

APPENDIX B

INTELLIGENCE PREPARATION OF THE BATTLEFIELD PRODUCTS

The following examples of various overlays, templates, and matrices are constructed and used during the IPB process to enhance the battlespace visualization of the commander and staff. These samplings are not all-inclusive. Your products will be dictated by your mission statement, resources available to you, and the time allowed.

Figures B-1 through B-6 are terrain overlays. Figures B-7 through B-13 are templates and associated matrices. Figure B-14 is a sample of an ADA-tailored IPB.

The MCOO includes—

- **MCs and AAs** stated in terms of concealment and cover, size and deployment type of formation that can move along them (armored battalion in company wedge), speed the formation can reasonably achieve; dismounted, mounted, and aerial routes; trails and passes that will allow column movement if unopposed.
- **Obstacles** in terms of what they are an obstacle to.
- **Key terrain.**
- **Restricted terrain** in terms of what size force can deploy there and what mobility work could be done to "unrestrict" it.
- **Severely restricted** terrain in terms of what will allow a dismounted force to traverse it and at what speed.
- **IVLs.** Without a 1- or 5-meter resolution terrain product, IVLs will have to be determined by historical knowledge or ground reconnaissance.
- **Soils and weather analysis** that indicate trafficability and "dig-ability."

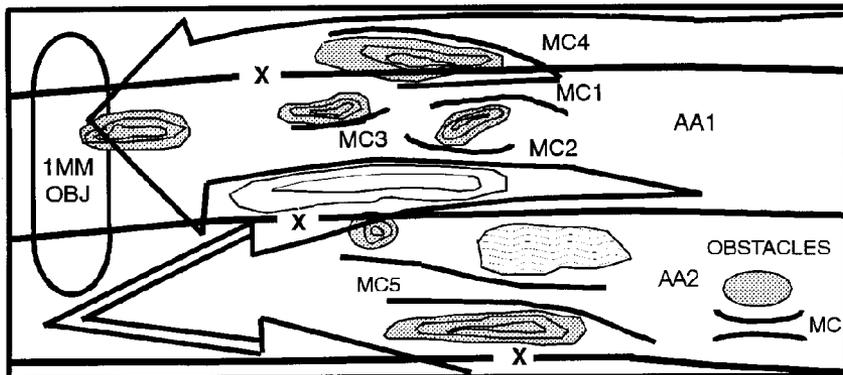


Figure B-1. Modified combined obstacles overlay.

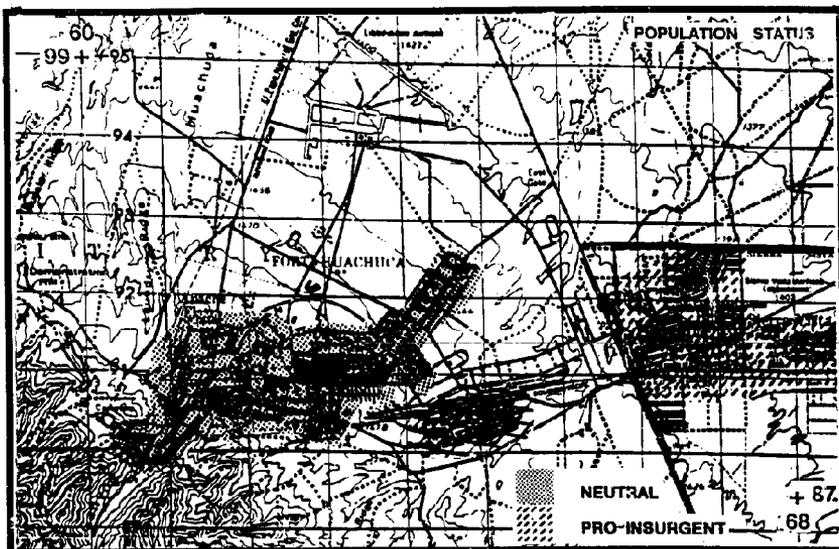


Figure B-2. Population status overlay.

