

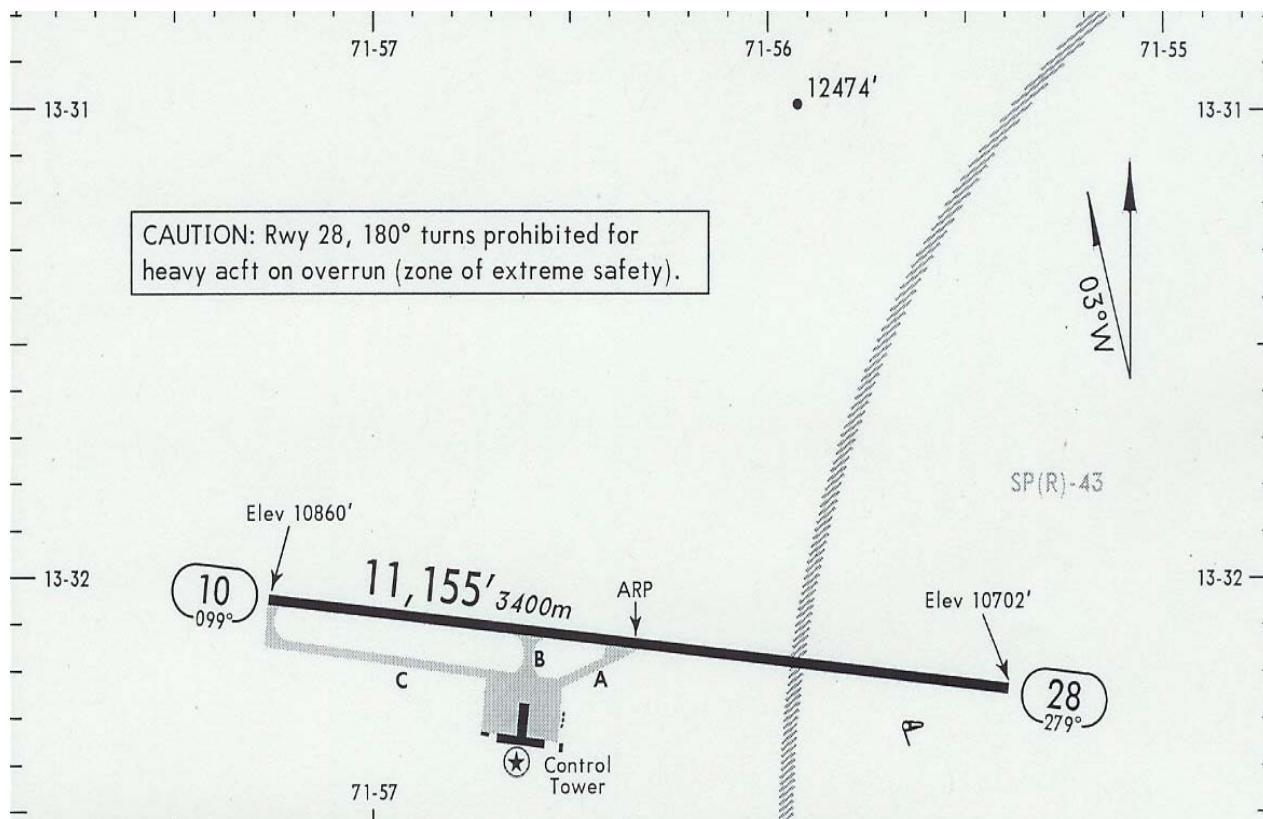


*ICAO Safety Management  
Systems (SMS) Course  
Handout N° 5 – Cuzco  
International Airport operation*



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## 2. What is the safety concern?

