



EVIDENCE BASED TRAINING

*Identifying training needs through
'Root Cause Analysis'*

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The Runway Excursion



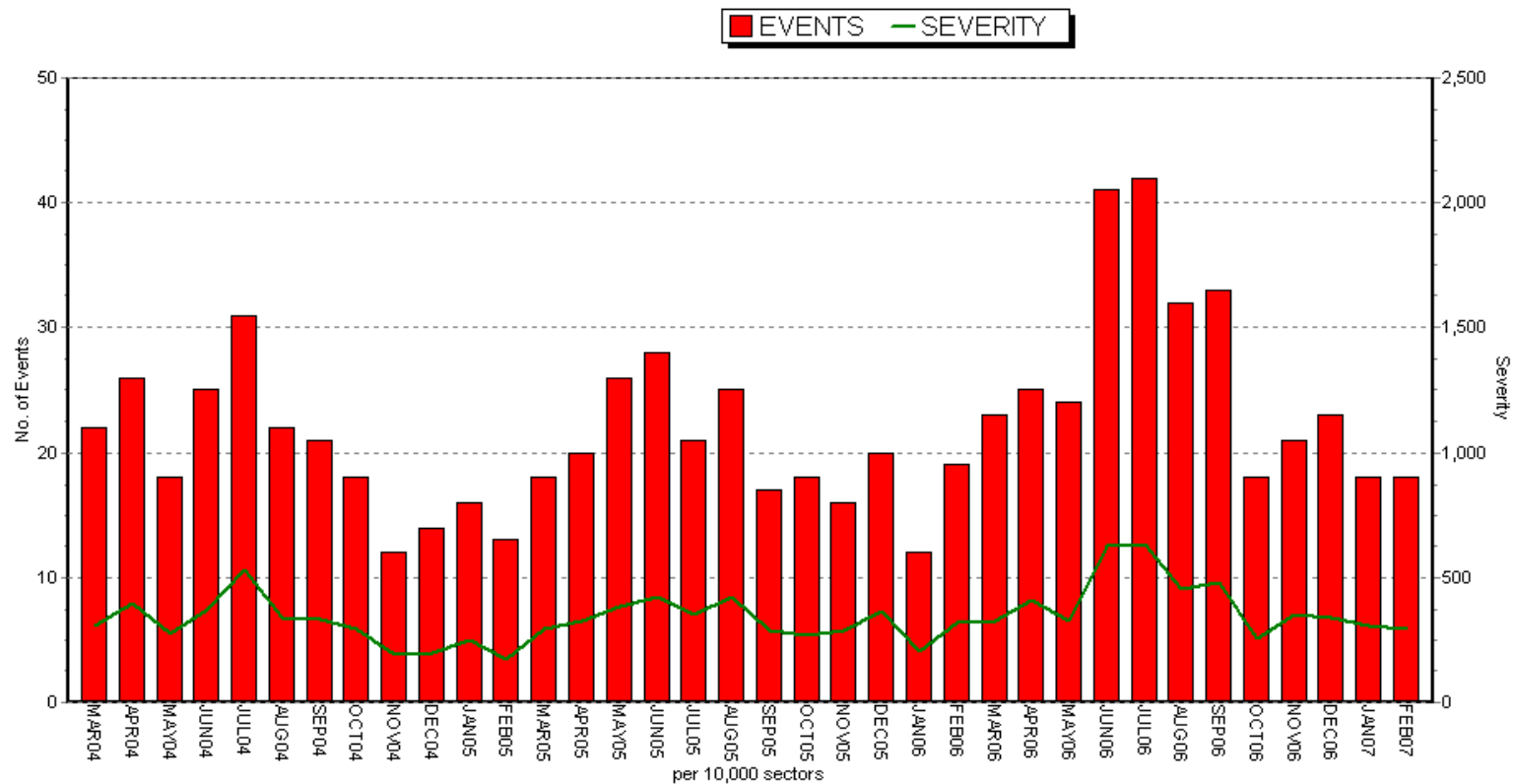
Runway Overrun

Typical technical factors

- **De-stabilised approach**
- **Weather, including runway surface condition**
- **Mishandling retardation devices**

Deep landings (Mar 04 – Feb 07)

