Federal Aviation Administration

Memorandum

Date: September 1, 2015

To: Manager, Certificate Management and Safety Oversight Branch, ACE-120A

From: Manager, Small Airplane Directorate, ACE-100

Prepared by: Donald J Young, Certificate Management and Safety Oversight Branch, ACE-120A

Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for Honda Aircraft, Model HA-420 (HondaJet), 14 CFR part 23, Amendment 23-62: Project TC9438AT-A

ELOS Memo#: ACE-15-15

Regulatory Ref: 14 CFR 23.45, 23.51, 23.63, 23.67, 23.73, 23.77, 23.161, 23.181, 23.221, 23.251, 23.253, 23.571, 23.1195, 23.1197, 23.1199, 23.1201; 23.1545, and 23.1583

This memorandum informs the certificate management aircraft certification office of an evaluation made by the Accountable Directorate on the establishment of an equivalent level of safety finding for the Honda Aircraft model HA-420.

Background:

Honda Aircraft Company (Honda), located in Greensboro, North Carolina made application to the Atlanta Aircraft Certification Office for type certification of a new very light jet airplane, the HA-420, on October 11, 2006. On October 10, 2013, Honda requested an extension with an effective application date of October 1, 2013. This effective application date necessitates the inclusion of 14 CFR part 23, amendment 23-62 (76 FR 75736, December 2, 2011), in the certification basis.

The Honda Aircraft model HA-420 is powered by two General Electric Honda Aero Engines model HF120 medium bypass turbofan engines mounted in a unique over-the-wing configuration. The HA-420 airplane avionics suite incorporates a Garmin G3000 Integrated Flight Deck with three displays. Two of the displays are configured as pilot and copilot Primary Flight Displays (PFD) and the third is configured as a Multi-Function Display and is located between the pilot and copilot PFDs. Primary flight information is indicated to the crew on the PFDs during normal operation.

The latest amendment (amendment 23-62) to 14 CFR part 23 became effective January 31, 2012. It amended the applicable regulations for part 23 turbofan- and turbojet-powered airplanes to

reflect the current needs of industry, accommodate future trends, address emerging technologies, and provide for future airplane operations.

Recently, while working several new certification projects that incorporated amendment 23-62, some unintentional errors were discovered by the FAA. The Small Airplane Directorate reviewed amendment 23-62, identified the errors, and drafted a corrected version of regulations. The Small Airplane Directorate is drafting a technical amendment to correct amendment 23-62. To accommodate applicants for new part 23 airplanes and avoid project delays while the technical amendment progresses, Issue Paper F-5 was created to show an equivalent level of safety to the intent of amendment 23-62.

Applicable regulations:

§§ 23.45, 23.51, 23.63, 23.67, 23.73, 23.77, 23.161, 23.181, 23.221, 23.251; 23.253, 23.571, 23.1195, 23.1197, 23.1199, 23.1201; 23.1545, and 23.1583

Regulations requiring an ELOS finding:

§§ 23.45, 23.51, 23.63, 23.67, 23.73, 23.77, 23.161, 23.181, 23.221, 23.251; 23.253, 23.571, 23.1195, 23.1197, 23.1199, 23.1201; 23.1545, and 23.1583

Description of compensating design features or alternative Methods of Compliance (MoC) which allow the granting of the ELOS (including changes, limitations, or equipment needed for equivalency)

The FAA has determined that an ELOS finding is the appropriate means for showing that the HA-420 meets the intent of amendment 23-62. The following table documents the ELOS to amendment 23-62 for the HA-420.

CFR 14 Reference	**Equivalent Interpretations**
§ 23.45, General (Performance)	
§ 23.45(h)(4) change:	"§ 23.67(c)(4)" to "§ 23.67(d)(4)"
§ 23.51, Takeoff speeds	
§ 23.51(c)(4) change:	"§ 23.67(c)(1) and (c)(2)" to "§ 23.67(d)(1) and (d)(2)"
§ 23.63, Climb: General	
§ 23.63(c), including (c)(1) and (c)(2), change to read:	(c) For each of the following normal, utility, and acrobatic category airplanes: (1) reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight, (2) single engine turbines, and (3) multiengine turbine airplanes of 6,000 pounds or less maximum weight, compliance must be shown at weights as a function of airport altitude and ambient temperature within the operational limits

