

*The Law Firm  
of  
**Obadal and MacLeod, p.c.**  
121 North Henry Street  
Alexandria, VA 22314-2903*

*Anthony J. Obadal* (licensed in Washington, D.C.)  
*Sarah MacLeod* (licensed in VA)  
*Christian A. Klein* (licensed in NC, Washington, D.C. and VA)

TEL: (703) 739-9485  
FAX: (703) 739-9488

## MEMORANDUM

**TO:** Sarah MacLeod  
Marshall Filler  
Christian Klein

**FROM:** Joanna C. Feldman

**DATE:** January 10, 2001

**RE:** Instructions for Continued Airworthiness/Manufacturer's Maintenance  
Manuals

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Within the Civil Air Regulations (CARs) and Federal Aviation Regulations (FARs), there are and have been many regulations requiring the creation and use of maintenance manuals. This memorandum is organized chronologically by Part, *i.e.*, in the order that each Part was either added or amended to include a section pertaining to maintenance manuals or manufacturer's instructions. Within each Part will be a discussion of any applicable amendments. For convenience, a chronological list of all of the rules has been attached.

**When did the requirement to create manufacturer's maintenance manuals first appear in the regulations?**

### **Civil Air Regulation Part 13 (first requirement: 1941)**

The Civil Aeronautics Authority most likely issued the first requirement to create maintenance manuals on June 13, 1941.<sup>1</sup> Although the final rule published in the Federal Register only states that the rule amended CAR Part 13 (Aircraft Engine Airworthiness) and does not specify whether the rule added or amended § 13.32, it is in the Code of Federal Regulations (C.F.R.) current through January 1, 1942 that the section entitled "Manufacturer's Instructions" first appears:

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<sup>1</sup> 6 Fed. Reg. 2867 (June 13, 1941).

§ 13.32 *Manufacturer's Instructions*. The holder of a type certificate shall, within a reasonable time after receiving such certificate, prepare and submit for approval by the Administrator suitable instructions for the installation, operation, servicing, maintenance, repair and overhaul of the type certificated engine model or models. The holder of a type certificate shall make the approved instructions available to persons engaged in the operation, maintenance, repair or overhaul of engines manufactured under such certificate and shall prepare, submit for approval, and make available such revisions to the instructions as are found advisable from service experience.<sup>2</sup>

No previous editions of the C.F.R. contain any similar provision. In 14 C.F.R. current through January 1, 1950, § 13.33 is the section containing the requirement for manufacturer's instructions. Interestingly, this edition of the C.F.R., like the edition current through 1942, also cites 6 Fed. Reg. 2868 as the source for CAR §§ 13.1-13.33. However, 14 C.F.R. § 13.32 (1942) and 14 C.F.R. § 13.33 (1950) are identical except for the section number change. There is no mention of another rule published in the Federal Register.

In 1952, the Civil Aeronautics Board (CAB) adopted the last amendment to CAR Part 13 regarding manufacturer or instruction manuals.<sup>3</sup> Moved to § 13.21, the revised requirement read:

§ 13.21 *Instruction manual*. The applicant [for a type certificate] shall prepare and make available an approved manual containing instructions for the installation, operation, servicing, maintenance, repair, and overhaul of the engine.

NOTE: It is not intended to limit the form of the manual to a single document.<sup>4</sup>

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<sup>2</sup> Id. at 2868, 2870.

<sup>3</sup> 17 Fed. Reg. 1101, 1103 (Feb. 5, 1952).

<sup>4</sup> Id.

Although the CAB stated that “[i]nterested persons [were] afforded an opportunity to participate in the making of this amendment and due consideration [had] been given to all relevant matter presented,” there is no reference to any Notice of Proposed Rulemaking (NPRM) or any other type of notice, nor is there any discussion of § 13.21.<sup>5</sup>

### **Civil Air Regulation Part 6 (first requirement: 1950)**

The next part of the CARs to include a requirement for this type of manual was Part 6 (Rotorcraft Airworthiness), which was initially applicable to all rotorcraft, regardless of use or size. The CAB amended Part 6 to include § 6.719 on December 15, 1950:

§ 6.719 *Maintenance manual*. The applicant [for a type certificate] shall furnish with each rotorcraft a maintenance manual to contain information which he considers essential for the proper maintenance of the rotorcraft. The maintenance manual shall include recommended limits on service life or retirement periods for major components of the rotorcraft.<sup>6</sup>

Again, it is unclear from the final rule whether § 6.719 was added or amended, but it appears that the December 15, 1950 action added the pertinent section.<sup>7</sup> The FAA clarified that “Part 6, as herein amended, prescribes: . . . (e) the compilation of flight and maintenance manuals to be *furnished* to operators of rotorcraft.”<sup>8</sup> (Emphasis added.) In

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<sup>5</sup> 17 Fed. Reg. 1101 (Feb. 5, 1952).

<sup>6</sup> Rotorcraft Airworthiness, 15 Fed. Reg. 8905, 8921 (Dec. 15, 1950).

<sup>7</sup> While § 6.719 is included in the 14 C.F.R. edition current through January 1, 1951, it is not in the edition current through January 1, 1950. In the January 1, 1951 edition, the sources listed for Part 6 are 14 Fed. Reg. 6770 (Nov. 9, 1949), 14 Fed. Reg. 7469 (Dec. 14, 1949), 15 Fed. Reg. 30 (Jan. 5, 1950), 15 Fed. Reg. 765 (Feb. 4, 1950), 15 Fed. Reg. 1267 (Mar. 9, 1950), 15 Fed. Reg. 3936 (June 17, 1950) and 15 Fed. Reg. 5224 (Aug. 12, 1950). However, none of these contained any reference to § 6.719. Therefore, it seems that this final rule actually added § 6.719 to Part 6.

<sup>8</sup> 15 Fed. Reg. 8905 (Dec. 15, 1950).

1953, the CAB added the last line, “Such components shall be identified by serial number or by other equivalent means.”<sup>9</sup>

Eventually, CAR Part 6 was recodified as Federal Aviation Regulation (FAR”) Part 27.<sup>10</sup>

### **Civil Air Regulation Part 14 (first requirement: 1952)**

In an effort to make CAR Part 14 (Aircraft Propeller Airworthiness) more akin to CAR Part 13, the CAB on February 5, 1962 amended Part 14 to include § 14.21.<sup>11</sup>

§ 14.21 *Instruction manual.* The applicant [for a type certificate] shall prepare and make available an approved manual containing instructions for the installation, operation, servicing, maintenance, repair, and overhaul of the propeller.

NOTE: It is not intended to limit the form of the manual to a single document.<sup>12</sup>

Like various amendments to other CARs explained above, the final rule does not explicitly state that the CAB was adding § 14.21. However, as “[t]he previously effective Part 14 was issued on May 31, 1938, and to date has been amended only in minor details,” and the previous Part 14 did not contain any requirement for the production of a maintenance or instruction manual, it is a fairly safe assumption that the February 5, 1962 amendment added § 14.21.<sup>13</sup> Also like the various amendments to other CARs, there is no reference to any NPRM or other prior notice of the final rule, although the same “interested persons” paragraph contained in the 1962 amendment to CAR Part 13 was included.<sup>14</sup>

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<sup>9</sup> 18 Fed. Reg. 2218, 2221 (Apr. 18, 1953)

<sup>10</sup> FAR Part 27, *infra*. See also, 29 Fed. Reg. 15,694 (Nov. 24, 1964); 33 Fed. Reg. 14,104 (Sept. 18, 1968).

<sup>11</sup> 17 Fed. Reg. 1105, 1106 (Feb. 5, 1952).

<sup>12</sup> Id.

<sup>13</sup> 17 Fed. Reg. 1105 (Feb. 5, 1952).

<sup>14</sup> Id.

