



PW127 ATR SAFETY CONFERENCE

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AGENDA

Fleet Reliability Status

In-Flight Event Evolution

Key Design Improvements

Environmental Awareness

Addressing Variability

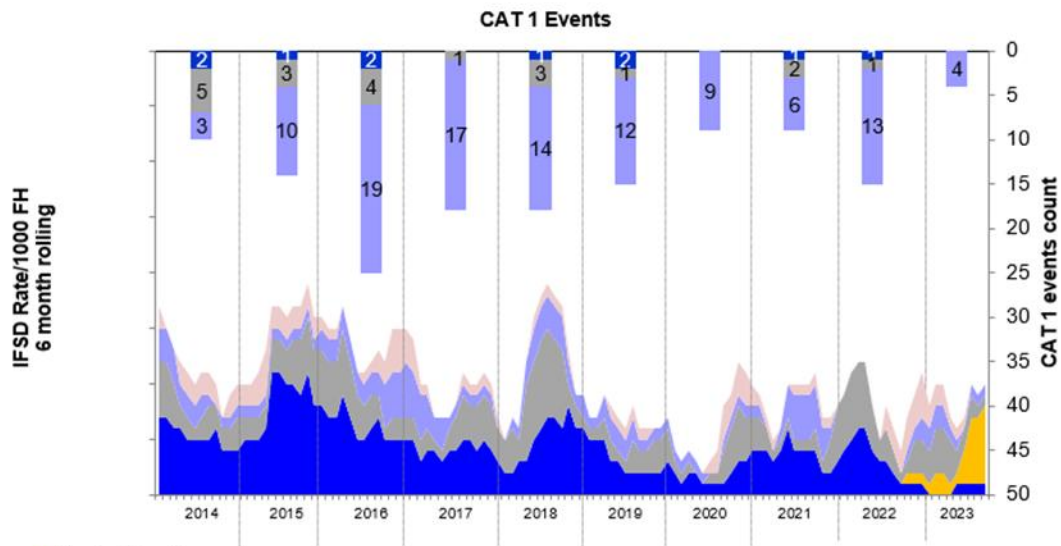
ATR & P&WC Supporting Operators

Conclusion



Fleet Reliability Status

ATR PW100 MEDIUM/LARGE SIGNIFICANT EVENTS & IFSD



- Basic Events
- Under Investigation
- Field Maintenance
- Airframe & Operational
- Non Basic - Others

Fleet Cumulative (Flying Hours)	53,444,800
Fleet Cumulative (Cycles)	57,666,939
Current Population	3,114
Fleet Leader	52,883
Last 12 Months Flying Hours	2,800,900

Cat 1 Events

- Accident/Incidents or hazardous conditions
- Dominated by runway excursions

IFSD rate

- Majority from field maintenance and operational issue
- Steady reduction in last 10 years
- Fostered by collaboration

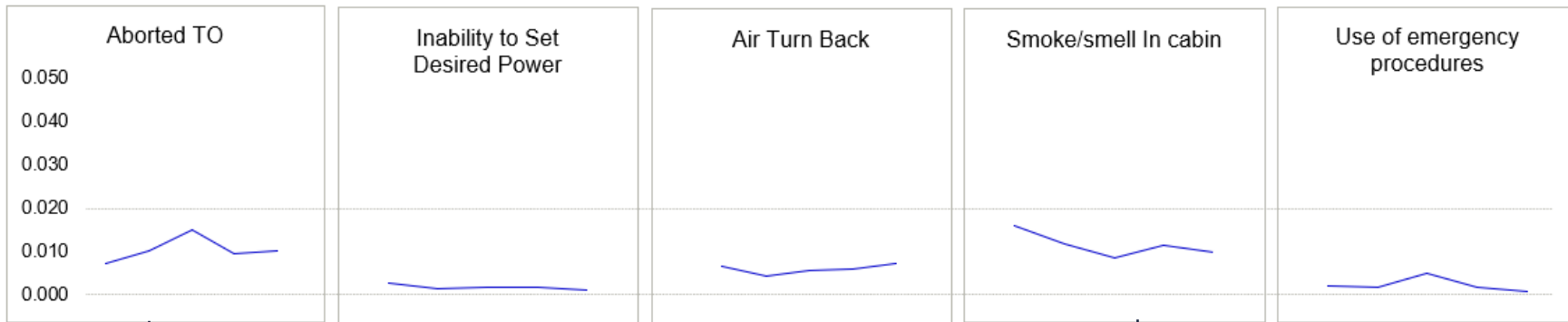
Customer Days

- Quarterly Meeting with TC
- On-site maintenance reviews (M&O)



In flight Event Evolution

2019-2023 PW124B/127 SERIES - TOTAL RATES PER 1000 EFH



Dominated by HBOV screen environmental contamination

→ EMM 05-20-01 with task to inspect.

