

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION TYPE CERTIFICATE DATA SHEET E00078NE	TCDS NUMBER E00078NE REVISION: 14 DATE: June 20, 2016		
	GENERAL ELECTRIC COMPANY MODELS:		
	GENx-1B54	GENx-1B54/P1	GENx-1B54/P2
	GENx-1B58	GENx-1B58/P1	GENx-1B58/P2
	GENx-1B64	GENx-1B64/P1	GENx-1B64/P2
	GENx-1B67	GENx-1B67/P1	GENx-1B67/P2
	GENx-1B70	GENx-1B70/P1	GENx-1B70/P2
		GENx-1B70C/P1	GENx-1B70C/P2
		GENx-1B70/72/P1	GENx-1B70/72/P2
	GENx-2B67	GENx-1B70/75/P1	GENx-1B70/75/P2
	GENx-2B67B	GENx-1B74/75/P1	GENx-1B74/75/P2
	GENx-2B67P	GENx-1B75/P1	GENx-1B75/P2
			GENx-1B76/P2
			Genx-1B76A/P2
			GENx-1B78/P2

Engines of models described herein conforming with this data sheet (which is part of Type Certificate Number E00078NE) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations, provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

TYPE CERTIFICATE (TC) HOLDER: General Electric Company
GE Aviation
1 Neumann Way
Cincinnati, OH 45215-6310

GE Aviation	GENx-1B54	GENx-1B58	GENx-1B64	GENx-1B67	GENx-1B70
TYPE	The GENx-1B engine is a dual rotor, axial flow, high bypass ratio turbofan. The 10-stage high pressure compressor is driven clockwise (Aft Looking Forward) by a 2-stage high pressure turbine. The single stage fan and 4-stage low pressure compressor are driven counterclockwise (Aft Looking Forward) by a 7-stage low pressure turbine. The engine control system includes a Full Authority Digital Engine Control (FADEC), which has an aircraft connection for digital communication. An engine monitoring unit (EMU) provides vibration level signals to the aircraft.				
	The GENx-2B engine is a dual rotor, axial flow, high bypass ratio turbofan. The 10-stage high pressure compressor is driven clockwise (Aft Looking Forward) by a 2-stage high pressure turbine. The single stage fan and 3-stage low pressure compressor are driven counterclockwise (Aft Looking Forward) by a 6-stage low pressure turbine. The engine control system includes a Full Authority Digital Engine Control (FADEC), which has an aircraft connection for digital communication. An engine monitoring unit (EMU) provides vibration level signals to the aircraft.				
RATINGS (See NOTE 5)					
Maximum continuous at sea level,					
static thrust, lb	56,300	--	61,500	--	66,500
fan speed, rpm	2,166	--	2,247	--	2,319
Takeoff - 5 min. at sea level, (see NOTE 12)					
static thrust, lb	57,400	61,000	67,000	69,400	72,300
fan speed, rpm	2,184	2,239	2,326	2,360	2,401
Flat rating ambient temperature					
Takeoff	86°F / 30°C	--	--	--	--
Maximum Continuous	77°F / 25°C	--	--	--	--

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LEGEND: "--" INDICATES "SAME AS PRECEDING MODEL" / "-"- NOT APPLICABLE

I. MODELS (cont.)	GENx-1B54	GENx-1B58	GENx-1B64	GENx-1B67	GENx-1B70
MODEL LIST (Engine Configuration) (see NOTE 16)	GENx-1B54G01 GENx-1B54G02 GENx-1B54G03 GENx-1B54G04 GENx-1B54G05	GENx-1B58G01 GENx-1B58G02 GENx-1B58G03 GENx-1B58G04 GENx-1B58G05	GENx-1B64G01 GENx-1B64G02 GENx-1B64G03 GENx-1B64G04 GENx-1B64G05	GENx-1B67G01 GENx-1B67G02 GENx-1B67G03 GENx-1B67G04 GENx-1B67G05	GENx-1B70G01 GENx-1B70G02 GENx-1B70G03 GENx-1B70G04 GENx-1B70G05
COMPONENTS (GE P/Ns)					
Fuel Metering Unit	2122M20	--	--	--	--
FADEC Hardware	2121M82 2447M85	-- --	-- --	-- --	-- --
FADEC Software (earliest part number shown)	2124M23P09 (G03-G05 Model List)	--	--	--	--
Configuration Box Engine Configuration	787-8 2400M60P03 787-9 2400M60P11 (G03 Model List)	-- --	-- --	-- --	-- --
	787-8 2400M60P06 787-9 2400M60P12 (G04/G05 Model List)	-- --	-- --	-- --	-- --
FADEC Rating Plug	2125M31P62	2125M31P08	2125M31P68	2125M31P20	2125M31P74
Fuel Pump	2122M22	--	--	--	--
IGNITION SYSTEM					
Two ignition exciters GE P/N	2121M94	--	--	--	--
Two igniter plugs GE P/N	1754M84	--	--	--	--
PRINCIPAL DIMENSIONS (in)					
Length (Fan spinner to aft centerbody flange)	194.9 in	--	--	--	--
Width (maximum envelope)	139.1 in	--	--	--	--
Height (maximum envelope)	137.2 in	--	--	--	--
WEIGHT (DRY)					
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	13,505 lbs (G01-G03 Model List)	--	--	--	--
	13,552 lbs (G04/G05 Model List)	--	--	--	--
CENTER OF GRAVITY LOCATIONS (in); Engine only					
Station (axial)	216.1 in. (G01-G03 Model List)	--	--	--	--
	216.6 in (G04/G05 Model List)	--	--	--	--
Waterline	99.9 in.	--	--	--	--
Buttline	100.7 in.	--	--	--	--