### **Civil Air Regulation Part 7 (first requirement: 1955)**

In 1955, the CAB proposed the adoption of new CAR Part 7.<sup>15</sup> Recognizing that “[n]o distinction [was] made in the [requirements] between large and small rotorcraft or between rotorcraft intended for general and air carrier service,” the CAB thought it would be more prudent to distinguish among the different types of rotorcraft.<sup>16</sup> To make the new Part 7 congruous to Part 6, § 7.719 was proposed to be the same as § 6.719.<sup>17</sup> The new part, including § 7.719 was adopted eleven months later:

§ 7.719 *Maintenance manual.* The applicant [for a type certificate] shall furnish with each rotorcraft a maintenance manual to contain information which he considers essential for the proper maintenance of the rotorcraft. The maintenance manual shall include recommended limits on service life or retirement periods for major components of the rotorcraft. Such components shall be identified by serial numbers of [sic] by other equivalent means.<sup>18</sup>

### **Federal Aviation Regulation Parts 33 and 35 (first requirement: 1964)**

As stated above, CAR Parts 13 and 14 became FAR Parts 33 and 35, respectively. On June 10, 1964, the Federal Aviation Administration (FAA) added “Part 33 [New] [Part 35 [New]] to the Federal Aviation Regulations to replace the airworthiness requirements contained in Part 13 [and Part 14] of the Civil Air Regulations” as “part of the Agency recodification program.”<sup>19</sup> Connecting these parts to new FAR Part 21, the FAA noted

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<sup>15</sup> Rotorcraft Airworthiness; Transport Categories and Simplification of Requirements for Small Rotorcraft, 20 Fed. Reg. 3114 (May 7, 1955).

<sup>16</sup> *Id.*

<sup>17</sup> Civil Air Regulation Part 6, *supra*.

<sup>18</sup> 21 Fed. Reg. 3737, 3743 (June 2, 1956). Eventually, CAR Part 7 was recodified as FAR Part 29.

<sup>19</sup> 29 Fed. Reg. 7452 (June 10, 1964); 29 Fed. Reg. 7458 (June 10, 1964).

that at this time no definite effective date for this part is stated. The procedural requirements of Part 13 [Part 14] of the Civil Air Regulations are proposed to be included in Part 21 [New] as published in the Federal Register on May 27, 1964 (29 Fed. Reg. 7000). Part 33 [New] [Part 35 [New]] will be made effective on the same date as Part 21 [New] is made effective. In addition, at that time Part 13 [Part 14] will be rescinded in its entirety.<sup>20</sup>

FAR Part 21 [New] became effective on February 1, 1965.<sup>21</sup>

Within the final rule are distribution tables that indicate that CAR § 13.21 became FAR § 33.5 and that CAR § 14.21 became FAR § 35.3.<sup>22</sup> Substantively, the new sections included in Parts 33 and 35 are similar to their CAR predecessors: “§ 33.5 [§ 35.3] *Instruction manual*. Each applicant [for a type certificate] must prepare and make available an approved manual or manuals containing instructions for installing, operating, servicing and maintaining the engine [propeller].”<sup>23</sup>

In 1975, the FAA proposed to amend Parts 33 and 35 further, by adding §§ 33.4 and 35.4 and revising §§ 33.5 and 35.3.<sup>24</sup> Sections 33.4 and 35.4 were proposed and explained as follows:

§ 33.4 [35.4] *Instructions for Continued Airworthiness*.

The applicant [for a type certificate] must prepare and complete, prior to the issuance of a type certificate, Instructions for Continued Airworthiness in accordance with Appendix A to this part that are acceptable to the Administrator.

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<sup>20</sup> Id.

<sup>21</sup> 29 Fed. Reg. 14,562 (Oct. 24, 1964).

<sup>22</sup> 29 Fed. Reg. 7453 (June 10, 1964); 29 Fed. Reg. 7459 (June 10, 1964).

<sup>23</sup> Id.

<sup>24</sup> 40 Fed. Reg. 29,425 (July 11, 1975).

*Explanation.* This proposal would require the preparation of comprehensive instructions that would be made available upon delivery of each engine [propeller]. This proposal is one of a group of proposals dealing with the establishment of Instructions for Continued Airworthiness and the responsibilities of maintenance personnel and operators with respect to those Instructions.<sup>25</sup>

Deciding to remove the requirements for servicing and maintaining the engine, the FAA proposed revising § 33.5:

§ 33.5 *Instruction manual for installing and operating the engine.*

Each applicant must prepare and make available to the Administrator prior to the issuance of the type certificate and to the owner at the time of delivery of the engine, approved instructions for installing and operating the engine. The instructions must include the following: . . .

*Explanation.* These requirements would be placed in a new § 33.4 as part of a group of proposals dealing with the establishment of Instructions for Continued Airworthiness and the responsibilities of maintaining personnel and operators with respect to those instructions. In addition, the proposal would make it clear that these instructions are approved.<sup>26</sup>

For the same reason, proposed § 35.3 was drafted in the same manner, but with less restrictions: “§ 35.3 *Instruction manual for installing and operating the propeller.* Each applicant must prepare and make available an approved manual or manuals containing instructions for installing and operating the propeller.”<sup>27</sup>

The final rule connected to the 1975 NPRM was issued on September 11, 1980. While similar, final §§ 33.4 and 35.4 were revised from the proposed drafts to clarify that the Instructions for Continued Airworthiness need not be complete at type certification:

§ 33.4 [§ 35.4] *Instructions for Continued Airworthiness*

The applicant [for a type certificate] must prepare Instructions for Continued Airworthiness in accordance with Appendix A to this part that are acceptable to the Administrator. The instructions may be incomplete at type certification

<sup>25</sup> *Id.*; 40 Fed. Reg. 29,427 (July 11, 1975).

<sup>26</sup> 40 Fed. Reg. 29,425 (July 11, 1975).

<sup>27</sup> 40 Fed. Reg. 29,427 (July 11, 1975).

if a program exists to ensure their completion prior to delivery of the first aircraft with the engine [propeller] installed, or upon issuance of a standard certificate of airworthiness for the aircraft with the engine [propeller] installed, whichever occurs later.<sup>28</sup>

Sections 33.5 and 35.3 remained substantively similar.

### **Federal Aviation Regulation Parts 27 and 29**

As discussed above, CAR Parts 6 and 7 became FAR Parts 27 and 29, respectively, as part of the FAA's recodification program. Effective February 1, 1964, FAR Part 27 replaced CAR Part 6.<sup>29</sup> FAR Part 29 officially replaced CAR Part 7 exactly one year later.<sup>30</sup>

CAR § 6.719 was recodified as FAR § 27.1529; CAR § 7.719 was recodified as FAR § 29.1529.<sup>31</sup> Although substantively similar, the FAA somewhat revised the new sections:

#### **§ 27.1529 [§ 29.1529] *Maintenance manual.***

Each rotorcraft must have a maintenance manual containing any information that the applicant considers essential for the proper maintenance, including recommended limits on service life or retirement period for major components. These components must be identified by serial number or equivalent means.<sup>32</sup>

In 1967, the FAA proposed amending these sections:

#### **§ 27.1529 [§ 29.1529] *Rotorcraft Maintenance Manual***

(a) Each rotorcraft must be furnished with a Rotorcraft Maintenance Manual containing the following:

(1) All information that the applicant considers essential for proper maintenance, including replacement times for major components, if replacement is anticipated. Part numbers (or equivalent) must be furnished for major components for which a replacement time is furnished.

<sup>28</sup> 45 Fed. Reg. 60181-2 (Sept. 11, 1980).

<sup>29</sup> 29 Fed. Reg. 15,694 (Nov. 24, 1964).

<sup>30</sup> 29 Fed. Reg. 16,149 (Dec. 13, 1964).

<sup>31</sup> 29 Fed. Reg. 15,694, 15,717 (Nov. 24, 1964); 29 Fed. Reg. 16,149, 16,182 (Dec. 13, 1964).

