



Erickson Air-Crane Incorporated

FAA Certificated Repair Station No. JYDR439F

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BY E-MAIL AND FIRST CLASS MAIL

Larry S. Bird
Manager
Federal Aviation Administration
Portland Flight Standards District Office
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Hillsboro, OR 97124

Bradley D. Pearson
Manager (ANM-200)
Federal Aviation Administration
Flight Standards Division
Northwest Mountain Region
1601 Lind Avenue, S.W.
Renton, WA 98055-4056

Dear Messrs. Bird and Pearson:

As you know, Erickson Air Crane (EAC) has availed itself of the Consumer Service Initiative (CSI) with respect to an issue that has long plagued the aviation maintenance industry. This updated letter is being sent due to discussions and communications among EAC, Daret Kanayama and Cathryn M. Kurtz as well as internal FAA exchanges and Mr. Bird's letter dated May 24, we are clarifying our question and our potential solution.

The question: Can major repairs and alterations, (determined by the repair station to be major in accordance with the definition in 14 CFR Part 1, and further described in Part 43 Appendix A), be performed in accordance with methods, techniques and practices (how-to instructions) contained in documents developed by design approval holders under part 21 procedures (during the original certification and subsequent to certification, data developed and approved under Subpart D to part 21) without further approval from the FAA?

The issue: Use of design approval holder created documents, such as Instructions for Continued Airworthiness (ICAs), including maintenance and overhaul manuals and service bulletins, as well as other documents created under section 21.95 procedures to perform major repairs and/or alterations without further approval.

EAC uses information created by the previous holder of the type design, Sikorsky, as well as information developed under EAC's section 21.95 procedures to accomplish repairs and alterations on operating aircraft. These documents include maintenance manuals, overhaul manuals, service bulletins, technical manuals developed for the military (since the aircraft was originally a military aircraft), as well as other documents setting forth methods, techniques and practices for accomplishing maintenance or alterations. These documents are based upon data used to substantiate the type design and changes to the type design.

This situation is not unique to EAC. Many operating aircraft were originally designed and produced for military use before receiving a type certificate by the FAA. The methods, techniques and practices used to maintain or alter those aircraft are technical manuals and other information that was first used to maintain the military aircraft. While some of this information was transferred to "civilian" documents, the majority is not. In EAC's case, an earlier version of its type certificate clearly stated

that the civilian version of the aircraft could be maintained in accordance with technical manuals developed for the military.

Customer and FAA perspective on the issue: The FAA's Flight Standards District Office position as understood by the ASI was set forth in two letters, dated February 27 and April 7, the relevant portion of which are set forth in italics – EAC's response to both positions is set forth in bold.

(From the February 27, 2004 letter to EAC from Ms. Cathryn M. Kurtz) Finally, as a matter of record, a recurring topic of discussion during our repair station inspections over the past few years has been the requirement for the repair station to use only FAA approved data for major repairs. This topic came up again during this visit and we wish to reiterate the FAA's position on this issue. 14 CFR Part 145.201(c)(2), (formerly 145.51(d)(3), states that a certificated repair station may not approve for return to service any article after a major repair or major alteration unless it was performed in accordance with applicable approved technical data. Airframe, engine, and propeller manufacturers' service manuals/documents are only considered approved data if they are specifically FAA-approved. The FAA does not routinely approve many of these documents; often only specific sections are approved. If the data is FAA approved, it will state this in the document. (See Order 8300.10, Volume 2, Chapter 1; and Advisory Circulars 20-114, 43-210, and 120-77, for additional guidance.) With this in mind, a review of the repair station's return to service documents following major repairs will be an emphasis item during our next inspection.

(EAC's position) We appreciate the confusion the FAA-FSDO may have over the term "approved data." However, we do not believe that the position reiterated above truly describes how the FARs and guidance material address this concern. Indeed, the majority of the repairs and alterations performed by the EAC repair station are based upon data developed and approved by the type certificate holder or FAA as is required by 14 CFR 21.95. If the type certificate holder does not review the approved data supporting a major repair or alteration in this manner, EAC obtains the services of an appropriately authorized DER or requests a field approval.

In the case of methods, techniques and practices contained in the maintenance, overhaul or alteration instructions developed by the design approval holder under 14 CFR 21.95, data that are approved by the FAA are the drawings and specifications and information on materials, dimensions and processes developed during the design of an aircraft, aircraft engine or propeller and subsequently shown to comply with the applicable FARs in order to obtain approval (see, 14 CFR 21.31 and 21.41 as well as AC 120-77). A repair station rarely, if ever, has access to or needs this proprietary data because once the technical data is developed, substantiated and approved, the design approval holder is obligated to develop maintenance & overhaul manuals (or Instructions for Continued Airworthiness) containing the acceptable methods, techniques and practices that will return the article to its original or properly altered condition (see 14 CFR 43.13(a) and (b)) from that data in order to obtain its type certificate (or other approval) (see 14 CFR 21.50 and predecessor regulations to 29.1529).

