U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: DESIGNATED ALTERATION STATION AUTHORIZATION PROCEDURES

Date:
Initiated by: AWS-110

AC No: 21.431-U
Change:

1. PURPOSE. This advisory circular (AC) updates the Federal Aviation Administration's (FAA) Designated Alteration Station (DAS) authorization program; provides acceptable means of compliance with the DAS eligibility, personnel qualifications, and procedural requirements; provides information on FAA's participation in design change approval projects conducted under DAS procedures; and describes the FAA's DAS audit procedures.

2. CANCELLATION. AC No. 21.431-1, Designated Alternation Station Authorization Procedures, dated February 8, 1982, is canceled.

3. RELATED FEDERAL AVIATION REGULATIONS (FAR). FAR Part 21, Subpart M; FAR Part 43, § 43.3(i); FAR Part 121; and FAR Part 145.

4. BACKGROUND.

a. The regulations related to the DAS program became effective on October 8, 1965. These regulations were promulgated to alleviate delays that modifiers of aircraft and aircraft components were experiencing in obtaining supplemental type certificates (STC) under the normal FAA approval procedures. Under the DAS system, an eligible domestic repair station, air carrier (except an air taxi operator), commercial operator of large aircraft, or manufacturer may hold a DAS authorization. A DAS authorization holder has, within certain limits, the delegated authority of the Administrator to issue STCs which are official FAA design approvals for aircraft, aircraft engines, and aircraft propellers which have undergone major changes in type design. The DAS also has authority to issue experimental certificates of airworthiness for aircraft undergoing supplemental type certification. In addition, the DAS is authorized to issue amended standard airworthiness certificates for aircraft which incorporate alterations covered by an STC issued by the DAS.

b. Section 314(a) of the Federal Aviation Act (FA Act) allows the FAA to delegate certain prescribed work, business, or functions relating to issuance of certificates to a private person and provides for the FAA to participate in any delegations it makes. Section 314(b) provides that the FAA may reverse, change, or modify action taken by any person who has been given delegated authority.

c. Through the DAS program, it is the FAA's intent to give eligible manufacturers, operators, and repair stations the option of having delegated authority to approve aircraft, aircraft engine, and aircraft propeller type design changes to an extent consistent with the applicant's particular engineering capabilities, facilities, and business needs.

5. DEFINITIONS.

a. "Person", as used in § 314 of the FA Act, is defined in § 101(32) of the FA Act and means any individual, firm, copartnership, corporation, company, association, joint-stock association, or body politic: and includes any trustee, receiver, assignee, or other similar representative thereof.

b. "Geographical Directorate" means the Directorate in whose geographic area the applicant's facilities are located.

c. "Accountable Directorate" means the Directorate which has the final authority, accountability, and responsibility for type certification programs and standardization of technical policy for the product involved.

d. "ACO" means Aircraft Certification Office within the geographical directorate.

6. APPLICATION, ELIGIBILITY, PERSONNEL, QUALIFICATIONS, AND AUTHORITY.

a. Application. An applicant for a DAS authorization must submit an application per § 21.435 to the ACO.

b. Eligibility.

(1) Each DAS is required by §§ 21.431(b) and 21.439(a) to be a domestic repair station under Part 145; an air carrier (except an air taxi operator) or a commercial operator under Part 121; or a manufacturer of a product for which it has alteration authority for the product under § 43.3(i).

(2) Each DAS is required either to maintain eligibility or to notify the ACO within 48 hours of any change that could affect its eligibility.

c. Personnel and Qualifications.

(1) The requirement of § 21.439(b) can be met by having a central certification officer as defined in paragraph 6b(1) of this AC. The central certification officer should have demonstrated to the FAA the capability of obtaining compliance with the applicable airworthiness regulations and should have the following qualifications:

(i) A thorough working 'knowledge of the applicable regulations.

(ii) A position, on the applicant's staff, with authority to establish alteration programs that ensure that altered products meet the applicable regulations.

(iii) At least 1 year of satisfactory experience in direct contact with the FAA while processing engineering work for type certification or alteration projects.

