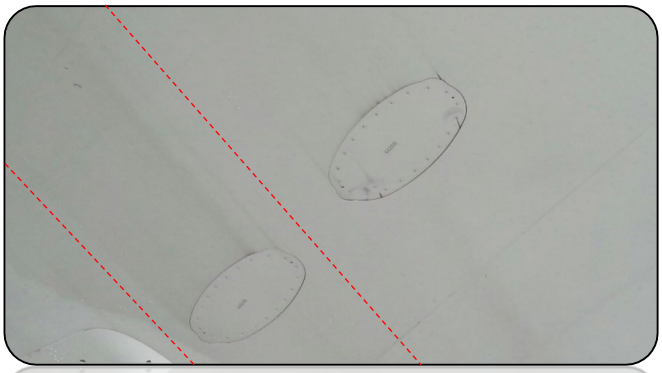
Safety Briefing Sheet:

KENALI PENYEBAB FUEL LEAK DI UNDERWING TANK ACCESS PANEL

Background:

Pada tanggal 11 September 2022, sebuah pesawat Airbus A330-300 mengalami *First Departure Delay* (FDD) selama 24 menit pada saat persiapan penerbangan rute CGK-CAN. Hal ini disebabkan oleh kebocoran *fuel* di RH *wing tank access panel* 642CB, setelah dilakukan pemeriksaan lebih lanjut ditemukan bahwa kondisi *seal out of position*. Kejadian serupa juga dilaporkan oleh banyak operator ke Airbus, dimana terdapat kebocoran *fuel* pada *underwing tank access panel* antara RIB 01 dan RIB 27.

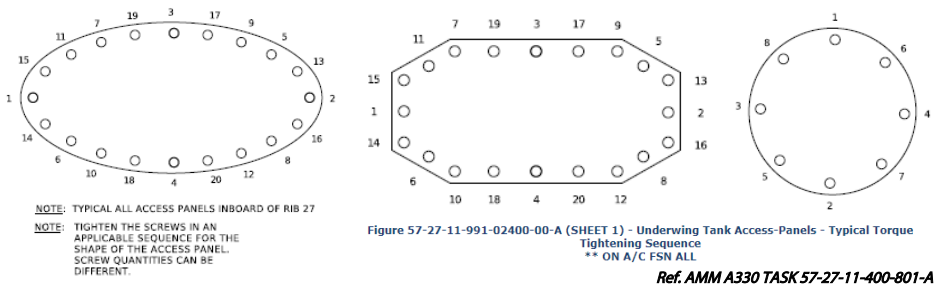


Gambar 1. Ilustrasi streaked black marks sebagai indikasi fuel leak pada fuel access panel

***Maintenance Tips*:**

Mengacu pada *Airbus Technical Follow-Up* (TFU) 57.20.00.024, ketika ditemukan tanda hitam bergaris *(streaked black marks)* di sekitar *underwing tank access panel*, menunjukkan ada indikasi degradasi pada *seal ring*. Tergantung dari lokasi kebocoran *fuel*, kondisi tersebut dapat mengakibatkan situasi AOG dan akan mengganggu operasional. Dalam kebanyakan kasus, ditemukan kondisi *seal* yang sudah rusak, sementara pada beberapa pesawat, terdapat *access panel screw* yang telah hilang atau karena *screw overtorqued*. *Seal ring* harus segera diganti pada kesempatan pertama bergantung pada tingkat kebocorannya. Berikut beberapa *summary maintenance tips* berdasarkan referensi *AMM 57-27-11* yang dapat dilakukan oleh *maintenance personnel* untuk memperbaiki kebocoran pada *fuel access panel* :

1. Mengganti *seal* dengan yang baru sebelum memasang *underwing tank access panel*
2. Gunakan *spesific sealant* sesuai ketentuan untuk mengikat *seal* baru ke *underwing tank access panel*
3. Oleskan *grease* pada seal sebelum pemasangan *underwing tank access panel*
4. Implementasikan urutan *cross diagonal torque sequence* seperti yang di ilustrasikan pada AMM



Note:

Untuk informasi maintenance tips lebih lanjut dapat dibaca pada Airbus TFU 57.20.00.024. ***(Terlampir)***

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https://tinyurl.com/TQY-SBS-021-2022

SBS Applicable for: TB, TL, TQ

WING FUEL ACCESS PANEL SEALING RING DAMAGE

Reference: 57.20.00.024 Issue date: 05-MAR-2020 Last check date: 02-APR-2021 Status: Closed
A/C type/serie: A330, A340 ATA: 57-27
Engine manufacturer: Supplier: AIRBUS OPERATIONS LTD
Purpose / Reason for revision: Updated to combine TFU 57-27-11-002 AND TFU 57-27-11-003 information in one TFU 57-20-00-024

