

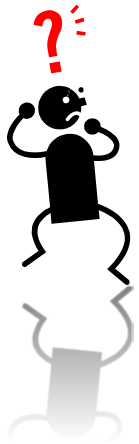
Lessons Learned in the Region

Capt. Richard Hill
Etihad Airways



mitigating runway excursions

lessons learnt



Safety Management Approach

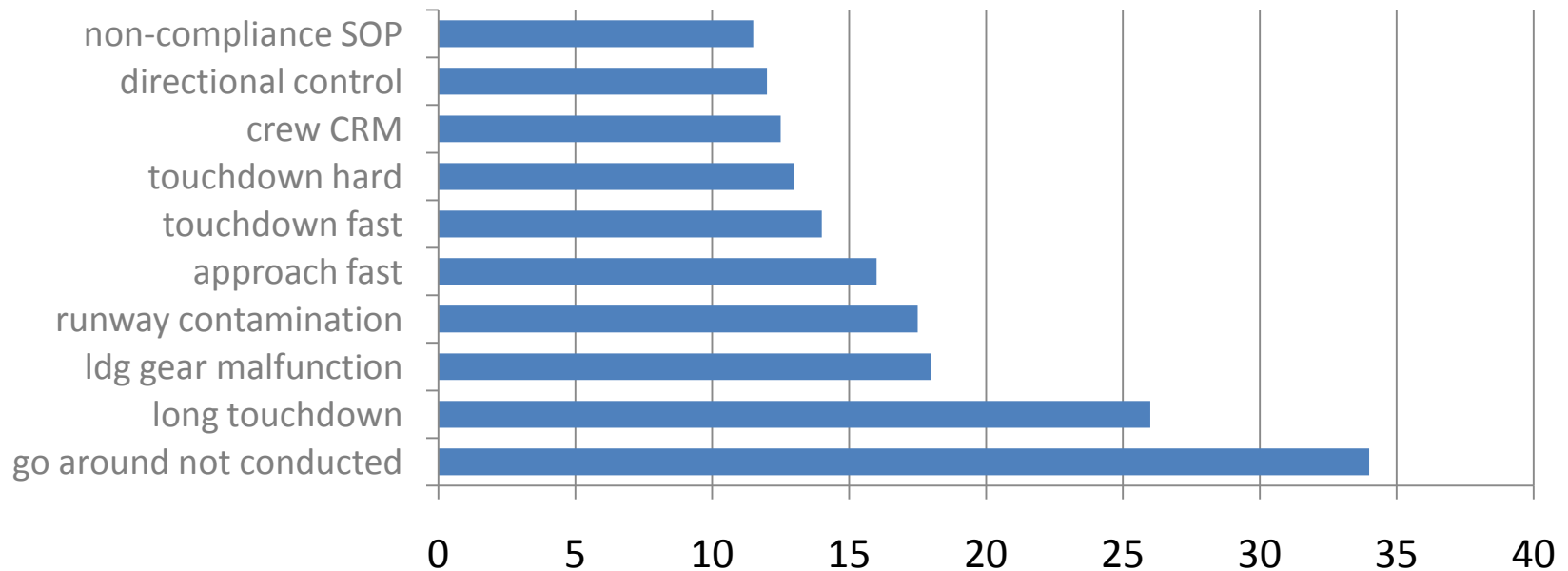
- Risk mitigation required – threat and error analysis



THREATS

ERRORS

threats and errors involved in runway excursion accidents



threats:

- ineffective braking
- runway contamination
- landing gear malfunctions

Some Background

Continuing an unstabilized approach is a causal factor in 40 % of all approach and landing accidents.

Source: Airbus Industries

In 75% of the off-runway touchdown, tail strike or runway excursion/overrun accidents, the major cause was an unstable approach.

