

DISPOSITION OF FAA COMMENTS

Policy Statement PS-ANM-25-20, High-Energy Wide-Area Blunt Impact (HEWABI) for Composite Structures
Prepared by Mark Freisthler, ANM-115

No.	Comment	Requested Change	Disposition
<p>Commenter: Allen Rauschendorfer ANM-120S <i>NOTE: The majority of the comments below are addressing the “Policy” section, assuming the rest of the sections will be revised appropriately.</i></p>			
1.	<p>The policy statement adds new requirements to “consider” Category 5 damage scenarios for certification of composite aircraft that were not previously required for recent certification of composite or metal aircraft.</p>	<p>Make clear that the policy statement addresses HEWABI damage up to the upper bounds of Category 3, which is currently required by 25.571.</p>	<p>We do not concur with this comment and have not revised the document. This policy is in regard to the evaluation required by section 25.571(a) that must be conducted for any accidental damage which may cause catastrophic failure of structure. This is not the same as the damage tolerance evaluation (DTE) called out in 25.571(b).</p>
2.	<p>Is the intent of the policy is to address Category 5 damage? Levying hard requirements regarding Category 5 damage is not appropriate in a policy memo.</p>	<p>Revise the “should” statements in the policy to “recommend” since Category 5 is outside the current 25.571 assessment requirements.</p>	<p>We do not concur with this comment and the document has not been revised for the reason stated in the disposition of item 1 above.</p>
3.	<p>What does compliance look like? It is not clear how a DAH will show compliance to the requirement to “consider a range of possible damage scenarios” when the range would include all the vehicles that could possibly come in contact with the aircraft during operations. The range is huge. In fact, the “Background” section states that Category 5 events are “not easily described in advance by the DAH.”</p> <p>If a ground vehicle strikes an airplane, the damage will depend on factors such as:</p> <ul style="list-style-type: none"> - Vehicle mass and speed - Location of impact on airplane (wing, fuselage, near door, away 	<p>Develop a standard HEWABI test to show compliance (not within the scope of this policy memo).</p> <p>The only other way we can envision compliance to this policy is for the DAH to include a statement within the ICA, instructing operators to contact the DAH when any/all HEWABI events occur.</p>	<p>We partially concur with this comment and have revised the document to clarify that the policy is intended for applicants to provide conditional inspections for HEWABI events in their required maintenance manual, with appropriate references in the ALS.</p> <p>The goal is for applicants to provide the conditions for which inspections would need to be performed (e.g., impact by a vehicle) and the method to perform inspections to detect damage that is not obvious, and then repair as necessary. As the intent is not to “show the structure good” for these types of impacts, we do not need to provide a compliance test.</p>

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	<p>from door) - Relative height of airplane and vehicle - Impact angle - Configuration of bumper, if that is what hits</p> <p>This requirement is new and open ended.</p>		
4.	<p>Training requirements are levied on operators through the operational rules, and not on the DAH through the Part 25 certification rules. Section 25.571 does not address operations personnel training requirements currently. This policy levies a new requirement on the DAH.</p>	<p>Remove training requirements from the policy memo or tie operators’ training requirements to an operational rule.</p>	<p>We concur with this comment and have removed training requirements from the policy.</p>
5.	<p>The second and third sentence seem to conflict. “However, HEWABI events may result in damage that is outside the range of damages required to be considered during the damage tolerance evaluation. Therefore, this policy clarifies that the DAH should provide guidance to operators for investigating the potential damage resulting from HEWABI events.”</p>	<p>Remove or reword to address HEWABI events could result in Category 3 damage of which the upper bounds are required to be established within the current DT requirements.</p>	<p>We partially concur with this comment. The policy has been reworded to clarify that the accidental damage evaluation per § 25.571(a) is being addressed, not the DTE per § 25.571(b).</p>
6.	<p>H25.4 specifies the Airworthiness Limitations (AWL) section of the ICA. Currently, 787 AWL does not include</p>	<p>Any conditional inspections should be included within the Aircraft Maintenance Manual (AMM), which is</p>	<p>We partially concur with this comment. We have revised the document to specify that in the case of damage caused by HEWABI events, applicants</p>

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	<p>conditional inspections for discrete source damage, but does include periodic zonal inspections to detect accidental damage on PSE structure. Is the policy requiring the DAH to include additional routine maintenance tasks to inspect for HEWABI?</p>	<p>described in H25.2(a).</p>	<p>must include conditional inspections, or other procedures as necessary, in the Airworthiness Limitations Section (ALS) of the Instructions for Continued Airworthiness (ICA) required by § 25.1529 and appendix H to part 25. The specific inspections to be performed should be contained elsewhere in the ICA, such as in the Aircraft Maintenance Manual.</p>
7.	<p>How does this policy statement affect the smaller part 25 aircraft (e.g., business jets)? How do they show compliance? The operations are completely different than the larger part 25 aircraft and therefore the HEWABI threats are different or nonexistent. No baggage trucks, catering trucks, refueling trucks, uncrowded airports, etc. Also, the DAH’s relationship with operators is different between business jets and airliners.</p>	<p>Address different operating environments for part 25 aircraft within “Effect of policy” section of policy memo.</p>	<p>We do not concur with this comment and the document has not been revised as suggested. This policy is applicable to all part 25 airplanes. The means of compliance is similar in all cases (conditional inspections being contained in the maintenance manual, with appropriate references in the ALS); however, the details may be different. In paragraph 1 of the “Policy” section of the policy statement, we include consideration of operational environments.</p>
8.	<p>Item 1. of the policy is addressing two different topics in one paragraph, general damage Category assessment and HEWABI damage assessment.</p>	<p>Break item 1. Into 1. and 2. Renumber 2. To 3.</p>	<p>We concur with this comment. We have revised the document as suggested.</p>
9.	<p>Item 2 of policy: Conditional inspections should not be included in the requirements of H25.4 (AWL). As with discrete source</p>		<p>We do not concur that the conditional inspections should be contained within the AMM. We revised the first paragraph of the policy section to read,</p>

