

# Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 35

[Docket No. NE128; Notice No. 35–06–01–SC]

#### Special Conditions: McCauley Propeller Systems, Model 3D15C1401/C80MWX–X Propeller

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed special conditions.

**SUMMARY:** This action proposes special conditions for McCauley Propeller Systems. This 3D15C1401/C80MWX–X model propeller will have a novel or unusual design features(s) associated with composite blades. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed special conditions contain the added safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**DATES:** We must receive your comments by September 1, 2006.

**ADDRESSES:** You must mail two copies of your comments to: Federal Aviation Administration, Engine and Propeller Directorate, Attn: Jay Turnberg, Rules Docket (ANE–110), Docket No. NE128, 12 New England Executive Park, Burlington, Massachusetts 01803–5299. You may deliver two copies to the Engine and Propeller Directorate at the above address. You must mark your comments: Docket No. NE128 You can inspect comments in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4 p.m.

**FOR FURTHER INFORMATION CONTACT:** Jay Turnberg, ANE–110, Engine and Propeller Directorate, Aircraft Certification Service, 12 New England Executive Park, Burlington, Massachusetts 01803–5299; telephone

(781) 238–7116; facsimile (781) 238–7199; e-mail [jay.turnberg@faa.gov](mailto:jay.turnberg@faa.gov).

#### SUPPLEMENTARY INFORMATION:

##### Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive, as well as a report summarizing each substantive public contact with FAA personnel about these special conditions. You can inspect the docket before and after the comment closing date. If you wish to review the docket in person, go to the address in the **ADDRESSES** section of this preamble between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

We will consider all comments we receive by the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change these special conditions based on the comments we receive.

If you want us to let you know we received your comments on this proposal, send us a pre-addressed, stamped postcard on which the docket number appears. We will stamp the date on the postcard and mail it back to you.

##### Background

On November 29, 2004, McCauley Propeller applied for type certification for a new model 3D15C1401/C80MWX–X propeller. This propeller uses blades that are constructed of composite material. The blade has a carbon fiber spar, a shell composed of braided carbon fiber and fiberglass, and metallic leading edge erosion protection to give the material strength properties and durability. The material properties depend on the carbon fiber and fiberglass lay-up and the resin matrix material that bind the blade together. Composite materials introduce fatigue characteristics and failure modes that differ from metallic materials.

The requirements of part 35 were established to address the airworthiness considerations associated with propellers with metallic hubs and

blades. Propeller blades constructed using composite material may be subject to damage due to the high impact forces associated with a bird strike.

In addition, part 35 does not require a demonstration of propeller integrity following a lightning strike. Composite blades may not safely conduct or dissipate the electrical current from a lightning strike. Severe damage can result if the propellers are not properly protected. Therefore, composite blades must demonstrate propeller integrity following a lightning strike.

Lastly, the current certification requirements address structural and fatigue evaluation only of metal propeller blades or hubs and metal components of non-metallic blade assemblies. Allowable design stress limits for composite blades must consider the deteriorating effects of the environment and in-service use, particularly those effects from temperature, moisture, erosion and chemical attack. Composite blades also present new and different considerations for retention of the blades in the propeller hub.

##### Type Certification Basis

Under the provisions of 14 CFR 21.17, McCauley Propeller Systems must show that the Model 3D15C1401/C80MWX–X propeller meets the applicable provisions of § 21.21 and part 35.

If the Administrator finds that the applicable airworthiness regulations (i.e., part 35) do not contain adequate or appropriate safety standards for the McCauley Propeller Systems Model 3D15C1401/C80MWX–X propeller, because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

The FAA issues special conditions, as defined by 14 CFR 11.19, in accordance with 14 CFR 11.38, which become part of the type certification basis in accordance with § 21.17(a)(2).

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same or similar novel or unusual design feature, or should any other model already included on the same type certificate be modified to incorporate the same or similar novel or unusual design feature, the special

conditions would also apply to the other model under § 21.101(d).

### Novel or Unusual Design Features

The McCauley Propeller Systems Model 3D15C1401/C80MWX-X will incorporate the following novel or unusual design features: Blades constructed of composite materials. Special conditions for centrifugal load tests, fatigue limits and evaluation, bird impact, and lightning strike are proposed to address the novel and unusual design features. The special conditions are discussed below.

### Discussion

#### *Centrifugal Load Tests*

Section 35.35 currently requires that the hub and blade retention arrangement of propellers with detachable blades be tested to a centrifugal load of twice the maximum centrifugal force to which the propeller would be subjected during operation. This requirement is limited to the blade and hub retention capacity and does not address composite materials and composite construction of the propeller assembly or changes in materials due to service degradation and environmental factors.