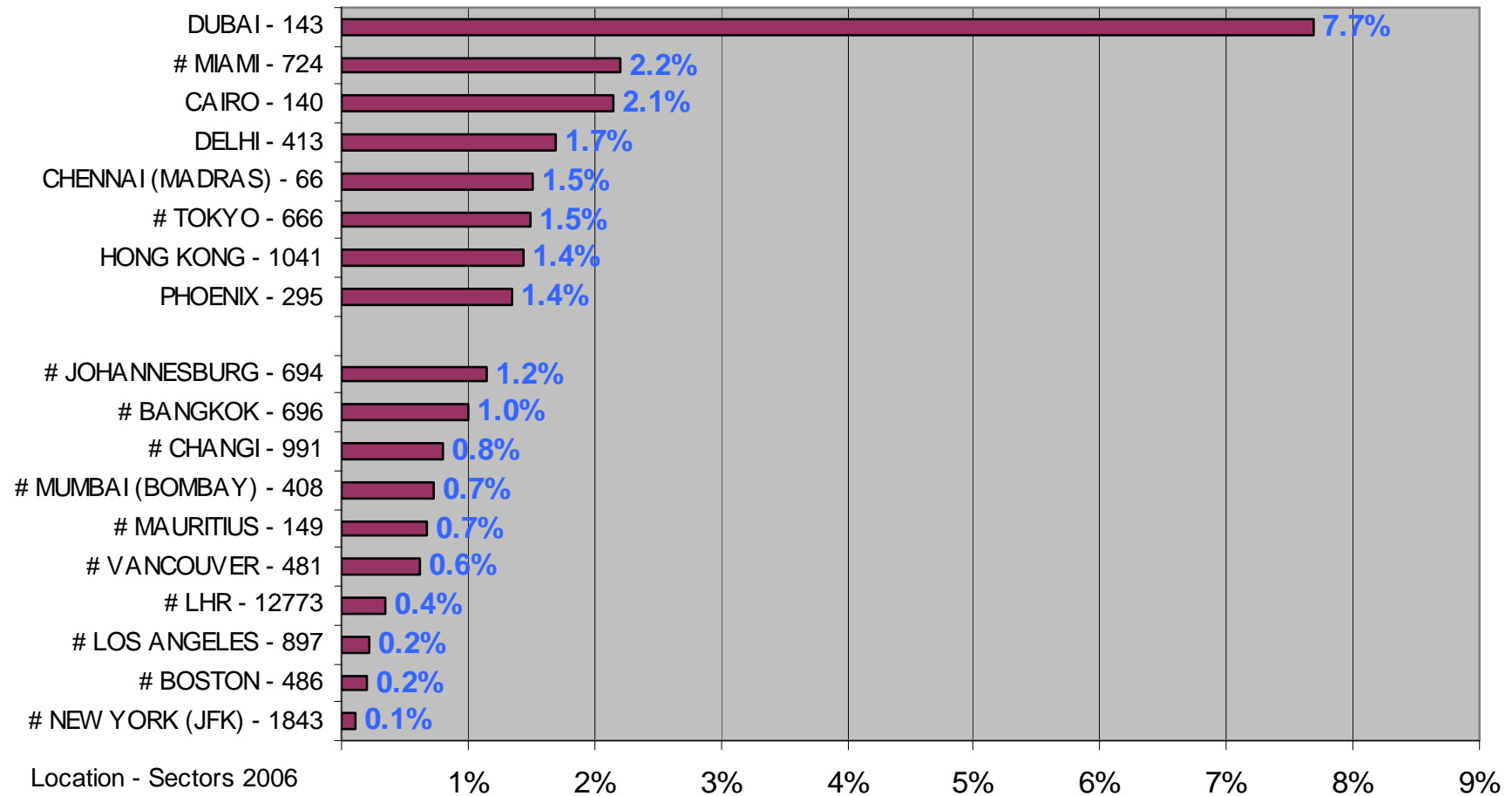
BAFDA: Event Frequency by Events & Severity : Mar 04 to Feb 07



Filter: SESMA Category is "50A - Deep Landing".

