

**SUBJECT** : Use of Automatic Power Reserve for Go-Around Performance Credit

**REQUIREMENTS incl. Amdt.** : CS 25.117, CS 25.119(a)(b), CS 25.121(d1)(d2), CS 25.904, CS 25.1309, Appendix I, amdt. 15

**ASSOCIATED IM/MoC** : Yes ☐ / No ☒

**ADVISORY MATERIAL** :

**INTRODUCTORY NOTE:**

The FAA Special Condition 25-700-SC has been issued by the FAA for the Textron Aviation project 700 (FAA TCDS T00015WI). The special condition is considered by EASA acceptable for the EASA validation of the Textron project 700. This special condition has been classified as important; as such it shall be subject to public consultation in accordance with EASA Management Board decision 12/2007 dated 11 September 2007, Article 3 (2.) which states:


*"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."*

Note: this consultation is for the EASA Special Condition SC-E25.904-01 and not for the FAA Special Conditions 25-700-SC. Comments and the corresponding resolution will affect the EASA Special condition only.

**IDENTIFICATION OF ISSUE:**

See sections **"background"**, **"Novel or Unusual Design Features"**, **"Discussion"**, in FAA Special Condition 25-700-SC attached.

Considering the above, the following Special Condition is proposed:

 European Union Aviation Safety Agency	<p><b>Consultation paper</b></p> <p><b>Special Condition</b></p>	<p>Doc. No. : SC-E25.904-01</p> <p>Issue : 1</p> <p>Date : 19 Jan 2021</p> <p>Proposed <input type="checkbox"/> Final <input checked="" type="checkbox"/></p> <p>Deadline for comments: 04 Jan 2021</p>
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### **Special condition SC-E25.904-01**

#### **Use of Automatic Power Reserve for Go-Around Performance Credit**

##### **1. APPLICABILITY**

Textron Aviation Inc. Model 700.

##### **2. Special Condition**

See sections **“The Special Conditions”** in FAA Special Condition 25-700-SC attached.



### 3. Attachments

#### FAA special condition 25-700-SC



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must always be possible to reduce angle of attack by conventional use of the controls. The pilot must retain good lateral and directional control, by conventional use of the controls, throughout the maneuver.

#### 6. Atmospheric Disturbances

Operation of the high incidence protection system must not adversely affect aircraft control during expected levels of atmospheric disturbances, nor impede the application of recovery procedures in case of wind-shear. This must be demonstrated in non-icing and icing conditions.

#### 7. Proof of Compliance

In addition to the requirements of § 25.21, the following requirement applies:

(b) The flying qualities must be evaluated at the most unfavorable center-of-gravity position.

8. Sections 25.145(a), 25.145(b)(6), and 25.1323(d)

The following requirements apply:

• For § 25.145(a), add “ $V_{min}$ ” in lieu of “stall identification.”

• For § 25.145(b)(6), and “ $V_{min}$ ” in lieu of “ $V_{sw}$ .”

• For § 25.1323(d), add “From 1.23  $V_{SR}$  to  $V_{min}$  . . .,” in lieu of, “1.23  $V_{SR}$  to the speed at which stall warning begins . . .,” and, “. . . speeds below  $V_{min}$  . . .” in lieu of, “. . . speeds below stall warning.”

#### Special Conditions Part II

##### Credit for Robust Envelope Protection in Icing Conditions

The following special conditions are in lieu of the specified paragraphs of §§ 25.103, 25.105, 25.107, 25.121, 25.123, 25.125, 25.143, and 25.207.

1. Define the stall speed as provided in these special conditions, Part I, in lieu of § 25.103.

2. In lieu of § 25.105(a)(2)(i), the following requirement applies:

(i) The  $V_2$  speed scheduled in non-icing conditions does not provide the maneuvering capability specified in § 25.143(h) for the takeoff configuration, or

3. In lieu of § 25.107(c) and (g), the following requirements apply, with additional sections (c') and (g'):

Takeoff speeds:

(c) In non-icing conditions  $V_2$ , in terms of calibrated airspeed, must be selected by the applicant to provide at least the gradient of climb required by § 25.121(b) but may not be less than—

(1)  $V_{2min}$ ;

(2)  $V_R$  plus the speed increment attained (in accordance with § 25.111(c)(2)) before reaching a height of 35 feet above the takeoff surface; and

(3) A speed that provides the maneuvering capability specified in § 25.143(h).

