AIR INTERDICTION EFFECTS

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Air interdiction (AI) effects differ with every situation and can significantly affect the course of an operation. AI against an enemy with minimal logistics requirements, a simple force structure, and primitive logistics systems differs from AI conducted against a highly mechanized, modern force possessing intensive logistics requirements (such as potential peer or near-peer rivals). Interdiction conducted against enemy forces and logistics, without regard to the overall theater situation, may be largely ineffective; therefore planning for interdiction should be closely integrated in the joint force commander's overall planning process.

The effectiveness of AI depends on a number of variables. The time required for AI to affect the enemy, and the duration and depth of those effects, depends on several factors. These factors include, but are not limited to, the distance between interdiction operations and the location of intended effects; the means and rate of enemy movement (ships, trains, aircraft, trucks); the physical target (forces, supplies, fuel, munitions, infrastructure); the level of enemy activity; enemy tactics; and the resilience of the targeted force or system.

AI will have a more robust effect in linear combat against a modern, mobile, conventional force using significant resources. The timing and magnitude of effects will vary depending upon where AI is conducted and the nature of the enemy. AI deep in the operational area will usually produce extensive, protracted effects that take longer to occur while AI conducted near the front lines typically produces immediate, but geographically limited, effects. During major operations and campaigns, the effects of AI are typically more apparent by influencing an enemy's ability to command, mass, maneuver, supply, and reinforce available conventional combat forces. AI may have negligible effects against an insurrection during stability operations where the enemy employs a shadowy force structure, a simple logistics net, and unconventional tactics. Timely, accurate intelligence and persistent operations allow AI to disrupt enemy supply operations, destroy weapons caches, or deny sanctuary to insurgents. To maximize the influence AI has on an enemy, commanders should understand how its effects will differ depending on the nature of the conflict being fought.

Counterland Operations during Operation IRAQI FREEDOM (OIF)

Counterland operations had a devastating effect on the Iraqi armed forces during OIF. The commander of the Al-Nida Republican Guards Division, whose division dissolved from the psychological impact of the air attacks, commented to interviewers after the war:

"In the 42nd Brigade sector, the troops were in their prepared positions and were hit very effectively for five days. The continuous nature of the attacks did not allow us to track the number of losses. After the attacks many of the soldiers 'escaped' [a euphemism for deserted]. By the end of the war more than 70 percent of the Al-Nida Republican Guard Division 'escaped,' [while at the conclusion of hostilities] between the air strikes and desertions only 1000-1500 soldiers remained out of more than 13,000."

Iraqi Perspectives Project, A View of Operation IRAQI FREEDOM from Saddam's Senior Leadership, Kevin M. Woods, with Michael R. Pease, Mark E. Stout, Williamson Murray, and James G. Lacey.

Whether the Air Force is involved in major operations and campaigns or smaller scale contingencies, **AI can channel movements, constrict logistics systems, disrupt communications, force urgent movement, and attrit enemy fielded forces.**

CHANNELING ENEMY MOVEMENTS

AI channels the movement of ground forces when conditions force the enemy to maneuver through or along predictable avenues. This generally results from the lack of transportation routes, manmade and natural obstacles, and other geographic constraints. With fewer routes available to transport enemy supplies and reinforcements, the greater the loss or delay caused by severing those routes. Attacks on enemy lateral lines of communications (LOCs) can channel movement, impair reinforcement, reduce operational cohesion, and create conditions for defeating the enemy in detail. Geography influences the rate of enemy movement, the size of the force to be moved, where it can move, and the means required to move the force. Geography may also restrict or channel ground movement, creating chokepoints and concentrated targets. In cases where geography favors rapid movement of enemy forces, AI assets can create artificial or temporary chokepoints by dropping bridges or collapsing tunnels.

Air component planners should coordinate the AI effort with the land component planners when they are establishing their overall scheme of maneuver. LOCs used by the enemy may also facilitate rapid advance of our own ground forces, requiring

properly coordinated tradeoffs between the enemy and preserving key routes for advancing friendly ground units.

CONSTRICTING THE ENEMY'S LOGISTICS SYSTEM

Heavy ground combat creates demands on enemy fielded forces and speeds consumption of vital war materiel. This in turn increases the effects of AI operations by straining the enemy support system and reducing stockpiles. When the enemy consumes large quantities of supplies because of heavy combat or extensive movement, interdiction operations have an accelerated impact for two reasons. First, when opponents are under heavy pressure, they may be forced to use up stockpiles reserved for ongoing or future operations. Inability to stockpile supplies makes it more difficult for the enemy to initiate large-scale offensive operations. Second, high consumption drives an enemy to use more direct routes, making them more vulnerable to interdiction attacks. The nature of ground combat also determines which supporting elements are most critical at any given time, as which items of supply and infrastructure are critical can vary greatly with the situation. Historically, an enemy force fighting under static conditions is more affected by the destruction of munitions, while a highly mobile enemy is more disrupted by the loss of fuel and transportation.

The less surplus capacity the enemy's logistics system has, the less it can compensate for damage. Degrading the mobility of the enemy's distribution system hinders its ability to redistribute assets to effectively counter friendly operations. When attacking the enemy's logistics systems, it is normally prudent to concentrate efforts on a small number of limiting factors such as concentrations of supplies; petroleum, oils, and lubricants; storage and resupply systems; or soft vehicles. There may not be enough interdiction assets to attack all an enemy's logistics systems, even sequentially over time.

