POWERPLANT ON-SITE INSPECTION IN SUPPORT OF ACCIDENT INVESTIGATION OF BEECHCRAFT 1900D REG. N240CJ, PERFORMED FOR THE NATIONAL TRANSPORTATION SAFETY BOARD.

1. **Powerplant Inspection:**

The powerplant inspection was conducted on 28 August 2003 at the facilities of Cape Air, Hyannis, Massachusetts The following persons participated in the inspection as representatives of their respective organizations:

Robert J. Gretz	Air Safety Investigator National Transportation Safety Board
Floyd A. (Tony) James	Air Safety Investigator Federal Aviation Administration
Richard I. Bunker	Aeronautical Inspector Aeronautics Commission The Commonwealth of Massachusetts
Dave Vance	Director of Safety Colgan Air
Robert L. Ramey	Engineer B Air Safety Investigation Raytheon Aircraft Company
Thomas A. Berthe	Service Investigation Pratt & Whitney Canada

2. **Left Hand Engine History:**

PT6A-67D S/N 114052

Total Hours: 15,245

Total Cycles: 23,662

Hours Since Overhaul: 3,120

Cycles Since Overhaul: 3, 936

There was no unusual maintenance was reported for the subject engine.

3. Left Hand Engine Inspection:

The engine displayed impact and salt water immersion damage. The engine was recovered stripped of the cowling, the right hand engine mount, and the right hand exhaust stub.

3.1 External Condition:

All of the magnesium engine housings displayed severe salt water immersion damage.

Reduction Gearbox: The housing and propeller shaft were intact. The propeller blade airfoils were fractured uniformly from the blade butts. The reduction gearbox chip detector was fractured from the its mounting boss. The propeller governor input lever was fractured from the upper housing. The Np tachometer generator was fractured from its mounting boss. The propeller overspeed governor was in place and intact. The torque meter transducer and autofeather switch manifold was fractured from flange "A" and held in place by external lines.

Exhaust Duct: Displayed radial deformation around the lower circumference. The "C" flange was partially separated around the lower circumference. The 2nd stage power turbine was examined in-situ through the right hand exhaust port. The blade airfoils were intact. The shroud and guide vane inner and outer drums were circumferentially scored due to contact with the 2nd stage power turbine.

Gas Generator Case: Displayed axial deformation to the compressor housing. The fuel manifold was in place, with impact damage. The compressor bleed valve was in place and intact. The compressor 1st stage was examined in-situ by cutting the inlet screen. A number of the blade airfoils were deformed forward and away from the direction of rotation. The shroud displayed circumferential scoring due to radial contact with the blade tips.

Accessory Gearbox: The main housing was intact. The external scavenge pump was fractured from its mounting boss. All of the controls and accessories were fractured from their mounting bosses.

Power Control and Reversing Linkage: Impact damage precluded assessment of pre-impact continuity.

Pneumatic Lines, Compressor Discharge Air (P3) and Power Turbine Control (Py): Impact damage precluded assessment of pre-impact continuity.

4. **Right Hand Engine History:**

PT6A-67D S/N 114111

Total Hours: 16,180

Total Cycles: 23, 504

Hours Since Overhaul: 3,120

Cycles Since Overhaul: 3,936

There was no unusual maintenance was reported for the subject engine.

5. **Right Hand Engine Inspection:**

The engine displayed impact and salt water immersion damage. The engine was recovered with the engine mounts, firewall, and portions of the cowling attached.

5.1 **External Condition:**

All of the magnesium engine housings displayed severe salt water immersion damage.

Reduction Gearbox: The housing and propeller shaft were intact. The propeller blade airfoils were fractured uniformly from the blade butts. The propeller governor input lever was fractured from the upper housing. The Np tachometer generator, the propeller overspeed governor, and the torque meter transducer and autofeather switch manifold were in place and intact.

Exhaust Duct: The exhaust duct was torn around the entire circumference between the exhaust ports and the "C" flange, structurally separating the reduction gearbox and power turbine shaft housing from the main engine. The 2nd stage power turbine was examined in-situ. The blade airfoils and disc face displayed circumferential scoring due to contact with the power turbine shaft housing. The shroud was circumferentially scored due to contact with the 2nd stage power turbine.

Gas Generator Case: Displayed axial deformation to the compressor housing. The fuel manifold was in place, with impact damage. The compressor bleed valve was in place and intact. The compressor 1st stage was examined in-situ by cutting the inlet screen. A number

of the blade airfoils were deformed forward and away from the direction of rotation. The shroud displayed circumferential scoring due to radial contact with the blade tips.

Accessory Gearbox: The main housing was intact. The external scavenge pump was fractured from its mounting boss. The fuel pump and control, and the oil to fuel heater were fractured from their mounting bosses and held in place by external lines.

Power Control and Reversing Linkage: Continuous, with severe impact damage, from the forward linkage to the fuel control unit input lever.

Pneumatic Lines, Compressor Discharge Air (P3) and Power Turbine Control (Py): The P3 line was continuous, with severe impact damage, from the gas generator case fitting to the fuel control unit fitting. The Py line was continuous from the fuel control unit fitting to the propeller governor fitting.

6. **Closing:**

These factual notes are based upon observations made on 28 August 2003, and may be altered or corrected on the basis of further information.

PRATT & WHITNEY CANADA

Thomas A. Berthe
Service Investigation
29 August 2003