CFR 14 Reference	Equivalent Interpretations
	established for takeoff and landing, respectively, with: (1) For reciprocating engine-power airplanes of more than 6,000 pounds maximum weight: (i) Sections 23.65(b) and 23.67(b)(1) and (2), where appropriate, for takeoff and (ii) Section 23.67(b)(2), where appropriate, and § 23.77(b), for landing, (2) For single-engine turbines: (i) Section 23.65(b), for takeoff, and (ii) Section 23.77(b) for landing. (3) For multiengine turbine airplanes of 6,000 pounds or less maximum weight: (i) For takeoff, § 23.65(b) and (A) If a turbopropeller-power airplane, § 23.67(b)(1), and (2), where appropriate. (B) If a jet airplane, § 23.67(c)(1), and (2), where appropriate. (ii) For landing, § 23.77(b) and (A) If a turbopropeller-powered airplane, § 23.67(b)(2), where appropriate. (B) If a jet airplane, § 23.67(c)(2), where appropriate.
§ 23.63(d)(1) change to read:	(d) * * * (1) If a normal, utility, or acrobatic category, turbopropeller-powered airplane: (i) Section 23.67(b)(1), and (2), where appropriate, for takeoff, and (ii) Section 23.67(b)(2), where appropriate, and § 23.77(c), for landing.
§ 23.63(d)(2) change to read:	(d) * * * (2) If a jet or commuter category airplane: (i) Section 23.67(d)(1), (2), and (3), where appropriate, for takeoff, and (ii) Section 23.67(d)(3), and (4), where appropriate, and § 23.77(c) for landing.

CFR 14 Reference	**Equivalent Interpretations**
§ 23.67, Climb: One engine inoperative	
§ 23.67(a) change:	"reciprocating engine-powered" to "reciprocating multiengine-powered"
§ 23.67(b) change:	"reciprocating engine-powered" to "reciprocating multiengine-powered" and "turbopropeller-powered" to "multiengine turbopropeller-powered
§ 23.67(c) change:	"jets" to "multiengine jets"
§ 23.67(d) change:	"jets" to "multiengine jets"
§ 23.67(d)(1)(i) change:	"propeller" to "propeller, if applicable,"
§ 23.67(d)(2)(i) change:	"propeller" to "propeller, if applicable,"
§ 23.67(d)(3)(i) change:	"propeller" to "propeller, if applicable,"
§ 23.67(d)(4)(i) change:	"propeller" to "propeller, if applicable,"
§ 23.73, Reference landing approach speed	
§ 23.73(b) change to read:	"Each of the following normal, utility, and acrobatic category airplanes: (1) reciprocating engine-powered airplane of more than 6,000 pounds maximum weight, (2) turbine powered airplane of 6,00 pounds or less maximum weight, and (3) single engine turbine powered airplane of more than 6,000 pounds maximum weight,"
§ 23.73(c) change:	"jets of more than" to "multiengine turbine powered airplanes over"
§ 23.77, Balked landing	
§ 23.77(b) change to read:	"Each of the following normal, utility, and acrobatic category airplanes: (1) reciprocating engine-powered airplane of more than 6,000 pounds maximum weight, (2) turbine powered airplane of 6,000 pounds or less maximum weight, and (3) single engine turbine powered airplane of more than 6,000 pounds maximum weight,

CFR 14 Reference	**Equivalent Interpretations**
§ 23.161, Trim	
§ 23.161(d) change:	"§ 23.67(a), (b)(2), or (c)(3)," to "§ 23.67(a), (b)(2), (c)(2), or (d)(3),"
§ 23.181, Dynamic stability	
§ 23.181(c) change:	"(b)(2)" to "the fixed position testing of (b)"
§ 23.221, Spinning	
§ 23.221(a)(2)(ii) change:	"§ 23.201(e)" to "§ 23.201(f)"
§ 23.221(b) change:	"§ 23.807(b)(7)" to "§ 23.807(b)(6)"
§ 23.221(c) change:	"§ 23.807(b)(6) to "§ 23.807(b)(5)"
§ 23.251, Vibration and buffeting	
§ 23.251(a) change:	"turbojets" to "jets"
§ 23.253, High speed characteristics	
§ 23.253(b)(2) change:	"turbojets" to "jets"
§23.571, Metallic pressurized cabin structures	
§ 23.571 change:	"For normal," to "(a) For normal,"
§ 23.571(a) change:	"(a) A fatigue . . ." to "(1) A fatigue . . ."
§ 23.571(b) change:	"(b) A fail safe . . ." to (2) A fail safe . . ."
§ 23.571(c) change:	"(c) The damage . . ." to "(3) The damage . . ."
§ 23.571(d) change:	"(d) If certification for operation . . ." to "(b) If evaluation of the metallic structure of the pressure cabin is performed in accordance with (a)(1) or (a)(2) and certification for operation …"
§ 23.1195, Fire extinguishing systems	
§ 23.1195(a) change:	"For all airplanes . . ." to "For commuter category airplanes, and all airplanes . . ."