#### *Fatigue Limits and Evaluation*

The current requirement does not adequately address composite materials and is limited to metallic hubs and blades and primary load-carrying metal components of non-metallic blades. The proposed special conditions will expand the requirements to include all materials and components whose failure would cause a hazardous propeller effect and take into account material degradation expected in service, material property variations, manufacturing variations, and environmental effects. The proposed special conditions will clarify that the fatigue limits may be determined by tests or analysis based on tests. The components whose failure may cause a hazardous propeller effect include control system components, when applicable.

The proposed special conditions will require the applicant to conduct fatigue evaluation on a typical aircraft or on an aircraft used during aircraft certification to conduct the vibration tests and evaluation required by either §§ 23.907 or 25.907. The typical aircraft may be one used to develop design criteria for the propeller or another appropriate aircraft.

#### *Bird Impact*

Currently part 35 has no bird impact requirements. The existing requirements

only address the airworthiness considerations associated with propellers that use wood and metal blades. Propeller blades of this type have demonstrated good service experience following a bird strike. Propeller blade and spinner construction now use composite materials that have a higher potential for damage from bird impact.

The need for bird impact requirements was recognized when composite blades were introduced in the 1970's; the safety issue has been addressed by special test and special conditions for composite blade certifications. These special conditions were unique for each propeller and effectively stated that the propeller will withstand a four-pound bird impact without contributing to a hazardous propeller effect. These special tests and special conditions have been effective for over fifty million flight hours. There have not been any accidents attributed to bird impact on composite propellers. The selection of a four-pound bird has been substantiated by the extensive service history of blades that have been designed using the four-pound bird criteria.

#### *Lightning Strike*

Currently part 35 has no lightning strike requirements. The need for lightning strike requirements was recognized when composite blades were first introduced in the 1970's; the safety issue has been addressed by special tests and special condition for each design using composite blades. The special tests and special condition, which were unique for each propeller, effectively stated that the propeller must be able to withstand a lightning strike without contributing to a hazardous propeller effect. These special tests and special conditions have been effective for over fifty million flight hours. There have not been any accidents attributed to a lightning strike on composite propellers.

### Applicability

As discussed above, these special conditions are applicable to McCauley propeller systems Model 3D15C1401/C80MWX-X. If McCauley Propeller systems applies later for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

### Conclusion

This action affects only certain novel or unusual design features on one model of propellers. It is not a rule of general

applicability, and it affects only the applicants who applied to the FAA for approval of these features on the propeller.

### List of Subjects in 14 CFR Part 35

Air transportation, Aircraft, Aviation safety, Safety.

The authority citation for these special conditions is as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701–44702, 44704.

### The Proposed Special Conditions

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for McCauley Propeller Systems Model 3D15C1401/C80MWX-X propellers.

1. *Definitions.* Unless otherwise approved by the Administrator and documented in the appropriate manuals and certification documents, for compliance with these special conditions the following definitions apply to the propeller:

(a) Propeller—the propeller is defined by the components listed in the type design.

(b) Propeller system—the propeller system consists of the propeller plus all the components necessary for its functioning, but not necessarily included in the propeller type design.

(c) Hazardous propeller effect—a hazardous propeller effect is:

(1) A significant overspeed of the propeller.

(2) The development of excessive drag.

(3) A significant thrust in the opposite direction to that commanded by the pilot.

(4) The release of the propeller or any major portion of the propeller.

(5) A failure that results in excessive unbalance.

(6) The unintended movement of the propeller blades below the established minimum in-flight low pitch position.

(d) Major propeller effect—A major propeller effect is:

(1) An inability to feather for feathering propellers.

(2) An inability to command a change in propeller pitch.

(3) A significant uncommanded change in pitch.

(4) A significant uncontrollable torque or speed fluctuation.

2. *Centrifugal Load Tests.* McCauley must demonstrate that the propeller, accounting for environmental degradation expected in service, complies with paragraphs (a), (b) and (c) of this section without evidence of failure, malfunction, or permanent

deformation that would result in a hazardous propeller effect. Environmental degradation may be accounted for by adjustment of the loads during the tests.

(a) The hub, blade retention system, and counterweights must be tested for a period of one hour to a load equivalent to twice the maximum centrifugal load to which the propeller would be subjected during operation at the maximum declared rotational speed.

(b) If appropriate, blade features associated with transitions to the retention system (for example a composite blade bonded to a metallic retention), must be tested either during the test of paragraph (a) of this section or in a separate component test.

