

The Air Traffic Controller/ATC perspective on hazards and mitigation strategies

Session 3 Presentation 3

Regional Runway Safety Seminar-Kuala Lumpur
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Outline

Runway Incursion & Excursion Hazards and Mitigations

- ◆ **Communication Hazards and Mitigation**
- ◆ **Operational Hazards and Mitigation**
- ◆ **Aerodrome Design Hazards and Mitigation**
- ◆ **Human Factors Hazards and Mitigation**



Runway Incursions



Communication Hazards and Mitigations (1)



RUNWAY INCURSIONS

- Read Back Errors
- Blocked Transmissions /Frequency Congestion
- Rushing/ overlong/ complex transmissions
- Use of non standard phraseology,
- Inadequate R/T training to drivers

- Training and recurrent training to flight crew / controllers/ drivers -
 - ▶ read-back of safety related instructions/ information
 - ▶ Ensuring correctness of read-back by the controllers
 - ▶ Good communication technique
- Regular monitoring of effectiveness of training and compliance with mandatory provisions



Communication Hazards Mitigation (2)



RUNWAY INCURSIONS

- Call Sign Confusion
- Different frequencies / controllers associated with same runway
- Low level of aviation language proficiency

- Avoid using similar call sign
- Use principle “One runway, one controller one frequency and one language.
- Ensuring controllers and flight crew meet the ICAO language proficiency requirements.



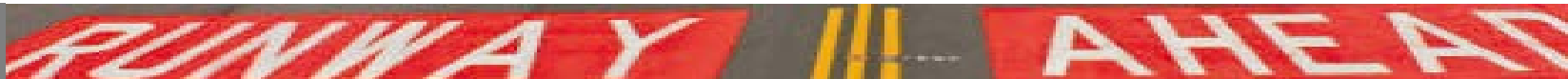
Operational Hazards and Mitigations (1)



RUNWAY INCURSIONS

- Multiple Line-ups on same runway or Simultaneous line-ups on intersecting runway
- Conditional Clearances
- More head-down times on automation/ surveillance tools
- Late issuance of departure/en-route clearance
- Inadequate handing over/ taking over procedures

- Ensuring read-back by correct aircraft and correct clearance, and immediate intervention where required
- Correct identification of aircraft and read-back
- Head-up for more visual surveillance over aerodrome operations
- Timely Issuance of Departure clearances/ amended clearances
- Checklist for handing over/ taking over and adequate monitoring of frequency before taking over.



Operational Hazards and Mitigation (2)



RUNWAY INCURSIONS

- Runway Occupied/obstructed/closed
- Uncertainty of position of an aircraft/vehicle in manoeuvring area
- Instruction to cross illuminated red light/stop bar
- Lining up when aircraft is required to wait
- Change of runways

- SOPs/ memory aids/ technologies e.g. A-SMGCS
- SOPs for not crossing illuminated red lights / SOPs unless contingency procedures in progress
- SOPs for line-ups
- Checklist for change of runways



Aerodrome Design Hazards and Mitigation (1)



RUNWAY INCURSIONS

- Intersection Runways
- Blind Spots/Obscured view from Tower
- Closely spaced runways
- Frequent crossing of active runways
- Construction Activities
- Closed Runways/ taxiways

- Monitoring correctness of read-back, surveillance
- CCTV/A-SMGCS/ SOPs
- Monitoring hold short clearances
- SOPs/Briefing/ Familiarization
- Memory Joggers/ A-SMGCS



Aerodrome Design

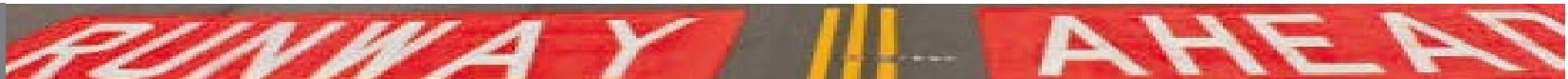
Hazards and Mitigation (2)



RUNWAY INCURSIONS

- Poor Visibility Conditions-Fog/ glare/snow/ water/ sand
- Signage
- Hot Spots
- Capacity Constraints

- A-SMGCS & SOPs
Cleanliness of cab glasses
- SOP, advice to flight crew about unserviceable signage.
- Familiarization of controllers about hotspots, mitigating SOPs
- Restrict number of aircraft operations which can be handled safely and expeditiously



Human Factor Hazards and Mitigation



RUNWAY INCURSIONS

- Expectancy bias of controllers, flight crew and drivers
- Unintentional incorrect instruction i.e. slip of tongue/ mind
- Wrong read-back by flight crew but not corrected by controller
- Understanding of flight crew /drivers that they had clearance to enter/cross runway
- Understanding of flight crew /driver that there is no other traffic except that aircraft/vehicle at low density traffic aerodrome
- Short Term memory loss
- Distractions
- Workload
- Use of Stop Bar or any other technological means on H24 basis
- Training to controllers/flight crew/drivers on human factors- Expectancy Bias
- Strengthening of read-back procedures and checking correctness of read-back
- Memory joggers / A-SMGCS
- Sterile Tower
- Traffic flow management/ sector bifurcation



Runway Excursions



Communication Hazards and Mitigation



RUNWAY EXCURSIONS

- Not passing time critical aerodrome information to pilots in real time----
- ✓ Significant changes in the mean surface wind direction and speed
- ✓ Runway condition and braking action reports
- ✓ Weather information
- ✓ Wind shear
- Updating ATIS/D-ATIS
- Runway selection and change of runway
- Low visibility procedures
- Training and recurrent/refresher training to controllers
- Monitoring of effectiveness of training
- Consider equipping for digital transmission of ATIS,
- SOPs for selecting runway & change of Runway-consider the time the flight crew will require to prepare/re-brief.
- SOP for LVP



Operational Hazards and Mitigation



RUNWAY EXCURSIONS

Unstable Approaches

- Vectoring to short final/
Inadequate distance
from touchdown
information
- Vectors above the glide
slope
- Speed control
 - High speed
approaches
 - Speed vs.
configuration
requirements
- Last minute approach/
runway changes

ANSPs

- Training and recurrent/
refresher training to
controllers.
- Refer CANSO guidance
material -
The education booklet "*Unstable
Approaches – ATC
Considerations 2nd Edition*" and
two flyers for ATCs/Pilots.
- Monitoring effectiveness of
training
- Establish awareness
campaign.

RUNWAY AHEAD

Aerodrome Design Hazards and Mitigation



RUNWAY EXCURSIONS

- Shortened Runways

- Location of Tower that prevents the monitoring of multiple runway operations

- Passing revised landing and take off distance
- Include information in ATIS

- A-SMGCS and specific SOP



Human Factor Hazards and Mitigation



RUNWAY EXCURSIONS

- Tendency of controllers to accede flight crew requests for shorter vectors which may not provide appropriate track miles for stable approach
- Once an individual has selected a particular course of action, he/she hardly changes his/her plan.

- Training /sensitization programme to controllers



THANK YOU