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	<p>damage evaluation (Category 4), conditional inspections should be contained within the Aircraft Maintenance Manual (AMM).</p>		<p>“Section 25.571(a)(3) requires applicants to establish inspections or other procedures to prevent such catastrophic failure from those events, and include them in the Airworthiness Limitations Section (ALS) of the Instructions for Continued Airworthiness required by § 25.1529 and appendix H to part 25.” While the ALS has historically focused on damage tolerance inspections to address fatigue, § 25.571(a)(3) also requires the identification of required conditional inspections or other procedures which need to be conducted to address possible accidental damage from HEWABI events.</p>
10.	<p>This policy should also address Category 3 damage, which by definition in AC 20-107B, is detectable within a few flights by non-trained personnel, but could be the result of HEWABI. This definition seems to conflict with the HEWABI threat of damage being not visually detectable.</p>	<p>Cover in other section of policy.</p>	<p>We do not concur with this comment and have not revised the policy to address Category 3 damage. It is not the purpose of this policy to address the DTE requirements of § 25.571(b). The purpose of the policy is to address Category 5 damage which may have resulted from a HEWABI event. Guidance for Category 3 damage events is provided in AC 20-107B.</p>
11.	<p>During our discussion with Larry Ilcewicz, he mentioned the current industry practice of using standard impactor type testing strategies to simulate localized Category 1 (BVID) and 2 (VID) type impacts is not appropriate for a simulating a HEWABI</p>	<p>Cover in other section of policy.</p>	<p>We partially concur with this comment and the Policy section has been reworded for clarity. The intent of this policy statement is to address Category 5 damage which may have resulted from a HEWABI event. Guidance for Category 3</p>

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	<p>damage threat. HEWABI, by definition, affects a large area.</p>		<p>damage events is provided in AC 20-107B.</p>
<p>12.</p>	<p>This policy, as written, is very difficult to assess what is an acceptable means of compliance. Policy should provide clarity to an existing requirement and provide guidance on how to comply with the current requirements of 25.571. Again, policy cannot create new requirements.</p>	<p>Be concise on method of showing compliance.</p>	<p>We concur with this comment and the policy has been revised as follows:</p> <p>For composite structure, the applicant should consider HEWABI-related events by:</p> <ol style="list-style-type: none"> 1 Drawing from past experience with airplanes in similar operational environments, provide guidelines, inspection instructions, or other safety management procedures as necessary to prevent catastrophic failure that will enable operators to distinguish the level of damage that is covered under the substantiating data for § 25.571(b) (damage Categories 1 through 4) and the level of damage that is outside the scope of the DTE (damage Category 5). 2 Establishing a limitation in the ALS which sets the requirement for conditional inspections when a HEWABI event occurs, and indicating how the operator can identify HEWABI events so that the airplane is removed from service until the appropriate necessary maintenance is completed. 3 Providing the appropriate detailed maintenance instructions in the ICA, such as inspections or other actions, to ensure HEWABI

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			<p>events are properly evaluated and dispositioned prior to the next in-service flight. Refer to Order 8110.54A for guidance on ICA content.</p>
13.	<p>This topic was not a subject of an issue paper on the 787, nor was it required for the showing compliance to 25.571 during the certification effort. Boeing did conduct extensive HEWABI full-scale testing at the encouragement of the FAA, but it was considered “company tests” behind closed doors: no conformity, no transparency or any sort of certification documentation of the results. This policy memo seems to be holding the rest of industry to a similar threat assessment standard without the due process of rulemaking, and furthermore would require certification tests rather than company tests.</p>	<p>This is legal concern using a policy memo to “clarify” requirements not addressed during a recently certified product.</p>	<p>Although a specific change was not requested, we partially concur with the statement. We removed the word “clarify” from the document. However, no new rules are being created by this policy and this policy is not intended to address the DTE requirements of § 25.571(b). One of the explicit objectives of § 25.571(a) is to require a showing that catastrophic failure due to accidental damage will be avoided throughout the airplane’s operational life. And, in accordance with § 25.571(a)(3), inspections or other procedures must be established to achieve this objective and must be included in the ALS. The purpose of this policy is to ensure that these existing unambiguous requirements are complied with in the future.</p>
14.	<p>After lengthy discussion with Larry Ilcewicz, it became apparent that the original intent of the policy was for the DAH to define what level of damage was covered by Categories 1-4 during certification, and ensure that if an event causes damage beyond that level (by definition, Category 5 damage), the operator will detect and correct it before</p>	<p>Rewrite the document to clarify intent.</p>	<p>We concur that the document was not as clear as it could have been. Therefore, we have revised the document as indicated in comment #12 above.</p>

