


<b>EASA</b>	<b>COMMENT RESPONSE DOCUMENT</b>
	<b>EASA PAD No. 12-109-CN – Proposal to cancel EASA AD 2006-0265</b> <b>[Published on 21 August 2012 and officially closed for comments on 31 October 2012]</b>

**Commenter 1: IAE Ltd. (UK) – Garry Joyce – 21/8/2012**

**Comment # 1**

Having recently received the above NOTIFICATION OF A PROPOSAL TO CANCEL AN AIRWORTHINESS DIRECTIVE for AD 2006-0265 I have to say that I am surprised by this decision. In my experience from owning an EASA Part 145 Maintenance Organisation working on Part 23 aircraft I have to say that we regularly find discrepancies in Mode C readouts.

To say that ATC will alert the crew to any discrepancy does not mean the issue will [be] resolved. In my experience certainly on smaller part 23 aircraft many owner operators if they know they have a mode c discrepancy will fly at the incorrect altitude to ensure there altitude reporting is reading correct to ATC and this can continue on for many flights. This as you can imagine is probably a most dangerous scenario with aircraft flying at the incorrect flight level and ATC being unaware.

If you take away this monitoring by maintenance companies I do believe errors will continue and aircraft may well fly at incorrect flight levels.

From a cost point of view I can tell you my company charges a flat rate fee £75.00 + VAT for this check, considering this is only done every 24 months I don't believe this is an unacceptable cost to the owner/operator

**EASA response:**

***EASA disagrees. Nevertheless, it is surprising to learn that, according to the commenter, 'many' pilots will fly at an incorrect altitude to ensure their altitude reporting is reported correctly to ATC. Such actions would clearly be unacceptable (if not actually illegal) and pose a significant safety risk to other aircraft. The purpose of an AD is to correct an unsafe condition, not to prohibit (or otherwise prevent) actions which can be considered illegal, e.g. through existing operational regulations. The commenter's observations also contradict the reports received from organisations representing owners and operators, which indicate that there are very few problems found during the execution of AD 2006-0265.***

***No changes have been made in the Final AD-CN in response to this comment.***

**Commenter 2: Darren Tuttle (Licensed Engineer) – 4/9/2012**

**Comment # 2**

After reading EASA PAD 12-109-CN regarding the cancellation of EASA AD 2006-0265, I have a number of concerns, issues and questions relating to the purpose and

reasons to this decision.

Some of the wording on this EASA PAD document is confusing to understand, it seems to imply that altitude reporting issues are due to 'affected transponders'. My understanding is that ANY transponder using gilham code parallel wiring from an altitude encoder will suffer from inaccurate height reporting if they are not serviced and inspected at regular intervals. This includes any new transponder on the market today, a mode 'S' ELS transponder is highly likely to be wired gilham code to an existing encoder.

I have personally been doing this 24 monthly inspection for many years on CS23 / 25 / 27 and 29 aircraft. My analysis of this decision to cancel this AD is that it seems to be commercial fuelled as a cost cutting exercise for CS23 owner / operators. Through experience, this category of aircraft is the most likely to have issues with transponder / altitude encoder errors and faults, and to summarise; the most likely category to not want to do anything about it!

It is very common for me to make adjustments to the calibration of an altitude encoder whilst on inspection. It is also very common to find altitude encoders that are faulty. The fact that EASA have not necessarily been made aware of these issues does not mean that it does not happen. These faults include spurious height readings which can put the altitude encoder thousands of feet in error opposed to a few hundred. The Gilham code wiring is also a common issue with connection issues / damaged wiring giving incorrect height readings. Most altitude encoders installed to CS23 / 27 aircraft are capable of operating to at least 35000ft putting any aircraft operating within this airspace range at risk of a potential false target and/or incorrect resolution advisories. This is regardless of the weight / operation and flight rules of an aircraft. The FAA are still using FAR 91.411/413 which can cover an altitude encoder check, we cannot force an encoder check without some sort of mandatory requirements to do so. I believe that this decision to terminate EASA AD 2006-0265 will have a negative effect to aircraft safety.

