United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number SA3820SW 190-2404

This certificate, issued to Greenwich Aircraft Corporation 7727 Airport Road Waco, Texas 76708, certifies that the change in the type design for the following product with the limitations and conditions therefore as specified hereon meets the airworthiness requirements of Part 4b of the Civil Aviation Regulations and Part 25 of the Federal Aviation Regulations.

Original Product—Type Certificate Number: A-669
Make: McDonnell-Douglas
Model: DC3C-SC3G, -S1C3G, -S4C4G, -R-1830-90C

Description of Type Design Change:

Limitations and Conditions:
The following Airplane Flight Manual or later FAA Approved Revisions are required as appropriate:
FAA Approved Airplane Flight Manual (AFM) dated 8/4/87, with Change 3, dated 12/14/93, when the airplane is modified in accordance with Drawing List SA-DL1-DC3, Rev. M, dated 9/03/93. See continuation sheet.

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: July 18, 1985
Date of issuance: August 4, 1987
Date issued: 07/23/93, 9/15/93
Date amended: 12/22/87, 7/27/89, 12/14/93

By direction of the Administrator
Mark R. Schilling, Manager
Special Certification Office

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

This certificate may be transferred in accordance with FAR 21.47.
Supplemental Type Certificate
(Continuation Sheet)

Number SA3820SW

Limitations and Conditions:

The conditions & limitations of Aircraft Specification No. A-669 apply except as follows:

This specification, which is a part of Supplemental Type Certificate No. SA3820SW, prescribes conditions and limitations under which the product for which the Supplemental Type Certificate was issued meets the airworthiness requirements of the Civil Air Regulations. A copy of this Supplemental Type Certificate Specification shall be maintained as part of the modified aircraft’s permanent records.

Supplemental Type Certificate Holder: GREENWICH AIRCRAFT CORPORATION
7727 Airport Road
Waco, Texas 76708

Model: DC3C-SC3G, -S1C3G, -S4C4G, -R-1830-90C

Engine: 2 Pratt & Whitney Canada PT6A-65AR, or 2 Pratt & Whitney Canada PT6A-67R

Fuel: Pratt & Whitney of Canada Service Bulletin 13044 (See NOTE 9)

Oil: Pratt & Whitney of Canada Service Bulletin 130001 (See NOTE 10)

Engine Limits Ratings

Takeoff (5 min)

Shaft horsepower 1230

Maximum continuous at sea level

Shaft horsepower 1165

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

The engine ratings are based on static sea level conditions (No external accessory loads and no airbleed). The PT6A-65AR maximum continuous rating is available to 101 deg F Air Inlet Temperature (AIT) and takeoff rating is available to 84 deg F AIT. The PT6A-67R maximum continuous rating is available to 115 deg F AIT and takeoff rating is available to 99 deg F.

RPM Limits (See NOTE 5)

<table>
<thead>
<tr>
<th>Torque (lb. ft.)</th>
<th>Engine RPM</th>
<th>Propeller Ng %</th>
<th>Propeller Np %</th>
</tr>
</thead>
<tbody>
<tr>
<td>3800</td>
<td>39,000</td>
<td>104</td>
<td>1700</td>
</tr>
<tr>
<td>3600</td>
<td>39,000</td>
<td>104</td>
<td>1700</td>
</tr>
<tr>
<td>5100</td>
<td>39,000</td>
<td>104</td>
<td>1870</td>
</tr>
</tbody>
</table>

For propeller ground operation, See NOTE 6.

Inter-Turbine Temperature

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Takeoff (5 min)</td>
<td>820 deg C</td>
</tr>
<tr>
<td>Max Continuous</td>
<td>820 deg C</td>
</tr>
<tr>
<td>Starting transient (5 sec)</td>
<td>1000 deg C</td>
</tr>
</tbody>
</table>

Fuel Pressure

Fuel: Minimum pressure at inlet to the engine fuel system shall not be less than 5 p.s.i. above true vapor pressure of the fuel. For emergency operation, with airframe boost pump inoperative, the inlet pressure must be such that vapor/liquid ratio does not exceed 0.1 for continuous operation and does not exceed 0.3 for more than 10 hours in a pump overhaul life.