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	<p>further flight.</p> <p>This intent was not apparent just from reading the document as currently written. A requirement to define the “upper bound” of what is covered by Categories 1 – 4 is more consistent with current 25.571 regulation than a requirement to evaluate Category 5 damage.</p>		

No.	Comment	Requested Change	Disposition
<p>Commenter: Galib Abumeri, ANM-120L</p>			
1.	<p>In Summary Section on page 1: It will be helpful to add a statement on types of aircraft structures at risk for HEWABI events.</p>	<p>Add a statement on types of aircraft structures at risk for HEWABI events.</p>	<p>We concur with this comment. We included examples in the Summary, Definitions, and Background sections of the document.</p>
2.	<p>In Definition of Key Terms section on page 1, item 1, High-energy Wide-area blunt impact (HEWABI):</p> <p>These types of events do not always result in “minimal external indications.” In reality, the damage may or may not be visible externally.</p>	<p>Recommend replacing “minimal external indications” with “little or no external visibility.”</p>	<p>We concur with this comment. We have revised the document as suggested.</p>
3.	<p>In Definition of Key Terms section on</p>	<p>Identify a range of impact energy</p>	<p>We partially concur with the comment and have</p>

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	<p>page 1, item 1, High-energy Wide-area blunt impact (HEWABI):</p> <p>It will be helpful to identify a range of impact energy associated with these types of impact events.</p>	<p>associated with these types of impact events.</p>	<p>revised the definition of HEWABI to: “A high-energy impact generated by a large mass when the type, force, or cause is significant with or without visible surface damage. In composite structure, HEWABI events may cause considerable structural damage with little or no external indication, and are associated with Category 5 damage. An example of a HEWABI event is a collision between a service vehicle and an airplane fuselage during ground servicing.”</p>
4.	<p>In Relevant Past Practice on page 2, 2nd paragraph, 4th line:</p> <ul style="list-style-type: none"> a. Need to provide more details on what is meant by “for some impacts.” It is not clear what the defining characteristic(s) might be. These could be characterized by energy levels, impact or geometry/density, etc..? b. General comment for same section: recommend mentioning that damage can be widespread and not localized making it more difficult to detect. 	<ul style="list-style-type: none"> (1) Clearly define the important characteristics of the impacts that are being addressed. (2) Mention that damage can be widespread and not localized making it more difficult to detect. 	<p>We partially concur with this comment and have revised the Background section of the document to address the concern. We added “This damage may not be localized to the immediate impact area, but more widespread making it necessary to inspect the structure over a larger area.” We intentionally did not define the “important characteristics” of Category 5 damage, which, by definition, is unknown. However, we did add text to address the widespread nature of the resulting damage.</p>
5.	<p>In Background, page 3, end of second paragraph:</p> <p>“sound of creating structural damage” may not be an obvious source to personnel involved in the event due to the noise</p>	<p>General comment. No suggestion for change.</p>	<p>Although no specific change was requested, the Background section of the document was revised to address the comment. The sentence now reads, “Such events are typically obvious to personnel involved in the event, either through the sound of</p>

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	environment where the aircraft is operating and also due to protective hearing equipment used by personnel involved.		creating structural damage or through personally experiencing the forces involved.”
6.	<p>In Policy Section, page 4, item 1: Recommend that the DAH, as part of their safety risk management strategy, addresses the following:</p> <ul style="list-style-type: none"> - Identify high risk areas for HEWABI events. - Use of test and analysis building block for understanding of failure modes associated with HEWABI events. - Develops training programs for prevention of HEWABI events. - Supports operators training. 	<p>Add the following as possible actions the DAH could take to mitigate the risk of HEWABI events:</p> <p>The DAH, as part of their safety risk management strategy, addresses the following:</p> <ul style="list-style-type: none"> - Identify high risk areas for HEWABI events. - Use of test and analysis building block for understanding of failure modes associated with HEWABI events. - Develops training programs for prevention of HEWABI events. - Supports operators training. 	<p>We partially concur with this comment. However, it is the applicant’s responsibility to assess areas of risk for their structure and to consider the expected operational environment. We have revised the Policy section but operator training is beyond the scope of this policy.</p>

No.	Comment	Requested Change	Disposition
Commenter: Donald Hobbs, ACE-118W			
1.	<p>From Order IR 8100.16 Policy Statement: “Each guidance document should not include mandatory language such as “shall,” “must,” “required” or</p>	<p>Evaluate “musts” for compliance with Order IR 8100.16.</p>	<p>We concur with this comment and have evaluated the proper use of “must” per the commenter’s suggestion. The word “must” is used in the document when referencing a requirement in regulation. It is also used in the Effect of Policy</p>

