

# Pocket Checklist

## F-14A/B AIRCRAFT

**REV: 20220116**



**Procedures**

**Systems**

**AWG-9  
Radar**

**TCS  
LANTIRN**

**A/G  
Weapons**

**A/A  
Weapons**



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## 1 PROCEDURES

## 1.1 PILOT - PRE-START

1.	<b>Parking Break</b>	<b>ENGAGED</b>
2.	<b>Ground Power</b>	connected
3.	<b>Compressed Air</b>	connected
4.	<b>ICS</b>	<b>HOT MIC</b>
5.	<b>TO RIO</b>	<i>"Begin Start-Up"</i>
6.	<b>ICS</b>	<b>Comm Check</b>
7.	<b>MASTER TEST Selector</b>	<p>(a) <b>LTS</b></p> <ul style="list-style-type: none"> <li>· <b>Warning Lights</b> ..... checked</li> <li>· <b>Caution Lights</b> ..... checked</li> <li>· <b>Advisory Lights</b> ..... checked</li> </ul> <p>(b) <b>FIRE DET/EXT</b></p> <ul style="list-style-type: none"> <li>· <b>L FIRE GO</b> ..... illuminated</li> <li>· <b>R FIRE GO</b> ..... illuminated</li> </ul> <p>(c) <b>INST</b></p> <ul style="list-style-type: none"> <li>· <b>RPM</b> ..... 96%</li> <li>· <b>EGT</b> ..... 960 C</li> <li>· <b>FF</b> ..... 10500 pph</li> <li>· <b>AOA</b> ..... <math>18 \pm 5</math></li> <li>· <b>Wing Sweep</b> ..... <math>45 \pm 2.5</math></li> <li>· <b>FUEL QTY</b> ..... <math>2000 \pm 200</math></li> <li>· <b>Oxygen QTY</b> ..... 2 liters</li> <li>· <b>L&amp;R FF lights</b> ..... illuminated</li> </ul> <p>(d) <b>OFF</b></p>
8.	<b>Ejection Seat</b>	Armed
9.	<b>RIO</b>	Canopy Closed
10.	<b>Oxygen</b>	<b>ON (FWD)</b>
11.	<b>Emergency Wing Sweep</b>	<b>OVERSWEEP</b>

## 1.2 PILOT - ENGINE START

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



## 1.3 PILOT - POST-START

1.	<b>TO RIO</b>	<i>"Both Engines Running"</i>
2.	<b>Displays Control Panel</b>	<ul style="list-style-type: none"> <li>• <b>VDI</b> ..... <b>ON</b></li> <li>• <b>HUD</b> ..... <b>ON</b></li> <li>• <b>HSD</b> ..... <b>ON</b></li> <li>• <b>HDS MODE</b> ..... <b>TID</b> (monitor INS)</li> </ul>
3.	<b>RIO</b>	<b>Select Align Quality</b> <ul style="list-style-type: none"> <li>• <b>INS GO NOW:</b> shortest but least precise alignment</li> <li>• <b>INS GO COARSE:</b> does not meet Launch Criteria for AIM-7 / AIM-54</li> <li>• <b>INS GO MIN WPN LAUNCH:</b> allows AIM-7 / AIM-54 launch</li> <li>• <b>INS GO FINE</b> fine align (8 min)</li> </ul>
4.	<b>ACM Panel</b>	<ul style="list-style-type: none"> <li>• <b>GUN RATE</b> ..... as required</li> <li>• <b>SW COOL</b> ..... <b>OFF</b></li> <li>• <b>MSL PREP</b> ..... <b>OFF</b></li> <li>• <b>Missile MODE/STP</b> ..... <b>NORM</b></li> </ul>
5.	<b>Gun Rounds</b>	<b>Set</b>
6.	<b>ANTI-SKID SPOILER BK</b>	<b>OFF</b>
7.	<b>Emergency Wing Sweep</b>	(a) <b>Handle</b> ..... <b>AFT</b> (b) <b>Angle</b> ..... Verify 68 deg
8.	<b>AFCS Panel - SAS STAB AUG</b>	<ul style="list-style-type: none"> <li>• <b>PITCH</b> ..... <b>ON</b></li> <li>• <b>ROLL</b> ..... <b>ON</b></li> <li>• <b>YAW</b> ..... <b>ON</b></li> </ul>
9.	<b>WING/EXT TRANS</b>	<b>AUTO</b>
10.	<b>UHF 1 Function Selector</b>	<b>BOTH</b>
11.	<b>TACAN Function Selector</b>	<b>T/R</b>
12.	<b>ARA-63 ICLS RECEIVER</b>	<b>ON</b>

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

## 1.4 RIO - PRE-START

1. <b>Oxygen</b>	<b>ON (FWD)</b>
2. <b>PILOT</b>	<ul style="list-style-type: none"> <li>· <b>Ground Power</b> ..... connected</li> <li>· <b>Compressed Air</b> ..... connected</li> </ul>
3. <b>ICS</b>	Comm Check
4. <b>Lights</b>	As required
5. <b>LTS Test</b>	Coordinate with Pilot
6. <b>Ejection Seats</b>	<b>ARMED</b>
7. <b>Canopy</b>	<b>CLOSED</b>
8. <b>TO PILOT</b>	<i>"Ready to Start"</i>

## 1.5 RIO - POST-START - SHORE

1. <b>PILOT</b>	<ul style="list-style-type: none"> <li>· <b>Engines</b> ..... started</li> <li>· <b>AIR SOURCE</b> ..... BOTH ENG</li> </ul>
2. <b>INS STARTUP</b>	(a) <b>LIQUID COOLING</b> ..... <b>ON (FWD)</b> (b) <b>WCS Switch</b> ..... <b>STANDBY</b> (c) <b>IR/TV Power</b> ..... <b>STBY/IR/TV</b> (d) <b>TID/DDD</b> ..... illuminated after 40 s
3. <b>Kneeboard</b>	Retrieve Coordinates, Elevation, Magnetic Variation from GROUND SETTINGS Page

**WARNING** Input Coords **BEFORE** selecting **GND ALIGN** if using ASH

4. <b>Start INS Align</b>	(a) <b>Nav Mode</b> ..... <b>GND ALIGN</b> (b) <b>CAP</b> <ul style="list-style-type: none"> <li>· <b>Category</b> ..... <b>NAV</b></li> <li>· <b>MESSAGE</b> ..... <b>OWN AC</b></li> </ul> (c) <b>Keyboard</b> <ul style="list-style-type: none"> <li>· <b>CLEAR, LAT</b>, latitude, <b>ENTER</b></li> <li>· <b>LONG</b>, longitude, <b>ENTER</b></li> <li>· <b>ALT</b>, altitude, <b>ENTER</b></li> </ul> (d) <b>CAP MESSAGE</b> ..... <b>MAG HDG VAR</b> (e) <b>Keyboard</b> ..... <b>HDG</b> , mag var, <b>ENTER</b> (f) <b>Align Progress</b> ..... Monitor
5. <b>U/VHF Mode</b>	<b>T/R G</b>

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

## 1.6 RIO - POST-START - CARRIER

1. <b>PILOT</b>	<ul style="list-style-type: none"> <li>Engines ..... started</li> <li>AIR SOURCE ..... BOTH ENG</li> </ul>
2. <b>INS STARTUP</b>	(a) LIQUID COOLING ..... <b>ON (FWD)</b> (b) WCS Switch ..... <b>STANDBY</b> (c) IR/TV Power ..... <b>STBY/IR/TV</b> (d) TID/DDD ..... illuminated after 40 s
3. <b>Datalink</b>	(a) Kneeboard ..... TACTICAL DL (b) DL Power ..... <b>ON (FWD)</b>
4. <b>Start INS Align</b>	(a) DL FREQ ..... Set (b) DL Mode ..... <b>CAINS/WAYPT</b> (c) Nav Mode ..... <b>CVA</b>
5. <b>U/VHF Mode</b>	<b>T/R G</b>
6. <b>TACAN</b>	<b>T/R</b>
7. <b>RWR Panel</b>	(a) Display Type ..... <b>NORM</b> (b) PWR ..... <b>ON</b> (c) TEST ..... <b>SPL</b> (d) MODE ..... <b>LMT</b>
8. <b>DECM</b>	<b>STBY</b> , then <b>ACT</b>
9. <b>IFF</b>	(a) MASTER ..... <b>STBY</b> (b) CODE ..... as required
10. <b>Altimeter</b>	Reset
11. <b>CAP</b>	Enter Data (WP, FP, etc.)
12. <b>Displays</b>	<ul style="list-style-type: none"> <li>DDD ..... Set</li> <li>TID ..... Set</li> <li>Multiple Display Indicator ..... Set</li> </ul>
13. <b>Hand Control Panel</b>	Set
14. <b>AN/ALE-39</b>	Set (as required) <ul style="list-style-type: none"> <li><b>AUTO (CHAFF)/MAN</b></li> <li><b>MAN</b></li> </ul>
15. <b>Flare Mode</b>	<b>PILOT</b>

16. <b>Complete INS Align</b>	<ul style="list-style-type: none"> <li>· <b>Duration Full Fine</b> ..... 9 min</li> <li>· <b>Duration ASH</b> ..... much faster</li> </ul> <p>(a) <b>Align Complete</b> ..... Caret → Diamond</p> <p>(b) <b>NAV Mode</b> ..... <b>INS NAV</b></p>
17. <b>Datalink</b>	<p>(a) <b>DL Mode</b> ..... <b>TAC (AFT)</b></p> <p>(b) <b>DL Freq.</b> ..... <b>Set</b></p>
18. <b>Standby ADI</b>	Erect at least 2 min before T/O
19. <b>TO PILOT</b>	<i>"Ready to Taxi"</i>
<b>Once Airborne</b>	
20. <b>IR/TV Power</b>	<b>ON</b>
21. <b>WCS Switch</b>	<b>WCS XMT</b>

## 1.7 PRE-TAXI

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

## 1.8 TAKEOFF - SHORE

## After Lining Up On Runway

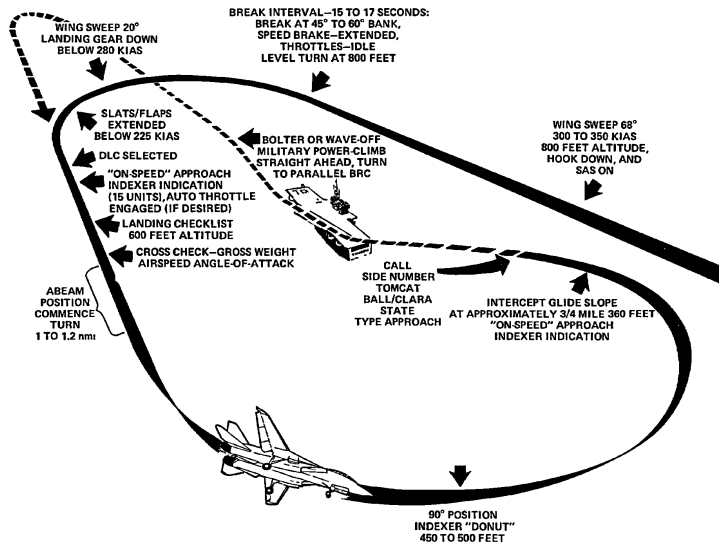
1. <b>Wing Sweep</b>	(a) <b>EM WING SWEEP</b> ..... <b>FWD</b> , then <b>IN</b> (b) <b>MASTER RESET</b> ..... <b>PRESS</b> (c) <b>Wings</b> ..... Verify thumb controller (d) <b>WING SWEEP</b> ..... <b>AUTO</b> (e) <b>Wings</b> ..... Verify at 20 deg
2. <b>ANTI SKID SPOILER BK</b>	<b>BOTH (UP)</b>
3.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

## 1.9 TAKEOFF - CARRIER

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



## 1.10 LANDING - OVERHEAD PATTERN



1. Initial Approach	<ul style="list-style-type: none"> <li>WING SWEEP ..... 68 deg</li> <li>HOOK ..... DOWN</li> <li>SAS ..... ON</li> <li>HUD ..... LDG</li> <li>Airspeed ..... 300-350 KIAS</li> <li>Altitude ..... 800 ft</li> </ul>
2. Initial Break	<ul style="list-style-type: none"> <li>Break Interval ..... 15-17 s</li> <li>BANK ..... 45-60 deg</li> <li>SPEED BRAKE ..... EXTEND</li> <li>Throttle ..... IDLE</li> <li>G ..... 3-4 G</li> <li>Altitude ..... 800 ft</li> </ul>
3. Break Turn	<ul style="list-style-type: none"> <li>Wing Sweep ..... AUTO &lt; 280 KIAS</li> <li>Landing Gear ..... DOWN &lt; 280 KIAS</li> <li>FLAPS ..... DOWN &lt; 225 KIAS</li> </ul>
4. Downwind	<ul style="list-style-type: none"> <li>DLC ..... Selected once flaps out</li> <li>AOA ..... ON-SPEED</li> <li>LANDING CHECKLIST</li> <li>Altitude ..... descend to 600 ft</li> </ul>

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

### 1.11 LANDING - CHECKLIST

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

**1.12 AERIAL REFUELING**

## 1.13 AIRSTART

<ul style="list-style-type: none"> <li>Spooldown</li> </ul>	<p><i>Before significant spooldown</i></p> <p>(a) <b>Non-Running ENG</b> ..... <b>IDLE</b> or above</p> <p><i>If no relight occurs</i></p> <p>(b) <b>Non-Running ENG</b> ..... <b>OFF</b> then <b>IDLE</b></p> <p><i>If still no relight occurs</i></p> <p>(c) <b>ENG MODE</b> ..... <b>SEC</b></p> <p>(d) <b>Non-Running ENG</b> ..... <b>OFF</b> then <b>IDLE</b></p>
<ul style="list-style-type: none"> <li>Cross-Bleed Restart</li> </ul>	<p><i>With one ENG running, if Spooldown fails</i></p> <p>(a) <b>Non-Running ENG</b> ..... <b>OFF</b></p> <p>(b) <b>FUEL SHUT OFF</b> ..... check</p> <p>(c) <b>Running throttle</b> ..... 80%+</p> <p>(d) <b>BACK UP IGNITION</b> ..... <b>ON</b></p> <p>(e) <b>ENG CRANK</b> ..... non-running eng</p> <p>(f) <b>Non-Running ENG</b> ..... <b>IDLE</b></p> <p><i>If no start occurs</i></p> <p>(g) <b>Non-Running ENG</b> ..... <b>OFF</b> then <b>IDLE</b></p> <p><i>If still no start</i></p> <p>(h) <b>ENG MODE</b> ..... <b>SEC</b></p> <p>(i) <b>Non-Running ENG</b> ..... <b>OFF</b> then <b>IDLE</b></p>
<ul style="list-style-type: none"> <li>Windmill Restart</li> </ul>	<p>(a) <b>Airspeed</b> ..... &gt;450 kts</p> <p>(b) <b>Throttle</b> ..... IDLE or above</p> <p>(c) <b>BACK UP IGNITION</b> ..... <b>ON</b></p> <p><i>If no relight occurs</i></p> <p>(d) <b>Throttle</b> ..... <b>OFF</b> then <b>IDLE</b></p> <p><i>If still no relight</i></p> <p>(e) <b>ENG MODE</b> ..... <b>SEC</b></p> <p>(f) <b>Throttle</b> ..... <b>OFF</b> then <b>IDLE</b></p>
<ul style="list-style-type: none"> <li>Post Restart</li> </ul>	<p>(a) <b>BACK UP IGNITION</b> ..... <b>OFF</b></p> <p>(b) <b>ENG MODE</b> ..... <b>PRI</b></p>

