

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

**TYPE INSPECTION REPORT (TIR)
FOR
AIRPLANE AIRWORTHINESS**

PART II – FLIGHT TEST REPORT (continued)

DATE: 20 December 2005

ACTIVITIES: Accomplished per TIA, Item 18 – Part II, Flight Test Representative duties:

1. Verified completion of all Part 1 activities with DAR (Mr. John Harris).
2. Reviewed list of prior modifications; no significant modifications applicable to this program.
3. Conducted Flight Tests in accordance with CNE 5197-3; Report enclosed as CNE-5197-4.
4. Evaluated Aircraft Flight Manual Supplement (AFMS) to be satisfactory.
5. Additional Tests: None.

SPECIFICS:

1. Function. The installation was transparent to the pilot, except for the red radial marking on the manifold Pressure Instrument, as specified.
2. Cooling Performance. The engine easily stayed within specified temperature limits when a simulated-single-engine climb was performed, using the left engine at maximum power, and while at best AFM climb airspeed. More specifically:
 - (a) EGT: Maintained within tolerances, but with leaning for conservative results. Never closer than 400 degrees of the limit (1250 vice 1650 degrees).
 - (b) CHT: Peak at 5 minutes of climb, and at 7,300 ft MSL. Test day 350 degrees, corrected to hot day of 389 degrees. Limit is 460 degrees. Large margin.
 - (c) Oil: Steady and mostly unchanging. Assumed peak at 5 minutes of climb (with CHT), and at 7,300 ft MSL. Test day 155 degrees, corrected to hot day of 194 degrees. Limit is 225 degrees. Large margin.

3. Cruise Performance. The airplane cruise speeds were significantly higher than for the un-modified model, by comparing test data to AFM. Fuel was leaned to approximate original AFM numbers (while maintaining at least 100 degrees rich of EGT peak). Results show an increased specific range at all test altitudes (up to 9% increase). Test day temperatures were close to standard day at altitude, and weight was within 5% of maximum gross weight. Data unreferral would approximate less than a 2-kt penalty, in all cases.

				<u>Test airplane</u>	<u>Original AFM</u>
(a)	4,000 ft MSL:	24.5" MAP	2450 RPM	192 KIAS	176 KIAS
		22.0" MAP	2300 RPM	170 KIAS	159 KIAS
		20.0" MAP	2300 RPM	160 KIAS	152 KIAS
(b)	8,000 ft MSL:	22.0" MAP	2300 RPM	170 KIAS	159 KIAS
		20.0" MAP	2300 RPM	161 KIAS	152 KIAS
(c)	12,000 ft MSL:	18.5" MAP	2300 RPM	152 KIAS	145 KIAS

4. AFMS. The AFMS reflects the required entries for the AFM.