I. MODELS (cont.)	GENx-1B54/P1	GENx-1B58/P1	GENx-1B64/P1	GENx-1B67/P1	GENx-1B70/P1
RATINGS (See NOTE 5)					
Maximum continuous at sea level, static thrust, lb	56,300	--	61,500	--	66,500
fan speed, rpm	2,166	--	2,247	--	2,319
Takeoff - 5 min. at sea level, (see NOTE 12)					
static thrust, lb	57,400	61,000	67,000	69,400	72,300
fan speed, rpm	2,184	2,239	2,326	2,360	2,401
Flat rating ambient temperature					
Takeoff	86°F / 30°C	--	--	--	--
Maximum Continuous	77°F / 25°C	--	--	--	--
MODEL LIST (Engine Configuration) (see NOTE 16)	GENx-1B54/P1G01	GENx-1B58/P1G01	GENx-1B64/P1G01	GENx-1B67/P1G01	GENx-1B70/P1G01
COMPONENTS (GE P/Ns)					
Fuel Metering Unit	2122M20	--	--	--	--
FADEC Hardware	2121M82 2447M85	-- --	-- --	-- --	-- --
FADEC Software (earliest part number shown)	2124M23P13	--	--	--	--
Configuration Box Engine Configuration	787-8 2400M60P10 787-9 2400M60P13	-- --	-- --	-- --	-- --
FADEC Rating Plug	2125M31P62	2125M31P08	2125M31P68	2125M31P20	2125M31P74
Fuel Pump	2122M22	--	--	--	--
IGNITION SYSTEM					
Two ignition exciters GE P/N	2121M94	--	--	--	--
Two igniter plugs GE P/N	1754M84	--	--	--	--
PRINCIPAL DIMENSIONS (in)					
Length (Fan spinner to aft centerbody flange)	194.9 in	--	--	--	--
Width (maximum envelope)	139.1 in	--	--	--	--
Height (maximum envelope)	137.2 in	--	--	--	--
WEIGHT (DRY)					
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	13,552 lbs	--	--	--	--
CENTER OF GRAVITY LOCATIONS (in); Engine only					
Station (axial)	216.6 in	--	--	--	--
Waterline	99.9 in.	--	--	--	--
Buttline	100.7 in.	--	--	--	--

I. MODELS (cont.)	GEnx-1B70/72/P1	GEnx-1B70/75/P1	GEnx-1B74/75/P1	GEnx-1B75/P1
RATINGS (see NOTE 5)				
Maximum continuous at sea level, static thrust, lb	66,500	--	68,600	68,800
fan speed, rpm	2,319	--	2,375	2,378
Takeoff - 5 min. at sea level, (see NOTE 12)				
static thrust, lb	72,300	--	76,700	77,600
fan speed, rpm	2,401	--	2,496	2,510
Flat rating ambient temperature				
Takeoff	93.4°F / 34.1°C	101.8°F / 38.8°C	89°F / 31.7°C	86°F / 30°C
Maximum Continuous	77°F / 25°C	--	--	--
MODEL LIST (Engine Configuration) (see NOTE 16)	GEnx-1B70/72/P1G01	GEnx-1B70/75/P1G01	GEnx-1B74/75/P1G01	GEnx-1B75/P1G01
COMPONENTS (GE P/Ns)				
Fuel Metering Unit	2122M20	--	--	--
FADEC Hardware	2121M82 2447M85	-- --	-- --	-- --
FADEC Software (earliest part number shown)	2124M23P13	--	--	--
Configuration Box Engine Configuration	787-8 2400M60P10 787-9 2400M60P13	-- --	-- --	-- --
FADEC Rating Plug	2125M31P32	2125M31P80	2125M31P44	2125M31P50
Fuel Pump	2122M22	--	--	--
IGNITION SYSTEM				
Two ignition exciters GE P/N	2121M94	--	--	--
Two igniter plugs GE P/N	1754M84	--	--	--
PRINCIPAL DIMENSIONS (in)				
Length (Fan spinner to aft centerbody flange)	194.9 in	--	--	--
Width (maximum envelope)	139.1 in	--	--	--
Height (maximum envelope)	137.2 in	--	--	--
WEIGHT (DRY) Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	13,552 lbs	--	--	--
CENTER OF GRAVITY LOCATIONS (in); Engine only				
Station (axial)	216.6 in	--	--	--
Waterline	99.9 in.	--	--	--
Buttline	100.7 in.	--	--	--

I. MODELS (cont.)	GENx-1B54/P2	GENx-1B58/P2	GENx-1B64/P2	GENx-1B67/P2	GENx-1B70/P2
RATINGS (See NOTE 5)					
Maximum continuous at sea level,					
static thrust, lb	56,300	--	61,500	--	66,500
fan speed, rpm	2,166	--	2,247	--	2,319
Takeoff - 5 min. at sea level, (see NOTE 12)					
static thrust, lb	57,400	61,000	67,000	69,400	72,300
fan speed, rpm	2,184	2,239	2,326	2,360	2,401
Flat rating ambient temperature					
Takeoff	86°F / 30°C	--	--	--	--
Maximum Continuous	77°F / 25°C	--	--	--	--
MODEL LIST (Engine Configuration) (see NOTE 16)	GENx-1B54/P2G01 GENx-1B54/P2G02	GENx-1B58/P2G01 GENx-1B58/P2G02	GENx-1B64/P2G01 GENx-1B64/P2G02	GENx-1B67/P2G01 GENx-1B67/P2G02	GENx-1B70/P2G01 GENx-1B70/P2G02
COMPONENTS (GE P/Ns)					
Fuel Metering Unit	2459M17	--	--	--	--
FADEC Hardware	2447M85	--	--	--	--
FADEC Software (earliest part number shown)	2124M23P15	--	--	--	--
Configuration Box Engine Configuration	2400M60P07	--	--	--	--
FADEC Rating Plug	2125M31P62	2125M31P08	2125M31P68	2125M31P20	2125M31P74
Fuel Pump	2122M22	--	--	--	--
IGNITION SYSTEM					
Two ignition exciters GE P/N	2121M94	--	--	--	--
Two igniter plugs GE P/N	1754M84	--	--	--	--
PRINCIPAL DIMENSIONS (in)					
Length (Fan spinner to aft centerbody flange)	194.9 in	--	--	--	--
Width (maximum envelope)	139.1 in	--	--	--	--
Height (maximum envelope)	137.2 in	--	--	--	--
WEIGHT (DRY)					
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	13,552 lbs	--	--	--	--
CENTER OF GRAVITY LOCATIONS (in); Engine only					
Station (axial)	216.6 in	--	--	--	--
Waterline	99.9 in.	--	--	--	--
Buttline	100.7 in.	--	--	--	--