The maintenance manual usually does not contain data that needs to be approved, since (1) the technical and substantiating data from which it is developed is/was already

approved, and (2) it should only contain methods, techniques and practices necessary to return the article to its original (or properly altered condition). Although a particular maintenance or overhaul manual is not “approved by the FAA,” the data supporting it (technical and substantiating data) certainly is approved. Therefore, all repairs and alterations (including major repairs and alterations) performed in accordance with manufacturer developed manuals complies with 14 CFR 145.201(c)(2).

(From the April 7, 2004 letter)

“Approved Data”

As stated in our original letter, airframe, engine, and propeller manufacturers’ service manuals/documents are only considered approved data if they are specifically FAA approved. If the data is FAA approved, it will state this in the document. You are correct that the design approval holder is obligated to prepare maintenance manuals (or Instructions for Continued Airworthiness-ICAs) from the technical data developed in the process of certifying an aircraft, engine or propeller. However, unless specifically approved by the FAA and identified as such, these ICAs are only considered acceptable data, and can only be used as a basis for approval when used for major repairs and major alterations. Therefore, major repairs and alterations performed in accordance with manufacturer developed manuals is not compliant with 14 CFR 145.201(c)(2), unless specifically FAA approved. (Ref. Order 8300.10, Volume 2, Chapter 1; and Advisory Circulars 20-114, 43-210, and 120-77).

Not all documents that are based upon approved data are clearly marked as “approved.” Indeed, in Order 8300.10, Volume 2, Chapter 1, the FAA considers maintenance manuals created by “appliance manufacturers” to be approved unless specifically referenced otherwise. We believe this indicates that the FAA acknowledges that the information contained in maintenance, overhaul manuals and other documents created by design approval holders containing methods, techniques and practices for returning articles to their original or properly altered condition is based upon the data approved during the certification process. Additionally, data can only be deemed “acceptable” if it shows compliance with the FARs.

Using maintenance or overhaul manuals as “a basis for approval” of the data supporting a major repair or alteration evidences a misunderstanding of the data that must be approved. In order for data to be approved, it must be established that it complies with an enumerated FAR normally contained in the airworthiness standards of parts 23, 25, 27, 29, et. al. When reviewing the methods, techniques and practices, what regulations would be cited to establish compliance? The “how-to” instructions are not substantiating data.

In order to be issued a design approval, including a type certificate, supplemental type certificate, parts manufacturer approval or technical standard order authorization, the applicant must submit for acceptance, instructions for continued airworthiness. These instructions are the methods, techniques and practices used to return an article to its original or properly altered condition. These instructions are not made up out of whole cloth. The design approval holder bases those instructions on the data used to establish compliance

with the applicable airworthiness standard. To request that data be approved again because a major repair or alteration is being accomplished is unnecessary.

Information and materials presented to the FAA by the customer: In addition to the above information the customer is submitting this letter.

Type of review conducted (telephone call, meeting, etc.): This has been an ongoing issue for both EAC and other certificate holders.

Meetings with or telephone calls to customer to get his/her version of the situation: EAC has discussed this issue several times with Ms. Kurtz. Since the issue is complicated and far reaching, the parties have mutually agreed to use this CSI process to seek resolution for EAC and the industry.

Relevant regulations:

Part 21, Subpart D: Changes to Type Certificates: The type certificate includes type design and information showing compliance with the applicable airworthiness standard (see, section 21.41). Information relevant to showing compliance with the airworthiness standard includes maintenance information (see, section 29.1529). Although the maintenance information does not have to be approved separately (except for the Airworthiness Limitation section), it must be developed during the certification process and is based upon the data used to show compliance with the applicable airworthiness standard. The original submission of maintenance instructions as well as changes to those instructions can be considered part of the type certification process. Changes to instructions, including those developed to support major changes (either amendments to type certificates or supplemental type certificates), must be based upon data developed under the auspices of Subpart D to the regulations. The data submitted during certification must be approved and ALL changes to that data must be approved (see, sections 21.95 and 21.97).

Section 43.13(a) and (b): Maintenance, preventive maintenance and alteration must be performed in accordance with methods, techniques and practices acceptable to the FAA. In order to be found acceptable, it must be shown to return the article to at least its original or properly altered condition. That condition is dictated by the design standards. The design standards require appropriate maintenance information be developed based upon the approved data submitted during the design approval procedures.