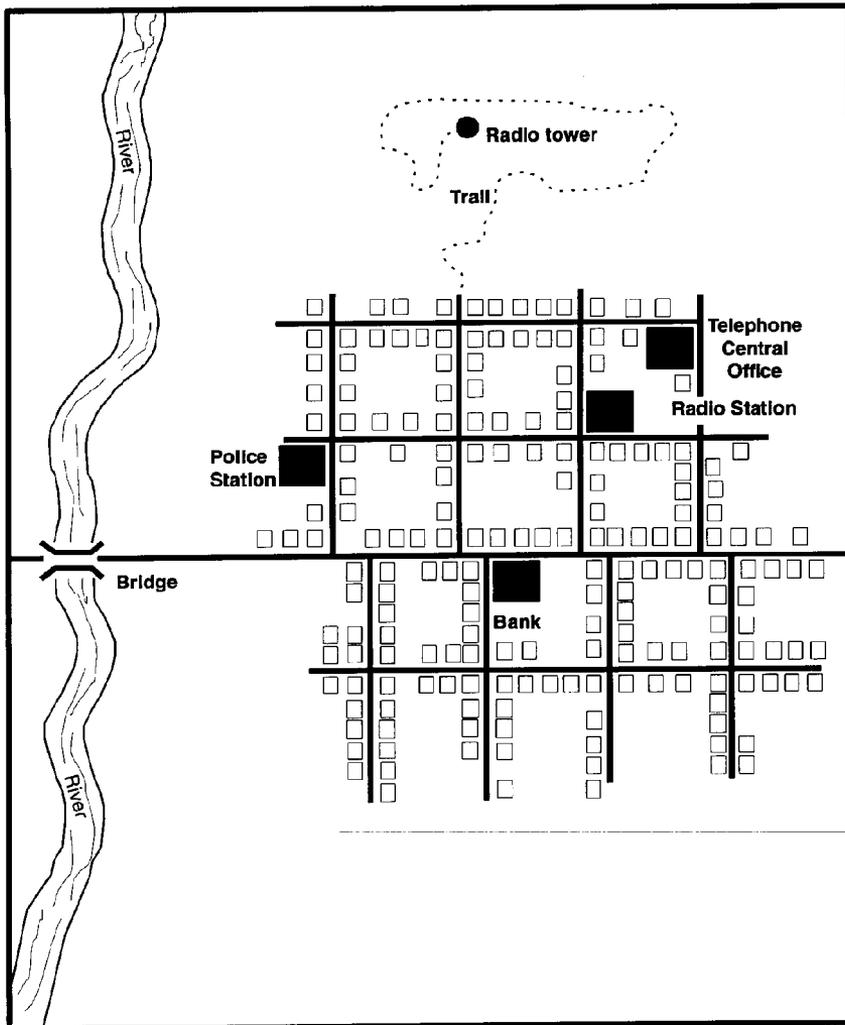


Figure B-3. Key facilities and target overlay.