I. MODELS (cont.)	GENx-1B70/72/P2	GENx-1B70/75/P2	GENx-1B74/75/P2	GENx-1B75/P2	GENx-1B78/P2
RATINGS (see NOTE 5)					
Maximum continuous at sea level,					
static thrust, lb	66,500	--	68,600	68,800	68,600
fan speed, rpm	2,319	--	2,375	2,378	2,375
Takeoff - 5 min. at sea level, (see NOTE 12)					
static thrust, lb	72,300	--	76,700	77,600	80,400
fan speed, rpm	2,401	--	2,496	2,510	2,586
Flat rating ambient temperature					
Takeoff	93.4°F / 34.1°C	101.8°F / 38.8°C	89°F / 31.7°C	86°F / 30°C	86°F / 30°C
Maximum Continuous	77°F / 25°C	--	--	--	--
MODEL LIST (Engine Configuration) (see NOTE 16)	GENx-1B70/72/P2G01 GENx-1B70/72/P2G02	GENx-1B70/75/P2G01 GENx-1B70/75/P2G02	GENx-1B74/75/P2G01 GENx-1B74/75/P2G02	GENx-1B75/P2G01 GENx-1B75/P2G02	GENx-1B78/P2G01 GENx-1B78/P2G02
COMPONENTS (GE P/Ns)					
Fuel Metering Unit	2459M17	--	--	--	--
FADEC Hardware	2447M85	--	--	--	--
FADEC Software (earliest part number shown)	2124M23P15	--	--	--	--
Configuration Box Engine Configuration	2400M60P07	--	--	--	--
FADEC Rating Plug	2125M31P32	2125M31P80	2125M31P44	2125M31P50	2125M31P86
Fuel Pump	2122M22	--	--	--	--
IGNITION SYSTEM					
Two ignition exciters GE P/N	2121M94	--	--	--	--
Two igniter plugs GE P/N	1754M84	--	--	--	--
PRINCIPAL DIMENSIONS (in)					
Length (Fan spinner to aft centerbody flange)	194.9 in	--	--	--	--
Width (maximum envelope)	139.1 in	--	--	--	--
Height (maximum envelope)	137.2 in	--	--	--	--
WEIGHT (DRY)					
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	13,552 lbs	--	--	--	--
CENTER OF GRAVITY LOCATIONS (in); Engine only					
Station (axial)	216.6 in	--	--	--	--
Waterline	99.9 in.	--	--	--	--
Buttline	100.7 in.	--	--	--	--

I. MODELS (cont.)	GEnx-1B70C/P1	GEnx-1B70C/P2	GEnx-1B76/P2	GEnx-1B76A/P2
RATINGS (see NOTE 5)				
Maximum continuous at sea level,				
static thrust, lb	66,500	--	68,600	--
fan speed, rpm	2,319	--	2,375	--
Takeoff - 5 min. at sea level, (see NOTE 12)				
static thrust, lb	72,300	--	78,500	--
fan speed, rpm	2,401	--	2,521	--
Flat rating ambient temperature				
Takeoff	101.8 °F / 38.8 °C	--	86°F / 30°C	91°F / 32.8°C
Maximum Continuous	77°F / 25°C	--	--	--
MODEL LIST (Engine Configuration) (see NOTE 16)	GEnx-1B70C/P1G01	GEnx-1B70C/P2G01 GEnx-1B70C/P2G02	GEnx-1B76/P2G01 GEnx-1B76/P2G02	GEnx-1B76A/P2G01 GEnx-1B76A/P2G02
COMPONENTS (GE P/Ns)				
Fuel Metering Unit	2122M20	2459M17	--	--
FADEC Hardware	2121M82 2447M85	2447M85	--	--
FADEC Software (earliest part number shown)	2124M23P18	2124M23P18	2124M23P22	--
Configuration Box Engine Configuration	787-8 2400M60P10 787-9 2400M60P13	2400M60P07	--	--
FADEC Rating Plug	2125M31P98	2125M31P98	2125M31P56	2125M31P92
Fuel Pump	2122M22	--	--	--
IGNITION SYSTEM				
Two ignition exciters GE P/N	2121M94	--	--	--
Two igniter plugs GE P/N	1754M84	--	--	--
PRINCIPAL DIMENSIONS (in)				
Length (Fan spinner to aft centerbody flange)	194.9 in	--	--	--
Width (maximum envelope)	139.1 in	--	--	--
Height (maximum envelope)	137.2 in	--	--	--
WEIGHT (DRY)				
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	13,552 lbs	--	--	--
CENTER OF GRAVITY LOCATIONS (in); Engine only				
Station (axial)	216.6 in	--	--	--
Waterline	99.9 in.	--	--	--
Buttline	100.7 in.	--	--	--

I. MODELS (cont.)	GENx-2B67	GENx-2B67B	GENx-2B67/P
RATINGS (see NOTE 5)			
Maximum continuous at sea level, static thrust, lb	58,500	--	--
fan speed, rpm	2,604	--	--
Takeoff - 5 min. at sea level, (see NOTE 12)			
static thrust, lb	67,400	--	--
fan speed, rpm	2,806	--	--
Flat rating ambient temperature			
Takeoff	86°F / 30°C	--	--
Maximum Continuous	77°F / 25°C	--	--
MODEL LIST (Engine Configuration) (see NOTE 16)			
	GENx-2B67G01	GENx-2B67BG01	GENx-2B67/P01
	GENx-2B67G02	GENx-2B67BG02	GENx-2B67/P02
COMPONENTS (GE P/Ns)			
Fuel Metering Unit	2122M20	--	2459M17
FADEC Hardware	2124M70	--	--
FADEC Software (earliest part number shown)	2124M22P02	2124M22P06	2124M22P10
Configuration Box Engine Configuration	2400M60P04	2400M60P08	2400M60P09
FADEC Rating Plug	2125M31P20	--	--
Fuel Pump	2122M22	--	--
IGNITION SYSTEM			
Two ignition exciters GE P/N	2139M52	--	--
Two igniter plugs GE P/N	1754M84	--	--
PRINCIPAL DIMENSIONS (in)			
Length (Fan spinner to aft centerbody flange)	185.0 in	--	--
Width (maximum envelope)	126.0 in	--	--
Height (maximum envelope)	127.3 in	--	--
WEIGHT (DRY)			
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	12,397 lbs	--	--
CENTER OF GRAVITY LOCATIONS (in); Engine only			
Station (axial)	218.7 in.	--	--
Waterline	98.4 in.	--	--
Buttline	99.9 in.	--	--

I. MODELS (cont.)	ALL
FUEL	See NOTE 7 for approved fuels.
OIL	Refer to GENx-1B Service Bulletin 79-0001 and GENx-2B Service Bulletin 79-0001 and its latest revision for detailed information pertaining to Type 2 oils. These Service Bulletins cover the approved oils conforming to General Electric Specification D50TF1 or the latest revisions that are authorized.

