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Flight Standardization Board Report

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Manufacturer Textron Aviation, Inc.

Type Certificate Data Sheet (TCDS)	TCDS Identifier	Marketing Name	Pilot Type Rating
T00013WI	Textron Aviation 4000	Hawker 4000	RA-4000

Approved by the Aircraft Evaluation Division

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TABLE OF CONTENTS

Section	Page
1. RECORD OF REVISIONS.....	3
2. INTRODUCTION.....	3
3. HIGHLIGHTS OF CHANGE	3
4. BACKGROUND	3
5. ACRONYMS.....	3
6. DEFINITIONS	5
7. PILOT TYPE RATING	6
8. RELATED AIRCRAFT	6
9. PILOT TRAINING.....	7
10. PILOT CHECKING.....	8
11. PILOT CURRENCY	9
12. OPERATIONAL SUITABILITY.....	9
13. MISCELLANEOUS	9
APPENDIX 1. DIFFERENCES LEGEND.....	10
APPENDIX 2. MASTER DIFFERENCES REQUIREMENTS (MDR) TABLE.....	12
APPENDIX 3. DIFFERENCES TABLES.....	13
APPENDIX 4. HEAD-UP DISPLAY (HUD).....	32
APPENDIX 5. ELECTRONIC DISPLAY OF AERONAUTICAL CHARTS, CHECKLISTS, AND WEATHER	33

1. RECORD OF REVISIONS

Revision Number	Section(s)	Date
Draft	All	08/25/2006
Original	All	06/06/2008
Revision 1	3, 4, 5, 6, 7, 10, 11	01/10/2012
Revision 2	All	XX/XX/XXX

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

The purpose of this revision is to convert the document to comply with Section 508 compliance and put this report into new Flight Standardization Board Report (FSBR) template. No technical evaluations were completed or board convened as this revision is administrative only. Change bars are not included in this document because the entire report is revised and updated.

4. BACKGROUND

The Small Aircraft AEG formed a Flight Standardization Board (FSB) that evaluated the Textron Aviation Model 4000 as defined in FAA Type Certificate Data Sheet (TCDS) No. T00013WI. The evaluation was conducted using the methods described in FAA Advisory Circular (AC) 120-53, Guidance for Conducting and Use of Flight Standardization Board Evaluations.

5. ACRONYMS

- 14 CFR Title 14 of the Code of Federal Regulations
- AC Advisory Circular
- ACFT Aircraft
- ACS Airman Certification Standards

- AEG Aircraft Evaluation Group
- AFCS Automatic Flight Control System
- APU Auxiliary Power Unit
- ATP Airline Transport Pilot
- AV Audiovisual Presentation
- BPU Block Point Upgrade
- CAT Category
- CCD Cursor Control Device
- CMC Central Maintenance Computer
- CMF Communication Management Function
- CPT Cockpit Procedures Trainers
- CVR Cockpit Voice Recorder
- DA Decision Altitude
- ECL Electronic Checklist
- EFB Electronic Flight Bag
- EICAS Engine Indicating and Crew Alerting System
- FAA Federal Aviation Administration
- FADEC Full-Authority Digital Engine Control
- FDR Flight Data Recorder
- FFS Full Flight Simulator
- FLC Flight Level Change
- FMS Flight Management System
- FPS Fire Protection System
- FSB Flight Standardization Board
- FSBR Flight Standardization Board Report
- FSTD Flight Simulation Training Device
- FTD Flight Training Device
- GPS Global Positioning System
- HMDG Hydraulic Motor-Driven Generator
- HO Handout
- HUD Head-Up Display
- ICBI Interactive Computer-Based Instruction
- LNAV Lateral Navigation
- LPV Localizer Performance with Vertical Guidance
- MDR Master Differences Requirements
- MFD Multifunction Display
- MFF Mixed Fleet Flying
- MMEL Master Minimum Equipment List
- MTOW Maximum Takeoff Weight
- NAS National Airspace System
- NIM Network Interface Module
- PAI Pressure Altitude Increment
- PI Principal Inspector
- PIC Pilot in Command