Maximum pressure at inlet to fuel system: 50 p.s.i.
United States of America
Department of Transportation—Federal Aviation Administration
Supplemental Type Certificate
(Continuation Sheet)

Number SA3820SW

Limitations and Conditions:

- **Maximun**: 135 psig
- **Normal**: 90-135 psig
- **Minimum**: 60 psig

Oil Inlet Temperature (See NOTE 8)

- **Maximum**: 110 deg C
- **Minimum for takeoff**: 0 deg C
- **Minimum for starting**: -40 deg C

Propeller (with PT6A-65AR) 2 Hartzell HC-B5MP-3C/M10876ASK
Propeller (with PT6A-67R) 2 Hartzell HC-B5MA-3J/M10876ASK
Propeller limits Diameter 110.7 - 111.2 inches

Pitch settings (42 in. sta.)

- **Low Pitch**: +13 deg +/- .2 deg
- **Feather**: +79 deg +/- .5 deg
- **Reverse**: -11 deg +/- .5 deg

NOTE: Model M10876ASK propeller blades which acquire 48,000 hours total time in service must be retired.

Airspeed Limits

<table>
<thead>
<tr>
<th>Description</th>
<th>CAS kts</th>
<th>CAS mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMO (maximum operating)</td>
<td>180</td>
<td>207</td>
</tr>
<tr>
<td>Va (maneuvering)</td>
<td>112</td>
<td>128</td>
</tr>
<tr>
<td>Vlo (landing gear operation)</td>
<td>144</td>
<td>165.5</td>
</tr>
<tr>
<td>Vle (landing gear extended)</td>
<td>144</td>
<td>165.5</td>
</tr>
<tr>
<td>Vfe (flaps extended 1/4)</td>
<td>135</td>
<td>155.5</td>
</tr>
<tr>
<td>Vfe (flaps extended 1/2)</td>
<td>99</td>
<td>114</td>
</tr>
</tbody>
</table>

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

FAA FORM 8110-2-1 (10-69)
Limitations and Conditions:

Vfe (flaps extended 3/4 to full) 97 111.5

Maximum Operating Altitude 24,000 feet pressure altitude (See NOTE 14):

C. G. Range Fuselage Sta. 239.6 inches (11% MAC) @ 18000 lbs and below.
Fuselage Sta. 242.35 inches (13% MAC) @ 26900 lbs.
Fuselage Sta. 263.1 inches (28% MAC) @ 26900 lbs. and below.

Straight line deviation between points.

Maximum Weight Takeoff 26,900 lbs.
Landing 26,900 lbs.

Maximum Zero Fuel Weight 25,400 lbs.

Minimum Empty Weight 15,100 lbs. (See AFM)

Minimum Crew 2 (pilot and copilot)

Maximum Passengers See NOTE 13

Maximum Cargo See NOTE 13

FUEL CAPACITY USABLE CAPACITY TOTAL CAPACITY

<table>
<thead>
<tr>
<th>TANK</th>
<th>U.S. GALLONS</th>
<th>POUNDS</th>
<th>U.S. GALLONS</th>
<th>POUNDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main L.H.</td>
<td>118</td>
<td>790.6</td>
<td>118.3</td>
<td>792.6</td>
</tr>
<tr>
<td>Main R.H.</td>
<td>118</td>
<td>790.6</td>
<td>118.3</td>
<td>792.6</td>
</tr>
<tr>
<td>Fwd Aux L.H.</td>
<td>202</td>
<td>1,353.4</td>
<td>204</td>
<td>1,366.8</td>
</tr>
<tr>
<td>Fwd Aux R.H.</td>
<td>202</td>
<td>1,353.4</td>
<td>204</td>
<td>1,366.8</td>
</tr>
<tr>
<td>Aft Aux L.H.</td>
<td>199</td>
<td>1,333.3</td>
<td>200</td>
<td>1,340</td>
</tr>
<tr>
<td>Aft Aux R.H.</td>
<td>199</td>
<td>1,333.3</td>
<td>200</td>
<td>1,340</td>
</tr>
</tbody>
</table>

NOTE: Weights based on fuel density of 6.7 pounds per U.S.
Limitations and Conditions:

Gallon.

Oil capacity: 1 tank integral with each engine, 2.5 U.S. Gallons

Maximum usable oil, 1.5 U.S. Gallons.

Required Equipment: In addition to the pertinent required basic equipment specified in CAR 4b and FAR 25 (for the turbopropeller installation) refer to "Required Equipment List" Section 6 of Airplane Flight Manual.

