL** set number of bomb per press<br>• **RPL-PRS** set number of pairs per press<br>(d) **Mechanical Fuze** ..... **NOSE**<br>(e) **Electronic Fuze** ..... **INST**<br>(f) **Delivery Options** ..... set<br>• **INTERVAL** ..... 010 msec<br>• **QTY** ..... 01<br>(g) **Stations** ..... **Armed** |
| 2. | **Pilot Conditions** | (a) **MASTER ARM** ..... **ON**<br>(b) **HUD** ..... **A/G**<br>(c) **WEAPON SELECTOR** ..... **OFF**<br>(d) **Stations** ..... verify selected<br>(e) **Wing Sweep** ..... **BOMB** |
| 3. | **Designation** | (a) **Slew Diamond** ..... **VSL HI/LO**<br>(b) **Designate** ..... **PAL** |
| 4. | **Employment** | (a) **Flight Path** ..... Straight, Level<br>(b) **Vel Vector** ..... on Bomb Fall Line<br>When Solution Cue meets Velocity Vector<br>(c) **STORE RELEASE** ..... **Press and Hold** |

## 6.5 GBU-10 / 12 / 16 / 24

| | | |
|---|---|---|
| 1. | **LANTIRN PREP** | (a) **Target Pod Power** ..... **POD**<br>• Warm up takes approx. 8 min<br>• Automatically switches to **STANDBY**<br>(b) **Laser Code** ..... as desired<br>• **MUST BE SET ON THE GROUND**<br>• **Default:** 1688<br>(c) **LANTIRN Mode** ..... **OPERATE**<br>• **STANDBY** caution will flash for 30 s<br>• Then switches to **OPER**<br>(d) **VIDEO Switch** ..... **FLIR**<br>(e) **TID Mode** ..... **TV** |
| 2. | **RIO Conditions** | (a) **WPN TYP** ..... **GBU-12**<br>(b) **Attack Mode** ..... **Manual**<br>(c) **Deliver Mode** ..... **STP-SGL**<br>• **STP-SGL** single bomb per press<br>• **STP-PRS** single pair per press<br>• **RPL-SGL** set number of bomb per press<br>• **RPL-PRS** set number of pairs per press<br>(d) **Mechanical Fuze** ..... **NOSE**<br>(e) **Electronic Fuze** ..... **INST**<br>(f) **Delivery Options** ..... set<br>(not necessary for STP-SGL)<br>(g) **Stations** ..... **Armed** |
| 3. | **Pilot Conditions** | (a) **MASTER ARM** ..... **ON**<br>(b) **HUD** ..... **A/G**<br>(c) **WEAPON SELECTOR** ..... **OFF**<br>(d) **VDI Mode** ..... **TV**<br>(e) **Stations** ..... verify selected<br>(f) **Wing Sweep** ..... **BOMB** |
| 4. | **Slew LANTIRN** | • **Slave to WYPT** ..... **Left-4-Way RIGHT**<br>• **QSNO (Snowplow)** ..... **S4 HAT Down**<br>• **Toggle FOV** ..... **LANTIRN Toggle FOV**<br>• **Slew** ..... **LANTIRN Stick**<br>• **Area Track** ..... **Left-4-Way UP**<br>• **Point Track** ..... **Left-4-Way Down**<br>• **Undesignate** ..... **LANTIRN Undesignate** |

| | | |
|---|---|---|
| 4. | **Designate** | (a) **Designate** ..... **Trigger Full-Action**<br>• Time-to-Go calculated<br>• Slant Range calculated<br>**Once Time-to-Realease (TREL) is 0**<br>(b) **Auto-Lase** ... If selected: lases 10s to impact<br>(c) **Manual Lase** ..... **Trigger Full-Action**<br>(d) **While Lasing** ..... **L** blinks |
| 5. | **Employment** | **Once Time-to-Realease (TREL) is 0**<br>(a) **STORE RELEASE** ..... **Press and Hold**<br>(b) **Flight Path** ..... Gentle right-hand turn (to prevent masking) |

