

Cessna suggests that the proposed rulemaking does not provide sufficient definition to allow compliance to be shown with respect to susceptibility. In order for a manufacturer to assess the susceptibility, a regulatory definition of the ash particle density, size and concentration within the atmosphere is necessary. The trajectory paths of particles in the atmosphere can be significantly affected by local air flow effects around the aircraft and can form concentration areas and shadow zones similar to those observed with icing particles. Without knowledge of the specific particle variables, the specific levels of ash content at mounting locations for pitot tubes, static ports, or inlet scoops cannot be established.

Cessna believes that without more detailed knowledge of the environment, most of the features of concern in the AMC list cannot be effectively evaluated (such as windscreen abrasion, erosion, cabin air quality, or reduced electronic cooling efficiencies, volcanic cloud static discharge). The AMC materials also declare that volcanic clouds comprise volcanic ash combined with gases and other chemicals that should be assessed. Again, without definition of the gases and other chemicals, there is no means to assess their effect as directed. Similar issues exist with other concerns noted in the AMC, without definition of the runway effects of wet ash concentrations; there is no method to assess stopping performance in such an environment.

Aircraft manufacturers do not have the resources to address the basic science that is required to provide sufficient information to allow compliance with the rule as drafted. Characterization of the volcanic ash environment similar to current icing standards (particle density, size, concentration, gases and chemical concentrations) would be necessary to set up meaningful ground tests. While some large transport manufacturers have participated with major operators in assessing the effects of flights through low concentrations of volcanic ash, this information is not available to all Part 23 and Part 25 manufacturers. For most general aviation type aircraft, no significant field experience is available to assess the susceptibility to the aircraft.

The economic impact assessment for Option 1 characterizes the effort required by manufacturers to comply with the proposed rule as small relative to the overall certification costs for a new/changed product or APU. Given the lack of methods available to show compliance, Cessna suggests that this assessment should be revisited. If manufacturers have to define the environments, create testing procedures and techniques required to assess susceptibility, the costs could approach that required for certification for flight in icing. As such, it is not apparent that the costs are insignificant.

Due to the lack of a means of addressing the concerns stated in the draft AMC materials, it is likely most manufacturers will find it necessary to prohibit all operations in such an environment, which will not provide the benefits as proposed in the NPA. The characterization of volcanic ash environments is an effort best addressed by the scientific communities prior to attempting to regulate flight in such an environment. Aircraft manufacturers do not have the resources necessary to fly research missions, or developing the instrumentation suites that would be required to measure particle sizes and concentrations, gases present, characterize the static discharge properties, or the wet runway braking performance.

The only technically viable option with the current state of knowledge of the volcanic ash environment is Option 1. Without further knowledge of the environment, no compliance methods are available. As flights into volcanic ash are an international issue, the decision to not harmonize with the FAA and TCCA is recommended to be revisited.