<sup>32</sup> 29 Fed. Reg. 15,694, 15,714 (Nov. 24, 1964); 29 Fed. Reg. 16,149, 16,179 (Dec. 13, 1964).



(2) The replacement times, inspection intervals, and related procedures approved under § 27.571 (§ 29.571), and the part number (or equivalent) of each component to which they apply. This section of the manual must be identified by the title “Airworthiness Limitations.” The information and procedures in this section of the manual –

- (i) Must be consistent with the information in the rest of the manual;
  - (ii) Must be shown to be practicable; and
  - (iii) Must indicate where “equivalent” procedures are to be permitted.
- (b) The information in the “Airworthiness Limitations” section of the manual must be segregated and clearly distinguished from the rest of the manual.<sup>33</sup>

The FAA clearly explained that “the approved maintenance procedures would be mandatory on all operators and maintenance personnel.”<sup>34</sup> The sections were finalized, as proposed, on September 18, 1968.<sup>35</sup>

The last amendments to §§ 27.1529 and 29.1529 were proposed on July 11, 1975, and the sections were to be amended “in a manner substantively identical to that proposed for § 23.1529.”<sup>36</sup> In the same NPRM, the FAA proposed revising § 23.1529 and offered the following explanation:<sup>37</sup>

**§ 23.1529 *Instructions for Continued Airworthiness***

The applicant must prepare Instructions for Continued Airworthiness in accordance with Appendix G to this part that are acceptable to the Administrator. The instructions may be incomplete at type certification if a program exists to ensure their completion prior to delivery of the first airplane or issuance of a standard certificate of airworthiness, whichever occurs later.

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<sup>33</sup> 32 Fed. Reg. 14,106, 14,108 (Oct. 11, 1967). These amendments to §§ 27.1529 and 29.529 were originally proposed in an NPRM published on Dec. 28, 1965, but for reasons not pertaining to maintenance manuals, the NPRM never became final. 30 Fed. Reg. 16,129 (Dec. 28, 1965).

<sup>34</sup> 32 Fed. Reg. 14,106, 14,108 (Oct. 11, 1967).

<sup>35</sup> 33 Fed. Reg. 14, 104 (Sept. 18, 1968).

<sup>36</sup> 40 Fed. Reg. 29,421 (July 11, 1975); 40 Fed. Reg. 29,423 (July 11, 1975).

<sup>37</sup> Federal Aviation Regulation Parts 23 and 25, *infra*.

*Explanation.* This proposal would require the preparation of comprehensive maintenance instructions that would be made available, under proposed § 21.50, upon delivery of each aircraft. Under this proposal, the applicant for a type certificate would be required to submit, prior to the issuance of a type certificate, Instructions for Continued Airworthiness that conform in form and content with the standards specified in proposed Appendix F. The applicant would also be required to submit a program for making changes to those Instructions.

The FAA recognizes that at the time that the airplane is type certificated, the Instructions for Continued Airworthiness may not be complete. The instructions and the program that would be required by Appendix F for making changes, as they exist at type certification, will be the basis on which the type certificate is issued. However, § 21.50 would require that complete instructions be made available with each aircraft. The “Airworthiness Limitations” section of the Instructions would be specifically made a part of the type design under proposed § 21.31. Section 21.50 would require that the “Airworthiness Limitations” section be furnished with each aircraft. Compliance with the “Airworthiness Limitations” section of the Instructions will be required under proposed §§ 43.16 and § 91.163. Compliance with the other Instructions will be permitted under proposed § 43.13.<sup>38</sup>

Finalized in September 11, 1980, the only change made to §§ 27.1529 and 29.1529 from proposed § 23.1529 was the appendix section, which became Appendix A.<sup>39</sup>

### **Federal Aviation Regulation Parts 23 and 25 (first requirement: 1969)**

As the FAA wanted “to provide for maintenance manuals for airplanes type certificated under Parts 23 and 25 of the Federal Aviation Regulations, ” in 1969, the Agency proposed adding new §§ 23.1529 and 25.1529.<sup>40</sup> The FAA explained it’s rational behind seeking more uniform regulations:

At the present time, the regulations governing the type certification of rotorcraft require that each rotorcraft have a maintenance manual containing the information that the type certificate applicant considers essential for the proper maintenance of the rotorcraft. In addition, the regulations require that each engine and propeller manufacturer prepare and make available an

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<sup>38</sup> 40 Fed. Reg. 29,414 (July 11, 1975).

<sup>39</sup> 32 Fed. Reg. 60,177 (Sept. 11, 1980); 32 Fed. Reg. 60,179 (Sept. 11, 1980).

<sup>40</sup> 34 Fed. Reg. 5440 (Mar. 20, 1969).

approved manual containing instructions for installing, operating, servicing and maintaining the engine or propeller. The FAA has recently recognized this necessity with respect to airplanes capable of carrying more than 10 persons and used in Air Taxi operations under Part 135. However, there are no such requirements for other airplanes. Because of the increasing complexity of even the smaller airplanes not to mention the very large airplanes not in the process of certification, the continued airworthiness of such airplanes requires that a maintenance manual be made available to the owners and operators of these airplanes.<sup>41</sup>

The new sections were proposed to read: “§ 23-25.1529 *Maintenance manual*. A maintenance manual containing the information that the applicant considers essential for proper maintenance must be made available to the owner at the time of delivery of the airplane. The manual must include at least the following: . . .”<sup>42</sup>

In the final rule issued January 8, 1970, the FAA discussed many of the comments received in response to the new proposals. Although “most commentators gave wholehearted support to the proposal,” some commentators said that the proposed requirement was unnecessary, as manufacturers already made maintenance manuals available.<sup>43</sup> The FAA responded:

The FAA is aware that some manufacturers provide or make available manuals containing maintenance information, however, the FAA is not aware that all manufacturers make all the information considered essential for proper maintenance available at the time of delivery of an airplane. Furthermore, there are no standards prescribing the minimum content, distribution, and time the information must be available to the person who needs it.<sup>44</sup>

The FAA compared the new airplanes being manufactured to the older planes and noted that the new planes require knowledge of techniques and practices that may not be

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<sup>41</sup> 34 Fed. Reg. 5440, 5440-1 (Mar. 20, 1969).

<sup>42</sup> Id.

<sup>43</sup> 35 Fed. Reg. 303 (Jan. 8, 1970).

common knowledge or used on older planes. “[T]he information contained in the manual will increase the likelihood of satisfactory maintenance during the earliest stages of operation of the airplane.”<sup>45</sup>

The only change from the proposed rules was that the second sentence of paragraph one for each section was revised to read, “The applicant must consider at least the following in developing the essential information: . . .”<sup>46</sup> In its discussion of received comments, the FAA explained the change:

Some comments expressed concern that the issuance of a type certificate for the airplane would be withheld pending the production of the maintenance manual and its approval by the FAA. However, it should clearly be understood that the rule merely requires the manual be available to the owner at the time of delivery of an airplane and that it need contain only that information which the manufacturer considers essential for proper maintenance. It was not intended that the manufacturer had to supply each of the items listed unless he considers such information essential for proper maintenance. To remove any possible confusion in this regard, proposed §§ 23.1529 and 25.1529 have been revised to make it clear that the manufacturer must consider the listed items in determining the information essential for proper maintenance of his airplane.<sup>47</sup>

It is interesting to note that at this stage, the FAA used the language “make available,” rather than “furnish,” when discussing the manufacturers’ responsibility regarding maintenance manuals and operators.

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<sup>44</sup> Id.

<sup>45</sup> Id.

<sup>46</sup> 35 Fed. Reg. 303, 303-4 (Jan. 8, 1970).

<sup>47</sup> Id.