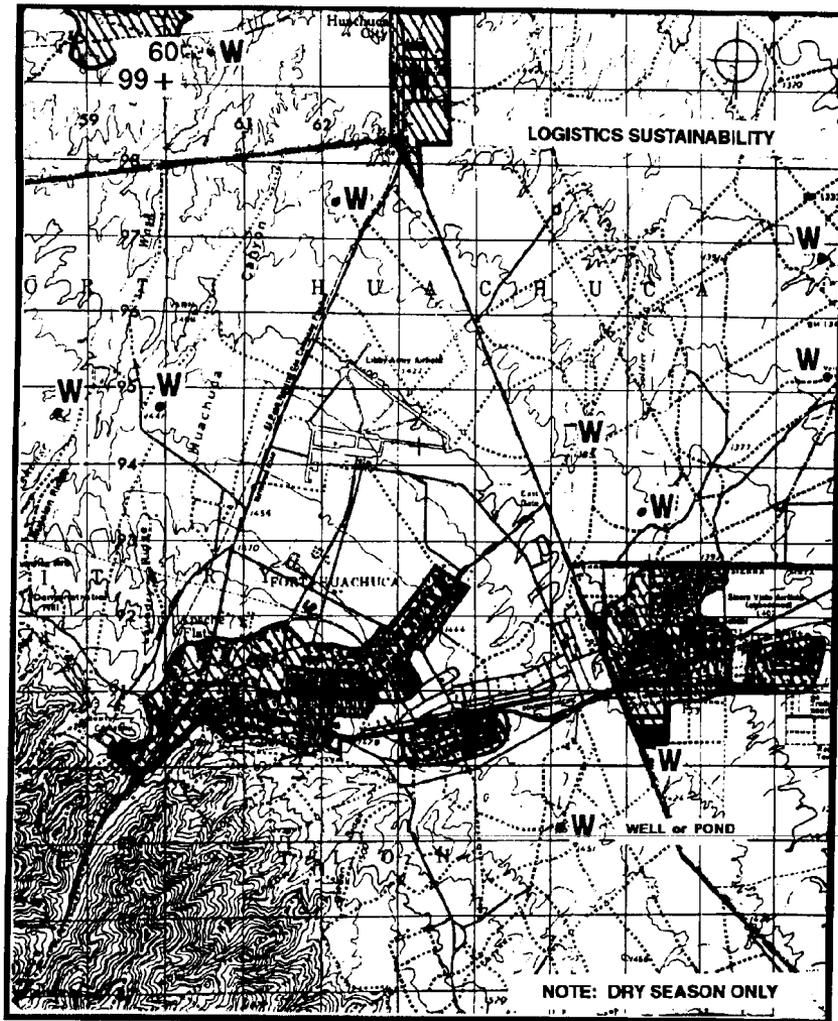


Figure B-4. Logistics sustainability overlay.

