


EASA	COMMENT RESPONSE DOCUMENT
	<p>EASA PAD No. 12-035</p> <p>[Published on 26 April 2012 and officially closed for comments on 24 May 2012]</p>

Commenter 1: TAP Maintenance & Engineering –Ricardo de Magalhães Corrêa – Wed 02/05/2012 14:57

Comment # 2

Dear sirs,

Regarding the mentioned PAD, we find that the following HMU's P/Ns are also used on **CFM56-5C** engines:

1348M79P08
1348M79P09
1348M79P10
1348M79P11
1348M79P12
1348M79P13
1348M79P14

Therefore, we would like to question if a future AD should not contemplate also the CFM56-5C engines when the latter have had CIS fuels uploads?

Best regards,

EASA response:

The comment is noted, following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The 5C will not be included in this AD. The same HMU is installed on 5C engines although none of these have experienced problems, though none are operated by CIS airlines

Commenter 2: JSC "Siberia Airlines" – Aleksey Shatko – Sat 05/05/2012 15:11

Comment # 3

Dear Sir/Madam,

I'd like to use this opportunity to raise some questions related to the wording provided through PAD No.: 12-035.

1. Let's imagine we will accomplish the first calculations of HMU operation on TS-1 fuel for the preceding 12 months in June 2012. Does it mean that we will need to do the same calculations for the second time only in June 2013?
2. In (1.2) you link the HMU operation on TS-1 fuel with the percentage of TS-1 fuel uploads on the airplane. Does it mean that any aircraft refilling with TS-1 fuel (regardless its actual volume compare to remaining fuel onboard of another jet fuel type) has to be counted?
3. Let's assume that we have one HMU with some hours since its overhaul/cleaning/inspection installed on aircraft operated on TS-1 fuel. Does it mean that the subject HMU has to be removed from wing at 10000 hours since overhaul/cleaning/inspection even if it has operated less than 10000 hours with TS-1 fuel?
4. Please provide an example of a situation when HMU removal is requested "before next flight".
5. Let's imagine we have one HMU operated for 5000 hours with TS-1 fuel. For some reasons this HMU has been removed and installed on another airplane flying outside TS-1 fuel region. 12 months later this HMU (after satisfactory inspection) came back to TS-1 fuel region and has continued operation with TS-1 fuel only. How one should determine the removal deadline for this HMU?
6. Are you expecting to get sufficient corrective actions from OEM's (Woodward, CFMI, Airbus) to be able to provide terminating action for this AD as soon as possible? I propose to establish a deadline date for OEM's to generate corrective actions. The AD should not be issued without committed date from OEM's.

Your kind assistance and soonest reply are highly appreciated.

Best regards,

EASA response:

The comments are noted, following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received

Comment #3/6 EASA are continuing to work with all relevant parties to identify the appropriate corrective actions. At this time no terminating action is available. Based upon information presented to the agency, root cause for the corrosion and the presence of corrosive catalysts has not been identified. Therefore the agency has decided to implement the mandatory mitigating actions identified in the AD whilst all parties continue to investigate root cause and suitable terminating actions.

Commenter 3: FAA Engine Certification Office, ANE-141 – Marty (Martin) Adler – Tue 08/05/2012 16:26

Comment # 4

Dear EASA AD team,
I wish to point out a typographical error on the noted proposed AD.
Table 1, paragraph A

currently reads:

"... or SB CFM56-
573-0182 (any revision), as applicable to engine
type."

should be:

"... or SB CFM56-5
73-0182 (any revision), as applicable to engine
type."

EASA response:

Comment accepted.

Commenter 4: Lufthansa Technik AG – Egbert Hahn – Mon 14/05/2012 16:58

Comment # 5

To the editor of PAD.: 12-035

Herewith I would like to file an objection regarding the realization procedure of the PAD.
Lufthansa Technik Engineering would be grateful for reinvestigation by the authority and subsequent clarification:

1. Effectivity:
 - a. According PAD 12-035 the engine type CFM56-5A & 5B are affected only. Anyhow the affected HMU partnumbers are used by CFM56-5C engines as well.
 - i. What is the reason behind or is a PAD also aimed for CFM56-5C engines?