As discussed above, the FAA proposed revising §§ 23.1529 and 25.1529 in 1975 in accordance with its new Continued Airworthiness program.<sup>48</sup> Like §§ 27.1529 and 29.1529, § 25.1529 was to be amended “in a manner substantively identical to that proposed for § 23.1529.”<sup>49</sup> Also on September 11, 1980, the sections were finalized and revised to clarify that Instructions for Continued Airworthiness do not need to be finalized until delivery.<sup>50</sup>

**Federal Aviation Rule Part 21, § 21.50 (first requirement: 1968 (§ 21.50(a)), 1980 (§ 21.50(b))**

One of the current regulations concerning the creation of maintenance manuals by the manufacturer is found in 14 C.F.R. § 21.50. First enacted in 1968, the regulation has been amended three times.

*New Rule*

In 1967, the FAA issued a NPRM proposing new § 21.50 (*i.e.*, only what is now currently § 21.50(a)). This NPRM proposed changes to various regulations, including § 46.16. “Since the “Airworthiness Limitations” section of the Rotorcraft Maintenance Manual would be mandatory with respect to operators by proposed § 91.163 (c) and with respect to maintenance personnel by proposed § 43.16, it is essential that these regulated persons have access to all changes that will affect their obligations under the proposed rules.”<sup>51</sup> Section 21.50 was proposed essentially to promote efficiency and ease in complying with the proposed § 91.163(c) and § 43.16:

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<sup>48</sup> Federal Aviation Regulations Parts 27 and 29, *supra*; 40 Fed. Reg. 29,414 (July 11, 1975).

<sup>49</sup> 40 Fed. Reg. 29,414, 29,421 (July 11, 1975).

<sup>50</sup> 45 Fed. Reg. 60,171, 60,159 (Sept. 11, 1980).

<sup>51</sup> 32 Fed. Reg. 14,106 (Oct. 11, 1967).

The effect of proposed § 91.163(c) and § 43.16 could be to require compliance with unnecessarily restrictive procedures unless a regulatory basis is provided to ensure that changes approved for the holder of the type certificate are made available to operators. For this reason, a new § 21.50 would be added to read as follows:

*§ 21.50 Rotorcraft Maintenance Manual; changes to the “Airworthiness Limitations” section.*

The holder of a type certificate for a rotorcraft for which a Rotorcraft Maintenance Manual containing an “Airworthiness Limitations” section has been issued under § 27.1529(a)(2) or § 29.1529(a)(2), and who obtains approval of changes to any replacement time, inspection interval, or related procedure in that section of the manual, *shall make those changes available upon request* to any operator of the same type of rotorcraft.<sup>52</sup> (Emphasis added.)

It is interesting to note that again, the FAA was not going to require the manufacturers to supply or furnish the changes to the operators, but only make them available should the operator requests them. In 1968, the FAA published the identical final rule in Volume 33 of the Federal Register.<sup>53</sup>

*Amendment No. 1*

It is with the 1975 proposed and 1980 final rule that § 21.50 began to resemble its current form. The NPRM proposed revising the heading of § 21.50, redesignating § 21.50 as § 21.50(a), and adding a new § 21.50(b) to read as follows:

*§ 21.50 Instructions for Continued Airworthiness and Rotorcraft maintenance manuals having “Airworthiness Limitations” sections.*

(b) The holder of a type certificate for an aircraft, engine, or propeller for which application was made after (the effective date of this amendment) shall make available complete Instructions for Continued Airworthiness prepared in accordance with §§ 23.1529, 25.1529, 27.1529, 29.1529, 31.82, 33.4, and 35.4 of this chapter, to the owner of each aircraft, engine, or propeller, upon its delivery, and to any other person required by this chapter

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<sup>52</sup> *Id.* at 14,109 (Oct. 11, 1967)

<sup>53</sup> 33 Fed. Reg. 14,104 (Sept. 18, 1968).

to comply with any of the terms of those instructions upon request. In addition, changes to the Instructions for Continued Airworthiness shall be made available, upon request, to any persons required by this chapter to comply with any of the terms of those instructions. The “Airworthiness Limitations” section of the Instructions for Continued Airworthiness shall be furnished with each aircraft, engine, or propeller.<sup>54</sup>

The FAA explained that this “proposal would ensure that those persons needing the Instructions for Continued Airworthiness and changes thereto will have that information available.”<sup>55</sup>

When proposed, the FAA received many comments pertaining to the new section. One commenter “questioned the need for the [proposed] provision in § 21.50(b) requiring that the Airworthiness Limitations section of the Instructions for Continued Airworthiness be furnished with each aircraft, engine, or propeller.”<sup>56</sup> The FAA agreed that this requirement would be redundant. “Accordingly, the requirement that the Airworthiness Limitations section be furnished with each airplane [was] revised to require that the section be furnished to each owner of the type.”<sup>57</sup>

Much of the Discussion of Comments section implies that the industry’s expectation was for manufacturers, owners/operators and purchasers of the type-certificated product to pass the Instructions for Continued Airworthiness (“ICAs”) to whomever needed them or whoever is required to follow them. For example, one commenter suggested that the proposed language in § 21.50(b) be clarified so that the ICAs for engines and propellers do not need to be supplied until the complete aircraft is delivered to the purchaser. The FAA

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<sup>54</sup> 40 Fed. Reg. 29,410 (July 11, 1975).

<sup>55</sup> Id.

<sup>56</sup> Airworthiness Review Program; Amendment No. 8A: Aircraft, Engine and Propeller Airworthiness, and Procedural Amendments, 45 Fed. Reg. 60, 154, 60, 157 (Sept. 11, 1980).

stated, “[t]he continued airworthiness instructions for propellers and engines should be provided to the aircraft manufacturer to facilitate transmittal to purchasers of the aircraft.”<sup>58</sup>

Another commenter objected to the proposed Appendix A to Part 35. The objection focused in § A35.1(c) “because the propeller owner (aircraft operator) would be wastefully provided with instructions and data that the [aircraft operator] has no authority to use.”<sup>59</sup>

The FAA disagreed. “The Instructions for Continued Airworthiness must be furnished to the aircraft owner/operator who is the person responsible for maintaining the aircraft (including the propeller). The owner/operator may not be authorized to maintain the propeller, but the owner/operator can place the Instructions in the hands of persons who are authorized.”<sup>60</sup> Many of the comments were concerned with unnecessary or superfluous distribution of the ICAs. For example, some repair stations probably do not service all types of aircraft, so it would be imprudent for each manufacturer to supply each repair station with their particular ICA.

There is a passage in the Discussion of Comments section in which the FAA used the language “make available” and “furnish” almost interchangeably. A commenter expressed concern with the proposed § 21.50(b) because, as written, it “require[d] that the Airworthiness Limitations section of the Instructions for Continued Airworthiness to be *furnished* with each aircraft, engine, or propeller.”<sup>61</sup> (Emphasis added). In its response, the FAA stated that the “type certificate holder *must made available*, and the

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<sup>57</sup> Id.

<sup>58</sup> Id.

<sup>59</sup> Id. at 60,168.

<sup>60</sup> Id.

<sup>61</sup> Id. at 60,157.



operator/owner must comply.”<sup>62</sup> (Emphasis added). However, as proposed and as finalized, § 21.50(b) clearly stated and continues to state that a type certificate holder *shall furnish* the ICA to the owner and thereafter to any other person required to comply with those instructions.<sup>63</sup> The final, revised version of § 21.50, with new section (b) was issued on September 11, 1980:

*§ 21.50 Instructions for continued airworthiness and manufacturer's maintenance manuals having airworthiness limitations sections.*

(b) The holder of a design approval, including either the type certificate or supplemental type certificate for an aircraft, aircraft engine, or propeller for which application was made after October 14, 1981, shall furnish at least one set of complete Instructions for Continued Airworthiness, prepared in accordance with §§ 23.1529, 25.1529, 27.1529, 29.1529, 31.82, 33.4, or 35.4 of this chapter, as applicable, to the owner of each type aircraft, aircraft engine, or propeller upon its delivery, or upon issuance of the first standard certificate of airworthiness for the affected aircraft, whichever occurs later, and thereafter make available those instructions to any other person required by this chapter to comply with any of the terms of those instructions. In addition, changes to the Instructions for Continued Airworthiness shall be made available to any person required by this chapter to comply with any of those instructions.<sup>64</sup>

*Amendment No. 2*

This amendment is fairly immaterial, as it was published in the Federal Register to correct Amendment No. 1. According to the comments, Amendment No. 1 printed incorrectly the date October 14, 1981 within the actual section, when it should have been October 14, 1980. “In order to give the notice required by the Administrative Procedure

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<sup>62</sup> Id.

