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Flight Standardization Board Report

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Manufacturer:
Pilatus Aircraft Limited

Type Certificate Data Sheet (TCDS)	TCDS Identifier	Marketing Name	Pilot Type Rating
A00072CE	PC-24	Pilatus PC-24	PC-24

Approved by the Aircraft Evaluation Division

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1. RECORD OF REVISIONS

Revision Number	Section(s)	Page(s) Affected	Date
Original	All	All	01/14/2018
1	3, 4, 5, 7.3, 9.1 thru 9.3, 9.5, 10.1 thru 10.8, 11.1 and 11.2, 13.1.1 thru 13.2, Appendices 4 and 5	1, 2, 3, 6, 7, 14, 15, 16, and 17	01/16/2020

2. INTRODUCTION

Aircraft Evaluation Groups (AEG) are responsible for working with aircraft manufacturers and modifiers during the development and Federal Aviation Administration (FAA) certification of new and modified aircraft to determine:

- 1) The pilot type rating;
- 2) Flightcrew member training, checking, and currency requirements; and
- 3) Operational suitability.

This report lists those determinations for use by:

- 1) FAA employees who approve training programs;
- 2) FAA employees and designees who certify airmen; and
- 3) Aircraft operators and training providers to assist them in developing their flightcrew member training, checking, and currency.

3. HIGHLIGHTS OF CHANGE

In March 2019, the Flight Standardization Board (FSB) evaluated the Pilatus PC-24 aircraft for steep approach operations and for operations on unpaved runways. The PC-24 Level D simulator was evaluated in May 2019. The aircraft and the associated Airplane Flight Manual (AFM) change, were found to be operationally suitable. Training and checking information for steep approaches is listed in Appendix 4, Steep Approach Operations; and for unpaved runways is listed in Appendix 5, Unpaved Runway Operations.

4. BACKGROUND

4.1 First Evaluation. The Small Aircraft AEG formed an FSB that evaluated the Pilatus PC-24 as defined in FAA Type Certificate Data Sheet (TCDS) No. A00072CE. The evaluation was conducted from August through November 2017 using the methods described in FAA Advisory Circular (AC) 120-53, Guidance for Conducting and Use of Flight Standardization Board Evaluations.

4.2 Second Evaluation. March to May 2019, an FSB evaluation for steep approaches and unpaved runways was conducted in both the aircraft and Level D full flight simulator (FFS).

5. ACRONYMS

• 14 CFR	Title 14 of the Code of Federal Regulations
• AC	Advisory Circular
• ACE	Advanced Cockpit Environment
• ACFT	Aircraft
• ACS	Airman Certification Standards
• AEG	Aircraft Evaluation Group
• AEO	All-Engines-Operating
• AFM	Airplane Flight Manual
• AV	Audiovisual Presentation
• CPT	Cockpit Procedures Trainer
• DA	Decision Altitude
• ECL	Electronic Checklist
• FAA	Federal Aviation Administration
• FCOM	Flightcrew Operating Manual
• FFS	Full Flight Simulator
• FMS	Flight Management System
• FSB	Flight Standardization Board
• FSI	FlightSafety International
• FSTD	Flight Simulation Training Device
• FTD	Flight Training Device
• HO	Handout
• ICBI	Interactive Computer-Based Instruction
• IGS	Instrument Guidance System
• LPV	Localizer Performance with Vertical Guidance
• MDR	Master Differences Requirements
• MFS	Multifunction Spoiler
• NAS	National Airspace System
• NOTAM	Notice to Airmen
• OEI	One-Engine-Inoperative
• PF	Pilot Flying
• PIC	Pilot in Command
• PTT	Part Task Trainer
• QRH	Quick Reference Handbook
• SAL	Steep Approach and Landing
• SIC	Second in Command
• SRM	Single-Pilot Resource Management
• SU	Stand-Up Instruction
• TC	Type Certificate
• TCBI	Tutorial Computer-Based Instruction
• TCDS	Type Certificate Data Sheet
• V _{REF}	Reference Landing Speed

6. DEFINITIONS

These definitions are for the purposes of this report only.