Source: Airbus Industries

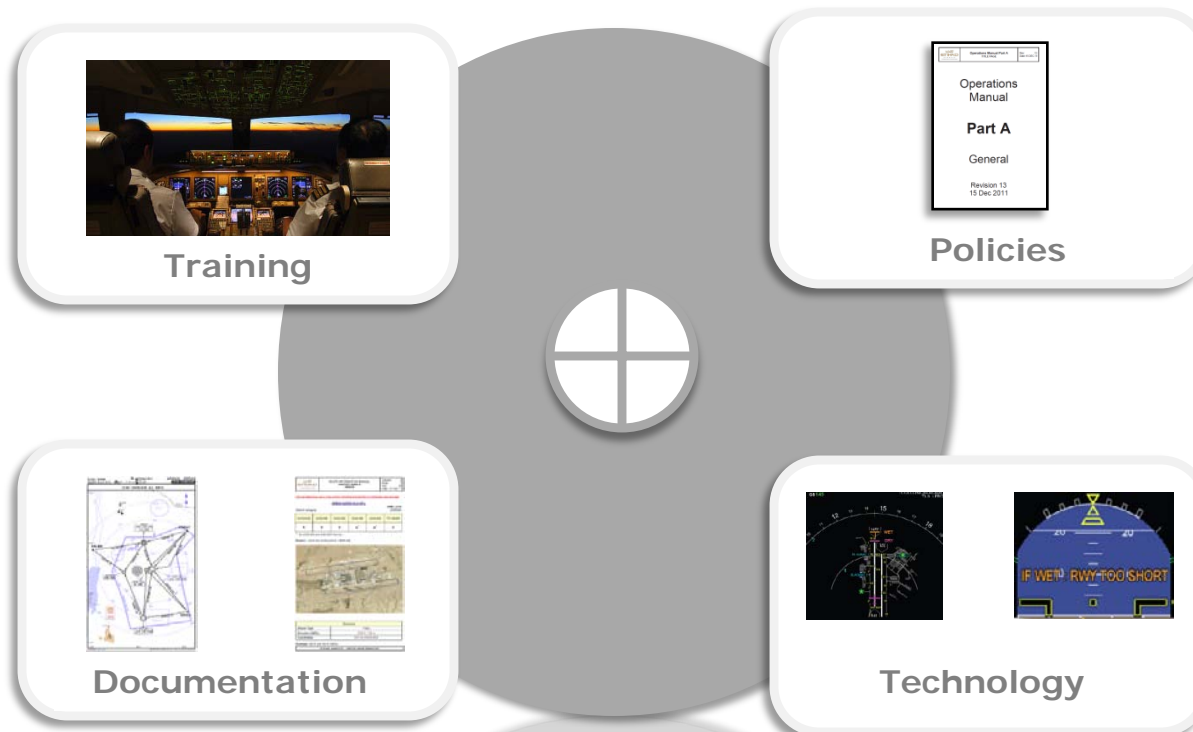
Some of the causal Factors for high energy approach

- Time pressure (both by the Crew and by ATC).
- Unfamiliar local procedures.
- Late Runway change.
- Tailwind approach
- ATC instructions which result in the Aircraft being too high or too fast.
- Crew or ATC induced changes (speed, altitude track) that result in insufficient time to plan and execute the approach.
- Unrealistic planning of the approach in the FMS resulting in incorrect descend path calculation.

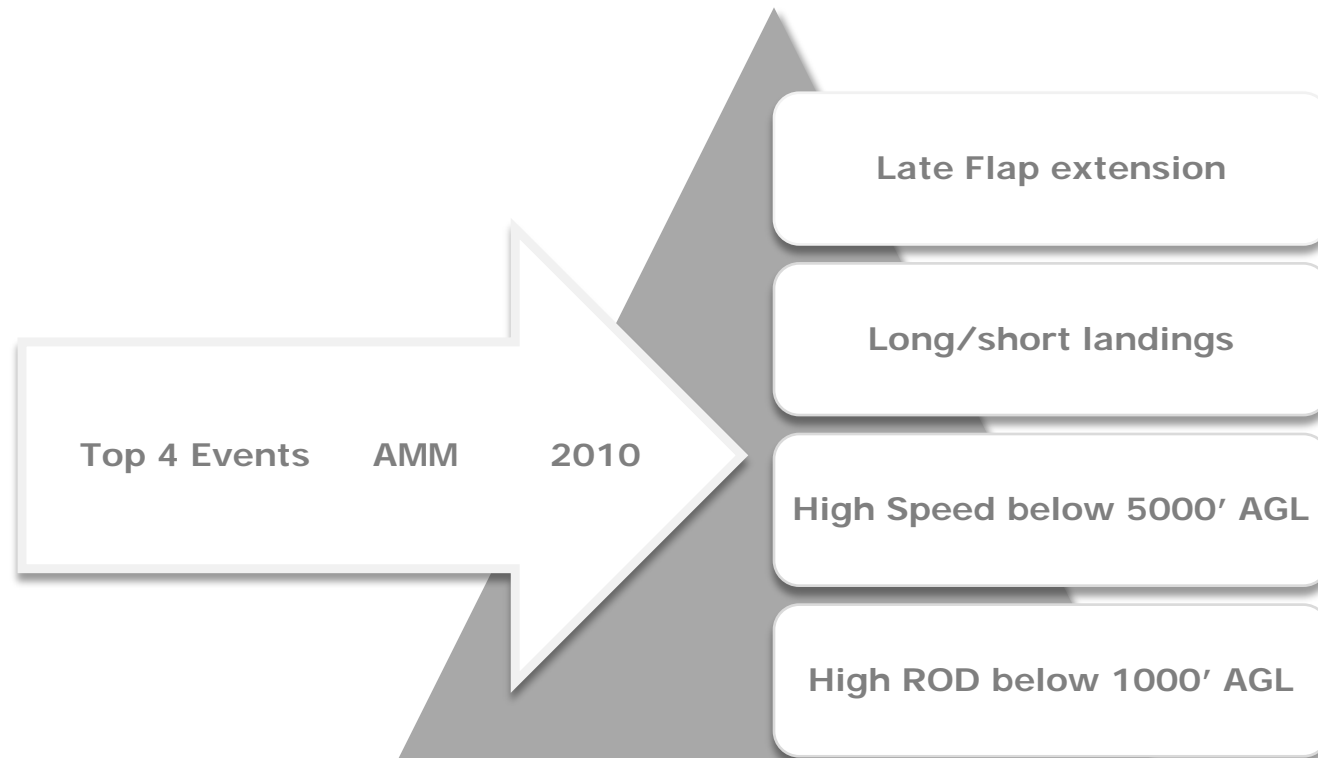
Typical Indications for unstabilized approach