(iv) At least 8 years of aeronautical engineering experience which may include the 1 year mentioned in paragraph 5c(1)(iii). An appropriate engineering degree from a college or university of recognized standing or a professional engineering license may be substituted for 4 years of experience.

(v) The general technical knowledge and experience necessary to determine that altered products, of the types for which a DAS authorization is requested, are in condition for safe operation.

(2) Engineering personnel required by § 21.439(a)(4) and responsible for making findings of compliance should have, but not be limited to, the following qualifications:

(i) Be employed by, or available to, the DAS as pre-named consultants. If consultants are selected, it is highly recommended that consultants who are already Designated Engineering Representatives (DERs) be used.

(ii) Have a thorough working knowledge of the applicable airworthiness regulations.

(iii) Possess integrity, sound judgement, and a cooperative attitude.

(iv) Have at least 8 years of specialized technical experience. An appropriate degree from a college or university of recognized standing or a professional engineering license may be substituted for 4 years of experience.

(3) In addition to the requirements of paragraph 5c(2)(i) through (iii), the flight test pilot employed, or made available, as required by § 21.439(a)(4) should have:

(i) A minimum of 200 hours flight time in the conduct of experimental flight tests, including significant participation as a pilot in at least one complete type certification project or the equivalent in several partial type certification or supplemental type certification projects.

(ii) A minimum of 50 hours of experimental flight testing experience in the class of aircraft being certificated. (Single-engine airplane, multiengine airplane, helicopter, etc.)

(iii) At least a currently valid commercial pilot certificate with instrument rating and with ratings appropriate to the class of aircraft being certificated.

(iv) For fixed-wing aircraft, a minimum of 1,750 hours flight time as pilot-in-comnand (pilot rating category): for rotary-wing aircraft, a minimum of 1,000 hours flight time as pilot-in-command (pilot rating category). In each category, 50 hours must have been logged within the past 12 months from the date an application is made for a DAS.

(4) One DAS employee or available qualified *person* required by § 21.439(a)(4) should be identified as the person who can make the necessary inspections for issuance of experimental certificates and amended standard airworthiness certificates. This person should have the following qualifications:

(i) A thorough working knowledge of the applicable regulations for airworthiness certification and maintenance.

(ii) A position, on the applicant's staff, with authority to make binding decisions to assure that altered products meet the applicable regulations, conform to the type design, and are in condition for safe operation;

(iii) At least 2 years of experience making inspections and determining that aircraft are in condition for return to service after maintenance or alterations.

(5) The DAS must keep the ACO advised of changes in personnel and obtain the ACO's approval of new personnel who are identified to meet the requirements of § 21.439 (see paragraph 5. e.).

d. Authority.

(1) The DAS has authority to issue STCs, issue experimental certificates for aircraft that are altered under an STC issued by the DAS, and amend standard airworthiness certificates for aircraft that are altered by the DAS within limits of its DAS authorization.

(2) The ACO may impose any additional limitations that may be necessary taking into account the DAS staffing and facilities. For example, authority to approve alterations that require flight test or pilot evaluation may be excluded if the DAS does not employ, or have available, a qualified flight test pilot.

e. Maintenance of Eligibility. Each DAS is required by § 21.445 to continue to -meet the requirements for issuance of the authorization or must notify the ACO within 48 hours of any change (including a change of personnel) that could affect the ability of the DAS to meet those requirements.

7. DEVELOPMENT OF PROCEDURE MANUAL. Under § 21.441, each DAS authorization holder or applicant is required to submit and obtain approval of a procedure manual.

a. The procedure manual should follow the outline below:

(1) Contents.

(2) Log of Revisions.

(3) General (includes information on applicability, eligibility, procedure manual, DAS facilities, and operating certificate).

(4) DAS Organization.

(5) DAS Staff Duties and Responsibilities.

(6) DAS Limitations.

(7) DAS Operating Procedures.

b. The procedure manual should include:

(1) Provisions for a central certification officer (qualified in accordance with paragraph 5c(1) and known as a DAS Coordinator or other appropriate designation) for coordination and approval of certification data, including a compliance checklist, and for providing a control point for communication with the ACO as it relates to interpretation of regulations, policies, procedures, service experience, new design concepts, and design areas critical to safety.