## 2 SYSTEMS

### 2.1 AFCS - SAS

· <b>SAS</b>	<ul style="list-style-type: none"> <li>· <b>Stability Augmentation System</b> <ul style="list-style-type: none"> <li>– <b>Not Fly-by-Wire</b></li> <li>– Automatic control surface commands generated by analog computer to improve stability</li> </ul> </li> </ul>
· <b>Controls</b>	<ul style="list-style-type: none"> <li>· <b>Three individual Switches</b> <ul style="list-style-type: none"> <li>– Pitch</li> <li>– Roll</li> <li>– Yaw</li> </ul> </li> </ul>
· <b>Autopilot Emergency Disengage Paddle</b>	<ul style="list-style-type: none"> <li>· <b>Paddle on Stick</b> <ul style="list-style-type: none"> <li>– Disengages Autopilot Modes</li> <li>– Deactivates Pitch, Roll SAS Channels</li> </ul> </li> </ul>

### 2.2 AFCS - AUTOPILOT

· <b>Attitude Hold</b>	<ul style="list-style-type: none"> <li>· <b>Basic Attitude Hold</b> <ul style="list-style-type: none"> <li>– Maintains existing pitch &amp; roll</li> <li>– Attitude can be changed with stick input</li> <li>– If engaged outside limits will automatically move within range</li> </ul> </li> <li>· <b>Limits</b> <ul style="list-style-type: none"> <li>– Pitch: 30 deg</li> <li>– Roll: 60 deg</li> </ul> </li> <li>· <b>Engagement</b> <ul style="list-style-type: none"> <li>(a) <b>SAS Switches</b> ..... <b>ON (FWD)</b></li> <li>(b) <b>Alt. Hold Mode</b> ..... <b>OFF</b></li> <li>(c) <b>VEC/PCD/ACL</b> ..... <b>OFF</b></li> <li>(d) <b>Heading Mode</b> ..... <b>OFF</b></li> <li>(e) <b>Autopilot Switch</b> .... <b>ENGAGE (FWD)</b></li> </ul> </li> </ul>
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<ul style="list-style-type: none"> <li>Altitude Hold</li> </ul>	<ul style="list-style-type: none"> <li>Barometric Altitude Hold           <ul style="list-style-type: none"> <li>Maintains current barometric altitude</li> </ul> </li> <li>Limits           <ul style="list-style-type: none"> <li>Vertical velocity: &lt; 100 ft/s</li> </ul> </li> <li>Engagement           <ul style="list-style-type: none"> <li>(a) SAS Switches ..... ON (FWD)</li> <li>(b) Autopilot Switch .... ENGAGE (FWD)</li> <li>(c) Alt. Hold Mode ..... ALT (FWD)</li> <li>(d) A/P REF Light ..... Wait until appears</li> <li>(e) NWS Button ..... Press</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>Heading Hold</li> </ul>	<ul style="list-style-type: none"> <li>Magnetic Heading Hold           <ul style="list-style-type: none"> <li>Maintains current magnetic heading</li> </ul> </li> <li>Limits           <ul style="list-style-type: none"> <li>Bank angle &lt; 5 deg</li> </ul> </li> <li>Engagement           <ul style="list-style-type: none"> <li>(a) SAS Switches ..... ON (FWD)</li> <li>(b) Autopilot Switch .... ENGAGE (FWD)</li> <li>(c) Heading Mode ..... HDG (FWD)</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>Ground Track</li> </ul>	<ul style="list-style-type: none"> <li>Autopilot follows ground track           <ul style="list-style-type: none"> <li>Similar to heading hold</li> <li>Compensates for wind drift</li> <li>Uses INS data instead of mag. bearing</li> </ul> </li> <li>Limits           <ul style="list-style-type: none"> <li>Bank angle &lt; 5 deg</li> </ul> </li> <li>Engagement           <ul style="list-style-type: none"> <li>(a) SAS Switches ..... ON (FWD)</li> <li>(b) Autopilot Switch .... ENGAGE (FWD)</li> <li>(c) Heading Mode ..... GT (AFT)</li> <li>(d) A/P REF Light ..... Wait until appears</li> <li>(e) NWS Button ..... Press</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>VEC/PCD</li> </ul>	<ul style="list-style-type: none"> <li>Vector / Precision Course Direction           <ul style="list-style-type: none"> <li>Allows Link 4 controller to remotely direct the aircraft</li> <li>Not Modelled in DCS</li> </ul> </li> </ul>

· <b>ACL</b>	· <b>Automatic Carrier Landing</b> – See relevant section
· <b>Autopilot Emergency Disengage Paddle</b>	· <b>Paddle on Stick</b> – <b>Disengages Autopilot Modes</b> – <b>Deactivates Pitch, Roll SAS Channels</b>

## 2.3 APC / AUTOTHROTTLE

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

## 2.4 ACLS

## 2.5 WING-SWEEP

· <b>Overview</b>	<ul style="list-style-type: none"> <li>· <b>In Flight Limited between 20 deg &amp; 68 deg</b></li> <li>· <b>On Ground can Oversweep to 75 deg</b></li> <li>· <b>Hydromechanically Controlled</b> <ul style="list-style-type: none"> <li>– Automatically through CADC</li> <li>– Manually with emergency wing-sweep handle</li> </ul> </li> <li>· <b>15 deg/s at 1g loading</b></li> <li>· <b>Mechanically linked to ensure symmetry</b></li> </ul>
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· <b>CADC Modes</b>	<ul style="list-style-type: none"> <li>· <b>AUTO</b> <ul style="list-style-type: none"> <li>– CADC controls wing position as function of current Mach via wing-sweep program</li> </ul> </li> <li>· <b>MAN</b> <ul style="list-style-type: none"> <li>– Pilot manually chooses desired wing sweep angle with thumb controller</li> </ul> </li> <li>· <b>BOMB</b> <ul style="list-style-type: none"> <li>– Sets wing sweep to <b>55 deg</b> or further aft</li> </ul> </li> </ul>
· <b>Emergency Mode</b>	<ul style="list-style-type: none"> <li>· <b>Emergency Wing-Sweep Handle</b> <ul style="list-style-type: none"> <li>– Moved with wing sweep program by spider detent under normal operation</li> <li>– Can be forced out of spider detent and moved manually</li> </ul> </li> </ul>
· <b>Oversweep</b>	<ul style="list-style-type: none"> <li>· <b>Selected via Emergency Wing-Sweep Handle</b> <ul style="list-style-type: none"> <li>(a) <b>Em. Wing-Sweep</b> ..... <b>68 deg</b> Wait for wing-seal airbags to deflate</li> <li>(b) <b>HZ TAIL AUTH</b> ..... <b>Illuminated</b></li> <li>(c) <b>Em. Wing-Sweep</b> ..... <b>75 deg</b></li> </ul> </li> </ul>
· <b>Return to CADC Control</b>	<ul style="list-style-type: none"> <li>· <b>After Emergency Mode / Oversweep</b> <ul style="list-style-type: none"> <li>(a) <b>Em. Wing-Sweep</b> ..... <b>Spider Detent</b> (Fwd on startup)</li> <li>(b) <b>MASTER RESET</b> ..... <b>Press</b></li> </ul> </li> </ul>

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 - OVERVIEW

Pilot Cockpit Interface	
· <b>HUD</b>	<b>Heads Up Display</b> <ul style="list-style-type: none"> <li>· Displays WRITE ME information</li> </ul>
· <b>VDI</b>	<b>Vertical Display Indicator</b> <ul style="list-style-type: none"> <li>· placeholder</li> </ul>
· <b>HSD</b>	<b>Horizontal Situation Display</b> <ul style="list-style-type: none"> <li>· <b>NAV Mode</b> Information <ul style="list-style-type: none"> <li>– <b>Diamond</b> – Current heading</li> <li>– <b>Chevron</b> – <b>TACAN TO</b> bearing</li> <li>– <b>+</b> – <b>TACAN FROM</b> bearing</li> <li>– <b>House</b> – <b>ADF</b> bearing</li> <li>– <b>RNG</b> – Range to Waypoint (nm)</li> <li>– <b>MODE</b> – <b>NAV STEER</b> mode</li> <li>– <b>W</b> – Wind heading / speed (kts)</li> <li>– <b>TAS</b> – <b>True AirSpeed</b> (kts)</li> <li>– <b>GS</b> – <b>GroundSpeed</b> (kts)</li> </ul> </li> <li>· <b>TID Mode</b> Information <ul style="list-style-type: none"> <li>– Overhead View</li> <li>– Waypoint Coordinates</li> </ul> </li> </ul>
· <b>BDHI</b>	· placeholder
· <b>Standby Magnetic Compass</b>	· placeholder
· <b>Tacan Control Panel</b>	· placeholder
· <b>STEER CMD Selectors</b>	· placeholder

## 2.7 NAVIGATION - INS

<ul style="list-style-type: none"> <li>Contributing Sub-systems</li> </ul>	<ul style="list-style-type: none"> <li><b>IMU</b> – Inertial Measurement Unit               <ul style="list-style-type: none"> <li><b>4 Gimbals</b> – No gimbal-lock, corrects platform attitude errors</li> <li><b>2 Gyros</b> – Source for aircraft attitude data</li> <li><b>3 Accelerometers</b> – Source for aircraft acceleration data</li> </ul> </li> <li><b>CSDC</b> – Computer Signal Data Converter               <ul style="list-style-type: none"> <li>Processes sensor signals including IMU data</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li><b>CSDC Data Modes</b></li> </ul>	<ul style="list-style-type: none"> <li>(a) <b>INS</b> – Primary nav mode               <ul style="list-style-type: none"> <li><b>Velocity Data</b> – IMU</li> <li><b>Pitch/Roll Data</b> – IMU</li> </ul> </li> <li>(b) <b>IMU/AM</b> – Backup mode selected by RIO or automatically when CSDC determines IMU velocity data unreliable.               <ul style="list-style-type: none"> <li><b>Velocity Data</b> – Calculated from true airspeed &amp; stored wind</li> <li><b>Pitch/Roll Data</b> – IMU</li> </ul> </li> <li>(c) <b>AHRS/AM</b> – Further degraded mode selected by RIO or automatically when CSDC detects total INS failure               <ul style="list-style-type: none"> <li><b>Heading</b> – Mag heading &amp; MAG VAR</li> <li><b>Velocity Data</b> – Calculated from true airspeed &amp; stored wind</li> <li><b>Pitch/Roll Data</b> – AHRS</li> </ul> </li> </ul>

## 2.8 NAVIGATION - ALIGNMENT

<ul style="list-style-type: none"> <li>Ground Align</li> </ul>	(a)
<ul style="list-style-type: none"> <li>Carrier Align D/L</li> </ul>	
<ul style="list-style-type: none"> <li>Carrier Align Handset</li> </ul>	
<ul style="list-style-type: none"> <li>Reinitialization</li> </ul>	
<ul style="list-style-type: none"> <li>Automatic Stored Heading</li> </ul>	
<ul style="list-style-type: none"> <li>Catapult Align</li> </ul>	

**2.9 NAVIGATION - WAYPOINT****Reference Point  
Types**

- **Navigation Waypoint** – Used for navigation. Maximum of 3 stored simultaneously
- **Fixed Point (FP)** – Arbitrary point to establish current position relative to external references
- **Initial Point (IP)** – Starting point for A/G attack run
- **Surface Target (ST)** – Enemy surface target
- **Defended Point (DP)** – Area to protect (i.e friendly forces)
- **Hostile Area (HA)** – Area with known ground or air hostiles
- **Home Base (HB)** – Airfield / CV

**2.10 NAVIGATION - TACAN****2.11 NAVIGATION - VOR/ADF**



## 2.12 COMMS - OVERVIEW

· <b>ARC-159 UHF 1</b>	<ul style="list-style-type: none"> <li>· <b>Air-to-Air &amp; Air-to-Surface Communication</b></li> <li>· <b>Pilot Controlled</b></li> <li>· <b>Frequency</b> <ul style="list-style-type: none"> <li>– <b>Range</b> – 225.000 - 399.975 MHz</li> <li>– <b>Steps</b> – 25 kHz</li> <li>– <b>Channels</b> – 20</li> </ul> </li> </ul>
· <b>ARC-182 V/UHF 2</b>	<ul style="list-style-type: none"> <li>· <b>Air-to-Air &amp; Air-to-Surface Communication</b></li> <li>· <b>RIO Controlled</b></li> <li>· <b>Frequency</b> <ul style="list-style-type: none"> <li>– <b>Band 1</b> – 30 - 88 MHz</li> <li>– <b>Band 2</b> – 108 - 156 MHz</li> <li>– <b>Band 3</b> – 156 - 174 MHz</li> <li>– <b>Band 4</b> – 225 - 399.975 MHz</li> <li>– <b>Steps</b> – 25 kHz</li> <li>– <b>Channels</b> – 20</li> </ul> </li> </ul>
· <b>ARA-50 UHF ADF</b>	<ul style="list-style-type: none"> <li>· <b>UHF Automatic Direction Finder</b></li> <li>· <b>LoS bearing to UHF Transmitter</b></li> <li>· <b>Bearing displayed on BDHI, Pilot HSD</b></li> <li>· <b>5 min Warmup</b></li> </ul>
· <b>KY-28 Voice Security Equipment</b>	<ul style="list-style-type: none"> <li>· <b>Voice Ciphering</b></li> <li>· <b>Integrated with UHF 1 and V/UHF 2</b></li> <li>· <b>2 min Warmup</b></li> </ul>