- Approach flown in Idle power until touch down.
- Excessive Bank Angle during intercept of final track.
- Late extension of flaps or activation of flap load relief system.
- High Runway Threshold crossing
- Long Flare
- Dual Input during landing (Airbus only)

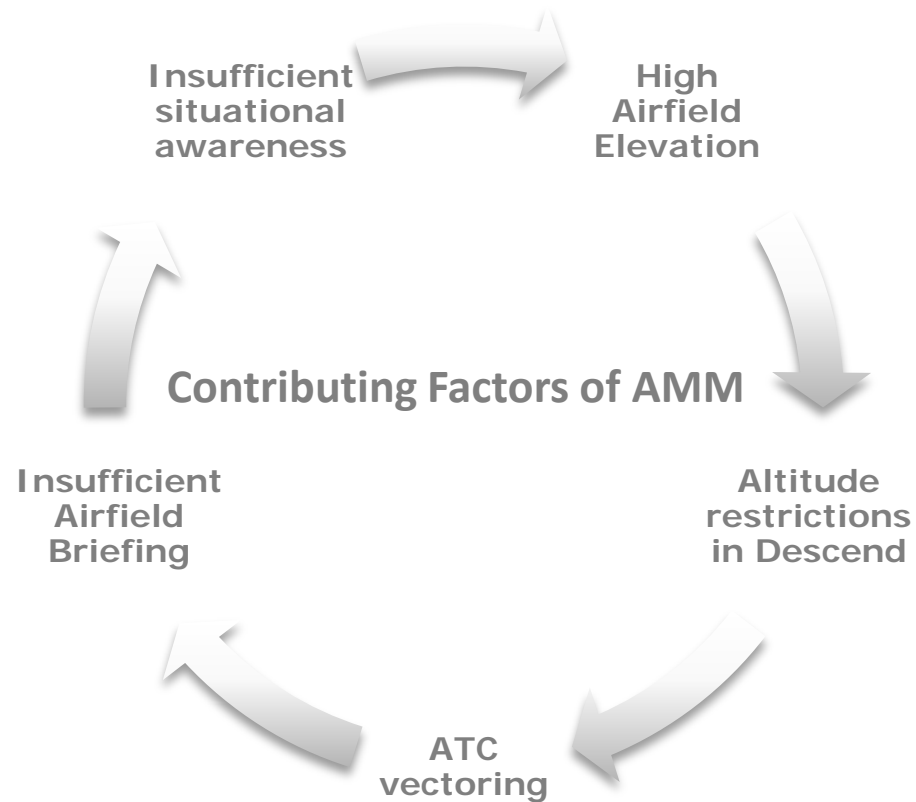
Unstable Approach Prevention Strategies

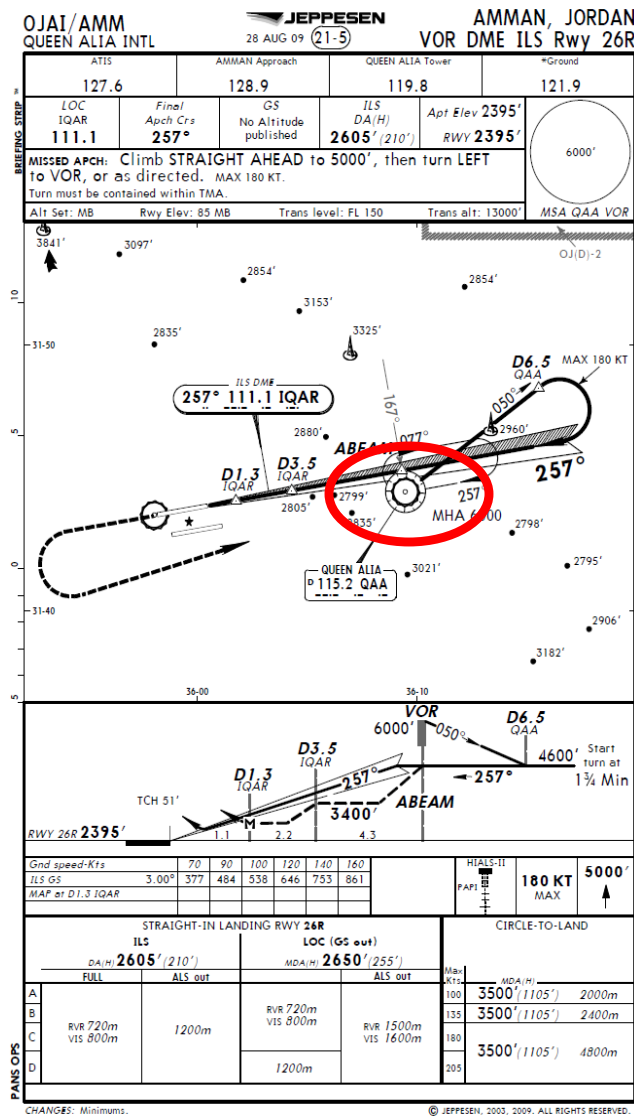
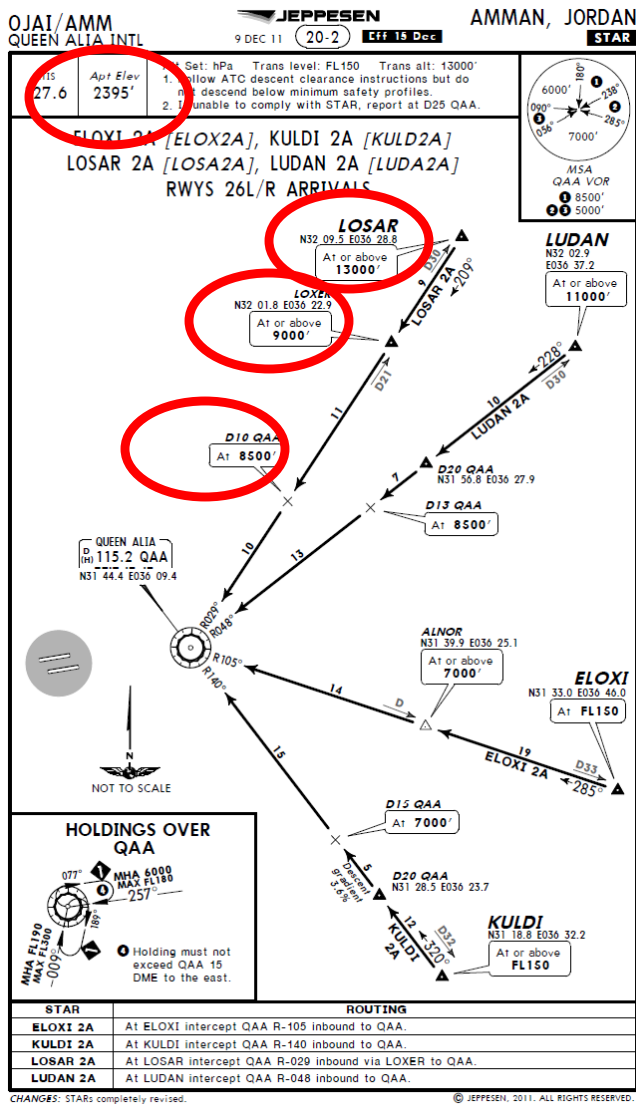