CERTIFICATION BASIS

GENx-1B54, -1B58, -1B64, -1B67, -1B70

- 14 CFR part 33, effective February 1, 1965, as amended by 33-1 through 33-21 and amendment 33-23 section 33.76.
- 14 CFR part 34, amendment 5, effective December 31, 2012. (14 CFR part 34, amendment 5A, effective October 23, 2013 for the GENx-1B70) See NOTE 16 for detailed summary of the certification basis for fuel venting and exhaust emissions.
- GENx-1B Fan Blade Special Condition (33-006-SC)
- Equivalent Level of Safety (ELOS) Findings:
 - o ELOS No. 8040-ELOS-08-NE02 to 14 CFR 33.87(a) and (b)
 - Applicable to engines with high pressure turbine stage 1 blade part number 2305M26P03 and/or combustor fuel nozzle part numbers 2255M88P09, 2255M88P10, and 2256M66P10
 - o ELOS No. 8040-ELOS-08-NE03 to 14 CFR 33.27(c)
 - o ELOS No. 8040-ELOS-08-NE04 to 14 CFR 33.90
 - Applicable to engines with combustor chamber part numbers 2257M40G03/G04
 - o ELOS No. 8040-ELOS-08-NE05 to 14 CFR 33.77
 - o ELOS No. 8040-ELOS-10-NE03 to 14 CFR 33.68(a)
 - o ELOS No. AT03359EN-E-P-1 to 14 CFR 33.83(d)
 - o ELOS No. TC2191EN-E-P1 to 14 CFR 33.27(c)(2)(v)

GENx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1 -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1

- 14 CFR part 33, effective February 1, 1965, as amended by 33-1 through 33-21 and amendment 33-23 section 33.76.
- 14 CFR part 34, amendment 5, effective December 31, 2012 (14 CFR part 34, amendment 5A, effective October 23, 2013 for the GENx-1B70/P1, -1B70C/P1 -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1) See NOTE 16 for detailed summary of the certification basis for fuel venting and exhaust emissions.
- GENx-1B Fan Blade Special Condition (33-006-SC)
- Equivalent Level of Safety (ELOS) Findings:
 - o ELOS No. 8040-ELOS-08-NE05 to 14 CFR 33.77
 - o ELOS No. 8040-ELOS-12-NE01 Rev. 1 to 14 CFR 33.27(c)
 - o ELOS No. 8040-ELOS-12-NE02 to 14 CFR 33.68(a)
 - o ELOS No. 8040-ELOS-12-NE03 to 14 CFR 33.87(a) and (b), and §33.93(a)
 - o ELOS No. AT03359EN-E-P-1 to 14 CFR 33.83(d)
 - o ELOS No. TC2191EN-E-P1 to 14 CFR 33.27(c)(2)(v)

GENx-1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2, -1B78/P2

14 CFR part 34, amendment 5, effective December 31, 2012 (14 CFR part 34, amendment 5A, effective October 23, 2013 for the GENx-1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2, -1B78/P2). See NOTE 16 for detailed summary of the certification basis for fuel venting and exhaust emissions.

- GENx-1B Fan Blade Special Condition (33-006-SC)
- Equivalent Level of Safety (ELOS) Findings:
 - o ELOS No. AT3129EN-E-P-1 Rev. 1 to 14 CFR 33.27(c)
 - o ELOS No. 8040-ELOS-08-NE05 to 14 CFR 33.77
 - o ELOS No. TC2191EN-E-P1 to 14 CFR 33.27(c)(2)(v)

GENx-2B67, -2B67B

- 14 CFR part 33, effective February 1, 1965, as amended by 33-1 through 33-21, and amendment 33-23 section 33.76.
- 14 CFR part 34, amendment 5, effective December 31, 2012. See NOTE 16 for detailed summary of the certification basis for fuel venting and exhaust emissions.
- GENx-2B Fan Blade Special Condition (33-007-SC)
- Equivalent Level of Safety (ELOS) Findings:
 - o ELOS No. 8040-ELOS-09-NE01 to 14 CFR 33.27(c)
 - o ELOS No. 8040-ELOS-09-NE02 to 14 CFR 33.77(c) and (e)
 - o ELOS No. AT2432EN-E8040-ELOS-10-NE02 to 14 CFR 33.78
 - o ELOS No. AT03382EN-E-P-1 to 14 CFR 33.83(d)
 - o ELOS No. TC2191EN-E-P1 to 14 CFR 33.27(c)(2)(v)

GENx-2B67/P

- 14 CFR part 33, effective February 1, 1965, as amended by 33-1 through 33-21, and amendment 33-23 section 33.76.
- 14 CFR part 34, amendment 5, effective December 31, 2012. See NOTE 16 for detailed summary of the certification basis for fuel venting and exhaust emissions.
- GENx-2B Fan Blade Special Condition (33-007-SC)
- Equivalent Level of Safety (ELOS) Findings:
 - o ELOS No. AT3138EN-E-P-1 to 14 CFR 33.27(c)
 - o ELOS No. AT3138EN-E-P-2 to 14 CFR 33.87(a) and (b), and 33.93
 - o ELOS No. AT3138EN-E-P-3 to 14 CFR 33.77(c) and (e)
 - o ELOS No. AT3138EN-E-P-5 to 14 CFR 33.78
 - o ELOS No. AT03382EN-E-P-1 to 14 CFR 33.83(d)
 - o ELOS No. TC2191EN-E-P1 to 14 CFR 33.27(c)(2)(v)

CERTIFICATION BASIS
(cont.)