- 6.1 Base Aircraft.** An aircraft identified for use as a reference to compare differences with another aircraft.
- 6.2 Current.** A crewmember meets all requirements to operate the aircraft under the applicable operating part.
- 6.3 Differences Tables.** These tables describe the differences between a pair of related aircraft, and the minimum levels operators must use to conduct differences training and checking of crewmembers. Difference levels range from A to E.
- 6.4 Master Differences Requirements (MDR).** These requirements specify the highest training and checking differences levels between a pair of related aircraft derived from the Differences Tables.
- 6.5 Mixed Fleet Flying.** The operation of a base aircraft and one or more related aircraft for which credit may be taken for training, checking, and currency events.
- 6.6 Operational Evaluation.** An AEG process to determine pilot type rating, minimum crewmember training, checking, and currency requirements, and unique or special airman certification requirements (e.g., specific flight characteristics and no-flap landing).
- 6.7 Operational Suitability.** An AEG determination during certification that an aircraft or system may be used in the National Airspace System (NAS) and meets the applicable operational regulations (e.g., Title 14 of the Code of Federal Regulations (14 CFR) parts 91, 121, 133, and 135).
- 6.8 Qualified.** A crewmember holds the appropriate airman certificate and ratings as required by the applicable operating part.
- 6.9 Related Aircraft.** Any two or more aircraft of the same make with either the same or different type certificates (TC) that have been demonstrated and determined by the Administrator to have commonality.
- 6.10 Seat-Dependent Tasks.** Maneuvers or procedures using controls that are accessible or operable from only one flightcrew member seat.
- 6.11 Special Emphasis Area.** A training requirement unique to the aircraft, based on a system, procedure, or maneuver, which requires additional stress or highlighting during training. It may also require additional training time, specialized training devices, or training equipment.
- 6.12 Specific Flight Characteristics.** A maneuver or procedure with unique handling or performance characteristics that the FSB has determined must be checked.

7. PILOT TYPE RATING

7.1 Type Rating. The Pilatus PC-24 type rating designation is “PC-24.”

NOTE: The TCDS lists the minimum crew requirements for the PC-24 as one pilot (left seat) or two pilots. As such, the PC-24 pilot type rating may be issued with the limitation “PC-24 Second in Command Required,” if applicable as per 14 CFR part 61, § 61.43(b)(3).

7.2 Common Type Ratings. Not applicable.

7.3 Military Equivalent Designations. Military aircraft that qualify for the PC-24 type rating can be found at [www.faa.gov](http://www.faa.gov/licenses_certificates/airmen_certification/) under “Licenses & Certificates,” “Airmen Certification,” “Online Services,” “Aircraft Type Rating Designators.” This webpage is kept up-to-date and can be found at http://www.faa.gov/licenses_certificates/airmen_certification/.

8. RELATED AIRCRAFT

8.1 Related Aircraft on Same TCDS. Not applicable.

8.2 Related Aircraft on Different TCDS. Not applicable.

9. PILOT TRAINING

9.1 Airman Experience. Airman receiving initial PC-24 pilot in command (PIC) training should have, at a minimum, a private pilot certificate with instrument and multiengine ratings and a logbook showing at least 70 hours PIC flight time and 200 hours of total flight time. Airmen should have previous training in new generation avionics, high altitude operations, flight management systems (FMS), and Single-Pilot Resource Management (SRM). Pilots without this experience may require additional training.

9.2 Special Emphasis Areas:

9.2.1 Pilots must receive special emphasis on the following areas during initial, recurrent, and requalification ground training:

- a) SRM, risk assessment, and risk management.
- b) Stick pusher aerodynamics and purpose.
- c) Autothrottle function, use, and system operation.
- d) Honeywell Advanced Cockpit Environment (ACE) system integration, such as obtaining weather or Notices to Airmen (NOTAM) via datalink and various methods to upload flight plans.
- e) Electronic checklist (ECL) and electronic quick reference handbook (QRH) usage.

9.2.2 Pilots must receive special emphasis and perform in the following areas during initial, recurrent, and requalification flight training:

- a) Stick pusher system. With an appropriately qualified instructor, all pilots should practice and demonstrate the stick pusher system in an FFS or in flight. If this training must be conducted in the aircraft, the FSB recommends it be conducted during the clean configuration stall maneuver and with ample altitude for recovery.
- b) ECL. An integrated ECL uses closed-loop principle for both single-pilot and multi-pilot operation.
- c) Autothrottle. Functional use of autothrottles in flight including manual disconnect during aborted takeoff and pilot override of autothrottles in flight.

9.3 Specific Flight Characteristics. Maneuvers or procedures required to be checked as referenced in the Airline Transport Pilot and Type Rating for Airplane Airman Certification Standards (ACS). There are no specific flight characteristics.