(2) Procedures for processing the technical data required for supplemental type certification and for issuing STCs.

(3) Procedures to be followed in issuing experimental certificates and amended standard airworthiness certificates.

(4) Names, signatures, and responsibilities of officials and each required staff member, identifying those persons who:

(i) Have authority to make changes in procedures that require a revision to the procedure manual; and

(ii) Conduct inspections (including conformity and compliance inspections) or approve inspection reports, prepare or approve data, plan or conduct tests, approve the results of tests, amend standard airworthiness certificates, issue experimental certificates, approve changes to the operating limitations or Aircraft Flight Manuals, and sign STCs.

(5) Procedures (including timing) for the submittal, review, and approval of revisions to the procedure manual.

c. The procedure manual (and revisions thereto) must be reviewed and approved by the ACO.

8. FAA PARTICIPATIQN IN STC PROJECTS.

a. Prior to supplemental type certification of a product, the ACO will participate, as necessary, depending on the project complexity and the DAS demonstrated capabilities from previous projects. (The applicant for an STC should show either that it has access to sufficient type design data previously approved under the cer-tificate being changed or that is has developed

sufficient data to evaluate adequately the design change.) Information required by §21.463(a)(1) should be submitted early in the program with the application for STC and should contain the following:

(1) Description of the type design change, including any novel or unusual design features.

(2) Certification basis considered applicable.

(3) Program (schedule and plan) for meeting applicable airworthiness regulations.

h. The ACO will review the information required by paragraph 8a to determine the complexity of the project, the adequacy of the plan, and identify special considerations set forth in paragraphs 8c and d.

c. In addition to providing the DAS with a "Materials Guidance Kit" necessary for the DAS to conduct its designated functions, the ACO will participate in the determination of compliance as follows:

(1) Confirm the acceptability of the program, including the certification basis, regarding the STC project as early as possible and indicate the extent of ACO involvement.

(2) When deemed necessary, review data, tests, or technical evaluations where the DAS has not demonstrated a satisfactory capability during previous similar projects.

(3) In areas where service difficulties have surfaced from previous DAS approvals.

(4) Review applicable noise and emission regulations to confirm the nature and extent of tests and substantiation expected from a DAS (required 'by 4 21.451(d). (A DAS may not issue an STC involving the acoustical change requirements of Part 36, until the ACO finds that the applicable requirements have been met.)

(5) Determine the need to apply later rules per § 21.101(b)(1) and participate, in the determination of compliance with rule changes critical to safety for which the DAS does not have certification experience.

(6) Determine compliance when necessary, in areas involving new design concepts including the identification of those areas which may require the formulation of special conditions per § 21.101(b)(2).

d. The DAS will:

(1) Obtain ACO concurrence on the application of all equivalent safety provisions per § 21.461.

(2) Obtain limitations and conditions, per § 21.475, from the ACO, and consult with the ACO before issuing an experimental airworthiness certificate.

e. For the purpose of classifying STC projects for ACO notification to the accountable directorate, the term "significant" means any application for any STC in which:

(1) The design appears to require special conditions, exemptions, or equivalent safety findings or a certification basis derived from an unusual application of § 21.101(a)(2) or 21.101(b).

(2) The design uses novel or unusual methods of construction.

(3) The design changes the kinematics, dynamics, or configuration of either the flight control or rotordrive system.

(4) The design change would substantially alter the aircraft's flight characteristics.

Note: Flight items for which compliance can be qualitatively recorded and/or documented are considered to be nonsignificant for project description purposes. However, the accountable directorate may opt to participate in any aspect of flight testing.

(5) The design affects an area that has been the subject of a major service difficulty or accident.

(6) The design changes the engine configuration from reciprocating to turbopropeller or turbojet powered or changes from one engine or propeller model to a completely different engine or propeller model (does not include dash number changes).

(7) The integrity of the basic load-bearing structure necessary for continued safe flight and landing or operation of the aircraft within approved limits is affected.