TYPE CERTIFICATE E00078NE

MODELS	APPLICATION DATE	ISSUE/AMMENDED
GENx-1B54	December 13, 2004	March 31, 2008
GENx-1B58	May 24, 2005	March 31, 2008
GENx-1B64	December 13, 2004	March 31, 2008
GENx-1B67	May 24, 2005	March 31, 2008
GENx-1B70	December 13, 2004	March 31, 2008
GENx-1B54/P1	September 21, 2010	June 14, 2012
GENx-1B58/P1	September 21, 2010	June 14, 2012
GENx-1B64/P1	September 21, 2010	June 14, 2012
GENx-1B67/P1	September 21, 2010	June 14, 2012
GENx-1B70/P1	September 21, 2010	June 14, 2012
GENx-1B70/72/P1	September 21, 2010	June 14, 2012
GENx-1B70/75/P1	September 21, 2010	June 14, 2012
GENx-1B74/75/P1	September 21, 2010	June 14, 2012
GENx-1B75/P1	September 21, 2010	June 14, 2012
GENx-1B54/P2	October 6, 2010	April 12, 2013
GENx-1B58/P2	October 6, 2010	April 12, 2013
GENx-1B64/P2	October 6, 2010	April 12, 2013
GENx-1B67/P2	October 6, 2010	April 12, 2013
GENx-1B70/P2	October 6, 2010	April 12, 2013
GENx-1B70/72/P2	October 6, 2010	April 12, 2013
GENx-1B70/75/P2	October 6, 2010	April 12, 2013
GENx-1B74/75/P2	October 6, 2010	April 12, 2013
GENx-1B75/P2	October 6, 2010	April 12, 2013
GENx-1B78/P2	October 6, 2010	April 12, 2013
GENx-2B67	February 28, 2006	July 22, 2010
GENx-2B67B	October 15, 2010	September 12, 2011
GENx-2B67/P	October 15, 2010	November 22, 2013
GENx-1B70C/P1	December 10, 2013	February 6, 2015
GENx-1B70C/P2	December 10, 2013	February 6, 2015
GENx-1B76/P2	March 24, 2016	June 20, 2016
GENx-1B76A/P2	March 24, 2016	June 20, 2016

PRODUCTION BASIS

Production Certificate No. 108

NOTES

NOTE 1. MAXIMUM PERMISSIBLE ENGINE ROTOR SPEEDS

GENx-1B54, -1B58, -1B64, -1B67, -1B70

Low pressure rotor (N1)	2,726 RPM
High pressure rotor (N2)	13,425 RPM

NOTES:

- A) 100 percent N1 is 2,560 RPM
- B) 100 percent N2 is 11,377 RPM

GENx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1

Low pressure rotor (N1)	2,778 RPM
High pressure rotor (N2)	13,539 RPM

NOTES:

- A) 100 percent N1 is 2,560 RPM
- B) 100 percent N2 is 11,377 RPM

GENx-1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2, -1B78/P2

Low pressure rotor (N1)	2,778 RPM
High pressure rotor (N2)	13,368 RPM

NOTES:

- A) 100 percent N1 is 2,560 RPM
- B) 100 percent N2 is 11,377 RPM

GENx-2B67, -2B67B

Low pressure rotor (N1)	3,026 RPM
High pressure rotor (N2)	13,425 RPM

NOTES:

- A) 100 percent N1 is 2,835 RPM
- B) 100 percent N2 is 11,377 RPM

GENx-2B67/P

Low pressure rotor (N1)	3,026 RPM
High pressure rotor (N2)	13,368 RPM

NOTES:

- A) 100 percent N1 is 2,835 RPM
- B) 100 percent N2 is 11,377 RPM

NOTE 2. MAXIMUM PERMISSIBLE TEMPERATURES

GENx-1B54, -1B58, -1B64, -1B67, -1B70

Indicated turbine exhaust gas temperature (T49) [see NOTE 5]

Takeoff 5 minutes (see NOTE 12)	1,895°F (1,035°C)
30 seconds Maximum Transient	1,904°F (1,040°C)
Maximum Continuous	1,841°F (1,005°C)

Ground starts (manual or auto)	1,382°F (750°C)
Inflight starts (manual or auto)	1,607°F (875°C)
Inflight starts (high power fuel cut)	1,787°F (975°C)

Oil temperature limits

Continuous	320°F (160°C)
Transient (15 minutes)	350°F (177°C)

GENx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1

Indicated turbine exhaust gas temperature (T49) [see NOTE 5]

Takeoff 5 minute (see NOTE 12)	1,940°F (1,060°C)
30 seconds Maximum Transient	1,949°F (1,065°C)
Maximum Continuous	1,886°F (1,030°C)

Ground starts (manual or auto)	1,382°F (750°C)
Inflight starts (manual or auto)	1,607°F (875°C)
Inflight starts (high power fuel cut)	1,787°F (975°C)

Oil temperature limits

Continuous	320°F (160°C)
Transient (15 minutes)	350°F (177°C)

GENx-1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, 1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2, -1B78/P2

Indicated turbine exhaust gas temperature (T49) [see NOTE 5]

Takeoff 5 minute (see NOTE 12)	1,949°F (1,065°C)
30 seconds Maximum Transient	1,958°F (1,070°C)
Maximum Continuous	1,886°F (1,030°C)

Ground starts (manual or auto)	1,382°F (750°C)
Inflight starts (manual or auto)	1,607°F (875°C)
Inflight starts (high power fuel cut)	1,787°F (975°C)

Oil temperature limits

Continuous	320°F (160°C)
Transient (15 minutes)	350°F (177°C)

NOTE 2.
(cont.)

GEnx-2B67, -2B67B, -2B67/P

Indicated turbine exhaust gas temperature (T49) [see NOTE 5]

Takeoff 5 minute (see NOTE 12)	1,940°F (1,060°C)
30 seconds Maximum Transient	1,949°F (1,065°C)
Maximum Continuous	1,886°F (1,030°C)

Ground starts (manual or auto)	1,382°F (750°C)
Inflight starts (manual or auto)	1,607°F (875°C)
Inflight starts (high power fuel cut)	1,787°F (975°C)

Oil temperature limits

Continuous	320°F (160°C)
Transient (15 minutes)	350°F (177°C)

NOTE 3.

FUEL AND OIL PRESSURE LIMITS

FUEL PRESSURE LIMITS AT THE ENGINE PUMP INLET

The limit is from minimum fuel pressures of not less than the greater of true vapor pressure plus 5.0 psi or ambient plus 5.0 psi to a maximum of 70 psig.

