# STRATEGIC ATTACK IN AIR OPERATIONS PLANNING

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Planners formulate courses of action (COA) for the commander, Air Force forces (COMAFFOR) or joint force air component commander (JFACC) to recommend to the joint force commander (JFC) through the joint operation planning process for air (JOPPA) which is the air component portion of the joint operation planning process (JOPP). The JOPPA culminates in production of the joint air operations plan (JAOP), which details how air and space efforts will accomplish or support the JFC's overall objectives. The JOPPA consists of the following stages, which mirror the stages of the JOPP: Initiation, mission analysis, COA development, COA analysis and wargaming , COA comparison, COA approval, and plan or order development. The following discussion highlights considerations specific to planning strategic attack (SA) within the JOPPA.

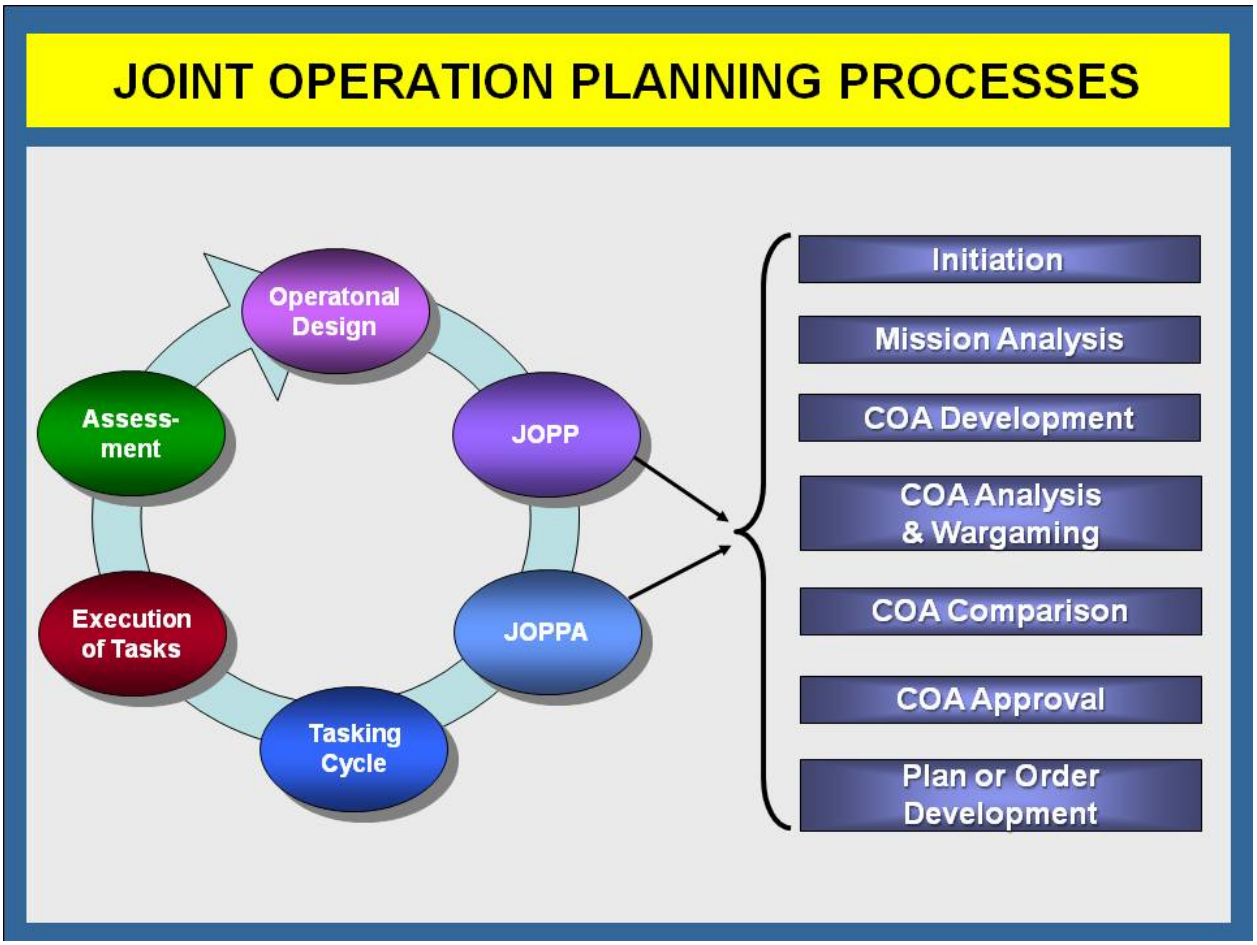
## Initiation

Planning begins when an appropriate authority recognizes potential for military capability to be employed in response to a potential or actual crisis and initiates strategy creation and operational design. For the JFACC, that authority is usually the JFC, but in the case of SA, its use may be ordered and authorized directly by national-level authorities (the Secretary of Defense [SecDef] and the President), because of the political sensitivity of targets and targeted locations in some cases.

## Mission Analysis

The mission analysis portion of the JOPPA establishes the purpose of the operation and broad guidance for its conduct, usually expressed in terms of a commander's mission statement. This stage is also where joint intelligence preparation of the operational environment (JIPOE) begins if has not already begun. A thorough understanding of the adversary, the adversary's centers of gravity (COGs) and critical infrastructure and support mechanisms is critical. Thoroughly understanding when, where, and how to attack the adversary's military targets is essential to achieving military objectives. Further, understanding the historical, cultural and economic sensitivities is critical for justifying the use of force and gaining the support (or at least the acquiescence) of the target audience. The figure titled **Joint Operation Planning Processes** illustrates the

JOPP, JOPPA, and other processes governing employment of forces that are related to them.




**Joint Operation Planning Processes**

**Objectives and Intent.** Determining the purpose of the operation and its desired outcome—establishing the objectives and end state—is the most important part of mission analysis. **Effective use of SA requires clear, attainable, relevant, and decisive objectives. It also requires clear definition of the commander's criteria for the operation's overall success—a logical and achievable end state.