## 2.13 COMMS - ARC-159 UHF 1

· <b>ARC-159 UHF 1</b>	<ul style="list-style-type: none"> <li>· <b>Air-to-Air &amp; Air-to-Surface Communication</b></li> <li>· <b>Pilot Controlled</b></li> <li>· <b>Frequency</b> <ul style="list-style-type: none"> <li>– <b>Range</b> – 225.000 - 399.975 MHz</li> <li>– <b>Steps</b> – 25 kHz</li> <li>– <b>Channels</b> – 20</li> </ul> </li> </ul>
· <b>VOL Knob</b>	<ul style="list-style-type: none"> <li>· <b>Controls Pilot UHF 1 Audio Level</b></li> </ul>
· <b>BRT/TEST Knob</b>	<ul style="list-style-type: none"> <li>· <b>Controls Radio FREQ Display</b></li> <li>· Turn past max to display <b>888.888</b></li> </ul>
· <b>SQL Switch</b>	<ul style="list-style-type: none"> <li>· <b>Toggles radio squelch (noise attenuation)</b></li> </ul>

· <b>READ Switch</b>	· <b>Displays Frequency of Selected Preset Channel</b>
· <b>LOAD Button</b>	· <b>Saves Displayed Frequency to Selected Preset Channel</b>
· <b>TONE Button</b>	· <b>Steady 1.020 kHz Test Tone</b>
· <b>Mode Selector</b>	· <b>Frequency Selection Method</b> <ul style="list-style-type: none"> <li>– <b>GUARD</b> – 243.000 MHz</li> <li>– <b>MANUAL</b> – Manual tuning</li> <li>– <b>PRESET</b> – Preset channels</li> </ul>
· <b>Function Selector</b>	· <b>Selects Transceivers to Energize</b> <ul style="list-style-type: none"> <li>– <b>ADF</b> – Not simulated</li> <li>– <b>BOTH</b> – Main &amp; Guard</li> <li>– <b>MAIN</b> – Main</li> <li>– <b>OFF</b> – Secures UHF 1 radio</li> </ul>
· <b>CHAN SEL</b>	· <b>Selects from 20 preset Channels</b>

## 2.14 COMMS - ARC-182 V/UHF 2

· <b>ARC-182 V/UHF 2</b>	· <b>Air-to-Air &amp; Air-to-Surface Communication</b> · <b>RIO Controlled</b> · <b>Frequency</b> <ul style="list-style-type: none"> <li>– <b>Band 1</b> – 30 - 88 MHz</li> <li>– <b>Band 2</b> – 108 - 156 MHz</li> <li>– <b>Band 3</b> – 156 - 174 MHz</li> <li>– <b>Band 4</b> – 225 - 399.975 MHz</li> <li>– <b>Steps</b> – 25 kHz</li> <li>– <b>Channels</b> – 20</li> </ul>
· <b>VOL Knob</b>	· <b>Controls RIO UHF 2 Audio Level</b>
· <b>BRT/TEST Knob</b>	· <b>Controls Radio FREQ Display</b>
· <b>SQL Switch</b>	· <b>Toggles radio squelch (noise attenuation)</b>

<ul style="list-style-type: none"> <li>Mode Selector</li> </ul>	<ul style="list-style-type: none"> <li>Transceiver Settings           <ul style="list-style-type: none"> <li>– <b>OFF</b> – Secures V/UHF radio unless frequency mode set to <b>243</b></li> <li>– <b>T/R</b> – Energizes transmitter and main receiver</li> <li>– <b>T/R &amp; G</b> – Energizes transmitter, main, and guard receiver</li> <li>– <b>DF</b> – Automatic direction finding from 108 - 399.975 MHz</li> <li>– <b>TEST</b> – BIT</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>CHAN SEL Outer Dial</li> </ul>	<ul style="list-style-type: none"> <li>Selects Frequency Tuning Mode           <ul style="list-style-type: none"> <li>– <b>243</b> – Selects UHF Guard</li> <li>– <b>MAN</b> – Manual Select frequency</li> <li>– <b>G</b> – Tunes Tranceiver to guard frequency in last selected band</li> <li>– <b>PRESET</b> – Allows selection between 40 preset channels (31-40 are Have Quick and not simulated)</li> <li>– <b>READ</b> – Displays frequency of selected preset channel</li> <li>– <b>LOAD</b> – Saves displayed frequency to selected preset channel</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>CHAN SEL Inner Dial</li> </ul>	<ul style="list-style-type: none"> <li>Selects one of 40 Preset Channels</li> </ul>

## 2.15 COMMS - KY-28 VOICE SECURITY EQUIPMENT

<ul style="list-style-type: none"> <li>KY-28 Voice Security Equipment</li> </ul>	<ul style="list-style-type: none"> <li>Voice Ciphering</li> <li>Integrated with UHF 1 and V/UHF 2</li> <li>2 min Warmup</li> </ul>
<ul style="list-style-type: none"> <li>ZEROIZE Switch</li> </ul>	<ul style="list-style-type: none"> <li>Lift Guard to Erase Preloaded Codes</li> <li>Codes loaded via ground crew</li> </ul>
<ul style="list-style-type: none"> <li>Power-Mode Switch</li> </ul>	<ul style="list-style-type: none"> <li>Selects Mode           <ul style="list-style-type: none"> <li>– <b>P/OFF</b> – Removes power from system</li> <li>– <b>C</b> – Transmit / Receive in secure mode</li> <li>– <b>DELAY</b> – Between PTT and trans.</li> </ul> </li> </ul>

· **Radio-Select  
Switch**

· **Selects Radio Mode**

- **RELAY** – Acts as relay for other stations (not simulated)
  - **RAD-2** – Secure voice for V/UHF 2
  - **RAD-1** – Secure voice for UHF 1
-



## 2.16 LINK 4 DATALINK - OVERVIEW

· <b>Link 4</b>	<ul style="list-style-type: none"> <li>· <b>Modes</b> – Mutually exclusive <ul style="list-style-type: none"> <li>– <b>Link 4A</b> – AWACS / Surface Ship</li> <li>– <b>Link 4C</b> – Fighter to Fighter</li> </ul> </li> <li>· <b>Data Speed</b> – up to 5000 bit/s!</li> </ul>
· <b>Link 4A</b>	<ul style="list-style-type: none"> <li>· <b>Network</b> – AWACS / Surface Ship</li> <li>· Additionally used for ACLS</li> </ul>
· <b>Link 4C</b>	<ul style="list-style-type: none"> <li>· <b>Network</b> – Fighter to Fighter <ul style="list-style-type: none"> <li>– Up to four F-14s</li> <li>– Unique to F-14</li> </ul> </li> </ul>
· <b>Basic Operation</b>	<p>(a) <b>Power Switch</b> ..... As Desired</p> <ul style="list-style-type: none"> <li>· <b>Link 4A</b> ..... <b>ON</b></li> <li>· <b>Link 4C</b> ..... <b>AUX</b></li> </ul> <p>(b) <b>Mode Switch</b> ..... <b>TAC</b></p> <p>(c) <b>Frequency</b> ..... <b>Set</b></p>

## 2.17 LINK 4 DATALINK - CONTROL PANEL

· <b>Test Switch</b>	<ul style="list-style-type: none"> <li>· <b>Controls Test / Anti-Jam Modes</b> <ul style="list-style-type: none"> <li>– <b>TEST</b> – Initiates BIT</li> <li>– <b>NORM</b> – Normal Operation</li> <li>– <b>A-J</b> – Anti-Jam (not simulated)</li> </ul> </li> </ul>
· <b>Frequency Thumbwheels</b>	<ul style="list-style-type: none"> <li>· <b>Selects Datalink Frequency</b> <ul style="list-style-type: none"> <li>– <b>First Digit – Fixed as 3</b></li> <li>– <b>Allowable Range</b> – 300.0 - 324.9 MHz</li> </ul> </li> </ul>
· <b>Power Switch</b>	<ul style="list-style-type: none"> <li>· <b>Controls System Power</b> <ul style="list-style-type: none"> <li>– <b>ON</b> – Enables Link 4A</li> <li>– <b>OFF</b> – Disables system</li> <li>– <b>AUX</b> – Enables Link 4C</li> </ul> </li> </ul>

## 2.18 LINK 4 DATALINK - REPLY/ANTENNA PANEL

· <b>ANTENNA Switch</b>	· <b>Selects Antenna</b> <ul style="list-style-type: none"><li>– Shared with UHF 1 – Mutually exclusive</li><li>– UHF 1 LWR / DL UPR</li><li>– UHF 1 UPR / DL LWR</li></ul>
· <b>REPLY Switch</b>	· <b>Sets Reply Mode</b> <ul style="list-style-type: none"><li>– <b>NORM</b> – Own Aircraft replies to datalink messages</li><li>– <b>CANC</b> – Receive only</li></ul>
· <b>MODE Switch</b>	· <b>Controls Overall Mode</b> <ul style="list-style-type: none"><li>– <b>TAC</b> – Normal airborne mode</li><li>– <b>CAINS/WAYPT</b> – Enables CV align</li></ul>
· <b>Address Thumbwheels</b>	· <b>Sets Two Least Significant Bits of Aircraft D/L Address</b>

## 2.19 ALR-67 RWR - CONTROLS / OVERVIEW

· <b>PWR Switch</b>	· <b>Set to ON to Operate</b>
· <b>VOL Knob</b>	· <b>Sets RIO Audio Level</b>
· <b>TEST Switch</b>	<ul style="list-style-type: none"> <li>· <b>Springloaded to Center</b></li> <li>· <b>BIT</b> – Initiates Build In Test</li> <li>· <b>SPL</b> – Holds BIT status page while held</li> </ul>
· <b>MODE Switch</b>	<ul style="list-style-type: none"> <li>· <b>Springloaded to Center</b></li> <li>· <b>OFST</b> – Separates overlapping symbols</li> <li>· <b>LMT</b> – Displays 6 highest threats</li> </ul>
· <b>DISPLAY TYPE Selector</b>	<ul style="list-style-type: none"> <li>· <b>Changes Priority of Display</b> <ul style="list-style-type: none"> <li>– <b>NORM</b> – Normal threat symbology</li> <li>– <b>AI</b> – Airborne Interceptor prioritized</li> <li>– <b>AAA</b> – Anti-aircraft artillery prioritized</li> <li>– <b>UNK</b> – Unknown prioritized</li> <li>– <b>FRIEND</b> – Friendly threats prioritized</li> </ul> </li> <li>· <b>Indicated by Letter in Display Center</b></li> </ul>
· <b>Display</b>	<ul style="list-style-type: none"> <li>· <b>Outer Band</b> <ul style="list-style-type: none"> <li>– <b>Critical Band</b></li> <li>– Imminent threat to own aircraft</li> <li>– Blinking indicates engaging own aircraft</li> </ul> </li> <li>· <b>Middle Band</b> <ul style="list-style-type: none"> <li>– <b>Lethal Band</b></li> <li>– Potentially threatening emitters</li> <li>– Not actively engaging own aircraft</li> </ul> </li> <li>· <b>Inner Band</b> <ul style="list-style-type: none"> <li>– <b>Non-Lethal Band</b></li> <li>– Not currently within capability of emitter</li> </ul> </li> <li>· <b>Inner Circle</b> <ul style="list-style-type: none"> <li>– <b>N, I, A, U, F</b> – Prioritization type</li> <li>– <b>O</b> – Offset</li> <li>– <b>L</b> – Limit</li> <li>– <b>B</b> – BIT Failure</li> <li>– <b>T</b> – Thermal overload</li> </ul> </li> </ul>

- **Alert Tones**

- **Short Tone** – New emitter / emitter moved
  - **Slow Warbling** – Threat in critical band
  - **Fast Warbling** – Threat actively engaging own aircraft
  - **4-Tone Sequence** – New threat capable of silently engaging own aircraft
-

## 2.20 ALR-67 RWR - THREAT SYMBOLOGY

## SHIPS

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

## AIRCRAFT

<b>14</b>	F-14A/B
<b>15</b>	F-15C/E
<b>16</b>	F-16C
<b>17</b>	JF-17
<b>18</b>	F/A-18C
<b>19</b>	MiG-19

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

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

**AIR DEFENSE**

<b>2</b>	S-75 TR SNR (SA-2) "Fan Song"
<b>3</b>	S-125 TR SNR-125 (SA-3) "Low Blow"
<b>6</b>	Kub SA-6
<b>7</b>	HQ-7 TR
<b>8</b>	OSA (SA-8)
<b>10</b>	S-300PS 30N6 TR (SA-10)
<b>11</b>	Buk (SA-11)
<b>12</b>	S-300V
<b>15</b>	Tor 9A331 (SA-15)
<b>19</b>	Tunguska 2C6M (SA-19)
<b>A</b>	Gepard M-163 Vulcan ZSU-23-4 Shilka
<b>BB</b>	S-300PS 64H6E SR (SA-10/Big Bird)
<b>BF</b>	Rapier Blindfire TR
<b>CS</b>	S-300PS 5N66M SR (SA-10/Clam Shell)
<b>DE</b>	Sborka (Dog Ear)
<b>FF</b>	S-125 P-19 SR (SA-3/Flat Face)
<b>GR</b>	Roland SR

<b>HA</b>	Hawk SR
<b>HK</b>	Hawk TR
<b>HQ</b>	HQ-7 SR
<b>PT</b>	Patriot
<b>RO</b>	Roland
<b>RP</b>	Rapier SR
<b>S</b>	1L13 55G6 EWR
<b>SD</b>	Buk TR (SA-11/Snow Drift)
<b>SN</b>	PRW-11 (Side Net)

**MISSILES**

<b>M</b>	AIM-54 AIM-120 MICA-EM R-37 R-77 SD-10
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**ATC**

<b>T</b>	Airport ATC Radar
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## 2.21 ALE-39 CMS DISPENSER