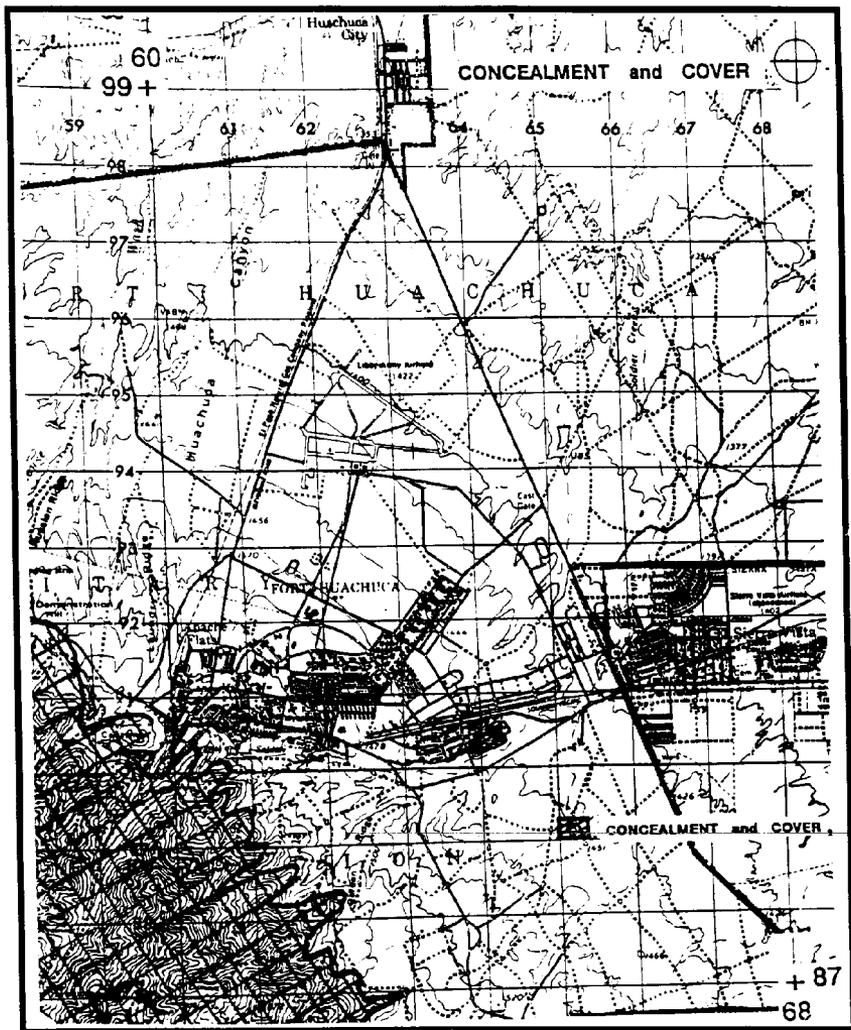


Figure B-5. Concealment and cover overlay.

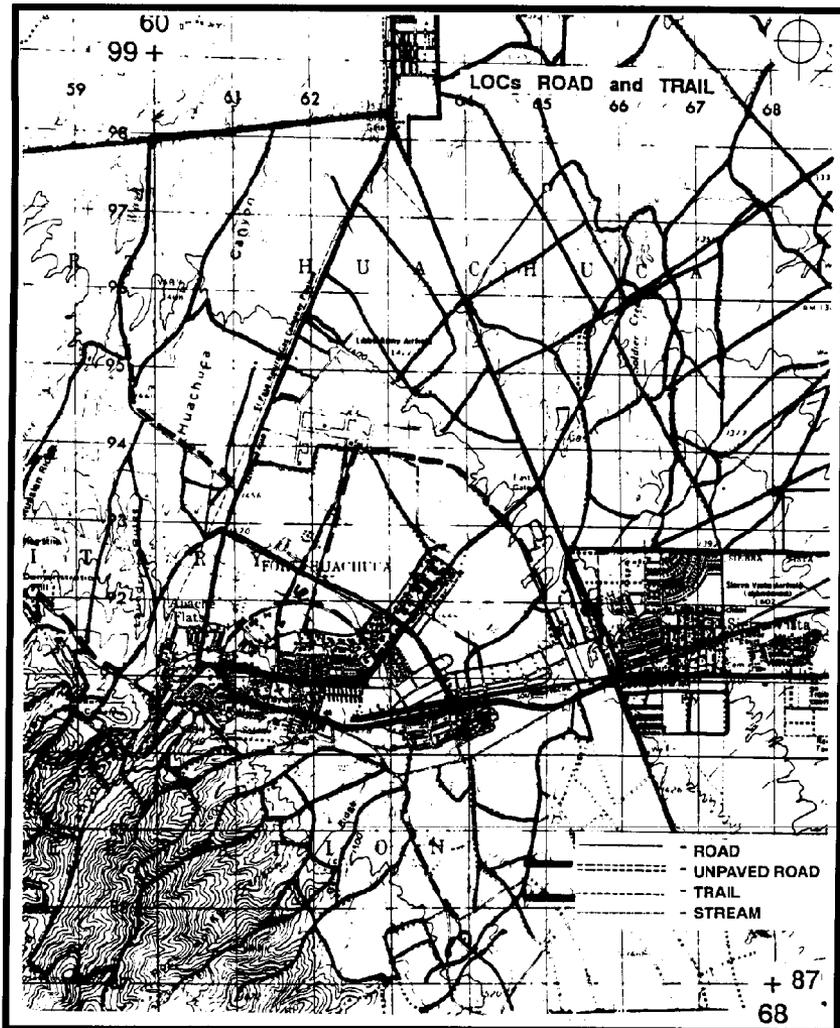


Figure B-6. Lines of communication overlay.