***EASA response:***

***EASA disagrees. PAD 12-109-CN clearly states that it applies to "Mode 'C' and Mode 'S' transponders, all types and models utilising Gilham code altitude input". Also, most Mode S ELS transponders today provide an interface to receive altitude via a digital data bus and new CS 23 designed aircraft generally use a digital data bus for input of altitude data.***

***No changes have been made in the Final AD-CN in response to this comment.***

***Commenter 3: ICARIUS (France) – Baptiste Roux – 2/10/2012***

***Comment # 3***

We are happy to learn that this requirement will be removed for general aviation.

However, please note that for the French aircraft registration, if AD 2006-0265 will be cancel, it will remain the "fascicule P-41-15" published by the OSAC (under issue 2 and revision1), which specified an ATC system inspection every 24 months (if AD 2006-0265 is not applicable).

So, if AD 2006-0265 will be cancel, the transponder inspection will remain applicable on French aircraft registration.

We hope the French requirement will follow the EASA decision.

***EASA response:***

***EASA agrees. However, DGAC France will have to decide which action to take (if any), based on the decision taken by EASA.***

***No changes have been made in the Final AD-CN in response to this comment.***

**Commenter 4: London Helicopter Centres Ltd – Jonathan Wright – 11/10/2012****Comment # 4**

I am writing to express my grave concern regarding the proposed cancellation of EASA AD 2006-0265 and the implications this would have on airworthiness.

With European air traffic levels set to double by 2020 and in light of Eurocontrol's proposed overhaul of the current air traffic management system, aimed at improving safety, it seems incongruous that EASA is proposing the cancellation of AD 2006 0265.

Altitude data is a vital interface for airborne secondary surveillance radar, traffic collision avoidance and traffic advisory systems and therefore it is imperative that this data is maintained functional and accurate at all times.

In my experience, approximately 10 to 15 percent of tests carried out under EASA AD 2006-0265 result in corrective adjustments being made to the altitude encoder output. Errors of several hundred feet are not uncommon.

With the advent of new technology, legacy altitude encoders using Gillham Grey Code will eventually be phased out. In the meantime however, the aircraft maintenance industry relies heavily on this AD TO to ensure aircraft altitude encoding systems remain accurate and safe.

**EASA response:**

***EASA disagrees. As stated in PAD 12-109-CN, the European Commission has recently published Implementing Regulation (EU) No. 1207/2011 which contains the requirements for the performance and interoperability of surveillance for the Single European Sky, which includes repetitive testing of transponders. This would effectively replace the need for AD 2006-0265 for those aeroplanes. This regulation, however, only applies to aeroplanes with a take-off mass exceeding 5 700 kilograms. For aeroplanes and helicopters with a take-off mass below 5700 kilograms EASA would propose to revise Safety Information Bulletin (SIB) 2011-15 to recommend certain actions to ensure correct operation of the transponders and Gilham code interface (if installed).***

***No changes have been made in the Final AD-CN in response to this comment.***

**Commenter 5: STC Aviation Services – Simon Cooper – 11/10/2012****Comment # 5**

As the certifying engineer in a Part145 maintenance organisation here in Spain, I have heard of the proposed cancelation of EASA AD 2006-0265 Gillham Code Test by EASA. In my opinion it would be a substantial mistake to cancel this directive.

Of the approximately 60 G.A. aircraft a year I carry out a Pitot/Static System test and Radio Annual inspection, I find about 30% with some defect or other in the Encoder/Transponder system which do not comply fully with AD 2006-0265.

The greater proportion of systems tested which do not comply (approximately 75%), have Altitude Encoders over or under reading, frequently by 200 - 300 feet over the whole range of altitudes. Less frequently others transmit erroneous or invalid codes at some altitudes resulting from Gray/Gillham Code lines open, shorted or incorrectly wired to the Transponder. In carrying out this inspection, I also find Encoders not piped in to the aircraft's static system or with obstructions or moisture in the lines.

I believe these such defects if undetected, can and do cause inconvenience/risk/danger to the aircraft, other aircraft in the vicinity (some equipped with TCAS which thus have erroneous information) and of course occupants.

I would also like to take the opportunity to comment on the wording of the AD in the title "Applicability". Occasionally I have spoken to other engineers/aircraft owners who when reviewing ADs and seeing the "Applicability" section which mentions three types of large commercial aircraft, have rather dismissed this AD as not possibly being applicable to a GA type. Maybe this error is easier to commit in a country where English is not the mother tongue?