## 6.6 TALD DECOYS

| | | |
|---|---|---|
| 1. | **RIO Conditions** | (a) **WPN TYP** ..... **TALD**<br>(b) **Deliver Mode** ..... **STP-SGL**<br>• **STP (Step)** single bomb per press<br>• **RPL (Ripple)** multiple bombs per press<br>• **SGL (Single)** single bomb per press<br>• **PRS (Pairs)** a pair of bombs per press<br>(c) **Delivery Options** ..... set (not necessary for STP-SGL)<br>(d) **Stations** ..... **Armed** |
| 2. | **Pilot Conditions** | (a) **MASTER ARM** ..... **ON**<br>(b) **HUD** ..... **A/G**<br>(c) **WEAPON SELECTOR** ..... **OFF**<br>(d) **HSD Mode** ..... **TID**<br>(e) **Stations** ..... verify selected |
| 3. | **Employment** | (a) **Flight Path** ..... High / Fast<br>(b) **RWR** ..... Monitor to locate emitters<br>(c) **STORE RELEASE** ..... **Press and Hold** |

## 6.7 SELECTIVE ORNANCE JETTISON

# 7 A/A WEAPONS

## 7.1 M61 GUN - OVERVIEW

| | |
|---|---|
| • **GUN RATE Button** | • **Cycles Gun Rate**<br>– **HIGH:** 6000 rpm<br>– **LOW:** 4000 rpm |
| • **A/A Gun Modes** | • **RTGS**<br>– **Real-Time Gunsight Mode**<br>– Selected automatically with guns<br>– **If No WCS Data Available** displays bullet location at 2000 ft with diamond and 1000 ft with pipper<br>– **If WCS Data Available** pipper displays bullet location at targets current range out to 4000 ft<br>• **MANUAL**<br>– Fixed manual pipper<br>– Adjust with **GUN ELEV** knob<br>– Press **CAGE/SEAM** to select |
| • **CAGE/SEAM Button** | • **Cycles RTGS / MANUAL Gun Modes** |
| • **ROUNDS Knob** | • **Allows selection of remaining gun rounds** |

## 7.2 M61 GUN - MANUAL

| | | |
|---|---|---|
| 1. | **Conditions** | • **MASTER ARM** ..... **ON**<br>• **HUD** ..... **A/A**<br>• **Gun Rate** ..... **HIGH**<br>• **Gunsight Lead** ..... as required<br>• **WEAPON SELECTOR** ..... **GUNS** |
| 2. | **Employment** | (a) **Gun Mode** ..... **MANUAL**<br>(b) **Pipper** ..... on target<br>(c) **Trigger** ..... **FIRE** |

## 7.3 M61 GUN - RTGS / NO RADAR

| | | |
|---|---|---|
| 1. | **Conditions** | • **MASTER ARM** ..... **ON**<br>• **HUD** ..... **A/A**<br>• **Gun Rate** ..... **HIGH**<br>• **WEAPON SELECTOR** ..... **GUNS** |
| 2. | **Employment** | (a) **Gun Mode** ..... **RTGS**<br>(b) **Pipper** ..... on target<br>(c) **Trigger** ..... **FIRE** |

## 7.4 M61 GUN - RTGS / RADAR

| | | |
|---|---|---|
| 1. | **Conditions** | • **MASTER ARM** ..... **ON**<br>• **HUD** ..... **A/A**<br>• **Gun Rate** ..... **HIGH**<br>• **WEAPON SELECTOR** ..... **GUNS** |
| 2. | **Employment** | (a) **Gun Mode** ..... **RTGS**<br>(b) **Radar** ..... **STT**<br>(c) **Pipper** ..... on target<br>(d) **Trigger** ..... **FIRE** |

## 7.5 AIM-9 SIDEWINDER - OVERVIEW

| | |
|---|---|
| • **Missile Preparation** | • **MSL PREP**<br>– AIM-9 seeker must be cooled<br>– Either press **SW COOL** button<br>– Or activation of **ACM** |
| • **Seeker Head Modes** | • **SEAM**<br>– **Sidewinder Expanded Acquisition Mode**<br>– **Double-D search pattern** invisible to pilot<br>– 4.5 sec search time<br>– **Allows AIM-9 to be uncaged and track target**<br>– 40 deg track limit<br>– **Allows WCS to slave AIM-9 to radar track**<br>• **Boresight**<br>– AIM-9 locked to ADL<br>– 2.5 deg FOV<br>– Selected if **MODE/STP** set to **BRSIT**<br>– And **ACM** not active |
| • **MODE/STP Switch** | • **NORM**<br>– Allows **SEAM** seeker mode<br>• **BRSIT**<br>– Forces Boresight seeker mode<br>– Overridden if **ACM** active |
| • **CAGE/SEAM Button** | • **Uncages Seeker**<br>– Starts 4.5 second search<br>– If no IR source found cages again<br>• **Slaves Seeker**<br>– If radar STT locked |

