

P77-10204

NASA News

National Aeronautics and
Space Administration

Washington, D C 20546
AC 202 755-8370

For Release.

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IMMEDIATE

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RELEASE NO: 77-206

EIGHT-BLADED PROPELLER DESIGN COULD BRING BACK

TURBOPROP AIRPLANES

Propellers, once thought of as obsolete for fast commercial aircraft service, could stage a comeback if research being conducted by NASA's Lewis Research Center, Cleveland, Ohio, is successful.

Lewis's work is part of a NASA-wide Aircraft Energy Efficiency Program aimed at achieving up to a 50 per cent savings in fuel in future United States aircraft and also at retaining the dominant position of the U.S. in the world commercial aircraft market.

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Mailed:
September 28, 1977

N77-84208
Unclas 49342
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(P77-10204) EIGHT-BLADED PROPELLER DESIGN
COULD BRING BACK TURBOPROP AIRPLANES
(National Aeronautics and Space
Administration) 5 P

In a program underway at Lewis, a family of small-diameter, eight-bladed propellers is being tested in wind tunnels to determine propeller operating characteristics at flight speeds up to 855 kilometers per hour (530 miles per hour, Mach 0.8) and cruising altitudes above 9,145 meters (30,000 feet).

Engineers estimate that at this speed and altitude an advanced turboprop engine with the new design propeller will offer a 20 to 40 per cent fuel savings over current turbofan engines and a 10 to 20 per cent fuel savings over an advanced turbofan engine.

Good results were achieved in the 1950s when airlines flew the then popular four-bladed propellers on turboprop engines. Those planes, however, flew at 645 km/hr (400 mph, Mach 0.6) and 6,095 m (20,000 ft.). To compete with today's commercial turbofan transports, the capability to fly efficiently at 855 km/hr (530 mph, Mach 0.8) and 9,145 m (30,000 ft.) cruise altitude is necessary.

Advances in composite materials technology have made it possible to begin development of the strong, thin, short propeller blades necessary for efficiency at high speeds, Lewis propulsion engineers say.

Using these new multi-bladed propellers offers the prospect of reduced fuel consumption at comparable cruise speeds, and a cabin environment and other desirable characteristics of current turbofan-powered transports.

A photograph to illustrate this news release will be distributed without charge only to media representatives in the United States. It may be obtained by writing or phoning:

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Photo No: 77-H-617

RESEARCH IS BEING CONDUCTED on this new eight-bladed propeller in a wind tunnel at NASA's Lewis Research Center, Cleveland, Ohio. The model with its eight short, ultra-thin, curved blades is expected to result in performance achieving a 20 to 40 per cent fuel saving over present turbofan engines. Lewis Center aeronautical engineer Robert J. Jeracki demonstrates the test model, suspended from the top of the tunnel on a pylon.

NASA Photo: 77-H-617

