EXPERTISE AND COMPETENCY FOR CONTINGENCY

When ATC centres suffer outages, contingency planning comes into play. In this article, **Önder Toydemir and Arife Aycan Mutlu** outline the contingency arrangements in Turkey, which were put to the test during a total loss of ATC data.

KEY POINTS

- **Effective human resources planning is essential to benefit fully from employees' expertise and competency.**
- **Listing 'key personnel' with the necessary competency and expertise before passing through to contingency mode is critical.**
- **Promotion of competency and expertise is needed for communication about contingency operations, dissemination of lessons learnt, and to enable continuous improvement of the process.**
- **A training policy for contingency operations requires a variety of training methods, including briefings, simulations and joint exercises.**

Contingency Planning in the Turkish Air Traffic Control Centre

There is today only one Area Control Centre in Turkey, located in Ankara. This is a result of a modernisation project known as 'SMART' (Systematic Modernization of ATM Resources Turkey). SMART ATC systems have been in operation since 7 July 2015, and involved the transfer of Istanbul ACC and Izmir ACC sectors to Ankara ACC. There are also a number of APP services in Istanbul, Antalya, Adnan Menderes, Dalaman and Bodrum.

In the event of a disaster or any other event that makes air traffic and supporting services partially or totally unavailable, contingency planning is put to the test. In Turkey, the Turkish Civil ANSP (DHMI, General Directorate of State Airports Authority) activates the contingency plan. This outlines the arrangements to be introduced to permit flights to transit, land and take off without significant disruption. In the event that one of Turkey's approach units becomes inoperable, an auxiliary facility within the Turkish Air Traffic Control Centre (THTKM) in Ankara becomes responsible for the provision of these air traffic services.

The contingency plan was developed in close co-operation and collaboration with Directorate General of Civil Aviation (SHGM), with the civil aviation authorities responsible for the adjacent FIRs, and also in a consultation of Turkish military authorities. Turkey has a huge, strategically important airspace, at the crossroads between Europe, the Middle-East, Africa and Asia. This comprises 66,930 kilometres of controlled air routes and 982,286 square kilometres of controlled airspace over Europe and Asia. So many adjacent States, FIRs and ACCs are directly affected by the Contingency Plan.

Under the plan, air traffic operations move safely and swiftly from the units to the auxiliary facility, and vice versa, with no loss of data or technical system performance. Flight information from the regions is securely transferred, along with communications between controllers and pilots, airlines and airports. During this interim period, flight operations in the Turkish FIR would be restricted, to a degree.

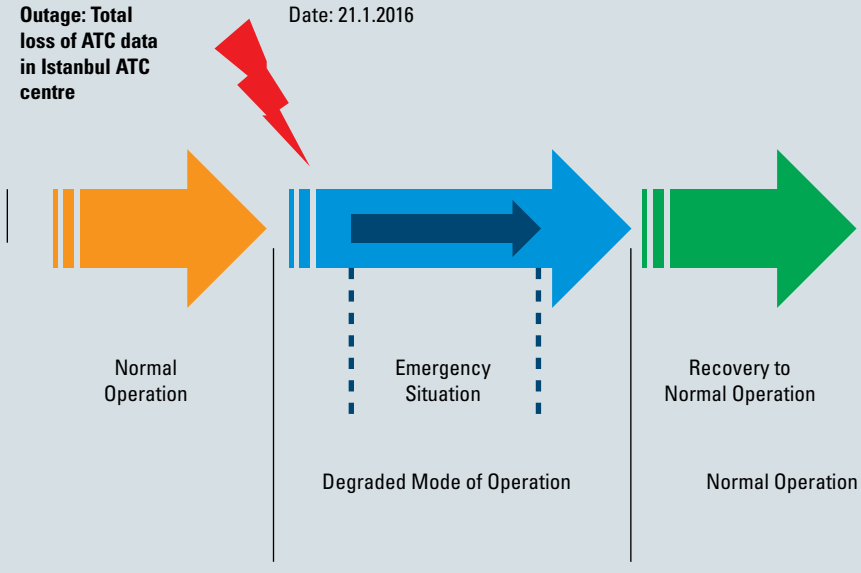

Figure 1: Contingency Life Cycle on 21/01/2016 in Turkish FIR

Expertise and competency in the contingency life cycle

There are five different stages in the 'contingency life cycle':

1. normal operations
2. emergency situations
3. degraded modes of operation
4. service continuity, and
5. recovery to normal operations, and again back to normal operations.