A example of effective mitigation

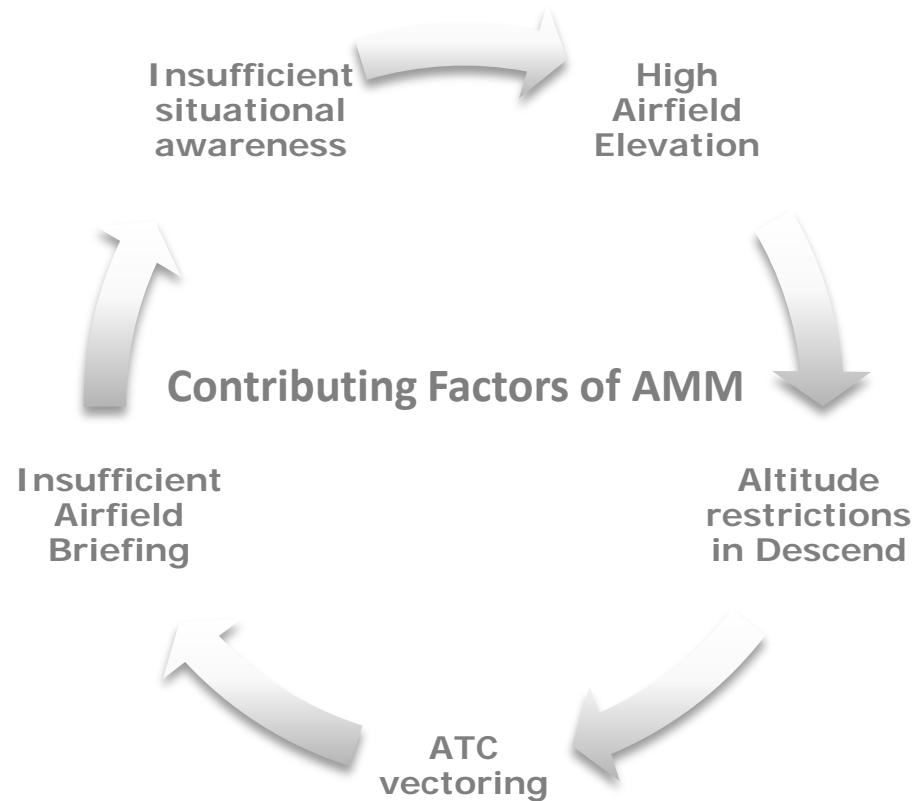


Initial Analysis

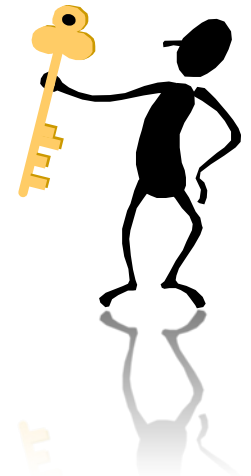
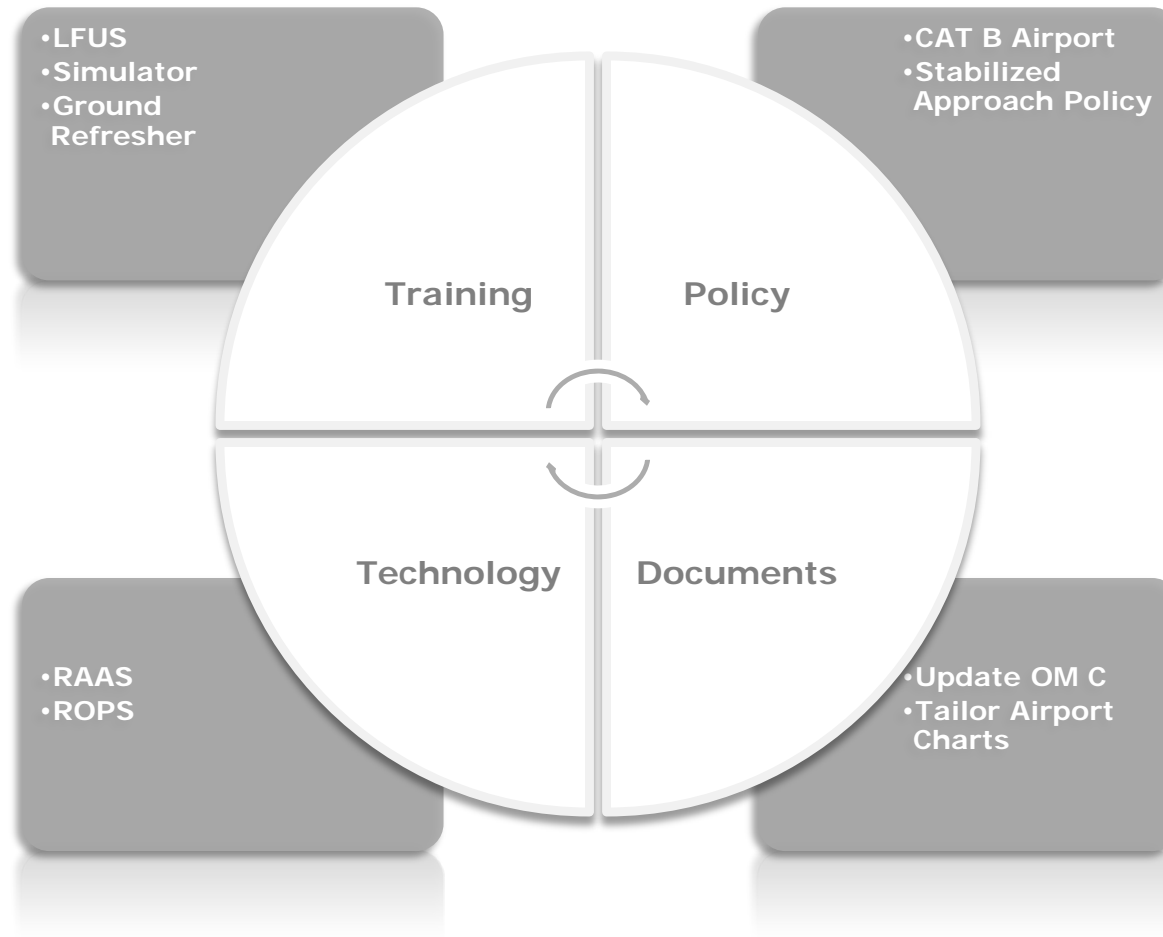