For the GEnx-1B, on the Boeing B787 aircraft, the minimum fuel pressure limit is extended down to minimum fuel pressure of 3.5 psia and maximum vapor-to-liquid ratio (v/l) of 0.45 for up to 60 minutes followed by up to 600 minutes with minimum fuel pressure of 3.5 psia and a maximum vapor-to-liquid ratio (v/l) of 0.28.

OIL PRESSURE LIMITS

See Figure 8-1 of GEnx-1B Operating Instructions GEK 112857 and GEnx-2B Operating Instructions GEK 114113 for definition of minimum and maximum oil pressures.

NOTE 4.

GENx ACCESSORY DRIVE CHARACTERISTICS

GENx-1B54, -1B58, -1B64, -1B67, and -1B70

Accessory	Defined By	Rotation (See Comment A)	Gear Ratio to Core Rotor	Drive Shaft (RPM)	Maximum Weight LB (KG)	Maximum Overhung Moment IN-LB (N·m)	Shear Torque IN-LB (N·m)	Continuous Pad Rating HP (Inflight -total for both VFSG's)	Overload [HP]
VFSG 1	ICNR -GE- BE059	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	692 (Dual Engine) 790 (Single Engine)	See Comment C
VFSG 2	ICNR-GE- BE060	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	692 (Dual Engine) 790 (Single Engine)	See Comment C
Hydraulic Pump	ICNR-GE- BE057	CCW	0.4438	5,049.10	30.3 (13.74) WET	140 (15.81) WET	2,625-3,715 (297-420)	62	85 [5 sec]
Core Turn	0.5 Square Drive/ Dwg- 2305M71	CCW	0.6773	7,705.60	N. A.	N. A.	N. A.	N. A.	N. A.

Comments:

- A. Rotation is defined facing the pad.
- B. 100 percent engine core speed is 11,377rpm.
- C. 1,021 HP total both drive pads at flight idle, with no more than 528 HP on any one drive pad for up to 1 second [single engine].
866 HP total both drive pads at flight idle, with no more than 471 HP on any one drive pad for up to 5 minutes [dual engine].

NOTE 4.
(cont.)

GENx ACCESSORY DRIVE CHARACTERISTICS (continued)

GENx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1

Accessory	Defined By	Rotation (See Comment A)	Gear Ratio to Core Rotor	Drive Shaft (RPM)	Maximum Weight LB (KG)	Maximum Overhung Moment IN-LB (N·m)	Shear Torque IN-LB (N·m)	Continuous Pad Rating HP (Inflight -total for both VFSG's)	Overload [HP]
VFSG 1	ICNR -GE-BE059	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	676 (Dual Engine) 720 (Single Engine)	See Comment C
VFSG 2	ICNR-GE-BE060	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	676 (Dual Engine) 720 (Single Engine)	See Comment C
Hydraulic Pump	ICNR-GE-BE057	CCW	0.4438	5,049.10	30.3 (13.74) WET	140 (15.81) WET	2,625-3,715 (297-420)	62	85 [5 sec]
Core Turn	0.5 Square Drive/ Dwg-2305M71	CCW	0.6773	7,705.60	N. A.	N. A.	N. A.	N. A.	N. A.

Comments:

- A. Rotation is defined facing the pad.
- B. 100 percent engine core speed is 11,377rpm.
- C. 1,021 HP total both drive pads at flight idle, with no more than 528 HP on any one drive pad for up to 1 second [single engine].
866 HP total both drive pads at flight idle, with no more than 471 HP on any one drive pad for up to 5 minutes [dual engine].

NOTE 4.
(cont.)

GENx ACCESSORY DRIVE CHARACTERISTICS (continued)

GENx-1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2

Accessory	Defined By	Rotation (See Comment A)	Gear Ratio to Core Rotor	Drive Shaft (RPM)	Maximum Weight LB (KG)	Maximum Overhung Moment IN-LB (N·m)	Shear Torque IN-LB (N·m)	Continuous Pad Rating HP (Inflight -total for both VFSG's)	Overload [HP]
VFSG 1	ICNR-GE-BE059	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	676 (Dual Engine) 720 (Single Engine)	See Comment C
VFSG 2	ICNR-GE-BE060	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	676 (Dual Engine) 720 (Single Engine)	See Comment C
Hydraulic Pump	ICNR-GE-BE057	CCW	0.4438	5,049.10	30.3 (13.74) WET	140 (15.81) WET	2,625-3,715 (297-420)	59	85 [5 sec]
Core Turn	0.5 Square Drive/ Dwg-2305M71	CCW	0.6773	7,705.60	N. A.	N. A.	N. A.	N. A.	N. A.

Comments:

- A. Rotation is defined facing the pad.
- B. 100 percent engine core speed is 11,377rpm.
- C. 1,021 HP total both drive pads at flight idle, with no more than 528 HP on any one drive pad for up to 1 second [single engine].
866 HP total both drive pads at flight idle, with no more than 471 HP on any one drive pad for up to 5 minutes [dual engine].

NOTE 4.
(cont.)

GEnx ACCESSORY DRIVE CHARACTERISTICS (continued)

GEnx-2B67, -2B67B, and -2B67/P

Accessory	Defined by	Rotation (See Comment A)	Gear Ratio to Core Rotor	Drive Shaft (RPM)	Static Weight LB	Maximum Overhang Moment IN-LB	Shear Torque	Torque
IDG	747-8 Boeing engine specification	CCW	0.6696	4654 to 8989 (See Comment C)	IDG 126.8 QAD 5.6	900	9000 ± 400 in-lb	(in-lb) 2245 -CONTINUOUS 3575 –TRANSIENT (See Comment D) 5250 –MOMENTARY (See Comment E)
HYDRAULIC PUMP	747-8 Boeing engine specification	CCW	0.3157	2194 to 4238	40.1 DRY	261 WET	4550 ± 300 in-lb	(in-lb) 1103 - CONTINUOUS 1790 – TRANSIENT (See Comment F) 4250 – FAILURE (See Comment G)
AIR TURBINE STARTER	M50TF4062	CCW	1.1331	58.4 % N2 (5863 RPM) MAX CUT OUT	49.38	300	1685 ft-lb	(ft-lb) Cold Day APU Start 617 XBL Start 820
CORE TURN	0.5 SQUARE DRIVE	CCW	0.6773	7705.6	N.A.	N.A.	N.A.	N.A.