4 causes for 80% of the events and being addressed separately:

Gas Generator Case → Removed weld repair at core passages in Dec 2016, Diffuser block replacement (vs No. 5 brg housing) when applicable

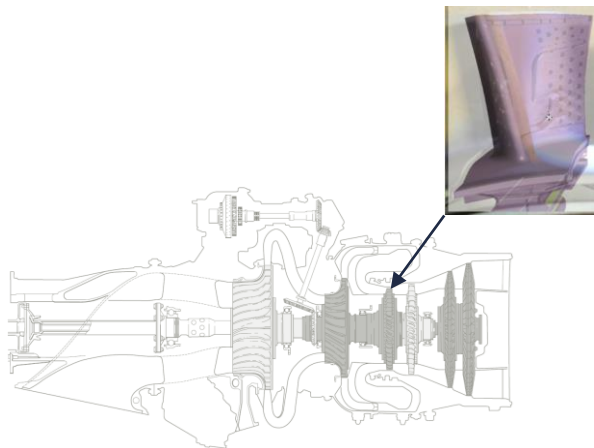
No. 5 bearing Stator Air Seal → 2 min cool down and criteria in EMM to inspect No. 5 bearing area for traces of oil at HSI.

ICC-GGC Transfer Tube → SB21957 issued May 2021.

P2.5/3 Air Switching Valve → New material for piston ring in 2024.



Environmental Awareness



HPT Blade durability may be affected by environmental effects

87% of the events occurred in Hot and sand/dust environments

38% of events captured by borescope inspections

HPT Blade Soft Time introduced in 2017

Related IFSD contribution reduced by 40% in last 4 years

EMM 05-20-01 “environmental tasks”

Introduced in May 2022 for PW124B and PW127 series:

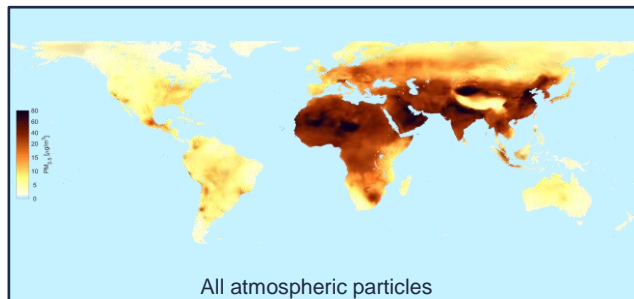
Recommended tasks and schedule based on frequency of operation and specific environment.

Recommended schedule for engine gas path wash and external engine wash

Periodic inspection of P2.5/3 ASV and HBOV Filters

Reduced BSI intervals of Hot section components in sand/dust environment.

