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BAKER AVIATION RELEASES UNPRECEDENTED TEST RESULTS OF HOT-STOP® 'L' FIRE CONTAINMENT KITS

FAA-Registered Independent Lab Reports 15-minute 2000ºF Fire-Proof Rating and More

June 13, 2018 – Addison, Texas – Baker Aviation, the Master Distributor for the HOT-STOP® 'L' Fire Containment Kits, has released successful test results from an FAA-registered independent lab, supporting the HOT-STOP 'L' fire proof design and its capability to fully contain lithium-ion battery runaways of powerful portable devices without the release of toxic smoke and without the use of any aqueous liquids.

"The 15-minute 2000-degree burn-through test that Aeroblaze Laboratory conducted, is commonly used for aircraft fire-wall testing and goes above and beyond the burn characteristics of today's typical Li-ion devices," explained Ray Goyco, Jr., President and Chief Operating Officer at Baker Aviation Maintenance, Master Distributor for HOT-STOP® 'L'. "The results are impressive, and we have confirmed our Fire-Proof status. As pioneers in this aviation fire containment market, we know how serious the threat of fire and smoke is in any aircraft, and our mission is to provide the best, most effective product on the market."

As an FAA-registered independent test laboratory, Aeroblaze specializes in flammability testing for aerospace materials. They provide the highest quality testing as evidenced by their accreditation to the international quality standards of ISO/IEC 17025 and Nadcap NMMT. Three HOT-STOP 'L' tests were recently conducted and documented for Industrial Energy Products, Inc., the manufacturer of the kits, by Aeroblaze Laboratory in Fort Worth, Texas.

<u>Fire Penetration Test</u>

The Powerplant Fire Penetration test utilizes a modified gun-type oil burner which is calibrated to provide a high-intensity flame with a minimum average flame temperature of 2,000 °F and minimum heat transfer rate of 4,500 BTU/hr or 9.3 BTU/ft2-sec. This test is used to demonstrate compliance with the aircraft powerplant (i.e., engine) fire protection requirements of the FAA. There are two types of fire protection designations as defined by 14 CFR 1.1:

1. **Fire Resistant:** the capacity to withstand the heat associated with fire at least as well as *aluminum alloy* in dimensions appropriate for the purpose for which they are used.
2. **Fire Proof:** the capacity to withstand the heat associated with fire at least as well as *steel* in dimensions appropriate for the purpose for which they are used.

The HOT-STOP® 'L' Fire Containment Kit successfully prevented the high-intensity flame from penetrating through its wall. The Containment Kit passed both the five-minute Fire Resistant test and the fifteen-minute Fire Proof test. Following the results of this testing, the HOT-STOP® 'L' Fire Containment Kit can be considered Fire Proof as defined by the Code of Federal Regulations (14 CFR 1.1) and as demonstrated by the Federal Aviation Administration's (AC 20-135) test procedure. Based on the 14 CFR 1.1 definition of Fire Proof, the HOT-STOP® 'L' Fire Containment Kit has the capacity to withstand the heat associated with fire at least as well as steel in dimensions appropriate for the purpose for which it is used (14 CFR 1.1).

Tablet Flammability Test

The device used for testing was a 7.9" tablet with a Li-Po 23.8 Wh battery. The battery was comprised of 2 rectangular cells. The device was charged to 100% battery prior to testing. A propane torch was used to heat the backside of the tablet until thermal runaway occurred. During this test, both cells went into thermal runaway simultaneously. Once thermal runaway was initiated, the tablet was immediately dropped into the containment kit. Once the outer zipper was closed, the kit was left alone for observation for approximately 20 minutes. During that time, no further propagation of thermal runaway occurred, and no smoke was observed exiting the bag. The HOT-STOP® 'L' Fire Containment Kit successfully contained the thermal runaway and the resulting fire of the tablet. No evidence of smoke was seen coming out of the kit after it was sealed. Following the test, it was determined that both cells had experienced thermal runaway. After examining the containment kit, no damage was found internally or externally.