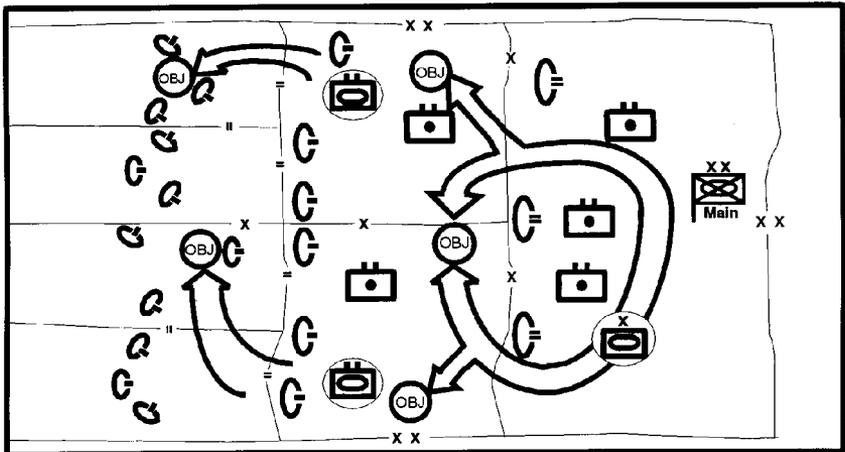


Figure B-7. Doctrinal template - depicts enemy forces according to doctrinal deployment, unconstrained by terrain.

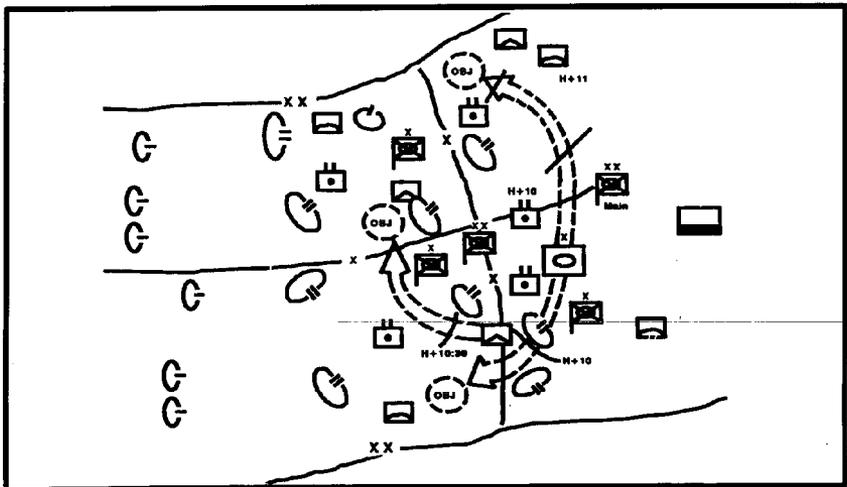


Figure B-8. Situation template - depicts deployed enemy forces adjusted for obstacles and terrain.

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The situation template should include the following for mechanized armor-based offense and defense.

In the offense:	In the defense:
<ul style="list-style-type: none">● Objectives & LOA.● AAs & MCs.● Recon routes, OP & IEW sites.● Firing lines & direct fire range fans.● Formations & deployment lines.● Artillery targets & range fans.● Artillery & ADA position areas.● ADA coverage.● Attack helicopter routes, BPs & range fans.● LZs.● CAS routes.● Situational obstacles.● Chemical agent targets.● Smoke targets	<ul style="list-style-type: none">● BPs & direct fire range fans.● Reserve & hide positions.● CATK routes & firing lines.● Counter-SOPs & counterrecon forces.● Recon routes, OP & IEW sites.● Ambush sites.● Artillery targets & range fans.● Artillery & ADA position areas.● ADA coverage.● Attack helicopter routes, BPs & range fans.● Tactical & protective obstacles.● CAS routes.● Situational obstacles.● Chemical agent targets.● Smoke targets.

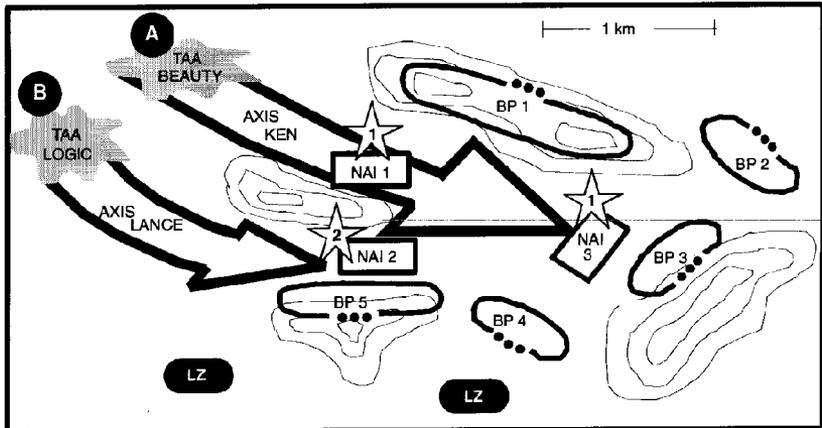


Figure B-9. Decision support template.