Programmer	
· <b>CHAFF Section</b>	<ul style="list-style-type: none"> <li>· <b>B QTY</b> – Number of cartridges to eject in burst               <ul style="list-style-type: none"> <li>– <b>Options</b> – <b>1-4</b> cartridges, <b>C</b> continuous, <b>R</b> random (4-6 cartridges)</li> </ul> </li> <li>· <b>B INTV</b> – Time in seconds between each cartridge ejection               <ul style="list-style-type: none"> <li>– <b>Options</b> – <b>.1, .2, .5, .7, 1</b> seconds, <b>R</b> random</li> </ul> </li> <li>· <b>S QTY</b> – How many salvos of bursts               <ul style="list-style-type: none"> <li>– <b>Options</b> – <b>1, 2, 4, 6, 8, 10, 15</b> salvos</li> </ul> </li> <li>· <b>S INT</b> – Time in seconds between salvos               <ul style="list-style-type: none"> <li>– <b>Options</b> – <b>2, 4, 6, 8, 10</b> seconds</li> </ul> </li> </ul>
<b>WARNING</b> <b>R</b> & <b>C</b> burst settings have special <b>INTV</b> behavior	
· <b>JAMMER Section</b>	Jammer cartridges not implemented in DCS
· <b>FLARE Section</b>	<ul style="list-style-type: none"> <li>· <b>QTY</b> – Number of cartridges to eject in burst               <ul style="list-style-type: none"> <li>– <b>Options</b> – <b>2, 3, 4, 6, 8, 10</b> cartridges</li> </ul> </li> <li>· <b>INTV</b> – Time in seconds between each cartridge ejection               <ul style="list-style-type: none"> <li>– <b>Options</b> – <b>2, 4, 6, 8, 10</b> seconds</li> </ul> </li> </ul>
Control Panel	
· <b>PWR/MODE Switch</b>	<ul style="list-style-type: none"> <li>· <b>AUTO (CHAFF) / MAN</b> – Enables power to system and allows automatic chaff ejection program initiation</li> <li>· <b>MAN</b> – Enables power to system</li> <li>· <b>OFF</b> – Disables system</li> </ul>

## 2.22 ALQ-100 / ALQ-126 DECM





### 3 AWG-9 RADAR

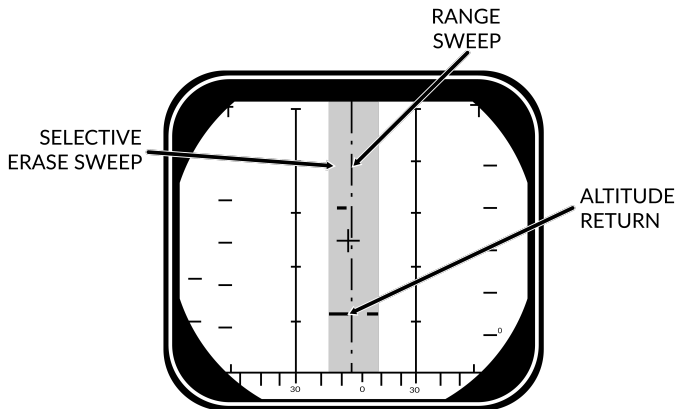
#### 3.1 MAIN MODES - OVERVIEW

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

#### 3.2 MAIN MODES

<ul style="list-style-type: none"> <li><b>Pulse</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Basic Pulse w/o doppler filtering</b> <ul style="list-style-type: none"> <li>– Cannot be notched</li> <li>– Ground Clutter</li> <li>– Rudimentary Ground mapping</li> </ul> </li> <li><b>Pulse Sub-Modes</b> <ul style="list-style-type: none"> <li>– <b>Pulse Search</b></li> <li>– <b>Pulse-STT</b></li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li><b>Pulse Doppler</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Doppler filter -&gt; no ground returns</b> <ul style="list-style-type: none"> <li>– Susceptible to notching</li> <li>– No ground clutter</li> <li>– Greater range</li> <li>– Advanced sub modes</li> <li>– AIM-54 Guidance</li> </ul> </li> <li><b>Pulse Doppler Sub-Modes</b> <ul style="list-style-type: none"> <li>– <b>PD Search</b></li> <li>– <b>RWS</b></li> <li>– <b>TWS</b></li> <li>– <b>PD-STT</b></li> </ul> </li> </ul>

### 3.3 PULSE MODE - PULSE SEARCH



SEARCH ( $\pm 10^\circ$  SCAN)

#### Pulse Search

**Basic Mode** - AWG-9 does not use pulse doppler filtering

##### Advantages

- All aspect target detection
- Cannot be notched
- Rudimentary ground mapping

##### Disadvantages

- Cannot discern ground returns and targets
- Lower range

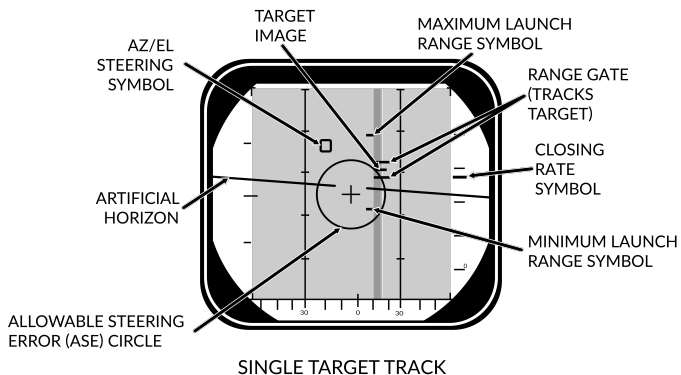
#### DDD

##### Range/Azimuth

- Visual representation of radar and erase sweeps

#### TID

- **No Information from Pulse**
- **Cannot guide AIM-54**

**3.4 PULSE MODE - PSTT**

**Pulse STT**

Lock Target w/o doppler filtering

**Advantages**

- Cannot be notched

**Disadvantages**

- Susceptible to ground clutter

**Lock Target**
**Conditions**

- Pulse Search Mode selected
- RDR HCU Mode selected

**Lock Target**

- (a) Hold HCU Half-action
- (b) Slew to desired Target
- (c) HCU Full-Action to lock

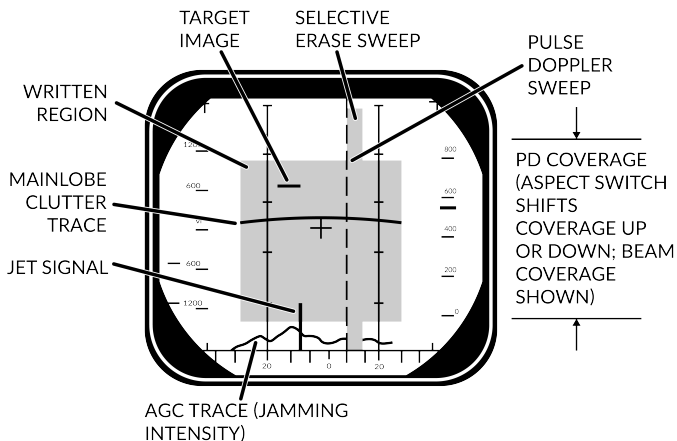
**Unlock Target**

- (d) HCU Half-action

**DDD**
**Track Indications**

- ANT TRK light
- RDROT light
- Tracking gates
- Closure rate
- Attack Symbology

### 3.5 PULSE DOPPLER MODE - PULSE DOPPLER SEARCH



SEARCH (±40° SCAN)

<ul style="list-style-type: none"> <li>• <b>Pulse Doppler Search</b></li> </ul>	<p><b>“Early Warning” Mode</b> - Longest Range, cannot display range</p> <ul style="list-style-type: none"> <li>• <b>Advantages</b> <ul style="list-style-type: none"> <li>– Longest Range</li> <li>– Doppler Filtering</li> <li>– <b>“Look Down Shoot Down”</b></li> </ul> </li> <li>• <b>Disadvantages</b> <ul style="list-style-type: none"> <li>– Can be notched</li> <li>– No range information</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>DDD</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Closure Rate/Azimuth</b></li> <li>• Visual representation of radar and erase sweeps</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Doppler Filters</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Main Lobe Clutter (MLC) Filter</b> <ul style="list-style-type: none"> <li>– <b>Own GS +/- 133 knots</b></li> <li>– Removes main ground return</li> <li>– Source of notching</li> </ul> </li> <li>• <b>Zero Doppler Filter</b> <ul style="list-style-type: none"> <li>– <b>Negative own GS +/- 100 knots</b></li> <li>– Removes Radar reflection from ground directly beneath own AC</li> </ul> </li> </ul>

**MLC Switch**

- **IN:** Enables MLC filter
- **AUTO:** Enables MLC filter if look-up angle less than 3 deg
- **OUT:** Disables MLC filter

**Vc Switch**

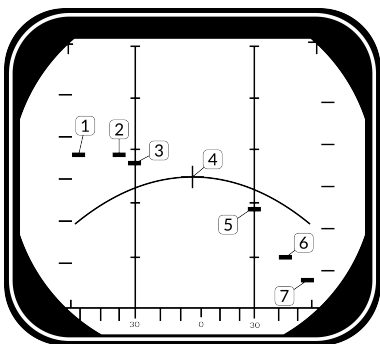
Changes closure rate DDD scale

- **X-4:** -800 to 4000 knots
- **NORM:** -200 to 1000 knots
- **VID:** -50 to 250 knots

**ASPECT Switch**

Changes closure rate processing scale

- **NOSE:** -600 to 1800 knots
- **BEAM:** -1200 to 1200 knots
- **TAIL:** -1800 to 600 knots



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

## 3.6 PULSE DOPPLER MODE - RWS

<ul style="list-style-type: none"> <li>Range While Search</li> </ul>	<p><b>FM Ranging</b>, used for getting good A/A picture before selecting TWS</p> <ul style="list-style-type: none"> <li><b>FM Ranging</b> <ul style="list-style-type: none"> <li>Pulse Doppler with ranging</li> <li>TID shows momentary tracks with ranges</li> <li>Processing reduces max range</li> </ul> </li> <li><b>Advantages</b> <ul style="list-style-type: none"> <li>Long Range</li> <li>Doppler Filtering</li> <li>“Look Down Shoot Down”</li> <li>Signal Processing</li> </ul> </li> <li><b>Disadvantages</b> <ul style="list-style-type: none"> <li>Can be notched</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>DDD</li> </ul>	<ul style="list-style-type: none"> <li><b>Closure Rate/Azimuth</b></li> <li>Visual representation of radar and erase sweeps</li> </ul>
<ul style="list-style-type: none"> <li>TID</li> </ul>	<ul style="list-style-type: none"> <li><b>Momentary Tracks</b></li> <li>Max concurrent tracks: 48</li> <li><b>Cannot lock targets from TID</b></li> </ul>
<ul style="list-style-type: none"> <li>Filtering</li> </ul>	<p><b>Same as Pulse Doppler Search</b></p>

## 3.7 PULSE DOPPLER MODE - TWS

<ul style="list-style-type: none"> <li>Track While Scan</li> </ul>	<p><b>Builds Track Files</b>, high situational awareness, multi-target AIM-54 launch</p> <ul style="list-style-type: none"> <li><b>Track Files</b> <ul style="list-style-type: none"> <li>AWG-9 builds Trackfiles for contacts</li> <li>Can launch multiple AIM-54</li> <li>Processing reduces max range</li> <li>Can lock targets from TID</li> </ul> </li> <li><b>FM Ranging</b> <ul style="list-style-type: none"> <li>Pulse Doppler with ranging</li> <li>TID shows momentary tracks with ranges</li> <li>Processing reduces max range</li> </ul> </li> <li><b>Advantages</b> <ul style="list-style-type: none"> <li>Doppler Filtering</li> <li><b>Multi-Target AIM-54</b></li> </ul> </li> <li><b>Disadvantages</b> <ul style="list-style-type: none"> <li><b>Lowest Range</b></li> <li>Can be notched</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>DDD</li> </ul>	<ul style="list-style-type: none"> <li><b>Closure Rate/Azimuth</b></li> <li>Visual representation of radar and erase sweeps</li> </ul>
<ul style="list-style-type: none"> <li>TID</li> </ul>	<ul style="list-style-type: none"> <li><b>Tracksfiles</b></li> <li>Max concurrent tracks: 24</li> <li>Max displayed tracks: 18</li> </ul>
<ul style="list-style-type: none"> <li>Filtering</li> </ul>	<p><b>Same as Pulse Doppler Search</b></p>
<ul style="list-style-type: none"> <li>Scan Volume</li> </ul>	<p>Trackfiles require update every 2.5 s →</p> <ul style="list-style-type: none"> <li>20 deg 4 bar (if selected)</li> <li>40 deg 2 bar (else)</li> </ul>
<ul style="list-style-type: none"> <li>TID Mode Selector</li> </ul>	<ul style="list-style-type: none"> <li><b>GND STAB:</b> Ground Stabilized, True North is up on TID</li> <li><b>A/C STAB:</b> Aircraft Stabilized</li> <li><b>ATTAK:</b> same as A/C STAB with superimposed attack steering symbology</li> <li><b>TV:</b> Displays TCS on TID, dispays LANTIRN on TID if equipped</li> </ul>

<ul style="list-style-type: none"> <li>• <b>TID Display</b> <b>Selector</b> <b>Buttons</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>RID DISABLE:</b> Not simulated</li> <li>• <b>ALT NUM:</b> Enables display of track altitudes on left side of track symbols</li> <li>• <b>SYM ELEM:</b> Enables display of all supplementary symbology of tracks and waypoints</li> <li>• <b>DATA LINK:</b> Enables display of D/L contacts</li> <li>• <b>JAM STROBE:</b> Enables display of jam strobes</li> <li>• <b>NON-ATTK:</b> enables/disables display of targets not possible to engage (friendlies)</li> <li>• <b>LAUNCH ZONE:</b> Enables display of weapon launch zones</li> <li>• <b>VEL VECTOR:</b> Enables display of velocity vectors</li> </ul>
<ul style="list-style-type: none"> <li>• <b>TRACK HOLD</b> <b>CLSN Steering</b> <b>Buttons</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>TRACK HOLD</b> <ul style="list-style-type: none"> <li>– Normally: Tracks maintained for 14 s after last observation</li> <li>– Track Hold: maintained for 2 min after last observation</li> </ul> </li> <li>• <b>CLSN Button</b> <ul style="list-style-type: none"> <li>– begins collision steering to currently tracked target</li> <li>– enables Steering Centroid if in TWS</li> <li>– LD CLSN presents azimuth steering only</li> <li>– CLSN presents both azimuth and elevation steering</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>TWS AUTO / MAN</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>TWS MAN:</b> Manual azimuth/elevation control, target designation by RIO</li> <li>• <b>TWS AUTO:</b> Automatic prioritization of targets and azimuth elevation control</li> </ul>



