



*Advanced Fire Control Technologies, Inc.*

# AFCT'S ANALYSIS

**FAA's Testing of the**

***Phoenix® Pulse Delivery® / QuadAgent®***

**Technology at the**

**TYNDALL AFB ARFF RESEARCH LABORATORY**

February – March 2004

These preliminary results are based on AFCT's single camera recordings of all tests performed at Tyndall AFB for the FAA by the Tyndall AFB ARFF Research Laboratory.

The comparative data for all other twin/tri agent technologies were taken from released test documentation performed and released by the FAA and include the testing of both typical twin agent parallel stream nozzles (variable and straight foam) and the HydroChem nozzle (entrainment of dry chemical powder in the water stream).

The following graphs will show comparisons of both fastest and average extinguishment times. Since the Tyndall ARFF firefighters had no previous training in the effective utilization of the *Phoenix® Pulse Delivery® / QuadAgent®* technology the firefighters went up a rather steep learning curve as can be seen by viewing all tests in sequence. Therefore, the fastest times should be more representative of an experienced ARFF firefighter with the *Phoenix® Pulse Delivery® / QuadAgent®* technology average times.

The fastest times are expected to match up well with the final report from the FAA. The average times, though, are determinate on which test are included in the average and what adjustments are made due to interruptions caused by outside forces that were not related to the fire suppression process.

Here are the resulting comparative results:



3-Dimensional Engine Fire in 30' water ring

This first chart is a comparison of the technologies on a 3-Dimensional engine fire simulating a high intensity tarmac or off runway incident. As you can see there is a DIFFERENCE! The *Phoenix® Pulse Delivery® / QuadAgent®* technology suppression times were on average better than 4 times faster than the other twin/tri agent technologies tested by Tyndall for the FAA.