## 7.6 AIM-9 SIDEWINDER - SILENT

| | | |
|---|---|---|
| 1. | **Conditions** | • **MASTER ARM** ..... **ON**<br>• **HUD** ..... **A/A**<br>• **SW COOL** ..... **ON**<br>• **MODE/STP** ..... **As Desired**<br>• **WEAPON SELECTOR** ..... **SW** |
| 2. | **Employment** | (a) **CAGE/SEAM** ..... **Uncage Seeker**<br>(b) **IR-Lock** ..... **Good Tone**<br>(c) **Trigger** ..... **FIRE** |

## 7.7 AIM-9 SIDEWINDER - RADAR

| | | |
|---|---|---|
| 1. | **Conditions** | • **MASTER ARM** ..... **ON**<br>• **HUD** ..... **A/A**<br>• **SW COOL** ..... **ON**<br>• **MODE/STP** ..... **NORM**<br>• **WEAPON SELECTOR** ..... **SW** |
| 2. | **Employment** | (a) **Radar** ..... **STT**<br>(b) **CAGE/SEAM** ..... **Slave Seeker**<br>(c) **IR-LOCK** ..... **Good Tone**<br>(d) **Steering** ..... center T-shaped cue with ASE<br>(e) **Trigger** ..... **FIRE** |

## 7.8 AIM-7 SPARROW - OVERVIEW

| | |
|---|---|
| • **Missile Preparation** | • **MSL PREP**<br>– AIM-7 must be tuned to AWG-9<br>– Either press **MSL PREP** button<br>– Or activation of **ACM** |
| • **Launch Modes** | • **Normal**<br>– Standard operation, STT target designated before launch<br>– AIM-7 uses SARH all the way to target<br>– WCS can use CS or PD for guidance set with **MSL OPTIONS** Switch<br>• **Boresight**<br>– Uses CS flood antenna of AWG-9<br>– Missile will **track strongest return** in Flood area<br>– Automatically activated if STT broken<br>– Selected if **MODE/STP** set to **BRSIT**<br>– **Or if no STT available** |
| • **MSL SPD GATE Switch** | • **NOSE QTR**<br>– Standard setting in DCS<br>• **All Others**<br>– Not simulated |
| • **MSL OPTIONS Switch** | • **NORM**<br>– WCS uses dedicated CW antenna for AIM-7 guidance<br>• **SP PD**<br>– WCS uses PD from main flood antenna for AIM-7F/M guidance |
| • **MODE/STP Switch** | • **NORM**<br>– Sets normal launch mode logic<br>• **BRSIT**<br>– Forces Boresight launch mode |

## 7.9 AIM-7 SPARROW - STT

| | | |
|---|---|---|
| 1. | **Conditions** | • **MASTER ARM** ..... **ON**<br>• **HUD** ..... **A/A**<br>• **MSL PREP** ..... **ON**<br>• **MODE/STP** ..... **NORM**<br>• **WEAPON SELECTOR** ..... **SP** |
| 2. | **RIO Conditions** | • **LIQUID COOLING** ..... **ON (FWD)**<br>• **MSL SPD GATE** ..... **NOSE QTR**<br>• **MSL OPTIONS** ..... **As Desired** |
| 3. | **Employment** | (a) **Radar** ..... **STT**<br>(b) **Steering**<br>• **Target** < 20 deg from ADL<br>• **ASE** center T-shaped cue within<br>(c) **Trigger** ..... **Press and Hold** (until weapon release)<br>(d) **Radar** ..... **Maintain Lock** (until impact) |