9.4 Seat-Dependent Tasks. There are no specific seat-dependent tasks. However, the minimum crew determination listed in the TCDS is one pilot (left seat) or two pilots. Therefore, a pilot being trained as a single pilot must occupy the left seat for all training tasks.

9.5 Title 14 Regulatory Training Requirements Which Are Not Applicable to the PC-24. Title 14 CFR part 135, § 135.345(b)(3).

9.6 Flight Simulation Training Devices (FSTD). There are no specific systems, procedures, or maneuvers that are unique to the PC-24 that require a specific FSTD for training.

9.7 Training Equipment. There are no specific systems or procedures that are unique to the PC-24 that require specific training equipment.

9.8 Differences Training Between Related Aircraft. Not applicable.

10. PILOT CHECKING

There are no additional checking requirements for the PC-24 aircraft other than those already specified in parts 61 and 135.

10.1 Landing from a No-Flap or Nonstandard Flap Approach. The probability of flap extension failure on the PC-24 is not extremely remote due to system design. Therefore, demonstration of a no-flap approach and landing during pilot certification; or a 14 CFR part 61, § 61.58 proficiency check, part 91, § 91.1065 competency check, or part 135, § 135.293 competency check is required.

NOTE: Refer to FAA Order 8900.1, Volume 5, Airman Certification, when the test or check is conducted in an aircraft versus an FFS.

10.2 Specific Flight Characteristics. Maneuvers or procedures required to be checked as referenced in the Airline Transport Pilot and Type Rating for Airplane ACS. There are no specific flight characteristics.

10.3 Seat-Dependent Tasks. There are no seat-dependent tasks. However, the minimum crew determination listed in the TCDS is one pilot (left seat) or two pilots. Therefore, a pilot being checked as a single pilot must occupy the left seat.

10.4 Other Checking Items. Not applicable.

10.5 FSTD. There are no specific systems, procedures, or maneuvers that are unique to the PC-24 that require a specific FSTD for checking.

10.6 Equipment. There are no specific systems or procedures that are unique to the PC-24 that require specific equipment.

10.7 Differences Checking Between Related Aircraft. Not applicable.

11. PILOT CURRENCY

There are no additional currency requirements for the PC-24 other than those already specified in parts 61 and 135.

11.1 Differences Currency Between Related Aircraft. Not applicable.

12. OPERATIONAL SUITABILITY

The PC-24 is operationally suitable for operations under parts 91 and 135. The FSB determined operational compliance by conducting an evaluation of flight test aircraft serial number P-03 in November 2017. The list of operating rules evaluated is on file at the Small Aircraft AEG.

13. MISCELLANEOUS

13.1 Forward Observer Seat.

13.1.1 The PC-24 is a single-pilot aircraft and the right cockpit seat as installed by TCDS No. A00072CE has been evaluated and determined to meet requirements of § 135.75(b).

13.1.2 While the right cockpit seat is the primary seat in the PC-24 to meet § 135.75(b), enroute tests and inspections for dual crew operations will need to be conducted from a passenger seat. A forward passenger seat has provisions for intercom with headset connection, oxygen, lighting, and ventilation. Additionally, Pilatus Aircraft, Ltd. provides an option for a certified camera mount to accommodate a portable high definition camera that is connected wirelessly to a portable device (such as a tablet or laptop) for a detailed view of the flight instruments from a passenger seat. A temporary sitting platform is also

provided near the flight deck for those enroute phases of flight that do not require the inspector or check pilot to be in a seat with a seatbelt.

- 13.2 Landing Minima Categories.** The PC-24 is considered a Category B aircraft for the purposes of determining straight-in landing weather minima. Refer to 14 CFR part 97, § 97.3.
- 13.3 Normal Landing Flaps.** The PC-24 normal “final flap setting” per § 91.126(c) is Flaps 33.
- 13.4 Aircraft Proving Tests.** Proving tests in accordance with § 135.145 are appropriate when the PC-24 is new to an operator.