Comments:

- A. Rotation is defined facing the pad
- B. 100 percent engine core speed is 11,377rpm.
- C. IDG online speed: 4,600 rpm. Load is removed when input remains 4,450 RPM or less for 150 ± 50 ms.
- D. Once every 1,000 engine operating hours.
- E. Once every 5,000 engine operating hours.
- F. Peak running torque at engine start and at maximum flow for simultaneous flap and gear operation (takeoff condition).
- G. Torque experienced during an input shaft shear event.

NOTE 5. ENGINE RATINGS

Engine ratings are based on calibrated test stand performance under the following conditions:

1. Sea level static, standard pressure (14.696 psia), 59 °F
2. No customer bleed or customer horsepower extraction
3. Ideal inlet, 100% ram recovery
4. Production aircraft flight cowling
5. Production instrumentation
6. Fuel lower heating value of 18,400 BTU/lb

NOTE 6. MAXIMUM PERMISSABLE BLEED AIR EXTRACTION

GEnx-1B54, -1B58, -1B64, -1B67, and -1B70
 (applicable to engines not equipped with a booster anti-ice system)

	Stage 7 - Percent W25
Any Power Setting	3.3%

GEnx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1, -1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2
 (applicable to engines equipped with a booster anti-ice system)

Percent Corrected Fan Speed (%N1K)	Stage 7 - Percent W25
0 to 31.3	5.0%
31.3 to 66.4	4.7%
> 66.4	3.3%

Comments:

- A. 100% engine fan speed is 2,560 RPM
- B. 3.3% W25 is the maximum flow delivered to the engine inlet anti-ice system at any power setting.

GEnx-2B67, -2B67B

%N1K	CDP Bleed Percent W25	
	T2 ≥ 67°F	T2 < 67°F
0	13	13
81.1	13	13
81.1	8	10
88.2	8	10
88.2	8	8.5
91.7	8	8.5
91.7	8	8
120.0	8	8

%N1K	S4 Bleed Percent W25
0	7.28%
15.9	7.28%
21.2	7.28%
50.0	7.28%
50.0	7.85%
75.8	7.85%
75.8	7.65%
81.1	7.65%
84.7	7.85%
91.7	7.85%
108.6	6.00%
108.6	5.00%
120.0	5.00%

NOTE: 100% engine fan speed is 2,835 RPM

GEnx-2B67/P

%N1K	CDP Bleed Percent W25	
	T2 ≥ 67°F	T2 < 67°F
0	13	13
81.1	13	13
81.1	8	10
88.2	8	10
88.2	8	8.5
91.7	8	8.5
91.7	8	8
120.0	8	8

%N1K	S4 Bleed Percent W25
0	7.28%
15.9	7.28%
21.2	7.28%
50.0	7.28%
50.0	7.85%
64.6	7.85%
64.6	7.60%
77.8	7.60%
77.8	7.39%
95.9	7.39%
108.6	6.00%
108.6	5.00%
120.0	5.00%

NOTE: 100% engine fan speed is 2,835 RPM

NOTE 7. FUEL

Refer to GENx-1B Service Bulletin 73-0001 and GENx-2B Service Bulletin 73-0001 for detailed information pertaining to fuels and additives. These Service Bulletins cover the eligible fuels listed per GE Aviation Specification D50TF2. Eligible fuel classifications are:

- Class A – Aviation Kerosene
- Class C – Low Freeze Kerosene
- Class D – High Flash Kerosene
- Class E – Low Flash Kerosene

NOTE: Class B – (Jet B, JP4) is prohibited

NOTE 8. LIFE LIMITS

Life limits for critical rotating components for the GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1, -1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2 are published in Chapter 5 of the GENx Engine Manual, GEK 112851.

The GENx-2B67, -2B67B, and -2B67/P cyclic life limits are published in Chapter 5 of the GENx Engine Manual GEK 114119.

The GENx-1B and GENx-2B cyclic life limits are based on a commercial mission cycle, which consists of a start, takeoff, climb, cruise, descent, and landing. Use (or non-use) of a fan reverser for braking during landing does not affect cycle counts. Each of the following constitutes one cycle:

- (1) a flight consisting of a takeoff and landing,
- (2) a touch-and-go landing or simulated touch-and-go landing (no weight on wheels) for pilot training.

NOTE 9. THRUST SETTING PARAMETER

Power setting, power checks, and control of engine thrust output in all operations are based on Fan Speed (N1). Speed sensors are included in the engine assembly for this purpose.

NOTE 10. ICING CONDITIONS

Requirements and limitations for ground operation in icing conditions are specified in:

Operating Instructions GEK 112857 for the GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1, -1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2

Operating Instructions GEK 114113 for the GENx-2B67, -2B67B, and -2B67/P.

NOTE 11. NEGATIVE G OPERATION

During "negative-G" operation only, it is permissible to operate below minimum oil pressure for a maximum of 15 seconds, as specified in:

GENx Operating Instructions, GEK 112857, Section 8, for the GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1, -1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2 minimum oil pressure definition.

GENx Operating Instructions, GEK 114113, Section 8, for the GENx-2B67, -2B67B, and -2B67/P minimum oil pressure definition.

NOTE 12. TAKEOFF TIME LIMIT

The normal 5-minute takeoff time limit may be extended to 10 minutes for engine out contingency.

NOTE 13. TIME LIMITED DISPATCH CRITERIA

Criteria pertaining to the engine control systems' dispatch and maintenance requirements are specified in:

For the GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1, -1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2 engine models: General Electric FADEC Control System Time Limited Dispatch Summary Document, GEK 112858, and the Airworthiness Limitations Section of the GENx Engine Manual, GEK 112851, which define the various configurations and maximum operating intervals.

For the GENx-2B67, -2B67B, and -2B67/P engine models: General Electric FADEC Control System Time Limited Dispatch Summary Document, GEK 114112, and the Airworthiness Limitations Section of the GENx Engine Manual, GEK 114119, which define the various configurations and maximum operating intervals.

NOTE 14. Deleted.