(c') In icing conditions with the “takeoff ice” accretion defined in part 25, appendix C,  $V_2$  may not be less than—

(1) The  $V_2$  speed determined in non-icing conditions; and

(2) A speed that provides the maneuvering capability specified in § 25.143(h).

(g) In non-icing conditions,  $V_{FTO}$ , in terms of calibrated airspeed, must be selected by the applicant to provide at least the gradient of climb required by § 25.121(c), but may not be less than—

(1) 1.18  $V_{SR}$ ; and

(2) A speed that provides the maneuvering capability specified in § 25.143(h).

(g') In icing conditions with the “final takeoff ice” accretion defined in part 25, appendix C,  $V_{FTO}$ , may not be less than—

(1) The  $V_{FTO}$  speed determined in non-icing conditions.

(2) A speed that provides the maneuvering capability specified in § 25.143(h).

4. In lieu of §§ 25.121(b)(2)(ii)(A), 25.121(c)(2)(ii)(A), and 25.121(d)(2)(ii), the following requirements apply:

In lieu of § 25.121(b)(2)(ii)(A):

(A) The  $V_2$  speed scheduled in non-icing conditions does not provide the maneuvering capability specified in § 25.143(h) for the takeoff configuration; or

In lieu of § 25.121(c)(2)(ii)(A):

(A) The  $V_{FTO}$  speed scheduled in non-icing conditions does not provide the maneuvering capability specified in § 25.143(h) for the en-route configuration; or

In lieu of § 25.121(d)(2)(ii):

(d)(2) The requirements of subparagraph (d)(1) of this paragraph must be met: (ii) In icing conditions with the approach ice accretion defined in appendix C, in a configuration corresponding to the normal all-engines-operating procedure in which  $V_{min1g}$  for this configuration does not exceed 110% of the  $V_{min1g}$  for the related all-engines-operating landing configuration in icing, with a climb speed established with normal landing procedures, but not more than 1.4  $V_{SR}$  ( $V_{SR}$  determined in non-icing conditions).

5. In lieu of § 25.123(b)(2)(i), the following requirements apply:

(i) The minimum en-route speed scheduled in non-icing conditions does not provide the maneuvering capability specified in § 25.143(h) for the en-route configuration; or

6. In lieu of §§ 25.125(b)(2)(ii)(B) and 25.125(b)(2)(ii)(C), the following requirements apply:

(B) A speed that provides the maneuvering capability specified in § 25.143(h) with the landing ice accretion defined in part 25, appendix C.

(C) 1.17  $V_{min1g}$ .

7. In lieu of § 25.143(j)(1), the following requirement applies:

(1) The airplane is controllable in a pull-up maneuver up to 1.5 g load factor or lower if limited by angle of attack protection; and

8. In lieu of § 25.207, *Stall warning*, to read as the requirements defined in these special conditions Part I, Section 4.

Issued in Renton, Washington, on July 31, 2017.

Victor Wicklund,

Manager, Transport Standards Branch, Aircraft Certification Service.

[FR Doc. 2017-17072 Filed 8-11-17; 8:45 am]

BILLING CODE 4910-13-P

#### DEPARTMENT OF TRANSPORTATION

##### Federal Aviation Administration

##### 14 CFR Part 25

[Docket No. FAA-2017-0484; Special Conditions No. 25-700-SC]

##### Special Conditions: Textron Aviation Inc. Model 700 Airplanes; Use of Automatic Power Reserve for Go-Around Performance Credit

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

**SUMMARY:** These special conditions are issued for the Textron Aviation Inc. (Textron) Model 700 airplane. This airplane will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport-category airplanes. This design feature is an Automatic Takeoff Thrust Control System (ATTCS), referred to as an Automatic Power Reserve (APR), to set the performance level for approach-climb operation after an engine failure. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**DATES:** This action is effective on Textron on August 14, 2017. Send your comments by September 28, 2017.

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**ADDRESSES:** Send comments identified by docket number FAA-2017-0484 using any of the following methods:

- **Federal eRegulations Portal:** Go to <http://www.regulations.gov> and follow the online instructions for sending your comments electronically.

- **Mail:** Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue SE., Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.

- **Hand Delivery or Courier:** Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

- **Fax:** Fax comments to Docket Operations at 202-493-2251.

**Privacy:** The FAA will post all comments it receives, without change, to <http://www.regulations.gov>, including any personal information the commenter provides. Using the search function of the docket Web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the **Federal Register** published on April 11, 2000 (65 FR 19477-19478).