(c) Components used with or attached to the propeller (for example spinners, de-icing equipment, and blade shields) must be subjected to a load equivalent to 159 percent of the maximum centrifugal load to which the component would be subjected during operation within the limitations established for the propeller. This must be performed by either:

(1) Testing at the load for a period of 30 minutes, or

(2) Analysis based on test.

#### 3. *Fatigue Limits and Evaluation.*

(a) Fatigue limits.

(1) Fatigue limits must be established by tests, or analysis based on tests, or propeller

(i) Hubs.

(ii) Blades.

(iii) Blade retention components.

(2) The fatigue limits must take into account:

(i) All known and reasonably foreseeable vibration and cyclic load patterns that are expected in service, and

(ii) Expected service deterioration, variations in material properties, manufacturing variations, and environmental effects.

(b) A fatigue evaluation of the propeller must be conducted to show that hazardous propeller effects due to fatigue will be avoided throughout the intended operational life of the propeller on either:

(1) The intended aircraft by complying with §§ 23.907 or 25.907 as applicable, or

(2) A typical aircraft.

#### 4. *Bird Impact Substantiation.*

McCauley must demonstrate, by tests or analysis based on tests or experience on similar designs, that the propeller is capable of withstanding the impact of a four-pound bird at the critical location(s) and critical flight condition(s) of the intended aircraft without causing a major or hazardous propeller effect.

5. *Lightning Strike Substantiation.* McCauley must demonstrate, by test or analysis based on tests or experience on similar designs, that the propeller is capable of withstanding a lightning strike without causing a major or hazardous propeller effect.

Dated: Issued in Burlington, Massachusetts, on July 24, 2006.

**Francis A. Favara,**

*Manager, Engine and Propeller Directorate, Aircraft Certification Service.*

[FR Doc. 06-6633 Filed 8-1-06; 8:45 am]

**BILLING CODE 4910-13-M**

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. FAA-2006-25332; Directorate Identifier 2006-CE-40-AD]

**RIN 2120-AA64**

#### **Airworthiness Directives; EADS SOCATA Model TBM 700 Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation (DOT).

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** We propose to adopt a new airworthiness directive (AD) for the products listed above. This proposed AD results from mandatory continuing airworthiness information (MCAI) issued by an airworthiness authority of another country to identify and correct an unsafe condition on an aviation product. The proposed AD would require actions that are intended to address an unsafe condition described in the MCAI.

**DATES:** We must receive comments on this proposed AD by September 1, 2006.

**ADDRESSES:** Use one of the following addresses to comment on this proposed AD:

- *DOT Docket Web site:* Go to <http://dms.dot.gov> and follow the instructions for sending your comments electronically.

- *Government-wide rulemaking Web site:* Go to <http://www.regulations.gov> and follow the instructions for sending your comments electronically.

- *Mail:* Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590.

- *Fax:* (202) 493-2251.

- *Hand delivery:* Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC,

between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in the proposed AD, contact EADS SOCATA, Direction des Services, 65921 Tarbes Cedex 9, France; telephone: 33 (0)5 62.41.73.00; fax: 33 (0)5 62.41.76.54; or SOCATA AIRCRAFT, INC., North Perry Airport, 7501 Airport Road, Pembroke Pines, Florida 33023; telephone: (954) 893-1400; fax: (954) 964-4141.

#### **FOR FURTHER INFORMATION CONTACT:**

Gunnar Berg, Aerospace Engineer, FAA, Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329-4141; facsimile: (816) 329-4090.

#### **SUPPLEMENTARY INFORMATION:**

##### **Streamlined Issuance of AD**

The FAA is implementing a new process for streamlining the issuance of ADs related to MCAI. We are prototyping this process and specifically request your comments on its use. You can find more information in FAA draft Order 8040.2, "Airworthiness Directive Process for Mandatory Continuing Airworthiness Information" which is currently open for comments at [http://www.faa.gov/aircraft/draft\\_docs](http://www.faa.gov/aircraft/draft_docs). This streamlined process will allow us to adopt MCAI safety requirements in a more efficient manner and will reduce safety risks to the public.

This process continues to follow all existing AD issuance processes to meet legal, economic, Administrative Procedure Act, and **Federal Register** requirements. We also continue to follow our technical decision-making processes in all aspects to meet our responsibilities to determine and correct unsafe conditions on U.S.-certificated products.

This proposed AD references the MCAI and related service information that we considered in forming the engineering basis to correct the unsafe condition. The proposed AD contains text copied from the MCAI and for this reason might not follow our plain language principles.

The comment period for this proposed AD is open for 30 days to allow time for comment on both the process and the AD content. In the future, ADs using this process will have a 15-day comment period. The comment period is reduced because the airworthiness authority and manufacturer have already published the documents on which we based our decision, making a longer comment period unnecessary.