(8) The design consists of new state-of-the-art systems or components which have not been previously certificated or for which adequate certification criteria have not been published.

(9) The certification is likely to be controversial or highly publicized.

9. FAA AUDITS. An initial inspection or audit will be conducted in accordance with Appendix 1 to determine the ability of a new applicant to function under a DAS authorization. A reinspection or audit of the engineering facilities of the DAS will be conducted in accordance with Appendix 1 at a frequency established by the ACO or when changes in company policy, personnel, or management could affect the ability of the DAS to function properly under the DAS system or when deemed necessary under § 21.449. The ACO may conduct an audit before or after an STC program is completed. As a result of these audits, correction of noncompliance items and service difficulties will be required.

10. FAA SURVEILLANCE. When the DAS is a manufacturer, ACO surveillance will be in accordance with the procedures applicable to holders of FAA production approvals. Surveillance of repair stations, air carriers, or commercial operators, will be performed by Flight Standards field offices, with assistanceas necessary from the appropriate ACO.

11. SERVICE DIFFICULTIES. The timely disposition of service difficulties should be given priority handling. No set process or time period can be defined in this advisory circular since each incident is unique and must be handled accordingly. Particular care should be given to the proper documentation method used to resolve service difficulties. Service difficulties will be reported in accordance with § 21.3.

12. POLICY AND INTERPRETATION. To assure that all DAS authorization holders have the same policy/interpretative material, the Aircraft Certification Division of the geographical directorate will transmit verbatim all policy/interpretative material to the DAS authorization holders.

13. RECORDKEEPING. The DAS must submit data required by §21.463, within 30 days after the date of issue of the STC. In accordance with § 21,493, the DAS must maintain at its facility, current records containing:

a. For each STC, a technical data file that includes any data and amendments there to (including drawings, photographs, specifications, instructions, and reports) necessary for the STC. (These data must be made available upon the ACO's request and must be identified and sent to the ACO if the DAS no longer operates under its authorization.)

b. A list of products by make, model, and if applicable, any FAA identification, that have been altered under the DAS authorization.

c. A file of information from all available sources on alteration difficulties of products altered under the DAS authorization.

14. ISSUANCE OF STCs. After approval of the procedure manual, the Manager, Aircraft Certification Division of the geographical directorate will issue a block of serial numbers which will be used to identify STCs issued by the DAS. The STC number will consist of the letter "S"; a letter symbol to identify the product (Airplane - A, Airship - AS, Balloon - B, Engine - E, Glider - G, Helicopter - H, and Propeller - P); a serial number assigned by the directorate; the symbol of the directorate: and a "-D" placed after the directorate symbol. For example, SA227CE-D would be the number of an STC issued for an airplane by a DAS under the Small Airplane Certification Directorate.

15. TRANSFER OF DAS/STC. A DAS/STC is transferred in accordance with § 21.47. Prior to issuance of a new STC in the name of the new holder, the DAS

must forward the following information/data to the ACO which is responsible for that DAS.

a. The original FAA Form 8110-2, Supplemental Type Certificate, with a completed transfer endorsement on the reverse side, and

b. Any other information/data, as requested by the ACO, for a complete data package on the DAS/STC that is to be transferred.

APPENDIX 1. DASAUDITS

1. AUTIT ORGANIZATIONS. The DAS Audit Board (Board) will consist of personnel qualified to investigate the DAS in those areas determined to be questionable,& the Administrator.

2. AUDIT PLANNING. An audit shouldbeplanned sothatitisconductedin an efficient and orderly manner. The following areas should be considered in the planning of the audit:

a. Service record of products including review of FAA service difficulty information prior to the audit.

b. Airworthiness regulations and standards selected for review.

c. Organization.

d. Areastobe evaluated.

e. Establishment of audit teams.

f. Procedures to be used in conducting the audit.

g. Reporting findings.

h. Audit report and follow-up actions.