**Docket:** Background documents or comments received may be read at <http://www.regulations.gov> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Joe Jacobsen, FAA, Airplane and Flightcrew Interface, ANM-111, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone 425-227-2011; facsimile 425-227-1320.

**SUPPLEMENTARY INFORMATION:** The substance of these special conditions has been subject to the notice and comment period in several prior instances and has been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. Therefore, because a delay would significantly affect the certification of the airplane, the FAA has determined that prior public notice

and comment are unnecessary and impracticable.

In addition, since the substance of these special conditions has been subject to the public comment process in several prior instances with no substantive comments received, the FAA finds it unnecessary to delay the effective date and finds that good cause exists for adopting these special conditions upon publication in the **Federal Register**.

The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

#### Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

#### Background

On November 20, 2014, Textron applied for a type certificate for their new Model 700 airplane. The Model 700 airplane is a turboprop-powered executive-jet airplane with seating for two crewmembers and 12 passengers. This airplane will have a maximum takeoff weight of 38,514 pounds.

#### Type Certification Basis

Under the provisions of Title 14, Code of Federal Regulations (14 CFR) 21.17, Textron must show that the Model 700 airplane meets the applicable provisions of part 25, as amended by Amendments 25-1 through 25-139, 25-141, and 25-143.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Textron Model 700 airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Model 700 airplane must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.17(a)(2).

#### Novel or Unusual Design Features

The Model 700 airplane will incorporate the following novel or unusual design feature: An Automatic Takeoff Thrust Control System, referred to as an Automatic Power Reserve, to set the performance level for approach-climb operation after an engine failure.

#### Discussion

Textron proposes using the ATTCS function of the Model 700 airplane during go-around and requests approach-climb performance credit for the use of the additional power. The Model 700 powerplant control system comprises a Full Authority Digital Electronic Control (FADEC) for the AS907-2-1S engine. The control system includes an ATTCS feature, referred to as Maximum Takeoff Thrust (MTO), and in the airplane flight manual (AFM), Automatic Power Reserve.

Section 25.904 and part 25, appendix I, limit the application of performance credit for ATTCS to takeoff only. Because the airworthiness regulations do not contain appropriate safety standards for approach-climb performance using ATTCS, special conditions are required to ensure a level of safety equivalent to that established in the regulations.

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

#### Applicability

As discussed above, these special conditions are applicable to the Textron Model 700 airplane. Should Textron apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

#### Conclusion

This action affects only certain novel or unusual design features on one model of airplane. It is not a rule of general applicability.



#### List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

#### The Special Conditions

The Textron Model 700 airplane must comply with the requirements of 14 CFR 25.904, and appendix I, and the following requirements for the go-around phase of flight:

##### 1. Definitions

a. Takeoff/go-around (TOGA): Throttle lever in takeoff or go-around position.

b. Automatic Takeoff Thrust Control System: The ATTCS in Model 700 airplanes is defined as the entire automatic system available during takeoff and in go-around mode, including all devices, both mechanical and electrical, that sense engine failure, transmit signals, actuate fuel controls or power levers (or increase engine power by other means on operating engines to achieve scheduled thrust or power

increase), and furnish cockpit information on system operation.

##### c. Critical time interval:

(1) When conducting an approach for landing using ATTCS, the critical time interval is defined as follows:

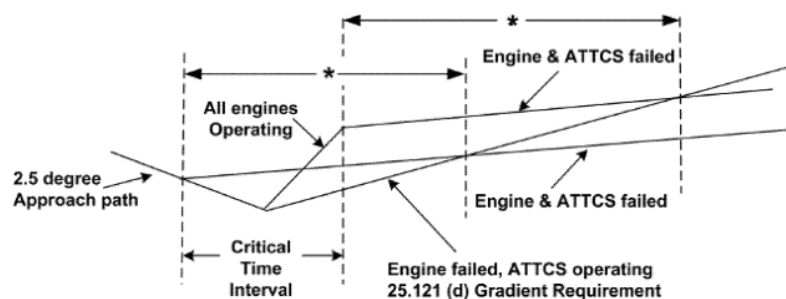
(i) The critical time interval begins at a point on a 2.5-degree approach glide path from which, assuming a simultaneous engine and ATTCS failure, the resulting approach-climb flight path intersects a flight path originating at a later point on the same approach path that corresponds to the part 25 one-engine-inoperative approach-climb gradient. The period of time from the point of simultaneous engine and ATTCS failure, to the intersection of these flight paths, must be no shorter than the time interval used in evaluating the critical time interval for takeoff, beginning from the point of simultaneous engine and ATTCS failure and ending upon reaching a height of 400 feet.

