NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

September 17, 2019

Attachment 8 – Flight Standardization Board report on Bell Model 407 Premier Aviation, Inc., IFR Configuration STC SR09244RC

OPERATIONAL FACTORS/HUMAN PERFORMANCE

CEN19FA072

FLIGHT STANDARDIZATION BOARD
BELL MODEL 407 PREMIER AVIATION, INC., IFR CONFIGURATION
STC SR09244RC

APPROVED: [redacted] 9-5-00
EDWARD L. HINCH, CHAIRMAN — DATE

CONCUR: [redacted] 9/5/00
MANAGER, FORT WORTH AIRCRAFT EVALUATION GROUP, FTW AEG — DATE

CONCUR: [redacted] 10/10/00
MANAGER, AIR TRANSPORTATION DIVISION AFS-200 — DATE

CONCUR: [redacted] 9-12-00
MANAGER, GENERAL AVIATION & AND COMMERCIAL DIVISION, AFS-800 — DATE

Bell Model 407 Premier Aviation, Inc., IFR Configuration STC SR09244RC

1. PURPOSE AND APPLICABILITY

The purpose of this report is to ensure complete coverage and documentation of Flight Standards responsibility regarding the Supplemental Type Certification, Single Pilot IFR, of the Bell Helicopter Textron Model 407 Helicopter.

Under this Supplemental Type Certificate, this aircraft is approved for single pilot VFR and IFR (Category 1) operations day or night, non-icing conditions. IFR operations are not permitted with any doors removed or with external loads.

2. PILOT TYPE RATING REQUIREMENTS

This aircraft is certificated under Federal Aviation Regulation 14 CFR Part 27 and does not have any operating characteristic which would require exceptional skill to pilot under VFR conditions.

3. MASTER COMMON REQUIREMENTS

N/A

4. MASTER DIFFERENCE REQUIREMENTS

N/A

5. ACCEPTABLE OPERATOR DIFFERENCE REQUIREMENTS

N/A

6. FSB SPECIFICATIONS FOR TRAINING

Aircraft and autopilot specific training required.

7. FSB SPECIFICATIONS FOR CHECKING

Aircraft and autopilot checking required.

8. FSB SPECIFICATIONS FOR CURRENCY.

It is recommended the recency of instrument experience to meet the requirements of 14 CFR Part 61.57c, the performing and logging under actual or simulated instrument conditions of the maneuvers and procedures specified by 14 CFR Part 61.57c(1)(i)(ii) & (iii) be made in a BHT-407 with STC SR09244RC applied.

9. AIRCRAFT REGULATORY COMPLIANCE CHECKLIST

N/A

10. FSB SPECIFICATIONS FOR DEVICES AND SIMULATORS

Advisory Circular 120-63 outlines specifications for helicopter simulators. Criteria for flight training devices has not yet been developed.

11. APPLICATION OF FSB REPORT

All Operators.

12. ALTERNATE MEANS OF COMPLIANCE

N/A

13. MISCELLANEOUS

The model BHT-407 is a derivative of the BHT-206 and is in production under Type Certificate H2SW. The type of single pilot IFR autopilot applied to this model helicopter under STC SR09244RC has had similar applications on other small rotorcraft but their capabilities were not evaluated by Flight Standards to establish FSB Specification for Training, Checking, and Currency.

Although the model BHT-407 is a derivative of the BHT-206, the main rotor, engine, engine control system (FADEC), hydraulic system, drive train, and tail rotor are significantly different from the BHT-206. The systems, handling qualities, and characteristics of the BHT model 407 itself requires specific training.

The autopilot was evaluated in flight by conducting the maneuvers and procedures required for the addition of an Airline Transport Pilot to a pilot certificate. The following were noted in reference to the autopilot which will require additional pilot training on this system:

a) Auto pilot disconnect light is amber, the same light is activated when system is operating normally (i.e., you get the same light activation when nav function captures as you do when you loose the autopilot).

b) Lights on the flight director switches are light green and difficult to read in any lighting condition. ADI does not display functions the flight director is engaged in, the selector switch lights which are used to determine what portions of the Flight Director is engaged, are also used to indicate to the flight crew its current mode of operation.

c) Automatic Flight Control System limitation requires the Flight Director mode(s) to be deselected before selecting the coupled mode of the AFCS. When a function of the autopilot is lost, the Flight Director modes must be disengaged before autopilot can be reengaged.

d) Airspeed in excess of 100 knots during glide slope capture causes excessive rate of descent (1000 fpm or more) and the glideslope (GS) Flight Director mode will disengage. Flight manual supplement limitation gives 100 knots as maximum glide slope intercept airspeed with G/S captured.

e) Heading and altitude excursions allowed by the autopilot during the evaluation exceeded Practical Test Standards for an Airline Transport Pilot rating. Utilizing this autopilot during a pilot evaluation for a certificate or rating will cause the applicant to exceed the allowable testing standards for the certificate.

RECOMMENDATIONS:

Recommend the provisions of paragraph 6, 7, and 8 above, be incorporated into the Flight Manual Supplement for the Premier Aviation, Inc., IFR Configuration, STCSR09244RC, to ensure all operators of this equipment receive adequate training on this Automatic Flight Control System and Flight Director.