EASA

Comment Response Tool

Title	Vibration Health Monitoring
NPA Number	NPA 2010-12

UK CAA (UK CAA, European.Affairs@caa.co.uk) has placed **2** reactions on this NPA:

NPA Page(s)	Reaction to	Reaction	Attachments
23	the resulting text for segment "**B. Draft Decisions - I. Draft Decision CS-29 - Proposal 4: Add a new AMC 29.1465 - u. Controlled Service Introduction**"	**Page No:** 29 **Paragraph No:** e. System Design Considerations, (3) Signal Processing **Comment:** Advanced Anomaly Detection (AAD) techniques have been demonstrated to provide enhanced sensitivity to defects <u>and</u> significantly reduced false alert/alarm rates. This technology is presently being voluntarily introduced in the UK North Sea fleet, the main area of HUMS application within Europe. Although it would not be appropriate to insist on AAD for all HUMS applications at this time, it is considered desirable to at least draw attention to it in AMC 29.1465 by the inclusion of an additional note (Note 3) to para. e.(3). **Justification:** The results of the two UK CAA main rotor gearbox seeded defect test programmes and in-service experience has highlighted aspects of VHM that are in need of improvement. Subsequent research culminated in the development and testing, in service over a period of two years, of a novel analysis technique which can address the shortcomings of 'standard' HUMS VHM data analysis. This has been comprehensively reported in CAA Paper 2011/01 and, at the request of their offshore oil and gas industry customers, the North Sea helicopter operators are voluntarily working towards implementing AAD on their EC225, S92 and AW139 fleets. Implementation on further fleets may follow. Since it is fast becoming best practice within the industry, it is considered appropriate to at least draw attention to it. **Proposed Text:** <u>Note 3</u>: Advanced Anomaly Detection (AAD) techniques have been demonstrated during extended in-service trials to provide enhanced sensitivity to defects and significantly reduced false alert/alarm rates. CAA Paper 2011/01	

		details the background, development and testing of the application of this technology to helicopter transmission VHM data. AAD is defined as follows: *"Rotorcraft HUMS Anomaly Detection is an approach that detects abnormalities in rotor drive system components by comparison of multiple downloaded health monitoring parameters with prepared multi-parameter models of normality for these components. It also provides diagnostic information on the monitoring parameters causing abnormal indications. The multi-parameter models of normality represent the statistical dependencies between monitoring parameters and are based on experience across multiple aircraft within a fleet. The approach incorporates methods to ensure that any unknown abnormalities within this experience do not prevent the detection of similar abnormalities. Models are to be periodically refined based on increasing fleet experience."*	
23	the resulting text for segment "**B. Draft Decisions - I. Draft Decision CS-29 - Proposal 4: Add a new AMC 29.1465 - u. Controlled Service Introduction**"	**Page No:** 36 **Paragraph No:** v. Related documents **Comment:** Add CAA Paper 2011/01 to the list of related documents. **Justification:** To support the additional note on Advanced Anomaly Detection at paragraph e.(3). **Proposed Text:** (3) CAA Paper 2011/01: Intelligent Management of Helicopter Vibration Health Monitoring Data http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=detail&	

Page viewed on 2012-10-22 09:19:13 GMT Copyright © 2005-2012 EASA