2. Reason:

- a. According PAD 12-035 A320 family aeroplanes predominantly using TS-1 fuel have experienced In Flight Shut Downs over the last 18 month.
 - i. Acc. SBE 73-0182 & 73-0122 CFMI is aware of the negative influence of TS-1 fuel since 2003. Is there a significant increase noticeable over the past 18 month?
 - ii. Is this phenomenon related to the time related noncompliance of TS-1 fuel specification (GOST 10227-86) ?
 - iii. If not, why does the HMU(manufactured by Woodward) reveal malfunctions with a fuel type it was specified for ?
 - 1. As a terminating action for the impending EASA AD LHT engineering would highly appreciate to encourage Woodward to design a new corrosion resistant delta p -valve !

3. Tracking:

- a. According PAD 12-035 every HMU contaminated with more than 50% use of TS-1 fuel over the last 12 month will be affected.
 - i. Example: If we have one operator that has accumulated 5000 hrs. using JetA1 fuel & 5000hrs using TS-1 fuel compared to another operator that has flown in alternate 1 leg with JetA1 fuel & 1 leg with TS-1 fuel for 10.000 hrs operation, both operators have flown 50% of the time with either fuel but not in the same way. Are both cases equivalent ?
 - ii. Tracking of the rate of used fuel type is made worse by the following aspects:
 - 1. In the CIS areas you will find several different fuel types:
 - a. TS-1 (Premium and Regular Fuel)-affected !
 - b. T1 Regular Fuel
 - c. T1-S Special Fuel
 - d. T-2 Wide Cut Fuel
 - e. RT Premium Fuel
 - f. Jet A-1 Fuel
 - 2. Every operator has to perform an on going process in order to monitor what type of fuel and what quantity of fuel was replenished.
 - a. This is a non realistic way to fulfill impending EASA AD !
 - 3. It is currently not clear how a maintenance provider like Lufthansa Technik may handle this requirements, due to the fact that we supply our customers with units coming from a HMU pool.
 - a. Do we need a written confirmation of customers whether removed HMU was contaminated by >50% TS-1 Fuel, if yes the hours since first exposure?
 - b. The current used Time Since Overhaul has to be supplemented with Time since Overhaul after first use of TS-1 fuel !
 - i. Example: A HMU installed on a NON TS-1 operated aircraft is removed for trouble shooting and tested No Failure Found. Subsequent user (TS-1) is unable to fully use the 10.000 engine hours using just the Time Since Overhaul parameter. This is a non economical way or an additional (unconventional) tracking parameter has be launched to count after the first TS-1 fuel contact.

I do hope that I was able to show that in the PAD the current advised tracking procedure is difficult to realize.
LHT suggest a HMU modification of the delta "P"-Valve as a terminating action reimbursed by Woodward.

If you require any additional information, please contact me.

Thanks in advance
and best regards

EASA response:

Comment #5/1 See response to Comment #2

Comment #5/2.a)i) The commenter is correct that HMU servicing recommendations have been in existence for some time, initially to address varnishing and fuel deposits when operated on TS-1 fuel. Although the recommendations were not at that time issued to address corrosion of the HMU delta p valve, the same actions provide an interim solution to mitigate the recent high rate of HMU corrosion related problems identified within the affected fleet in the last 18 months.

Comment #5/2.a)ii) The root cause has not been established at this time.

Comment #5/2.a)iii) The HMU does not exhibit the corrosion problem when operated with other types of fuel. However, the root cause has not been established at this time, and so it is not possible to state whether the HMU, the fuel quality or the fuel specification is the cause.

Comment #5/2.a)iii)1) The agency is continuing to work with all affected parties to identify root cause and investigate suitable terminating action for the requirements of this AD. If a subsequent terminating action is identified, then the AD will be revised accordingly at the earliest opportunity.

