


<b>EASA</b>	<b>COMMENT RESPONSE DOCUMENT</b>
	<b>EASA PAD No. 15-020</b> <b>[Published on 04 March 2015 and officially closed for comments on 01 April 2015]</b>

**Commenter 1: Masco Service Corporation – Kaye Hutchison – 30/03/2015**

**Comment # 1**

We are an NG LITEF licensed and approved Part 145 repair center located in Grapevine, TX. We will be involved in converting the fielded LCR-100s covered by this PAD as many of the operators of these units fall in the region we serve. We have been made aware of this forthcoming AD by NG LITEF and have been working together with them to provide a support plan. This involves the investment on our part of specific test equipment that will be needed to perform the upgrade.

We understand that there are a large number of fielded units both in North America, our primary service area, and throughout the world. The technical aspects of the upgrade have been briefed to us by NG LITEF. Our reason for submitting these comments is to enter our concern on the proposed schedule for updating the units seen in the PAD.

Securing the needed test equipment and parts to make the upgrade has already begun. However, given lead times, it will be a few months before we are in position to complete the first unit conversion with the new technical solution. We are trying to expedite the needed equipment but still do not have a commissioning date. Because of this, we are concerned that the deadline seen in the PAD will be too short to allow us to make major inroads to completing the “critical” fielded units.

We understand the importance of this AD and the critical nature of the problem. However, so as not to create expectations that are unrealistic, we thought we should make this situation known to you.

**EASA response:**

**Comment agreed. The Final AD has been updated to introduce two different compliance times to consider the different criticality impacts of the issue. In addition, a distinction has been added for the case of use of AHRS analogue output data for non-critical aircraft functions: for those installations, the compliance time has been extended to 24 months but maintained in this AD considering EU 748/2012 guidance material (GM) 21.A.3B section 2.1.2.4:**

**“If there is a deficiency in systems used to assist in the enquiry following an accident or serious incident (e.g., Cockpit Voice Recorder, Flight Data Recorder), preventing them to perform their intended function, the Agency may take mandatory action.”**

**The correction developed by Northrop Grumman LITEF is available and can be implemented at facilities authorised by Northrop Grumman LITEF.**

**Commenter 2: PZL Mielec – Andrzej Kaławaj – 31/03/2015**

**Comment # 2**

Please be kindly informed that mentioned period 6 months for the modification is too short to perform the requirements of this AD.

In our opinion 6 months does not seem to be sufficient to fulfil modifications for all aircrafts, therefore we preliminary suggest time 12 months for the modification of the AHRS. It is related with quantity of aircraft and logistic issues. In our case, we will have to modify 43 civil and military aircrafts equipped with 68 units of LCR-100 Attitude Heading Reference System. It is a very big logistic undertaking, because those aircrafts are located in the different regions of the world.

Please kindly consider our suggestion for AD regarding LCR-100 AHRSz from NORTHROP GRUMMAN LITEF GmbH.

**EASA response:**

**Comments partially agreed. See also EASA answer to Comment # 1. According to regulation EU 748/2012, Part 21.A.3B, the compliance time for aircraft installations using the LCR-100 analogue output without automatic detection of the frozen output data of the AHRS is determined by an estimated probability of a catastrophic event. For the other installation cases, the compliance time is determined by the necessity to restore the initial airworthiness level. It should also be noted that the equipment can be removed from one aircraft installation (e.g. low criticality), and subsequently installed on another aircraft, with an installation having a higher level of criticality. The AD takes that into account by requiring all units to be modified.**

**Note that all military aircraft are outside the scope of EASA responsibility.**

**Commenter 3: RUAG Aerospace Services GmbH – Jürgen Berk – 31/03/2015****Comment # 3**

If we understand Airworthiness Directive PAD No. 15-020 correctly, all AHRS units LCR-100 must be replaced within 6 months.

For our installation on Dornier 228 we use the digital output (ARINC 429) and are therefore not affected by this failure.

