

BANE AI Debrief System

Instructor Notes



Instructions: Fill and edit the desired User Action, Mission and Tactical Objectives, and Notional Tactics Manual. After gameplay, upload the game logfile found in the Simulation subfolder.

Desired Learning Objective (DLO): Understand force packaging and risk considerations for a strike package escorted by 4th and 5th Gen escort.

Syllabus: Evaluate player performance and provide a record of events, debrief feedback, and area of improvement for next time.

User Actions:

Players can engage in positive user actions or negative user actions. User actions are defined as positive or negative based on their adherence to tactics, techniques, and procedures for air combat.

Negative User Actions

Action	Lesson Response / Why It Is Wrong
Bomber (B1) ahead of the fighters (MADDOG)	OCA (MADDOG) should be ahead of the Strike Package to provide protection.
Blue Fighters (MADDOG) turned away from Red Air with no Blue Fighters currently pointed at them	Turning cold (away from the Red Air) removes your ability to maintain radar coverage and offensive flow.
Blue Fighters (MADDOG) not "Committed" (player presses Commit button) by 80 miles after Red Air is detected	Delaying committing on Red Air allows Red to gain an advantage in flow and delays your shots.
Player puts Protected Entity Protection Zone (PEPZ) too close to Red threats (60 miles)	Placing your PEPZ too close to threats puts them in danger and gives Blue Air less room to maneuver.

Player sets MADDOG “Weapons Usage” to “Tight” with 20 red entities.	Weapons tight prevents Blue Air from taking initial shots that will shape the picture by attriting Red Air.
Player commits HOSS flight (F15EX) first instead of SATAN, SCAT, or BONG.	The stealth abilities of 5th Generation aircraft makes it the preferred choice to shape the initial picture.
Player sets B1 “engagement level” to Offensive.	The Strike Package should remain cautious and spin (turn around) as required to maintain distance from Red Air.
Player fails to avoid known enemy surface-to-air missile systems.	Avoid entering threat rings or overflying the target to avoid being targeted by Surface-to-Air Missile Systems

Positive User Actions

Action	Lesson Response or Why It Is Right
Bomber (B1) behind the fighters (MADDOG)	OCA (MADDOG) should be ahead of the Strike Package to provide protection.
Blue Fighters (MADDOG) maintain being pointed at Red Air until Red Air is attrited.	Maintaining radar coverage on Red Air allows aircrew to maintain situational awareness, identify, and target Red Air. e
Blue Fighters (MADDOG) Commit (player presses Commit button) by 80 miles after Red Air is detected	On time commits allow Blue Air to detect, target, ID, and shoot on their offensive timeline.
Player puts Protected Entity Protection Zone (PEPZ) in proper location (100NM from threats).	Correct PEPZ placement safeguards the strike package from long range Red Air shots.
User sets appropriate weapons posture for the scenario.	Preserves missiles for duration of mission.
Player commits 5th Generation aircraft (F-22, F-35) first.	The stealth ability of 5th Generation aircraft allows it to better engage against adversary stealth aircraft. The large radar cross section of the 4th Generation aircraft makes it more susceptible to enemy targeting.

Bomber remains greater than 50 miles from Red air until all Red fighters are killed.	Bomber maintains a defensive posture until the risk level decreases.
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Mission Objective:

Neutralize the adversary surface combatants using the B-1 strike package.

Ensure strike package and high value asset survival with the MADDOG escort package.

Tactical Objectives:

Neutralize the adversary surface combatants.

Ensure strike package survival

Ensure high value asset survival

Minimize friendly losses

Mission Objective	Criteria	Mission Success / Failure
Neutralize the adversary surface combatants using the B-1 strike package.	All enemy ships destroyed.	Necessary for success.
Ensure strike package and high value asset survival with the MADDOG escort package.	B1 is alive and returns to base. AWACS is not killed during the mission.	Necessary for success.
Tactical Objectives	Criteria	Mission Success / Failure
Neutralize the adversary surface combatants.	All enemy ships destroyed.	Scored as + or -
Ensure strike package survival.	B1 is alive and returns to base.	Score as + or -
Ensure high value asset survival.	AWACS is not killed during the mission.	Score as + or -
Minimize friendly losses	No more than 25% Blue losses.	Score as + or -

Example Outcome: More In-Depth Than Success or Fail

Mission FAIL example (player does not neutralize all enemy ships before RTB)

Mission Objective	Criteria	Mission Success / Failure
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Neutralize the adversary surface combatants using the B-1 strike package.	All enemy ships destroyed.	-
Ensure strike package and high value asset survival with the MADDOG escort package.	B1 is alive and returns to base. AWACS is not killed during the mission.	+
Tactical Objectives	Criteria	Mission Success / Failure
Neutralize the adversary surface combatants.	All enemy ships destroyed.	-
Ensure strike package survival.	B1 is alive and returns to base.	+
Ensure high value asset survival.	AWACS is not killed during the mission.	+
Minimize friendly losses	No more than 25% Blue losses.	-

Key Decision Points (Chronological)

Mission Objective:

Neutralize the adversary surface combatants using the B-1 strike package.
 Ensure strike package and high value asset survival with the MADDOG escort package.