Comment #5/3.a)i) The comments are noted, following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received

Comment #5/3.a)ii)1) Of the fuel types listed, TS-1, RT and Jet A-1 are the only types specifically approved for use on the CFM-5 and -5B, and the problem only affects engines operated on TS-1

Comment #5/3.a)ii)2) Based on current understanding and information provided by the Type Certificate Holders, there is no other means available to identify the affected population. Following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received

Comment #5/3.a)ii)3)a) Unfortunately the agency is not able to comment on the contractual arrangements between Lufthansa Technik and their customers. However following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received. Any HMU removed (by the affected operators) in compliance with this AD must be considered unairworthy and cannot be re-installed on any aircraft (any operator) without first complying with the maintenance requirements of the AD.

Comment #5/3.a)ii)3)b)Comment noted, following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received.

Commenter 5: Aeroflot - Russian Airlines – Nikolay Antonov – Mon 21/05/2012 Mon 21/05/2012 14:07

Comment # 6

Dear Sirs,

In accordance with the declared in PAD, that “all interested persons may send their comments” prior the consultation closing date, “AEROFLOT - Russian Airlines” would like to give some comments (see text below & attached 3 files).

1. PAD paragraph “Reason”:

“Investigations have determined that these HMU failures were caused by corrosion and consequential seizure of the HMU delta-p valve. Investigations have found the presence of contaminants and corrosive catalysts within the TS-1 fuel.”

At the moment AEROFLOT is the airline most affected by this issue.

AEROFLOT has performed the investigations with the CFMi (Engine TCH) and Airbus (AC TCH) to determine the root cause of IFSD events. Following the investigation results presented by CFMi, IFSD events are caused by hydro-mechanical units failures linked to corrosion and consequential seizure of the HMU Delta-p Valve. Following the data from CFMi the corrosion is caused by water. AEROFLOT has performed number of fuel samples with GOSNIIGA (Russian industrial lab) and Airbus/EADS laboratory in France. All fuel sampling results has shown the water level presence compliance with the fuel standards ASTM and GOST (standard in Russian Federation). As a result, the water contamination is not confirmed by the analyses and at this moment it cannot be stated as a root cause of the failures and IFSD.

2. PAD paragraph “Required Action(s) and Compliance Time(s)”:

“Required as indicated, unless accomplished previously:

(1) Within 30 days after the effective date of this AD, and thereafter at intervals not to exceed 12 months, accomplish the following actions concurrently, for each HMU.

(1.1) Determine whether during the preceding 12 months period, the HMU has been operated on TS-1 fuel.

(1.2) If the HMU has been operated on TS-1 fuel, calculate the percentage of TS-1 fuel uploads during that 12 months period.

(4) If, during a second or later calculation, as required by paragraph (1) of this AD, it is determined that the HMU has been exposed to TS-1 fuel for less than 50% of the preceding 12 months period, the cleaning and inspection, based on a previous calculation are no longer required.”

The procedure of calculating the percentage of TS-1 fuel uploads is not clearly presented & it should be described in more details, steps & formulas. Concerning

(4) as an example: when next calculation is required or is it the terminating action?

3. Cleaning & accomplishment of the inspection in accordance with Section 3 “Accomplishment Instructions” paragraph A (2) of *SB CFM56-5B 73-0122* (any revision) or *SB CFM56-573-0182* (any revision) seems to be not effective solution to solve the problem. These actions just significantly increase operational cost for the CFM56 engines. For such Operators as AEROFLOT with a lot of aircraft of the same type & engines (there are 78 A320F in Aeroflot now) we may only imagine the required manhours & aircraft fleet total downtime (demurrage) those may hazard the commercial operations.

The presented in PAD problem is well-known in CFMi since 2005 but the root cause has not been identified yet. Till the present moment (in spite of our reiterative requests) we have not got any investigation results from CFMi with confirmative statistics showing the technical problem solving by presented in PAD steps. Moreover, we have not got any investigation results & confirmative statistics regarding presence of contaminants and corrosive catalysts within the TS-1 fuel.

The evident design problem (Delta P Valve seizure lead to IFSD) has not been studied well in reasonable time. 24 hour Tap water test has shown that the Delta P Valve itself is susceptible of the water corrosion, that should not be permitted in such an important aircraft component as a power plant. Moreover, the combination of HMU & engine designs features expects IFSD on the most tensioned engines modes during take-offs & it does not provide the engine's safety operability.