APPENDIX 1. DIFFERENCES LEGEND

Training Differences Legend

Differences Level	Type	Training Method Examples	Conditions
A	Self-Instruction	<ul style="list-style-type: none"> • Operating manual revision (handout (HO)) • Flightcrew operating bulletin (HO) 	<ul style="list-style-type: none"> • Crew has already demonstrated understanding on base aircraft (e.g., updated version of engine). • Minor or no procedural changes required. • No safety impact if information is not reviewed or is forgotten (e.g., different engine vibration damping mount). • Once called to attention of crew, the difference is self-evident.
B	Aided Instruction	<ul style="list-style-type: none"> • Audiovisual presentation (AV) • Tutorial computer-based instruction (TCBI) • Stand-up instruction (SU) 	<ul style="list-style-type: none"> • Systems are functionally similar. • Crew understanding required. • Issues need emphasis. • Standard methods of presentation required.
C	Systems Devices	<ul style="list-style-type: none"> • Interactive (full-task) computer-based instruction (ICBI) • Cockpit Procedures Trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4–5) 	<ul style="list-style-type: none"> • Training can only be accomplished through systems training devices. • Training objectives focus on mastering individual systems, procedures, or tasks versus highly integrated flight operations or “real-time” operations. • Training devices are required to assure attainment or retention of crew skills to accomplish more complex tasks usually related to aircraft systems.
D	Maneuver Devices	<ul style="list-style-type: none"> • Level 6 or 7 flight training device (FTD 6–7) • Level A or B full flight simulator (FFS A–B) 	<ul style="list-style-type: none"> • Training can only be accomplished in flight maneuver devices in a real-time environment. • Training requires mastery of interrelated skills versus individual skills. • Motion, visual, control-loading, and specific environmental conditions may be required.
E	Level C/D FFS or Aircraft	<ul style="list-style-type: none"> • Level C or D full flight simulator (FFS C–D) • Aircraft (ACFT) 	<ul style="list-style-type: none"> • Motion, visual, control-loading, audio, and specific environmental conditions are required. • Significant full-task differences that require a high fidelity environment. • Usually correlates with significant differences in handling qualities.

Checking Differences Legend

Differences Level	Checking Method Examples	Conditions
A	None	None
B	<ul style="list-style-type: none"> • Oral or written exam • Tutorial computer-based instruction (TCBI) self-test 	Individual systems or related groups of systems.
C	<ul style="list-style-type: none"> • Interactive (full-task) computer-based instruction (ICBI) • Cockpit Procedures Trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4–5) 	<ul style="list-style-type: none"> • Checking can only be accomplished using systems devices. • Checking objectives focus on mastering individual systems, procedures, or tasks.
D	<ul style="list-style-type: none"> • Level 6 or 7 flight training device (FTD 6–7) • Level A or B full flight simulator (FFS A–B) 	<ul style="list-style-type: none"> • Checking can only be accomplished in flight maneuver devices in a real-time environment. • Checking requires mastery of interrelated skills versus individual skills. • Motion, visual, control-loading, and specific environmental conditions may be required.
E	<ul style="list-style-type: none"> • Level C or D full flight simulator (FFS C–D) • Aircraft (ACFT) 	Significant full-task differences that require a high fidelity environment.

**APPENDIX 2. MASTER DIFFERENCES REQUIREMENTS (MDR)
TABLE**

Not applicable.

APPENDIX 3. DIFFERENCES TABLES

Not applicable.

APPENDIX 4. STEEP APPROACH OPERATIONS

1. PURPOSE AND APPLICABILITY

- 1.1 Determination.** An FSB was convened in March 2019 to determine operational suitability as well as to evaluate training and checking requirements for conducting steep approach landing operations in the Pilatus PC-24 aircraft.
- 1.2 Training.** The FSB completed academic and flight training at the FlightSafety International (FSI) Dallas North Learning Center at Dallas/Fort Worth International Airport (DFW) and Pilatus Aircraft, Ltd. in Stans, Switzerland.
- 1.3 Definition.** Steep approach landing operations in the PC-24 are defined as glidepaths greater than 4.5° and less than or equal to 6.65°. Pilatus modifications for steep approach landing operations were accomplished through Honeywell software and operational changes.
- 1.4 Evaluation.** The FSB evaluation included numerous steep approach operations in the aircraft. Instrument guidance system (IGS) approaches with a glidepath of 6.65° and localizer performance with vertical guidance (LPV) approaches of 6.5° were flown both manually and with autopilot and autothrottle. The PC-24 FFS at FSI DFW was evaluated following the steep approach evaluation in the airplane and the FSB found it to be suitable for steep approach operations training.
- 1.5 Operations.** All-engines-operating (AEO) and one-engine-inoperative (OEI) steep approach operations were flown, terminating with either a landing or execution of a missed approach or bailed landing procedure. Although steep approach landing operations in the PC-24 must be conducted with AEO, the FSB evaluated piloting skills required to perform an OEI go-around should an engine fail at or below decision altitude (DA).