**

Clear understanding of the commander's intent, which consists of the end state, objectives, and a comprehensive method for accomplishing them, is especially critical for SA operations. This is greater than for many other forms of force application, which primarily engage enemy fielded forces. Most counterforce applications seek to achieve strategic objectives through accumulation of tactical- and operational-level effects against enemy fielded forces. Since the defeat of fielded forces will usually aid

achievement of strategic-level objectives, efforts against these forces may still be of value even if strategic objectives are not clearly developed. This is not so with SA. Unclear or unattainable objectives will lead to ineffective operations. This is especially so when SA is used in concert with other instruments of national power such as diplomacy. Objectives that were unclear and unattainable within the context of enemy motivations (e.g., "our objective is to create conditions for a favorable settlement by demonstrating to the VC [Viet Cong] / DRV [Democratic Republic of Vietnam] that the odds are against their winning"[1]) contributed to failure of the SA portion of Operation ROLLING THUNDER in Vietnam. Even though closely coordinated with diplomatic efforts, the 1966-67 bombing accomplished no effects that contributed to attainment of national objectives and sent confusing signals to the enemy, the enemy's allies, and the rest of the world, and emboldened the North Vietnamese to expand their involvement in the insurgent struggle in South Vietnam.

**JIPOE.** Successful SA operations place unique demands on intelligence professionals involved in planning them. "Traditional" intelligence methods are well suited to estimating the strength and disposition of enemy forces. Even the intent of the enemy's military forces can usually be surmised from their overt actions. As planning progresses, the effects of force-on-force engagement are relatively easy to estimate, since cause and effect relationships are generally straightforward and well understood, and measures of effectiveness (MOEs) are easy to derive, especially if attrition-based.

This may not be the case with SA, which requires clear and in-depth understanding of two vital areas beyond those traditionally focused on during JIPOE. The first is how the enemy functions as a system—how the various components of their state, group, or entity interact and support one another; which functions are key to sustaining other functions; what processes are required to keep the system running; and so on. Those components or processes that enable many other components of the system to function are often the most lucrative targets, as transportation and oil were during the strategic bombing campaign of WW II. Enemy leadership is always such a component and, by definition, is always in some way a target of SA.