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	<p>“requirement,” unless the agency is using these words to describe a statutory or regulatory requirement, or the language is addressed to agency staff and will not foreclose agency consideration of positions advanced by affected private parties.</p> <p>“Policy statements are not meant to impose or relieve a burden on anyone.”</p> <p>There are seven “musts” in the document. Does the one on page 3 comply with Order IR 8100.16? Does the first “must” on page 4 conform?</p>		<p>section, specifically to address FAA personnel. In either case, we are not imposing or relieving a burden on the applicant. ANM-7 legal staff was consulted about proper use of terms within this policy statement.</p>
2.	Page 7, “must be” can be changed to “are” without changing the meaning of the sentence.	Consider changing the words “... must be ...” to “... are ...” on page 7.	We concur with this comment and have revised the document as suggested.
3.	Page 7, “disbanding” should be “disbonding”.	Change the word “disbanding” to “disbonding”.	We concur with this comment. We have revised the document as suggested.
4.	Page 8, “DAH include” should perhaps be “DAHs include”.	Consider changing “DAH include” to “DAHs include” when it is plural.	We concur with this comment and have revised the document as suggested.
5.	Page 4, “after the effective date of the final policy” could be written clearer as: “after the effective date of this policy”.	Change the wording “after the effective date of the final policy” to “after the effective date of this policy”	We do not concur with this comment and the document has not been revised. Removing the word “final” would make the information less clear. The word “final” is included to make clear that compliance methods in this policy apply to those programs with an application date that is on

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			or after the effective date of the final policy, as opposed to this draft policy. If the date of application precedes the effective date of the <u>final</u> policy, and the methods of compliance have already been coordinated with and approved by the FAA or its designee, the applicant may choose to either follow the previously acceptable methods of compliance or follow the guidance contained in this policy.
6.	References: Additional references besides a future release of CMH-17 would be useful. At \$760, getting a new copy of CMH-17 is not easy these days even in the largest of companies from my recent industry experience. Generally an out of date copy (print or internet) is the only one available to most engineers.	Add a reference or two that are readily available.	We do not concur with this comment and no additional references were added to the document. We are unaware of any other “readily available” no/low cost options that would substitute for CMH-17. The Composite Materials Handbook is referenced in many FAA policies and advisory circulars, including AC 20-107B.
7.	I pronounce the H in HEWABI; therefore it should be “a HEWABI”, not “an HEWABI”. Chicago Manual of Style, 16 th Edition, 2010: §7.44 p. 362 A hotel An HMO A historical study	Change wording to “a HEWABI”.	We concur with this comment and have revised the document as suggested.

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Commenter: Donald Hobbs, ACE-118W			
	<p>An honor An heir</p> <p>§10.9 p. 491</p> <p>“When an abbreviation follows an indefinite article, the choice of a or an is determined by the way the abbreviation would be read aloud.”</p>		

No.	Comment	Requested Change	Disposition
Commenter: Adam Neubauer, ACE-118W			
1.	<p>The first sentence of the policy states “The design approval holder (DAH) is required...”. This makes it sound as if this policy only applies to current TC/STC holders but I believe the intent is for this policy to apply more to applicants. Later on in the first paragraph the word “applicant” is used. There is an inconsistency in the use of the words “applicant” and “DAH”.</p>	<p>Instead of referring to the “DAH” throughout the policy, incorporate the word “applicant” where appropriate.</p>	<p>We concur with this comment and have changed the language throughout the document. We have incorporated the term “applicant” where appropriate and left the term “design approval holder (DAH)” in the document where it was more fitting in the context of the information.</p>
2.	<p>Page 3, paragraph 2 under Background section: In the fourth sentence of this paragraph it would make sense to add the</p>	<p>Change sentence to read: “...associated with Category 1 through Category 4 damage.”</p>	<p>We concur with this comment and have revised the document as suggested.</p>

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	word “damage” at the end of the sentence.		
3.	Page 3, first paragraph under Policy section: A reference is made to AC 20-107, however, it should be AC 20-107B to maintain consistency throughout.	Change “AC 20-107” to “AC 20-107B”	We concur with this comment. We have revised the document as suggested. (Reference to AC 20-107B was removed from the Policy section of the document; however, it is discussed in the Background section.)
4.	This policy statement appears to contradict itself in saying that Category 5 damage is outside the scope of the DT evaluation required by 25.571(a) and then requiring incorporation of maintenance instructions and training based on the need to comply with 25.571(a) and 25.1529. Based on this contradiction, one could argue that this policy statement is creating an additional regulatory requirement if it requires an applicant to include “appropriate maintenance actions” in the ALS of the ICA per Appendix H, H25.4.	Clarify the regulatory requirement to consider HEWABI and how it ties in with current 25.571, 25.1529 and Appendix H requirements. Also consider changing the reference to Appendix H, H25.4 to Appendix H, H25.3 which states: “In addition, the applicant must include an inspection program that includes the frequency and extent of the inspections necessary to provide for the continued airworthiness of the airplane.”	We partially concur with this comment. We added information to clarify the distinction between the evaluation of all accidental damage required by § 25.571(a) and the damage tolerance evaluation (DTE) required by § 25.571(b). This policy is in regard to the required evaluation in § 25.571(a). We do not concur that this policy creates an additional regulatory requirement.

