

Royal Aeronautical Society

Flying Through an Era of Volcanic Ash

The Regulators Approach

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As the UK's specialist aviation regulator the work of the UK Civil Aviation Authority (CAA) was under the spotlight during the ash events of April and May 2010. CAA Chief Executive Andrew Haines explains the situation the CAA faced, how the organisation made its decisions during ash and what the role of an independent regulator should be during such events. Andrew will also talk about the interface with Government and the role of a national regulator in an international crisis.

Thank you for the opportunity to be here today and explain the issues and principles that underpinned the work we undertook during the ash crisis.

It's hard to believe that the event is now over six months ago.

But it is not something that we should forget, as the risk is still just as high as it was last March when few were anticipating the effect it would have.

There are many experts speaking here today about the effect of ash, how we map ash and how we can seek to reduce its impact on aviation. So instead I'd like to look at the issue from a regulatory perspective.

Today I'd like to cover: The general role of the regulator, our task when dealing with unforeseen circumstances and the relationship between an independent regulator and the Government.

Specifically on ash I'll be talking about the information we had available when ash first struck, how a national regulator can operate in an international crisis and the role a regulator can play in pulling an industry together.

What is the role of the regulator in general?

The general role of a regulator is to protect the general public, indeed if this role is not being fulfilled then there is little need for the regulator at all.

At the CAA we endeavour to put the consumer at the heart of everything we do and certainly during ash they were at the forefront of our thoughts from three key perspectives.

These were:

Firstly – seeking to ensure those flying benefit from the highest possible levels of safety

Secondly – seeking to reduce the need for disruption and

Thirdly – and something people often forget, is the protection of those being overflown by aircraft – those with tickets have a choice whether to fly or not, those living underneath a flight path have no say, and therefore need protection.

These are roles that we fulfil every day of the week and for which we have established procedures and legislation.

As an independent regulator we also have an important role of impartiality and, although we are of course aware of the commercial implications of a decision, we are not driven by the need to please shareholders or a bottom line.

We also have a key critical resource and that is the quality and level of expertise we are fortunate enough to possess in our staff. When I joined the CAA I expected it to be full of people who knew their area, but the level of knowledge within key parts of the organisation is outstanding.

The way we undertake our day-to-day regulation is very different from what happened during ash in that we don't need to be so highly interventionist because there are clear standards, based on detailed evidence, that we use as the backbone of our work. That means that industry is able to undertake much of the work itself and follow the existing standards.

We then have an oversight of their operations to ensure that those standards are being maintained.

The role of the regulator in unforeseen or unquantified situations:

So, if our day-to-day business is relatively straightforward, the unforeseen and unquantified is certainly not.

And, though our business as usual model means we don't have to be interventionist, there are times, in unforeseen circumstances, when the opposite is true.

But when ash first arrived there were a number of options and choices we could have taken.

We could have said, this is an issue for ICAO to solve for the world and taken a step back.

We could have said, this requires an airworthiness solution and it's therefore up to EASA to resolve and taken a step back.

Or, we could have waited for industry to develop its own approach and solution.

But ash is an interesting case study in when an independent regulator is most valuable. For all the reasons I've already outlined: impartiality, experience and the willingness to get involved and make tough decisions.

No other body is in that position to pull everything and everybody together, while first immediately ensuring consumer's safety, and then helping to work up a solution based on information and data when none existed.

Throughout the whole process there were some people who appeared to argue that we should just 'suck it and see' and let operators fly in ash hoping nothing would happen. But our key principle is always that public safety is the paramount objective. It would have been unthinkable to abandon the current international guidance without the necessary evidence. When you are dealing with peoples' lives it is not enough to just make up a less restrictive standard. You have to agree a new standard based on robust evidence and data.

And let's not forget that industry had historically avoided tackling the issue of volcanic ash, passing up many chances to comprehensively address the issue, which would have significantly reduced the impact of the April events. As that opportunity had not been taken we had to step in instead.

So, what was the information available to us during ash?

At the time the existing international guidance, from aero-engine and airframe manufacturers, and adopted by international aviation authorities, is that aircraft encountering volcanic ash must 'AVOID AVOID AVOID' it to ensure no interaction

between jet engines and ash. This advice worked reasonably well where previous eruptions had occurred and avoiding action, by flying round any ash and re-routing to alternative airports, had posed little problem. In the UK, with its congested airspace, and where large areas of the country were affected by ash, neither of these options was possible. In practice this meant that we were faced with a situation where there was no guidance that would have allowed the regulator to allow commercial operations with any assurance of safety.

I say commercial operations because it's worth noting at this point that general aviation was operating pretty well unrestricted throughout the presence of ash.

It's also worth stating that the decision to restrict operations was actually taken by NATS. The UK's skies weren't officially closed. NATS looked at the ICAO advice and, like other air traffic services providers and authorities in Europe, decided that it could not provide a safe service to operators. It therefore zero rated the airspace under its control, effectively closing it to commercial operations.

The air traffic service providers therefore came to a very quick and clear conclusion about the necessary approach to deal with the situation.

Throughout the time that operations were restricted, the decisions being taken by us and NATS were primarily based on the Met Office's Volcanic Ash Advisory Centre model that predicted where ash would be and the densities it would be found in.