The second vital JIPOE requirement is to understand the causal linkages between actions and effects. As stated before, the effects of SA are almost always indirect—there is some intervening mechanism (often there are several) between the direct effects of attack and the ultimate outcome. This means that some thought must be put into determining these mechanisms or causal linkages—in thinking through the likely

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[1] Memorandum from SecDef McNamara to President Johnson, "Program of expanded military and political moves with respect to Vietnam," in *Foreign Relations of the United States, 1964-1968;* Vol. III, *Vietnam*, June-December 1965, Document 38; at http://history.state.gov/historicaldocuments/frus1964-68v03/d38.

consequences of attacks beyond the immediate damage caused by bombs (or missiles, SOF actions, offensive cyberspace operations, etc.).

Deriving such intelligence and analyzing it properly are not easy tasks. In-theater intelligence and assessment resources are geared to give limited target systems analyses, but are probably not sufficient for the kind of in-depth understanding necessary for successful SA. Planners can obtain assistance from organizations outside the theater (like the Joint Warfare Analysis Center [JWAC]) or outside the Department of Defense (DOD) (like the Central Intelligence Agency [CIA]), and may even require insight from intelligence assets of foreign governments. These agencies should know what is required of them and working relationships should be built before operations begin. In many cases appropriate access will require coordination above the JFC level.

**COA Development**

**Situation Development.** This phase of planning begins with a crucial refinement of the ongoing JIPOE process. Compelling an enemy to do our will requires denying them those things they need to continue the fight or placing at risk those things they value—we must critically weaken their sources of power. Thus we must understand what their sources of power are and where those sources are, or can be made, critically vulnerable and where decisive points for attack are. This may be accomplished through COG analysis.

**Center of Gravity Analysis.** A COG is a source of power that provides some entity its moral strength, freedom of action, or will to act. In the context of SA against enemy systems (nation, alliance, or other group), COGs are focal points that hold a system or structure together and draw power from a variety of sources and provide purpose and direction to that system. In practical terms COGs can be thought of as balance points, focal points, or leverage points that, if have appropriate action taken against them, will have a greater effect on the overall system that has been targeted. They provide a means of relating critical system elements to those that are vulnerable—determining critical vulnerabilities. Critical vulnerabilities will have decisive points within them; attacking these will critically affect the COG and confer decisive advantage for friendly commanders.

COGs differ from operation to operation. In the case of a major campaign against an industrialized opponent, the adversary's war sustaining resources may constitute a COG and its critical vulnerability may be the transportation system that serves all of its elements. Decisive points may be nodes within that system. This was the case in WW II in Europe, for instance. In the case of stability operations, the leadership of an adversary terrorist network may be the COG and the means of affecting it may be

cyberspace operations based SA against its means of financial support, which may have decisive points vulnerable to cyber attack. Some aspect of the adversary's leadership will likely form a COG regardless of the type of conflict, even though the means of affecting it may change from situation to situation.

Affecting the appropriate COGs in the right way should have the most decisive effect on a conflict. A number of tools and models exist to aid planners in analyzing COGs and how to best attack them. Regardless of the analysis method used, opportunities exist to achieve physical and coercive effects that are well out of proportion to the effort and resources required to accomplish the attacks. Identifying these opportunities requires sophisticated analysis of a specific system's COGs which gives a broad view of those parts of the enemy's system that friendly action should orient upon.

One of the key insights of the systems approach is that it emphasizes the vulnerability of complex adaptive systems to attacks upon the linkages and interrelationships among components. In many cases, it may be beneficial to strike at a COG through parallel attack. This may synergistically place greater stress on the COG than sequential or serial attack could alone. Allied attacks against the German rail network accomplished this effect during the last ten months of WW II. Allied bombers struck rail yards, while near-parallel attacks by medium altitude bombers and fighters destroyed rolling stock and rail track away from cities. These efforts crippled a system the Germans relied upon for freedom of action.

