

Date: 8/13/2012
Location: ACRC
Aircraft: Thor, FASER
Pilot: Arion Mangio
Flights: 3 Thor, 1 FASER

Weather

Sunny day with variable light wind
METAR (Anoka County)

KANE 131345Z 28006KT 12SM SCT070 19/16 A3002

Andrei, Arion, Tim, and Will arrived at ACRC around 9:00am to test a new implementation of the heading tracker on Thor. Instead of tracking the euler angle 'psi', the ground track angle was tracked by computing the inverse tangent of the north and east velocities. The first two flights were for verifying this method, and the third flight was a rectangular ground tracking pattern - all with Thor. The last flight of the day was with FASER, also verifying ground tracking, and testing to see if the pressure sensor data failed in flight, which was witnessed at the previous flight test.

Software used for this flight was [trunk/Software/FlightCode rev 883](#)

Thor flight 62 consisted of taxiing around the runway to see if the ground track angle matched up with the euler angle 'psi'. The two angles matched up very well. Software modules used were [manual_control](#), [EKF_15state](#)

Thor Flight 62

Rx Data: A000, L001, F000, H000

Thor flight 63 consisted of flying in the pattern configuration to see if the ground track angle matched up with the euler angle 'psi'. The two angles matched up very well. Software modules used were [manual_control](#), [EKF_15state](#)

Thor Flight 63

Rx Data: A159, L999, F106, H000

Thor flight 64 was to verify the ground tracking performance by commanding three rectangular patterns. The commands consisted of 90 turns for a certain length of time. Since there was a significant amount of wind, the sides of the rectangles were not expected to be the same length; however, the sides were all expected to be perpendicular since the airplane was tracking ground track. The performance was very good. All sides were perpendicular, as expected. Software modules used were [heading_tracker](#), [rectangles](#), [EKF_15state](#)

Thor Flight 64

Rx Data: A021, L999, F000, H000

FASER flight 10 consisted of flying around to see if the ground track angle matched up with the euler angle 'psi', and also to see if the pressure sensor data crashed mid-flight, similar to the last flight test with. The airspeed and altitude measurements crashed half way through the flight, as expected. The data showed that all components on the I2C bus

crashed at the same time. Further investigation is required to find the reason behind this. Software modules used were `manual_control`, `EKF_15state`

FASER Flight 10

Rx Data: A013, L009, F000, H000

Issues Faulty Rx data on Thor, crashing I2C bus on FASER