Laptop Flammability Test

The device used for testing was a 12.1" laptop with a Li-Ion 94 Wh battery. The battery was comprised of 9 cylindrical cells. The device was charged to 100% battery prior to testing. The battery reached approximately 300 °F before igniting. Immediately after ignition, the recorded peak temperature was 2,932 °F. At this point, the wires to the battery were cut, and the HOT-STOP 'L' bag was sealed. Once the outer zipper was closed, the kit was left alone for observation for approximately 20 minutes. During that time, no further propagation of thermal runaway occurred, and no smoke was observed exiting the bag. When the bag was opened, it was determined that only one cell had experienced thermal runaway and no propagation to adjacent cells had occurred. Since the kit was found to be in good condition, a second test was then run on the same laptop and bag. "

The HOT-STOP® 'L' Fire Containment Kit successfully contained the thermal runaway and the resulting fire of the laptop in both tests. Previous testing on Lithium Ion batteries resulted in propagation of the thermal runaway to adjacent cells. In both tests performed inside the storage bag, the thermal runaway was limited to the single cell triggered and no propagation occurred, suggesting that the HOT-STOP® 'L' Fire Containment Kit is suppressing the resulting fire and preventing propagation to adjacent cells. No evidence of smoke was seen coming out of the kit after it was sealed in either test. Only minor damage to the inner-most liner of the bag was found after the first round of testing, and no additional damage after the second round of testing. The damage did not extend to the primary inner liner nor to the exterior of the bag.

"We are committed to ongoing research and development throughout the year and will continue to push the limits to further prove HOT-STOP's performance against today's modern technology of water proof devices and vigorously powered battery chargers which most travel with today," added Goyco. "The FAA registered and UL laboratory testing we perform also helps us educate, prepare, and empower our patrons with the fact that our product will contain one of these new devices in an aircraft at 40,000 feet."

Test videos and copies of the laboratory test reports can be viewed here from the HOT-STOPL.com website. HOT-STOP® 'L' products are manufactured in the USA by Industrial Energy Products (IEP) and for more information contact Baker Aviation, the Master Distributor for HOT-STOP 'L' Fire Containment Kits at +1-972-248-0457 or go to www.HOT-STOPL.com

About HOT-STOP® 'L'

The HOT-STOP® 'L' bags are made up of multiple durable fabrics with a felt inner core that has a 3200ºF melting point which is sandwiched between two outer layers that have a 2080ºF melting point and are proven to absorb energy and fire while eliminating the escape of smoke, sparks, and flames. Multiple sizes are available to fit various devices up to the large 27" x 26" bag designed to contain defibrillators and all-in-one computers and custom solutions are available. Optional accessories are also available for larger bags, including a carry/stowage sling and an exterior carry bag with zipper.

The HOT-STOP® 'L' EVO series was introduced to target the airlines that are looking for containment solutions that will minimize the risk of unknown devices being brought on board, including portable charger/battery packs, e-cigarettes, and internal equipment, such as defibrillators, and electronic flight bags that are carried inside the cockpit. The added zipper technology offers an additional layer of security with its zero tolerance, airtight closure that is designed to contain a device in full thermal runaway until it has burned out. It can be deployed in less than five easy steps.

About Baker Aviation

Baker Aviation is a full-service aircraft maintenance, management, and charter company, licensed to provide professional aviation services Worldwide. ARG/US Platinum-Rated, Baker is headquartered at Meacham International Airport, in Fort Worth, Texas, with maintenance facilities at Addison Airport, in Addison, Texas, specializing in airframe maintenance for Hawker, King Air, Beechjet, Citation, Learjet, Falcon, Challenger, and Gulfstream aircraft. Baker has expanded its offerings as a stocking distributor of PMA Parts from Omega Aircraft Articles and established a dealership for LED Lighting with Aircraft Lighting International. Baker Aviation Maintenance is also the exclusive master distributor of the HOT-STOP® 'L' Fire Containment Kit product line. To learn more, please visit Baker-Aviation.com or call +1-972-248-0457.

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