Also the term "Gillham Code" can, I think, lead to certain confusion - while it is correct terminology, the term "Gray Code" is more frequently used at least in G.A. avionics of American manufacture, i.e. most G.A. avionics.

**EASA response:**

**EASA agrees that the 'Applicability' of AD 2006-0265 only mentions (as example) three 'large' aircraft types. However, the AD also states that "This type of equipment is known to be installed on, but not limited to, the following aircraft", which makes it clear that the AD applies not only to the types listed, but also applies to GA types, if these transponders are installed.**

**No changes have been made in the Final AD-CN in response to this comment.**

**Commenter 6: AVIONITEC AG (Switzerland) – Andy Stoll – 12/10/2012**

**Comment # 6**

We absolutely agree with Garry Joyce [see Comment # 1 above] that [EASA AD 2006-0265] should stay! We experience very often failures on the aircrafts during the tests.

1. Up to 30/40 percent of the tests fail
2. Most of the time there are encoder problems, either the encoder is completely u/s, or it is out of tolerance (100 to 400 ft. offset)
3. Very often the test shows also static system LEAKS!

**EASA response:**

**EASA disagrees. Reports received from organisations representing owner operators indicate that the problems found during the execution of the tests as required by AD 2006-0265 are mostly unrelated to the unsafe condition address by that AD, i.e. the altitude reporting function using Gilham code. See also the answer to comment # 4 above.**

**No changes have been made in the Final AD-CN in response to this comment.**

**Commenter 7: Avionicare Ltd (UK) – Peter Harland – 20/10/2012**

**Comment # 7**

I would like to comment on the PAD above and the intended removal of the EASA AD 2006 0265 for checking Transponders with Gilham Altitude Encoders and would be strongly against it. Having run my own independent Avionics company for 24 years, I would like to comment on this proposal as being unsound and would strongly recommend NOT removing or rescinding the AD for many reasons.

Current Maintenance programs have reduced many of the preventative maintenance and routine Avionics checks which I believe is the reason why we have experienced an increase in aircraft normal calibration tolerances being repeatedly exceeded.

Especially Gilham code Altitude Transponders, we experience approximately 25% of all the aircraft we check when completing the AD [2006-0265] to have either leaks in their static source system or transmit inaccurate altitudes caused by Gilham encoders being out of tolerance.

EASA should appreciate that the EASA AD [2006-0265] not only routinely checks Gilham Mode S but also the Pitot static systems. Abuses of static system integrity is very prevalent within the GA environment of aircraft under 5700kgs unpressurised, with the attitude of many operators/owners and maintenance providers being "it's not a problem the aircraft is un pressurised"

These obviously cause flight errors, and I have heard that some pilots correct their flying altitude to try to compensate if ATC routinely report their altitude errors. This is dangerous. Without the AD the Static system integrity would be ignored and compromised.

In addition many VFR owners of Private aircraft of 5700kgs unpressurised do not consider their Mode C Transponders as being important yet they routinely transit or operate close to major Class A airspace around terminal areas.

In addition we have also seen several aircraft under 5700kgs Pressurised also having errors, which causes altitude busts when selecting altitude or VNAV functions on their aircraft.

Therefore I can summarise that most of the aircraft below 5700kgs either pressurised or unpressurised regularly have faults found only during the check when the AD [2006-0265] is completed. Bear in mind many approved maintenance programs do not otherwise include Pitot Static checks and Mode C checks unless they have an unscheduled instrument change (usually when the aircraft is not on Base maintenance and is away. This also restricts correct testing of the system as the aircraft is outside the hanger) this compounds the problem and risk of errors not being picked up until they enter controlled airspace. Invariably this is when we find the aircraft out of spec. How long have they been out of spec?, no one knows, unless they are picked up by ATC which shouldn't be allowed to be the only back stop.

***EASA response:***

***EASA disagrees. See answers to # 4 and #6 above.***

***No changes have been made in the Final AD-CN in response to this comment.***

***Commenter 8: Bournemouth Avionics Limited – Brian Cook – 28/10/2012***

***Comment # 8***

I am responding to the above AD. I was unaware that reports of failures should be sent in. We all of course carry out the AD as required to every two years and on average I experience a failure rate of about 25 to 30%. These failures do vary from encoder failures/inaccuracies, wiring defects and also static issues. All of which contribute to incorrect Mode C reporting.