- PTT Part Task Trainers
- RAAS Runway Awareness and Advisory System
- RF Radius to Fix
- RNP Required Navigation Performance
- RTO Rejected Takeoff
- SATCOM Satellite Communications
- SID Standard Instrument Departure
- STAR Standard Terminal Arrival Route
- SU Stand-Up Instruction
- TC Type Certificate
- TCAS Traffic Alert and Collision Avoidance System
- TCBI Tutorial Computer-Based Instruction
- TCDS Type Certificate Data Sheet
- TLD Time-Limited Dispatch
- TOGA Takeoff/Go-Around
- TOLD Takeoff and Landing Data
- TRU Transformer-Rectifier Unit
- VNAV Vertical Navigation
- V₁ Takeoff Decision Speed
- VHF Very High Frequency
- V_{REF} Reference Landing Speed
- WAAS Wide Area Augmentation System

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.** Describe the differences between a pair of related aircraft, and the minimum levels operators must use to conduct differences training and checking of flightcrew members. Differences levels range from A to E.
- 6.4 Master Differences Requirements (MDR).** Specifies the minimum levels of training and checking required between a pair of related aircraft, derived from the highest level in the Differences Tables.
- 6.5 Mixed Fleet Flying (MFF).** 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.** The AEG process to determine pilot type rating, minimum flightcrew member training, checking and currency requirements, and unique or special airman certification requirements (e.g., specific flight characteristics, no-flap landing).
- 6.7 Operational Suitability.** The AEG determination 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 flightcrew member 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 highlighting during training. It may also require additional training time, specialized flight simulation training devices (FSTD), 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 Model 4000 aircraft type rating designation is RA-4000.
- 7.2 Common Type Ratings.** Not applicable.
- 7.3 Military Equivalent Designations.** Military aircraft that qualify for the RA-4000 can be found at www.faa.gov under “Licenses & Certificates,” “Airmen Certification,” “Online Services,” “Aircraft Type Rating Designators.” This webpage is kept up-to-date and can be found at https://www.faa.gov/licenses_certificates/airmen_certification/.

8. RELATED AIRCRAFT

- 8.1 Related Aircraft on Same TCDS.** The RA-4000 is related to the RA-4000 Block Point Upgrade (BPU).
- 8.2 Related Aircraft on Different TCDS.** Not applicable.

9. PILOT TRAINING

9.1 Airman Experience.

- 9.1.1 Airmen receiving initial RA-4000 pilot in command (PIC) training should have previous training in high-altitude operations in multiengine transport turbojet aircraft, new generation avionics, and flight management system (FMS) experience. Pilots without this experience may require additional training.
- 9.1.2 Airmen receiving upgrade, transition RA-4000 training are assumed to have previous experience in multiengine transport turbojet aircraft, new generation avionics, high-altitude operations, and FMS. 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 ground training:
 - a) Use of automation/flight guidance management to include autothrottles.
 - b) Knowledge of aircraft performance determination should be emphasized. Additional training is necessary to master performance calculation because of the use of Pressure Altitude Increment (PAI) procedures and determination of departure climb gradients to altitude.
- 9.2.2 Pilots must receive special emphasis on, and perform the following areas during initial flight training:
 - a) Integrated use of the autopilot and autothrottle, including knowledge of FMS Speeds associated with autothrottles is critical to energy management and knowing what thrust mode is controlling the autothrottle.
 - b) Flight control techniques for the fly-by-wire rudder requires an awareness of the rudder pedal force characteristics and the lack of any engine failure cues feeding through the rudder pedals.
 - c) Crosswind landing techniques at maximum demonstrated crosswind components and use of a Ground Attitude Clearance Chart.
 - d) Takeoff and Landing procedures must include training in transfer of flight controls and transition to tiller control of nosewheel steering because no rudder pedal nosewheel steering is available.

9.3 Specific Flight Characteristics. Maneuvers or procedures required to be checked as referenced in the Airline Transport Pilot (ATP) and Type Rating for Airplane Airman Certification Standards (ACS) as applicable.

NOTE: There are no specific flight characteristics.

9.4 Seat-Dependent Tasks. Pilots must receive training in the seat-dependent task of Nosewheel steering (left seat); Initial, Transition, Upgrade, and Recurrent training.

