Case Study Comment 2 by Keith Cartmale

It is worth taking both a 'micro' and a 'macro' view of this scenario from the perspective of the ANSP.

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First, the micro view. What is happening in the Operations Room? Several things are evident:

- The West Sector controllers are very busy, and have not applied restrictions;
- The East Sector controller is working (temporarily) on her own;
- There is no primary radar coverage;
- The West Sector Controller had not coordinated the ABC654 into the East Sector.
- The transponder of the 747 has failed;
- The aircraft transponder failure was not recognised at the time of failure by the West Sector Controllers;

Working a sector on your own is not a practice I would recommend, despite the light traffic, because situations can become complicated very quickly. It implies a lack of appropriate Operations Room discipline, and is a culture that can easily spread and lead to erosion of good practice.

I also see a 'can do' culture - let's handle as much traffic as possible, no matter what the weather or however complex the situation. This is exacerbated by a supervisory ethos which wants to avoid restrictions because this means delay and thus increases the cost per Unit.

However, the context is a fact of life. Cultures don't spring up over night - they develop over time and arise from the beliefs and values at all levels of the organisation. It is vital that all staff speak up when they have concerns and that supervisors and managers listen and act on concerns – a positive, open safety culture.

The impact on safety and capacity of the proposal to remove primary radar coverage should have been assessed to aid the decision making process. The impact of loss of individual/multiple transponder data would then be known, and any mitigation actions can then be taken prior to going ahead with removing primary radar. This lack of primary radar coverage increases the possibility of a false traffic display. If this had been recognised, the procedures for applying restrictions during adverse weather would have been tightened and enforced. Likewise, the controllers would have been given training on what to do in the event of a known loss of aircraft transponder data now that primary radar coverage is no longer available.

And then there is the macro view. From the total Systems perspective a lack of aircraft transponder data constitutes a single point of failure, something that all safety professionals are encouraged to design out of their systems.

With today's advanced ATM systems, especially in a Mode-S environment, consideration should have been given to developing and implementing a tool which automatically detects aircraft transponder data failures, then plots the predicted movement of the aircraft based on its previous known position, trajectory, flight path and destination. We could call this tool the AirCraft Transponder Failure Alerting and Subsequent Situation Tracking (ACT-FASST) tool. This would serve to warn the controllers, and allow them to take appropriate action, for example, confirming with the pilot that the transponder has failed, then periodically obtain updates of the aircrafts latest position and trajectory, to enable separation to be maintained, all be it based on degraded information.

A RECOMMENDATION

As a rule of thumb, when making recommendations following incidents, we only make recommendations that we can practically implement ourselves as an ANSP, i.e. in areas under our managerial control.

It would be great to make recommendations about reinstalling primary radar. State Regulations

Case Study Comment 3
by Captain Ed Pooley

We probably all recognise this type of Operator. They always have classic aeroplanes which if not leased cheaply would remain parked in the desert until scrapped for not a lot. We may know or have guessed that these aeroplanes are often crewed by almost-retired Captains over 60 years old accompanied by much younger First Officers with aspirations of a proper job. Meanwhile, these youngsters have little effect on their Captain's traditional approach to command ("I'm in charge") especially on a Classic 747 where there's likely to be an equally geriatric flight engineer with as much time on type and (consequently) almost as much 'authority' over the First Officer as the Captain. Examples of the genre are to be found more often outside Europe – such as the annual Haaj pilgrimage flights to Mecca and Medina. But as this sort of business is typically a long haul business model now that we have a proliferation of LCCs doing short haul, they sometimes have one end of the journey here, as in this story.

The attitude of the Captain to an unserviceable transponder doesn't surprise me much – although I'd expect the other one to have been available as a substitute whereas we are left to assume that it was defective already. Neither am I surprised by the reliance on SSR with no primary - although I did wonder if the airspace involved had been properly notified as a transponder mandatory zone….

The fact that there was defective safety equipment and that a cabin crew who had experience of something better felt moved to try and expose the fact didn't surprise me either. And as for the ease with which a non-specialist journalist can "have the wool pulled over has eyes" about safety issues, again no surprise. In fact this media problem actually works both ways – not only are real safety issues not appreciated for what they are, occurrences that aren't really about safety are often presented as though they are!

And what about the west sector team? They were certainly rather slow to spread the word that they thought the transponder on the old 747 may have failed? Definitely a poor response in SSR-only airspace – but had the controllers been properly prepared for the withdrawal of primary radar?

So where is there a chance to act to stop the next incident like this? Well quite possibly at the ANSP, but I am going to opt for the Flight Operation involved and specifically pick on the Regulator that issued an AOC to the airline involved. Such an act requires oversight of the holder **in proportion to the assessment of risk**.

A RECOMMENDATION

The Regulator which has responsibility for the AOC holder involved must recognise that their oversight effort cannot be based on fleet size and that this type of operation will need a lot more watching than many if an acceptable level of safety is to be maintained. Of course, I hope that the Regulation of operators like this one is provided by agencies which understand that their responsibilities extend beyond collecting the money. Unfortunately as with shipping on the high seas, outside of Europe, not all Regulators are equally competent…

could be strengthened to ensure this was a regulatory requirement. ANSPs have to balance safety with costs and they may decide not to operate primary radar if States do not require it.

I would be looking at how to bring about improvements in the safety culture, in particular improving communications between controllers, supervisors and managers, and seek to improve the balance between safety and capacity.

For this scenario, the recommendation would be to evaluate the feasibility, then develop and implement the ACT-FASST tool, including provision of user training in the use and limitations of such a tool.

Captain Ed Pooley

is an experienced airline pilot who for many years also held the post of Head of Safety for a large short haul airline operation. He now works with a wide range of clients as a Consultant and also acts as Chief Validation Adviser for SKYbrary.