The same HMU design is operated on the aircraft fleet of B737 with CFM56-7 engines on TS-1 fuel with **no** similar events with IFSDs. Moreover AFL has **no** similar malfunctions on engines fuel systems of other AEROFLOT operated aircraft types (A330, B767, IL96, RRJ-95B, TU154, TU-134) using TS-1 fuel.

Conclusion:

AEROFLOT-RUSSIAN AIRLINES applies with the request to EASA EXECUTIVE DIRECTORATE:

1. NOT TO ISSUE THE AIRWORTHINESS DIRECTIVE due to CFM56-5 engines HMU failure root cause is not identified yet.
2. DEFINE THE TIME FRAME FOR CFMi to provide the carefully argued technical solution to exclude the IFSD caused by HMU Delta P Valve seizure.

Thanks a lot for understanding & cooperation.

BRGDS.

EASA response:

Comment #6/1 It is agreed that a high level of water contamination has not been identified in the samples taken, however other contaminants have been identified, which could be linked to the corrosion. EASA is continuing to monitor the investigation.

Comment #6/2

Following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received.

Comment #6/Conclusion The Agency has determined following investigation that a potential unsafe condition exists requiring corrective action . At this time the published AD addresses the potential unsafe condition and may be amended or replaced by a new AD once the investigation is considered complete. The Agency is continuing to work with all affected parties to identify root cause.

Commenter 6: AIRBUS – Konstantinos SIDERIS – Tue 22/05/2012 11:45

Comment # 7

Please find below the AIRBUS comments on the published PAD 12-035:

1. **TS-1 usage criteria :**

§ (1) of the “Required actions and compliance time” section provides the means to determine if an HMU is at risk of seizure due to usage with mostly deficient TS-1 fuel. It quotes “Determine whether during the preceding 12 months period, the HMU has been operated on TS-1 fuel”. It then goes on to ask whether, in that period, more than 50% TS-1 has been used. The proposed AD therefore considers only the preceding 12 months to check if the HMU has been used for more than 50% time with TS-1 fuel. This is not consistent with (less aggressive than) the latest issue of the SBs (73-0122 i8 and 73-0182 i6), which say “[...] based on any 1 year average, since last hydromechanical unit (HMU) shop visit”. In effect, the proposed AD wording would allow for an HMU that has operated solely on TS-1 fuel for more than 1 year since last overhaul, but for not more than 50% in the last year, to not be affected by the AD requirements. This is not consistent with the current knowledge of the root-cause, because it assumes that the accrued corrosion and fuel deposit caused by deficient TS-1 are removed / relieved when using other fuels. To Airbus’ knowledge, using fuels other than TS-1 does not “clean” the HMU if it has been corroded by deficient TS-1. Airbus feels this should therefore be changed to reflect the wording of the VSBs and the current understanding of the root-cause mechanisms.

2. **Potential for recalculation of % of TS-1 usage**

In § (4) of the “Required actions and compliance time” part, the proposed AD allows (demands at least yearly) to recalculate whether or not an HMU fulfils the “more than 50% TS-1 usage in the preceding 12 months” criteria, and if the criteria is not met during a second, third, ..., calculation, then HMU cleaning is not needed. Therefore, an HMU which cumulates 49% of usage on TS-1 fuel in the preceding 12 months can be removed and operated on other fuels without having to be cleaned, thereby seeing its TS-1 usage percentage dropping, and then being re-utilized with TS-1 up to 49% again, and so on, without at any time having to be cleaned. This is also not in line with the current root-cause understanding, for the reasons described above.

3. **Restriction of installation / re-installation of an affected HMU**

§ (6) of the “Required actions and compliance time” part makes it possible to reinstall an HMU which has accrued risk whilst operated TS-1 for more than 50% time in the preceding 12 months, and with more than 10000FH, within the 24 months AD compliance time where the other engine could be also at high time. This is not consistent with

the increased risk of Dual In Flight Shut-Down brought by having 2 high-time HMUs which have been operated for more than 50% time on TS-1 fuel in the preceding 12 months twinned on the same aircraft.