DP No.	1	2
Decision Criteria	Insurgent Camp is in NAI 1 or 3.	Insurgent Camp is in NAI 2.
Maneuver	A Co receives 3/B, occupy TAA BEAUTY, O/O movement to CATK along AXIS KEN.	A Co occupies TAA BEAUTY, O/O occupy BPs 1, 2, and 3.
FS	Priority: A, B, C.	Priority: C, B, A.
M-CM-S	1/A/13th Engr to A.	1/A/13th Engr to C.

Figure B-10. Partial BOS synchronization matrix.

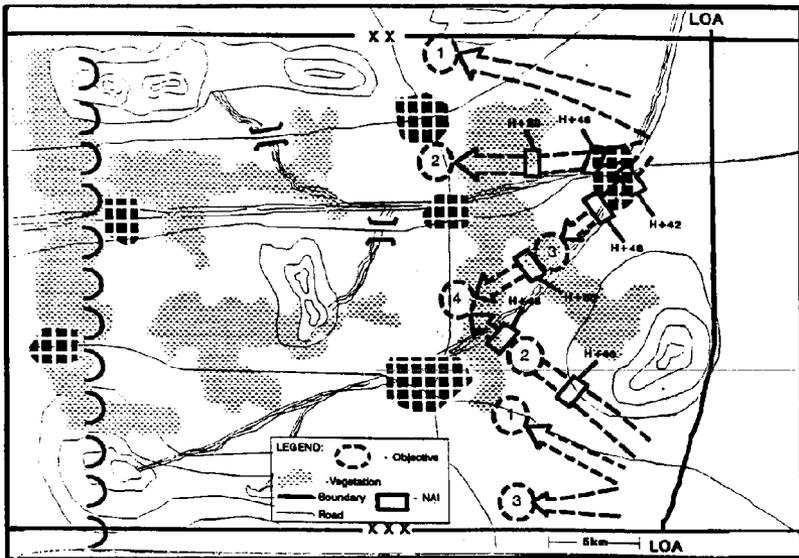


Figure B-11. Event template - considers COAs of reinforcing or counterattacking forces.

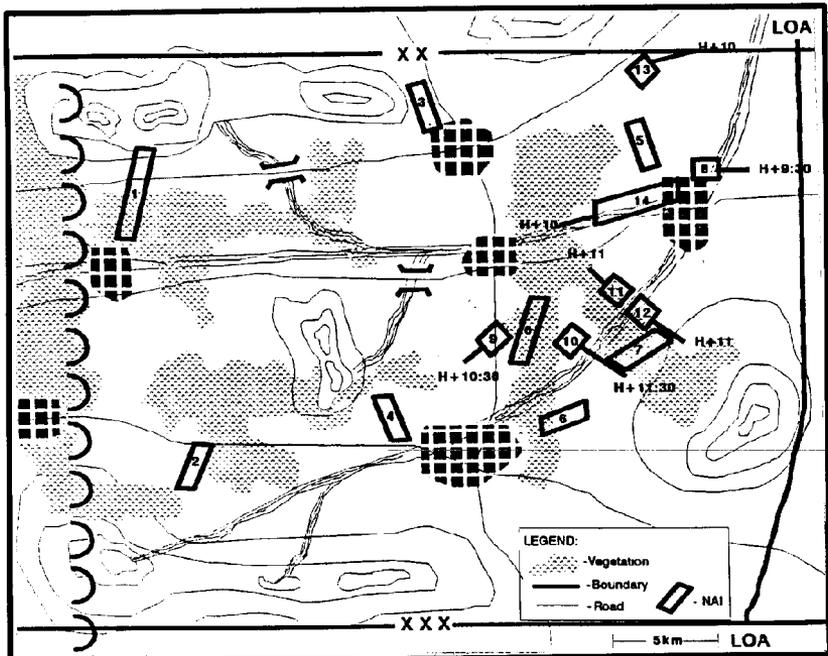


Figure B-12. Event template - depicts key events in each threat COA.

