



DoD INSTRUCTION 5000.84

ANALYSIS OF ALTERNATIVES

Originating Component: Office of the Director, Cost Assessment and Program Evaluation

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Purpose: In accordance with the authority in DoD Directive 5105.84, this issuance establishes policy, assigns responsibilities, and prescribes procedures for analyses of alternatives (AoAs) for major defense acquisition programs (MDAPs).

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SECTION 1: GENERAL ISSUANCE INFORMATION

1.1. APPLICABILITY.

This issuance applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (referred to collectively in this issuance as the “DoD Components”).

1.2. POLICY.

DoD Components will conduct AoAs for MDAPs pursuant to Section 832 of the National Defense Authorization Act for Fiscal Year 2020, and in support of the certifications to be executed pursuant to Sections 2366a and 2366b of Title 10, United States Code.

SECTION 2: RESPONSIBILITIES

2.1. DIRECTOR OF COST ASSESSMENT AND PROGRAM EVALUATION (DCAPE).

The DCAPE:

- a. Develops and issues study guidance and approves study plans for the AoAs for MDAPs.
- b. Evaluates the adequacy of each AoA for MDAPs.

2.2. UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING, UNDER SECRETARY OF DEFENSE FOR ACQUISITION AND SUSTAINMENT, AND DOD CHIEF INFORMATION OFFICER.

The Under Secretary of Defense for Research and Engineering, the Under Secretary of Defense for Acquisition and Sustainment, and the DoD Chief Information Officer will advise the DCAPE in their areas of responsibility in preparation of the AoA study guidance.

2.3. DOD COMPONENT HEADS.

The DoD Component heads:

- a. Notify DCAPE of impending component MDAPs.
- b. Submit AoA study plans for impending component MDAPs to DCAPE.
- c. Submit a memorandum to DCAPE certifying the DoD Component is ready to start the AoA.
- d. Conduct an AoA in accordance with DCAPE issued study guidance for MDAPs.
- e. Submit a written AoA report to DCAPE, the milestone decision authority (MDA), and the requirements validation authority for each MDAP.

SECTION 3: PROCEDURES

3.1. ACTIONS BEFORE THE MATERIEL DEVELOPMENT DECISION (MDD).

a. The DoD Component will inform the Office of the DCAPE (ODCAPE) of impending MDAPs by 60 business days before the MDD. The notification will include a copy of the latest requirements document for the program approved by the requirements validation authority and a copy of the analysis justifying that requirement document, such as a capabilities based assessment.

b. The DCAPE will:

(1) Develop and issue AoA study guidance to the DoD Component head by 40 business days before the MDD.

(2) Solicit the advice of other DoD officials and ensure that the AoA study guidance establishes a study advisory group (SAG) to oversee the conduct of the AoA (e.g., stay abreast of emerging results, refine guidance as needed, ensure the study progresses in a timely manner).

c. At minimum, the study guidance will require:

(1) A trade-space analysis of cost, schedule, and performance. The performance analysis will include both the capability of the options examined and the effect each option has on mission accomplishment.

(2) One alternative that represents the status quo and sufficient additional alternatives to enable a robust exploration of the trade-space.

(3) A trade-space analysis within alternatives as appropriate. Specifically, if an aspect of one alternative is found to have a substantive impact on mission accomplishment, that feature, if possible, will be incorporated in the other alternatives in an analytical excursion to better understand the trade-space.

(4) Alternatives that include consideration of evolutionary acquisition, prototyping, and use of a modular open system approach.

(5) A life-cycle cost analysis that includes the fully burdened cost of fuel.

(6) An assessment of whether the joint military requirement can be met in a manner consistent with the cost and schedule objectives recommended by the Joint Requirements Oversight Council.

(7) Consideration of affordability, to include any MDA-established affordability goals.

d. The DoD Component will submit an AoA study plan and a memorandum certifying the DoD Component is ready to start the AoA to the ODCAPE by 20 business days before the MDD. The memorandum will confirm that the DoD Component has completed the actions necessary to

begin the analysis. These actions are critical to ensure that the AoA can be completed within 9 months.

(1) These actions include ensuring:

(a) A study team with the authority needed to execute the analysis is established. This includes identifying the team members (organizations and individuals), oversight structure, and team member responsibilities.

(b) Any contract support needed to execute the AoA is under contract and ready to work.

(c) All clearances needed to execute the AoA have been approved and all necessary non-disclosure agreements have been established.

(d) Technical and threat data needed to conduct combat simulations and modeling are on hand.

(e) Methods of system employment, as well as tactics, techniques, and procedures for the system, are established (these may change with new information).

(f) The requirements for the alternatives are prioritized and the capabilities sought have metrics that measure and quantify the capability gaps.

(2) If the DoD Component believes the AoA cannot be completed within 9 months include in the memorandum:

(a) An explanation of why the analysis cannot be finished by 9 months.

(b) An estimate of when the analysis will be completed.

(c) An explanation of what an AoA constrained to 9 months would produce.

