

APPENDIX A THE ELEMENTS OF AN AIRWORTHINESS QUALIFICATION PLAN (AQP)

A-1 INTRODUCTION

AR 70-62, *Airworthiness Qualification of US Army Aircraft Systems*, (Ref. 1) assigns approval authority for airworthiness of standard and nonstandard Army air vehicles to the Commanding General (CG), US Army Aviation and Troop Command (ATCOM), for all air vehicles and modifications for which ATCOM has engineering cognizance. Air vehicles classified as nonstandard by the Army are normally acquired from other services and federal agencies. Included in this responsibility is the requirement to develop, implement, and maintain a coordinated program for airworthiness qualification of air vehicle systems, subsystems, and allied equipment. Subsystems and allied equipment are defined in AR 70-62 (Ref. 1). AR 70-62 also states that the individual air vehicle or developmental program, project, product manager's office (PMO) is responsible for funding airworthiness qualification efforts and ensuring that the airworthiness of the air vehicle system has been determined. One of the elements of a coordinated airworthiness qualification program is the airworthiness qualification plan (AQP). Either an AQP or fully coordinated statement of work should be required for every acquisition involving qualification. The statement of work should satisfy the same objectives as an AQP. The AQP should convert the general requirements of the operational requirements document (ORD) and acquisition policy into performance and effectiveness criteria. Also, air vehicle design criteria, performance, and limitations to be substantiated for airworthiness qualification should be defined. Objectively, the AQP should not only define means for determining if an air vehicle is airworthy but should also define the means for determining if it will satisfy user required functions and necessary operational capabilities. Survivability and mission performance are major components of the effectiveness of a system. Guidelines for test and evaluation may be found in Department of the Army (DA) Pamphlet (PAM) 73-series, *Test and Evaluation Guidelines*, (Ref. 2). In the larger sense, the AQP should define what is required, when required, where required, who will do it, and how. The need for targets and threat simulators should be defined within this plan. The AQP should be prepared by their respective air vehicle or developmental PMO. Engineering personnel within the PMO should prepare this plan in coordination with functional offices within the ATCOM, US Army Training and Doctrine Command (TRADOC), and other program managers, as applicable. The completed plan can be used in a request for proposal (RFP), request for quotation (RFQ), or included as an addendum to a statement of work (SOW), all for use by the air vehicle contractor (AC) in preparing an airworthiness qualification specification (AQS) and related data as contract deliverables. Depending on the type of program involved (full development or modification of existing air vehicle), the AQP should fulfill its purpose of delineating minimum requirements necessary to verify that the air vehicle and its components are qualified for use during developmental or operational test, or in operational aviation units. Contents of the AQP will be discussed in the following paragraphs.

A-2 AQP CONTENTS

A-2.1 SCOPE*

The Scope of the AQP should identify:

1. Required reviews
2. Performance based requirements
3. System safety tasks - information pursuant to this purpose may be found in MIL-STD-882, *System Safety Program Requirements* (Ref. 3)
4. Analysis, modeling, test, survey, and demonstration tasks
5. Mock-up and simulation requirements
6. Procurement, material, and process specification requirements and qualification
8. Functional, structural, environmental, endurance, bench, and survivability tests
9. Provisions for qualification by similarity
10. Software verification and validation (V&V)
11. RAM tests and demonstrations
12. Integrated logistic support (ILS) V&V.
13. Government test. Responsibilities for accomplishment, surveillance or test witnessing, and support for each task should be established in this paragraph.

A-2.2 REFERENCES

For modification programs involving a limited number of components, required specifications, standards, and other references may be cited in this paragraph. For major modification or developmental programs, each paragraph of the AQP should cite applicable specifications, standards, and data submittal requirements, or the requirement for the contractor to develop (and submit for approval) process specifications. Appropriate paragraphs of this handbook should be cited as necessary to further define qualification requirements.