This life cycle provides a framework for the more detailed plans that each service provider must develop within their local context of operation. Each of these plans depends on competency in the provision of safe ATC using current back-up systems. This, in turn requires effective human performance, including controller decision-making expertise.

By competency, we mean the ability to do something successfully or efficiently, and by expertise, we mean a high level of knowledge or skill, requiring lots of practice and exposure. But if it is a contingency situation, that means a rare and an unusual case. So what is the role of competency and expertise when dealing and struggling with a difficult and challenging situation? Here is an example.

Emergency: Total loss of ATC data

Until January 2016, air traffic services in Turkey had been provided under the new SMART system without any emergency situation. The whole ACC service had been provided in the new centre for about a year.

As a result of the human resource planning process, ATCOs in the Istanbul ACC and APP service for Atatürk and Sabiha Gökçen Airports had been transferred to THTKM in Ankara and distributed to the ATCO teams. Atatürk Airport is the 5th airport in Europe, providing services to 63,854,109 passengers in 2017, according to the Airports Council International.

Up to this time, the ATCOs, having no experience in İstanbul ACC and APP sectors before the SMART project, had been educated in the training and simulation facilities. Training for contingency operations had been carried out by a variety of means, including briefings, simulations and joint exercises. All these actions were put into practice in the 'normal operation' stage of the contingency life cycle.

But on January 21, 2016 there was a total loss of ATC data (voice, radar, network, phone, meteorology, others FIR's) in İstanbul APP sector. The air traffic and supporting services, normally undertaken by İstanbul ATC sector, were totally unavailable. This outage and the degraded modes of operation is technically described as follows: *"a reduced level of service invoked by equipment outage or malfunction, staff shortage or procedures becoming inadequate as a knock-on effect of one or several deficient system elements".*

Before passing to the 'emergency situation' (see Figure 1), the contingency plan was put into practice. All landings and departure traffic from İstanbul and to İstanbul from other airports were cancelled by the team, consisting of the controller, ATC supervisor and technical supervisor in the İstanbul APP sector. Approximately 55 landing and take-offs – just for Atatürk Airport – were affected in the first second of the contingency plan, and this number was going to increase steadily. The number of aircraft for Atatürk Airport was regulated immediately and the hourly capacity for the airport was decreased, first zero-rate, then 12, and afterwards 20 aircraft.

It took one or two minutes to transfer air traffic operations from İstanbul APP sector to Ankara ACC. In this time interval the supervisors and team members of Ankara ACC decided to decrease the lower divisions of the İstanbul Lower ACC sector to cover APP levels, while the technical team were trying to transfer air traffic information, including voice, surveillance, flight plans, meteorological information, aeronautical and auxiliary data to SMART radar display systems and voice communication systems. There was no interruption of ATC services, and the 'emergency situation' started. All subsequent actions were performed according to the contingency plan by the ATCOs and supervisors.

The elapsed time of emergency situation was 2 hours 47 minutes, after which the ATC service recovered to normal operation in İstanbul APP.

Return back to normal situation

In the 'normal operation' stage, the team handling the contingency operations on that day was honoured and their success – and associated competency and expertise – was announced to the organisation. This raised awareness of contingency, disseminated lessons learnt, and enabled continuous improvement of the process.

The FL decrease was introduced to the contingency plans and checklists. These plans have been reviewed and continually improved. Supervision has been enhanced; in a contingency situation, a supervisor observes and reminds controllers of relevant procedures. Finally, training for contingency now includes real case analysis and scenarios, such as simulation of the contingency mode of Antalya APP service.

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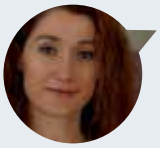

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