1. Encoder failures - these failures vary from no output at all due to hardware failure, fixed by replacement. Erratic outputs where the mode C output fluctuates +/- the desired reading this can be a substantial error, fixed by replacement. Inaccurate reading where the encoder has just wandered off and requires full test and adjustments to bring back within tolerance.
2. Wiring defects - where the wiring has become damaged over time and therefore outputs are affected but only at certain altitudes.
3. Static issues - where the static supply has been either disconnected or trapped. I have had cases where the static supply has been damaged resulting in forced ventilated air being transferred to the encoder causing massive fluctuations in the output.

With the exception of 3, the system needs to be tested to height in order to establish the fault or even see an error. In my view, the cancelation of this AD would not be in the interests of flight safety.

**EASA response:**

**EASA disagrees. In light of this comment, it might be expected that owners/operators of the affected aircraft (25-30%) are challenged more often by ATC regarding the accuracy/integrity of the reported altitude. However, EASA is not aware of significant numbers ATC reported events related to incorrect, or fluctuation of, altitude on GA aircraft.**

**No changes have been made in the Final AD-CN in response to this comment.**

**Commenter 9: AOPA Finland – Esa Harju – 30/10/2012**

**Comment # 9**

[text of page 5 of AOPA Finland Letter to EASA, dated 27.10.2012 – received by E-mail 30 October 2012]

On 14th of December 2010 AOPA-SWEDEN wrote a letter asking EASA to reconsider the applicability of [EASA AD 2006-0265]. Since the letter was sent, AOPA-SWEDEN has uncovered an FAA AD-note, 99-23-22 R2 effective 20 April 2000 rescinding the R1 issue and the requirement for special transponder code output testing. Furthermore, 99-23-22 R2 supply's the justification for the withdrawal of the requirement.

According to the AD, out of 1,142 aircraft tested, only 49 exhibited Mode C failures, and out of those 49, one (1) had a confirmed Gillham code failure.

Since transponder equipment and testing apparatuses are likely to be the same in the US and in Europe, we assume those figures to be representative also for EASA aircraft. We therefore believe there is no obvious threat to flight safety from erroneous Gillham codes and that the AD-note 2006-0265 may be withdrawn.

We estimate that each owner of a mode C equipped General Aviation aircraft has so far had to comply with the 24 month inspection requirement of the ref. EASA AD three times. We further estimate that each inspection has a cost of 300 EUR, not counting extra positioning expenses. This amounts to a total in excess of 900 EUR from the issuing date of the ref. EASA AD until today.

Since the FAA statistics shows that less than 1 in 1000 aircraft may be expected to have a problem with the Gillham code, and in particular since the 24 month interval test in no way guarantees that the equipment will be fault-free for the next 24 months, we see little reason to continue with the required tests.

It is important that General Aviation aircraft owner's funds are spent where they will be most beneficial to flight safety.

If the funds are spent on less than optimal actions, there will be less to spend on flight safety actions or inspections that may be more important. Indeed, the tests seem rather pointless as the ATC will likely spot any mode C discrepancy be it Gillham or not, as it happens, if it happens.

We therefore join to urge EASA to withdraw AD 2006-0265 applicability for General Aviation aircraft.

**EASA response:**

**EASA agrees. However, it should be noted that these comments do not reflect the reports received from Maintenance Organisations which would indicate that there are many problems found with the altitude reporting system using Gilham code during the execution of AD 2006-0265. The correct functioning of the altimetry system is essential for flight safety. EASA is, however, not aware of significant numbers ATC reported events related to incorrect, or fluctuation of, altitude on GA aircraft.**

*No changes have been made in the Final AD-CN in response to this comment.*

**Commenter 10: Pilatus Aircraft Ltd. – Johan Kruger – 30/10/2012**

**Comment # 10**

Although the PC-12 was not on the list of possible affected aircraft, the 2 yearly transponder test was performed.

We have searched our Occurrence- and Customer Reporting Databases and could not find a single report of any in-flight occurrence of false altitude information being transmitted. Pilatus has no report of any false TCAS II advisories.

We agree with the EASA position that 24 months is a long time between inspections when trying to avoid dormant failures and that any misbehavior would be noted by an ATC and reported to the operator.

