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TRAVIS AFB, Calif (WIO) - The C-141 powerplant, which will speed the first StarLifter to Travis Air Force Base Friday at more than 500 miles per hour, is the most powerful of any transport aircraft in use today.

Imparting a striking appearance on the aircraft's swept-back wing with their forward jutting pod mounts, the four engines move the StarLifter at cruising speeds of from 500 to 560 miles per hour. They develop a thrust of 84,000 pounds, or 21,000 pounds for each of the engines.

Known as the TF33P-7 engine, it was developed by Pratt and Whitney Aircraft Company as a modification of the first production turbofan engine, presently used on the B-52 long-range bomber. The initial engine, called the TF33P-3 model, develops 17,000 pounds thrust.

A turbofan engine differs from the so-called "straight jet" engine in the intake and compression of air. Whereas a straight jet or turbojet heats the air with burning fuel before expelling it through the rear of the engine, in a turbofan design the air inlets are larger and the air intake is much greater because of induced flow by big "fans" and turbines.

The turbines in the turbofan also operate the compressors, resulting in a greater thrust accelerating a relatively large mass of air. The hot air discharged from the main jet at the rear of the engine has less velocity than in

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a similar sized "straight jet" design because it passes through the turbines and has not been heated by combustion. End effect of the turbofan process is more thrust for less fuel.

This is why the StarLifter, despite its weight of 318,000 pounds minus payload, is comparatively "light on its feet." In other words, the big transport possesses the ability to take off on a conventional-sized runway of 4,500 feet and, using its powerful engines in reverse thrust, land on an even shorter field.

Its capability for use on some 1,850 of the world's airports is due in great measure to the power of its efficient turbofan engines.