No.	Comment	Requested Change	Disposition
Commenter: CE117A William O. Herderich			
1.	In order to ensure the reporting of potential HEWABI events, recommend that operational manuals require responsible ground support personnel to sign an aircraft release that no potential events	Under Appendix C “Suggested Means of Compliance With This Policy” ; add the following to the first paragraph: “In addition, the line maintenance	We do not concur with this comment and the document has not been revised as suggested. The commenter’s suggestion is beyond the purview of Transport Airplane Directorate (TAD) policy

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	have occurred.	personnel that become aware of a potential HEWABI event should be trained to use maintenance references that correctly document the necessary conditional inspections. <u>In order to ensure the reporting of potential HEWABI events, operational manuals should require responsible ground support personnel to sign an aircraft release before each flight that no potential events have occurred.</u>	which covers part 25 regulations.

No.	Comment	Requested Change	Disposition
Commenter: George J. Duckett, ANE-171			
1.	HEWABI is not clearly defined. Insofar as “high,” “wide” and “blunt” are not defined, it follows that HEWABI is not defined. It is not possible to direct the DAH to do an action based on an undefined condition.	Define HEWABI in terms of measurable parameters.	We do not concur with this comment and the document has not been revised. There is no set of measurable parameters for Category 5 damage that is applicable to all the different structural configurations.
2.	HEWABI damage would be Category 5 damage only if the extent of the damage is severe. If the damage is not obvious, the only way to determine the severity would be to do a thorough inspection. The operators are being put in the untenable position of having to do a thorough	I do not have an easy fix but I do have a comment: If HEWABI does exist extensively where the severity of damage is not readily detected (I.e., without the use of extensive NDI) then composites are not a practical material	No specific change requested.

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	inspection for a condition that is not defined.	for aircraft construction.	
3.	For uniform treatment, the damage should be defined independent of the geographical location of the occurrence. This commenter believes that HEWABI will seldom be reported from remote airports where NDI procedures are not available. The problem is aggravated by the fact that undefined adjectives (i.e., high, blunt, large and wide) are used to describe HEWABI.	Action taken after HEWABI (properly defined) should be the same regardless of the location of the occurrence. This implies that extensive NDI should not be a requirement for HEWABI evaluation.	We do not concur with this comment. It is the applicant's responsibility to define how the accidental damage is to be evaluated and to establish the associated conditional inspections in their maintenance manuals. However, we did clarify the definition for HEWABI.

No.	Comment	Requested Change	Disposition
Commenter: Jeffrey Zimmer, ANE-171			
1	Pgs. 2-3 state: "Tests on representative composite structural components have demonstrated that, for some impacts, there may be substantial damage to underlying structure while the surface shows little or no visible damage. This testing highlights that the practice of relying on visible inspection of an airplane exterior after an extreme impact event may not be sufficient in ensuring the continued safe operation of the airplane."	The first sentence directly implies (little/no visible damage) that the 2 nd sentence must not be conditional: It should be altered to read: "...relying on visible inspection of an airplane exterior after an extreme impact event is not sufficient in ensuring the continued safe operation of the airplane."	We concur with this comment and have revised the document to read: "Tests on representative composite structural components have demonstrated that for some impacts, such as those associated with HEWABI events, there may be substantial damage to underlying structure while the surface shows little or no visible damage. This damage may not be localized to the immediate impact area, but more widespread making it necessary to inspect the structure over a larger area. This testing highlights that the practice of relying on visible inspection of an airplane exterior after an extreme impact event is not sufficient in ensuring

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Commenter: Jeffrey Zimmer, ANE-171			
			the continued safe operation of the airplane.”
2	<p>On Pg. 3, we (the FAA) state: “[HEWABI] events are typically obvious to personnel involved in the event, either through the sound of creating structural damage or through personally experiencing the forces involved.”</p> <p>But then on Pg. 4, we demand that DAHs: “...show how HEWABI events are going to be identified by the operator so that the airplane is not flown prior to accomplishing the appropriate maintenance actions to comply with § 25.571(a).”</p>	<p>On one page we say X is typically obvious. On the next page we demand someone tells us how they’ll discover X. This is incongruous, maybe it can be rephrased to sound less hypocritical.</p>	<p>We partially concur with this comment and have revised this section of the document to distinguish the detection of HEWABI events on metallic structures (typically easily identifiable) versus composite materials (where resulting damage is less visible).</p>

No.	Comment	Requested Change	Disposition
Commenter: AIR-100 LI (Larry Ilcewicz)			
1	<p>Page 1, Summary, last sentence and in other locations throughout the document: Wording update</p>	<p>Replace the word “evaluation” with “substantiation”, including the acronym DTE, because part of damage tolerance evaluation will determine what vehicle collisions should be included in damage tolerance substantiation and what damages can be classified as Category 5 damage that requires immediate attention before further flight.</p>	<p>We partially concur with this comment and have revised the document. However, we retained the word “evaluation” in certain areas because the regulation refers to “evaluation.” We included the acronym for damage tolerance evaluation (DTE). We also modified the text to distinguish between the evaluation referenced in § 25.571(a) and the damage tolerance evaluation called out in § 25.571(b).</p>