Thank you.

Best Regards,

EASA response:

Comment #7 Following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received

Commenter 7: Lufthansa – Thomas Henschke – Wed 23/05/2012 15:16

Comment # 8

To the editor of PAD.: 12-035

Herewith I would like to send my comment regarding the realization procedure of the EASA PAD 12-035:

According PAD 12-035 every HMU contaminated with more than 50% use of TS-1 fuel over the last 12 month will be affected and every operator has to perform an on going process in order to monitor what type of fuel and what quantity of fuel was replenished.

For example Deutsche Lufthansa is operating actually 131 Aircrafts with 262 affected HMU's which are at random flying to the Commonwealth of Independent States (CIS).

On some Destinations the fuel upload is done with TS-1 fuel or a mixture of fuels that contains TS-1 fuel.

With a daily usage of 6 cycle per day this means for our affected 131 Aircrafts we have to track approx. 280.000 fuel uploads in a 12 months period.

But under no circumstances this fuel uploads will mean a exposure to TS-1 fuel of 50% or more to one single HMU in a specific time frame.

Therefore we like to ask to revise this AD and to exclude operators based outside the CIS from monitoring the TS-1 fuel usage.

Deutsche Lufthansa would be grateful for reinvestigation by the authority and subsequent clarification.

I do hope that I was able to show that in the PAD the current advised tracking procedure is difficult to realize.

If you require any additional information please do not hesitate to contact me.

Thanks in advance and best regards from Hamburg

EASA response:

Comment#8 Following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received

Commenter 8: Bermuda DCA-London Office – Dan Stana – Wed 23/05/2012 19:46

Comment # 9

A few questions regarding this PAD:

(1.2) If the HMU has been operated on TS-1 fuel, calculate the percentage of TS-1 fuel uploads during that 12 months period.- [How do you calculate the percentage of TS-1 fuel uploads, by number of uploads or by fuel quantity?](#)

.....
(2) If, based on the results of the actions as required by paragraph (1) of this AD, it is determined that the HMU has been **exposed to TS-1 fuel for 50% or more of the aeroplane fuel uploads** during the preceding 12 months period-[How do you calculate the percentage of exposure, by number of uploads or by fuel quantity?](#)

Table 1 - Initial HMU Cleaning and Inspection

A Upon accumulation by the HMU of 10 000 engine

hours **since first exposure to TS-1 fuel** –it might be impossible to identify the first exposure to TS-1 fuel as operator's records including such information might not be available anymore. [Have you taken this into consideration?](#)

(4) If, during a second or later calculation, as required by paragraph (1) of this AD, it is determined that the HMU has been exposed to TS-1 fuel for less than 50% of the preceding 12 months period- Do we calculate the percentage by calendar time? Did you intend to write "in" instead of "of"?

.....
Scenario:

Let's consider an A320 family airplane that flies about 3400FH per year.

-the first calculation takes place 30 days after the effective date of the AD; the HMU has 11,000FH and in the last 12 month it was exposed to TS-1 fuel for more than 50%.

Conclusion: in 24 month since the effective date of the AD (in one year and 11 month time) the HMU is due for removal for cleaning and inspection.

-the second calculation takes place 12 month after the first one: the HMU has 14,400FH and in the last 12 month it was exposed to TS-1 fuel for more than 50%.

Conclusion: in 24 month since the effective date of the AD (in 11 month time) the HMU is due for removal for cleaning and inspection.

-the third calculation takes place 10,5 month after the second one; the HMU has 17,400FH and in the last 12 month it was exposed to TS-1 fuel for less than 50%.

Conclusion: The HMU is not due for removal for cleaning and inspection in 24 month since the effective date of the AD (in half a month time) because the cleaning and inspection based on a previous calculation is no longer required as per para.4 of the PAD.

-the fourth calculation takes place 12 month after the third one. The HMU has 20,800FH and in the last 12 month it was exposed to TS-1 fuel for more than 50%.