**3D Engine within 30' water filled ring**

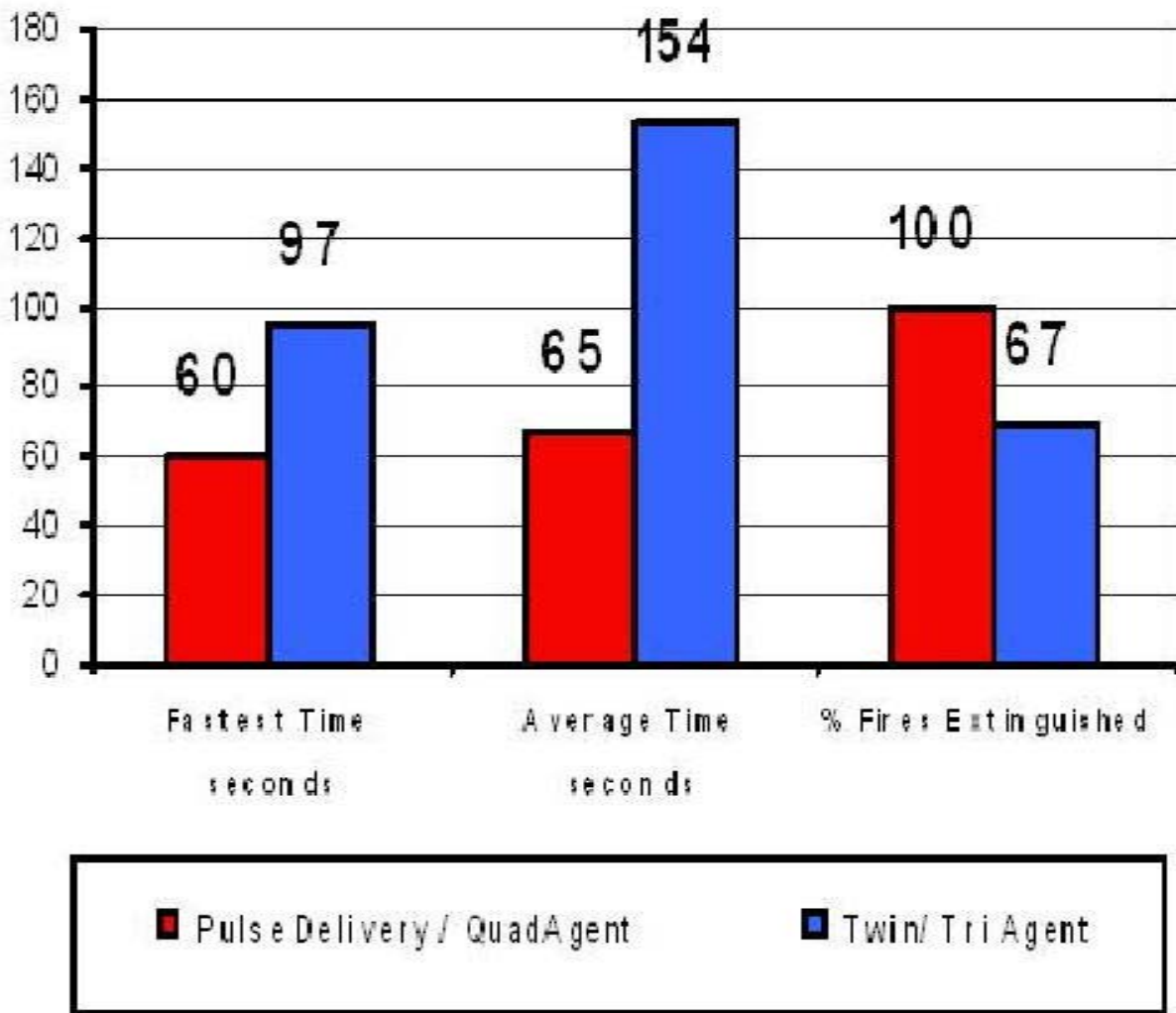




100' Diameter water covered pit with aircraft simulator

This chart posts the results on Tyndall's 100 foot diameter water covered pit with aircraft simulator in its center. This incident scenario is a real test of capabilities. As you can see in the third column the *Phoenix® Pulse Delivery® / QuadAgent®* technology extinguished 100% of all fire tests while the twin/tri agent technologies using both variable and HydroChem nozzle technologies only extinguished two-thirds of theirs.