At the time, and indeed since ash has subsided, there was much discussion around the model. Everyone involved acknowledges its weaknesses and shortcomings, primarily due, not to the model itself, but the accuracy of the data inputted into it from the volcano's source. But, contrary to some suggestions at the time and since, there was a considerable amount of validation undertaken to ensure the data we were getting was reasonable. Satellite readouts of actual ash cloud locations compared well with the forecasts from the VAAC model, as did similar readouts from the French and Canadian meteorological organisations. Indeed the model was the only real show in town as far as a predictive modelling goes and the best available for us to use.

Some put forward alternate models, but although they may have allowed a few extra flights on one day, on others they would have been far more restrictive than the VAAC model.

This is one of the key areas where work has continued since ash subsided but there is still progress to be made. Particularly around the science of what a volcano is emitting at source, and the real understanding on this doesn't yet exist anywhere in the world.

Gradually, as others today will describe, through an enormous amount of work the overall situation changed and we were able to revise the requirements over the acceptable levels of ash.

Although this was undertaken in a fraction of the time one would normally expect such international work to take it was, nevertheless, undertaken correctly and followed the same kind of principles that we would expect to see with any regulatory decision on safety.

And that work had to be done. Some operators may say they had experience of operating in ash, but that was in very different situations to the one we were faced with in Europe, and no operator provided data or evidence to back that argument up. Indeed, at no time during ash, or since, has anyone come to us with details of an alternate option to the one we followed.

It's also worth noting that many of the test flights being conducted, as supposed evidence that the skies were safe, were anything but scientific tests. Apart from the specialist test aircraft, primarily operational in the UK, fitted with data collection equipment, most of the aircraft being flown had no test or data gathering equipment on board and couldn't even tell if they had encountered ash or not.

The relationship between Government and regulator:

While we were making those decisions, and undertaking the work with industry, the Government was fully involved.

The then Secretary of State for Transport, Lord Adonis, was kept fully briefed by us, and his officials, of the situation and was in constant daily contact.

But, quite correctly, he left the decisions on safety to the independent regulator. So supporting our integrity, allowing us to manage the commercial pressures.

The role of the regulator as an international convenor

During the first few days of ash it immediately became clear that we, as the independent regulator, could fulfil a role in pulling together the various disparate, and sometimes competing, parts of our industry.

Being directly in the ash firing line we were perhaps also under more pressure than other countries, which at times meant we were leading the world's efforts. And we were content to do this to move the issue along.

As it became clear that the solution needed to be an airworthiness one it then meant dealing with engine manufacturers from around the world, some of which had much less of a comprehension of the situation underway in Europe.

Actually getting all these organisations, regulators, service providers and government agencies together on one telephone conference call would probably have been unheard of prior to ash.

The fact that we were independent, had the knowledge and expertise to know what we were talking about and had personal contacts in many of the companies concerned, meant that we were able to help broker the deal to raise engine ash limits in such a short time. This was not a simple or easy process.

Of course this scenario could also read across to any other similar situation.

Now, going forwards it is for international and European regulators to build on the short-term solution we put in place and turn it into a long-term answer. This is a real chance to show the positives that European and worldwide integration can bring to the table to resolve serious issues.

The Future

Much of the work that was set in train in April and May still continues today. We certainly didn't stop looking at ash and long-term solutions when the final grains settled from the last eruption of Eyjafjallajökull.

Our people have been working with colleagues from regulators and industry around the globe in the belief that we must all be better prepared if, or even when, ash returns.

Only last week we announced that high-density areas of ash would, in the future, be notified to industry by means of a temporary danger area rather than an airspace

closure. This is part of our continuing work to bring operators closer to the decision making process around ash now that we all have the benefit of more experience and evidence.

In Conclusion:

Eyjafjallajökull's eruption brought into sharp focus the debate about regulating risk that takes place often at one level or another amongst academics, in government and in the pages of tabloid newspapers. It underlined the need for an independent safety regulator who can assess the risk, consider the evidence impartially, and take the right technical decisions on behalf of consumers. It is only the regulator who maintains the public interest as its primary responsibility. There were those who said the regulator should step back and leave it to industry to solve. But industry had neither solutions nor impartiality. In such circumstances a decision making vacuum can easily develop. In this case we had to balance a potentially catastrophic public risk with extraordinarily strong, opposing pressures, which mounted with every further minute of airspace restriction. It was vital that our assessment of the risk and our decisions on how to mitigate them were based on the best evidence available, particularly when, as in this case, the stakes were so high. It's important to remain robust whilst making decisions in the eye of the storm - ironically it's when the stakes are very high that the evidence upon which to base decisions is often hardest to come by.

The international aviation community is better prepared should it be faced again with a situation where flight is only possible through ash, though disruptions are still possible. Eyjafjallajökull was a salutary reminder to us all that sometimes it's not possible to quickly find neat solutions, however great the imperative. Forces of nature, such as volcanoes, cannot be predicted or controlled and can create highly hazardous situations in a world accustomed to managing and mitigating risks. It's events such as these that highlight the real value of an independent safety regulator; thought not always contributing to its popularity.