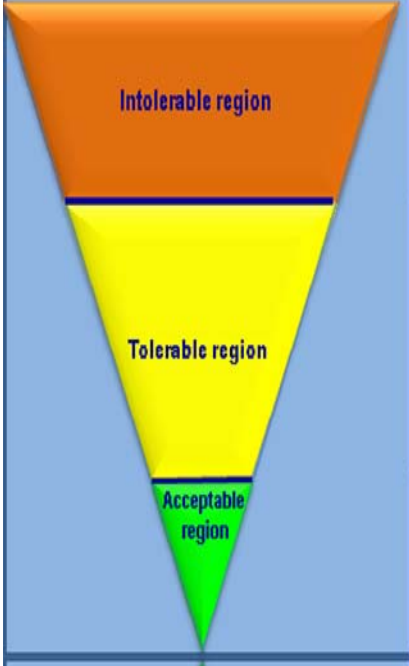
- Aspects to be considered:
  - Aerodrome infrastructure
  - Navigational radio aids
  - Weather conditions
  - Aircraft performance
  - Take-off obstacle clearance net path
  - En-route obstacle clearance net path (trajectory)
  - In-flight procedures
  - Documentation
  - Training
    - Pilots and cabin crew
    - Flight dispatchers
    - Safety ground crew

## 3. Risk assessment matrix

Probability of occurrence		
Qualitative definition	Meaning	Value
<b>Frequent</b>	Likely to occur many times ( <i>has occurred frequently</i> )	<b>5</b>
<b>Occasional</b>	Likely to occur some times ( <i>has occurred infrequently</i> )	<b>4</b>
<b>Remote</b>	Unlikely, but possible to occur ( <i>has occurred rarely</i> )	<b>3</b>
<b>Improbable</b>	Very unlikely to occur ( <i>not known to have occurred</i> )	<b>2</b>
<b>Extremely improbable</b>	Almost inconceivable that the event will occur	<b>1</b>

Severity of occurrences		
Aviation definition	Meaning	Value
<b>Catastrophic</b>	<ul style="list-style-type: none"> <li>➤ Equipment destroyed.</li> <li>➤ Multiple deaths.</li> </ul>	<b>A</b>
<b>Hazardous</b>	<ul style="list-style-type: none"> <li>➤ A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely.</li> <li>➤ Serious injury.</li> <li>➤ Major equipment damage.</li> </ul>	<b>B</b>
<b>Major</b>	<ul style="list-style-type: none"> <li>➤ A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of increase in workload, or as a result of conditions impairing their efficiency.</li> <li>➤ Serious incident.</li> <li>➤ Injury to persons.</li> </ul>	<b>C</b>
<b>Minor</b>	<ul style="list-style-type: none"> <li>➤ Nuisance.</li> <li>➤ Operating limitations.</li> <li>➤ Use of emergency procedures.</li> <li>➤ Minor incident.</li> </ul>	<b>D</b>
<b>Negligible</b>	➤ Little consequences	<b>E</b>

Risk probability		Risk severity				
		Catastrophic <b>A</b>	Hazardous <b>B</b>	Major <b>C</b>	Minor <b>D</b>	Negligible <b>E</b>
Frequent	<b>5</b>	<b>5A</b>	<b>5B</b>	<b>5C</b>	<b>5D</b>	<b>5E</b>
Occasional	<b>4</b>	<b>4A</b>	<b>4B</b>	<b>4C</b>	<b>4D</b>	<b>4E</b>
Remote	<b>3</b>	<b>3A</b>	<b>3B</b>	<b>3C</b>	<b>3D</b>	<b>3E</b>
Improbable	<b>2</b>	<b>2A</b>	<b>2B</b>	<b>2C</b>	<b>2D</b>	<b>2E</b>
Extremely improbable	<b>1</b>	<b>1A</b>	<b>1B</b>	<b>1C</b>	<b>1D</b>	<b>2E</b>

Risk management	Assessment risk index	Suggested criteria
	<b>5A, 5B, 5C, 4A, 4B, 3A</b>	<b>Unacceptable under the existing circumstances</b>
	<b>5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C</b>	<b>Acceptable based on risk mitigation. It might require management decision</b>
	<b>3E, 2D, 2E, 1A, 1B, 1C, 1D, 1E</b>	<b>Acceptable</b>

#### 4. Group activity

A facilitator will be appointed, who will coordinate the discussion. A summary of the discussion will be written on flip charts, and a member of the group will brief on their findings in a plenary session.