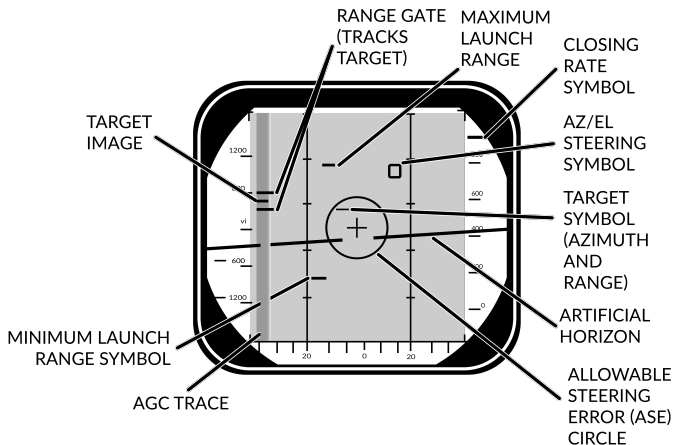
## 3.8 PULSE DOPPLER MODE - TWS MAN

· <b>TWS MAN</b>	<ul style="list-style-type: none"> <li>· <b>Target Selection:</b> Manual</li> <li>· <b>Scan Azimuth/Elevation:</b> Manual</li> </ul>
· <b>Target Selection</b>	<ul style="list-style-type: none"> <li>· <b>Conditions</b> <ul style="list-style-type: none"> <li>– TWS MAN Radar Mode selected</li> <li>– TID CURSOR TID Mode selected</li> </ul> </li> <li>· <b>Hook Target</b> <ul style="list-style-type: none"> <li>(a) Hold HCU Half-Action</li> <li>(b) Slew TID Cursor over desired Tgt</li> <li>(c) HCU Full-Action to select Tgt</li> </ul> </li> <li>· <b>TID Symbology</b> <ul style="list-style-type: none"> <li>– Range (<b>RA</b>)</li> <li>– Bearing (<b>BR</b>)</li> <li>– Altitude (<b>AL</b>)</li> <li>– Magnetic course (<b>MC</b>)</li> </ul> </li> <li>· <b>Lock Target</b> <ul style="list-style-type: none"> <li>(d) Press <b>PD STT</b> or <b>Pulse STT</b> buttons</li> </ul> </li> <li>· <b>Deselect Target</b> <ul style="list-style-type: none"> <li>(e) press HCU Half-Action</li> </ul> </li> </ul>
· <b>AIM-54 Launch</b>	<ul style="list-style-type: none"> <li>· <b>Automatically selects TWS AUTO</b></li> <li>· <b>Prevents selection of TWS MAN</b></li> </ul>

## 3.9 PULSE DOPPLER MODE - TWS AUTO

<ul style="list-style-type: none"> <li>• <b>TWS AUTO</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Target Selection:</b> prioritizes contacts based off range, aspect, closure</li> <li>• <b>Scan Azimuth/Elevation:</b> Geometric center of targets in scan volume</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Centroid / Steering Cues</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Steering Centroid</b> <ul style="list-style-type: none"> <li>– facilitates steering cues</li> <li>– HUD, VDI, TID, DDD</li> <li>– Appears as <b>X</b> on TID</li> <li>– Takes Gimbal limits into account</li> <li>– Weights individual Tracks based on parameters</li> </ul> </li> <li>• <b>Illumination Centroid</b> <ul style="list-style-type: none"> <li>– <b>Not Visible</b></li> <li>– Controls azimuth and elevation of scan pattern</li> <li>– Takes scan volume into account</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Pilot Steering Cues</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Conditions</b> <ul style="list-style-type: none"> <li>– A-A HUD Mode selected</li> <li>– Master Arm ON (UP)</li> <li>– AIM-54 or AIM-7 selected</li> <li>– TWS-AUTO selected</li> </ul> </li> </ul>

### 3.10 PULSE DOPPLER MODE - PDSTT

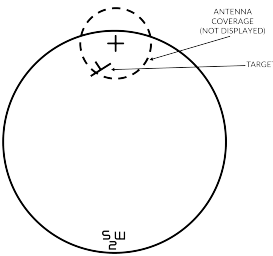


## SINGLE TARGET TRACK

<ul style="list-style-type: none"> <li>· <b>Pulse Doppler STT</b></li> </ul>	<p>Lock Target with doppler filtering</p> <ul style="list-style-type: none"> <li>· <b>Advantages</b> <ul style="list-style-type: none"> <li>– Ground Clutter filtering</li> </ul> </li> <li>· <b>Disadvantages</b> <ul style="list-style-type: none"> <li>– Susceptible to notching</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>· <b>Lock Target</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Conditions</b> <ul style="list-style-type: none"> <li>– Pulse Doppler Mode selected (PD Search, RWS, TWS)</li> <li>– RDR HCU Mode selected</li> </ul> </li> <li>· <b>Lock Target</b> <ul style="list-style-type: none"> <li>(a) Hold HCU Half-action</li> <li>(b) Slew to desired Target</li> <li>(c) HCU Full-Action to lock</li> </ul> </li> <li>· <b>Unlock Target</b> <ul style="list-style-type: none"> <li>(d) HCU Half-action</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>· <b>DDD</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Track Indications</b> <ul style="list-style-type: none"> <li>– ANT TRK light</li> <li>– RDROT light</li> <li>– Tracking gates</li> <li>– Closure rate</li> <li>– Attack Symbology</li> </ul> </li> </ul>

## 3.11 ACM MODES - OVERVIEW





	PLM	VSL	PAL	MRL
<b>Range</b>	5 nm	5 nm	15 nm	5 nm
<b>Description</b>	Boresight	Vertical	Horizontal	RIO
<b>Weapons</b>	Gun + All Missiles			

<ul style="list-style-type: none"> <li>PLM</li> </ul>	<ul style="list-style-type: none"> <li><b>Pilot Lockon Mode</b></li> <li><b>Highest Priority ACM</b></li> <li><b>Search Pattern</b> <ul style="list-style-type: none"> <li>Small Boresight</li> <li>Range: 5 nm</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>VSL</li> </ul>	<ul style="list-style-type: none"> <li><b>Vertical Scan Lockon</b></li> <li><b>HI Search Pattern</b> <ul style="list-style-type: none"> <li>Width: 5 deg</li> <li>Vertical: +15 to +55 deg</li> <li>Range: 5 nm</li> </ul> </li> <li><b>LO Search Pattern</b> <ul style="list-style-type: none"> <li>Width: 5 deg</li> <li>Vertical: -15 to +25 deg</li> <li>Range: 5 nm</li> </ul> </li> <li><b>RIO/PILOT Controlled</b></li> </ul>	
<ul style="list-style-type: none"> <li>PAL</li> </ul>	<ul style="list-style-type: none"> <li><b>Pilot Automatic Lockon</b></li> <li><b>Search Pattern</b> <ul style="list-style-type: none"> <li>Width: +/- 20 deg</li> <li>Vertical: 8-bar</li> <li>Range: 15 nm</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>MRL</li> </ul>	<ul style="list-style-type: none"> <li><b>Manual Rapid Lockon</b></li> <li><b>RIO Controlled</b></li> <li><b>Search Pattern</b> <ul style="list-style-type: none"> <li>HCU Controlled</li> <li>Range: 5 nm</li> </ul> </li> </ul>	

## 3.12 APX-76 IFF





## 3.13 TID SYMBOLOGY







## GENERAL

Center Dot		<ul style="list-style-type: none"> <li>• <b>Basic Component of Symbols</b> <ul style="list-style-type: none"> <li>– Marks coordinates of symbol</li> </ul> </li> </ul>
Own AC		<ul style="list-style-type: none"> <li>• <b>Symbol representing own aircraft</b> <ul style="list-style-type: none"> <li>– Ground Stabilized: Moves</li> <li>– Aircraft Stabilized: Stationary</li> <li>– Outside TID: line drawn from TID center towards symbol</li> </ul> </li> </ul>
TID Cursor		<ul style="list-style-type: none"> <li>• <b>Hook Cursor</b> <ul style="list-style-type: none"> <li>– Controlled by <b>HCU</b> in <b>TID mode</b></li> </ul> </li> <li>• <b>Half-Action</b> <ul style="list-style-type: none"> <li>– Enables display of symbol</li> <li>– Enables HCU stick to move cursor</li> </ul> </li> <li>• <b>Full-Action</b> <ul style="list-style-type: none"> <li>– Hooks closest symbol</li> <li>– If no symbol near, cursor dropped at location</li> </ul> </li> </ul>
TWS Steering Centroid		<ul style="list-style-type: none"> <li>• <b>Steering centroid of TWS tracks</b> <ul style="list-style-type: none"> <li>– Selected by WCS for weapons engagement</li> </ul> </li> </ul>








## ONBOARD SENSORS

## Symbol Above Dot





Unknown		<ul style="list-style-type: none"> <li>• <b>Unknown Sensor Track</b></li> <li>• <b>All Returns in RWS</b></li> </ul>
Hostile		<ul style="list-style-type: none"> <li>• <b>Sensor Track designated Hostile by RIO</b></li> </ul>
Friend		<ul style="list-style-type: none"> <li>• <b>Sensor Track designated Friendly by RIO</b></li> </ul>
Angle-Track Radar Target		<ul style="list-style-type: none"> <li>• <b>Radar Angle Tracking</b> <ul style="list-style-type: none"> <li>– Jamming Target</li> </ul> </li> </ul>

Angle-Tracked Radar Target with Altitude Difference Ranging		<ul style="list-style-type: none"> <li>· Radar Angle Tracking               <ul style="list-style-type: none"> <li>– Jamming Target</li> <li>– Alt. diff. ranging</li> </ul> </li> </ul>
TCS-Angle Tracked Target		<ul style="list-style-type: none"> <li>· TCS Angle Tracking</li> </ul>
TCS-Angle Tracked Target with Altitude Difference Ranging		<ul style="list-style-type: none"> <li>· TCS Angle Tracking               <ul style="list-style-type: none"> <li>– Alt. diff. ranging</li> </ul> </li> </ul>
<b>D/L TARGETS</b>		<b>Symbol Below Dot</b>
Unknown		<ul style="list-style-type: none"> <li>· D/L Track designated Unknown by Source</li> </ul>
Hostile		<ul style="list-style-type: none"> <li>· D/L Track designated Hostile by Source</li> </ul>
Friendly		<ul style="list-style-type: none"> <li>· D/L Track designated Friendly by Source</li> </ul>





**MANUAL REF POINTS**







Home base		<ul style="list-style-type: none"> <li>· Waypoint Representing               <ul style="list-style-type: none"> <li>– Home Base</li> <li>– Carrier</li> <li>– Airfield</li> </ul> </li> </ul>
Waypoint		<ul style="list-style-type: none"> <li>· Nav Waypoint</li> <li>· Supplanted by Number               <ul style="list-style-type: none"> <li>– 1, 2, or 3</li> </ul> </li> </ul>
Defended Point		<ul style="list-style-type: none"> <li>· Waypoint to Defend</li> </ul>
Fixed Point		<ul style="list-style-type: none"> <li>· Generic Waypoint</li> </ul>
Hostile Area		<ul style="list-style-type: none"> <li>· Waypoint Indicating Hostile Area</li> </ul>
Surface Target		<ul style="list-style-type: none"> <li>· Waypoint Indicating Surface Target</li> </ul>
IP		<ul style="list-style-type: none"> <li>· Initial Point               <ul style="list-style-type: none"> <li>– Waypoint for A/G engagement</li> </ul> </li> </ul>

**D/L REF POINTS**

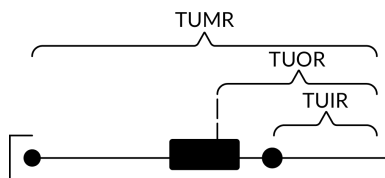
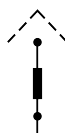
<b>Home Base</b>		<ul style="list-style-type: none"> <li>· <b>D/L Waypoint Representing Home Base</b></li> </ul>
<b>Waypoint</b>		<ul style="list-style-type: none"> <li>· <b>D/L Generic Waypoint</b></li> </ul>
<b>Data Link Fixed Point</b>		<ul style="list-style-type: none"> <li>· <b>D/L Waypoint Representing Fixed Point</b></li> </ul>
<b>Surface Target</b>		<ul style="list-style-type: none"> <li>· <b>D/L Waypoint Representing a Surface Target</b></li> </ul>

### POS SYMB MODIFIERS

<b>Mandatory Attack</b>		<ul style="list-style-type: none"> <li>· <b>Additional Symbology on TWS Track</b> <ul style="list-style-type: none"> <li>– Horizontal bar through center dot</li> </ul> </li> <li>· <b>Selected by RIO</b> <ul style="list-style-type: none"> <li>– Only 1 target can be designated</li> <li>– Guaranteed WCS priority number</li> </ul> </li> </ul>
<b>Data Link Destroy</b>		<ul style="list-style-type: none"> <li>· <b>Additional Symbology on D/L Track</b> <ul style="list-style-type: none"> <li>– Horizontal bar through center dot</li> </ul> </li> <li>· <b>Selected by Source</b> <ul style="list-style-type: none"> <li>– No effect on WCS prioritization</li> </ul> </li> </ul>
<b>Do Not Attack</b>		<ul style="list-style-type: none"> <li>· <b>Additional Symbology on TWS or D/L Track</b> <ul style="list-style-type: none"> <li>– Vertical bar through center dot</li> </ul> </li> <li>· <b>If Set by RIO</b> <ul style="list-style-type: none"> <li>– Removes WCS prioritization</li> </ul> </li> </ul>
<b>Multiple Targets</b>		<ul style="list-style-type: none"> <li>· <b>Additional Symbology on TWS or D/L Track</b> <ul style="list-style-type: none"> <li>– Horizontal bar on left side of symbol</li> </ul> </li> <li>· <b>Indicates Multiple Targets</b></li> </ul>