<sup>63</sup> 14 C.F.R. § 21.50(b) (2001). See also 45 Fed. Reg. 60,154, 60,157 (Sept. 11, 1980)(clarifying that “the phrase “upon request” has been deleted from § 21.50(b) and the language has been revised to require that at least one set of the complete Instructions for Continued Airworthiness be furnished upon delivery to the customer, or subsequent to issuance of the first standard certificate of airworthiness, whichever occurs later.”)

<sup>64</sup> 45 Fed. Reg. 60,154, 60,170 (Sept. 11, 1980).

Act, the date in Sec. 21.50(b) was amended to “January 28, 1981” (30 days after the effective date of [this amendment.]”<sup>65</sup>

*Amendment No. 3*

The final amendment to § 21.50 revised the regulation to “clarify that special classes of aircraft will be required to have Instructions for Continued Airworthiness similar to those required in the airworthiness standards of Chapter C. [Therefore], §§ 21.31(c) and 21.50(b) are revised to specify that the Airworthiness Limitations section of the Instructions for Continued Airworthiness constitutes a part of the type design for special classes of aircraft.”<sup>66</sup>

***When did the requirement to follow maintenance manuals when performing maintenance first appear in the regulations?***

**Civil Air Regulation Part 18**

The earliest requirement that persons performing maintenance follow the manufacturer’s maintenance manuals was 1938. Specifically related to engines, the section specified that “[i]n making repairs to (or overhauling) a certificated engine the mechanic shall be governed by the recommendations set forth in the respective instruction books published by the manufacturer, except when such recommendations conflict with Civil Air Regulations.”<sup>67</sup> The preceding regulation mandated that “[r]epairs to, or overhaul of, certificated engines shall not be attempted by any but certificated engine mechanics or

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<sup>65</sup> Amend. 21-51A (Dec. 29, 1980). N.B.: This amendment was printed from the FAA’s website.

<sup>66</sup> Designation of Applicable Regulations for the Type Certification and Airworthiness Certification of Special Classes of Aircraft, 52 Fed. Reg. 8040, 8041 (Mar. 13, 1987). See 14 C.F.R. § 21.50 (2001).

<sup>67</sup> 14 C.F.R. § 18.7221 (1938).

by employees of a manufacturer.”<sup>68</sup> Unfortunately, this edition of the C.F.R. did not cite any source for these regulations, other than “the civil air regulations, Secretary of Commerce, May 21, 1938.”<sup>69</sup>

In 1941, the CAB amended CAR Part 18 to include a regulation that referred to the use of manufacturer’s maintenance manuals when performing repairs or alterations. As opposed to the previous section in the 1938 C.F.R., the regulation was expanded to cover aircraft, aircraft engines, and propellers.

§ 18.51 *Provision for approval of major repairs and major alterations.* No aircraft, aircraft engine, or propeller which has undergone any major repair or major alteration shall be returned to service until examined, inspected and approved by a duly authorized representative for the Administrator unless such repair or alteration has been executed in accordance with a manual or specification approved by the Administrator, and performed by a certificated repair station of the proper rating or by the manufacturer.<sup>70</sup>

The CAB clarified that “[s]uch manual or specification *may*, for example, be issued by the manufacturer, a certificated repair station, or by the Administrator. All such manuals or specifications issued by parties other than the Administrator must be approved by him.”<sup>71</sup> (Emphasis added). “Repairs” were defined as “any operation other than routine maintenance which is required to restore on [sic] aircraft, aircraft engine, propeller, or instrument to a condition for safe operation, including the mending or replacement of damaged or deteriorated parts,”<sup>72</sup> and “alterations” were defined as “any appreciable

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<sup>68</sup> 14 C.F.R. § 18.7220 (1938).

<sup>69</sup> 14 C.F.R. § 18.0 (1938).

<sup>70</sup> 6 Fed. Reg. 1811 (Apr. 8, 1941).

<sup>71</sup> *Id.*, at n.2.

<sup>72</sup> 6 Fed. Reg. 1811 (Apr. 8, 1941)(to be codified at 14 C.F.R. § 18.3).

change in the design of an aircraft, aircraft engine, propeller, or instrument.”<sup>73</sup> Within the same amendment, “major repairs” were defined as “complex repair operations of vital importance to the airworthiness of an aircraft,”<sup>74</sup> as opposed to “minor repairs,” which were “elementary repair operations executed in accordance with standards practices and not within the definition of major repairs.”<sup>75</sup> Rather than draft an explicit definition, “major alterations” were defined simply as “all alterations not within the definition of minor alterations.”<sup>76</sup> “Minor alterations” were considered:

- (a) An alteration having no appreciable effect on the weight, balance, structural strength, powerplant operation, flight characteristics or other characteristics affecting the airworthiness of an aircraft; or
- (b) An alteration for which specific plans and instructions have been approved by the Administrator and which can be executed by means of elementary operations.<sup>77</sup>

Although the 1941 amendment was effective June 1, 1941, the 14 C.F.R. Part 18 (1949), which cites the 1941 amendment as its source, is quite different. For example, although identical to § 18.51 above, 14 C.F.R. § 18.11 (1949) is the section covering approval of major repairs and major alterations. The definitions for repairs, including general, major and minor, and alterations, including general, major and minor, are also identical, except that the section numbers are different.<sup>78</sup>

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<sup>73</sup> 6 Fed. Reg. 1811 (Apr. 8, 1941)(to be codified at 14 C.F.R. § 18.4).

<sup>74</sup> 6 Fed. Reg. 1811 (Apr. 8, 1941)(to be codified at 14 C.F.R. § 18.31).

<sup>75</sup> 6 Fed. Reg. 1811 (Apr. 8, 1941)(to be codified at 14 C.F.R. § 18.30).

<sup>76</sup> 6 Fed. Reg. 1811 (Apr. 8, 1941)(to be codified at 14 C.F.R. § 18.41).

<sup>77</sup> 6 Fed. Reg. 1811 (Apr. 8, 1941)(to be codified at 14 C.F.R. § 18.40).

<sup>78</sup> 14 C.F.R. § 18.6 (1949) contained the definitions for repairs, minor repairs and major repairs. 14 C.F.R. § 18.7 (1949) contained the definitions for alterations, minor alterations and major alterations.

The CAB next amended CAR Part 18 in 1952, and retained the provision specifying the requirements for approval of major repairs and major alterations.<sup>79</sup> While substantively similar, the specifications were drafted somewhat differently:

§ 18.11 *Persons authorized to approve maintenance, repair, and alterations—*  
(b) *Major repairs and major alterations.* No airframe, powerplant, propeller, or appliance, which has undergone any major repair or major alteration shall be returned to service until such repair or alteration has been examined, inspected, and approved as airworthy by one of the following:  
(1) An authorized representative of the Administrator, or  
(2) An appropriately rated certificated repair station, if the work has been performed by such repair station in accordance with a manual, specification, or other technical data approved by the Administrator, or  
(3) A manufacturer, if the product has been rebuilt or altered by the manufacturer under the provisions of § 18.10 (d) in accordance with a manual, specification, or other technical data approved by the Administrator, or  
(4) An appropriately certificated air carrier, if the work has been performed by such air carrier in accordance with a manual, specification, or other technical data approved by the Administrator.<sup>80</sup>

This amendment made it very clear that referring to a manual while performing repairs or alterations is important, regardless of whether the one performing the work is a repair station, manufacturer, or air carrier. However, unlike the previous amendment, the CAB did not choose to footnote the section with an explanation of the term “manual.”