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Commenter: AIR-100 LI (Larry Ilcewicz)			
2	Page 2, paragraph 2.1, first sentence: Wording	Replace “analysis” with “substantiation”, which would cover both tests and analysis.	We partially concur with this comment and revised the document. However, we replaced the word “analysis” with “evaluation” to keep in line with regulatory language.
3	Page 2, paragraph 2.1, sentences 2 and 3: the definitions of Categories 1, 2, 3 and 4 damages are generalized in a way that makes them incorrect.	Currently Category 2 and 4 damages are covered but Category 1 and 3 damages are not. Also I would recommend a reference to AC 20-107B for the full definition of each category.	We concur with this comment. We have revised the document to more clearly define the damage categories and we added a reference to AC 20-107B as suggested.
4.	Page 2, first paragraph, last sentence: Wording.	Recommend changing the wording “readily observable damage” to “readily detectable damage”	We concur with this comment and have revised the document as suggested.
5.	Page 2, current regulatory and advisory material. AC25-571-1D	Recommend removing reference to AC25-571-1D as having little to no relevance to HEWABI (it also notes that AC 20-107B is for composite structures).	We do not concur with this comment and have not revised the document. While AC25.571-1D does mainly focus on the DTE required in § 25.571(b), it supports the requirement to conduct an evaluation which covers any accidental damage which may cause critical failure over the life of the airplane.
6.	Throughout the document: Use of reference to §§ 25.1529 and H25.4.	Recommend changing to §§ 25.1529 and H25. See comments from RJJ	We concur with this comment and have revised the document as suggested.
7.	General Statement	This document does well in concisely describing a complex safety issue☺.	No specific change requested.

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No.	Comment	Requested Change	Disposition
Commenter: AIR-133 CA (Cindy Ashforth)			
1	Page 1, Definition of Key Terms, first sentence states “in the text below the terms... have specific meanings.” The terms “should” and “required” are used in the summary above the Key Terms	Reword the sentence to apply the terms must, should, and recommend to the entire document.	We concur with this comment and have revised the document as suggested.
2	Page 2 paragraph 2.1, the definition of Category 3 damage is incorrect	Define Category 3 as a damage that is detectable within a few flights (different than Category 4 which is immediately apparent and repaired before further flight)	We partially concur with this comment. We changed the definition of Category 3 damage to, “Categories 2 and 3 are classified as damage for which scheduled inspection procedures are implemented.” We also referred the reader to AC 20-107B for a full definition of each category.
3	Page 2, Relevant Past Practice, First paragraph, second sentence – appears to be missing an “and” in the sentence	Consider rewording sentence to read, “Some of the more common areas for such events are on the fuselage and in and around the cargo and passenger doors.”	We do not concur with this comment and have not revised the document as suggested. We intended the statement to convey that the common areas for HEWABI events are in and around the cargo and passenger doors of the fuselage.
4	Page 2, Relevant Past Practice, first paragraph	Remove sentence “Per §§ 25.1529 and H25.4, appropriate inspection thresholds and methods must be included in the airworthiness limitations of the ICA.” It does not need to be stated when the sentence before already discusses maintenance practices. However, if the sentence remains, correct the appendix citation as shown above to match the TAD issue paper style guide. Also note RJJ comment relating to H25 as a better	We partially concur with this comment. The document has been revised to state, “Many of these events can be classified as normal accidental damage events which are already covered by damage tolerance threat assessments required in showing compliance with § 25.571 and the related safe design and maintenance practices. Per § 25.1529 and appendix H to part 25, appropriate inspection thresholds, conditional inspections, and inspection methods must be included in the instructions for continued airworthiness (ICA).”

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Commenter: AIR-133 CA (Cindy Ashforth)			
		reference than H25.4.	
5	Page 3, Relevant Past Practice. Add a sentence to the end of the section explaining that HEWABI events, and subsequent conditional inspections, are analogous to inspections that are performed after hard landings.	Add an additional sentence to the end of the last paragraph that states something like, “This is analogous to a conditional inspection that most DAH define after hard landings.”	We concur with this comment. We added the following sentence to the Relevant Past Practice section: “However, most DAHs do include conditional inspections in the ICA for other events, such as hard landings, where damage might not be immediately evident.”
6	Page 3, Background, First Paragraph uses the words “high energy” twice in sentences very near each other so that it does not read well. Delete the first use. Also remove the words “outside prescribed limits” when describing how a service vehicle is being used because in the next paragraph it states that HEWABI events can occur during normal airplane operations. The intent is to say when a vehicle impacts at high speed, it’s an issue. It does not matter what the prescribed limits were.	Reword the end of the first Background paragraph to read, “An example of such an event is a ground service vehicle that impacts the airplane. This type of impact may be of high energy due to vehicle mass and contact speed...”	We concur with this comment. We revised the document to read, “An example of such an event is a ground service vehicle severely impacting an airplane creating large damage, which is beyond the other four categories. This type of impact tends to be of high energy due to the vehicle mass and contact speed.”
7	Page 3, Background, Second paragraph, second sentence says that damage from a HEWABI event may not be clearly visible. I believe we intend to say it may not be immediately visible to the naked eye	Reword the sentence to remove “clearly visible” and replace it with something like “Damage from a HEWABI event may not be readily visible to the naked eye.”	We partially concur with this comment. We modified the sentence to read, “In composite airframes, damage from a HEWABI event may not be readily visible.”
8.	Throughout – the policy refers to “an HEWABI event.”	Should be “a HEWABI event.”	We concur with this comment and have revised the document as suggested.
9.	Throughout – the citation for appendix H does not match the TAD Style Guide for	Correct citations to H25.4 to match the TAD IP Style Guide. Also note RJJ	We concur that the citation style needed correction. The citations have been revised to “§ 25.1529 and