9.5 Regulatory Training Requirements Which Are Not Applicable to the RA-4000. Title 14 CFR part 135, § 135.345(b)(3): Pilots: Initial, Transition, and Upgrade Ground Training.

9.6 FSTDs. There are no specific systems, procedures, or maneuvers that are unique to the RA-4000 that require a specific FSTD for training.

9.7 Training Equipment. There are no specific systems or procedures that are unique to the RA-4000 that require specific training equipment.

9.8 Differences Training Between Related Aircraft. Pilots must receive differences training between the RA-4000 and RA-4000 BPU. The level of training is specified in Appendix 3, Differences Tables.

10. PILOT CHECKING

10.1 Landing From a No-Flap or Nonstandard Flap Approach. The probability of flap extension failure on the RA-4000 is not extremely remote due to system design. Therefore, demonstration of a no-flap approach and landing during pilot certification or a 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 a full flight simulator (FFS).

10.2 Specific Flight Characteristics. Maneuvers or procedures required to be checked as referenced in the ATP and Type Rating for Airplane ACS, as applicable.

NOTE: There are no specific flight characteristics.

10.3 Seat-Dependent Tasks. Pilots must be checked in the seat-dependent task of Nosewheel steering (left seat); Initial, Transition, Upgrade, and Recurrent training.

10.4 Other Checking Items. Not applicable.

10.5 FSTDs. There are no specific systems, procedures, or maneuvers that are unique to the RA-4000 that require a specific FSTD for checking.

10.6 Equipment. There are no specific systems or procedures that are unique to the RA-4000 that require specific equipment.

10.7 Differences Checking Between Related Aircraft. Pilots must receive differences checking between RA-4000 and RA-4000 BPU. The level of checking is specified in Appendix 3.

11. PILOT CURRENCY

There are no additional currency requirements for the RA-4000 other than those already specified in parts 61, 91, and 135.

11.1 Differences Currency Between Related Aircraft. Not applicable.

12. OPERATIONAL SUITABILITY

The RA-4000 is operationally suitable for operations under parts 91 and 135. The list of operating rules evaluated is on file at the Small Aircraft AEG.

13. MISCELLANEOUS

13.1 Forward Observer Seat. RA-4000 aircraft that have the optional dedicated Forward Observer Seat meet the requirements of § 135.75(b) and has no restrictions on the type of pilot check conducted from the seat. The RA-4000 forward passenger seats were evaluated and found not suitable for conducting any checks. The FSB determines, in accordance with AC 120-83, Flight Deck Observer Seat and Associated Equipment, use of the optional Forward Observer Seat for flightcrew observation tasks is required in the RA-4000 aircraft.

13.2 Landing Minima Categories. Refer to part 97, § 97.3. The RA-4000 is considered Category “C” aircraft for the purposes of determining normal “straight-in” landing weather minima. This is based on the maximum certificated landing weight reference landing speed (V_{REF}) for “Flaps 35/Full.” For circling approaches, “Flaps 35/Full” is the normal flap position. The minimum indicated airspeed is V_{REF} for the selected flap position and the actual gross weight of the aircraft, plus any additional speed additives for the conditions during the approach, until aligned with the landing runway. If operating at a speed in excess of the upper limit of the speed range for the aircraft’s category, the minimums for the higher category must be used.

13.3 Normal Landing Flaps. The normal “final flap setting” per § 91.126(c) is “Flaps 35/Full.”

13.4 Aircraft Proving Tests. Proving and validation tests in accordance with §§ 91.1041 and 135.145 are appropriate per Order 8900.1, Volume 3, Chapter 29 when the RA-4000 is new to a particular operator. When an operator is currently operating RA-4000 aircraft and adds RA-4000 BPU aircraft in the same kind of operation, proving tests are not required. The RA-4000 and the RA-4000 BPU have similar type powerplants, and alterations between the RA-4000 and the RA-4000 BPU do not materially affect flight characteristics for purposes of proving tests.

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	Maneuvers 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

These are the minimum levels of training and checking required, derived from the highest level in the Differences Tables in Appendix 3. Differences levels are arranged as training/checking.

To Related Aircraft ↓	From Base Aircraft →	RA-4000	RA-4000 BPU*
RA-4000		Not applicable	C/C
RA-4000 BPU*		C/C	Not applicable

* BPU A provides new intended functions and changed functionality with installation of Honeywell EPIC software Load 20.0 and Sundstrand Software Load 18.0.