(ii) The critical time interval ends at the point on a minimum performance, all-engines-operating go-around flight path from which, assuming a

simultaneous engine and ATTCS failure, the resulting minimum approach-climb flight path intersects a flight path corresponding to the part 25 minimum one-engine-inoperative approach-climb gradient. The all-engines-operating go-around flight path, and the part 25 one-engine-inoperative approach-climb gradient flight path, originate from a common point on a 2.5-degree approach path. The period of time from the point of simultaneous engine and ATTCS failure, to the intersection of these flight paths, must be no shorter than the time interval used in evaluating the critical time interval for the takeoff, beginning from the point of simultaneous engine and ATTCS failure and ending upon reaching a height of 400 feet.

(2) The critical time interval must be determined at the altitude resulting in the longest critical time interval for which one-engine-inoperative approach-climb performance data are presented in the airplane flight manual.

(3) The critical time interval is illustrated in the following figure:



\* The engine and ATTCS failed time interval must be no shorter than the time interval from the point of simultaneous engine and ATTCS failure to a height of 400 feet used to comply with I25.2(b) for ATTCS use during takeoff.

2. Performance and system reliability requirements: The applicant must comply with the performance and ATTCS reliability requirements as follows:

a. An ATTCS failure or a combination of failures in the ATTCS during the critical time interval:

(1) Must not prevent the insertion of the maximum approved go-around thrust or power, or must be shown to be a remote event.

(2) Must not result in a significant loss or reduction in thrust or power, or must be shown to be an extremely improbable event.

b. The concurrent existence of an ATTCS failure and an engine failure

during the critical time interval must be shown to be extremely improbable.

c. All applicable performance requirements of part 25 must be met with an engine failure occurring at the most critical point during go-around with the ATTCS functioning.

d. The probability analysis must include consideration of ATTCS failure occurring after the time at which the flightcrew last verifies that the ATTCS is in a condition to operate until the beginning of the critical time interval.

e. The propulsive thrust obtained from the operating engine, after failure of the critical engine during a go-around used to show compliance with the one-

engine-inoperative climb requirements of § 25.121(d), may not be greater than the lesser of:

(1) The actual propulsive thrust resulting from the initial setting of power or thrust controls with the ATTCS functioning, or

(2) 111 percent of the propulsive thrust resulting from the initial setting of power or thrust controls with the ATTCS failing to reset thrust or power, and without any action by the flightcrew to reset thrust or power.

##### 3. Thrust setting

a. The initial go-around thrust setting on each engine at the beginning of the go-around phase may not be less than any of the following:

(1) That required to permit normal operation of all safety-related systems and equipment dependent upon engine thrust or power lever position; or

(2) That are shown to be free of hazardous engine-response characteristics, and not to result in any unsafe airplane operating or handling characteristics when thrust or power is advanced from the initial go-around position to the maximum approved power setting.

b. For approval to use an ATCS for go-arounds, the thrust-setting procedure must be the same for go-arounds initiated with all engines operating as for go-around initiated with one engine inoperative.

**4. Powerplant controls**

a. In addition to the requirements of § 25.1141, no single failure or malfunction, or probable combination thereof, of the ATCS, including associated systems, may cause the failure of any powerplant function necessary for safety.

b. The ATCS must be designed to:

(1) Apply thrust or power to the operating engine(s), following any one-engine failure during a go-around, to achieve the maximum approved go-around thrust without exceeding the engine operating limits;

(2) Permit manual decrease or increase in thrust or power up to the maximum go-around thrust approved for the airplane, under the existing conditions, through the use of the power lever. For airplanes equipped with limiters that automatically prevent the engine operating limits from being exceeded under existing ambient conditions, other means may be used to increase the thrust in the event of an ATCS failure, provided that the means:

(i) Is located on or forward of the power levers;

(ii) Is easily identified and operated under all operating conditions by a single action of either pilot with the hand that is normally used to actuate the power levers; and

(iii) Meets the requirements of § 25.777(a), (b), and (c).