(d) An estimate of any additional costs beyond 9 months to complete the analysis.

(e) Any other relevant information pertaining to the analysis and its completion.

(3) The requirement to complete the AoA within 9 months may be waived by the Secretary of Defense or his or her designee on a case-by-case basis if:

(a) The subject of the analysis is of extreme technical complexity;

(b) Collection of additional intelligence is required to inform the analysis;

(c) Insufficient technical expertise is available to complete the analysis; or

(d) The Secretary determines that there are other sufficient reason for the delay of the analysis.

(4) If an AoA cannot be completed within the allotted time, or waiver used, the ODCAPE will prepare for the signature of the Secretary of Defense or his or her designee a report to the congressional defense committees with the following information:

(a) For a waiver, the basis for use of the waivers, including the reasons why the study cannot be completed within the allotted time.

(b) For a study estimated to take more than 9 months:

(1) An estimate of when the analysis will be completed.

(2) An estimate of any additional costs to complete the analysis.

(3) Other relevant information pertaining to the analysis and its completion.

e. The ODCAPE will direct any changes to the AoA study plan by 10 business days before the MDD. If ODCAPE directs changes, the DoD Component will submit a revised plan and a memorandum certifying the component is ready to start the AoA consistent with the updated plan to the ODCAPE before the MDD.

(1) The ODCAPE will approve the plan within 5 business days once it receives both the plan with the directed changes and a memorandum certifying the component is ready to start the analysis consistent with Paragraph 3.1.d.

(2) The approval date of the study plan, typically at the MDD event, is the start date of the AoA. The analysis should be completed by 9 months after this date unless the Secretary of Defense or his or her designee has approved a waiver to extend the completion date.

(3) If the Secretary of Defense or his or her designee has approved a timeline waiver, DCAPE will inform the component of the timeline for the final results brief to the SAG.

3.2. ACTIONS FOLLOWING THE MDD.

a. Unless the Secretary of Defense or his or her designee approves an AoA timeline waiver (Paragraph 3.1.e.(3)), the DoD Component will brief the final AoA results to the SAG by the earliest of the following:

(1) Fifty-five business days before a release of request for proposals intended to support a contract award pursuant to an acquisition decision at the next milestone review.

(2) The MDA's first milestone review.

(3) 9 months from the start of the AoA.

b. If the Secretary of Defense or his or her designee approves an AoA timeline waiver (Paragraph 3.1.e.(3)), the DoD Component will brief the final AoA results to the SAG per the timeline provided by DCAPE (Paragraph 3.1.e.(3)).

c. The date of the final AoA results briefing to the SAG is the AoA completion date.

d. The DoD Component will submit a written AoA report to DCAPE by 40 business days after briefing the final AoA results to the SAG.

e. The DCAPE will provide a memorandum addressing the adequacy of the AoA and whether the analysis is consistent with the study guidance to the DoD Component head and MDA by 40 business days after the receipt of the written AoA report.

Table 1. AoA Actions and Timing: Preparation

Action	When	Party Responsible
Inform the ODCAPE of impending MDAP. Provide requirements documents and a copy of analysis justifying the requirements.	By 60 business days before the MDD	DoD Component
Establish study team (see Paragraph 3.1.d.(1)(a)).	Before submitting study plan to the ODCAPE	DoD Component
Contract any study support required.	Before submitting study plan to the ODCAPE	DoD Component
Obtain any security clearances required.	Before submitting study plan to the ODCAPE	DoD Component
Obtain technical and threat data needed to support combat simulations and modeling.	Before submitting study plan to the ODCAPE	DoD Component
Establish methods of system employment.	Before submitting study plan to the ODCAPE	DoD Component
Establish tactics, techniques, and procedures for the system(s).	Before submitting study plan to the ODCAPE	DoD Component
Establish metrics that measure and quantify the capability gaps for the capabilities sought.	Before submitting study plan to the ODCAPE	DoD Component
Identify and complete any preparatory analysis that might inform AoA (avoids replicating existing analysis within the AoA).	Before submitting study plan to the ODCAPE	DoD Component
Issue study guidance to DoD Component head.	By 40 business days before the MDD	DCAPE
Provide study plan to the ODCAPE with memorandum certifying component is ready to start AoA. Notify the ODCAPE in a memorandum if 9 month timeline cannot be met (see Paragraph 3.1.d.)	By 20 business days before the MDD	DoD Component

Table 2. AoA Actions and Timing: Execution

Action	When	Party Responsible
Approve study plan—AoA starts when plan is approved and should be completed within 9 months of the study plan approval unless Secretary of Defense requests a waiver.	By 10 business day before the MDD (subject to sufficiency of plan)	ODCAPE
Perform AoA.	Upon approval of study plan	DoD Component
Brief finals results to SAG—AoA is complete once SAG is briefed.	Unless the Secretary of Defense requests an AoA timeline waiver, brief by whichever is earliest: <ul style="list-style-type: none"> - 55 business days before a release of request for proposals - the MDA’s first milestone review - 9 months from the start of the AoA unless the Secretary of Defense requested a waiver If the Secretary of Defense requests a waiver, brief by the timeline provided by DCAPE (Paragraph 3.1.e.(3))	DoD Component