This installation requires Goodrich H-2-445 main wheel brakes.

Specification Pertinent to This Model

Datum: Fuselage Station "0" (40 inches aft of tip of nose).

Leveling Means: Pins on outside of fuselage at station 390.5 and 411.5 below windows (fore and aft leveling). Pins in left and right hand center section station 222 (lateral leveling).

Control Surface: Elevator up 12 +/- 1/8 inches, down 8 +/- 1/8 in.

Aileron up 13 +/- 1/8 in, down 8 +/- 1/2 in, (measured from inboard trailing edge of elevator)

Rudder left 18 +/- 1/4 in., right 18 +/- 1/4 in. (measured from lower trailing edge of rudder)

Elevator trim tab up 9/16 +/- 1/8 in, down 2 1/2 +/- 1/8 inches (measured from inboard trailing edge of trim tab).

Certification Basis:

(1) FAR 21 Subpart E - 21.101b

(2) SFAR 13 effective September 10, 1954
Limitations and Conditions:

(3) CAR 4b effective December 31, 1953, except where superseded by FAR 25 requirements.

(4) FAR 25 sections as amended by Amendments 25-1 through 25-54.

(5) FAR 36 including Amendments 36-1 through 36-12.

(6) FAR 27 Fuel Venting and Exhaust Emission requirement for Turbine Powered Airplanes.

NOTE 1

(a) Current weight and balance report including list of equipment included in certificated weight empty, and loading instructions, must be in each aircraft at the time of original certification and at all times thereafter (except in the case of air carrier operators having an approved weight control system).

(b) System fuel must be included in the empty weight of the airplane. System fuel is defined as the fuel required to fill the fuel system up to the fuel tank outlet plus the fuel tank unusable fuel quantity. Full oil tank and full hydraulic tank fluids must also be included in the empty weight of the airplane.

(c) The "unusable fuel" is that amount of fuel in the tanks which is unavailable to the engine under critical flight conditions as defined in FAR 25.959 and may be obtained by taking the difference between the total fuel capacities and "usable" tank capacities shown in this specification. The "unusable fuel" must be included in the empty weight or be suitably accounted for in the airplane weight and balance report.

(d) The engines utilize fuel only from the nacelle main
Limitations and Conditions:

tanks.

(e) A crossfeed system is provided to feed fuel from an opposite nacelle tank to the engine.

NOTE 2 This airplane is approved for Day, Night, VFR, and IFR. Refer to Airplane Flight Manual for limitations and required operating procedures.

NOTE 3 All Airworthiness Directives applicable to FAA Aircraft Specification A-669 also are effective for the DC3C as modified by this STC. The following Airworthiness Directives do not apply to DC3C aircraft modified according to this STC:

- 43-12-02 Engine Mount Fittings
- 47-06-07 Fire Ext. Trigger
- 47-33-02 Cowl Flap Hyd Lines
- 47-51-12 Carburetor Airscoop
- 48-05-01 Oil Shutoff Valve 'O' Rings
- 48-17-01 Fire Prevention Modifications
- 50-46-01 Oil Tank Standpipe
- 51-02-01 Ramp Type Door Rework
- 52-25-01 Vacuum System Rework
- 56-20-05 Prop Operating Limits
- 58-08-03 CB Fire Extinguisher System
- 60-16-03 Geared Rudder Tab
- 77-10-02 Fire Resistance of Prop Feather

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

This certificate may be transferred in accordance with FAR 21.47.
Limitations and Conditions:

System

Ailerons permanently identified as complying with the balancing procedure of this STC are considered to comply with the aileron balancing procedures specified in AD 41-47-01. The elevator and rudder balance procedures of AD 41-47-01 are still appropriate and required.

NOTE 4 Airworthiness Directives currently in effect or issued subsequent to the date of this STC, which involve the Pratt & Whitney PT6A-65AR engine or the Hartzell HC-B5MP-3C/M10876B propellers, are applicable to the engines or the propellers installed under this STC, and applicability statement of such Airworthiness Directives notwithstanding.

NOTE 5 Maximum overspeed limit is as specified for transient overspeed. If these limits are exceeded, consult P&WACL Maintenance Manual No. 3028042, page 604 for disposition of engine or gear reduction box.

NOTE 6 Ground Operation:
A. Stabilized ground operation below 900 rpm prohibited, except when propeller is feathered operation at or below 400 rpm is permissible.