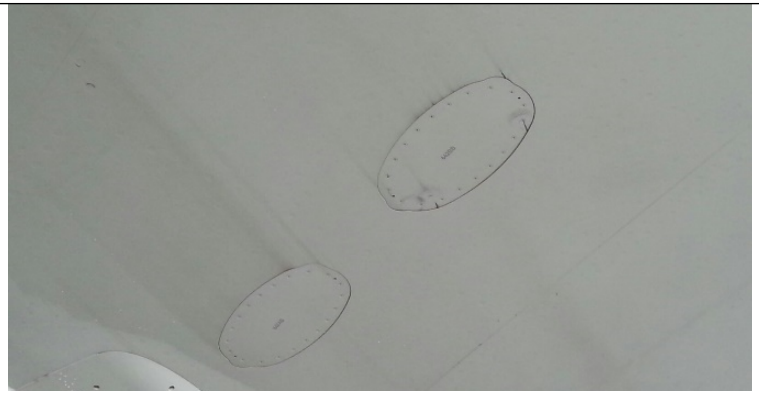
Engineering Support Status: Closed

Description

Operators have reported fuel leak on wing fuel access panels between RIB 01 and RIB 27 (non-load carrying panels).

When streaked black marks are found around access panel, it shows the sealing ring degradation.

Depending on the fuel leak location this could lead to an AOG situation.



Root cause / Investigation

In most cases, the sealing ring (ref IPC 57-27-11 fig 1 to 6 , pre-mod47583 (SPF) item 20 or post-mod47583 (alu machined) item 10 was found damaged

On some aircraft, missing access panels' screws or

Mitigation / Interim action

Depending of the importance of the level of the leak, the sealing ring has to be changed immediately or at the next Maintenance opportunity.
Sealing rings are available on spares.

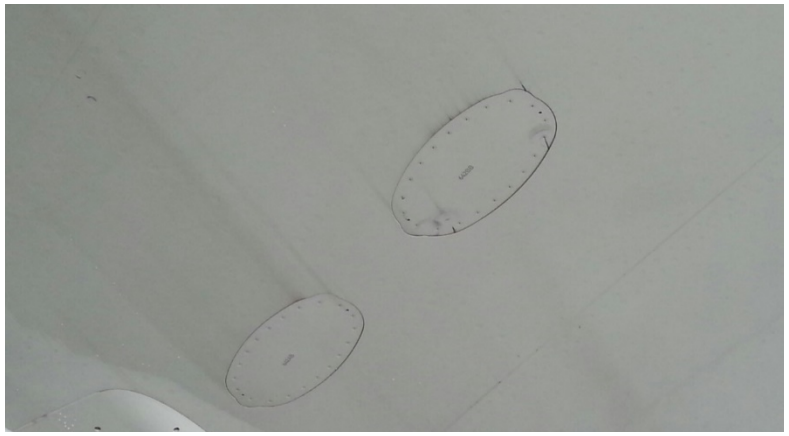
screws over torqued have been noticed. Several parameters have been identified: -Torque sequence -Seal shape and material can be improved	**Terminating action** MOD 57909 is the terminating action with the new sealing ring material. No Aircraft that have been fitted with the new sealing ring have shown signs of fuel leak.

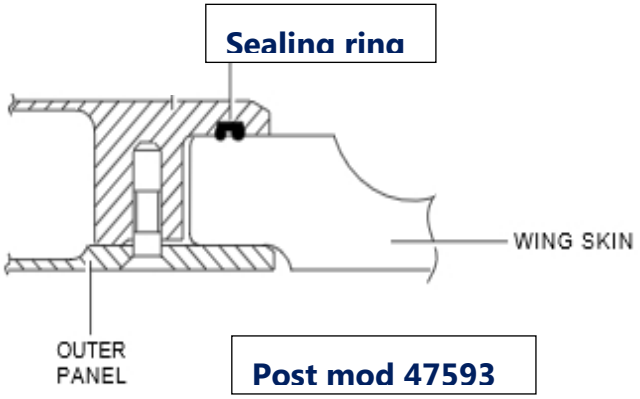
Applicability:
All A330 – A340

Reference / Documentation:
REF/A/ IPC 57-27-05 Fig 1 to 5
REF/B/ AMM 57-27-11
REF/C/ MOD 57909
REF/D/ D572-51257-200 and A573-50120-200
REF/E/ F572-50090-200 and F572-50091-200
REF/F/ AMM 28-11-00

Issue description / Consequence
Operators have reported fuel leak on wing fuel access panels between RIB 01 and RIB 27 as per REF/A/.
Depending on the fuel leak location, (refer to REF/F/), this could lead to an AOG situation.