NOTE 15. FAN BLADE REPAIR

Approval of repairs of the fan blade composite material in the root section of the fan blade up to the inner annulus flow path line must be coordinated with the FAA Engine Certification Office. Substantiation of the repairs must show that compliance to GENx-1B Special Condition No. 33-006-SC or GENx-2B Special Condition No. 33-007-SC is maintained.

NOTE 16. EXHAUST EMISSIONS AND FUEL VENTING

The following emissions standards promulgated in 14 CFR part 34, amendment 5, effective December 31, 2012, and 40 CFR part 87, effective July 18, 2012, have been complied with for: GENx-1B54, -1B58, -1B64, -1B67, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B54/P2, -1B58/P2, -1B64/P2 and -1B67/P2, as well as GENx-2B67, -2B67B, and 2B67/P.

Fuel Venting Emission Standards: 14 CFR 34.10(a) and 34.11; in addition, 40 CFR 87.10(a) and 87.11.

Smoke Number (SN) Emission Standards: 14 CFR 34.21(e)(2); in addition, 40 CFR 87.23(c)(l).

Carbon Monoxide (CO) Emission Standards: 14 CFR 34.21(d)(l)(ii); in addition, 40 CFR 87.23(c)(l).

Hydrocarbons (HC) Emission Standards: 14 CFR 34.21(d)(1)(i); in addition, 40 CFR 87.23(c)(l).

Oxides of Nitrogen (NOx) Emission Standards: 14 CFR 34.23(b)(l); in addition, 40 CFR 87.23(c)(3).

The following emissions standards promulgated in 14 CFR part 34, amendment 5A, effective October 23, 2013, and 40 CFR part 87, effective July 18, 2012, have been complied with for: GENx-1B70, -1B70/P1, 1B70C/P1, -B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1, -1B54/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2.

Fuel Venting Emission Standards: 14 CFR 34.10(a) and 34.11; in addition, 40 CFR 87.10(a) and 87.11.

Smoke Number (SN) Emission Standards: 14 CFR 34.21(e)(2); in addition, 40 CFR 87.23(c)(l).

Carbon Monoxide (CO) Emission Standards: 14 CFR 34.21(d)(l)(ii); in addition, 40 CFR 87.23(c)(l).

Hydrocarbons (HC) Emission Standards: 14 CFR 34.21(d)(1)(i); in addition, 40 CFR 87.23(c)(l).

Oxides of Nitrogen (NOx) Emission Standards: 14 CFR 34.23(b)(l); in addition, 40 CFR 87.23(c)(3).

In addition to the FAA's finding of compliance based on the certification requirements defined in this TCDS, the engine manufacturer has declared that the ICAO emissions standards identified in Annex 16, Volume II, Third Edition, Part III, Chapter 2, Section 2.2.2 for SN, Section 2.3.2 for CO and HC, Section 2.3.2.e.3 for NOx (also known as CAEP/8), and Part II Chapter 2 for fuel venting have also been demonstrated.

The GENx-1B54, -1B58, -1B64, -1B67, and -1B70 engine models (defined by the G01 and G02 model lists) for the B787-8 aircraft, and the GENx-2B67 (defined by the GENx-2B67G01 and GENx-2B67G02 model lists) for the B747-8 aircraft will not support the installation of the flow split valve fuel accumulator system. Fuel accumulator system installation is required in order to eliminate post-engine shutdown intermittent fuel releases and observed vapors.

NOTE 17. INDUCTION SYSTEM ICING

Demonstration of compliance to 14 CFR part 33, section 33.68, Induction System Icing, is installation specific to the Boeing B787 model aircraft for the GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1, -1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2 engine models, and B747-8 and B747-8F for the GENx-2B67, -2B67B, and -2B67/P engine models. Installation of these engine models on different airplane models or type will require a separate evaluation and finding of compliance to section 33.68.

NOTE 18. Deleted.

NOTE 19. AIRCRAFT MODELS

The GENx-1B54, -1B58, -1B64, -1B67, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B54/P2, -1B58/P2, -1B64/P2, and -1B67/P2 engine models are limited to installation on the Boeing B787-8 model aircraft only with respect to the installed power response characteristics.

The GENx-1B70, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2 engine models are limited to installation on the Boeing B787-8 and B787-9 model aircraft only with respect to the installed power response characteristics.

Part numbers found in the following kit numbers are not eligible for installation on the Boeing B787-9 aircraft model:

- 739L100G01 - GENx-1B70G03
- 739L101G01 - GENx-1B70G04
- 739L102G01 - GENx-1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1
- 739L103G01 - GENx-1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, and -1B78/P2

The GENx-2B67, -2B67B, and -2B67/P engine models are limited to installation on the Boeing B747-8 and B747-8F model aircraft only with respect to the installed power response characteristics.

Any bill-of-material changes that could significantly and adversely affect power response will have to be reassessed.

NOTE 20. Deleted.

NOTE 21. EXTENDED TWIN ENGINE OPERATIONS (ETOPS)

The GENx-1B54, -1B58, -1B64, -1B67, and -1B70 engine models (defined by the G03, G04 and G05 model lists), the GENx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1, -1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2 engine models, and the GENx-2B67, -2B67B, and -2B67/P engine models comply with the requirements of 14 CFR part 33, sections 33.4, Appendix A, A33.3(c), 33.71(c)(4), and 33.201, and are therefore eligible for installation on ETOPS and Early ETOPS approved airplanes. The demonstrated diversion time is 330 minutes at maximum continuous power plus 15 minutes at hold and go-around power. ETOPS eligibility does not constitute airplane or operational level approvals necessary to conduct ETOPS flights.

For the GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70C/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1, -1B54/P2, -1B58/P2, -1B64/P2, -1B67/P2, -1B70/P2, -1B70C/P2, -1B70/72/P2, -1B70/75/P2, -1B74/75/P2, -1B75/P2, -1B76/P2, -1B76A/P2 and -1B78/P2 engine models installed on B787 aircraft, the engine fuel pump must be replaced prior to the next ETOPS flight after any single suction feed operation event of duration greater than 30 minutes. Suction feed operation is defined by engine pump inlet fuel pressure less than the greater of true vapor pressure plus 5.0 psi or ambient plus 5.0 psi.

NOTE 22. Deleted.

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