

# AIR CON DOWN

## OPS ROOM AIR-CONDITIONING SYSTEM FAILURE

Sometimes the failures that can catch us out are relatively simple. In Malta ATS, it was an ops room air conditioning failure. **Francis Bezzina** explains what happened, and what was learned.

### What Happened on the Day

It was around 16:00 on 9 June 2019 in the OPS room in Malta ATS. An approach controller heard a loud, unusual noise. The vibrating sound seemed to come from the air conditioning (A/C) ducts. Everyone in the OPS room is familiar with the noise when the A/C compressor is activated, but this sounded louder and different.

The technical section was informed and a few minutes later, the fire alarm sounded inside the main OPS room. Within a few minutes another fire alarm, which covers the equipment room, also activated. Smoke was now evident in the OPS room, the air conditioning plant room and the corridor leading to the OPS room. In response, ATSEPs switched the FM-200 fire suppression system to manual. FM-200 is a harmless gas which, if triggered, lowers the oxygen level by 3% to extinguish a fire if present, but leaves enough oxygen for people to exit the rooms.

ATSEPs analysed the situation in the OPS room and concluded that frozen gas was being emitted from a ruptured air conditioning pipe. On further analysis, it was found that the leak was due to a metal fatigue crack in one of the internal compressor unit copper pipes. As a result of the crack, there was a total loss of refrigerant gas, and consequently this gas escaped into the OPS room. This produced a dense cloud of smoke, which filled the entire room, and the adjacent equipment room.

The traffic level was significant, and the main concentration of aircraft was with Malta West Sector. (During

this time of day ACC is divided in two sectors – Malta West and Malta East – with an Executive and a Planning controller in each position.) All IFR and VFR departures were stopped. The ACC sector was collapsed to one sector (from two) to reduce the number of ATCOs in the OPS room. The ATCO supervisor and a group of ATCOs remained in the OPS room handling traffic. Some ATCOs needed medical attention and one ATCO (APP) was hospitalised for observation.

In the meantime, the fire service was notified and were on site within a few minutes. As soon as they arrived on site, they were informed that it was not a fire, but refrigerant gas. The fire officers confirmed that, since the AC units were recently installed, the gas was probably nontoxic. Meanwhile, as soon as the crack was identified, an ATSEP tried to block the leak. Due to the high pressure involved, this was impossible (the nominal pressure is in excess of 20 Bar, while a typical car tyre pressure is approximately 2 bar or 32 psi). Fans were immediately placed inside the OPS room near the doors, to disperse the gas, and after 30-40 minutes, the room was almost cleared. The spare AC unit was switched on. At 16:53, operations were resumed back to normal.

This was a situation that was never anticipated, nor practised in any contingency training at MATS. An internal investigation was launched to build a clear understanding of the failure and how to mitigate for such circumstances and reduce the chance of such occurrences. Meetings were organised to discuss and review the findings and resulting safety

recommendations with ATCOs and ATSEPs.

### Equipment

The faulty A/C part was replaced and tested by the supplier, and resumed back in service, with a separate investigation by the manufacturer. All types of unearthing gases, fire suppressants, or any other gases or substances that might leak into any of the working areas must be documented and certified by a competent authority. In this case, while the refrigerant (R410A) used was nontoxic, in big amounts it can cause dizziness and nausea. This is why an ATCO needed hospitalisation.

Two mobile air extractors were also purchased, modified internally by the technical team. These extractors are mounted on wheels and can be stored to be available at short notice, and can clear the OPS room in a few minutes. The extractors were tested in the OPS room to check their noise levels and included in the ATSEP contingency procedures. Ventilation in the OPS room was also modified.

### Contingency Ops Room

The incident was a reminder of the importance of having a secondary standby operations room close to, but independent from, the main operations room. Work on the new contingency OPS room was given top priority to assure service continuity when the main OPS room is compromised. The contingency OPS room is now fully equipped and operational, with separate controller working positions

and servers for all functions, along with dual supplies. This can be activated in minutes. A contingency changeover is done every three weeks with different ATCO-ATSEP shifts involved.

### Procedures and Training

A procedure is needed to outline what operational and technical supervisors are expected to do when faced with a situation, such as fire, smoke etc., when they have to move out of the main OPS room. The supervisor manuals had the contingency procedures updated, and monthly exercises are conducted involving management,

ATCO and ATSEP teams. These cover the termination of service from the main OPS room, with OPS continued from the Contingency OPS room.

### Some Conclusions

It is difficult or impossible to cover all events and occurrences in your contingency setup, but it is important that we try, especially when dark days occur. A shock event – no matter how basic it seems – is always a possibility. Management teams need to give priority to contingency training and exercises. It will build confidence on the day when luck looks to the other side.

We are again updating our contingency and emergency response plans. It is of utmost important to listen carefully from the ground level because that is where the experience lies. Be close to the OPS room and technical areas if you want to know the risks that may someday come to haunt you. Share, discuss, and brainstorm, and don't be afraid of constructive criticism; this is the place where dragons can be identified and stopped in their tracks. And finally, show appreciation for the contributions from all staff, those are the people that will probably save you on the day. 🐉



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