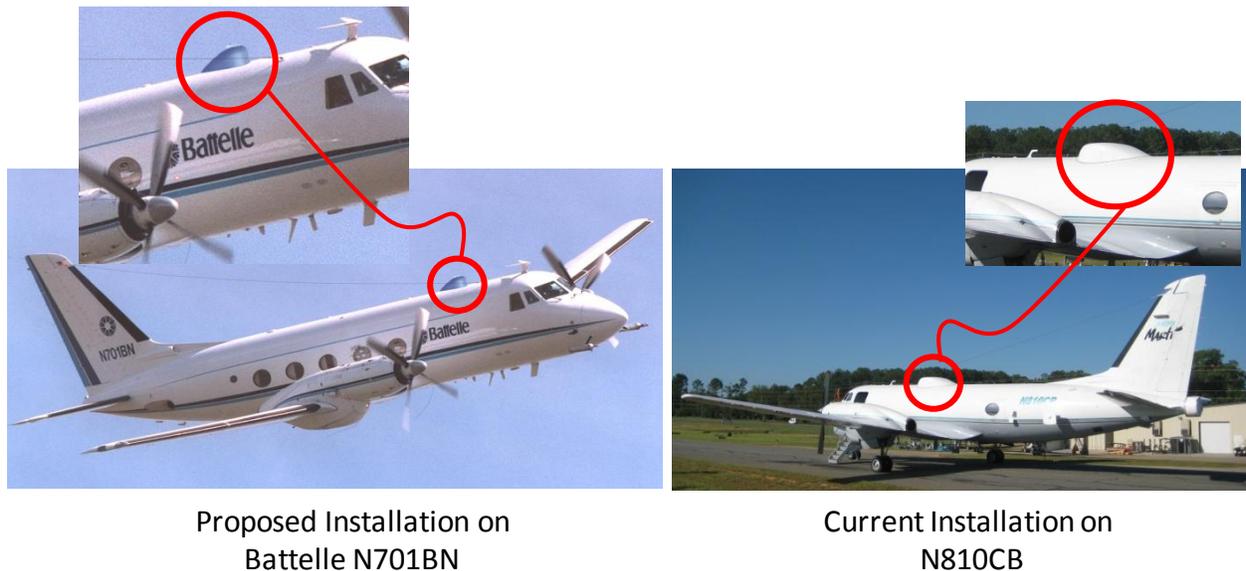


## Battelle Gulfstream G-159 Stabilized Radiometer Platform Installation

10 May 2010

The installation of the Stabilized Radiometer Platform is proposed for the Gulfstream model G-159 (G-I) aircraft, operated by Battelle for the Pacific Northwest National Laboratory. The aircraft is the Gulfstream model G-159, S/N 074, N701BN. The installation is proposed to be performed and approved by FAA Form 337, by a Field Approval.

A view of the proposed unit, housed in a streamlined fairing is shown in Figure 1. The installation concept is similar to that for the 4STAR (under concurrent development as described in the accompanying 2-pager) in that either system would occupy the existing overhead cabin hatch portal and be integrated into their own individual hatch. To provide context, a similar (but larger 90”Lx60”Wx16”H,) radome is flown operationally on a G-159 (N810CB) by Phoenix Air Group (Cartersville GA), as shown below, for a government customer.