Section 145.201(c)(2): Major repairs and alterations must be performed in accordance with data approved by the FAA. Data is approved by showing compliance with applicable airworthiness standards. Airworthiness standards establish original or properly altered conditions. Repairs return articles to a particular condition, whereas alterations change conditions. The methods, techniques and practices placed in maintenance (or alteration documents) are PART of the information evaluated, but they are not approved by themselves. Data establishing compliance with regulations is approved.

Relevant FAA guidance (i.e., ACs, Orders): Although Order 8300.10 and Advisory Circular 20-114 state what can be used as "approved data" and what is "not approved." Order 8300.10, Volume 2, Chapter 1 defines approved data as "substantiating and descriptive technical data, used to make a major repair or alteration, that is approved by the Administrator." Thereafter it lists examples (which

are not to be considered all-inclusive). That list includes “[a]pppliance manufacturer’s manuals or instructions, unless specifically not approved by the Administrator, are approved for major repairs.” It also includes “[o]ther data approved by the Administrator.” EAC believes that the “other data” would obviously include the “substantiating and descriptive data” used to support the type design, including maintenance and alteration documents developed by the design approval holder.

Advisory Circular 120-77 attempts to define the type of data that is approved, i.e., substantiating data. That is, technical data shown to comply with applicable airworthiness standards. The showing is by analyzing the tests or computations against an enumerated regulatory section. Once it is shown that the data does establish compliance with the enumerated section, the FAA can approve it either through the Aircraft Certification Office, delegated Flight Standards individuals or designated engineers.

Applicable legal interpretations or decisions (precedents): EAC is unaware of any legal interpretations or decisions that are directly on-point to this issue.

Ambiguities or inconsistencies in regulations and guidance or in customer’s communications (explain): EAC does not believe that the regulations are inconsistent. Indeed, it is clear that once data is approved, it remains approved unless some type of legal action is taken. Whereas some may believe the regulations are ambiguous in this area, EAC believes the regulations must be read in context and when that is done, the data that supports the type design can be used to establish compliance with parts 43 and 145.

The most glaring inconsistency in the FAA Order and guidance material is that appliance manufacturer manuals are considered approved even though they are not specifically marked as such. If you reference Appendix A to part 43, it is clear that much of the work performed on appliances would be considered “major,” yet it is clear that the FAA believes that the information in the manual is sufficient to ensure compliance with applicable regulations including section 145.201. On the other hand, the same type of information in a structural repair manual is not considered approved unless the manual specifically states that it is.

Prior FAA history with this customer (what issues, what decisions, etc.): This has been a long-standing issue between EAC and the FAA. Up until recently, the FAA has “accepted” EAC’s “interpretation” of the regulations in this regard and has not requested that each major repair or alteration performed in accordance with manufacturer developed data (i.e., maintenance instructions, manuals, including technical manuals, etc.) be approved either by a DER or through the field approval process.

However, with the advent of the new guidance material on “field approvals” contained in Order 8300.10, the issue has taken on a new significance.

Offices, regions, or directorates that have dealt with this customer (on this issue; on other issues): To EAC’s knowledge this issue has not been raised by any other FAA office. EAC deals with the Seattle Manufacturing Inspection District Office, Seattle Aircraft Certification Office and the Rotorcraft Directorate in Southwest Region holds its type certificate.

Prior FAA history/decisions with other customers on this or similar issues (precedents): EAC has contacted the Aeronautical Repair Station Association with respect to this issue and has been informed that the FAA has taken a similar position in Alaska where manufacturer structural repair manuals cannot be used to perform "major repairs" unless the manual is specifically approved by the FAA. In these cases, apparently a Form 337 has to be submitted to the FSDO who "approves" the "data" (i.e., the manufacturer's SRM) without citing any airworthiness standards or other regulations to which compliance was found. On the other hand, the Engine and Propeller Directorate no longer approves engine manuals even though they contain information that is applicable to "major repairs."

Any other questions deemed appropriate:

We would appreciate the FAA listing any other questions it may have that would help resolve this industry dilemma.

List agreed upon facts that apply to this issue:

We believe all would agree that the issue is confusing; partly because the regulations do not specifically address the issues and partly because the guidance material is inconsistent.

Potential solution: Major repairs and alterations may be performed in accordance with methods, techniques and practices (how-to instructions) contained in design approval holder (type certificate, supplemental type certificate, technical standard order authorization and parts manufacturer approval) documents developed based upon data approved under part 21 during the original certification and subsequent to certification, data developed and approved under Subpart D to part 21.

We look forward to meeting with you on this issue and to the ultimate resolution.

Sincerely,



Chris Erickson
Chief Repair Station Officer

cc: James Ballough
David Cann
Diana Frohn

John Hickey
David Hempe (AIR-100)