Conclusion: The HMU is due for removal for cleaning and inspection before next flight.

-Is that a correct interpretation/ application of the PAD?

.....
-Is it true that HMUs of an identical or very similar design on CFM56 engines installed on other than A320 family aircraft did not experience same problems even if operated on TS-1 fuel?

If yes, are there any measures other than this AD considered?

.....
Best regards,

EASA response:

Comment #9 Following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received. The same HMU is installed on the AirbusA340 aircraft. None of these engines have experienced problems, though none are operated by CIS airlines. At this time the action required is limited to CFM 56-5 and 5B fleets.

Commenter 09: CFM56 Commercial & Military Programs – Thomas M. Keene – Wed 23/05/2012 20:59

Comment #10

Email: Gentlemen,

CFM International expresses its thanks for the opportunity to review EASA PAD No. 12-035 Dated: 26 April 2012 and has the following comments attached. Please contact me with any questions.

Regards,

Attached Letter:

Subject: CFM Comments regarding EASA PAD No.: 12-03S Dated: 26 April 2012

Gentlemen,

CFM International expresses its thanks for the opportunity to review EASA PAD No. 12-03S Dated: 26 April 2012 and has the following comments:

1. On Page 1/3 in the Type/Model designation(s) field

"CFM56-5, -5A and -5B Engines"

CFM recommends removing "-5A" as TCDS EASA.E.067 only refers to "-5".

2. On Page 1/3 in the Applicability field: .

Regards,

"CFM International CFM56-5, CFM56-5A and CFM56-5B series engines, all certified Models, all serial numbers."

CFM recommends removing "-5A" as TCDS EASA.E.067 only refers to "-5".

Regards,

EASA response:

Comment #10 Comments accepted.

Commenter 10: Austrian Airlines – Mario Schröder – Thu 24/05/2012 11:03

Comment #11

To the editor of PAD.: 12-035

Herewith I would like to file an objection regarding the realization of procedure of the PAD.

Austrian Technik Engineering would be [encourage the EASA and the OEM to reinvestigate on the PAD following the subsequent objections 1,2 and 3](#):

Effectivity:

According PAD 12-035 the engine type CFM56-5A & 5B are affected only. Anyhow the affected HMU partnumbers are used by CFM56-5C engines as well.

- i. What is the reason behind or is a PAD also aimed for CFM56-5C engines?

Reason:

According PAD 12-035 A320 family aeroplanes predominantly using TS-1 fuel have experienced In Flight Shut Downs over the last 18 month.

- i. Acc. SBE 73-0182 & 73-0122 CFMI is aware of the negative influence of TS-1 fuel since 2003. Is there a significant increase noticeable over the past 18 month?
- ii. As a terminating action for the impending EASA AD, AUA engineering would highly appreciate to encourage Woodward to design a new corrosion resistant delta p -valve

Required Actions

- a. Compliance Time Table on Page 2 (Table1)
 - i. The compliance table is very difficult to interpret and will lead to interpretation errors, it should be defined when A, B or C is applicable inside a Table or Matrix.

If you require any additional information, please contact me.

Thanks in advance

and best regards

EASA response:

Comment #11/1 The comment is noted, following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The 5C will not be included in this AD. The same HMU is installed on 5C engines, however none of these engines have experienced problems, though none are operated by CIS airlines.

Comment #11/2 The commenter is correct that HMU servicing recommendations have been in existence for some time, initially to address varnishing and fuel deposits when operated on TS-1 fuel. Although the recommendations were not at that time issued to address corrosion of the HMU delta p valve, the same actions provide an interim solution to mitigate the recent high rate of HMU corrosion related problems identified within the affected fleet in the last 18 months. The agency is continuing to work with all affected parties to identify root cause and investigate suitable terminating action for the requirements of this AD. If a subsequent terminating action is identified, then the AD will be revised accordingly at the earliest opportunity.

