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From: L. G. "Shorty" Schroers
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Subject: Visit to Pegasus Rotorcraft Ltd. Of Palo Alto. CA

On February 14, 1992 I visited the office of Pegasus Rotorcraft Ltd. Located at the Palo Alto Airport. During this two hour visit I talked with Joe Reinhard and Dick McNally. We discussed many aspects of the Pegasus Gyroplane project, viewed the video they have of the aircraft flying, and inspected the one remaining aircraft. As promised, here are a few notes from that visit.

Background:

The gyroplane development was a joint effort of Avion of Canada and the Canadian government with the Canadian military targeted as the initial prime customer. Government funding for the program ceased when there was a change in the Canadian government. Through private industry support the program was continued and Canadian airworthiness certification was obtained in 1965 and U. S. certification was obtained in 1969. Six aircraft were built and a total of 2500 flight hours were flown before the program was suspended. Through a series of business transactions the rights to the project, including hardware and associated data, was secured by C. Richard McNally and Joseph R. Reinhard and Pegasus Rotorcraft Ltd. Of Palo Alto was formed. At present, only one aircraft (aircraft number 6) and a fuselage used for "drop" tests remain. These are stored in a hangar at the Palo Alto Airport.

Aircraft Configuration:

The Pegasus Mk III gyroplane is a three place rotorcraft with a three blade rotor system, and a ducted pusher propeller powered by a Lycoming 10 360 200 horsepower engine. This rotorcraft has a 37 foot rotor diameter that uses Enstrom helicopter rotor blades. These rotor blades are installed inverted because they operate continuously in the autorotational state. The rotor, therefore, turns in a clockwise direction as viewed by the pilot which is the opposite rotational direction of American helicopter rotors. At a maximum gross weight of 2000 pounds and a disk area of 1075 ft², the aircraft operates at a very low disk loading of approximately 1.8 pounds per square foot of rotor area. The Enstrom helicopter blades, when operated at 2300 pounds gross weight, have a service life of 96,000 thousand hours. In the autorotational flight mode, at 2000 pounds gross weight, these blades should have nearly infinite life and contribute to a lower maintenance cost.

Safety Aspects:

The gyroplane concept has several features that not only reduce the weight and complexity of the design, as compared to a helicopter, but also offer a significant safety factor. For example, the gyroplane rotor is not powered by the engine and therefore does not require a main rotor transmission. Helicopter transmissions convert high engine RPM and low propshaft torque to low RPM and high rotorshaft torque and consequently are heavy and complex components. Qualification of this component, plus routine inspection and maintenance of this component, adds significantly to the initial cost and to the operating cost, but does not eliminate the possibility of an in flight failure. The gyroplane concept has this inherent safety feature with an associated reduction in weight, complexity, and cost. Another safety feature of the gyroplane concept results from the fact that the gyroplane rotor always operates in the autorotational mode. The transition from powered flight to unpowered flight is minimal and similar to that of a single engine airplane while maintaining the vertical landing or low forward speed landing capability of a helicopter. This feature makes the gyroplane ideal for missions requiring low speed and low altitude operation. Finally the inherent stability of the gyroplane concept makes it easier to fly and is well suited to long duration missions.

Program Status:

Pegasus Rotorcraft is searching for ways to set up a prototype production line to obtain an FAA production certificate, and to market the aircraft commercially. One of the first steps of this plan is to convert the design and associated data to a computer aided design (CAD) program. This engineering system would be used in a product improvement program to incorporate the latest technology in materials, structural design and system integration. Initially very few changes to the certificated aircraft are anticipated. One proposed change, that is supported by the FAA is to install a twist-grip throttle on the collective control for the pusher engine on the collective control. This twist-grip throttle on the collective control would make it easier for the pilot to manage the engine thrust vector and the rotor lift vector with a single integrated control in a manner similar to that of the Lockheed AH-56 "Cheyenne" compound helicopter. The present control is a twist-grip throttle mounted on the cyclic stick and found to be less than satisfactory. Other changes were discussed as possible in-house R&D efforts to be incorporated after production of the basic aircraft had begun.

Market Potential:

The gyroplane has always been an aircraft in search of a mission. The 1930's development never lead to a commercially successful aircraft because of the helicopter development financed by the U.S. military where cost was not always the driving element. Today, however, the rising cost of helicopter procurement and operation, and the decrease in production of small, single engine general aviation airplanes may very well produce a market niche for the gyroplane. In the Pegasus Rotorcraft Ltd. brochure there are eighteen potential missions listed for the gyroplane. The "chicken and egg" situation requires an aircraft to demonstrate the mission(s) which will in turn justify development of the aircraft. Historically, once an aircraft is put into the hands of the user new missions are developed, or existing missions are modified to take advantage of the unique characteristics of a particular aircraft. This is especially true for a concept with the unique safety aspects of the gyroplane.

Investor Risk:

The risk for a potential investor is greatly reduced by the fact that they are starting with a certificated aircraft. It will still require the right investor to reactivate the program, obtain a production certificate, launch a successful sales program, and develop a customer service program. In addition, It will be necessary to overcome the bias against gyroplanes by both fixed wing and helicopter operators and pilots.

Recommendation:

Well John that's about it. My recommendation is that your Office continue to work with the Pegasus Rotorcraft Group and help make this project known to other Federal, State, and local government agencies. Let me know if I can help.

A handwritten signature in black ink, appearing to read "L.G. Schroers". The signature is written in a cursive, slightly slanted style.

L.G. Schroers

Enclosure 1: Pegasus Rotorcraft Ltd. Brochure Enclosure 2: Consultant Qualifications cc
Pegasus Rotorcraft LTD. (w/enclosures)