

Unit 8: Airport Operations and Airport Roles

Key Term 1

- **Induce:** to persuade someone to do something, or to cause something to happen (ชักนำ มีส่วนทำให้)
- **Catalytic:** making a chemical reaction happen more quickly by using a catalyst (เร่งให้เร็วขึ้น ทำให้เกิดมากขึ้น รุนแรงขึ้น)
- **Overhaul:** to repair or to completely change a system so that it works more effectively.
- **Tragedy :** An event causing great suffering, destruction, and distress, such as a serious accident, crime, or natural catastrophe.
- **Crack:** A narrow space between two surfaces which have broken or been moved apart.
- **Rescue:** An act of saving or being saved from danger or difficulty
- **Inspection:** Careful examination or scrutiny.

Key Term 2

- **Crucial:** Of great importance
- **Scrutiny:** careful examination, inspection, survey, scan, study, perusal, search, investigation, exploration, research, probe, inquiry, check, audit, review, analysis, dissection
- **Aborted** : terminate, end.
- **Eliminate:** remove, get rid of, abolish, put an end to, do away with, banish, end, stop, terminate, eradicate, destroy, stamp out, obliterate, wipe out, extinguish, finish off.
- **Habitat:** The natural home or environment of an animal, plant, or other organism.

Airport operations

- The effective management of the facilities that exist on and around an airport's airfield is vital to the **safety and efficiency** of aircraft operations.

Airport Operations include:

1. Pavement Management
2. Aircraft rescue and fire fighting (ARFF)
3. Safety Inspection Programs
4. Bird hazard management

1. Pavement Management

- Pavement is surface section of runway/taxiway (concrete or asphalt).
- To serve its purpose, a pavement must have:
 - Adequate load-carrying capability,
 - Good ride ability
 - And must allow safe operation of aircraft.

Pavement Management

- Strong, level, dry and well-maintained pavement are required for the safe movement of aircraft.
- Minimum quality standard for runway pavements, including:
 - No holes
 - No cracks and surface variations which could impair directional control of an aircraft
 - No contamination such as mud, dirt & foreign object.

*** Foreign Objects : solid objects or materials on runway surfaces which are capable of damaging aircraft.**

Pavement Management

- Inspection & maintenance of the runway/taxiway pavement are thus importance to airport management
- Actions in pavement maintenance are:
 1. **Pavement repairing:** including sealing of small surface cracks. Purpose to ensure pavement always in good condition.
 2. **Pavement reconstruction:** Adding an additional layer of asphalt to increase the strength of pavement. Replaced the pavement entirely. Expensive process.

pavement maintenance

Purpose of pavement maintenance are:

- To prevent further runway crack.
- To provide good runway surface friction.
- To increase safety by providing correct and clearly visible runway marking

Crack Sealing

2. Safety Inspection Programs

Timely inspections are important to maintain airport operational safety.

Areas under Safety Inspection Programs include:

- Runways
- Taxiways
- Apron-Aircraft Parking Area
- Fueling Facilities
- Buildings and Hangars

Safety Inspection Programs

The purpose of the inspection are to ensure these areas are free from:

- Foreign Object Damages (FOD) such as misplaced tools, aircraft parts and tyre debris.
- Hazards created by weather conditions (snow/ice/mud).
- Hazards created by damaged facilities (unsealed runway pavements).
- Hazards occurring during construction activity (holes or obstacles).
- Bird or wildlife hazard.

3. Aircraft rescue and fire fighting (ARFF)

- The objective of a rescue and fire fighting service is to save lives.
- ARFF important because aircraft accident occurring at area that there are the greatest opportunities of saving lives.
- ARFF capabilities at airport determine difference between life and death for pilots, all crews and passengers.

3. Aircraft rescue and fire fighting (ARFF)

- For any incidents of fires or emergencies ARFF have to **RESPOND within 3 minutes.**



Effectiveness of ARFF

- Intensive in-service training programs and live-fire drills are required to ensure ARFF personnel and equipment in top working order.

Snow and Ice Control

Snow & ice control plan is established to ensure airport operations safety in the event of snow and ice conditions.