It is important to note that the 1952 amendment also contained a provision allowing an “appropriately certificated air carrier [to] perform maintenance, repairs, and alterations on aircraft or aircraft components . . . as provided for in its continuous airworthiness maintenance and inspection program and its maintenance manual.”<sup>81</sup> However, the

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<sup>79</sup> 17 Fed. Reg. 2975 (Apr. 5, 1952).

<sup>80</sup> 17 Fed. Reg. 2975, 2977 (Apr. 5, 1952)(to be codified at 14 C.F.R. § 18.10(d)).

<sup>81</sup> Id.

maintenance manual to which this section refers is the air carrier's own maintenance manual,<sup>82</sup> not the manufacturer's manual.

Finally, the 1952 amendment contained a series of "Performance Rules," all under § 18.30.<sup>83</sup> These rules prescribed the quality of maintenance, repairs and alterations. Within Civil Aeronautics Manual (CAM) 18 of February 1, 1957, the CAB issued interpretive document § 18.30-1.<sup>84</sup> Although the CAB did not specifically require that all maintenance, repair and alterations be completed pursuant to the manufacturer's maintenance manual, if one exists, the Administrator did clarify that "[w]here special equipment or test apparatus is recommended by the manufacturer of the article involved, such equipment or apparatus, or equivalent acceptable to the Administrator must be used."<sup>85</sup>

#### **Federal Aviation Rule Part 43 (first requirement: 1964)**

In 1961, the FAA announced the agency recodification program.<sup>86</sup> Almost exactly two years later, the FAA proposed adding new FAR Part 43 to replace CAR Part 18.<sup>87</sup> On April 23, 1964, the proposed rule became final.<sup>88</sup> Within that final rule, CAR Part 18.30 and 18.30-1 (from CAM 18, discussed above) were combined to create FAR § 43.13, which was issued as follows:

#### **§ 43.13 *Performance rules (general)*.**

(a) Each person maintaining or altering, or performing preventive maintenance, shall use methods, techniques, and practices acceptable to

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<sup>82</sup> CAR Parts 40, 41 and 42; Civil Aeronautics Manual 18, § 18.30-1(b) (CAA interpretations which apply to section § 18.30)(Dec. 15, 1959).

<sup>83</sup> 17 Fed. Reg. 2975, 2977 Apr. 5, 1952).

<sup>84</sup> Civil Aeronautics Manual 18, § 18.30-1 (Feb. 1, 1957).

<sup>85</sup> CAM 18, § 18.30-1(a) (Feb. 1, 1957); CAM 18, § 18.30-1(a) (Dec. 15, 1959).

<sup>86</sup> 26 Fed. Reg. 10,698 (Nov. 15, 1961).

<sup>87</sup> 28 Fed. Reg. 12,096 (Nov. 13, 1963).

<sup>88</sup> 29 Fed. Reg. 5449, 5451 (Apr. 23, 1964).

the Administrator. He shall use the tools, equipment, and test apparatus necessary to assure completion of the work in accordance with accepted industry practices. If special equipment or test apparatus is recommended by the manufacturer involved, he must use that equipment or apparatus or its equivalent acceptable to the Administrator.

(b) Each person maintaining or altering, or performing preventive maintenance, shall do that work in such a manner and use materials of such a quality, that the condition of the aircraft, airframe, aircraft engine, propeller, or appliance worked on will be at least equal to its original or properly altered condition (with regard to aerodynamic function, structural strength, resistance to vibration and deterioration, and other qualities affecting airworthiness).

(c) *Special provisions for air carriers and commercial operators.* Unless otherwise noted by the Administrator, the methods, techniques, and practices contained in the maintenance manual or the maintenance part of the air carrier manual of a certificated air carrier or commercial operator (that is required by its operating certificate or approved operating specifications to provide a continuous airworthiness maintenance and inspection program) constitute acceptable means of compliance with this section.<sup>89</sup>

Note that the requirement of CAM 18, § 18.30-1(a) discussed above was included in subsection (a) of the new section.<sup>90</sup>

As part of the new ICA amendments, the FAA proposed revising the first sentence of § 43.13(a) in 1975 to read, "Each person performing maintenance, alteration, or preventive maintenance on an aircraft, engine, propeller, or appliance shall use the methods, techniques, and practices prescribed in the current Instructions for Continued Airworthiness prepared by its manufacturer or other methods, techniques, and practices acceptable to the Administrator."<sup>91</sup> Whereas § 43.13(a) in effect at the time did not absolutely require one to follow the manufacturer's maintenance manuals during maintenance or alterations, except if and when the manufacturer recommended specific equipment or test apparatus, the proposed amendment would make it clear that these

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<sup>89</sup> 29 Fed. Reg. 5449, 5451 (Apr. 23, 1964).

activities must be done in accordance with the manufacturer's ICAs unless there were other methods, techniques and practices acceptable to the FAA. The FAA offered the following explanation for the proposed amendment:

*Explanation.* This proposal is one of a group of proposals dealing with the establishment of Instructions for Continued Airworthiness and the responsibilities of maintenance personnel and aircraft operators with respect to those instructions. In light of the improved and more uniform maintenance manuals that will be provided in the future for new products, this proposal would clearly emphasize that the information contained in such manuals should be used by maintenance personnel. However, it should be noted that the option would exist of using other maintenance methods, techniques, and practices that are acceptable to the Administrator.<sup>92</sup>

The 1975 proposed amendment was issued as a final rule on September 11, 1980 along with the other Airworthiness amendments discussed above. Although the proposed rule was similar to the final language, the latter gave those performing maintenance or alterations the option of following the manufacturer's maintenance manuals *or* ICAs:

§ 43.13 *Performance rules (general).*

(a) Each person performing maintenance, alteration, or preventive maintenance on an aircraft, engine, propeller or appliance shall use the methods, techniques and practices prescribed in the current manufacturer's maintenance manual or Instructions for Continued Airworthiness prepared by its manufacturer, or other methods, techniques, and practices acceptable to the Administrator, except as noted in § 43.16.<sup>93</sup>

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<sup>90</sup> 29 Fed. Reg. 5449, 5453 (Apr. 23, 1964).

<sup>91</sup> 40 Fed. Reg. 29,410, 29,428 (Jul. 11, 1975).

<sup>92</sup> *Id.*

<sup>93</sup> 45 Fed. Reg. 60,154, 60,182 (Sept. 11, 1980).



No explanation for the change was recorded, although the maintenance manual option was probably added in recognition of the fact that not all aircraft, engines, propellers or appliances were required to have ICAs. The FAA also limited the “other methods” provision by allowing persons to use “other methods, techniques, and practices acceptable to the Administration, except as noted in § 43.16.”<sup>94</sup>

The final two amendments to § 43.13 occurred in 1982 and 1987, but are immaterial to the issue at hand.<sup>95</sup>

#### **Federal Aviation Rule Part 145 (first requirement: 1952)**

Another pertinent regulation contained in the FARs is § 145.57, “Performance standards.” As currently in effect, the regulation prescribes:

(a) Except as provided in § 145.2, each certificated domestic repair station shall perform its maintenance and alteration operations in accordance with the standards in part 43 of this chapter. It shall maintain, in current condition, all manufacturers’ service manuals, instructions, and service bulletins that relate to the articles that it maintains or alters. . . .<sup>96</sup>

FAR § 145.57 is the result of a series of amendments to its predecessor, CAR § 52.44.<sup>97</sup> First issued in 1952, the original CAR § 52.44 was included as part of a revision “to improve the standards of repair stations.”<sup>98</sup> The new regulation, entitled “Standard of Performance,” prescribed that “[a]ll maintenance, repair, and alteration work shall be

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<sup>94</sup> 45 Fed. Reg. 60,154, 60,183 (Sept. 11, 1980). Also on September 11, 1980, § 43.16 was amended to read, “Each person performing an inspection or other maintenance specified in an Airworthiness Limitations section of a manufacturer’s maintenance manual or Instructions for Continued Airworthiness shall perform the inspection or other maintenance in accordance with that section, or in accordance with operations specifications approved by the Administrator under Parts 121, 123, 127, or 135, or an inspection program approved under § 91.217(e).”