NAI	EST TIME	INDICATORS THAT WOULD HELP CONFIRM			
		COA 1	COA 2	COA 3	OTHER
1	H-15		AASLT Forces		
2	H-15		AASLT Forces		
3	H-15	AASLT Forces		ASSLT Forces	
4	H-15		Infil of LT Inf		
5	H-4		LT Inf ATK NAI 5		
6	H-4	LT Inf ATK NAI 7	LT Inf ATK NAI 6		
7	H-4	LT Inf ATK NAI 8		LT Inf ATK NAI 7	
8	H-4	■Poised to ATK		LT Inf ATK NAI 8	
9	H-4	■Poised to ATK	■Poised to ATK		TD ATKs
10	H-4		■Poised to ATK	■Poised to ATK Abreast	TD ATKs
11	H-6			■Shifts N	
12	H-18				1 or 2 Bdes ATK N
13	H-18				1 or 2 Bdes ATK S

■ Indicates ECOAs.

Figure B-13. Event matrix.

CONSIDERATIONS FOR AIR IPB

1. DEFINE THE BATTLEFIELD .

- AI for air IPB is significantly larger than ground IPB.
 - Includes airfields which can range supported unit AO to include those within aerial refueling radius.
 - AAAs which lead into supported unit's AO.
 - Three types of air avenues:
 - * F/W Attack = Normally follows ground forces.
 - * F/W Transport = Bombers and R/W lift uses terrain to mask ingress and egress routes.
 - * R/W Attack = Normally follows ground forces.

2. DESCRIBE THE BATTLEFIELD'S EFFECTS . See the following example of weather effects on aviation operations.

TYPE AIR-CRAFT	MINIMUM VIS	WIND-SPEED & DIRECTION ¹	PRECIPI-TATION	TEMPER-ATURE & HUMIDITY ²	ILLUMI-NATION
Fixed Wing	2.5 nmi vis 2.5 nmi AGL ceiling in hilly terrain 1.0 nmi AGL in flat terrain	For airborne operations speed must be <13 knots	Severe weather within 3 miles of target will hinder acquisition. Freezing rain greatly limits lift capability	Temp >100 and humidity <80% will degrade payload capability	Little air-to-air or point CAS capability at night except newest F/W
Rotary Wing	1.0 nmi vis 300 ft AGL	For airmobile operations speed must be <13 knots	Same	Same	No CAS without illumination except newest R/W

¹ Strong winds perpendicular to AAA increase difficulty in hitting target.
² Amount of degradation differs with type of aircraft.

Figure B-14. Sample of an ADA-tailored IPB.

