

United States of America
Department of Transportation — Federal Aviation Administration
Supplemental Type Certificate

Number SA4127WE

This certificate, issued to Floyd D. Stilwell

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part * of the Civil Air Regulations. * See page 4 of this STC for certification basis.*

Original Product — Type Certificate Number: 1A16
Make: Grumman American
Model: G-164C

Description of Type Design Change: Installation of an AiResearch TPE331-1-101Z turboprop engine in accordance with Floyd D. Stilwell Drawing 164-00C, revision "F" dated March 18, 1980, or later FAA sealed revisions. FAA approved Floyd D. Stilwell Flight Manual Supplement dated April 17, 1980 or later FAA approved revisions, is required as part of this installation.

Limitations and Conditions: The limitations and conditions of Data Sheet 1A16 apply except as outlined in pages 3 through 5 of this STC. A copy of this STC must be included in the permanent records of each airplane modified in accordance with this STC.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: January 17, 1977

Date issued:

Date of issuance: April 18, 1980

Date amended:



By direction of the Administrator

[Handwritten Signature]
(Signature)

Acting Chief, Aircraft Engineering Division
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

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1 - Grumman American G-164C as modified by this STC

Engine AiResearch TPE331-1-101Z

Fuel AiResearch EMS 53111 (Type A)
AiResearch EMS 53112 (Type A-1)
AiResearch EMS 53113 (Class A-JP4 and Class B Type B)
AiResearch EMS 53116 (Type JP-5)

British D. Eng. R.D. 2482 Issue 2
British D. Eng. R.D. 2486 Issue 2
British D. Eng. R.D. 2494 Issue 4

Aviation gasoline MIL-G-5572D, Grade 80/87, not in excess of 1000 gallons per 100 hours of operation, may be used for emergency fuel operation.

Fuel Additives MIL-I-27686D or E Fuel System Icing Inhibitor, or an equivalent inhibitor, may be added in a quantity not in excess of 0.15 percent by volume, to fuels not containing anti-icing inhibitors.

Shell ASA-3 anti-static additive, or equivalent, may be used in amounts to bring the fuel up to 300 conductivity units, but in no event shall the additive exceed 1 ppm.

Sohio Biobor JF Biocide Additive, or equivalent, is approved for use in the fuel at a concentration not to exceed 20 ppm of elemental Boron.

Oil Oils conforming to AiResearch Manufacturing Company of Arizona Specification EMS 53110 (Type I and Type II).

Engine Ratings	Takeoff	600 SHP (55 psi torque)
	Maximum Continuous	600 SHP (55 psi torque)
	Reverse	600 SHP (55 psi torque)

Engine Limits	Output Shaft Speed	2000 RPM
	Transient Overspeed (5 secs.)	2100 RPM
	Transient Overspeed (5 mins.)	2020 RPM
	Reverse	2000 RPM

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Torque	Takeoff (5 mins.) Maximum Continuous Reverse	55 p.s.i. 55 p.s.i. 55 p.s.i.
Exhaust Gas Temperature	Takeoff (5 mins.) Maximum Continuous Starting (1 sec.) Reverse	578°C 556°C 815°C 578°C
Oil Pressure	Takeoff and Maximum Continuous Idle (minimum)	70 to 120 psig 40 psig
Oil Temperature	MIL-L-23699 MIL-L-7808	-40°C to 127°C -40°C to 93°C
Propeller	Hartzell HC-B3TN-5E/T10282+4 Min. length 101 inches diameter Max. length 106 inches diameter	
Max. Approved Altitude	30,000 feet	
C.G. Range and Weight	Maximum weight 6300 pounds; Forward d.g. limit 121.8 inches aft of datum Aft d.g. limit 123.5 inches aft of datum (Datum is 81.1 inches forward of engine firewall)	
Applicability	The approval of this change in type design applies to the basic aircraft of the model shown on page 1 of this STC that is otherwise unmodified. This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of that aircraft. See "Equipment" below.	
Certification Basis	(a) CAR 8.10(a)(1) dated October 11, 1950 (b) FAR 23, effective February 1, 1965, including Amendments 23-1 through 23-16 only as applies to turboprop engine installation.	

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(c) Special Federal Aviation Regulation 27, effective January 1, 1975, including Amendment 27-1.

Production
Basis

None. An inflight operational check must be conducted in accordance with FAR 91.167(a) for each aircraft modified to incorporate this Supplemental Type Certificate.

The following must be installed in the aircraft for airworthiness certificate subsequent to the incorporating of this STC:

1. The basic required equipment as prescribed in the applicable airworthiness regulations (See "Certification Basis" outlined above).
2. The additional required items shown in FAA sealed Floyd D. Stilwell Equipment List MA-107.

NOTE: Equipment items approved for the basic Grumman American G-164C are not eligible with this STC unless such items are also shown on the above noted equipment list or unless it is determined that the interrelationship between those items and the modifications covered by this STC will introduce no adverse effect on the airworthiness of that aircraft.

NOTE 1. Refer to the applicable FAA Approved Airplane Flight Manual for required placards and instruments markings.

NOTE 2. The ratings shown on the AiResearch TPE331 engine is based on the static sea level standard conditions with no external accessory loads and no air bleed.

NOTE 3. Current weight and balance data, including a list of equipment included in the certificated empty weight and loading instructions, when necessary, must be provided at the time of airworthiness certification for return to service.

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