Analysis Result

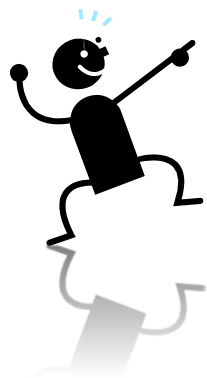


Mitigation Strategy

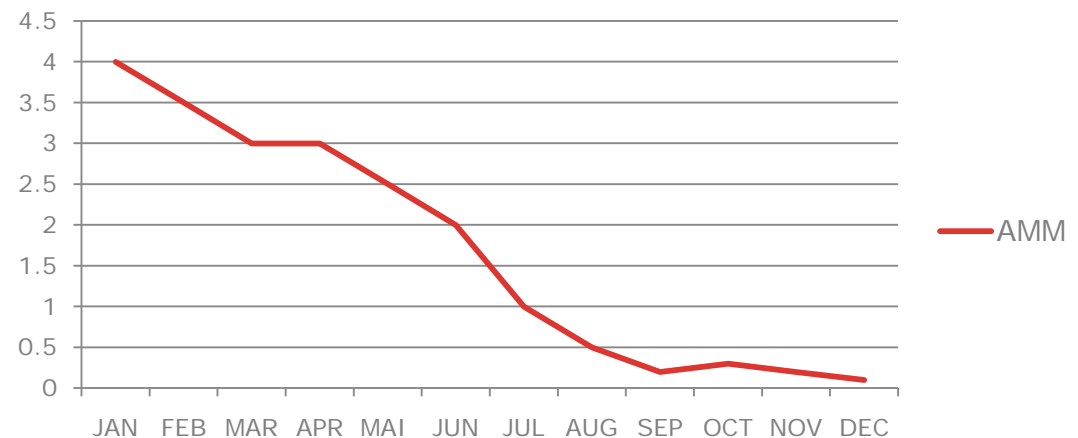


Results

Within 6 month AMM disappeared from list of Airports with a elevated number of FDM rates.



FDM Events





aircraft operators' lessons learnt

- ✓ clear policy
- ✓ rigorous training
- ✓ just culture

zero tolerance for unstable
approaches not flown to go-around

ATC lessons learnt

- ✓ knowledge of aircraft performance
- ✓ speed control appropriate to type
- ✓ communicate track miles to landing
- ✓ know what the upper wind is doing

airport operators lessons learnt

- ✓ approach procedure design
- ✓ distance/approach slope guidance
- ✓ runway surface friction levels
- ✓ vertical wind profiler

THANK YOU

