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The UK Civil Aviation Authority and other specialists from different parts of the aviation industry set up a large scale fire test in May 2012 to compare compressed air foam systems (CAFS) with normal aspirated foam using different foam products. These tests took place at the CNPP research facilities in Vernon, France, with participation of UK CAA regulators, manufactures from the aviation and ARFF industries and airport firefighters.

CAFS has been used to fight fires for many years. Traditionally CAFS has been used to fight Class A/Structural fires and has never really been used for Class B/Fuel fires. CAFS is really a simple system in which air is injected into the water/foam solution before leaving the piping leading to the turret or hose line. Traditionally airport crash tenders have operated using aspirating turrets and nozzles.

Environmental issues with fluorine and the organohalogens (fluorosurfactants) in aqueous film-forming foams (AFFFs) have resulted in a process of these foams being replaced by new fluorine-free foams. The new fluorine-free foams are also ICAO level B approved and it was with great interest to see how these performed on a large scale fire.

Results from this testing clearly shows that CAFS has a tremendous capability for knocking down the fire compared to the normal aspirated nozzle. The CNPP results showed that CAFS is some 40% more efficient! Moreover, test results also showed that the new fluorine-free foam was just as efficient as AFFF!

Typical results for these CAFS fire tests are shown in the two diagrams in which results are compared for an ICAO level B compliant AFFF (Foam X) and an ICAO Level B compliant fluorine-free foam (Foam Z). Clearly there are no significant differences in efficiency.

For the last five to six years Copenhagen Airport Fire Service has worked on operational and tactical improvements. The whole fleet of crash tenders has been upgraded with Rosenbauer CA-5 Panthers. One Panther is provided with FLASH CAFS (air bottles instead of a compressor – this works extremely well with large flow rates) on the main turret and two others with high reach extended turrets (HRET) and the Hydro-Chem dual system. For environmental reasons AFFF foam was replaced with fluorine-free Solberg RF re-healing foam.

Seen from my position as an Assistant Fire Chief responsible for the Fire Service's operational capability, these results "fit like a hand in a glove", and prove that we at Copenhagen Airport in Denmark have taken the right choices at the right time. I have no doubt at all that CAFS and fluorine-free foam will improve both aviation safety and the environment impact of fire service operations at airports. Just as important is the safety of the



CAFS & AFFF IN ARFF

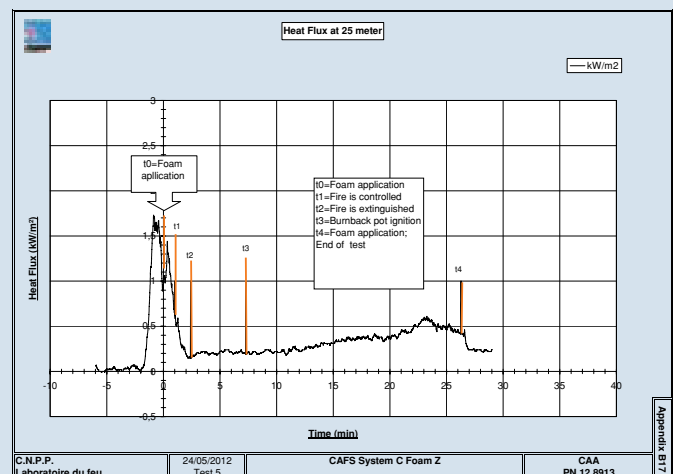
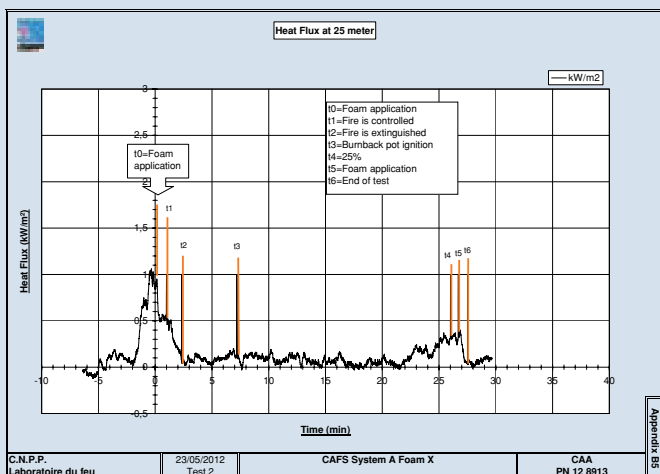
CAFS AND FLUORINE-FREE FOAM IN FUTURE AVIATION SAFETY AND ARFF EFFICACY, BY KIM THORBJØRN OLSEN, ASSISTANT FIRE CHIEF, COPENHAGEN AIRPORT, DENMARK.

firefighters whom we send straight into the danger zone in a worst case scenario. Greater efficiency and faster control of the situation will certainly also give firefighters more confidence in coping with the situation. A new Rosenbauer Panther with CAFS on all low-pressure outlets is well on its way and expected to be put into service at CPH in November 2012.

The UK Civil Aviation Authority has recently put forward a proposal, which was accepted, to the ICAO Rescue and Fire Fighting Working Group at their last meeting in Montreal (Canada) for the use of CAFS on airport fire vehicles. If things go as planned, this recommendation will be implemented in the ICAO Airport Service Manual in November 2013.

Great news for the future of aviation safety!

Typical results for CAFS ICAO Level B fire tests as carried out by CNPP. Left, AFFF foam, and right, fluorine-free foam: there are no significant differences in efficiency.



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