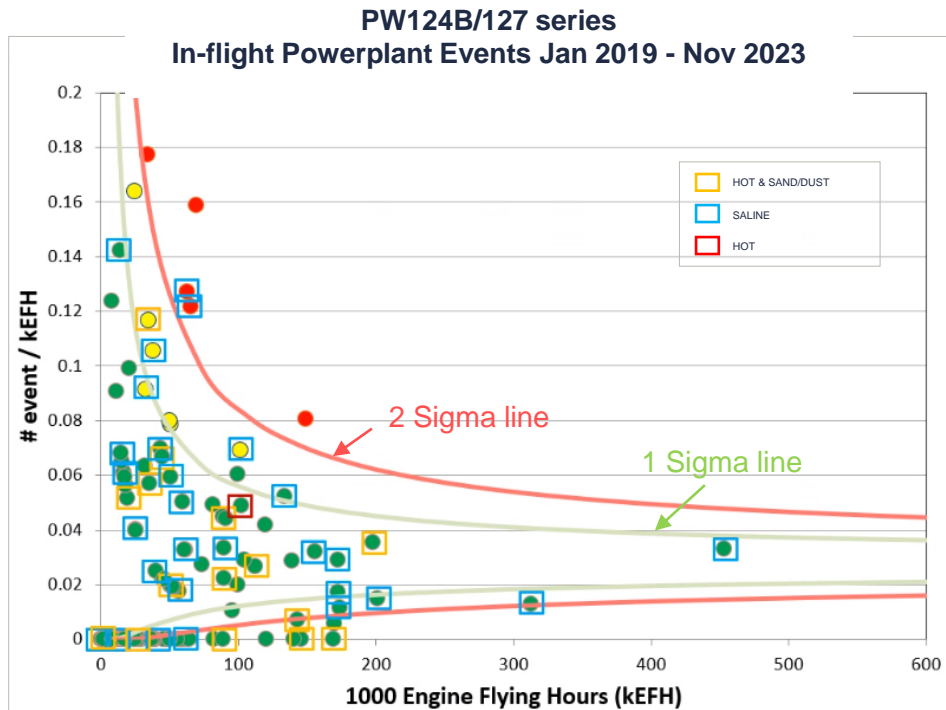
Compressor and turbine wash schedule further updated in May 2023 for engines operated in multiple environments (salt and sand/dust)



All atmospheric particles



Addressing Variability



P&WC is monitoring variance in event rate within worldwide fleet

Environment variability can be mitigated by appropriate maintenance plans

P&WC is committed to support operators in developing tailored maintenance plans

Identify systemic event drivers



Non-Basic Events & Knowledge Transfer

P&WC objective is to influence adoption of maintenance best practices to improve in-service product performance



Support

Sharing of best practices via Customer visits and P&WC / ATR conferences

Maintenance & Operation assessment at operator base to identifies opportunities for improvements

On-line information with best practice manual, workscope planning guide and video available

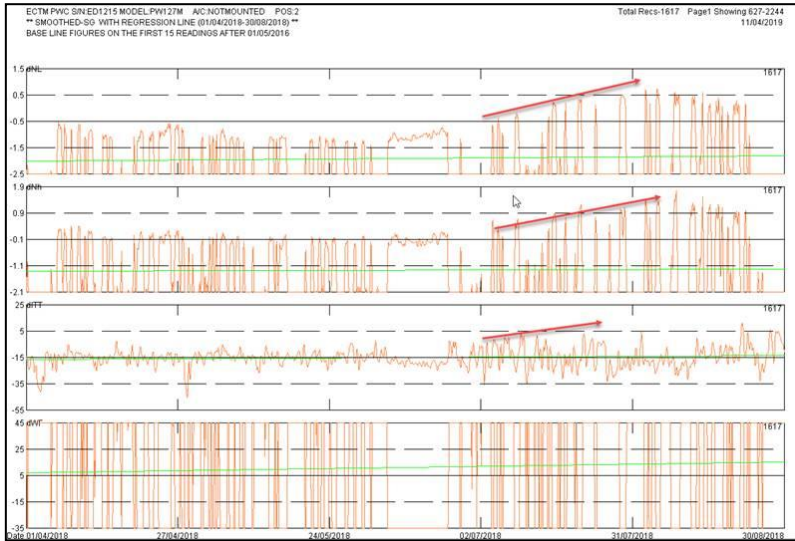
Training - Performed by Flight Safety

Line & Base training available

New! Advance Practical training launched March 2023



HEALTH MONITORING TOOLS



ECTM Benefit

Forecast most economical time to perform HSI or major refurbishment

Crucial element of On-Condition Maintenance Program

Help to reduce the operating cost by taking timely action

Excellent tool for troubleshooting (engine and aircraft)

Help to prepare the engine removal plan



Hpt Blade with Obstruction of Cooling Hole

Health Monitoring tools offer opportunities to continue to enhance safety and reliability



Conclusion

Positive trend in overall reliability indicators maintained

Effectiveness of product improvements and maintenance best practices demonstrated

Continued focus required to address:

- Variability

 - AFU, PT2 blades, Fuel Nozzles

- Oil Smells

Lessons learned applied to PW127XT – 40 engines in service and 52K flying hours to date

Accurate and timely reporting of event is key to continuous reliability improvement





GO BEYOND



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