FAA Certification Flights (F&R Program) of Robinson's R66 Turbine

Field Report from Hansruedi Amrhein

The FAA allowed two external pilots chosen by Robinson to participate at the certification process. Hansruedi Amrhein was selected by Robinson to fly the aircraft for the Function & Reliability Testing in Torrance.

On August 9th and 10th, 2010, after a brief ground course, Hansruedi flew the R66 Turbine.

Charles Roberts
Project Leader of FAA Certification Process

Hansruedi Amrhein
Test Pilot R66 Turbine

Hansruedi convinced the FAA to do his test flights in the mountains. The idea behind was to get a baseline from which to extrapolate on how the R66 will perform in the mountainous terrain.

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One of the flights target was the mountain region south of Big Bears with highest point on 11'500 Feet.

Pilot's Report:

We started in Torrance and flew direction Long Beach. With Max. Continuous Power of 83% Torque and 120 KIAS we flew along the coast line.

	Hansruedi Amrhein Flight Direction Big Bear

The first point of the F&R program started in the area of Laguna Beach: Max. power flight for 5 minutes. We started on 2000 feet and pulled 100 % Torque holding the as maximum defined speed of 65 KIAS.

	Hansruedi Amrhein Climb Flight of R66 Turbine

In 5 minutes we climbed 8400 feet which gives an average of 1680 feet per minute. These max. power check has to be repeated according to the F&R program once per hour.

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	R66 Turbine Approach on landing place over 10'000 Feet

Now we are on operating altitude for first landings. We landed without any interferences with 70 % Torque on 10500 feet. Outside temperature of 13^{0} C, which gives Density Altitude of 12'800 feet or 3'900 Meter over sea level.

	R66 Turbine with Hansruedi Amrhein Landed on 10'500 feet

We hovered in ground effect and pulled 100% torque. We climbed with 1'000 feet vertically to the sky. (3 persons and for 2 hours fuel on board) by MGT 760°C.

We flew various maneuver in that height. The performance fulfilled all my expectations!

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Another flight was direction Mount Baldy on 10064 feet.

Hansruedi's report to that flight:

Outside temperature of 12° C gives Density Altitude of 12'100 Feet or 3690 meter over sea level.

	Mount Baldy
	Landing on Mount Baldy on 10064 feet Testing of tail rotor's power

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I tested the tail rotor on 3690 meter over sea level, wind approx. 5 nodes with 3 persons and 2 hours fuel on board.

	Landing in "the middle of nowhere"

Pedal Turns left 180° and 360°, Pedal Turns right 180° und 360° and the helicopter stopped when I applied the pedal. The tail rotor performance impressed me.

	R66 Turbine On the way back to Torrance

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Hansruedi Amrhein's Conclusion after 8 Flying Hours:

The R66 Turbine is a helicopter with an excellent performance. The cruising speed is 115-120 KIAS with max. gross weight. Impressive is the very good engine power and extremely efficient tail rotor which is an important safety aspect especially in the mountainous terrain.

R66 Turbine Basic Specifications:

⇨ Number of Seats	5
⇨ Approx. Basic Empty Weight	1280 lb
⇨ Maximum Gross Weight	2700 lb
⇨ Usable Fuel Capacity	73.6 gal (493 lb)
⇨ Powerplant	Rolls-Royce 250-C300/A1
⇨ Engine Ratings	
• Rolls-Royce 5 Minute Takeoff	300 hp at 6016 rpm
• Rolls-Royce Continuous	240 hp at 6016 rpm
• Robinson 5 Minute Takeoff Rating	270 hp at 6016 rpm
• Robinson Max Continuous Rating	224 hp at 6016 rpm

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