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July 31<sup>st</sup>, 2003

From: Vertical Flight Human Factors Program Manager, AAR-100  
To: Vertical Flight TCRG

Subj: VERTICAL FLIGHT HUMAN FACTORS THIRD QUARTER '03 REPORT

1) Third quarter report for each project is listed below.

- a) NVG lighting requirement. Researchers have completed 95% of the data analysis and the final report is 70% complete. Work-around devised to prevent absence of primary radiometer from further delaying final data analysis and report completion. Unfortunately, the radiometric equipment needed for final re-verification of NVIS radiance levels has not been returned from the manufacturer; a work-around has been devised. The final draft report should be completed by end of July, 2003.

*Indications are the activity has been delayed because of radiometric measurement equipment breakdown (needed to verify final NVIS radiance interference levels) delaying final report until July 2003.*

- b) NVG resolution requirement. The MATLAB model will be complete by the end of July.

*All indications indicate that this project is on track to complete year 1 milestones.*

- c) Simultaneous Non-interfering Operations - Quantify VFR Navigation Performance.

**Task 1. Initial construction of simulation environment**

Task 1 Deliverables: Virtual terrain and surrounding areas, simple flight models and interfaces

Task 1 Progress: The basic terrain model is complete. A basic flight model is also in place. We believe this aspect will need more work however in order to approximate actual flight for the later experiment. The basic cockpit apparatus is complete but we still need to build the instrument console for the simulator that is identical to the experimental platform.

**Task 2. Coordinate with TBD group who will be responsible for developing test plan and collecting helicopter flight data. We will provide eye tracker requirements and obtain information about the test location**

Task 2 Deliverables: Requirements specification for eye tracking device

Task 2 Progress: Complete.

**Task 3. Build eye tracker for helicopter data collection**

Task 3 Deliverables: Eye tracking device, Pilot test data

Task 3 Progress: Prototype is complete. Testing is underway.

**Task 4. Record eye movement data in helicopter**

Task 4 Deliverables: Complete actual flight data set, analysis, model of pilot performance to be used in subsequent tasks

Task 4 Progress: Will occur during upcoming experiment in Tullahoma, TN.

**Task 5. Complete simulation environment**

Task 5 Deliverables: Complete model and simulation environment, interfaces, flight models, radio communications

Task 5 Progress: See Task 1 update above.

**Task 6. Replicate actual flight study in simulated environment**

Task 6 Deliverables: Complete virtual flight data set and analysis, validated simulation model

Task 6 Progress: Will occur during upcoming experiment in Tullahoma, TN.

**Work in Progress:**

- Complete model of Tullahoma, Tennessee area
- Strip helicopter motion model from base NPSNET system architecture and integrate into current helicopter simulator.
- Complete cockpit apparatus

*All indications indicate that this project is on track to complete year 1 milestones.*

d) Rotocraft Precision Visual Flight Rules Simultaneous Non-Interfering Human Factors Project. Mr. Hickok, STI Manager/PVFR Project Supervisor, and Mr. McConkey, STI Engineer/PVFR Program Manager, have continued coordination with NASA, and the FAATC during this period. Mr. McConkey has scheduled with FAATC to pick up the Ashtech truth system and components for July 15<sup>th</sup>. After pickup and during the July 21 he will collect data samples for NASA, and ship the aircraft antenna to UTSI for preparations of installation. Mr. Hickok has coordinated the logistics for the first integration and systems installation trip, scheduled for the week of July 28<sup>th</sup>. Mr. Hickok has also continued the search for test subject pilots. STI has submitted technical data to Jeppesen, and the test route is coded; submitted to Bendix King. STI also submitted technical data to Jeppesen for charting; awaiting a proof copy for review.

STI completed and submitted to FAA a FINAL Draft PVFR/SNI Flight Test Plan during this quarter. The FINAL Draft Flight Test Plan is currently being circulated within FAA for approval.

Status of Specific Tasks for Phase One (the current Phase of the project):

- Task 3.1.1 through 3.1.2 (Flight Test Plan): Final Draft was submitted on June 2<sup>nd</sup> (on schedule/complete). The internal FAA coordination has exceeded the scheduled month of June and is being extended to the end of July. This is the only critical task with schedule overrun of concern.
- Task 3.1.3 (Site Selection/Test Routes): Complete/data base coding Complete/Charting in progress.
- Task 3.1.5 (Data Collection/System Evaluations): Phase One tasks Completed
- Task 3.1.6 (Test Aircraft/Subject Pilots/Equipment): The test aircraft has been selected (Completed). Mr. Hickok is still coordinating with various sources to identify the final subject pilots. This task is being extended to the end of July 03 for subject pilot selection, but will have no impact upon the overall test schedule.
- Task 3.1.9 (Coordination with NPS and NASA): Phase One tasks Completed.
- Tasks 3.2, 3.3, 3.6 & 3.5, 3.7, 4.0 (Management and Reporting): Completed



3.1.6

3.1.9

3.2, 3.3, 3.6

3.5, 3.7, 4.0



*All indications indicate that this project is on track to complete year 1 milestones.*

William K. Krebs