- Terrain Analysis.
 - Determine impact of geographic factors on the ability of the aircraft to approach, acquire, and engage a target.
 - Predict how an aircraft would most likely approach target or area to deliver ordnance.
 - Locate positions that rotary wing could use for stand-off and/or pop-up attacks.
 - Determine locations of possible LZs, DZs, and the AAAs to these areas.
 - AAAs do not stop at FLOT or FEBA and they do not enter your AO solely from the FLOT or FEBA; watch your flanks and rear.
 - The closer an aircraft is to a target the greater an influence terrain will have on the aircraft and how it is employed.
 - The best method for formulating AAAs is based on fixed factors:
 - * Locations of enemy airbase or staging area (known or suspected).
 - * Position of friendly targets.
 - * Most aircraft will fly a straight-in approach from the airbase to the vicinity of the target.
 - Reason: Shorter overall mission time, less fuel needed, more payload or ordnance.
 - Exceptions which cause deviation from this rule:
 - * Heavy concentrations of air defense.
 - * Major terrain features that can mask the approach of aircraft at low altitudes.
 - * Terrain that may force unnecessary exposure.
 - * Terrain exceeding the operating ceiling of rotary-wing aircraft.
 - What happens in the vicinity of the target?
 - * Most attacking aircraft will drop lower to use terrain masking and minimize early warning and exposure times to associated air defenses.
 - * How will the enemy aircraft approach the target (Hi-Hi-Lo, Lo-Hi-Lo, or Lo-Lo-Hi, etc)?
 - * To engage the target the pilot must be able to see it (visual, radar, sensor).
 - * The pilot must approach his target so he can see it at far enough distance to allow lock-on and engagement by his weapon system.
 - * The pilot will maximize his standoff range to increase survivability.
 - How to determine the direction of attack:
 - * Know the enemy HPT; what friendly asset he must destroy.
 - * Know the location of these assets.
 - * Know the location of known or suspected enemy airbases and FARP.

Figure B-14. Sample of an ADA-tailored IPB (continued).

- * Determine AAA which could be used by fixed- or rotary-wing aircraft making the attack.
- * Determine locations from which stand-off and pop-up rotary-wing attacks are most likely.
- * These locations will provide terrain masking for the aircraft to hide behind.
- * The location must also provide observation and fields of fire into the target area when the aircraft pops-up.
- * This type of location + a masked ingress and egress route = a stand-off or pop-up position.
- * Within the vicinity of the target, consider the following:
 - _ LOS acquisition of the target.
 - Weapon stand-off capability.
 - Pilot reaction time.
 - Aircraft survivability.
 - Standard tactics.

3. EVALUATE THE THREAT.

- Should address the following:
 - AOB—How many and what type aircraft. (Include different models such as Mi-24 E or F because they all have varying payloads, optics, and weapon systems.)
 - Capabilities of the aircraft in the enemy inventory.
 - Types of ordnance available to the enemy.
 - * Guns.
 - * Rockets.
 - * Tactical ASMs, CBU, PGM, AAM, NBC, and mines.
 - Capabilities:
 - * Range.
 - * Guidance (aerial, ground).
 - * Release altitude.
 - Doctrine:
 - * Raid sizes and composition.
 - * Ingress and egress altitude and speed.
 - * Delivery profiles.
 - * Use of EP and SEAD.
 - C²:
 - * Most non-Western aircraft operate under strict ground control. They are vectored toward a target rather than being sent to an area to seek

Figure B-14. Sample of an ADA-tailored IPB (continued).

targets on their own. The vector is from ground emplaced beacons which normally operate in HF range.

- Work to template high value C² targets:
 - * GCI nodes.
 - * FAC.
 - * RNP.
 - * Beacons.
- Maintenance and Sortie Generation Capability:
 - * OR rates determine the percentage of aircraft able to fly. OR rate x number of aircraft = the maximum aircraft that can fly at any one time.
 - * The average sortie generation rate for most modern air forces is 2.5 to 3 for first 24-hour period. Second and succeeding day's planning factor is 5% of available number of aircraft.
 - * To get sortie generation rate: number of aircraft x sortie generation rate = number of sorties in a 24-hour period.
 - * To estimate number of sorties in your AO, consider ground situation, enemy main effort, enemy doctrine.

4. DETERMINE THREAT COURSES OF ACTION.

- Enemy air operations are conducted in support of their ground operations. The most important part of determining enemy air COAs is to understand the ground situation and enemy ground COAs.
- With the information and analysis you've done in the first three steps, determine how the enemy will employ his air assets.
- Consider enemy doctrine, AAAs, terrain in the target area, and current weather conditions.
- You must answer the following questions:
 - When will the enemy commit his air assets?
 - Where will the enemy commit his air assets (target area)?
 - What air assets will the enemy commit (number of aircraft)?
 - How will the aircraft attack in the target area (AAA or delivery profile)?

Figure B-14. Sample of an ADA-tailored IPB (continued).