A-2.3 TEST ACCOMPLISHMENT

A-2.3.1 TEST SPECIFICATION

The AQP should specify how the AQP will be used in developing the contractor's airworthiness qualification specification (AQS). Appropriate paragraphs of this handbook should be cited as a guide for preparation of the AQS. Reporting requirements for all applicable tasks of subparagraph A-2.1 should be identified, and Government approval requirements should be specified. This element should refer to the airworthiness qualification specification (AQS) discussed in par. 2-3 and other applicable test specifications. By doing this, traceability of test requirements can be maintained. This traceability will ensure that all required testing is planned, and that any element of the AQS or other test specifications is required by the AQP.

A-2.3.2 TEST ARTICLE AND AVAILABILITY

* The underlined portion of the paragraph number and title identifies the paragraph number and title in the AQP.

The minimum requirements for numbers and types of test articles should be identified. Prequalification and qualification of test articles, (which include but are not limited to components, subsystems, ground test vehicles, and complete air vehicle), should be specified in sufficient detail to allow the AC to use this information to develop an AQS and a master test schedule.

A-2.3.3 TEST FACILITIES

The degree of Government participation in all development test (DT) and operational test (OT) phases should be specified. Guidance should be provided to the AC concerning use of Government test facilities during DT phases. Requirements for contractor furnished equipment (CFE) at Government locations during DT should be identified. Locations and facilities for each phase of OT should be identified. Unless there is a cost or schedule advantage in using contractor facilities, Government OT and DT locations and facilities should be identified and used. Test facilities are identified in DA PAM 73-series (Ref. 2).

A-2.3.4 TEST EQUIPMENT

Guidance should be provided to the contractor concerning support equipment, instrumentation, threat systems and simulators, allied equipment, and test support air vehicle requirements. Government furnished equipment (GFE) should be identified. Commonalty of DT and OT instrumentation and support equipment should be specified by the procuring activity (PA). The Test and Evaluation Master Plan (TEMP) for the system should be referenced and used to further identify sequencing and requirements for threat systems, simulators, allied equipment, and test support air vehicles.

A-2.4 TEST MANAGEMENT

The AQP should specify the required level of Government participation in test conduct and witnessing or surveillance. In order to allow Government personnel to participate in or witness tests, requirements for advance notification of upcoming tests should be specified. A system to be used for managing Government and contractor test coordination should be specified. Test management which may be required by the AQP is discussed in par. 2-5. Requirements for approval of plans and reports submitted by the AC should be specified.

A-2.5 DOCUMENT GENERATION

Within the AQP, submittal of required plans, procedures, reports, analyses, and engineering drawings should be specified, as applicable. The Contract Data Requirements List (CDRL) furnished by the PA typically will specify due dates for initial and subsequent submissions, and Government review cycle times. When Government data will be used by the AC to generate a required report, data reduction responsibilities should also be covered in the AQP.

Bibliography
None

LIST OF ACRONYMS AND ABBREVIATIONS

| | | |
|--------|---|---|
| AC | = | air vehicle contractor |
| AEFA | = | aviation engineering flight activity |
| AQP | = | airworthiness qualification plan |
| AQS | = | airworthiness qualification specification |
| ATCOM | = | aviation and troop command |
| CDRL | = | contract data requirements list |
| CFE | = | contractor furnished equipment |
| CG | = | commanding general |
| DA | = | department of the army |
| DT | = | development test |
| GFE | = | government furnished equipment |
| ILS | = | iterated logistic support |
| ORD | = | operational requirements document |
| OT | = | operation test |
| PA | = | procuring activity |
| PAM | = | pamphlet |
| PMO | = | program/project/product management |
| RFP | = | request for proposal |
| RFQ | = | request for quotation |
| SOF | = | statement of work |
| TEMP | = | test and evaluation master plan |
| TRADOC | = | us army training and doctrine command |
| V&V | = | verification and validation |

REFERENCES

1. AR 70-62, *Airworthiness Qualification of US Army Aircraft Systems*, 25 July 1978.
2. DA PAM 73-1 through -8, *Test and Evaluation Guidelines*, 16 October 1992.
3. MIL-STD-882C, *System safety Program Requirements*, 19 January 1993.