The enemy transportation system itself should also be broken down into components when analyzing for weaknesses to attack. Most transportation systems consist of the actual conduit for travel (roads, rail, etc.), vehicles used to transport troops or supplies along the conduit, energy required for those vehicles to operate (typically fuels or electricity), command and control (C2) to run the transportation system, and repair facilities to keep the system operating. The loading and unloading points in the transportation system may prove especially lucrative, as large concentrations of enemy forces or supplies are often found there. Examples include rail yards, harbors, and airfields. If forces or supplies are critically needed at the front, the enemy may not have the luxury of dispersing them during loading or unloading, which increases vulnerability to attack. Moreover, environmental impacts on the transportation system can create additional chokepoints worth exploiting. In many cases, the enemy will use the same transportation system for both forces and supplies. Under such circumstances, destroying or degrading the enemy's LOCs will affect both their force mobility and resupply capability. When analyzing an enemy transportation network for importance to their overall strategy, all possible uses for such a system should be considered. Before making the decision to interdict the enemy's transportation network, planners or

engagement authorities must conduct a proportionality analysis. Planners or engagement authorities consider surplus capacity, potential adverse impact upon the civilian population and reconstitution capability, among other factors. Failure to do this has sometimes led to large-scale AI efforts that caused unintended harm to the civilian population or had little chance of success (e.g., the limited effectiveness in halting activity on the Ho Chi Minh Trail during the Vietnam War).

DISRUPTING ENEMY COMMUNICATIONS

The enemy's combat operations may be disrupted with attacks on their C2 nodes; the level of communications disruption should be commensurate with overall objectives. C2 attacks may seek complete isolation of enemy combat forces from higher headquarters, or such attacks may force the enemy to use less capable, less secure backup communication systems that can be more easily exploited by friendly forces. When the enemy employs rigid, top-down C2, they can be particularly vulnerable to the disruptive effects of C2 interdiction. This is especially important when the enemy has not had a long preparation period to exercise their plan, or when the conflict has moved beyond the initial stages. Conversely, an enemy that practices a high degree of C2 autonomy will likely be less affected by attacks on their C2 network. When the ground situation has been static for long periods before the campaign, chances are greater that the enemy has planned and trained for either offensive or defensive operations. Under such circumstances, attacks on enemy C2 are less likely to have significant effects, as the enemy is still able to react in a scripted manner. Once enough time has elapsed for events to overcome a preplanned enemy response, attacks on C2 will impair their ability to respond and pay larger dividends on the battlefield. In some circumstances, such as when the operations plan includes forcing the enemy to react to friendly maneuver, complete destruction of their C2 architecture would be counterproductive. The capability to affect the enemy through information operations should also be considered, as this approach may lead to better overall results while freeing up conventional attack assets for other forms of AI.

FORCING URGENT MOVEMENT UPON THE ENEMY

The enemy may execute urgent movement for several reasons: an attempt to achieve surprise, the need to attack before reinforcements or supplies arrive, the requirement for rapid reinforcement of threatened defensive positions, the attempt to exploit offensive operations, or when driven to urgent movement by interdiction effects. Under these conditions, the enemy has a strong incentive to attain specific objectives within time constraints. Rapid movement of enemy forces and supplies may make them more vulnerable to AI. They generally become more concentrated while traversing more exposed and predictable avenues, foregoing time-consuming camouflage and concealment efforts. However, urgent movements are temporary due to a desire to limit exposure. For friendly forces to capitalize on such opportunities, they should deny the enemy mobility when needed most. Close coordination is required among all forces to take full advantage of the situation. Additionally, commanders should have access to information systems able to process real-time and near real-time intelligence to exploit

the capabilities of interdiction and opportunities that AI operations create. Friendly forces should take full advantage of all intelligence, surveillance, and reconnaissance assets, from air- and spaceborne sensors to special operations force air and ground elements, to detect when these movements occur. Coordination should occur among all forces to take full advantage of the situation in the time provided; otherwise, the enemy may escape the desired effects of AI.

ATTRITION OF THE ENEMY

AI can attrite enemy forces and materiel, tipping the balance of forces in favor of friendly units. Resources, terrain, weather, enemy actions, and enemy characteristics are just a few variables to consider when developing an AI strategy.

The fact that directly attacking individual enemy forces is possible does not mean it is always the most efficient approach in terms of munitions and sorties available. Although the direct destruction of individual enemy forces has an immediate impact on enemy combat power, it usually requires more assets due to the larger number of individual targets—especially if they are dispersed or dug in. Often, the isolation of large enemy formations by destroying enemy logistics nets, sustaining resources, and supporting infrastructure can achieve more widespread results than attacking individual tanks or artillery pieces.

Terrain and weather affect the ability to attrit enemy forces. Attacking an enemy in open terrain in good weather significantly differs from striking an enemy in rough wooded terrain under a layer of adverse weather. As an example, exposed Iraqi forces were much easier AI targets for coalition airpower during Operation DESERT STORM than dispersed Serbian forces that took cover using trees, valleys, and adverse weather conditions during Operation ALLIED FORCE.

Enemy characteristics influence an attrition-based strategy. The number and vulnerability of enemy fielded force components, along with the enemy's ability to replace its losses, should be weighed against the expected results of targeting the supporting infrastructure. An attrition-based strategy against enemy fielded forces tends to produce intense localized results with fewer disruptive effects across the entire enemy system. Psychologically disruptive effects, however, may prove to be an added benefit. Enemy movement also influences the ability to destroy enemy fielded forces. During Operations DESERT STORM and IRAQI FREEDOM, the presence of coalition land forces forced the enemy to react *en masse,* leaving them detectable and exposed to air attack. However, because Operation ALLIED FORCE saw no use of significant coalition land forces, the Serbians were able to use dispersion, deception, and concealment tactics. Thus, friendly ground maneuver that forces an enemy to react and become predictable can make an attrition strategy viable and more effective. Retreating enemy forces remain a legitimate target in AI operations as such forces may be available for continuous use by the opposing commander.