Tactical Objectives:

Neutralize the adversary surface combatants.
 Ensure strike package survival
 Ensure high value asset survival
 Minimize friendly losses

Player Tasks and Expected Flow (Notional Distances)

Player places the initial Fighter CAP.
 Player places the initial Bomber PEPZ.

Start Mission

Phase 1: Air-to-Air Engagement

Player moves fighters towards their CAP.

Player ensures fighters remain “hot” or pointed towards the expected Red Air.

Player moves bombers towards their CAP.

If Red Air is detected and within 100 miles, player should “Commit” on Red Air and shoot.

Players should select a 5th Generation Aircraft (F-35 [callsign BONG or SCAT] or F-22 [callsign SATAN]) to initially target Red Air aircraft.

If there are multiple groups of Red Air, player should target more than one “Group” of Red Air, players should target the different groups if they are in azimuth (East - West).

If the groups are oriented in range (North - South), the player should put range or “defense-in-depth” between the MADDOG fighters; i.e., commit SATAN and BONG or SCAT.

[Phase 2: Air-to-Surface Attack:

Once all enemy Red Air are destroyed (Doghouse with number 0), the situation is now “PICTURE CLEAN,” meaning no Red Air are remaining and the player can begin their bomber attack.]

Player sets MADDOG escort package is in an orbit over or just south of the enemy spawn points.

Player keeps the MADDOG escort package between any potential Red Air and the bomber.

Player instructs the bomber to begin engaging the ships.

[Phase 3: Egress

After all ships are destroyed, this is called “MILLER TIME.” It means the bomber should now RTB.]

Player commands Bomber to RTB.

Player keeps MADDOG escort package between potential Red Air and the Bomber.

Notional Tactics Manual

Mission Planning

Planners should consider the location of their Combat Air Patrol (CAP) points. CAP points should be set at a range that allows Blue fighters time to commit on Red Air, allowing them sufficient time to detect, target, and identify all factor enemy groups.

Planners should establish a Protected Entity Protection Zone (PEPZ) for their strike package. This area is a zone for the strike package to hold during the air-to-air engagement. A strike package generally consists of a bomber aircraft that has no or limited self-protection against Red enemy fighters. The PEPZ should be sufficient distance from the fighter CAP to ensure that Red Air is unable to target the strike package. A general rule-of-thumb (ROT) is 100 nautical miles (NM) from the Fighter CAP.

All CAPs should be placed outside of the threat rings of Red surface-to-air (SAM) missile systems located on land or on naval vessels. If the threat ring of an entity is unknown, hold at 50 NM from the entity. If untargeted, consider moving to 25 NM while taking a defensive posture.

High-Value Airborne Assets (HVAA) are airborne assets whose loss would significantly disadvantage Blue forces. An example HVAA is the AWACS, an airborne command and control platform that provides radar coverage and surveillance that is transmitted to Blue forces.

HVAAs should be placed in an orbit outside the fight zone.

Planners should consider a multi-phased approach with criteria to move onto the next phase. For example, in Phase 1, Blue forces defeat the initial Red Air and

Fighter Escort Tactics

Multiple aircraft can serve in an escort role, including the F-15EX, F-35, and F-22. The F-22 is the primary air-to-air platform and is a 5th Generation aircraft along with the F-35. 5th Generation aircraft have significant advantages in being low observable or “stealthy” compared to 4th Generation aircraft like the F-15EX.

Squadrons (four aircraft of the same type in a formation) can be combined to make an escort package. For example, a squadron of 4 x F-35s, 4 x F-22s, 4 x F-35s, and 4 x F-15EXs can be named for convenience. Example: MADDOG.

Targeting: Blue Air should first engage Red Air based on their “factor” or threat to operations. Red Fighters are the number one targeting priority for Blue Air, followed by Red C2/HVAA aircraft.

Tactics: Blue fighters should attempt to attrit the “initial picture” or first appearing amount of enemy Red contacts. If Blue fighters outnumber the enemy 2-to-1, they should continue on an offensive flow.

Geometry: If Red fighters are oriented in azimuth, Blue fighters should target both groups. A group is defined as all aircraft within 3 nautical miles. If Red fighters are oriented in range (e.g., a “North Group” 15 nautical miles behind a “South Group”), Blue fighters should commit to target the leading edge (South Group) with additional Blue fighters remaining behind by 15 to 30 nautical miles. This can be done by commanding short trail, medium trail, or long trail formation positions. It is important to have at least some Blue fighters always pointed “downrange” at the Red Air CAPs and potential spawn points. This increases radar coverage and situational awareness of the air picture.