Table 3. AoA Actions and Timing: Assessment

Action	When	Party Responsible
Submit written AoA report to ODCAPE	By 40 business days after briefing the final AoA results to the SAG	DoD Component
Issue memorandum assessing adequacy of the AoA and compliance with the study guidance	By 40 business days after the receipt of the written AoA report	DCAPE

SECTION 4: AOA GUIDELINES

4.1. DOD COMPONENT AOA PREPARATION.

a. DoD Components should engage ODCAPE once the Component knows they will likely need an AoA. Ideally this should begin as the DoD Component initiates analysis for determining requirements, such as a capabilities based assessment. Early collaboration and dialogue helps expedite issuance of study guidance, and minimizes the time needed to arrive at an approved study plan.

b. DoD Components should program funding needed to conduct AoAs so that funds are available to conduct these analyses.

c. If contract support is needed to conduct an AoA, DoD Components should initiate the contracting process in sufficient time to begin the AoA in a timely manner.

d. DoD Components should identify and begin the process of obtaining long lead items needed to conduct the AoA so the analysis can begin in a timely manner. Examples of long lead items include: security clearances (including clearances for any special access program(s) necessary for performance of the AoA); technical and threat data to support combat simulations and modeling; scenarios; methods of employment; and tactics, techniques, and procedures.

e. To ensure an efficient AoA, DoD Components should:

(1) Identify their lead for the AoA study, and charter that lead to identify study team members (organizations and individuals), the oversight structure, team responsibilities, and any external support the team is likely to require.

(2) Establish an executive steering body within the DoD Component or joint community, as appropriate, to help prepare for and guide the AoA. (Ideally, ODCAPE should be included in that body.) The steering body should be interdisciplinary and include material developers, acquisition experts, the requirements community, people with operational experience, people with analytical expertise, intelligence community experts, cost experts, and financial experts from the programming and budgeting community.

(3) Ensure that the requirement document used to help initiate the AoA has prioritized and quantified the capabilities sought. Specifically, metrics that measure and quantify each capability gap are essential.

f. DoD Component heads should establish affordability goals before the AoA.

4.2. CONDUCT OF THE AOA.

a. DoD Components should ensure the AoA is conducted in a transparent manner. The transparency facilitates understanding of the analysis and enables leadership to focus on the implications of the analytical work because the pedigree of the analysis is understood.

Additionally, it enables components to address possible concerns before time and effort is invested and rework required.

(1) ODCAPE staff and other staff that support the SAG principals should conduct site visits to the centers conducting the analysis.

(2) DoD Components should ensure open analyst interaction during the AoA.

b. DoD Components should conduct the analysis in an intellectually honest manner. The study team's products (SAG briefings, written AoA report) should properly articulate the limitations and uncertainty of its findings and represent the level of precision warranted by the data and its study methods.

c. DoD Components should ensure that the AoA quantifies the physical performance of the options and the effect the options have on the mission accomplishment (e.g., time to complete the mission, enemy destroyed, number of friendly forces remaining operational).

d. DoD Components should leverage existing analysis where possible. In doing so, DoD Components should provide the existing analysis to the SAG for:

(1) Confirmation that the previous analysis provides the information needed for the AoA.

(2) Guidance on what is needed to supplement or modify the existing work to meet the AoA's needs.

e. DoD Components should conduct the analysis in a balanced manner, balancing precision, simplicity, and economy, adding complexity only when it provides needed explanatory power. The study team must apply the appropriate level of analytical fidelity that best informs decisions in a timely manner.

f. The AoA study team should consider cost and affordability as early in the analysis as possible.

g. As facts warrant, the DoD Component and its study team should seek prompt updates to SAG direction.

(1) For example, if analysis indicates an option is infeasible, it may not be justifiable to continue additional exploration of that option, and the Chairman of the SAG may limit the scope or waive further analysis.

(2) Alternatively, the study team may find that some aspect of the study will not discriminate between the alternatives, and the Chairman of the SAG may limit or waive work in that area.

h. DoD Components should conduct in-process reviews with the SAG without extensive pre-coordination.

i. The DoD Components should ensure that the AoA study team conducts sensitivity analysis to identify the dependence of results on key parameters of the analysis. This enables decision makers to understand whether the solutions examined are robust.

GLOSSARY

G.1. ACRONYMS.

AoA	analysis of alternatives
DCAPE	Director of Cost Assessment and Program Evaluation
MDA	milestone decision authority
MDAP	major defense acquisition program
MDD	materiel development decision
ODCAPE	Office of the Director of Cost Assessment and Program Evaluation
SAG	study advisory group

REFERENCES

- DoD Directive 5105.84, “Director of Cost Assessment Program Evaluation,” May 11, 2012. as amended
- Public Law 116-92, “National Defense Authorization Act for Fiscal Year 2020,” December 20, 2019
- United States Code, Title 10