B. Stabilized ground operation between 1170 and 1400 rpm is prohibited. Taxi between 900 and 1170 rpm in order to keep operation through 1170 to 1400 rpm range to a minimum in cross tail winds.

C. Advance through 1170 - 1400 rpm only after aircraft is lined up with the runway for takeoff.

NOTE 7 Oil pressure at 75% Ng (27,000 rpm) gas generator speed and above with an oil temperature of 140 to 160 deg F: 105 - 135 p.s.i.g. Below 75% Ng (27,000 rpm) gas generator speeds: 60 p.s.i.g. (min). Extreme cold starts oil pressure may reach 200 p.s.i.
Limitations and Conditions:

NOTE 8 Oil temperature range continuous from minus 40 deg F (-40 deg C) to 210 deg F (99 deg C).

NOTE 9 APPROVED FUELS

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet A</td>
<td>ASTM 1655</td>
</tr>
<tr>
<td>Jet A-1</td>
<td>ASTM 1655</td>
</tr>
<tr>
<td>Jet B</td>
<td>ASTM 1655</td>
</tr>
<tr>
<td>JP-4</td>
<td>ASTM 1655 or MIL-T-5624</td>
</tr>
<tr>
<td>JP-5</td>
<td>MIL-T-5624</td>
</tr>
<tr>
<td>JP-8</td>
<td>MIL-T-83133</td>
</tr>
</tbody>
</table>

The use of aviation gasoline (AVGAS) is not approved. For additional information see P&WACL Service Bulletin No. 13044.

NOTE 10 APPROVED LUBRICATING OILS

<table>
<thead>
<tr>
<th>Oil Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeroshell Turbine Oil 500</td>
<td>ROYCO TURBINE OIL 500</td>
</tr>
<tr>
<td>Mobil Jet Oil II</td>
<td>TURBONYCOIL 525-2A</td>
</tr>
<tr>
<td>Mobil Jet Oil 254</td>
<td>Stauffer Jet II</td>
</tr>
<tr>
<td>Castrol 5000</td>
<td>Esso/Exxon Turbo oil 2380</td>
</tr>
</tbody>
</table>

Only type II oils conforming to P & WC Service Bulletin No. 13001 are acceptable.

NOTE 11 Fuel anti-icing additives conforming to specifications MIL-I-27686D or MIL-I-27686E may be used, at a concentration not exceeding 0.15% by volume.

NOTE 12 Noise Characteristics: No acoustical change was shown under the provisions of FAR Paragraph 21.93(b). Noise measurements taken in flyover tests have demonstrated that the noise levels of the PT6A-65AR powered aircraft are no noisier than the noise levels of the R-1830 powered aircraft, at their respective maximum.
Limitations and Conditions:

takeoff and landing weights available for a sea level airport at ISA+10 deg C (ISA +18 deg F).

NOTE 13 The aircraft is approved with the following limitations: "No passengers or cargo may be carried until an FAA approved interior is installed." See FAR 91.47 for maximum passengers when an FAA approved interior is installed, except as allowed under maximum cargo.

NOTE 14 Engine and airframe certificated operating temperature limits; min. -40 deg C (-40 deg F) to ISA +34 deg C (ISA +61 deg F) maximum.

NOTE 15 The location of the cockpit has not been evaluated for compatibility with the icing equipment. Any approvals for flight into known icing conditions must be coordinated with the FAA Southwest Region Special Certification Office, Fort Worth, Texas.

END
INSTRUCTIONS: The transfer endorsement below may be used to notify the appropriate FAA Regional Office of the transfer of this Supplemental Type Certificate.

The FAA will reissue the certificate in the name of the transferee and forward it to him.

TRANSFER ENDORSEMENT

Transfer the ownership of Supplemental Type Certificate Number _________________________.

to (Name of transferee) _________________________.

(Address of transferee) _________________________.

(Number and street) _________________________.

(City, State, and ZIP code) _________________________.

from (Name of grantor) (Print or type) _________________________.

(Address of grantor) _________________________.

(Number and street) _________________________.

(City, State, and ZIP code) _________________________.

Extent of Authority (if licensing agreement): ___________________________________________

________________________________________

________________________________________

________________________________________

Date of Transfer: _________________________.

Signature of grantor (In ink): _________________________.