Another technique involves affecting target systems so as to expose new, more accessible vulnerabilities. During Operation DESERT STORM, coalition forces disabled a key portion of the fiber optic network in the Iraqi communication system in order to force reliance on more exploitable forms, such as ultrahigh frequency radios.

**COA Development, Analysis and Wargaming, Comparison, and Approval**

Subsequent phases of the JOPPA involve the development, analysis, comparison, and selection of COAs. COAs address who, what, when, where, how, and why joint air operations are to be conducted, including objectives, forces required, and concepts for projecting, employing, and sustaining those forces. In many cases SA will form part of a larger COA or set of COAs, complementing efforts against fielded forces and action by nonmilitary elements of national power, as it did in both Europe and the Pacific in WW II and again in OIF. In some cases, it may form a distinct phase, "sub-campaign," or sequel within a larger conflict, as LINEBACKER II did in Vietnam or the bombing of Serbia did in OAF as sequels to their original campaign plans. In other cases, it may be employed in an independent COA, an alternative to force-on-force engagement. Finally, SAs may be employed separately to accomplish very specific purposes, as in Doolittle's raid on Tokyo, US and British strikes on Rome in 1943 (helping bring about

Italian surrender), or Israel's attack on Iraq's Osiraq nuclear reactor in 1981. Regardless of how large or small a part of the joint campaign, however, planners should develop and validate a concept of operations for SA, just as they do for counterforce applications.

When developing COAs, planners should think through the causal links between an affected system or target and the achievement of objectives. This is not easy—it is much more art than science. These links almost always involve subjective judgments about the nature of the enemy and how they will react to us, especially at the very highest levels of the "causal chain," where changes in actual behavior occur. Ultimately, COA development should discern objectives, tasks, measures, and indicators to create effects among adversary systems in a manner consistent with the commander's assumptions, guiding strategy, and end state. In doing so, the campaign transitions from merely dismantling the systems studied in the COG analysis phase to creating appropriate effects at the right time in the proper location. Sorting out the linkages will probably require assistance from sources outside the theater and insight from sources with deep knowledge of the enemy. Automated tools may someday help sort through them, but such tools will only be as accurate as the underlying assumptions planners make concerning enemy motivations, psychology, and structure.

**Wargaming.** Planners should be aware that during the COA analysis and comparison phases of the JOPPA, it may be difficult to accurately wargame the effects of SA. Counterforce operations (e.g., counterland) are usually easier to model, since the effects of attrition on enemy forces are often assumed to be linear. The effect of SA is most often nonlinear and simple force-on-force models are not very useful in predicting outcomes. This is true even of strikes against enemy resources, due to the complex interactive and adaptive nature of economic activity. It is essential that COA comparison and wargaming be assessed qualitatively, not just quantitatively, and airmen should be prepared to speak to the complex, nonlinear nature of effects on enemy leadership, perceptions, strategies, and systems. A wargaming format that emphasizes friendly action, enemy reaction, and friendly counteraction may be best suited for SA planning.

The unsuccessful Allied SA effort against the German ball bearing industry during the Combined Bomber Offensive in WW II offers an excellent illustration of difficulties involved in determining and modeling (or wargaming) causal linkages. Operations analysis revealed that ball bearings represented a critical potential bottleneck in German war production. Virtually all German manufactured machinery used them, and over half of all those used were manufactured at a single plant in Schweinfurt. In 1943, US bombers leveled the plant, reducing German ball bearing production by 38% in one strike. Unfortunately for the Allies, the Germans had anticipated such an attack and had laid up months of reserve stock, purchased tons more from neutral nations, begun the

full-scale dispersal of the industry, and researched use of a different type of bearing that could be used in place of ball bearings. The Schweinfurt raid, though successful in its direct, tactical-level effects, ultimately failed to have the desired strategic effect on the Nazi war effort. Even the opportunity costs involved in dispersing the industry and researching use of alternative bearings represented net improvements for the German war economy. Further, the price Germany exacted for the raid (over 15% losses) forced Allied planners to dramatically reduce attacks on German industry until a greater degree of air superiority could be attained.