Due to this fact we kindly ask you to limit the replacement to those installations using analogue output without automatic detection of the frozen output data. The “Required Actions (1)” in the AD is only applicable for aircrafts using the analogue data without automatic detection of the failure. We recommend to add this condition also to (2).

**EASA response:**

**Comment not agreed. See EASA answers to Comments # 1 and # 2.**

**Commenter 4: DAC International Inc. – Francisco (Cisco) Hernandez – 31/03/2015****Comment # 4**

DAC International, INC, Austin Texas is a Northrop Grumman Distributor and have sold over 400 units to Dealers and other flight organizations. We are aware of the forthcoming AD by NG-LITEF and have been working in support of contacting our install base. The majority of our customers are a single or a small fleet aircraft operator, therefore, as you will understand it is very difficult to locate and inform such a base. Since each installation can be quite different it is very difficult to have the

customers change their airworthiness certification for the new product. DAC feels the timing to make such a change will cause a large population of our customers to ground aircraft until the follow on certification can be accomplished. Considering the FAA and possibility EASA workload, to make a change in an STC takes 3-6 months. With the regulatory back log we feel the 6 months timing is too short. Our position is one year for the critical units and 3 year for the non-critical operators would be more appropriate for a total timing. Generally speaking, the aircraft owner will not have the information in the AD until an annual inspection is scheduled and the AD review is accomplished.

DAC International understands the safety issues but over 8 years of selling the LCR-100 NG-LITEF AHRS and over 20 years of selling NG LITEF products we have not had a certification denied or an incident as noted in the AD occur.

In aircraft applications where there are no issue due to adequate alarm and/or annunciation, DAC feels it is difficult to require people to make an additional expense to re-certify a very satisfactory and safe working product. Therefore we request you further evaluate the case where there are no safety issues due to proper annunciation/alarms be part of this AD and separate it from the new Part Number requirement.

**EASA response:**

**Comments partially agreed.**

**The commenter is correct that the STC package will have to be updated, applying the AD requirements would restore the original STC airworthiness level. The equipment replacement may be considered minor at aircraft level due to the possibility of the (re)classification path (see classification process in GM21.A.91 Annex).**

**Additionally, considering the communication to aircraft owners, EASA notifies (by e-mail) each AD to all National authorities of the States of Registry, who in turn are expected to inform the owners and operators of affected aircraft registered in each respective State. It is the responsibility of each aircraft owner/operator to keep knowledge and awareness of the applicable ADs.**

**The Final AD has been updated to introduce two different compliance times to consider the different criticality impacts of the issue.**

**Commenter 5: Bell Helicopter – Cassandra Wolvin – 31/03/2015**

**Comment # 5**

Bell Helicopter agrees with the application of the subject Proposed Airworthiness Directive (PAD) for the identified Bell Helicopter Models. Upon release of the Northrop Grumman LITEF (LiTEF) SB 145130-0017-884, Bell Helicopter performed a safety analysis and coordinated the results with the FAA. This resulted in the February 2, 2015 release of an Alert Service Bulletin (ASB) requiring temporary revisions to the applicable flight manual. These revisions meet the majority of the requirements outlined in Required Action (1) of the subject PAD. In addition to the ASB flight manual revisions, Bell Helicopter proposes additional flight manual procedures to comply with the requirements outlined in Required Action (1) of the subject Pad within the specified timeframe.

Although Bell Helicopter supports the hardware retrofit requirement as a terminating action for the proposed PAD, Bell disagrees with the proposed 6 month time limit. There are more than 170 impacted aircraft operating with the affected units and the Bell Helicopter believes LITEF does not have the capacity to retrofit the fleet at that rate and has requested 60 months to complete the required hardware retrofit. Additionally, with the implementation of the ASB required flight manual revision, the probability of catastrophic occurrence is sufficiently mitigated within an acceptable range and to date, there have been no recorded failures in the affected fleet, which has accumulated an estimated 159,599 flight hours .