Pilatus Aircraft Ltd. supports the cancellation of the AD 2006-0265.

**EASA response:**

*EASA agrees. No changes have been made in the Final AD-CN in response to this comment.*

**Commenter 11: Drabpol Sp. Jawna (Poland) – Pawel Drabczyński – 31/10/2012**

**Comment # 11**

With reference to the information about the Agency's proposal to cancel EASA AD 2006-0265 [requiring] Mode S and Mode C transponders checks, we herewith file our observation against this PAD.

The 'Drabpol Sp. Jawna P. Drabczyński i Wspólnik' company is a certified PART 145 and PART 21 ADOA organization with several years of experience in avionics business in Poland. In our opinion the cancellation of EASA AD 2006-0265, especially with regards to aircraft below 5700kg MTOW, will cause a significant decrease of safety in their operation due to the lack of national regulations and effective legal instruments demanding periodic checks of avionics equipment.

From our observations we have concluded that EASA AD 2006-0265 is in Poland the only effective instrument persuading owners and operators of aircraft below 5700kg MTOW to visit a certified workshop and have any avionics checks concluded. Our records indicate that ca. 50% of transponder checks reveal leaks in static pressure systems and/or encoder faults (broken or uncalibrated encoder).

Considering the above, we appeal to cease the proposal of EASA AD 2006-0265 cancellation, or to create an alternative, that would effectively execute maintenance of safety standards in flight for general aviation.

**EASA response:**

*EASA disagrees. However, as described in PAD 12-109-CN, EASA will revise SIB 2011-15 to recommend certain actions which would ensure correct*



***operation of the transponders and Gilham code interface (if installed). An SIB is for information and, by definition, does not contain mandatory actions. No changes have been made in the Final AD-CN in response to this comment.***

***Commenter 12: Aero-club of Switzerland & Europe Air Sports – René Meier – 31/10/2012***

***Comment # 12***

On behalf of the Aeroclub of Switzerland and of the Board of Europe Air Sports I would to communicate our support for this Proposed Airworthiness Directive Cancellation Note. It makes sense to cancel requirements for repetitive unnecessary tests. Both organisations thank the Agency for this initiative.

***EASA response: Comment noted. No changes have been made in the Final AD-CN in response to this comment.***

***Commenter 13: Norwegian Air Sports Federation – Torkell Saetervadet – 31/10/2012***

***Comment # 13***

[received through Mr. Meier – commenter #12 above]

the Norwegian Air Sports Federation strongly supports this initiative!

***EASA response: Comment noted. No changes have been made in the Final AD-CN in response to this comment.***

***Commenter 14: Avionicsplace.com (Rockford, Illinois, USA) – Tony Polemarkis – 31/10/2012***

***Comment # 14***

I am against rescinding [EASA AD 2006-0265]

Reasons: We have been performing 24 month checks on part 23 aircraft since the 70's.

The required check we do gives us a good background on the transponder issues as well as the encoder issue in regards to the Grey [code] outputs.

When we run into encoder errors that are more than a couple hundred feet it is usually a bad encoder. If it is a thousand foot error or more it is usually a bad connection on the code lines or possibly a problem in the transponder decoder I would estimate needing adjustments or repairs to encoder system runs about 20 to 30 % of the time.

I consider the test we do preventative and flight safety as well as required under FAR 91.413 Aircraft flying in controlled or uncontrolled airspace should maintain a



good working transponder encoder system

***EASA response:***

***EASA disagrees. EASA AD 2006-0265 (which is not a State of Design AD – it applies to all transponder installations, irrespective of State of Design) has never been adopted by the FAA. Compliance with this AD is therefore not required for aircraft registered in the US. We note that FAR 91.413 (which refers to Part 43 Appendix F) contains similar tests for the transponder and altimetry system. As the PAD indicates, the FAA previously issued an AD, similar in requirements to EASA AD 2006-0265 but with a more limited Applicability. The conclusion of the FAA, even before EASA AD 2006-0265 was issued, was that repetitive tests of these transponders were no longer necessary to ensure safe operation. Consequently, the FAA cancelled that AD – we note, however, that Part 43 Appendix F was still in place to require periodic transponder testing.***

***No changes have been made in the Final AD-CN in response to this comment.***