Procedures to follow are:

1. Timely removal of control of snow and icing.
2. Selection and application of approved materials for snow and ice control
3. Timely notification to aircraft when any portion of the pavement is less than satisfactory.

Bird hazard

- bird strikes
- aborted take off

Bird hazard

- **Example: Bird Hazard That Caused The Tragedy at Brussels Airport, Belgium.**
- The Boeing 747 crashed after take-off when the right engine experienced a momentary loss of power because of bird strike.

Bird hazard



- US Airways Flight 1549 experienced total engine failure due to multiple bird strikes (flock of Canada Geese) no fatalities, 5 injuries.

Bird hazard Control Techniques

There are several control techniques available to solve the bird hazard problem. Some of the techniques are:

2. **Elimination of habitat** such as trees to discourage bird populations.
3. The ground crews must **inform** the ATC of **movements of birds** detected.
4. **Noisemakers tools**, this tool will scare the bird and cause the bird to move away from airport.



NOTAMS

- **NOTAM** is stand for **Notice to Airmen**
- NOTAM is the notices containing updated information which is essential to personnel concerned with flight operations. The information including airport condition, or change in any component and any hazard.
- A NOTAM is filed with an aviation authority **to alert aircraft pilots of any hazards at a specific location.**

NOTAMs are issued (and reported) for a number of reasons, such as:

1. Closed runways
2. Inoperable radio navigational aids or lights
3. Military exercises with resulting airspace restrictions
4. Temporary obstacles near airfields (ex: Cranes)
5. Passage of flocks of birds through airspace
6. Notifications of runway/taxiway/apron status with respect to snow, ice and standing water.
7. Notification of an operationally significant change in volcanic ash or other dust contamination.
8. Hazards such as air-shows, parachute jumps, kite flying, rocket launches, etc.
9. Flights by important people such as heads of state

1. The airport roles on economic and social

1.1 Economic impact of airport

1. Direct or primary impact
2. Indirect or primary impact
3. Induced impact
4. Catalytic impact

1.2 Social impact of airport

1.2 Social impact of airport

The aviation can have impact on social as well.

- Strengthening ethnic and cultural links between countries
- Enhancing travel opportunities and increasing consumer choices for products
- Employment and living patterns will change with implication of housing, health, education and other needs on surrounding areas
- The airport can have major role in promoting social, such as remote and island communities' promotion
 - The remote area, without an airport would suffer and have minimize quality of life. Since, the airport can enable regions to have access to crucial services, for example hospitals and higher education

2. The airport and environmental impact

There are 5 main types of environmental impact at the airport
(*Graham, 2014*)

1. Noise
2. Emission or air pollution
3. Water pollution
4. Waste and energy management
5. Wildlife, heritage and landscape

Tangible Services at Airports

- Airside infrastructure (taxiways, runways, ramp, apron, navigational aids),
- Landside infrastructure (terminals, ground transport, parking facilities)
- Airport support infrastructure (aircraft maintenance, in-flight catering services, security and police facilities)
- Support areas (industrial areas, duty free zone)

Intangible Services

- Administration (airport management, air traffic control)
- Operations (airport safety and security)
- Airport maintenance
- External factors ex. regulations and environment

The airport promotion and reduction

The airport products, seemingly, are the same. Hence, it is depending on promotion tactics of each airport to attract various users.

For example; The Singapore Straits Times (2015) reported that Singapore Changi Airport cuts fees for passengers, airlines to boost competitiveness details as follow;

“SINGAPORE - Changi Airport has cut charges for selected travelers, airlines and other partners amid intense competition from rivals in the region, including airports in Hong Kong and the Middle East.

Include lower passenger service fees for transit travelers, discounted landing fees for large aircraft and rebates for flight catering and other ground handling services.

The airport promotion and reduction

Include;

- Lower fuel prices
- Discounted landing fees for large aircraft
- Lower passenger service fees for transit travelers
- Cut charges for selected travelers to boost competitiveness
- Rebates for flight catering and other ground handling services
- Incentives - being offered to encourage staff to boost productivity