## 7.10 AIM-54 PHOENIX - OVERVIEW

| | |
|---|---|
| • **Missile Preparation** | • **Weapon Cooling**<br>– AIM-54 requires liquid cooling<br>– RIO enabled **LIQUID COOLING** switch<br>• **MSL PREP**<br>– AIM-54 must be tuned to AWG-9<br>– Either press **MSL PREP** button<br>– Or activation of **ACM** |
| • **Launch Modes** | • **PDSTT SARH**<br>– AIM-54 uses SARH all the way to target<br>– Faster update rate than TWS<br>– **Slightly increased effective range** as compared to a TWS launch<br>• **TWS SARH/ARH**<br>– Allows **6 AIM-54 launches at 6 targets**<br>– Missile is initially SARH guided<br>– When within AIM-54 seeker range AWG-9 sends activation command<br>– **Not Fire and Forget:** Requires automatic activation command<br>• **ACM Active**<br>– Activated when **BRSIT** selected<br>– Or when **ACM** active with no radar track<br>– Missile commanded active **before launch** |
| • **MSL SPD GATE Switch** | • **NOSE QTR**<br>– Standard setting in DCS<br>• **All Others**<br>– Not simulated |
| • **MSL OPTIONS Switch** | • **NORM**<br>– Normal guidance (SARH or SARH/ARH)<br>• **PH ACT**<br>– WCS immediately sends AIM-54 activation command on launch<br>– Reverts to SARH if no target detected<br>– **Must be selected before launch** |

| | |
|---|---|
| • **TGTS Switch** | • **SMALL:** 6nm activation range<br>• **NORM:** 10nm activation range<br>• **LARGE:** 13nm activation range |
| • **MODE/STP Switch** | • **NORM**<br>– Normal operation<br>• **BRSIT**<br>– Commanded active **before launch**<br>– Missile follows ADL and locks strongest return |
| • **TWS Symbology** | **Refer to TID Symbology Section**<br>• **Pre-Launch**<br>– Prioritization numbers assigned to tracks automatically or manually<br>– Blinking indicates optimal launch parameters<br>• **Post-Launch**<br>– Target prioritization number replaced with TTI<br>– Other prioritization numbers collapsed by one<br>– Tracks under missile attack brightened<br>– **TTI blinks when missile active** |
| • **Launch To Eject (LTE) Time** | • **Normal Operation:** 3-4 seconds<br>• **When in ACM:** 1 second |

## 7.11 AIM-54 PHOENIX - PD-STT

| | | |
|---|---|---|
| 1. | **Conditions** | • **MASTER ARM** ..... **ON**<br>• **HUD** ..... **A/A**<br>• **MSL PREP** ..... **ON**<br>• **MODE/STP** ..... **NORM**<br>• **WEAPON SELECTOR** ..... **PH** |
| 2. | **RIO Conditions** | • **LIQUID COOLING** ..... **ON (FWD)**<br>• **MSL SPD GATE** ..... **NOSE QTR**<br>• **MSL OPTIONS** ..... **As Desired**<br>• **TGTS Switch** ..... **As Desired** |
| 3. | **Employment** | (a) **Radar** ..... **STT**<br>(b) **Steering**<br>• **Target** < 20 deg from ADL<br>• **ASE** center T-shaped cue within<br>(c) **Trigger** ..... **Press and Hold** (until weapon release)<br>(d) **Radar** ..... **Maintain Lock** (until impact) |

## 7.12 AIM-54 PHOENIX - TWS / MULTI

| | | |
|---|---|---|
| 1. | **Conditions** | • **MASTER ARM** ..... **ON**<br>• **HUD** ..... **A/A**<br>• **MSL PREP** ..... **ON**<br>• **MODE/STP** ..... **NORM**<br>• **WEAPON SELECTOR** ..... **PH** |
| 2. | **RIO Conditions** | • **LIQUID COOLING** ..... **ON (FWD)**<br>• **MSL SPD GATE** ..... **NOSE QTR**<br>• **MSL OPTIONS** ..... **As Desired**<br>• **TGTS Switch** ..... **As Desired**<br>• **WCS Mode** ..... **TWS MAN/AUTO** |
| 4. | **Employment** | (a) **Radar** ..... **TWS**<br>(b) **Trigger** ..... **Press and Hold** (until weapon release)<br>(c) **Repeat** ..... for remaining targets<br>(d) **Radar** ..... **Maintain Track** (until active) |