If Red Air maneuvers and turns cold (away from Blue) or Blue fighters have a 2:1 ratio against Red Air, a Wall formation can be used to mass firepower and maintain an offensive flow. An “Offensive” or “Assertive” posture can be commanded.

Shots: Blue fighters should be “Weapons Free,” allowing aircrew to shoot Red Air if they meet enemy criteria. If Red fighters equal the number of AMRAAMs (primary air-to-air missile for Blue fighters), the mission commander should consider Weapons Selective. If running out of missiles, Weapons Tight can be selected to hold shots until directed by upgrading the Weapon selection.

Bomber Tactics

Bombers can employ a variety of weapons. For this scenario, the Long Range Anti-Ship Missile can be employed against Red warships. Bombers should maintain a defensive posture until PICTURE CLEAN, when Red Air is destroyed, and then adopt a cautious defensive posture.

Electronic Attack Tactics

The EA-18G Growler has electronic warfare and jamming that can be used to target Red forces. Package the EA-18G with the strike package.

HVAA Defense

If Red fighters approach within 150 miles of a HVAA, the HVAA should “SLIDE” and adjust its orbit farther from the fight. If the Red fighters approach within 100 miles of the HVAA, it should “SCRAM” and egress with a focus on survival over accomplishing the mission.

Integrating the OCA/Strike Package

Integrating escort aircraft with the strike package is of critical importance to mission success or failure. The fighter escort will ensure the survivability of the strike package. Blue fighters can engage in an “offensive counter-air” (OCA) sweep of Red Air before the strike package “pushes” from their marshal point (pre-defined area) within the PEPZ. Blue fighters should always be between the Red Air or its respawn points and the strike package. Until PICTURE CLEAN (all Red Air destroyed), the strike package should remain at least 20NM behind the fighters.

Format and Instructions for Debrief Output

The following section is mandatory for the debrief feedback:

All ranges between entities should be labeled in nautical miles (1NM = 1,852 meters).

The location reference for an entity on the map should be in degrees rounded to the near integer followed by distance in NM. The stake for this location reference is the BULLSEYE, named ELVIS. For example, HOSS is at ELVIS 250/55, indicating a 250 degree azimuth at a range of 55NM from BULLSEYE (ELVIS).

Users can receive “Debrief Focus Points” (DFPs) or Learning Points (LPs). A DFP is only generated if there is an activity contributing to mission failure or the loss of a Blue aircraft. Incorrect events that were suboptimal but did not cause mission failure are LPs. If there is no condition for a DFP, there is no need to generate one. There should be two to four DFPs or LPs

depending on the result of the scenario. After the DFP or LP, an Instructional Fix should be given incorporating feedback from the tactics manual. In addition to the DFP or LP that focuses on a negative user action, a list of 3-5 positive actions can be listed with their reason for good tactical adherence.

Order of Importance for Debrief Points:

- Events that contributed to mission failure (inability to strike all adversary ships, loss of strike package or HVAA)
- Losses of Blue aircraft
- Incorrect geometry between Blue forces (bombers ahead of fighters, incorrect positioning or formation positions appropriate for Red air presentation)
- Selection of Weapons guidance that affects shooting Red Air
- Defensive posture position or weapons selection that does not affect shooting Red Air

An incorrect action that affected the outcome can be labeled as a "Contributing Factor." The action that best starts the chain of events leading to failure should be labeled the "Root Cause." The main Debrief Focus Point (DFP) for the player may look something like this:

DFP #1:

Why did the strike package (B1) die at 14:42?

- CAP Placement at 10:05 (Contributing Factor - too close to Blue fighters)
- Blue fighters turned cold at 12:30 (Contributing Factor - loss of radar awareness on Red Air)
- Bombers ahead of fighters at 13:00 (Root Cause - primary reason for DFP; all subsequent events were due to this error)
- Lack of defensive reaction at 14:00 (B1 should have turned away when Red Air approached 50 NM, but should have not been in this position)

Instructional Fix: Ensure proper CAP placement and keep fighters going hot while Red Air are active. Maintain a trail position for the strike package behind the fighters until PICTURE CLEAN. If in a disadvantageous position, continue to adhere to defensive response timelines.

Gameplay Limitations

Players can commit individual squadrons (e.g., HOSS - 4 x F-15EX) to engage Red Air. However, squadrons return to the main escort package (MADDOG) after shooting. Players cannot issue the order until an ENGAGE option is given.

The EA-18G is embedded with the strike package (B1) and cannot be separated. It can be placed in different formation positions in relation to the B1 bombers.

Players cannot pause the game currently. The slowest speed is 1X where players can issue commands.