Commenter 11: Virgin America – Gareth O'Hagan – Thu 24/05/2012 22:22

Comment #12

Dear Sir/Madam,

PAD: 12-035

Virgin America has reviewed PAD 12-035 and has the following comments:

1. The construction of the PAD indicates that the issue is with the fuel (contaminants and corrosive additives) and not with the HMU. Therefore, Virgin America urges EASA to alter the PAD so that the non compliance to the TS1 fuel specification is the subject of the AD as opposed to the HMU.
2. Furthermore, the 'Reason' for the PAD indicated that the component that is affected by the contaminated fuel is the delta-p valve. The 'Required Action and Compliance Time' paragraph (2) will mandate the accomplishment of CFM SB 73-0122 rev 8. When that SB is reviewed the accomplishment instructions are very brief and non-specific. It essentially incorporates the entire CMM into the PAD thereby making that document part of the AD. Virgin America believes that the SB needs to be revised to be much more prescriptive as regards what specific components need to be cleaned/overhauled per the CMM to address the concern of the PAD.

Regards,

EASA response:

Comment #12/1 Investigations are on-going to identify whether low level fuel quality issues, or HMU corrosion resistance are the cause of the HMU malfunction. Once these investigations are complete, the requirements of this AD will be revised accordingly. This AD defines the necessary mitigating actions necessary to maintain airworthiness pending the outcome of these investigations.

Comment #12/2 Comment partially accepted. EASA will consider with CFM the need to add more specific details on the component maintenance to the SBs

Commenter 12: AIR FRANCE – Patrick THEODET A320 family – Tue 22/05/2012 11:45

Comment # 13

Bonjour,

Would you please find below our comments about PAD 12.035, relative to HMU cleaning/inspection :

- Effectivity :

This AD is expected to affect only CFM56-5A / 5B

The HMU fitted on CFM56-5C for A340, wear the same P/N than on CFM 5B.

As far as we can understand, the AD won't affect the A340.

Since HMU can be removed from an A340, and reinstalled on a A320 family A/C after shop visit, this will be very tough to ensure of how much the HMU has been exposed to TS1 fuel on its 340 life.

Moreover, because it looks to not be mandated per AD on 340, this will be very hard to ask for an official statement from the 340 operator which has removed the part, and which is not required to track TS1 fuel use.

- PAD paragraph 1.2 : calculation.

The PAD is based on fuel uploads during 12 months periods.

We assume that this would have been more convenient for tracking and calculation to base the PAD on operating time (FH or FC).

Please, consider mandating FH or FC instead. (We assume that FH should be more appropriated than FC)

- PAD paragraph 2, table 1, Compliance Time :

Compliance time are based on 3 limitations, whichever occur later.

Compliance "C" for corrective action "before next flight", looks very conservative according to a calculation mandated on a yearly basis.

This latest parameter could be reached in 2015, on a 1st run HMU totalizing 11.000 FH since new : Please consider replacing the "before next flight" compliance, by not least than "50 FH"

- From a general stand point, if the criterion are clearly defined within this PAD, this will be very difficult to manage and trigger calculations, as well as introduction of used parts.

Handling of used parts will be very expensive, especially for units coming from CFM 5C, since the only way to ensure of compliance with the AD might be to fully disassemble the HMU.

- Please advise if any background action is contemplated, to cure the presence of contaminants and corrosive catalysts in TS1 fuel.

Best regards.

EASA response:

Comment #13/1 The comment is noted, following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The 5C will not be included in this AD. The same HMU is installed on 5C engines, however none have experienced problems, though none are operated by CIS airlines.

Comment #13/5 Investigations are on-going to identify whether low level fuel quality issues, or HMU corrosion resistance are the cause of the HMU malfunction. Once these investigations are complete, the requirements of this AD will be revised accordingly. This AD defines the necessary mitigating actions necessary to maintain airworthiness pending the outcome of these investigations.

Summary Comment:

Following consultation under PAD 12-035 this AD has been amended to limit the applicability to operators based in states where TS-1 fuel is widely available. The structure of the AD has also been revised based on comments received.

The published AD addresses the potential unsafe condition identified at this time and may be amended or replaced by a new AD once the investigation is considered complete. The agency is continuing to work with all affected parties to identify root cause.