#### 5. Your task

1. List the type of operation or activity.
2. State the generic hazard(s)
3. State the specific components of the hazard(s).
4. State the hazard-related consequences and assess the risk(s).
5. Assess existing defences to control the risk(s) and resulting risk index.
6. Propose further action to reduce the risk(s) and resulting risk index.
7. Establish individual responsibility to implement the risk mitigation
8. Complete the attached log (Table 08/01).

## 6. Utilization of the hazard identification and risk management log

- From Table 08/01 – *Hazard identification and risk management log* below is used to provide a record of identified risks and the actions taken by nominated individuals. The record should be retained permanently in order to provide evidence of safety management and to provide a reference for future risk assessments.
- Having identified and ranked the risks, any existing defences against them should be identified. These defences must then be assessed for adequacy. If these are found to be less than adequate, then additional actions will have to be prescribed. All actions must be addressed by a specified individual (usually the line manager responsible) and a target date for completion must be given. The *Hazard identification and risk management log* is not to be cleared until this action is completed.
- An example is given to facilitate the understanding in the use of the table.

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**TABLE 08/01 – HAZARD IDENTIFICATION AND RISK MANAGEMENT**

Type of operation or activity	Generic hazard	Specific components of the hazard	Hazard-related consequences	Existing defences to control risk(s) and risk index	Further action to reduce risk(s) and resulting risk index	Responsible person
<b>Flight operations</b>	<p>All weather operations at an aerodrome where one of the two parallel runways is closed due to a construction work.</p> <p><i>(Example only, not related to the present case study)</i></p>	<p>Aircraft taking off or landing on a closed runway.</p> <p><i>(Example only, not related to the present case study)</i></p>	<p>Aircraft colliding foreign object.</p> <p><i>(Example only, not related to the present case study)</i></p>	<ol style="list-style-type: none"> <li>1. NOTAM issued by the aerodrome manager to notified users on the construction work on the closed runway.</li> <li>2. ATIS</li> <li>3. Aerodrome layout available in the national AIP</li> <li>4. New signage and lighting</li> <li>5. Company operations manual</li> <li>6. Dispatch performance manual</li> <li>7. Aircraft operating manual</li> <li>8. Flight crew competency requirements in AWOP.</li> <li>9. Recurrent training</li> <li>10. CRM training</li> </ol> <p><i>(Example only, not related to the present case study)</i></p> <p><b>Risk index: 3A</b></p> <p><b>Risk tolerability: Unacceptable under the existing circumstances</b></p>	<ol style="list-style-type: none"> <li>1. Ensure that flight dispatchers and operations officers inform flight crew on the risk of taking mistakenly the closed runway.</li> <li>2. Ensure that flight crew is aware of the current layout of the aerodrome.</li> <li>3. Issuance of company NOTAM concerning the closed runway and new routing on the movement area.</li> <li>4. Review of the Low Visibility Operations (LVO) during training sessions.</li> <li>5. Review procedures in the Company Operations Manual and Route Manual.</li> </ol> <p><i>(Example only, not related to the present case study)</i></p> <p><b>Risk index: 1A</b></p> <p><b>Risk tolerability: Acceptable after review of the operation</b></p>	<ol style="list-style-type: none"> <li>1. Director of the operations control centre (OCC)</li> <li>2. Chief pilot</li> <li>3. Head of Flight operations engineering</li> <li>4. Flight training manager</li> <li>5. Head of Documentation Department</li> </ol> <p><i>(Example only, not related to the present case study)</i></p>



Type of operation or activity	Generic hazard	Specific components of the hazard	Hazard-related consequences	Existing defences to control risk(s) and risk index	Further action to reduce risk(s) and resulting risk index	Responsible person
				<i>Risk index:</i> <i>Risk tolerability:</i>	<i>Risk index:</i> <i>Risk tolerability:</i>	
				<i>Risk index:</i> <i>Risk tolerability:</i>	<i>Risk index:</i> <i>Risk tolerability:</i>	

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