DISTRUSTING Luck

Maybe it's a consequence of too much information about the calamities that can befall this planet — comet and asteroid impacts, dramatic climate shifts, violent solar flares, volcanic winters and the like — that increasingly I view the rarity of extreme versions of such upheavals over the past several millennia to be a matter of luck. Not that I'm a pessimist, but I think some planning should be undertaken to mitigate those events where interventions can make a difference in their impact on humanity.

And so it follows that I conclude we need to pay attention to volcanoes. Clearly, we can't stop volcanoes from erupting. We can, however, take steps to minimize the threats such events present to aviation. This is the clear take-away from last spring's Icelandic eruption that snarled traffic within, to and from Europe. As stories in this issue of *ASW* relate, the amount of information we had about that situation was dwarfed by what we didn't know. This is a problem we need to address with some sense of urgency. While there never has been a crash or a fatality related to eruptions, the threat they pose to aviation is undeniable.

First, standards need to be set on what density of volcanic ash is the danger threshold (See "Very Fine Ash," p. 15).

Second, responsibility for avoiding danger areas must be assigned to institutions in good positions to make informed decisions. The failed procedures used in Europe last year vested that responsibility in the hands of air navigation service providers (ANSPs), which, in the absence of facts, opted for caution in what seems to have been excessive amounts. And International Civil Aviation Organization guidance to ANSPs, which directs them to "take extreme care to ensure that aircraft do not enter volcanic ash clouds," is flawed, and not only by the lack of definitions.

Third, the world's equipment manufacturers — mostly the powerplant folks — must quantify the hardware consequences of ash encounters, develop procedures to be used in unexpected encounters and explore if any design changes can mitigate the risk of engine failure and then the long-term mechanical consequences of ingesting ash, realizing that major investments in this regard may be difficult to justify given the rarity of such events.

And, fourth, detection technologies and procedures must be improved. In a presentation at our recent International Air Safety Seminar, Ed Pooley, principal consultant for The Air Safety Consultancy, discussed existing options:

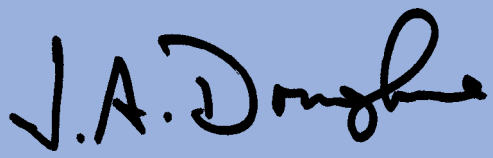
"Satellite remote sensing can provide periodic density mapping but not particle size; vertical density discrimination is poor.

"Direct sampling by manned research aircraft is limited by the need to avoid ash-induced engine malfunction and maintenance costs.

"Direct sampling of air columns can measure ash density variation and in some cases detect particle size using: airborne or ground-based LIDARs (light detection and ranging), daylight only; laser CBRs (cloud base recorders), useful to about 3000 m (9,800 ft) above ground level; radio sondes, radio tracked balloon-borne instrument packs; and drop sondes, instrument packs attached to parachutes deployed from aircraft."

We also are aware of an infrared-based detection system named AVOID (Airborne Volcanic Object Identifier and Detector) that easyJet planned to test.

We should not turn away from working on the challenges presented by volcanic eruptions simply because there are no troublesome eruptions at the moment.



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