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Commenter: AIR-133 CA (Cindy Ashforth)			
	Issue Papers. Instead of referencing “§ 25.1529 and H25.4 in appendix H” it should say, “§§ 25.1529 and H25.4.”	comment relating to “H25” as a better reference than “H25.4”.	appendix H to part 25.

No.	Comment	Requested Change	Disposition
Commenter: AFS-300 RJJ (Rusty Jones)			
1	The last sentence in the summary: While applicants are not required to include HEWABI events in their damage tolerance evaluation, appropriate maintenance instructions and training requirements should be addressed in the instructions for continued airworthiness (ICA) per § 25.1529 and H25.4 in appendix H.	Training requirements are typically not part of the ICA, suggest removing “and training requirements”.	We concur with this comment. We removed the reference to training requirements, as suggested.
2	Current Regulatory and Guidance Material: The third bullet: Appendix H25.4, Airworthiness Limitation Section should be changed to read: Appendix H to Part 25 – Instructions for Continued Airworthiness. This change should also be made to the reference in the sections: Summary, Relevant Past Practice, item #2 in Policy and the last sentence in the Conclusion.	As these are unscheduled inspections/events they cannot be an airworthiness limitation, therefore H25.4 is not applicable. Suggest removing the .4 and leaving H25 in each instance H25.4 is referenced.	We do not concur with this comment. While the ALS has historically focused on damage tolerance inspections to address fatigue, section 25.571(a)(3) also requires inspections or other procedures to prevent such catastrophic failure from those events, and to include them in the Airworthiness Limitations Section (ALS) of the Instructions for Continued Airworthiness required by § 25.1529 and appendix H to part 25. However, the revised document no longer cites “H25.4.” Instead, it cites “appendix H to part 25.”
3	Should AC 25.571-1D be referenced when the introduction to the AC states that “The	Suggest just referencing AC 20-107B	We do not concur with this comment and have not revised the document as suggested. While AC

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Commenter: AFS-300 RJJ (Rusty Jones)			
	focus of this AC is metallic structure refer to AC 20-107B for guidance on composite structure.” The description for 25.571-1D discusses WFD and LOV, neither of which is applicable to the policy statement.		25.571-1D does mainly cover the fatigue and damage tolerance portion of the regulations (and mainly from a metallic perspective), the AC also reinforces the need to conduct an evaluation of the strength, detailed design, and fabrications that could contribute to catastrophic failure due to accidental damage.
No.	Comment	Requested Change	Disposition
Commenter: ACE-111, LC (Lester Cheng)			
1	Summary (last sentence): §25.159 & H25.4 don't have “training requirements”	Recommend removing “and training requirements” as too much details	We concur with this comment and have revised the document as suggested.
2	Definitions of Key Terms (2 Damage Categories): Too much info	Recommend removing the word “fully from this definition.	We concur with this comment and have revised the document as suggested.
3	Definitions of Key Terms (2.2 Damage Category 5): Wording	Recommend removing the word “necessarily”	We concur with this comment and have revised the document as suggested.
4	Current Regulatory and Advisory Material (page 2, second paragraph): Wording	Recommend changing the word “procedures” to “means”	We concur with this comment and have revised the document as suggested.
5	Relevant Past Practice (page 2, paragraph 1, sentence 3): Type Error	The “an” before HEWABI should be “a”.	We concur with this comment and have revised the document as suggested.
6	Relevant Past Practice (page 2, paragraph 1, sentence 3): Wording	The wording “readily observable” should be changed to “observable” or “readily detectable”	We concur with this comment and have revised the wording to “readily detectable.”
7	Background (page 3, paragraph 1, sentence 1): Wording	Reword the first sentence to read: “AC 20-107B classifies the range of damage to consider, when designing composite	We concur with this comment and have revised the document. We changed the sentence to read like the commenter’s first suggestion.

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Commenter: AFS-300 RJJ (Rusty Jones)			
		structures, into five categories.” or “When designing composite structures, AC 20-107B classifies five categories of damage of increasing severity, which should be considered.”	
8	Background (page 3, paragraph 1, sentence 2): Wording	Reword to plural: “Damages Category 1 through Category 4...”	We partially concur with this comment and have revised the document. The revised sentence reads, “Damage Categories 1 through 4 are associated with damage threat scenarios, ...”
9	Background (page 3, paragraph 1, sentence 5): Wording	Recommend changing “... take into consideration those events that can are not be easily described in advance...”	We concur with this comment and revised the document to “...take into consideration those anomalous events that cannot be easily predicted in advance by the applicant.”
10.	Background (page 3, paragraph 1, sentence 6): Wording	Recommend removing “with high energy” from the end of the sentence since it is redundant with the following sentence.	We concur with this comment and have revised the document as suggested.
11.	Policy (page 3, paragraph 1, sentence 1): Remove word.	Recommend deleting the word “detailed” before design.	We do not concur with this comment. The word “detailed” was in reference to § 25.571. However, the regulation says, “An evaluation of the strength, detail design, and fabrication must show ...” Therefore, we changed the word “detailed” in the policy to “detail.”
12.	Policy (page 3, paragraph 1, last sentence): Break into two sentences.	Recommend the new 2 nd to last sentence read “...damage tolerance evaluation in -showing compliance with § 25.571 (b).” and the new last sentence read: “ However, but Category	We partially concur with this comment. We have revised this portion of the policy; however, it was in accordance with a different commenter’s suggestion.

