Aero Twin, Inc. Engineering Report				
Title: Hydraulic System Compliance For Airglas LH4000F Ski Installation			Prepared by: Brian Slater and Jason Kepler	Report No: FND-SKI-HYD
			Approved by: Peter Pupator	Issue No.: 1
			Prepared for: Aero Twin, Inc.	Date: January 23, 2008
Aircraft Make: Found Aircraft Canada, Inc.	Aircraft Model: FBA-2C / -2C1 / -2C2	Aircraft Registration No.: N/A	Aircraft Make: N/A	Page: 1 of 2

1.0 Abstract:

Aero Twin, Inc.'s installation of the Airglas LH4000F skis is being certified for Found Aircraft models FBA-2C, FBA-2C1, and FBA-2C2. This document provides a discussion of the installation's compliance with proof pressure test requirements for hydraulic systems.

2.0 References:

1. 14 CFR Section 23.1435 dated February 1, 1965.
2. Found Aircraft Canada, Inc., Drawing Number N50, Ski Hydraulic Installation.
3. Found Aircraft Canada, Inc., Drawing Number N84, Ski Hydraulic Pack Installation, sheets 1 and 2 of 2, Iss. 2, dated June 13, 2007.
4. Found Aircraft Canada, Inc., Drawing Number N115, Hydraulic Line Provisions, Aerocet Amphibious Floats, all sheets.
5. Found Aircraft Canada, Inc., Drawing Number N145, Systems Install, Aerocet 3400 Amphibious Floats, sheets 1 and 4 of 9, Iss. 7, dated June 24, 2004.
6. Army Navy Aeronautical Standard AN6201 Rev. A, dated March 22, 1982.
7. Military Specification, Pump, Hydraulic, Ram, Hand Driven, Document Number MIL-P-5515D, dated May 17, 1972.
8. Aero Twin, Inc., Drawing Number FND-SKI-1010, Airglas LH4000F Hydraulic Installation, all sheets, Iss. 1, dated January 8, 2008.
9. Type Certificate Data Sheet (TCDS) A7EA, Found Aircraft Canada, Inc. FBA-2C, FBA-2C1, and FBA-2C2, Revision 6, dated November 15, 2005.

3.0 Discussion:

Aero Twin, Inc.'s hydraulic system installation for the Airglas LH4000F consists of minor modifications made to existing FAA approved hydraulic system installations (per 14 CFR §23.1435). These modifications were made to the hydraulic systems shown in reference drawings 2 through 5 for the installation of Wipaire 3600 skis and for the installation of Aerocet 3400 Amphibious floats. The hydraulic systems for each of these installations are factory options and are included as part of the TCDS, reference document 9. The modifications made to these systems allow the installation of the LH4000F skis. Modifications include: (1) the addition of hydraulic hardlines that tie the existing float and ski hydraulic systems together, (2) the installation of a different hand pump and a different electro-hydraulic pump, (3) hydraulic hardlines connecting the electro-hydraulic pump into the existing float hydraulic system, (4) the flex lines from the termination of the existing ski hydraulic lines to the skis, and (5) the skis themselves. The LH4000F ski installation hydraulic operating pressure is defined by the operating pressure of the hand pump and electro-hydraulic pump, 800 psi. Both of those pumps have previously been installed under STC on a Cessna 185. The Aerocet float hydraulic system operating pressure is 1,100 psi, as noted in reference document 5. The Wipaire

ski system incorporates an AN6201-1 hand hydraulic pump that has a maximum operating pressure of 1,500 psi. 14 CFR §23.1435(b) states that:

"Each system must be substantiated by proof pressure tests. When proof tested, no part of any system may fail, malfunction, or experience a permanent set. The proof load of each system must be at least 1.5 times the maximum operating pressure of that system."

Because the pre-existing hydraulic systems on the aircraft were all used at an operating pressure equal to or higher than that used with the LH4000F installation, it may be assumed that those components are able to withstand the 1,200 psi proof pressure. It may also be assumed that those components common to the C185 installation are able to withstand the same proof pressure. The additional components unique to the LH4000F installation on the Found aircraft, including the hydraulic hardlines and flexlines, are of the same construction as those already existing in the previously installed hydraulic systems, and may therefore be assumed to be adequate strength.

Because each of the components of the hydraulic system for the LH4000F skis have been shown to be of adequate strength to provide for a proof pressure test at 1.5 times the maximum operating pressure, based on comparison to existing and known systems, no pressure test is required to show compliance with 14 CFR §23.1435.

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