100' Diameter Large Scale Fire with Aircraft Simulator Scenario



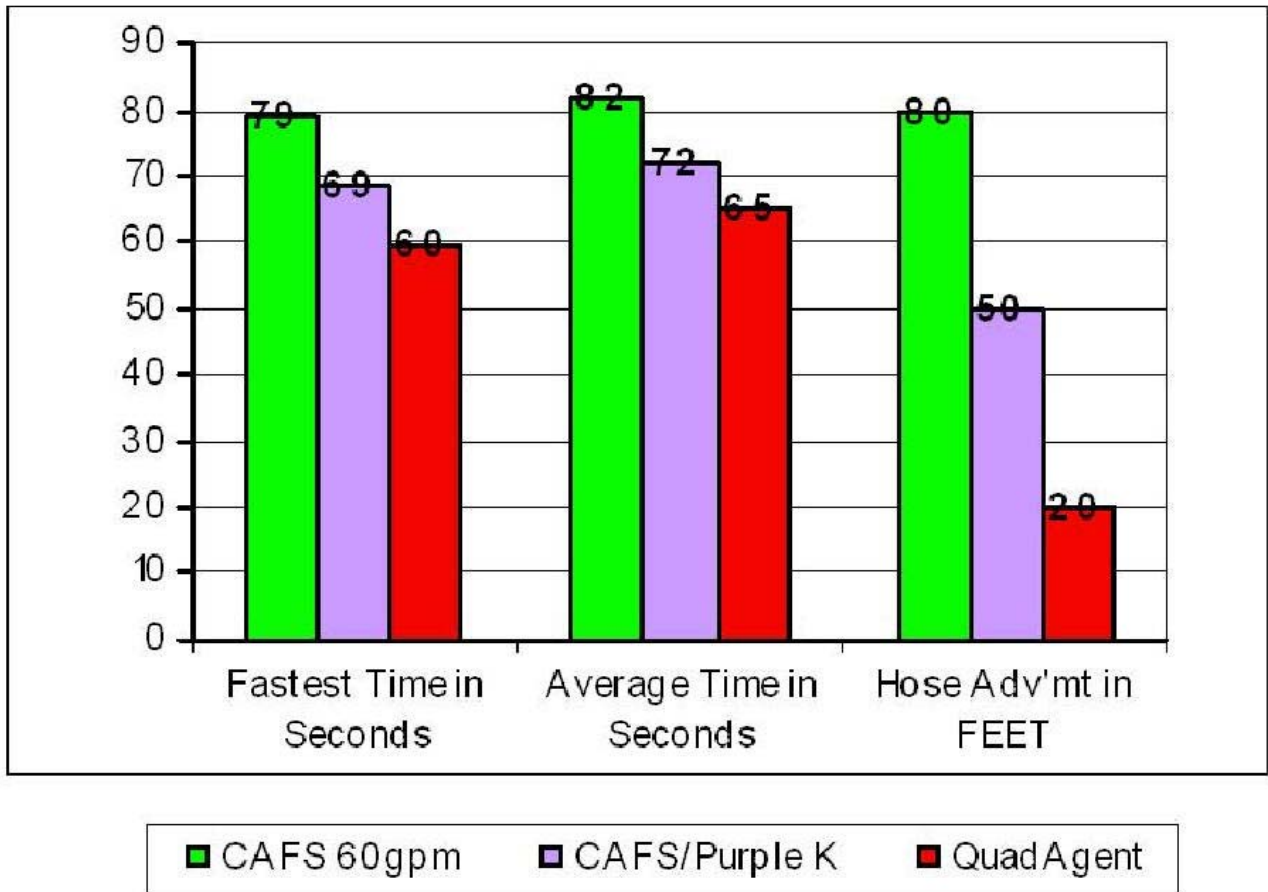


Summary of Phoenix® Pulse Delivery® / QuadAgent® technology ONLY on the 100' diameter pit

This chart shows the summary of results of the Phoenix® Pulse Delivery® / QuadAgent® technology at Tyndall AFB. The green bar represents the use of CAF ONLY - note average time of extinguishment of 82 seconds vs. the 154 seconds for the twin/tri agent technologies using both CAF and Dry Chemical from the chart above. The purple bar represents the use of CAF and Phoenix® Pulse Delivery® PKP while the red bar represents the Phoenix® QuadAgent® technology (i.e. delivery of all agents at once).

The most striking differences other than the time to suppression changes associated with adding agents is required hose line advancement numbers. This dramatic change points directly at the importance of EFFECTIVE DELIVERY OF MULTIPLE AGENTS -- and that is SAFETY-- reducing firefighter exposure to the risk and hazards of fighting fire.

### Phoenix Pulse Delivery/QuadAgent Results 100' Large Scale Fire Scenario





Various Agent Combination Testing with the **Phoenix® Pulse Delivery® / QuadAgent®** technology

This next chart illustrates the capabilities of varying the agent combinations on the 3-Dimensional Engine fire within 30' water filled ring. All these tests had full involvement of the 30' ring except for the PKP ONLY test which was only the 3-Dimensional Engine flowing at 5 gallons JP fuel per minute. These various agent combination show that any complimentary agent when combined with CAF can suppress a 3-Dimensional Engine fire. These tests also show the effectiveness of the various combinations.

It should also be noted that the PKP ONLY test using the **Phoenix® Pulse Delivery®** technology extinguished the 3-Dimensional Engine on its first attempt without flashback to the surprise of the Tyndall testing staff. Apparently this had never been done before even with a crash truck bumper turret. As a result, the test was redone and the preheat sequence was extended to about twice the protocol and suppression was once again accomplished, although, the engine did flash back at 29 seconds from extinguishment. The flash back can be attributed to the extended preheat and the lack of extension of the cool down after extinguishment with the PKP. The test was attempted a third time using protocol preheat and the **Phoenix® Pulse Delivery®** technology once again extinguished the scenario without flashback.

### Phoenix Pulse Delivery/QuadAgent Technology Various Agent Combination Testing