<b>Data Link Challenge</b>		<ul style="list-style-type: none"> <li>· <b>Additional Symbology on D/L Track</b> <ul style="list-style-type: none"> <li>– Small <b>V</b> with center at center dot</li> </ul> </li> <li>· <b>Command to Visually Identify</b></li> </ul>
<b>Track Extrapolated</b>		<ul style="list-style-type: none"> <li>· <b>Additional Symbology on TWS or D/L Track</b> <ul style="list-style-type: none"> <li>– Small <b>X</b> with center at center dot</li> </ul> </li> <li>· <b>No Update within 8 seconds</b> <ul style="list-style-type: none"> <li>– Track deleted after 14 seconds</li> <li>– Or after 2 min if track hold</li> </ul> </li> </ul>
<b>Altitude Numerics</b>		<ul style="list-style-type: none"> <li>· <b>Altitude to Nearest Ten Thousand</b> <ul style="list-style-type: none"> <li>– example: 35000-45000</li> </ul> </li> </ul>
<b>Firing Order Numerics</b>		<ul style="list-style-type: none"> <li>· <b>Indicates AIM-54 Prioritization</b> <ul style="list-style-type: none"> <li>– Numbers 1-6</li> <li>– Only in TWS</li> </ul> </li> </ul>
<b>Time-to-Impact (TTI)</b>		<ul style="list-style-type: none"> <li>· <b>After AIM-54 Launch</b> <ul style="list-style-type: none"> <li>– Prioritization replaced with estimated TTI</li> </ul> </li> <li>· <b>Flashes after Pitbull</b></li> </ul>
<b>Velocity Vector</b>		<ul style="list-style-type: none"> <li>· <b>Additional Symbology from center Dot</b> <ul style="list-style-type: none"> <li>– Direction represents track heading</li> <li>– Length represents speed</li> </ul> </li> <li>· <b>Varies with Mode</b> <ul style="list-style-type: none"> <li>– Ground Stabilized: true heading and ground speed</li> <li>– Aircraft Stabilized: relative heading and velocity</li> </ul> </li> </ul>



**Launch Zone Vectors**

**Additional Symbology for AIM-54**

- Selected manually by RIO
- Or 60 seconds from max launch

**• TUMR**

- Time-Until-Minimum-Range
- Max: 180 seconds, 1.5 inches

**• TUOR**

- Time-Until-Optimal-Range
- Start of bar is 8 seconds from optimum

**• TUIR**

- Time-Until-In-Range

**Jamming Strobe**


- **Line from own AC towards Jammer**

**Radar Antenna Scan Pattern Azimuth Limits**


- **Limits of Current Scan Azimuth**
- **Single Line in STT**

**Data Link Jamming Strobe**


- **Line from D/L point towards Jammer**

**Data Link Pointer**


- **Additional Symbology on D/L Track**





- Circle
- Indicates operator concern

**Data Link Priority Kill**


- **Additional Symbology on D/L Track**

- Square
- Indicates target must be destroyed
- No effect on WCS prioritization

## ATTACK DISPLAY SYMBOLOGY

Artificial Horizon		<ul style="list-style-type: none"> <li>Represents Pitch and Roll</li> </ul>
Steering Guidance Symbol		<ul style="list-style-type: none"> <li>Represents Steering Error               <ul style="list-style-type: none"> <li>Should be placed as near as possible to center of ASE circle</li> </ul> </li> </ul>
Allowable Steering Error Circle		<ul style="list-style-type: none"> <li>Indicates Allowable Steering Error for Missile Launch</li> <li>Size Varies with Geometry, Mode, Missile</li> </ul>
Breakaway Indication		<ul style="list-style-type: none"> <li>Appears when Target Range Less than Minimum for Selected Weapon</li> </ul>

## **4 TCS**

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### **4.1 OVERVIEW**



## 5 LANTIRN

### 5.1 OVERVIEW

· <b>LANTIRN</b>	<p>Low <b>A</b>ltitude <b>N</b>avigation and <b>T</b>argeting <b>I</b>nfra-<b>R</b>ed for <b>N</b>ight</p> <ul style="list-style-type: none"> <li>· <b>Only Targeting Pod</b> – Nav pod was deleted</li> <li>· <b>Incomplete Integration</b> – Own control panel, supplants TCS feed</li> </ul>
· <b>Master Modes</b>	<ul style="list-style-type: none"> <li>· <b>A/G</b> – Allows bomb release guidance</li> <li>· <b>A/A</b> – Optimized for air targets</li> </ul>
· <b>FOV Levels Overview</b>	<ul style="list-style-type: none"> <li>· <b>Wide</b> <ul style="list-style-type: none"> <li>– <b>FOV</b> – 5.9 deg</li> <li>– <b>Slew</b> – 8.5 deg/s</li> </ul> </li> <li>· <b>Narrow</b> <ul style="list-style-type: none"> <li>– <b>FOV</b> – 1.7 deg</li> <li>– <b>Slew</b> – 1.8 deg/s</li> </ul> </li> <li>· <b>Expanded</b> <ul style="list-style-type: none"> <li>– <b>FOV</b> – 0.8 deg</li> <li>– <b>Slew</b> – 0.7 deg/s</li> <li>– <b>Digital Zoom</b> – Degraded quality</li> </ul> </li> </ul>

### 5.2 OVERVIEW - STARTUP

1. <b>Power Switch</b>	<b>POD</b>
2. <b>Pod Startup Sequence</b>	<ul style="list-style-type: none"> <li>· 8 min startup sequence</li> <li>· <b>MODE Switch</b> shows <b>STBY</b> when complete</li> </ul>
3. <b>MODE Switch</b>	<b>Press</b>
4. <b>Initialization Sequence</b>	<ul style="list-style-type: none"> <li>· 30 sec initialization</li> <li>· <b>MODE Switch</b> shows <b>OPER</b> when ready</li> </ul>
5. <b>VIDEO Switch</b>	<b>FLIR</b>
6. <b>TID MODE</b>	<b>TV</b>

## 5.3 OVERVIEW - POINTING MODES

<ul style="list-style-type: none"> <li>· <b>Sensor Modes Overview</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Contrast Lock</b> <ul style="list-style-type: none"> <li>– Area Track</li> <li>– Point Track</li> </ul> </li> <li>· <b>Q Designation</b> <ul style="list-style-type: none"> <li>– <b>Directional Q</b> – QSNO / QADL / QHUD</li> <li>– <b>Location Q</b> – QWp / QDES</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>· <b>Directional Q</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Do Not Allow Weapon Guidance</b></li> <li>· <b>QSNO</b> <ul style="list-style-type: none"> <li>– Pod slaved to <b>ground 15 nm in front</b> along own aircraft heading</li> </ul> </li> <li>· <b>QADL</b> <ul style="list-style-type: none"> <li>– <b>Pod slaved to ADL</b></li> <li>– In A/A mode</li> </ul> </li> <li>· <b>QHUD</b> <ul style="list-style-type: none"> <li>– <b>Pod slaved to HUD</b></li> <li>– In A/G mode</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>· <b>Location Q</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Allow Weapon Guidance</b></li> <li>· <b>QWp</b> <ul style="list-style-type: none"> <li>– Pod slaved to WCS waypoint</li> <li>– Cycled with <b>QWp+</b> / <b>QWp-</b></li> </ul> </li> <li>· <b>QDES</b> <ul style="list-style-type: none"> <li>– <b>Designate targets for engagement</b></li> <li>– <b>LANTIRN Trigger Second Detent</b> to designate</li> <li>– Coordinates can be manually added to WCS for navigation</li> </ul> </li> </ul>

## 5.4 OVERVIEW - LASING/DESIGNATION

· <b>A/G Designation</b>	(a) <b>Designate</b> ..... <b>Trigger Full-Action</b> <ul style="list-style-type: none"> <li>· Laser Fires</li> <li>· Slant Range calculated</li> <li>· Time-to-Go calculated</li> </ul>
· <b>Steering Cues</b>	<ul style="list-style-type: none"> <li>· <b>Automatically activated when QDES selected/designated</b></li> <li>· QDES remains even if new Q selected</li> <li>· Cues still point towards QDES even if pod at another point</li> </ul>
· <b>Manual Lase</b>	(a) <b>Lase</b> ..... <b>Trigger Half-Action Hold</b>
· <b>Latched Lase</b>	<ul style="list-style-type: none"> <li>· <b>Effect</b> – Lases for 60 sec</li> </ul> (a) <b>Activate</b> ..... <b>Latch Lase Button Press</b> (b) <b>Extend</b> ..... <b>Latch Lase Button Press</b> (c) <b>Deactivate</b> ..... <b>Trigger Half-Action</b>
· <b>Auto Lase</b>	<ul style="list-style-type: none"> <li>· <b>Effect</b> – Fires from -10 to +4 sec TIMP</li> </ul> (a) <b>Laser Mode</b> ..... <b>Slider AFT Short</b> (b) <b>Cycle A/M</b> ..... <b>Right 4-Way Depress</b>
· <b>Laser Notes</b>	<ul style="list-style-type: none"> <li>· <b>Always at current Pod location</b></li> <li>· Can point to different location than QDES</li> </ul>

## 5.5 CONTROLS - PANEL

· <b>Power Switch</b>	<ul style="list-style-type: none"> <li>· <b>OFF</b> – Disables power to system</li> <li>· <b>IMU</b> – Only powers LANTIRN IMU (<b>Not Simulated in DCS</b>)</li> <li>· <b>POD</b> – Powers whole system</li> </ul>
· <b>MODE Switch</b>	<ul style="list-style-type: none"> <li>· <b>STBY</b> – Standby</li> <li>· <b>OPER</b> – Operational</li> </ul>
· <b>LASER Switch</b>	<ul style="list-style-type: none"> <li>· <b>ARM</b> – Arms laser</li> <li>· <b>SAFE</b> – Inhibits laser use</li> </ul>
· <b>VIDEO Switch</b>	<ul style="list-style-type: none"> <li>· <b>FLIR</b> – Displays LANTIRN FLIR on TID</li> <li>· <b>TCS</b> – Displays TCS video on TID</li> </ul>
· <b>Indicator Light</b>	<ul style="list-style-type: none"> <li>· <b>Indicate Error States</b></li> </ul>

- **IBIT Button**

- Initiates Build-In-Test

## 5.6 CONTROLS - STICK

<ul style="list-style-type: none"> <li>· <b>Master Mode</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>A/G Mode – Side 2-Way FWD</b></li> <li>· <b>A/A Mode – Side 2-Way AFT</b></li> </ul>
<ul style="list-style-type: none"> <li>· <b>Slew</b></li> </ul>	<b>Center Slew Hat</b>
<ul style="list-style-type: none"> <li>· <b>WHOT/BHOT</b></li> </ul>	<b>Center Slew Hat Depress</b>
<ul style="list-style-type: none"> <li>· <b>Contrast Track</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Point Track – Left 4-Way Up</b></li> <li>· <b>Area Track – Left 4-Way Down</b></li> </ul>
<ul style="list-style-type: none"> <li>· <b>Q Select</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>QADL/QHUD – Right 4-Way Up</b></li> <li>· <b>QDES – Right 4-Way Right</b></li> <li>· <b>QSNO – Right 4-Way Down</b></li> </ul>
<ul style="list-style-type: none"> <li>· <b>Declutter</b></li> </ul>	<b>Right 4-Way Depress</b>
<ul style="list-style-type: none"> <li>· <b>Zoom Level</b></li> </ul>	<b>FOV Button</b>
<ul style="list-style-type: none"> <li>· <b>Cycle Gain</b></li> <li>· <b>Control Mode</b></li> </ul>	<b>Slider FWD short</b>
<ul style="list-style-type: none"> <li>· <b>Manual Gain</b></li> <li>· <b>Control</b></li> </ul>	(a) <b>Slider</b> ..... <b>FWD long</b> (b) <b>Gain</b> ..... <b>Right 4-Way Up/Down</b> <b>Level</b> ..... <b>Right 4-Way Left/Right</b>
<ul style="list-style-type: none"> <li>· <b>Laser Code</b></li> </ul>	(a) <b>Slider</b> ..... <b>AFT short</b> (b) <b>Select Digit</b> ..... <b>Right 4-Way Left/Right</b> (c) <b>Change Digit</b> ..... <b>Right 4-Way Up/Down</b>
<ul style="list-style-type: none"> <li>· <b>Focus Control</b></li> </ul>	(a) <b>Slider</b> ..... <b>AFT hold</b> (b) <b>Right 4-Way</b> ..... <b>Up/Down</b>
<ul style="list-style-type: none"> <li>· <b>Manual Lase</b></li> </ul>	<b>Trigger Half-Action</b>
<ul style="list-style-type: none"> <li>· <b>Latched Laser</b></li> </ul>	<b>Latched Laser Fire Button</b>
<ul style="list-style-type: none"> <li>· <b>Designate</b></li> <li>· <b>QDES</b></li> </ul>	<b>Trigger Full-Action</b>



5.7 **DISPLAY**

· <b>Top Left</b>	<ul style="list-style-type: none"> <li>· <b>Own Aircraft Datablock</b> <ul style="list-style-type: none"> <li>– <b>Lat</b> – deg:min.dec</li> <li>– <b>Long</b> – deg:min.dec</li> <li>– <b>ALT</b> – Altitude (ft)</li> <li>– <b>KGS</b> – Knots Ground Speed</li> <li>– <b>DIVE</b> – Dive Angle (deg)</li> </ul> </li> </ul>
· <b>Mid Left</b>	<ul style="list-style-type: none"> <li>· <b>Sensor Mode</b> – <b>WHOT</b> / <b>BHOT</b></li> <li>· <b>Gain Control</b> – <b>Auto</b> / <b>Manual</b></li> </ul>
· <b>Bottom Left</b>	<ul style="list-style-type: none"> <li>· <b>Pod Info Datablock</b> <ul style="list-style-type: none"> <li>– <b>SRA</b> – Slant Range</li> <li>– <b>AZ</b> – Pod LoS Azimuth L/R</li> <li>– <b>EL</b> – Pod LoS Elevation</li> <li>– <b>Time</b> – UTC Time</li> <li>– <b>IBIT</b> – Codes</li> </ul> </li> </ul>
· <b>Bottom Center</b>	<ul style="list-style-type: none"> <li>· <b>Master Mode</b> – <b>A/A</b> / <b>A/G</b></li> <li>· <b>Track Mode</b> – <b>AREA</b> / <b>POINT</b> / <b>Q</b></li> <li>· <b>Current Weapon</b></li> <li>· <b>Laser Code</b></li> <li>· <b>L</b> <ul style="list-style-type: none"> <li>– <b>Steady</b> – Laser Armed</li> <li>– <b>Flashing</b> – Laser Firing</li> </ul> </li> </ul>
· <b>Bottom Right</b>	<ul style="list-style-type: none"> <li>· <b>Q Datablock</b> <ul style="list-style-type: none"> <li>– <b>TTG</b> – Time-To-Go</li> <li>– <b>B/R</b> – Bearing and Range</li> <li>– <b>ELEV</b> – Elevation (ft) of Q</li> <li>– <b>Lat</b> – deg:min.dec</li> <li>– <b>Long</b> – deg:min.dec</li> </ul> </li> </ul>
· <b>Mid Center</b>	<ul style="list-style-type: none"> <li>· <b>Crosshair</b> <ul style="list-style-type: none"> <li>– <b>Bounding Box</b> – Indicates currently tracked target in point mode</li> <li>– <b>Zoom Boxes</b> – Indicates next zoom levels</li> <li>– <b>FLIR Pointing Cue</b> – Shows Pod LoS, screen center indicates straight down</li> </ul> </li> </ul>

