Volcanic Ash

Risks to the Aviation

ENAC Initiatives

Hazards

Volcanic ash is a known hazard in aviation
it could degrade the in-flight safety

The actual weather radar on board of aircraft are not able to detect the presence of ash or volcanic clouds

Hazards

- *Volcanic gas and ash can travel at different heights and speeds over long distances*
- *Volcanic clouds residing at different height of the atmosphere have great potential of intersecting flight routes and can be dispersed by the prevailing winds over large area and long distances*

Hazards

Aircraft that have encountered volcanic ashes experienced :

engine fail or performance degradation ,
loss or degradation of critical navigation systems
damage to air conditioning systems ,
abrasion and damage to the leading edges of wings and control surface
……

Hazards

encountering *dense plume* for an aircraft can result in immediate hazards :

- *crashes*
- *or near crashes with subsequent damages requiring major repair and increased maintenance of engine, systems and external surfaces.*

The immediate costs are potentially major

Hazards

No immediate hazards for aircraft encountering *fine volcanic ash* clouds are expected

but they can incur in longer-term costs due to increased maintenance

Risk Reduction

Possible actions :

Avoidance

preventing flight into potential ash environment by planning flight routes in these area

- *Identification of alternate routes to help to avoid airspace containing volcanic ash*
- *Information at the dispatch*
- *Information to assist averting danger*

Risk Reduction

Possible actions :

Recognition
Provide guidance on

- *indicators to safely recognize where ash might be encountered*

- *Procedures to be adopted in flight by the crew encountered volcanic ash*

ENAC has taken two initiatives :

- *the issuance of a Circular*
- *the proposal of a study*

ENAC GEN XX

In order to put in place measures for

Avoidance

a Circolare is going to be issued by ENAC

ENAC GEN XX

On the basis the specific scenario of airspace and airports affected or potentially affected establishes :

- *the various activities to be performed during the routinely monitoring of volcanoes activities :*

  to detect ,track and forecast hazardous ash clouds to adequately warn aviation community through alert messages on the present and future location of the clouds

- specific routes and procedures to be followed by air crew in case of volcanic ash

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to limit the risks for the air traffic , a system is set to standardize and coordinate the activities of all the subjects involved providing definition of responsibilities , comprehensive description of the interrelations and outline the actions that any agency shall follow

provides operational procedures to be adopted in case of volcanic eruption and in particular establishing routes and procedures applicable to Etna area on the basis of the results of mathematical models used to predict the dispersion of volcanic ash

Study

Intends to focus on

- *evaluation of the potential impact of fine and/or not visible dust particles to aircraft*
- *Identification of any potential long or medium term impact on the aircraft safety*

Study

No immediate hazard

- **No quantitative data on what is considered safety limits**
- **Lack of sufficient information regarding what constitutes safe operating limits when flying near to volcanic clouds**
- **Atmospheric dispersion models can be run to predict paths , but these can lead to very conservative predictions on regions a of airspace deemed safe for flying**

Study

No immediate hazard

- **The model available cannot foresee the dispersion of the fine volcanic dust , however their presence can be encountered also over long distance from the volcanic area**
- **Although no immediate hazard is expected long-term impact could be experienced**
- **No specification on safe limits for aviation encountering airborne volcanic substances .**

Study

No immediate hazard

- **To identify any correlation between ash parameters and potential danger to aircraft as reduction of engine critical component life or potential for obstruction of the conduct of the air conditioning systems**

- **Test on engines could provide data to assess the effect of fine volcanic dust and determine if an impact could be envisaged on the current maintenance practices and inspection intervals established by the engine manufacturers**

Study

- To give an answer to the above mentioned issues a study has been proposed
- A group was set up with the participation of :
  INGV Catania e Roma
  Facoltà di ingegneria di Napoli , di Brindisi e del Salento
  Protezione Civile
  Aeronautica Militare
- On 25/3/09 a kick off meeting was held


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