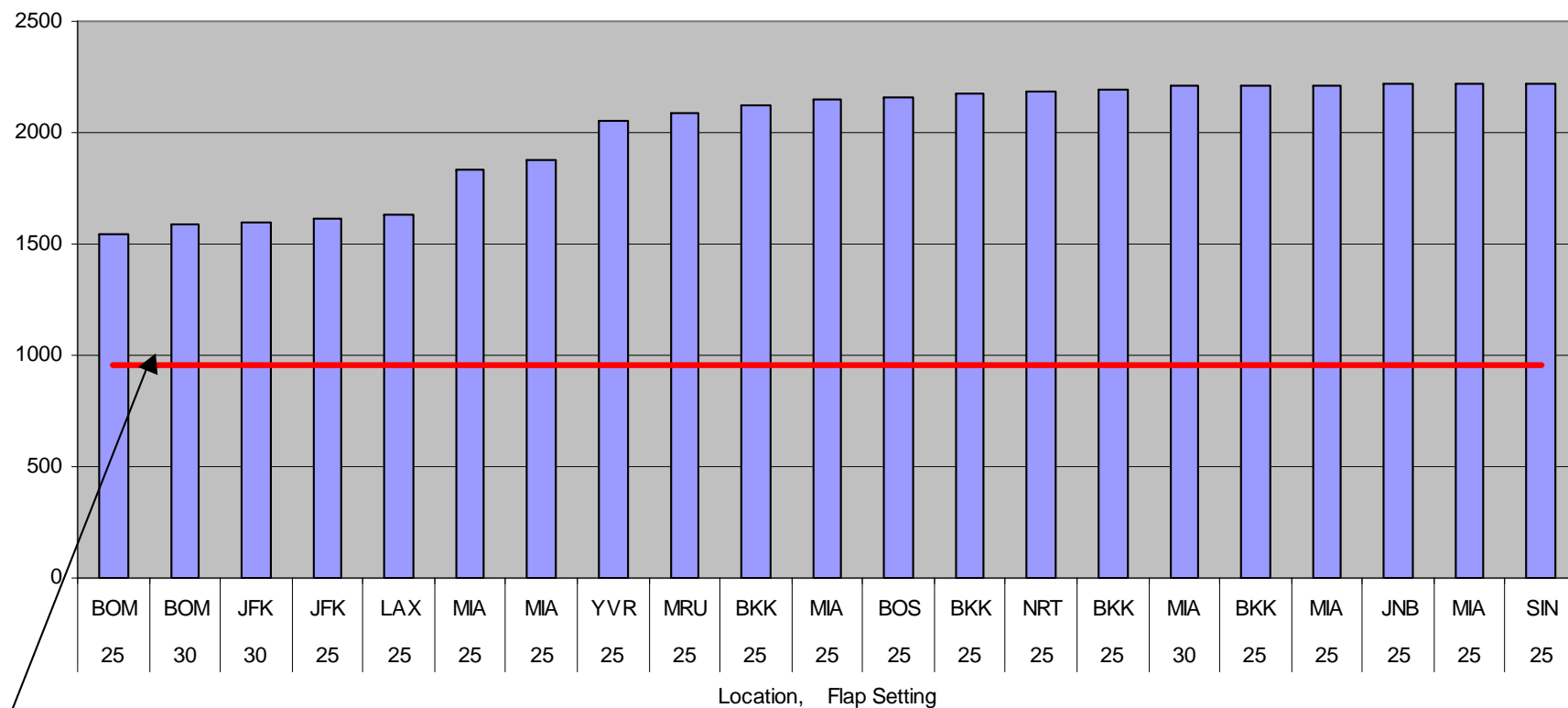
Deep landings - destinations

Rate of 747 Deep landings by Location Jan-Dec06



Deep landings – RW remaining

744 Deep Landings Jan-Dec06 - runway remaining at touchdown < 2300m



Landing run required (touchdown to stopped), at max landing weight, good braking action assumed. = 950m

Deep landing factors

- **Long, Broad Runway = Visual Illusion = High Flare**
- **Long Runway + Good Weather = Smooth Landing**
- **Higher Temperature = Higher TAS = Ground Rush = High Flare**

'Near miss' example (2002)

Normal Touchdown zone (X) with planned roll out



35 knots fast

Approx 80 knots passing normal turnoff

Actual Touchdown (X) and rollout



Near excursion incident analysis

- Mindset – committing to land too early?
- Overload – no capacity for decision making
- Tunnel vision – focus on task completion
- Confidence

Training mitigation

- **Raise crew awareness** – mindset, threat identification and error management techniques
- **Integrated human factors training** – Situation Awareness, Decision Making, Workload Management (overload), Communication
- **Simulator training** – overrun pre-conditions, low go-around procedures & baulked landing practice

ATQP repeat analysis

- **Operational and Technical (OT)**
- **Leadership and Management (LM)**
- **Situation Awareness (SA)**
- **Teamwork (TW)**
- **Decision Making (DM)**

ATQP repeat analysis

- OT – less than 1% manual handling (S)
 - 8% automation handling (S)
 - 48% procedure or system knowledge (K)
- LM – 9% Workload management related (B)
 - 4% Lack of assertiveness (B)
 - 4% Standards (B)
- SA – 6% Building SA (B)
 - 8% Maintaining SA (B)
- TW – No significant issues
- DM – Root cause on 10% of occasions (B)

Summary

- **Training decisions – risk based, supported by data**
- **Root cause analysis key**
- **Flexible regulations when an equivalent or better level of safety can be demonstrated**
- **More training does not mean better training**
- **Avoid imposition of training as an emotional response to a single event**

THANK YOU