3. PROCEDURES FOR AUDIT. When the ACO plans an audit, it assigns a Board Chairperson who notifies the highest appropriate level of the company of the pending audit. The notification should include the starting date, scope of the audit, schedule, and any special requirements for either inspections or tests (including flight tests) deemed necessary.

a. Prior to the start of the audit, the Chairperson should convene the Board to discuss the audit plans, personnel assignments, and any other items relative to the audit. The Chairperson should emphasize to the Board that the audit must be conducted in an efficient and professional manner to be effective and meaningful.

b. To start an audit, the Board should arrange for a meeting between the DAS authorization holder's representatives and the members of the Board. The Chairperson of the Board should explain the purpose of the audit, the schedule, the subjects to be investigated, the products to be inspected, and the plan for any inspections or tests.

c. The members of the Board, as assigned, should conduct an audit of facilities, data, and systems to ensure that the DAS has demonstrated compliance with all applicable regulations. All items should be thoroughly reviewed by Board members and signed prior to presentation as findings. Board members should maintain frequent informal contact with each other and the Board Chairperson to ensure that problems which cross technical speciality areas are followed and handled properly.

d. Flight tests or inspections, in addition to those scheduled in advance, my be conducted, if as a result of the audit, such tests are considered necessary.

e. The Board should hold meetings as necessary to discuss the Board's findings and to select the appropriate category for each finding.

f. The categories of the findings should be based on the relative importance of the finding. The following are suggested categories:

(1) Compliance - those items which comply with the applicable airworthiness regulations and certification procedures.

(2) Improvement - those compliance items which are presented for review and recommendations for consideration.

(3) Noncompliance - those items which do not comply with applicable airworthiness regulations or certification procedures.

g. When the Board completes the audit, the findings which will be presented to the DAS (at the level at which initial notification was given) should be summarized, and the Board Chairperson orally advise the DAS of the findings. This will allow the DAS to undertake appropriate corrective action without delay. The DAS should also be advised that it will be notified officially by letter at a later date. The Board should prepare a report which will contain the final findings and recommendations. This report should summarize the individual reports submitted by the Board members and should contain supporting data for each finding.

4. OFFICIAL NOTIFICATION TO THE DAS. A formal written notification of the Board's findings should be prepared and forwarded to the DAS as soon as possible, not to exceed 15 working days, following the conclusion of the audit activity at the facility. This notification, signed by the Board Chairperson, should cover those findings and recommendations where the ACO desires action or an investigation. Within 30 days after receipt of notification of findings, the DAS should submit written comments regarding the corrective action taken on each of the findings involving noncompliance with the applicable regulations. Within 60 days after the end of the audit at the facility, all findings of noncompliance should be resolved (with the possible exception of those findings referred to the Manager, Aircraft Certification Division of the accountable directorate for adjudication). An attempt should be made to complete the closeout report within 90 days after the end of the audit at the facility. Reference should be made to Order 2150.3, Compliance and Enforcement Program Handbook, to ensure consistency with current agency procedures.

5. AUDIT REPORT AND FOLLOW-UP ACTION.

a. A follow-up system should be established by the ACO to ensure that appropriate corrective actions have been satisfactorily started before the closeout report. Correction of each noncompliance item should be accomplished to the satisfaction of the Board. If deemed necessary, the Board should conduct a reinspection of the facility prior to the closeout of the audit. The original closeout report should be retained by the ACO conducting the audit.

b. The DAS will be notified by a letter, from the Manager of the geographical Aircraft Certification Division that:

(1) All audit items have been resolved to the satisfaction of the auditing directorate, and the DAS authorization remains in effect;

(2) The DAS authorization remains in effect; however, certain limitations are being applied; or

(3) Termination action of the DAS authorization is being initiated because either there are noncompliance items on which the DAS has failed to take corrective action or the DAS is otherwise failing to maintain qualifications as a representative of the Administrator.

c. At the closeout of the audit, the geographical, Aircraft Certification Directorate will ensure that a report is compiled that contains at least the following:

(1) Board recommendations as to the continued operation of the company under DAS authorization procedures.

(2) Statement of overall findings.

(3) Disposition of FAR noncompliance findings.

(4) Summary of individual findings.

(5) Corrective actions taken by the DAS and/or FAA, including date.

(6) FAA acceptance of response.

(7) Individual team reports summarizing its overall activities and general findings during the audit.

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