



FEDERAL AVIATION ADMINISTRATION
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From: Vertical Flight Human Factors Program Manager
To: Vertical Flight Human Factors TCRG (POC: Hooper Harris AFS-410)
Subj: Determine NAV Performance of VFR Helicopter Pilots Using IFR Qualified GPS Execution Plan
Ref: (a) Vertical Flight Human Factors TCRG 5/31/01 meeting - requirement entitled "Simultaneous Non-interfering Operations - Quantify VFR Navigation Performance"
(b) Rotorcraft Precision Visual Flight Rules Simultaneous Non-Interfering Human Factors Project Execution Plan

- 1) Per reference (a), the "Inexpensive Night Vision Imaging System Field Evaluation Methodology" was ranked first by the Vertical Flight Human Factors TCRG. The requirement's objective is to "determine navigation performance of visual flight rules helicopter pilots using instrument flight rules qualified global positioning systems receivers. The Federal Aviation Administrations Flight Standards Office AFS-400 needs to quantify helicopter pilot navigation performance for IFR and VFR pilotage which will allow the development of procedures to integrate within the national airspace system."
- 2) The Federal Aviation Administration AAR-100 office will be responsible in funding the "Determine NAV Performance of VFR Helicopter Pilots Using IFR Qualified GPS" project. The objective of this project will be to collect human performance data in a virtual environment and record eye movements in a helicopter that will be furnished by Federal Aviation Administration AAR-100 office (reference b).
- 3) The three year project will be executed as follows:

Tasks to be completed:

- i. Initial construction of simulation environment based on the location of the real world data collection (reference b).
- ii. Coordinate with flight test group (reference b) to define eye tracker requirements.

- iii. Build self-contained eye tracker for helicopter data collection
 - iv. Record eye movement data in helicopter field data collection (reference b).
 - v. Complete simulation environment.
 - vi. Replicate actual flight study in simulated environment (virtual flight)
 - vii. Conduct simulation using multiple SNI scenarios
- 4) Quarterly (December, March, June, and September) research progress status reports
- Informal e-mail reports from the AAR-100 vertical flight human factors program manager to Hooper Harris (AFS-410)
- 5) FY03 annual report summarizing year's activities by grantee. This annual report including other human factors vertical flight projects sponsored by vertical flight TCRG will be electronically submitted to the committee.
- Grantee will submit an annual report using AAR-100's Productivity Report website (<http://www.hf.faa.gov/report/>) to the AAR-100 vertical flight human factors program manager.
- 6) Deliverables:
- FY03:
 - Deliver airworthiness self-contained head mounted eye tracker to flight test group, July 30th 2003
 - FY04:
 - Report on the October 2003 eye tracking helicopter data collection, March 1st 2004
 - Interim report on simulation data collection replication test, September 30th 2004
 - FY05:
 - Final report that specifies the minimal RNP value for various SNI scenarios, September 30th 2005

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