**Branches and Sequels.** The Schweinfurt raid points out another element critical to successful SA planning and COA selection: The anticipation of likely enemy responses to our actions. Planners and commanders should assume the enemy is intelligent and adaptive; that he will develop ways to work around the damage caused to his systems, or find ways to deny elements of friendly strategy (especially easy to do when subjected to serial attacks). We should anticipate those workarounds and build branches and sequels into our plans accordingly.

Branches are options built into the basic or initial plan. They will usually have a specific trigger or triggers delineated, such as a particular enemy action or success of a friendly operation. In terms of SA, a branch might involve shifting the COG or COGs the friendly effort is focused upon, opening or closing certain target systems to attack, escalating or de-escalating the intensity of effort. In 1943, senior Allied leaders built the option to bomb Rome into plans for the invasion of Italy. Implementation of this branch had the desired effects, hastening the downfall of the Mussolini government and Italian surrender.

A branch may also entail a change in the way force is applied through SA. LINEBACKER II represented a dramatic increase in the tempo and intensity of SA coupled with a change in target focus, as did the last several weeks of operations during OAF. Both efforts were successful. Such branches should be planned before operations begin.

Sequels are subsequent operations based on possible outcomes of current operations. At the operational level, campaign phases can be viewed as sequels to the basic plan. They usually represent larger changes in focus or emphasis than branches do. The strategic bombing campaign against Germany involved several sequels—in this case implicit campaign phase changes—as the Germans devised workarounds to the damage caused by Allied bombing. The largest was a shift in early 1944 away from bombing war-sustaining resources for their own sake to bombing aircraft production infrastructure and Berlin, which had the effect of drawing the Luftwaffe into the teeth of escorting Allied fighters. SA became subordinate to a larger offensive counterair effort until the Luftwaffe was defeated. Essentially, this shift represented a new phase of the

Allied bombing effort. “Industrial web” bombing resumed in full force (and was much more effective) after defeat of the Luftwaffe, introducing another phase or sequel. Of course, “reactive phasing” is not the best way to conduct operations. Sequels in the form of phases should be planned for and made part of the JAOP.

**Plan and Order Development**

Air component planning culminates in production and validation of a JAOP, which provides general guidance and a framework for succeeding air operations directives, master air attack plans, air tasking orders, and similar products that direct air and space efforts once execution has begun. There are a number of considerations unique to SA operations that planners should consider as they assemble the JAOP.

**Targeting Considerations.** As the JAOP is developed, commanders and planners should continually assess whether the military effects they are planning to impose are achievable and support the campaign’s overall objectives. As planning progresses into tactical tasks and individual targets, planners sometimes have a tendency to devolve into “input” or “target-based” planning rather than effects-based planning. Planners may begin to say, “The plan has these resources; what can we hit with them?” or “let’s hit the usual list of targets,” rather than determining the desired effects on the enemy system and then deriving resources and capabilities required to achieve those effects. Input-based planning often leads to logical disconnects between ends and means, such as military COAs that cannot achieve the overall political goals, as was the case in Vietnam. Such logical disconnects may not seriously hamper efforts to defeat enemy fielded forces. However, such disconnects may greatly hamper SA efforts, because success usually requires clear understanding of the more complex logical links between actions and desired effects. The temptation to resort to an inputs-based approach often becomes more pronounced as planning progresses into execution and the stress of a daily battle rhythm. Planners should be aware of this temptation and compensate. Commanders should be prepared to redirect or refocus planners if they see this happening. Airmen should think effects-based if they are to successfully operate effects-based.

**Force Considerations.** A wide variety of tools can perform SA operations. There is no such thing as an inherently “tactical” or “strategic” asset—virtually any system, regardless of what it is ordinarily used for, may conduct SA. Planners should think broadly: many options will be available. They should avoid resorting to a particular system or weapon because “that’s what we usually use.” The desired effects should drive the capabilities used and the targets selected.