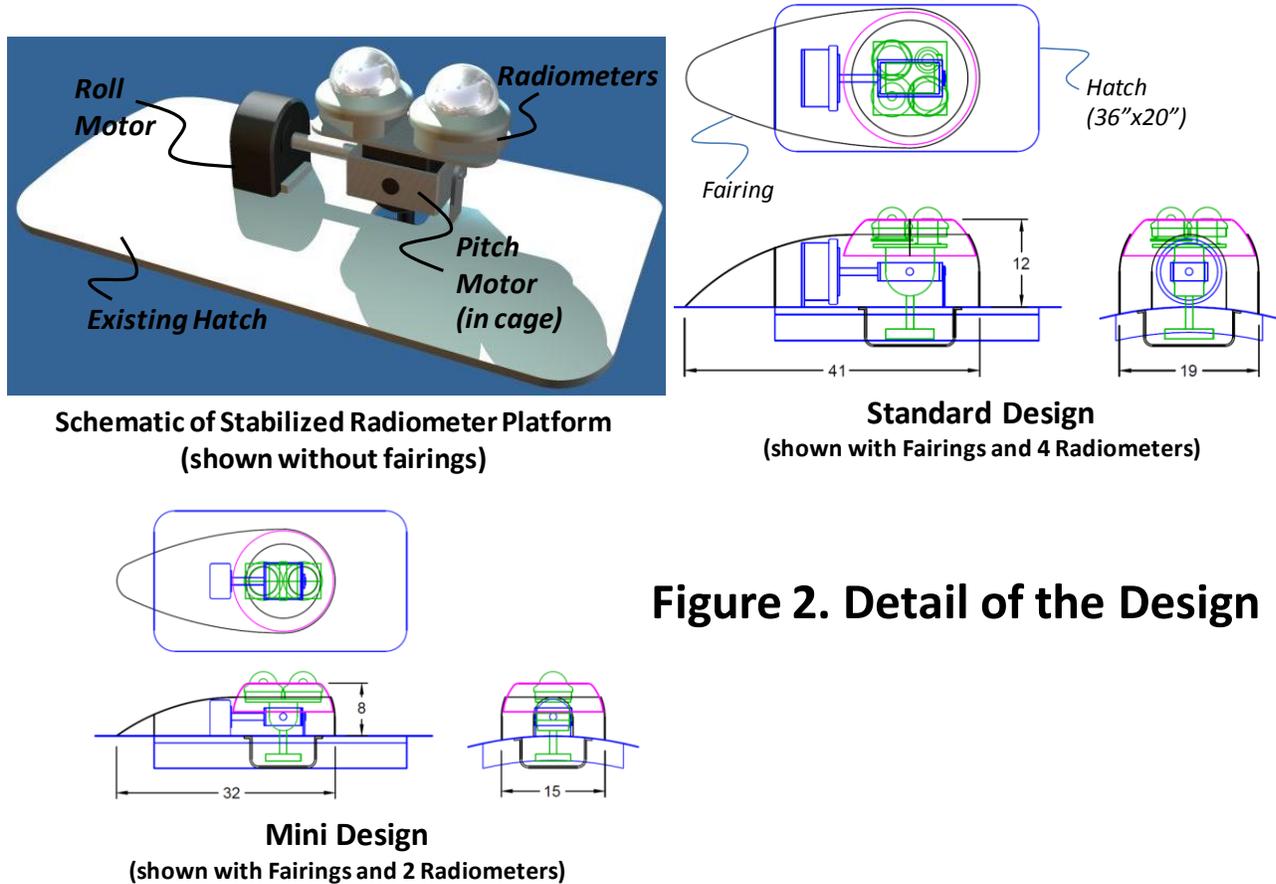
**Figure 1.**

Two versions of the proposed unit are shown in detail in Fig. 2: a standard version (41”Lx19”Wx12”H, weighing about 60 lb), and a smaller mini version, (32”Lx15”Wx8”H, weighing about 35-40 lb).

**Structural Issues:** The unit is to be mounted into the cabin overhead hatch; this hatch is an auxiliary emergency exit, and is not a required exit path. Aerodynamic loads and inertia loads will be determined and applied to the supporting structure. All structural engineering data will be DER reviewed and approved (by FAA Form 8110-3).

**Electrical Issues:** There is an auxiliary generator utilized for power separate from the aircraft flight systems, with cockpit shut-off control. There is adequate power for the intended use.

**Icing Issues:** The aircraft is certified for flight into known icing, but the intent during operation using the Stabilized Radiometer Platform is to avoid icing conditions.



**Figure 2. Detail of the Design**

**Bird Strike:** Similar units have been installed on other aircraft, and though susceptible to bird strikes, the supporting structure for the Stabilized Radiometer Platform is being designed to prevent the unit from easily tearing out or away from its mounting. Heavy structure will be utilized; even though the unit may be damaged in the event of a bird strike, the design goal is to keep the unit attached to the aircraft.

**Operations:** The aircraft is used in research projects for gathering data on solar radiation, air pollution, trace element concentrations, cloud moisture chemistry, remote sensing, and weather parameters, and carries a broad range of instruments and sensors. The aircraft is operated in the restricted aircraft category, and flown with required crewmembers only.

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