

# Aviation Group News



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The tragic events of last September, in the USA, have focused world attention on Aviation Safety. While the security aspect is being reviewed and rapidly overhauled, lets take a short look at what goes on behind the scenes at our Airports, regarding the Fire and Rescue Services.

We are all aware of the necessity to have a rapid response, fully equipped and trained Fire and Rescue Service, on duty, during all the hours of flying, at every single airport, no matter how big or small.

With the enormous growth of International Air Travel since the end of the 1940's. The various National Air Authorities combined together under the United Nations to form the International Civil Aviation Organization. The ICAO became the regulatory body to oversee International Air Travel and a licensing system was devised.

The Fire and Rescue Operations were identified as a significant aspect of safety and a system of airport categorization was devised to identify the level of protection needed. The categories were developed by measuring the number of aircraft movements (a take-off and a landing equates to 2 movements) over a 3-month operational period and combining this with the numbers of passengers. In the old days, the number of passengers was roughly proportional to the length of the fuselage. This rule had to be seriously modified with the coming of the Jumbo Jets and other wide bodies in the late 1960's.

The Guru's put their heads together and produced an airport category chart. This runs from 1 to 9 with 9 being the major International Airports, taking aircraft up to about 7m wide. For each category judgments were taken on the levels of risk. Standards were laid down covering the minimum amount cover the amounts of Fire Fighting Media to be carried by the Fire Trucks.

Many of you will know that the biggest risk is from burning fuel and that foam is used extensively for Hydrocarbon fires. Why foam? Try putting drops of water in a frying pan! Water is a very effective means of fire fighting but it sinks to the bottom of burning fuel and spreads the fire. Foam, on the other hand, will cover the surface to seal off the free oxygen and assist to cool the liquid. Hot fuel liberates combustible vapors.

The original tables showing the amounts of water and foam were permitted to be down-sized with the coming of modern synthetic foams. These are more effective than the old protein based versions. Secondary fire fighting media such as the Dry Chemical powders have made big strides due to their rapid flame knock-down characteristics but still need to be backed up by foam to cool down the area and seal off the flammable vapors.

A typical category 9 International Airport must have at least 25000L water with the proportion amount of foam and about 500kg. of Dry Chemical available, "on wheels", at any time. In practice, airports double-up on the requirements to cover service down time etc. The amounts of fire fighting media can be divided up into small or large vehicles to suit local conditions but the larger vehicle option is preferred. One of the reasons for this is that the application rate of foam is very critical to successful fire extinguishing. The minimum rate for a category 9 airport being 9000 L/min.

Fire vehicle response time is a measurable parameter and the vehicles must be able to reach any point on the airport within 2 minutes of alarm. The modern trend is for relatively large Rapid Intervention Vehicles with about 600 HP carrying 5000L liquid load with the back-up Major Vehicles carrying 10,000L. At Riyadh Airport there is a 1000 HP vehicle carrying 13000L.

In the event of an accident whereby an aircraft is sitting in a fire of burning fuel, the fuselage skin would resist the fire for up to about 2 minutes. Air crews are trained to evacuate a full passenger load using only half the escape exists, within 2 minutes.

The vehicles themselves must be of all-wheel-drive and have performance criteria to meet. The Rapid Intervention Vehicles must be able to accelerate 0-80 KPH within 25 seconds (weighing up to 20 tonnes) and the Major Vehicles within 35 seconds (weighing up to 40 tonnes). Many modern designs can better these figures.

The Airport Fire and Rescue Services are significant proportion of the Airport Operational Costs in terms of capital equipment, manpower, training, servicing, consumable etc, which thankfully cannot be cut.



## AVIATION WORLD NEWS

Did you see that the US Air Force and the US Navy recently announced that the first ever landing of a C-17 on an aircraft carrier had been a total success.

In other news, the USAF and the USN announced that they have commissioned a new study into the optimum way to get a C-17 off an aircraft carrier!