<sup>95</sup> 47 Fed. Reg. 41,076 (Sept. 16, 1982); 52 Fed. Reg. 20,026 (May 28, 1987).

<sup>96</sup> 14 C.F.R. § 145.57 (2001).

<sup>97</sup> 27 Fed. Reg. 6662, 6667 (Jul. 13, 1962).

performed in accordance with the standards prescribed in Part 18 of this subchapter.”<sup>99</sup>  
Unfortunately, there is no reference to any NPRM or equivalent within the final rule.

One month later, the CAB amended Part 52 to include § 52.44-1, which detailed the CAA’s interpretation of § 52.44.<sup>100</sup> The actual regulation was not changed, and the interpretation did not offer much more explanation:

(a) *General.* Standards referred to in § 52.44 may be found in Civil Aeronautics Manual 18. These standards apply to all aircraft, powerplants, propellers, instruments, and accessories undergoing maintenance, repair and alteration by a certificated repair station. Civil Aeronautics Manual 18 refers to manufacturers’ recommendations and instructions; therefore, the repair station must maintain in a current condition all manufacturers’ service manuals, instructions and service bulletins which pertain to the articles undergoing repair or alteration by the repair station. . . .<sup>101</sup>

During the FAA’s recodification program, CAR §§ 52.44 and 52.44-1 were combined into FAR § 145.57. Although not substantively different, the new regulation streamlined the language, as was the Agency’s intention.<sup>102</sup>

§ 145.57 *Performance standards.*

(a) Each certificated domestic repair station shall perform its maintenance and alteration operations in accordance with the standards in Part \_\_\_\_ of this chapter [Present Part 18]. It shall maintain in current condition, all manufacturers’ service manuals, instructions, and service bulletins that relate to the articles that it maintains or alters. . . .<sup>103</sup>

In 1965, the FAA published an NPRM in the Federal Register indicating that it was considering amending FAR § 145.57 to read:

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<sup>98</sup> 17 Fed. Reg. 2981 (Apr. 5, 1952).

<sup>99</sup> 17 Fed. Reg. 2981, 2984 (Apr. 5, 1952); See ICA Project Memorandum, CAR Part 18.

<sup>100</sup> 17 Fed. Reg. 5002 (Jun. 4, 1952).

<sup>101</sup> *Id.* at 5012-3 (Jun 4, 1952).

<sup>102</sup> 27 Fed. Reg. 6655 (Jul. 13, 1962).

<sup>103</sup> *Id.* at 6666 (Jul. 13, 1962).

(a) Except as provided in § 145.2, each certificated domestic repair station shall perform its maintenance and alteration operations in accordance with the standards in [FAR] Part 43 of this chapter. It shall maintain, in current condition, all manufacturer's service manuals, instructions, and service bulletins that relate to the articles that it maintains or alters.<sup>104</sup>

The amendment was proposed "to specifically require repair stations to perform [maintenance and alterations for air carriers and commercial operators] in accordance with the procedures outlined in the applicable sections of Subpart L of Part 121 and Subpart I of Part 127 as set forth in the required manuals."<sup>105</sup> The FAA thought that the standards for the work performed should be "consistent regardless of who does the work . . ."<sup>106</sup> The final rule was passed on August 9, 1966, but only the first sentence became final.<sup>107</sup> This was the last time § 145.57 was amended pertaining to the issue at hand.<sup>108</sup>

Currently, 14 CFR § 145.2(a) requires that each repair station that "performs any maintenance, preventive maintenance, alterations, or required inspections for an air carrier or commercial operator having a continuous airworthiness program under part 121 or part 127 of this chapter" . . . "shall perform that work in accordance with the air carrier's or commercial operator's manual."<sup>109</sup>

As opposed to the regulations discussed above, this regulation requires repair stations to also follow the air carrier or commercial operator's manual, not only the

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<sup>104</sup> 30 Fed. Reg. 15,296, 15,297 (Dec. 10, 1965).

<sup>105</sup> Id.

<sup>106</sup> Id.

<sup>107</sup> 31 Fed. Reg. 10,612 (Aug. 9, 1966).

<sup>108</sup> On June 21, 1966, the FAA amended § 145.57(b), but this subsection deals with certificated domestic repair stations with radio ratings. 31 Fed. Reg. 8585 (Jun. 21, 1966).

<sup>109</sup> 14 C.F.R. § 145.2(a) (Jan. 1, 2001).

manufacturer's maintenance manual or ICA. In the NPRM published on December 10, 1965, the FAA explained that

Section 145.57 of the Federal Aviation Regulations prescribes the performance standards governing the maintenance and alteration of aircraft by certificated repair stations. Under these general rules, certificated repair stations are now doing work for operators required to have a continuous airworthiness program under Parts 121 and 127, in a manner that complies with the maintenance and alteration regulations applicable to such operators. However, at present, the repair stations are not specifically required by Part 145 to perform maintenance and alterations for an air carrier or a commercial operator in accordance with the air carrier's or commercial operator's continuous airworthiness program as set for in its manuals.<sup>110</sup>

To close this loophole, the FAA proposed new § 145.2, which included subsection (a) and was substantively similar to that currently in effect.

Since the regulations governing the performance of maintenance and alterations for air carriers and commercial operators should be consistent regardless of who does the work, the Agency proposes to amend Part 145 to specifically require repair stations to perform that work in accordance with the procedures outlined in the applicable subsections of Subpart L of Part 121 and Subpart I of Part 127 as set forth in the required manuals.<sup>111</sup>

The final amendment to § 145.2 occurred on October 9, 1980. The final rule added subsection (b), which set forth that "[e]ach repair station that performs inspections on airplanes governed by Part 125 of this chapter shall do that work in accordance with the inspection program approved for the operator of the airplane."<sup>112</sup>

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<sup>110</sup> 30 Fed. Reg. 15,296, 15,297 (Dec. 10, 1965). In the same NPRM, § 145.57(a) was proposed to read: § 145.57 *Performance standards*.

(a) Except as provided in § 145.2, each certificated domestic repair station shall perform its maintenance and alteration operations in accordance with the standards in Part 43 of this chapter. It shall maintain, in current condition, all manufacturer's service manuals, instructions, and service bulletins that relate to the articles that it maintains or alters.

In the final rule issued on August 9, 1966, only the first sentence of proposed § 145.57(a) was issued.

<sup>111</sup> *Id.*

<sup>112</sup> 45 Fed. Reg. 67,214, 67,235 (Oct. 9, 1980).

### Chronological Listing of Rules on Instructions for Continued Airworthiness

As discussed above, historical research reveals that in 1941 the Civil Aeronautics Board issued the first regulation requiring manufacturers to create maintenance manuals. The following table offers a chronological record of the applicable regulations that succeeded CAR § 13.32.