(3) Provide a means to verify to the flightcrew, before beginning an approach for landing, that the ATCS is in a condition to operate (unless it can be demonstrated that an ATCS failure, combined with an engine failure during an entire flight, is extremely improbable); and

(4) Provide a means for the flightcrew to deactivate the automatic function. This means must be designed to prevent inadvertent deactivation.

5. Powerplant instruments: In addition to the requirements of § 25.1305:

a. A means must be provided to indicate when the ATCS is in the OFF or FAILED condition; and

b. If the inherent flight characteristics of the airplane do not provide adequate warning that an engine has failed, a warning system that is independent of the ATCS must be provided to give the pilot a clear warning of any engine failure during a go-around.

Issued in Renton, Washington, on August 8, 2017.

**Victor Wicklund,**

*Manager, Transport Standards Branch, Policy and Innovation Division, Aircraft Certification Service.*

[FR Doc. 2017-17073 Filed 8-11-17; 8:45 am]

**BILLING CODE 4910-13-P**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 71**

[Docket No. FAA-2017-0222; Airspace  
Docket No. 17-AWP-8]

**Amendment of Class D and E  
Airspace; Hilo, HI**

**AGENCY:** Federal Aviation  
Administration (FAA), DOT.

**ACTION:** Final rule, technical  
amendment, correction.

**SUMMARY:** This action corrects a final rule, technical amendment published in *Federal Register* on June 22, 2017, that amends Class E airspace designated as an extension at Hilo International, General Lyman Field, Hilo, HI. The airport name is corrected to Hilo International Airport, Hilo, HI, removing "General Lyman Field" from the airport name to match the FAA's aeronautical database. This technical amendment also corrects the airport name in Class D, Class E surface area airspace, and Class E airspace extending upward from 700 feet above the surface.

**DATES:** Effective 0901 UTC, August 17, 2017. The Director of the Federal Register approves this incorporation by reference action under Title 1, Code of Federal Regulations, Part 51, subject to the annual revision of FAA Order 7400.11 and publication of conforming amendments.

**FOR FURTHER INFORMATION CONTACT:**  
Robert LaPlante, Federal Aviation  
Administration, Operations Support  
Group, Western Service Center, 1601  
Lind Avenue SW., Renton, WA 98057;  
telephone (425) 203-4566.

**SUPPLEMENTARY INFORMATION:**

**History**

The FAA published a final rule, technical amendment in the *Federal Register* (82 FR 28404, June 22, 2017) Docket No. FAA-2017-0222, amending Class E Airspace designated as an extension, removing the Notice to Airmen (NOTAM) part-time status at Hilo International, General Lyman Field, Hilo, HI. Subsequent to publication, the FAA found the airport name was incorrect and is now corrected from Hilo International, General Lyman Field, to Hilo International Airport.

In making the airport name change in Class E airspace designated as an extension, the FAA realized that the airport name change for Hilo International Airport also affects Class D airspace, Class E surface area airspace, and Class E airspace extending upward from 700 feet above the surface. This technical amendment correction includes amending the above airspace areas by removing General Lyman Field from the airport name, and does not affect the boundaries or operating requirements of the airport in the associated airspace.

**Authority:** 49 U.S.C. 106(f), 106(g); 40103, 40113, 40120; E.O. 10854, 24 FR 9565, 3 CFR, 1959-1963 Comp., p. 389.

**Correction to Final Rule**

■ Accordingly, pursuant to the authority delegated to me, in the *Federal Register* of June 22, 2017 (82 FR 28404) FR Doc. 2017-13048, Amendment of Class E Airspace; Hilo HI, is corrected as follows:

**§ 71.1 [Amended]**

*Paragraph 5000 Class D Airspace.*

\* \* \* \* \*

**AWP HI D Hilo, HI [Amended]**

Hilo International Airport, HI  
(Lat. 19°43'13" N., long. 155°02'55" W.)

That airspace extending upward from the surface to and including 2,500 feet MSL within a 4.3-mile radius of Hilo International Airport. This Class D airspace area is effective during the specific dates and times established in advance by a Notice to Airmen. The effective date and time will thereafter be continuously published in the Pacific Chart Supplement.

*Paragraph 6002 Class E Airspace Areas  
Designated as a Surface Area.*

\* \* \* \* \*

**AWP HI E2 Hilo, HI [Amended]**

Hilo International, HI  
(Lat. 19°43'13" N., long. 155°02'55" W.)

That airspace extending upward from the surface within a 4.3-mile radius of Hilo International Airport. This Class E airspace area is effective during the specific dates and