## · Mid Right

## · Bomb Release Cue

- Only shown if current Q is **QDES**, with valid weapon selected
- **TREL** – Time to release
- **TIMP** – Time to Impact (after release)

## · Top Center

## · Steering Guidance to Q

- Relative bearing L/R to commanded heading

## 6 A/G WEAPONS

### 6.1 A/G WEAPON SETTINGS - OVERVIEW

• <b>WPN TYPE</b>	<ul style="list-style-type: none"> <li>• <b>Selects Weapon Type</b> <ul style="list-style-type: none"> <li>– Configures WCS for selected weapon</li> <li>– Refer to Kneeboard for list of mounted weapons</li> <li>– Mk-81 / 82 / 83 have both <b>L</b> and <b>H</b> option referring to high and low drag</li> </ul> </li> </ul>
• <b>DLVY MODE</b>	<ul style="list-style-type: none"> <li>• <b>STP-SGL</b> – Single weapon per press</li> <li>• <b>STP-PRS</b> Single pair per press</li> <li>• <b>RPL-SGL</b> – QTY of weapons per press</li> <li>• <b>RPL-PRS</b> – QTY of pairs per press</li> </ul>
• <b>DLVY OPTNS</b>	<ul style="list-style-type: none"> <li>• <b>INTERVAL</b> – Interval in ms</li> <li>• <b>QTY</b> – Number of stores to be released</li> </ul>
• <b>MECH FUZE</b>	<ul style="list-style-type: none"> <li>• <b>NOSE</b> – Arms nose fuze</li> <li>• <b>SAFE</b> – Inhibits arming of fuzes</li> <li>• <b>NOSE/TAIL</b> – Arms both fuzes</li> </ul>
• <b>ELEC FUZE</b>	<ul style="list-style-type: none"> <li>• <b>SAFE</b> – Inhibits electrical bomb fuzing</li> <li>• <b>VT</b> – Sets air-burst mode at preset burst height for compatible stores</li> <li>• <b>INST</b> – Sets instantaneous burst mode</li> <li>• <b>DLY 1</b> – Sets preset time delay 1</li> <li>• <b>DLY 2</b> – Sets preset time delay 2</li> </ul>
• <b>STA SEL</b>	<ul style="list-style-type: none"> <li>• <b>Selects Stations for Employment/Jettison</b> <ul style="list-style-type: none"> <li>– Set to <b>SEL</b> to activate a pylon</li> <li>– Stations 1 &amp; 8 should be set to <b>B</b> for selection</li> <li>– Station 1 &amp; 8 <b>SW</b> was used for Sidewinder jettison, is now inoperable</li> </ul> </li> </ul>
• <b>TANK JETT</b>	<ul style="list-style-type: none"> <li>• <b>Allows Drop Tank Jettison</b></li> </ul>
• <b>SEL JETT</b>	<ul style="list-style-type: none"> <li>• <b>JETT</b> – Selective jettison</li> <li>• <b>SAFE</b> – Inhibits jettison</li> <li>• <b>AUX</b> – Backup mode</li> </ul>
• <b>JETT OPTIONS</b>	<ul style="list-style-type: none"> <li>• <b>MER TER</b> – Jettisons ejector racks</li> <li>• <b>WPNS</b> – Jettisons weapons only</li> </ul>

**ATTK MODE**

- **CCMPTR TGT**
  - **Computer Target** – Similar to CCRP
- **CMPTR IP**
  - **Computer initial point**
  - Extended **CMPTR TGT** mode using known IP
  - For use when target hard to spot visually but close to landmark
- **CMPTR PLT**
  - **Computer Pilot** – similar to CCIP
- **MAN**
  - **Manual** – HUD displays pipper
  - Backup mode
- **D/L BOMB**
  - **Data-Link Bomb** – Automatic mode steered by D/L cues
  - **Not Implemented in DCS**

**6.2 SELECTIVE ORNANCE JETTISON**

1. <b>Pilot Conditions</b>	· <b>MASTER ARM</b> ..... <b>ON</b>
2. <b>RIO Conditions</b>	· <b>Desired Stations</b> ..... <b>Selected</b> · <b>JETT OPTIONS</b> ..... <b>As Desired</b>
3. <b>Jettison</b>	(a) <b>SEL JETT Guard</b> ..... <b>Flipped</b> (b) <b>SEL JETT Switch</b> ..... <b>JETT</b>

**6.3 M61 GUN**

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

**6.4 FFAR / ZUNI ROCKETS**

1. <b>RIO Conditions</b>	<ul style="list-style-type: none"> <li>• <b>WPN TYP</b> ..... <b>LAU-10</b></li> <li>• <b>Attack Mode</b> ..... <b>Pilot Attack</b></li> <li>• <b>Deliver Mode</b> ..... <b>RPL-SGL</b></li> <li>• <b>Mechanical Fuze</b> ..... <b>NOSE</b></li> <li>• <b>Electronic Fuze</b> ..... <b>INST</b></li> <li>• <b>Delivery Options</b> ..... <b>As Desired</b></li> <li>• <b>Stations</b> ..... <b>Armed</b></li> </ul>
2. <b>Pilot Conditions</b>	<ul style="list-style-type: none"> <li>• <b>MASTER ARM</b> ..... <b>ON</b></li> <li>• <b>HUD</b> ..... <b>A/G</b></li> <li>• <b>WEAPON SELECTOR</b> ..... <b>OFF</b></li> <li>• <b>Stations</b> ..... verify selected</li> <li>• <b>Wing Sweep</b> ..... <b>BOMB</b></li> </ul>
3. <b>Employment</b>	<ul style="list-style-type: none"> <li>(a) <b>Dive</b> ..... 20-30 deg</li> <li>(b) <b>Pipper</b> ..... on target</li> <li>(c) <b>TRIGGER</b> ..... <b>FIRE</b></li> </ul>

**6.5 UNGUIDED BOMB - CCIP**

1. <b>RIO Conditions</b>	<ul style="list-style-type: none"> <li>• <b>WPN TYP</b> ..... <b>MK-8X</b></li> <li>• <b>Attack Mode</b> ..... <b>Pilot Attack</b></li> <li>• <b>Deliver Mode</b> ..... <b>STP-PRS</b></li> <li>• <b>Mechanical Fuze</b> ..... <b>NOSE</b></li> <li>• <b>Electronic Fuze</b> ..... <b>INST</b></li> <li>• <b>Delivery Options</b> ..... <b>As Desired</b></li> <li>• <b>Stations</b> ..... <b>Armed</b></li> </ul>
2. <b>Pilot Conditions</b>	<ul style="list-style-type: none"> <li>• <b>MASTER ARM</b> ..... <b>ON</b></li> <li>• <b>HUD</b> ..... <b>A/G</b></li> <li>• <b>WEAPON SELECTOR</b> ..... <b>OFF</b></li> <li>• <b>Stations</b> ..... verify selected</li> <li>• <b>Wing Sweep</b> ..... <b>BOMB</b></li> </ul>
3. <b>Employment</b>	<ul style="list-style-type: none"> <li>(a) <b>Dive</b> ..... 40 deg</li> <li>(b) <b>Pipper</b> ..... on target</li> <li>(c) <b>STORE RELEASE</b> ..... <b>Press and Hold</b></li> </ul>

## 6.6 UNGUIDED BOMB - CCRP

1. <b>RIO Conditions</b>	<ul style="list-style-type: none"> <li>· <b>WPN TYP</b> ..... <b>MK-8X</b></li> <li>· <b>Attack Mode</b> ..... <b>Target Attack</b></li> <li>· <b>Deliver Mode</b> ..... <b>STP-PRS</b></li> <li>· <b>Mechanical Fuze</b> ..... <b>NOSE</b></li> <li>· <b>Electronic Fuze</b> ..... <b>INST</b></li> <li>· <b>Delivery Options</b> ..... <b>As Desired</b></li> <li>· <b>Stations</b> ..... <b>Armed</b></li> </ul>
2. <b>Pilot Conditions</b>	<ul style="list-style-type: none"> <li>· <b>MASTER ARM</b> ..... <b>ON</b></li> <li>· <b>HUD</b> ..... <b>A/G</b></li> <li>· <b>WEAPON SELECTOR</b> ..... <b>OFF</b></li> <li>· <b>Stations</b> ..... verify selected</li> <li>· <b>Wing Sweep</b> ..... <b>BOMB</b></li> </ul>
3. <b>Designation</b>	<ul style="list-style-type: none"> <li>(a) <b>Slew Diamond</b> ..... <b>VSL HI/LO</b></li> <li>(b) <b>Designate</b> ..... <b>PAL</b></li> </ul>
4. <b>Employment</b>	<ul style="list-style-type: none"> <li>(a) <b>Flight Path</b> ..... Straight, Level</li> <li>(b) <b>Vel Vector</b> ..... on Bomb Fall Line</li> </ul> <p>When Solution Cue meets Velocity Vector</p> <ul style="list-style-type: none"> <li>(c) <b>STORE RELEASE</b> ..... <b>Press and Hold</b></li> </ul>

## 6.7 LASER GUIDED BOMB

1. <b>LANTIRN PREP</b>	(a) <b>Target Pod Power</b> ..... <b>POD</b> · Warm up takes approx. 8 min · Automatically switches to <b>STANDBY</b> (b) <b>Laser Code</b> ..... as desired · <b>MUST BE SET ON THE GROUND</b> · <b>Default:</b> 1688 (c) <b>LANTIRN Mode</b> ..... <b>OPERATE</b> · <b>STANDBY</b> caution will flash for 30 s · Then switches to <b>OPER</b> (d) <b>VIDEO Switch</b> ..... <b>FLIR</b> (e) <b>TID Mode</b> ..... <b>TV</b>
2. <b>RIO Conditions</b>	· <b>WPN TYP</b> ..... <b>GBU-XX</b> · <b>Attack Mode</b> ..... <b>Manual</b> · <b>Deliver Mode</b> ..... <b>STP-SGL</b> · <b>Mechanical Fuze</b> ..... <b>NOSE</b> · <b>Electronic Fuze</b> ..... <b>INST</b> · <b>Delivery Options</b> ..... <b>As Desired</b> · <b>Stations</b> ..... <b>Armed</b>
3. <b>Pilot Conditions</b>	· <b>MASTER ARM</b> ..... <b>ON</b> · <b>HUD</b> ..... <b>A/G</b> · <b>WEAPON SELECTOR</b> ..... <b>OFF</b> · <b>VDI Mode</b> ..... <b>TV</b> · <b>Stations</b> ..... verify selected · <b>Wing Sweep</b> ..... <b>BOMB</b>
4. <b>Slew LANTIRN</b>	<b>Refer to LANTIRN Control Section</b> · <b>Slave to WYPT</b> ..... <b>Left-4-Way RIGHT</b> · <b>QSNO (Snowplow)</b> ..... <b>S4 HAT Down</b> · <b>Toggle FOV</b> ..... <b>LANTIRN Toggle FOV</b> · <b>Slew</b> ..... <b>LANTIRN Stick</b> · <b>Area Track</b> ..... <b>Left-4-Way UP</b> · <b>Point Track</b> ..... <b>Left-4-Way Down</b> · <b>Undesignate</b> ..... <b>LANTIRN Undesignate</b>

4. <b>Designate</b>	<p>Refer to LANTIRN Designation Section</p> <p>(a) <b>Designate</b> ..... <b>Trigger Full-Action</b></p> <ul style="list-style-type: none"> <li>· Slant Range calculated</li> <li>· Time-to-Go calculated</li> </ul> <p><b>Once Time-to-Release (TREL) is 0</b></p> <p>(b) <b>Auto-Lase</b> ..... If selected: lases 10s to impact</p> <p>(c) <b>Manual Lase</b> ..... <b>Trigger Full-Action</b></p> <p>(d) <b>While Lasing</b> ..... <b>L</b> blinks</p>
5. <b>Employment</b>	<p><b>Once Time-to-Release (TREL) is 0</b></p> <p>(a) <b>STORE RELEASE</b> ..... <b>Press and Hold</b></p> <p>(b) <b>Flight Path</b> ..... Gentle right-hand turn (to prevent masking)</p>

## 6.8 TALD DECOYS

1. <b>RIO Conditions</b>	<ul style="list-style-type: none"> <li>· <b>WPN TYP</b> ..... <b>TALD</b></li> <li>· <b>Deliver Mode</b> ..... <b>STP-SGL</b></li> <li>· <b>Delivery Options</b> ..... <b>As Desired</b></li> <li>· <b>Stations</b> ..... <b>Armed</b></li> </ul>
2. <b>Pilot Conditions</b>	<ul style="list-style-type: none"> <li>· <b>MASTER ARM</b> ..... <b>ON</b></li> <li>· <b>HUD</b> ..... <b>A/G</b></li> <li>· <b>WEAPON SELECTOR</b> ..... <b>OFF</b></li> <li>· <b>HSD Mode</b> ..... <b>TID</b></li> <li>· <b>Stations</b> ..... verify selected</li> </ul>
3. <b>Employment</b>	<p>(a) <b>Flight Path</b> ..... High / Fast</p> <p>(b) <b>RWR</b> ..... Monitor to locate emitters</p> <p>(c) <b>STORE RELEASE</b> ..... <b>Press and Hold</b></p>