Year	Regulation	What?	To Whom?
1941	CAR § 13.32	Make available Engines Manufacturer's Instructions	"to persons engaged in the operation, maintenance, repair or overhaul of engines"
1950	CAR § 13.33	Make available Engines Manufacturer's Instructions	"to persons engaged in the operation, maintenance, repair or overhaul of engines"
1950	CAR § 6.719	Furnish with each rotorcraft Maintenance manual	The regulation does not specify to whom the manual is to be furnished, but if it is to be furnished with each rotorcraft.
1952	CAR § 13.21	Make available Engines Instruction manual	The regulation does not specify to whom the manual is to be made available, but the instructions are for the installation, operating, servicing, maintenance, repair and overhaul of the engine.
1952	CAR § 14.21	Make available Propellers Instruction manual	The regulation does not specify to whom the manual is to be made available, but the instructions are for the installation, operating, servicing, maintenance, repair and overhaul of the propeller.
1953	CAR § 6.719	Furnish with each rotorcraft a Maintenance manual	The regulation does not specify to whom the manual is to be furnished.
1956	CAR § 7.719	Furnish with each [transport rotorcraft] Maintenance manual	The regulation specifies that the manual is to be furnished with each rotorcraft.
1964	FAR §§ 27.1529 & 29.1529 (recodified from CAR §§ 6.719 & 7.719)	"must have" Rotorcraft/Transport Rotorcraft Maintenance manual	The regulations do not specify to whom the maintenance manual is to be made available. Rather, the regulations state that "each rotorcraft must have a maintenance manual . . ."
1964/5	FAR § 33.5 (recodified from CAR § 13.21)	Make available Engines ICA	The regulation does not specify to whom the manual is to be made available, but the instructions are for the installing, operating, servicing, and maintaining the engine.
1964/5	FAR § 35.3 (recodified from CAR § 14.21)	Make available Propeller ICA	The regulation does not specify to whom the manual is to be made available, but the instructions are for the installing, operating, servicing, and maintaining the propeller.

<b>Year</b>	<b>Regulation</b>	<b>What?</b>	<b>To Whom?</b>
1968	FAR § 21.50 (to be recodified in 1980 as FAR § 21.50(a))	Make available	Any changes to "Airworthiness Limitations" section of Rotorcraft Maintenance Manual shall be made available upon request to any operator of the rotorcraft.
1968	FAR §§ 27.1529 & 29.1529	Furnished Rotorcraft Maintenance Manual	The regulations do not specify to whom the maintenance manual is to be furnished. Rather, "each rotorcraft must be furnished with a Rotorcraft Maintenance Manual . . . ."
1970	FAR §§ 23.1529 & 25.1529	Make available Airplane Maintenance manual	To owner at time of delivery of the airplane
1980	FAR § 21.50 (added subsection (b))	Make available Airplanes, Engines, Propellers, Rotorcraft, Manned Free Balloons ICAs	All ICAs prepared in accordance with §§ 23.1529, 25.1529, 27.1529, 29.1529, 31.82, 33.4, and 35.4 must be made available to the owner of each aircraft, engine, or propeller upon its delivery. The ICAs prepared as specified above and any changes made thereto must also be made available to any other person required under 14 C.F.R. to comply with the ICAs.
1980	FAR §§ 23.1529 & 25.1529	Make available per § 21.50(b) Airplanes ICAs	These regulations do not specify to whom the ICAs should go, or how they are to be made available. The ICAs may be incomplete at type certification, but they must be completed by delivery of the airplane.
1980	FAR §§ 27.1529 & 29.1529	Make available per § 21.50(b) Rotorcraft ICAs	These regulations do not specify to whom the ICAs should go, or how they are to be made available, furnished, delivered, etc. The ICAs may be incomplete at type certification, but they must be completed by delivery of the first rotorcraft.
1980	FAR §§ 33.4 & 35.4	Make available per § 21.50(b) Engines/Propellers ICAs	These regulations do not specify to whom the ICAs should go, or how they are to be made available, furnished, delivered, etc. The ICAs may be incomplete at type certification, but they must be completed by delivery of the first aircraft with the engine or propeller installed.
1980	FAR § 33.5	Make available Engines Instruction manual	Must prepare and make available to the Administrator prior to issuance of type certificate must prepare and make available to owner at the time of delivery these instructions covering the installation and operation of the engine
1980	FAR § 35.3	Propellers Instruction manual	The regulation does not specify to whom the manual is to be made available, but the instructions are for installing and operating the propeller

### Chronological Listing of Regulations on Following ICAs

Even before the CAB first required the creation of maintenance manuals, persons repairing or overhauling a certificated engine must follow any recommendations included in the manufacturer's instruction book(s).<sup>113</sup> The following table details the transformation of this regulation, as well as other regulations requiring those performing repairs to follow maintenance manuals and ICAs.

Year	Regulation	Application	Description
1938	CAR § 18.7221	Engines	Repairs or overhauls of certificated engine must be done pursuant to recommendations made in the manufacturer's instruction books
1941	CAR § 18.51	Aircraft Aircraft Engines Propellers	Before being returned to service, all major repairs and major alterations performed on these parts must be approved by the Administrator unless the repair or alterations has been done in accordance with a manual or specification approved by the Administrator and performed by a certificated repair station or by the manufacturer. Such manual may be issued by the manufacturer, a certificated repair station, or by the Administrator. Manuals issued by those other than the Administrator must receive approval.
1952	CAR § 18.11	Airframe Powerplant Propeller Appliance	§ 18.11 <i>Persons authorized to approve maintenance, repair, and alterations – ...</i> (b) <i>Major repairs and major alterations.</i> No airframe, powerplant, propeller, or appliance, which has undergone any major repair or major alteration shall be returned to service until such repair or alteration has been examined, inspected, and approved as airworthy by one of the following: (1) An authorized representative of the Administrator, or (2) An appropriately rated certificated repair station, if the work has been performed by such repair station in accordance with a manual, specification, or other technical data approved by the Administrator, or (3) A manufacturer, if the product has been rebuilt or altered by the manufacturer under the provisions of § 18.10 (d) in accordance with a manual, specification, or other technical data approved by the Administrator, or (4) An appropriately certificated air carrier, if the work has been performed by such air carrier in accordance with a manual, specification, or other technical data approved by the Administrator.

<sup>113</sup> 14 C.F.R. § 18.7221 (1938).

<b>Year</b>	<b>Regulation</b>	<b>Application</b>	<b>Description</b>
1952	CAR § 52.44	(per CAR § 52.44-1, issued one month later: Aircraft Powerplants Propellers Instruments Accessories)	All maintenance, repair, and alteration work must be performed in accordance with the standards of Part 18 of 14 C.F.R.
1952	CAR § 52.44-1	Aircraft Powerplants Propellers Instruments Accessories	The repair station must maintain in a current condition all manufacturer's service manuals, instructions and service bulletins pertaining to the parts undergoing repair or alteration
1957	CAR § 18.30-1(a)		If a manufacturer's maintenance manual exists and special equipment or test apparatus is recommended, such equipment or apparatus, or equivalent acceptable to the Administrator, must be used.
1962	FAR § 145.57(a) (recodified from CAR §§ 52.44 and 52.44-1)		All maintenance and alterations by a certificated domestic repair station must be performed in accordance with CAR Part 18 / FAR Part 43. All applicable current manufacturer's service manuals, instructions and service bulletins must be maintained.
1964	FAR § 43.13 (recodified from CAR §§ 18.30 and 18.30-1)		If a manufacturer recommends using specific equipment or an apparatus while maintaining, altering or performing preventive maintenance, the recommendation or its equivalent acceptable to the Administrator must be followed.
1965	FAR § 145.2(a)		Repair stations must follow the air carrier or commercial operator's manual, not only the manufacturer's maintenance manual.
1966	FAR § 145.57(a)		Except as provided in § 145.2, all maintenance and alterations by a certificated domestic repair station must be performed in accordance with FAR Part 43.
1980	FAR § 43.13	Aircraft Engine Propeller Appliance	Maintenance, alteration or preventive maintenance must be performed in accordance with the current manufacturer's maintenance manual or ICAs, or other methods, techniques, and practices acceptable to the Administrator, except as noted in § 43.16.
1980	FAR § 43.16		Each person performing inspection or other maintenance specified in an Airworthiness Limitations section of a manufacturer's maintenance manual or ICA must perform the activity in accordance with that section or as approved by the Administrator under Parts 121, 123, 127 or 135, or an inspection program approved under § 91.217(e).