APPENDIX 3. DIFFERENCES TABLES

This Design Differences Table, from the RA-4000 to the RA-4000 BPU, was proposed by the manufacturer and validated by the FSB. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: RA-4000 TO RELATED AIRCRAFT: RA-4000 BPU	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	General Airplane Configuration	No Change.				
	Weights	Maximum takeoff weight (MTOW) increase to 39,500 lb (previous to BPU).	No	No	A	A
	Airworthiness Limitations	MTOW, 10-minute Takeoff Power for PW308A engine, category (CAT) II Approach Approval Limitation Not Use Vertical Profile Display.	No	Yes	B	B
	Placards, Markings & Annunciations	New full-authority digital engine control (FADEC) CAS Messages. New Data Link CAS Message. Change auxiliary power unit (APU) CAS Message. Split transformer-rectifier unit (TRU) CAS Message.	No	Yes	B	B
	Engines	10-minute Takeoff Power. Time-Limited Dispatch FADEC.	No	Yes	B	B

FROM BASE AIRCRAFT: RA-4000 TO RELATED AIRCRAFT: RA-4000 BPU	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Flight Deck	Electronic checklist (ECL). Electronic Approach Charts. Graphical Weather thru Communication Management Function (CMF) using very high frequency (VHF). Takeoff and Landing Data (TOLD).	No	Yes	C	C

FROM BASE AIRCRAFT: RA-4000	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
TO RELATED AIRCRAFT: RA-4000 BPU						
	Instrument Panel Layout	Change Manual Pressurization Indications.	No	No	A	A
	Cabin	Satellite communications (SATCOM).	No	Yes	A	A
	Flight Controls	STAB Trim Indicator scaling & TO Trim Warning Margin changed.	No	No	A	A
	Aerodynamic Controls	No Change.				
	Master Minimum Equipment List (MMEL)	Time-Limited Dispatch (TLD), Fuel System, ECL, Electronic Flight Bag (EFB) Charts, Graphical Weather, CMF, VHF.	No	Yes	B	B
	Integration	Network Interface Module (NIM) 2, Marker Beacon Hi/Lo selection.	No	No	A	A
	21 Air Conditioning	Outflow Valve screen to prevent debris. Baggage Door CAS Message to 35,000 ft.	No	No	A	A
	22 Autoflight	Autothrottle Go-Around with use of FMS Speed schedule. Automatic flight control system (AFCS) Max Speed Mode engage (Flight Level Change (FLC)). Takeoff/go-around (TOGA) Pitch Target Change.	Yes	Yes	B	B
	23 Communications	No Change.				

FROM BASE AIRCRAFT: RA-4000 TO RELATED AIRCRAFT: RA-4000 BPU	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	24 Electrical Power	Sundstrand 18.0, Essential Buss Items, VHF 1 on Battery Buss. EMER GEN AUTO on ground fixed. APU Load Shed. Engine indicating and crew alerting system (EICAS) Battery Voltage Indication. TRU Overheat/Overload now separate.	No	Yes	B	B
	25 Equipment/Furnishings	No Change.				
	26 Fire Protection	Fire Protection System (FPS) Test all on Battery Power (no longer do test 2X).	No	Yes	A	B
	27 Flight Controls	STAB Trim Indicator scaling & TO Trim Warning Margin changed.	No	No	A	A
	28 Fuel	Fuel Tank Flammability (14 CFR part 25 as amended by Amendment 25-102). New Minimum Fuel for Engine Start Limit. Minimum Fuel Quantity to run fuel pumps.	No	No	A	A
	29 Hydraulic Power	Updates on Hydraulic Synoptic Display.	No	No	A	A

FROM BASE AIRCRAFT: RA-4000 TO RELATED AIRCRAFT: RA-4000 BPU	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	30 Ice and Rain Protection	Amber ICING CAS include system faults.	No	Yes	B	B