Bell Helicopter therefore proposes that this be considered non safety critical for affected Bell Helicopter Models and, given the supplier's production capacity coupled

with the sufficient mitigation provided by the ASB required flight manual revision, Bell Helicopter proposes that retrofit timeline be extended to 60 months.

**EASA response:**

**Comments partially agreed. See EASA answers to Comments # 1 and # 2.**

**Commenter 6: Textron Aviation – Poonam Richardet – 01/04/2015**

**Comment # 6**

Comment to page 1, par.3: EASA has issued a proposed AD 15-020 against the LITEF LCR-100 AHRS for misleading analog output without warning. The AD lists the Cessna Model 560XL as having a potential unsafe condition as a result of this failure. Cessna Aircraft does not consider misleading analog output of the LCR-100 AHRS to be an unsafe condition on the Model 560XL based on the following considerations.

The 145130-7000 LCR-100 affected by AD 15-020 is installed on eight serials of the Model 560XL (XLS\*) as AHRS number 2 (AHRS 2). The 142185-1100 LCR-93 or 145130-6000 LCR-100 installed as AHRS 1 on these serials are not affected by AD 15-020. All primary display of attitude, heading and autopilot interface is via ARINC 429 databus outputs of the LCR-93 and LCR-100 AHRS. The analog output of the 145130-7000 LCR-100 AHRS 2 is used to provide heading and attitude to the optional F1000 L3 Flight Data Recorder and the optional WX-500 L3 Stormscope. The WX-500 Stormscope provides lightning strike data displayed on the optional Garmin Apollo MX20 Multi-Function Display. All information displayed on the Apollo MX20 display including Stormscope is advisory only and not approved for navigation. Loss of the 429 data output of the LCR-100 AHRS 2 installed on the 560XL will result in red X display of attitude and heading from AHRS 2 on the primary EFIS displays. AHRS 1 data will still be available to EFIS. Therefore the flight crew would have warning of the AHRS 2 failure and would continue flight with attitude/heading data from AHRS 1. Stormscope data display on the MX-20 would be frozen with respect to heading orientation. The Stormscope display is not used for primary navigation and misleading Stormscope display is assessed to be a Minor failure per Cessna report AV-560XL-031. The Model 560XL does power AHRS 2 on the emergency bus to provide 429 heading input to the HSI-315B Standby Horizontal Situation Indicator. Loss of the 429 heading input would be flagged as a failure on the HSI-315B. Heading display in this situation would continue to be provided the flight crew as a heading tape display on the bottom the GH-3000 Standby Flight Display. The stand-by GH-3000 attitude and heading display is independent of the primary LITEF AHRS.

\*Note the XLS variant of the Model 560XL is no longer in production. Current production XLS+ aircraft utilize dual Collins AHC-3000 AHRS.

Suggested change: The failure of frozen analog output data without annunciation from the 145130-7000 LCR-100 AHRS installed on the Cessna Model 560XL is not considered to be an unsafe condition. The analog data is not used for primary attitude heading display or for autopilot. Failure annunciation is provided the flight crew on the primary EFIS display and the non-affected AHRS will continue to provide primary attitude and heading data. Any Stormscope data display would be frozen in regard to heading orientation, however, this is assessed to be a minor failure. Loss of the HSI-315B heading input in emergency power is annunciated and heading data will continue to be provided to the flight crew via the GH-3000 Standby Flight Display.

Based on this analysis Cessna Aircraft requests the Model 560XL be removed from the list of potentially affected aircraft on proposed AD 15-020.

**EASA response:**

**EASA disagrees with the proposal to remove the Cessna Model 560XL from the Applicability of the AD; EASA partially agrees with the remaining comments. See EASA answers to Comments # 1 and # 2. Because the issue is inducing the AHRS Digital output frozen and announced unavailable, Cessna Model 560XL aeroplanes, with LITEF LCR-100 AHRS installed, are considered affected by this AD.**