

**Proposed Special Condition on the Propeller Bird Impact Assessment
Applicable to Propellers intended for Large Aeroplane installations**

Comment Response Document

Commentor:	UK CAA
Page No:	2
<p>Paragraph No: Proposed Special Condition</p> <p>Comment: It is required to perform an additional impact assessment considering the conditions of CS-E 800(e). This requirement calls for an assessment of the bird against CS-E 800 (d) (1)(v) A and (b) (1)(ii) for the medium and large bird cases respectively and the reference area used in these paragraphs is the engine frontal area.</p> <p>It is not clear whether the areas to be considered in this SC are the engine frontal area or the propeller frontal area. If it is the engine frontal area that is to be considered, then the SC should indicate this and any assumption made regarding the engine used should be included in the instructions for the propeller required under CS-P 30. If it is the propeller frontal area that is to be used as the criterion for assessment, then again the requirement should indicate this.</p> <p>Further, use of the areas quoted in the table A of the requirement under CS-E 800(d)(1)(v)A could lead to multiple birds needing to be considered in the assessment. It is not clear if this is the intent for a propeller, since the solidity of the propeller disc is much reduced compared to the first stage of a gas turbine.</p> <p>The aiming points for the bird as described in CSE 800 (d) (1) (v) A would also need to be amended from the text in the engine requirement, if it is the critical position on the propeller rather than the engine which needs to be considered in the assessment.</p> <p>Justification: Application of the additional impact assessment called up in the SC requires further guidance on how the CS-E requirement is to be applied to a propeller.</p> <p>Proposed Text (if applicable): ---</p>	
<p>Author's Response: Partially agreed.</p> <p>This Special Condition comes in addition to the requirement of CS-P 360 in the case when testing in accordance with CS-P 360 results in propeller debris being released. There is no intent to certify the propeller to a higher bird impact requirement than the one already applicable to the engine. The objective is to ensure a consistent safety level for the whole powerplant. Therefore the engine inlet throat area should be considered for determining the size of the birds. The assumption made regarding this inlet throat area should be included in the instructions for the propeller required under CS-P 30. Consistent with CS-E 800(e), the aiming point for the bird should be the most critical location on the propeller for normal flight operations up to 450m (1500 feet). The final Special Condition will be amended to include this information.</p> <p>The bird impact assessment of CS-E 800(e) requires considering the impact of one (the largest) medium bird of CS-E 800(d)(1)(v)(A) and of the large bird of CS-E 800(b)(1)(ii). Therefore only one bird needs to be considered in each case.</p>	

Commentor:	Dowty Propellers
Page No:	2
<p>Paragraph No: Proposed Special Condition</p> <p>Comment: Dowty Propellers is in broad agreement with EASA's proposed Special Condition on propeller bird impact assessment applicable to propellers for large aeroplane installations.</p> <p>We would make three observations.</p> <p>1) A new propeller test would need to be performed at different conditions critical to the engine, which could result in testing with heavier birds than CS-P requires, depending on engine intake size in accordance with CS-E 800(b)(ii). If propeller debris released under these conditions were judged to be Hazardous for the engine or aircraft, this could drive a re-design of the propeller.</p> <p>2) AMC P 360(2)(b) requires inclusion of the spinner in the CS-P bird impact test.</p> <p>3) Dowty only learned of this EASA consultation on propeller certification a few days ago through informal notification by the CAA-UK.</p> <p>Justification:</p> <p>Proposed Text (if applicable): ---</p>	
<p>Author's Response:</p> <p>Comment 1) Agreed. The size of the bird for the additional propeller impact assessment will not be bigger than the one required for the engine bird impact assessment.</p> <p>Comment 2) Agreed when the spinner is declared part of the propeller Type Design.</p> <p>Comment 3) Noted. According to the EASA website, it is possible to subscribe to the consultation webpage to get notified about changes: http://easa.europa.eu/certification/current-consultations.php</p>	