2. PILOT TYPE RATING REQUIREMENTS

The pilot type rating for the Pilatus PC-24 is “PC-24” and is unchanged for aircraft with the steep approach functionality installed.

3. PILOT TRAINING

- 3.1 Differences Training.** The FSB has evaluated steep approach operations and determined a minimum of Level E training is required for all flightcrews current in the PC-24 aircraft. Level E training is defined in Appendix 1. Steep Approach and Landing (SAL) training can be accomplished as a separate module or integrated with initial, transition, upgrade, or recurrent training.
- 3.2 Pilot Requirements.** A pilot acting as second in command (SIC) must be a qualified and current PC-24 pilot or another pilot being trained by a qualified PC-24 instructor or

check pilot. It should be noted that some steep approach procedures require two pilots (e.g., London City Airport (EGLC)).

3.3 Steep Approach Operations Training Requirements.

3.3.1 Academic Training. Academic training must consist of training in the following areas and is appropriate to any flightcrew member position:

- a) AFM, recommended patterns depicted in the PC-24 Flightcrew Operating Manual (FCOM), and AFM review to include limitations, normal procedures, abnormal procedures, emergency procedures, and performance with special emphasis on landing performance.
- b) Stages of the steep approach to include stabilized approach concept as a key success for steep approach operations, appropriate flaps configuration, multifunction spoilers (MFS), and approach speeds.
- c) Comparison of the steep approach sight picture to that of 3.0° (normal) approach.
- d) Pilot techniques to include avoidance of abrupt control inputs, ground rush illusion.
- e) Identification of airports with special procedures or limitations for conducting steep approaches (e.g., EGLC).
- f) Reference landing speed (V_{REF}) SAL flying qualities along the glideslope.
- g) Autopilot and autothrottle operations.
- h) Recognition of SAL mode failure.

3.4 Flight Training.

3.4.1 Flight training must be conducted in a Level C or D FFS or the aircraft. The FFS must have 14 CFR part 60 Class I or II airport modeling. Aircraft training must have an acceptable means to replicate a 6.65° glideslope.

3.4.2 The following minimum training is appropriate for single- and dual-pilot operations:

- a) Two normal steep approaches, one to a full stop and one with a missed approach or bailed landing.
- b) An OEI steep approach to a missed approach. Since OEI steep approaches are prohibited prior to commencing the approach, the engine failure should be initiated after beginning the approach.
- c) Crosswind approaches and minimum ceiling and visibility should be part of the above training.

3.5 When Using an FFS. Repositions should occur to a point beyond and below the glideslope intercept to allow for pilot flying (PF) practice of glideslope intercept transition.

4. PILOT CHECKING

There is no checking requirement for PC-24 steep approach qualification. Documented satisfactory completion of steep approach training is sufficient.

5. PILOT RECURRENT TRAINING

The FSB recommends, regardless of the number of steep approaches completed, a review of all SAL academic and flight training items be accomplished annually and documented in a manner acceptable to the Administrator. A minimum of one steep approach should be accomplished during recurrent training.

6. OPERATIONAL APPROVAL

This FSB report does not constitute operational approval for the execution of steep approach operations in the PC-24. Additionally, it is common that individual airport authorities have training and documentation requirements specific to their airfields with regard to steep approaches.

APPENDIX 5. UNPAVED RUNWAY OPERATIONS

1. PURPOSE AND APPLICABILITY

An FSB was convened in March 2019 to determine operational suitability and to evaluate training and checking requirements for unpaved runway operations in the PC-24 aircraft.

The FSB completed academic training at FSI DFW. The FSB evaluated ground handling, takeoff, and landing characteristics in the PC-24 at Fano Airport (LIDF) in Italy.

2. PILOT TRAINING

Operations on unpaved runways are unique for jet-powered aircraft. Pilot training should emphasize the differences in performance and handling characteristics on unpaved surfaces during taxiing, takeoff, and landing. The FSB evaluated unpaved runways operations and determined that a minimum of Level B training should be required for flightcrews current in the PC-24.

3. PILOT CHECKING

There is no checking requirement for PC-24 unpaved runway operations.

4. PILOT RECURRENT TRAINING

There is no recurrent requirement for PC-24 unpaved runway operations.

5. OPERATIONAL APPROVAL

This FSB report does not constitute operational approval for the execution of unpaved runway operations in the PC-24.