FROM BASE AIRCRAFT: RA-4000						
TO RELATED AIRCRAFT: RA-4000 BPU	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	31 Indicating/Recording Systems	Cockpit Voice Recorder (CVR) Updates. Flight Data Recorder (FDR) Updates. New CAS Messages.	No	Yes	B	B
	32 Landing Gear	No Change.				
	33 Lights	Emergency Lights on Hydraulic Motor-Driven Generator (HMDG) Power.	No	No	A	A
	34 Navigation	Airspeed Trend Vector visible with Bug.	No	No	A	A
	34 Navigation	FMS Global Positioning System (GPS) Navigation Page on EMER GEN. FMS AUTO Speed on Go-Around Required Navigation Performance (RNP) (enroute and approach). Go-Around Auto Lateral Navigation (LNAV) Reactive Windshear Warning Runway Awareness and Advisory System (RAAS).	Yes	Yes	C	C
	35 Oxygen	No Change.				
	36 Pneumatic	No Change.				
	38 Waste/Water	No Change.				
	45 Central Maintenance System	FADEC Fault messages Central Maintenance Computer (CMC) update.	No	No	A	A

FROM BASE AIRCRAFT: RA-4000						
TO RELATED AIRCRAFT: RA-4000 BPU	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	46 Information Systems	ECL. Electronic Approach Charts (Approach, Airport Diagrams, Standard Instrument Departures (SID), Standard Terminal Arrival Routes (STAR)) Paperless Jeppesen Terminal Airspace Charts.	No	Yes	C	C
	49 Airborne Auxiliary Power	APU Unattended Mode approval APU ON for Landing approval.	No	Yes	A	A
	52 Doors	No Change.				
	54 Nacelles/Pylons	No Change.				
	55 Horizontal & Vertical Stab.	STAB Indicator scale and Takeoff Warning Margins.	No	No	A	A
	56 Windows	Windshield Heat Overheat sensing.	No	Yes	A	A
	72 Engine (Turbine)	No Change.				
	73 Fuel Controls	FADEC TLD.	No	Yes	B	B
	74 Engine Ignitions	No Change.				
	75 Engine Bleed Air	No Change.				
	76 Engine Controls	No Change.				

FROM BASE AIRCRAFT: RA-4000 TO RELATED AIRCRAFT: RA-4000 BPU	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	77 Engine Indicating	No Change.				
	78 Exhaust	No Change.				
	79 Engine Oil	Chip Detect Indications include failure. (remove from FADEC Fault CAS Message).	No	No	A	A
	80 Engine Starting	Auto-abort motoring removed. Temperature/Time Abort trigger.	No	Yes	A	A

This Maneuver Differences Table, from the RA-4000 to the RA-4000 BPU, was proposed by the manufacturer and validated by the FSB. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: RA-4000 TO RELATED AIRCRAFT: RA-4000 BPU	MANEUVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Engine Start	No Change.				
	Preflight	Add TOLD to FMS. Min Speed for Approach TOLD active. Cruise Alt/Optimum Alt Tables for FMS performance.	No	Yes	B	B
	Taxi	No Change.				
	Takeoff	No Change.				
	Rejected Takeoff (RTO) or Takeoff Decision Speed (V ₁) Fail	Engine Failure on Takeoff, PW308A Approved for 10 Minutes at Takeoff Power.	Yes	Yes	B	B
	Climb Cruise Decent	No Change.				

FROM BASE AIRCRAFT: RA-4000 TO RELATED AIRCRAFT: RA-4000 BPU	MANEUVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Instrument Approaches	Add Dual Wide Area Augmentation System (WAAS)/GPS. Add RNP enroute Add localizer performance with vertical guidance (LPV) & annunciations. Add LNAV/Vertical Navigation (VNAV) & Baro-VNAV. Temperature Compensated Baro-VNAV. RNP Approaches (with Radius to Fix (RF) Legs)(RNP 0.3). CAT II Instrument Approach Approval. Go-Around Auto LNAV. EFB Charts.	Yes	Yes	C	C
	Landing	APU ON Landing approval.	No	Yes	A	A
	Normal Procedures	ECL. Electronic Approach Charts. Instrument approach procedures.	No	Yes	C	C
	Abnormal Procedures	ECL.	No	Yes	C	C
	Emergency Procedures	ECL.	No	Yes	C	C
	In-Flight Maneuvers	No Change.				

