

**Comments for Draft Revisions (*Not Applicable to Directives; Refer to Directive Management Officer for Directive Comment Format*)**

[For detailed instructions on how to fill out the columns below, please see the Instructions sheet.](#)

<b>Comments Submitted By:</b>	ACE-114
<b>Organization:</b>	ACE-100, ACE-110 Standards Staff, Small Airplane Directorate
<b>Phone:</b>	816-329-4127

#	Document Name	Page Number	Paragraph Number	Referenced Text	Comment/Rationale or Question	Proposed Resolution	Comment Type (Conceptual, Editorial, or Format)	Disposition/Response to Comment
1	Lithium SC Policy		1 Summary	This document provides a typical list of special conditions to enable standardization for all part 23, 25, 27 and 29 aircraft.	The Policy should not say "all". It implies the SC must be applied to all Lithium on all aircraft, regardless of historical service history, size, type of aircraft, etc.	Implement Risk-based decision steps engineers can use to know when to apply the SC. New installations of an old box or appliance that uses Lithium, but has a successful service history, should not be subject to the new policy. Also, size and intended use matter.	conceptual	Agreed- Updated PS to reflect this comment.
2	Lithium SC Policy		1 Summary	This document provides a typical list of special conditions to enable standardization for all part 23, 25, 27 and 29 aircraft.	The SC should only apply to certain installations.	How do we allow the policy to recognize existing batteries installed inside a TSO'd box, appliance, etc.? If the ELT fire and 787 battery fire being used as a basis for levying the requirement were due to improper maintenance/installation, the SC will not solve the issue. ACE114 will help develop a flowchart to assist in the decision process for when the SC and Policy apply.	conceptual	Agreed- Updated PS to reflect this comment.
3	Lithium SC Policy		1 Effect of Policy	The document states "Whenever a certification project involves the installation of lithium batteries on aircraft"	"Whenever" implies all Lithium batteries. Instead, let's provide some additional guidance for applying the SC and eliminating applicability. Can we add a sentence that says the Directorates might have additional guidance?	Add sentence to say: "Product specific Directorates may have additional policy to clarify applicability of this general Lithium Battery policy to their products to assist in compliance to the applicable regulations."	conceptual	Agreed- Updated PS to reflect this comment.

[For detailed instructions on how to fill out the columns below, please see the Instructions sheet.](#)

<b>Comments Submitted By:</b>	ACE-114
<b>Organization:</b>	ACE-100, ACE-110 Standards Staff, Small Airplane Directorate
<b>Phone:</b>	816-329-4127

4	Lithium SC Policy	2	Implementation	The document states: "The attached special conditions are required"	For existing part 23 installations, particularly for small batteries, we do not levy special conditions. We often handle Lithium batteries via MOC to 1309, with the NiCad language in 23.1353 and additional language in the certification plan.	Existing part 23 installations that have proven safe service history, or where the Lithium has been addressed by 1309 should not be subject to additional SC requirements. New installations of boxes or appliances that have already been certified in other installations should also not be subject to the SC unless an unsafe condition has been shown to exist. We usually apply the SC only to large "ships battery" installations for part 23.	conceptual	Agreed- Updated PS to reflect this comment.
5	Lithium SC Policy	3	Special Condition req 1	The SC says: "The probability of this event must be shown to be extremely remote (one event in 10 million (1x10 <sup>-7</sup> ) flight hours)"	Please remove the explicit probability value, or say it is specifically for part 25 only. Part 23 allows 10E-6 to be used for Catastrophic failures under 23.1309, so we could allow a 10E-4 value to be used for this particular event in small single engine aircraft.	Remove <b>any/all</b> explicit probabalistic targets, or make specific reference that they are for part 25 only.	conceptual	Agreed- Updated PS to reflect this comment.
6	Lithium SC Policy	3	Special Condition req 2	Requirement 1 and 2 seem redundant and/or in conflict at the probabalistic level. Both refer to self-sustaining, uncontrolled increases in temperature or pressure, but assign different target probabilities to the events. Clarify 1 and 2 to delineate between them more clearly. I believe one is for the battery and one is for the instllation effects, but it needs clarification.	Requirement 1 and 2 seem redundant. Also, the 10E-9 value is only applicable to part 25.	Clarify text, distinguish between the intent of 1 and 2 more clearly, and remove the specific 10E-9 reference.	conceptual	Agreed- Updated PS to reflect this comment.

[For detailed instructions on how to fill out the columns below, please see the Instructions sheet.](#)

<b>Comments Submitted By:</b>	ACE-114
<b>Organization:</b>	ACE-100, ACE-110 Standards Staff, Small Airplane Directorate
<b>Phone:</b>	816-329-4127

7	Lithium SC Policy	3	Special Condition req 3	Requirement 3 seems to be overkill for small, coin sized batteries or small AA sized batteries where uncontrolled venting inside a box or enclosure would be no hazard.	Is the intent of requirement 3 to redesign batteries with venting systems? Seems like this should only apply to large "ships" battery systems.	State his needs to be applied for batteries greater than 10Wh (small multi-cell batteries, and medium or large single-cell or multi-cell batteries).	conceptual	Agreed- Updated PS to reflect this comment.
8	Lithium SC Policy	3	Special Condition req 3	Worst Case	We need to be careful using these words. Do you mean foreseeable worst case that is likely given the installation, or "worst case" like you have in the lab with a bunsen burner on the battery?	Our engineers are great at thinking of "worst case" scenarios that are not actually likely to occur in reality, or are so improbable they should not drive the design. Make sure when we use worst case in the policy, we are limiting it to "sufficiently likely" conditions, and not the worst case someone can think up.	conceptual	Agreed- Updated PS to reflect this comment.
9	Lithium SC Policy	4	Special Condition req 4	Fire safety can be containment, and this containment may be simply done by the box for small batteries installed inside avionics systems.	The policy should not force all Lithium batteries to be fire proof, but should consider the capability of the metal box to contain a tiny Lithium battery fire without specific provision.	We will provide decision steps to determine whether fire safety for part 23 requires specific design features, or whether the fire might inherently be contained by the box itself.	conceptual	Agreed- Updated PS to reflect this comment.
10	Lithium SC Policy	4	Special Condition req 5	The policy says: There shall be no damage to surrounding structure or any adjacent systems, equipment, or electrical wiring from the fluids or gases emitted from the battery.	The statement that "NO" damage can occur is too stringent. In the intent section, add the words used just above it to say "to cause a major or more severe failure condition"	Change text as suggested	conceptual	Agreed- Updated PS to reflect this comment.