CFR 14 Reference	**Equivalent Interpretations**
§ 23.1197, Fire extinguishing agents	
§ 23.1197 introduction sentence, change:	"For all airplanes . . ." to "For commuter category airplanes, and all airplanes . . ."
§ 23.1199, Fire extinguishing containers	
§ 23.1199 introduction sentence, change:	"For all airplanes . . ." to "For commuter category airplanes, and all airplanes . . ."
§ 23.1201, Fire extinguishing materials	
§ 23.1201 introduction sentence, change:	"For all airplanes . . ." to "For commuter category airplanes, and all airplanes . . ."
§ 23.1545, Airspeed indicator	
§ 23.1545(d) change:	"(b)(4)" to "(b)(3)"
§ 23.1583, Operating limitations	
§ 23.1583(c)(3) change to read:	"For each of the following normal, utility, and acrobatic category airplanes: (1) reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight, (2) single-engine turbines, and (3) multiengine turbines of 6,000 pounds or less maximum weight . . ."
§ 23.1583(c)(3)(i) change:	"§ 23.63(c)(1)" to "§ 23.63(c)(1)(i), (c)(2)(i), or (c)(3)(i), as appropriate"
§ 23.1583(c)(3)(ii) change:	"§ 23.63(c)(2)" to "§ 23.63(c)(1)(ii) or (c)(3)(ii), as appropriate"
§ 23.1583(c)(4) change:	"jets" to "turbines"
§ 23.1583(c)(4)(i) change:	"§ 23.63(d)(1)" to "§ 23.63(d)(1)(i), or (d)(2)(i), as appropriate"
§ 23.1583(c)(5) change:	"jets" to "turbines"
§ 23.1583(c)(5)(i) change:	"§ 23.63(d)(1)" to "§ 23.63(d)(1)(ii) or (d)(2)(ii), as appropriate"

Explanation of how design features or alternative Methods of Compliance (MoC) provide an equivalent level of safety intended by the regulation:

The FAA has determined that an ELOS finding is the appropriate means for showing that the HA-420 meets the intent of amendment 23-62. The following table documents the ELOS to amendment 23-62 for the HA-420.

FAA approval and documentation of the ELOS finding:

The FAA has approved the aforementioned ELOS finding in project issue paper F-5. This memorandum provides standardized documentation of the ELOS finding that is non-proprietary and can be made available to the public. The Accountable Directorate has assigned a unique ELOS memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS memorandum number must be listed in the Type Certificate Data Sheet under the Certification Basis section (TCs & ATCs) or in the Limitations and Conditions section of the STC.

Equivalent Level of Safety findings has been made for the following regulation(s):

23.45	General (Performance)
23.51	Takeoff speeds
23.63	Climb: General
23.67	Climb: One engine inoperative
23.73	Reference landing approach speed
23.77	Balked landing
23.161	Trim
23.181	Dynamic Stability
23.221	Spinning
23.251	Vibration and buffeting
23.253	High speed characteristics
23.571	Metallic pressurized cabin structures
23.1195	Fire extinguishing systems
23.1197	Fire extinguishing agents
23.1199	Fire extinguishing characteristics
23.1201	Fire extinguishing materials
23.1545	Airspeed indicator
23.1583	Operating limitations

(Documented in ELOS Memo ACE-15-15)

//SIGNED// 9/1/2015

Earl Lawrence, Manager, Small Airplane Directorate, Aircraft Certification Service — Date

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