This Design Differences Table, from the RA-4000 BPU to the RA-4000, was proposed by the manufacturer and validated by the FSB. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: RA-4000 BPU TO RELATED AIRCRAFT: RA-4000	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	General Airplane Configuration	No Change.				
	Weights	MTOW increase to 39,500 lb (previous to BPU).	No	No	A	A
	Airworthiness Limitations	MTOW, 5-minute Takeoff Power for PW308A engine. No CAT II Approach.	No	Yes	B	B
	Placards, Markings & Annunciators	Single FADEC CAS Messages. Change APU CAS Message. Composite TRU CAS Message.	No	Yes	B	B
	Servicing	No Change.				
	Engines	5-Minute Takeoff Power. No Time Limited Dispatch FADEC.	No	Yes	B	B
	Flight Deck	Manual Entry TOLD.	No	Yes	C	B
	Instrument Panel Layout	Change Manual Pressurization Indications.	No	No	A	A
	Cabin	No SATCOM.	No	Yes	A	A
	Flight Controls	STAB Trim Indicator scaling & TO Trim Nuisance TO Warning for Trim.	No	No	B	A
	Aerodynamic Controls	No Change.				

FROM BASE AIRCRAFT: RA-4000 BPU TO RELATED AIRCRAFT: RA-4000	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	MMEL	Applicability for TLD, Fuel System, ECL, EFB Charts, Graphical Weather, CMF, VHF.	No	Yes	B	B
	Integration	Marker Beacon Hi/Lo selection Inop.	No	No	A	A
	21 Air Conditioning	Baggage Door CAS Message wrong alt.	No	No	A	A
	22 Autoflight	Approach and Go-Around MAN SPD only AFCS Max Speed Mode engage (FLC). TOGA Pitch Target always 10°.	Yes	Yes	B	B
	23 Communications	No Change.				

FROM BASE AIRCRAFT: RA-4000 BPU TO RELATED AIRCRAFT: RA-4000	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	24 Electrical Power	Sundstrand 17.0, Essential Buss Items. No VHF 1 tuning on EMER GEN EMER GEN OFF for Engine Start APU Load Shed. EICAS Battery Voltage Indication disappears during APU Start. 1 CAS MSG for both TRU Overheat & Overload .	No	Yes	B	B
	25 Equipment/Furnishings	No Change.				
	26 Fire Protection	FOPS Test done 2X.	No	Yes	A	B
	27 Flight Controls	STAB Trim Indicator scaling & TO Trim Warning Margin inaccuracy.	No	No	A	A
	28 Fuel	Not Fuel Tank Flammability-compliant (14 CFR part 25 as amended by Amendment 25-102).	No	No	A	A
	29 Hydraulic Power	Anomalies on Hydraulic Synoptic Display.	No	No	A	A
	30 Ice and Rain Protection	Amber ICING CAS only for Ice Detected with ice projection OFF.	No	Yes	B	B

FROM BASE AIRCRAFT: RA-4000 BPU TO RELATED AIRCRAFT: RA-4000	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	31 Indicating/Recording Systems	Different CAS Messages.	No	Yes	B	B

FROM BASE AIRCRAFT: RA-4000 BPU TO RELATED AIRCRAFT: RA-4000	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	32 Landing Gear	No Change.				
	33 Lights	Emergency Lights On with EMER GEN.	No	No	A	A
	34 Navigation	No GPS Navigation on EMER GEN. Airspeed Trend Vector covered with Bug. No RNP. No Reactive Windshear Warning. No RAAS.	No	Yes	B	B
	34 Navigation	Go-Around MAN SPD only. Go-Around manual FMS & NAV selection.	Yes	Yes	C	C
	35 Oxygen	No Change.				
	36 Pneumatic	No Change.				
	38 Waste/Water	No Change.				
	45 Central Maintenance System	Only 1 FADEC Fault messages.	No	No	A	A
	46 Information Systems	No ECL. No Electronic Approach Charts.	No	No	A	A

FROM BASE AIRCRAFT: RA-4000 BPU TO RELATED AIRCRAFT: RA-4000	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	49 Airborne Auxiliary Power	No APU Unattended Mode approval. APU OFF for Landing.	No	Yes	A	A
	52 Doors	No Change.				
	54 Nacelles/Pylons	No Change.				
	55 Horizontal & Vertical Stab.	STAB Indicator scale and Takeoff Warning Margins.	No	No	A	A
	56 Windows	Windshield Heat Overheat sensing.	No	Yes	B	B
	72 Engine (Turbine)	No Change.				
	73 Fuel Controls	No FADEC TLD.	No	Yes	B	B
	74 Engine Ignitions	No Change.				
	75 Engine Bleed Air	No Change.				