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		5 events, such as HEWABI,..."	
13.	Policy (page 4, paragraph 1, number1): Wording updates.	Recommend the following edits: "Providing guidelines, inspection instructions, and other safety management procedures that help distinguish the level of damage that is covered under the substantiating data for § 25.571(b) (damages Category 1 through 4) and the level of damage that is outside the scope of the damage tolerance evaluation (damage Category 5). The DAH should show how HEWABI events are going to be identified by the operator so that the airplane is not flown prior to accomplishing the appropriate maintenance complying to § 25.571(a)."	We partially concur with this comment. This section of the policy statement was split into three separate items. We removed the word "risk" per the commenter's suggestion. However we did not use the suggestion of "damages Category ..." We changed the term to "damage Categories." We removed the word "clearly" as suggested, but we incorporated the rest of the information into a new Item #2 and reworded it for clarity.
14.	Policy (page 4, paragraph 2, number 2): Wording updates.	Recommend the following edits: Performing appropriate maintenance, such as conditional inspections and operator training, to ensure HEWABI events are properly evaluated and dispositioned prior to the next flight. Per § 25.1529 and H25.4 of appendix H, these maintenance requirements should be specified in the ICA provided to the operators.	We concur with the commenter that the information should be reworded. However, we did not revise the document as suggested. Instead, we edited Item #2 and added Item #3 to read: 2 Establishing a limitation in the ALS which sets the requirement for conditional inspections when a HEWABI event occurs, and indicating how the operator can identify HEWABI events so that the airplane is removed from service until the appropriate necessary maintenance is completed.

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			<p>3 Providing the appropriate detailed maintenance instructions in the ICA, such as inspections or other actions, to ensure HEWABI events are properly evaluated and dispositioned prior to the next in -service flight. Refer to in Order 8110.54A for guidance on ICA content.</p> <p>Some of these changes were in response to other comments received.</p>
15.	Effect of Policy (page 4, paragraph 2, sentence 1): Wording	Recommend removing the word “established” before policy on first line.	We do not concur with this recommendation. This is standard language in our policy statements and removing the word “established” does not improve the document.
16.	Effect of Policy (page 4, paragraph 2, sentence 3): Wording	Recommend the following changes” “...relevant to new certification projects.”	We do not concur with this recommendation. This is standard language we include in our policy statements and the requested change does not improve the document.
17.	Conclusion (page 5, sentence 3): Type error and wording.	Recommend the following changes: “...immediate maintenance required if a HEWABI event occurs.”	We partially concur with this comment. We agree that the sentence needed to be revised. However, we adopted a different change that made the paragraph more succinct.
18.	Conclusion (page 5, sentence 4): Wording.	Recommend removing the words “and training requirements” as not proper for the regulation used in reference.	We concur with this comment and have revised the document as suggested.
19.	Appendix B (Differences and Similarities for Blunt Impact versus More Common Impacts): Type errors.	Change the first word in the paragraph from “An” to “A”. Similarly, change the “an” to “a” before HEWABI in the third sentence. Finally, change	We partially concur with this comment. We changed “an” to “a” before HEWABI. However, we did not change “damage category” to “damages category.”

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		“damage” to “damages” in the last sentence.	
20.	Appendix B (Summary of AC 20-107B, paragraph 1): Type error.	Change the word “action” to “actions” in the first sentence.	We believe the commenter is referring to paragraph 2 of the section and not paragraph 1. We concur with the comment and have revised the document as suggested.
21.	Appendix B (Composite Structures response to HEWABI Events): Type error	Change the “an” to “a” before HEWABI in the first sentence.	We concur with this comment and have revised the document as suggested.
22.	Appendix C (page 9, paragraph 4, sentence 1): Wording	Recommend changing the start of the first sentence to read: Data collected in HEWABI engineering studies...”	We concur with this comment and have revised the document as suggested.
23.	Appendix C (page 9, paragraph 4, sentence 2): Add more information.	Recommend adding “Chap. 12 and 14” after Volume 3 and before Revision G.	We concur with this comment and have revised the document as suggested.
24.	Appendix C (page 10, paragraph 2, sentence 2): Wording.	Recommend deleting words as shown: “include, but is not limited to, any exterior visual clues...”	We concur with this comment and have revised the document as suggested.
25.	Appendix C (page 10, paragraph 2, sentences 3 and 4): Type error.	Change the “an” to “a” before HEWABI in two locations.	We concur with this comment and have revised the document as suggested.