## 7 A/A WEAPONS

### 7.1 M61 GUN - OVERVIEW

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

### 7.2 M61 GUN - MANUAL

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

**7.3 M61 GUN - RTGS / NO RADAR**

1. <b>Pilot Conditions</b>	<ul style="list-style-type: none"> <li>· MASTER ARM ..... ON</li> <li>· HUD ..... A/A</li> <li>· Gun Rate ..... HIGH</li> <li>· WEAPON SELECTOR ..... GUNS</li> </ul>
2. <b>Employment</b>	<ul style="list-style-type: none"> <li>(a) Gun Mode ..... RTGS</li> <li>(b) Pipper ..... on target</li> <li>(c) Trigger ..... FIRE</li> </ul>

**7.4 M61 GUN - RTGS / RADAR**

1. <b>Pilot Conditions</b>	<ul style="list-style-type: none"> <li>· MASTER ARM ..... ON</li> <li>· HUD ..... A/A</li> <li>· Gun Rate ..... HIGH</li> <li>· WEAPON SELECTOR ..... GUNS</li> </ul>
2. <b>Employment</b>	<ul style="list-style-type: none"> <li>(a) Gun Mode ..... RTGS</li> <li>(b) Radar ..... STT</li> <li>(c) Pipper ..... on target</li> <li>(d) Trigger ..... FIRE</li> </ul>

## 7.5 AIM-9 SIDEWINDER - OVERVIEW

<ul style="list-style-type: none"> <li>• <b>Missile Preparation</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>MSL PREP</b> <ul style="list-style-type: none"> <li>– AIM-9 seeker must be cooled</li> <li>– Either press <b>SW COOL</b> button</li> <li>– Or activation of <b>ACM</b></li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Seeker Head Modes</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>SEAM</b> <ul style="list-style-type: none"> <li>– <b>Sidewinder Expanded Acquisition Mode</b></li> <li>– <b>Double-D search pattern</b> invisible to pilot</li> <li>– 4.5 sec search time</li> <li>– <b>Allows AIM-9 to be uncaged and track target</b></li> <li>– 40 deg track limit</li> <li>– <b>Allows WCS to slave AIM-9 to radar track</b></li> </ul> </li> <li>• <b>Boresight</b> <ul style="list-style-type: none"> <li>– AIM-9 locked to ADL</li> <li>– 2.5 deg FOV</li> <li>– Selected if <b>MODE/STP</b> set to <b>BRSIT</b></li> <li>– And <b>ACM</b> not active</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>MODE/STP Switch</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>NORM</b> <ul style="list-style-type: none"> <li>– Allows <b>SEAM</b> seeker mode</li> </ul> </li> <li>• <b>BRSIT</b> <ul style="list-style-type: none"> <li>– Forces Boresight seeker mode</li> <li>– Overridden if <b>ACM</b> active</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>CAGE/SEAM Button</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Uncages Seeker</b> <ul style="list-style-type: none"> <li>– Starts 4.5 second double-D search</li> <li>– If no IR source found cages again</li> </ul> </li> <li>• <b>Slaves Seeker</b> <ul style="list-style-type: none"> <li>– If radar STT locked</li> </ul> </li> </ul>

**7.6 AIM-9 SIDEWINDER - SILENT**

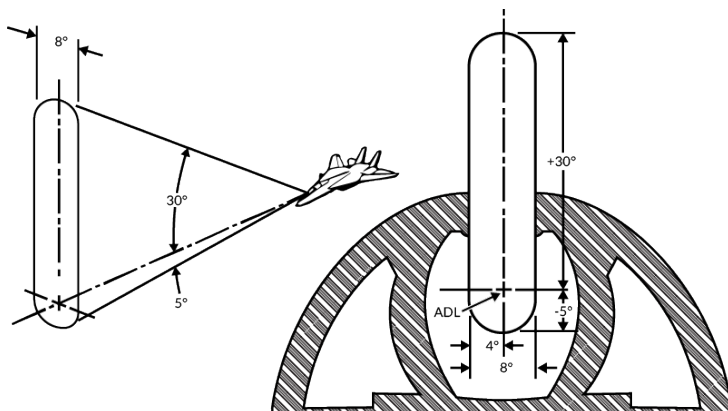
1. <b>Pilot Conditions</b>	<ul style="list-style-type: none"> <li>· MASTER ARM ..... ON</li> <li>· HUD ..... A/A</li> <li>· SW COOL ..... ON</li> <li>· MODE/STP ..... As Desired</li> <li>· WEAPON SELECTOR ..... SW</li> </ul>
2. <b>Employment</b>	<ul style="list-style-type: none"> <li>(a) CAGE/SEAM ..... Uncage Seeker</li> <li>(b) IR-Lock ..... Good Tone</li> <li>(c) Trigger ..... FIRE</li> </ul>

**7.7 AIM-9 SIDEWINDER - RADAR**

1. <b>Pilot Conditions</b>	<ul style="list-style-type: none"> <li>· MASTER ARM ..... ON</li> <li>· HUD ..... A/A</li> <li>· SW COOL ..... ON</li> <li>· MODE/STP ..... NORM</li> <li>· WEAPON SELECTOR ..... SW</li> </ul>
2. <b>Employment</b>	<ul style="list-style-type: none"> <li>(a) Radar ..... STT</li> <li>(b) CAGE/SEAM ..... Slave Seeker</li> <li>(c) IR-LOCK ..... Good Tone</li> <li>(d) Steering ..... center T-shaped cue with ASE</li> <li>(e) Trigger ..... FIRE</li> </ul>

## 7.8 AIM-7 SPARROW - OVERVIEW

<ul style="list-style-type: none"> <li>Missile Preparation</li> </ul>	<ul style="list-style-type: none"> <li><b>MSL PREP</b> <ul style="list-style-type: none"> <li>AIM-7 must be tuned to AWG-9</li> <li>Either press <b>MSL PREP</b> button</li> <li>Or activation of <b>ACM</b></li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>Launch Modes</li> </ul>	<ul style="list-style-type: none"> <li><b>Normal</b> <ul style="list-style-type: none"> <li>Standard operation, STT target designated before launch</li> <li>AIM-7 uses SARH all the way to target</li> <li>WCS can use CS or PD for guidance set with <b>MSL OPTIONS</b> Switch</li> </ul> </li> <li><b>Boresight</b> <ul style="list-style-type: none"> <li>Uses CS flood antenna of AWG-9</li> <li>Missile will <b>track strongest return</b> in Flood area</li> <li>Automatically activated if STT broken</li> <li>Selected if <b>MODE/STP</b> set to <b>BRSIT</b></li> <li><b>Or if no STT available</b></li> <li><b>Shown Below</b></li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li><b>MSL SPD</b> <b>GATE Switch</b></li> </ul>	<ul style="list-style-type: none"> <li><b>NOSE QTR</b> <ul style="list-style-type: none"> <li>Standard setting in DCS</li> </ul> </li> <li><b>All Others</b> <ul style="list-style-type: none"> <li>Not simulated</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li><b>MSL OPTIONS</b> <b>Switch</b></li> </ul>	<ul style="list-style-type: none"> <li><b>NORM</b> <ul style="list-style-type: none"> <li>WCS uses dedicated CW antenna for AIM-7 guidance</li> </ul> </li> <li><b>SP PD</b> <ul style="list-style-type: none"> <li>WCS uses PD from main flood antenna for AIM-7F/M guidance</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li><b>MODE/STP</b> <b>Switch</b></li> </ul>	<ul style="list-style-type: none"> <li><b>NORM</b> <ul style="list-style-type: none"> <li>Sets normal launch mode logic</li> </ul> </li> <li><b>BRSIT</b> <ul style="list-style-type: none"> <li>Forces Boresight launch mode</li> </ul> </li> </ul>



## 7.9 AIM-7 SPARROW - STT

1. <b>Pilot Conditions</b>	<ul style="list-style-type: none"> <li>· MASTER ARM ..... ON</li> <li>· HUD ..... A/A</li> <li>· MSL PREP ..... ON</li> <li>· MODE/STP ..... NORM</li> <li>· WEAPON SELECTOR ..... SP</li> </ul>
2. <b>RIO Conditions</b>	<ul style="list-style-type: none"> <li>· MSL SPD GATE ..... NOSE QTR</li> <li>· MSL OPTIONS ..... As Desired</li> </ul>
3. <b>Employment</b>	<ul style="list-style-type: none"> <li>(a) Radar ..... STT</li> <li>(b) Steering               <ul style="list-style-type: none"> <li>· Target &lt; 20 deg from ADL</li> <li>· ASE center T-shaped cue within</li> </ul> </li> <li>(c) Trigger ..... Press and Hold (until weapon release)</li> <li>(d) Radar ..... Maintain Lock (until impact)</li> </ul>

## 7.10 AIM-54 PHOENIX - OVERVIEW

<ul style="list-style-type: none"> <li>• <b>Missile Preparation</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Weapon Cooling</b> <ul style="list-style-type: none"> <li>– AIM-54 requires liquid cooling</li> <li>– RIO enabled <b>LIQUID COOLING</b> switch</li> </ul> </li> <li>• <b>MSL PREP</b> <ul style="list-style-type: none"> <li>– AIM-54 must be tuned to AWG-9</li> <li>– Either press <b>MSL PREP</b> button</li> <li>– Or activation of <b>ACM</b></li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Launch Modes</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>PDSTT SARH</b> <ul style="list-style-type: none"> <li>– AIM-54 uses SARH all the way to target</li> <li>– Faster update rate than TWS</li> <li>– <b>Slightly increased effective range</b> as compared to a TWS launch</li> </ul> </li> <li>• <b>TWS SARH/ARH</b> <ul style="list-style-type: none"> <li>– Allows <b>6 AIM-54 launches at 6 targets</b></li> <li>– Missile is initially SARH guided</li> <li>– When within AIM-54 seeker range AWG-9 sends activation command</li> <li>– <b>Not Fire and Forget:</b> Requires automatic activation command</li> </ul> </li> <li>• <b>ACM Active</b> <ul style="list-style-type: none"> <li>– Activated when <b>BRSIT</b> selected</li> <li>– Or when <b>ACM</b> active with no radar track</li> <li>– Missile commanded active <b>before launch</b></li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>MSL SPD GATE Switch</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>NOSE QTR</b> <ul style="list-style-type: none"> <li>– Standard setting in DCS</li> </ul> </li> <li>• <b>All Others</b> <ul style="list-style-type: none"> <li>– Not simulated</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>MSL OPTIONS Switch</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>NORM</b> <ul style="list-style-type: none"> <li>– Normal guidance (SARH or SARH/ARH)</li> </ul> </li> <li>• <b>PH ACT</b> <ul style="list-style-type: none"> <li>– WCS immediately sends AIM-54 activation command on launch</li> <li>– Reverts to SARH if no target detected</li> <li>– <b>Must be selected before launch</b></li> </ul> </li> </ul>

<ul style="list-style-type: none"> <li>· <b>TGTS</b> <b>Switch</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>SMALL</b> – 6nm activation range</li> <li>· <b>NORM</b> – 10nm activation range</li> <li>· <b>LARGE</b> – 13nm activation range</li> </ul>
<ul style="list-style-type: none"> <li>· <b>Missile Next</b> <b>Launch Button</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Selects Hooked Track as Next Target for AIM-54 TWS Engagement</b></li> </ul>
<ul style="list-style-type: none"> <li>· <b>MODE/STP</b> <b>Switch</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>NORM</b> <ul style="list-style-type: none"> <li>– Normal operation</li> </ul> </li> <li>· <b>BRSIT</b> <ul style="list-style-type: none"> <li>– Commanded active <b>before launch</b></li> <li>– Missile follows ADL and locks strongest return</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>· <b>TWS Symbology</b></li> </ul>	<p><b>Refer to TID Symbology Section</b></p> <ul style="list-style-type: none"> <li>· <b>Pre-Launch</b> <ul style="list-style-type: none"> <li>– Prioritization numbers assigned to tracks automatically or manually</li> <li>– Blinking indicates optimal launch parameters</li> </ul> </li> <li>· <b>Post-Launch</b> <ul style="list-style-type: none"> <li>– Target prioritization number replaced with TTI</li> <li>– Other prioritization numbers collapsed by one</li> <li>– Tracks under missile attack brightened</li> <li>– <b>TTI blinks when missile active</b></li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>· <b>Launch To Eject (LTE) Time</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Normal Operation</b> – 3-4 seconds</li> <li>· <b>When in ACM</b> – 1 second</li> </ul>



## 7.11 AIM-54 PHOENIX - PD-STT

1. Pilot Conditions	<ul style="list-style-type: none"> <li>MASTER ARM ..... ON</li> <li>HUD ..... A/A</li> <li>MSL PREP ..... ON</li> <li>MODE/STP ..... NORM</li> <li>WEAPON SELECTOR ..... PH</li> </ul>
2. RIO Conditions	<ul style="list-style-type: none"> <li>LIQUID COOLING ..... ON (FWD)</li> <li>MSL SPD GATE ..... NOSE QTR</li> <li>MSL OPTIONS ..... As Desired</li> <li>TGTS Switch ..... As Desired</li> </ul>
3. Employment	<ul style="list-style-type: none"> <li>(a) Radar ..... STT</li> <li>(b) Steering <ul style="list-style-type: none"> <li>Target &lt; 20 deg from ADL</li> <li>ASE center T-shaped cue within</li> </ul> </li> <li>(c) Trigger ..... Press and Hold (until weapon release)</li> <li>(d) Radar ..... Maintain Lock (until impact)</li> </ul>

## 7.12 AIM-54 PHOENIX - TWS / MULTI

1. Pilot Conditions	<ul style="list-style-type: none"> <li>MASTER ARM ..... ON</li> <li>HUD ..... A/A</li> <li>MSL PREP ..... ON</li> <li>MODE/STP ..... NORM</li> <li>WEAPON SELECTOR ..... PH</li> </ul>
2. RIO Conditions	<ul style="list-style-type: none"> <li>LIQUID COOLING ..... ON (FWD)</li> <li>MSL SPD GATE ..... NOSE QTR</li> <li>MSL OPTIONS ..... As Desired</li> <li>TGTS Switch ..... As Desired</li> <li>WCS Mode ..... TWS MAN/AUTO</li> </ul>
4. Employment	<ul style="list-style-type: none"> <li>(a) Radar ..... TWS</li> <li>(b) Trigger ..... Press and Hold (until weapon release)</li> <li>(c) Repeat ..... for remaining targets</li> <li>(d) Radar ..... Maintain Track (until active)</li> </ul>