FROM BASE AIRCRAFT: RA-4000 BPU TO RELATED AIRCRAFT: RA-4000	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	76 Engine Controls	No Change.				
	77 Engine Indicating	No Change.				
	78 Exhaust	No Change.				
	79 Engine Oil	Chip Detect Indications included in FADEC Fault CAS Message.	No	No	A	A
	80 Engine Starting	Manual FUEL/IGN to abort starts.	No	Yes	B	B

This Maneuver Differences Table, from the RA-4000BPU to the RA-4000, was proposed by the manufacturer and validated by the FSB. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: RA-4000 BPU TO RELATED AIRCRAFT: RA-4000	MANEUVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Engine Start	No Change.				
	Preflight	Manual TOLD entry to FMS. No Cruise Alt/Optimum Alt Tables for flight performance calculations.	No	Yes	B	B
	Taxi	No Change.				
	Takeoff	No Change.				
	RTO or V ₁ Fail	Engine Failure on Takeoff, PW308A Approved for 5 Minutes at Takeoff Power.	Yes	Yes	B	B
	Climb Cruise Decent	No Change.				
	Instrument Approaches	GPS only, No WAAS. No RNP enroute. No LPV & annunciations. No LNAV/VNAV to decision altitude (DA). No Temperature Compensated Baro-VNAV. No RNP Approaches. No CAT II Instrument Approach Approval.	No	Yes	B	B

FROM BASE AIRCRAFT: RA-4000 BPU TO RELATED AIRCRAFT: RA-4000	MANEUVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Instrument Approaches	Go-Around manual FMS & NAV selection.	Yes	Yes	C	
	Landing	No APU ON Landing approval.	No	Yes	A	A
	Normal Procedures	No ECL. No Electronic Approach Charts Instrument approach procedures.	No	No	B	B
	Abnormal Procedures	Follow published procedures.	No	No	A	A
	Emergency Procedures	Follow published procedures.	No	No	A	A
	In-Flight Maneuvers	No Change.				

APPENDIX 4. HEAD-UP DISPLAY (HUD)

Not Applicable.

APPENDIX 5. ELECTRONIC DISPLAY OF AERONAUTICAL CHARTS, CHECKLISTS, AND WEATHER

1. Purpose and Applicability

The following is provided for the benefit of FAA principal inspectors (PI) and aircraft operators for their use in determining the acceptance of EFB applications. The Honeywell Load 20 was evaluated using AC 120-76, Authorization for Use of Electronic Flight Bags.

2. Suitability Determination

Honeywell Load 20 is operationally suitable for:

- Electronic Display of Aeronautical charts.
- ECL display.

3. Description

Electronic Charts (Approach Charts Only) Added with Honeywell Load 20. Chart use is menu driven on the multifunction display (MFD) using respective cursor control device (CCD). Cursor control of Electronic Charts is workload intensive due to cursor positioning for selections, panning and formatting display for the charts. Crew coordination is necessary to organize MFD information to simultaneously display of Electronic Charts, ECL and Navigation Display information.

ECL is Added with Honeywell Load 20. Checklist use is menu driven on the MFD using respective CCD. The ECL does not alleviate the need for the printed Pilot Checklist due to lack of MFD availability at all times during flight operations and some Abnormal Procedures not code-able in electronic format. ECL is suitable for use when available. Some ECL procedures direct user to use the printed Pilot Checklist. The Printed Pilot Checklist is required to be available for use at the pilot station in all phases of flight.

4. Specifications for Training

As a minimum, training should include use of the menu on MFD to manipulate electronic chart/ECL functions to display approach charts and checklists in flight operations.

5. Specification for Checking

Recommended tasks include demonstrating competency in using and integrating use of the electronic chart/ECL functions to display approach charts and checklists.