Typical finding





Root Cause / Investigation

When streaked black marks are found around access panel, it shows the sealing ring degradation.

The sealing ring REF/D or REF /E has to be replaced.

On some aircraft, missing access panels' screws or screws over torqued have been noticed.

Several parameters have been identified as having a major influence on access panel's fuel leaks:

1) Torque sequence installation procedure introduced into the AMM (cross diagonal pattern) shows to be more efficient as it maintains the sealing ring into its groove.
2) Seal shape Post mod 47583 has been reviewed with a more robust design and material changed to improve low temperature, performance and resistance to known contaminants.
3) Specific sealant to bond this new seal onto the access panels.

Mitigation / Interim Action

Depending of the importance of the level of the leak, the sealing ring has to be changed immediately or at the next Maintenance opportunity.

The following instructions presented in AMM 57-27-11 fixed the leak:

- Replacement of the seal with a new one before panel installation
- bonding of the new seal on the panel
- apply grease on the seal before installation of the panel
- observe carefully the cross diagonal torqueing sequence as illustrated in the AMM

Maintenance Information

REF/B/ AMM gives some advice on the grease application procedure on panel's fastener head and also the cross diagonal torqueing sequence.
Sealing rings are available on spares, it is possible to identify between the pre-mod and the post-mod 57909 sealing rings by their different colors, the black seal is the old standard, the new seal is grey or light blue.
The new material for panel SPF: F572-500**91**-200 installed on pre-mod 47583 and new Seal panel Alu: F572-500**90**-200 machined aluminum non-loaded access panel.

Repercussion on A/C operation

In case of fuel leak, the flow chart as per REF/F/ provide some recommendation. This could lead to an AOG situation.
There is no temporary repair when leak occurs on fuel tank panels, when leak meet continuous values , above two drops, the permanent repair is required before further flight

Investigation Status

Several parameters have been identified as having major influence on access panels' fuel leaks:

1) Torque sequence. Original torque sequence (following ABP 2-2336 : symmetric diagonal pattern) called for on the wing panel installation drawings is pushing the seal ring outwards. The consequence is that the seal ring is mechanically worned and pulled out of the panel groove. The installation procedure introduced into the AMM (cross diagonal pattern) shows to be more efficient as it maintains the sealing ring into its groove.
2) Post-mod 47583 seal shape, strength and material have to be reviewed in order to lead to a more robust design. Previous material analysis showed the material to be within ABR 4-0101 grade 55 specifications.
3) Shape of the panel could be improved in order to ensure a better seating of the seal in its groove.
4) Improvement decided through this RFW for installation procedures, non-loading carrying panel seals and access covers should be applied to A340-500/600.

Terminating Action

After exhaustive investigations onto returned damaged seals and a campaign of replacement of all the underwing access panels seals onto a grounded aircraft the following product improvements have been decided:
- seal material change from ABR4-0101 to ABR4-0090A55 to improve low temperature performance and resistance to known contaminants
- specific sealant to bond this new seal onto the access panels different from the previous one used with the old seal

- Seal shape maintained identical The above changes have been successfully tested on a bench and will be implemented into production on A330/A340 from MSN1023 and up and A340-500/600 from MSN1030 and up through modification 57909.

IPC July 2008 revision already introduces the new part numbers that should be available on the 4th quarter of 2008. Depending of the underwing access panel technology, the following seals are valid:
-F572-50091-200 to be fitted onto SPF access panels (pre-mod 47583 aircraft)
-F572-50090-200 to be fitted onto machined access panels (post-mod 47583 aircraft)

MOD 57909 is the terminating action with the new sealing ring material.
No Aircraft that have been fitted with the new sealing ring have shown signs of fuel leak.

Survey for the Engineering Support section

Annex

General Information

Potential impact:	Maintenance, Operational Reliability				
Key information:					
Solution benefit:					
First issue date:	12-AUG-2014	Issue date:	05-MAR-2020	Last check date:	02-APR-2021

Technical parameters

ATA:	57-27
A/C type/serie:	A330, A340
Engine:	
Engine manufacturer:	
Fault code/ECAM warning:	
FIN:	
Part Number:	A5735012020000, D5725125720000, F5725009020000, F5725009120000
Supplier:	AIRBUS OPERATIONS LTD

Attachments

N/A

Links

N/A