**ABSTRACT**
The goal of the Information Presentation Directed Research Project (DRP) is to address design questions related to the presentation of information to the crew. The major areas of work, or subtasks, within this DRP are: 1) Displays, 2) Controls, 3) Electronic Procedures and Fault Management, and 4) Human Performance Modeling. This DRP is a collaborative effort between researchers at Johnson Space Center and Ames Research Center.

**DISPLAYS – Visual displays**

**FY08 Studies**

**Label Alignment**

Three studies investigated the effects of label alignment in small and large data groupings: 4, 8, and 16 label/value pairs, as well as high fidelity displays. The task was to find a value that corresponded to a target label.

- For large data groupings, such as the 16-label group, data-alignment is faster than left-alignment
- In high fidelity displays, there was no difference in search times between left and data-aligned labels.

**Study on HMD use in lunar lighting**

- Collaboration with Orion lighting
- Demonstration of spatially localized beacons

**Studies Planned for FY09**

Cursor control device investigations will continue under vibration and in microgravity.

**EVA OPERATIONS**

**Gloved Dexterity and Tactility**

- First study to look at glove dexterity in high pressure environment

**VIBRATION STUDIES**

- Orion-Ares exposure will be at levels that may exceed the 0.25 g limit imposed by earlier programs during ascent
- There is a serious risk that higher vibration will cause unacceptable degradation of human performance, due in part to decrements in visual function
- Present study began the process of quantifying this risk by examining how different vibration levels impact ability to make speeded yes/no responses to alphanumeric symbology while in a semi-supine position
- 5 blocks of 60 self-paced trials, 40 with vibration, 20 without
- Each block at one vibration level: 0 g, 15 g, 30 g, 5 g, or 7.5 g

**Letter processing task (8 participants)**

- Orient to magenta box
- Do the three letters in the middle row form a word or a non-word?
- Press one button for “Yes”, another for “No”

**Results**

- Errors increased with increased vibration
- There were more errors for smaller compared to larger font
- Vibration effects appeared at smaller vibrations levels for 10 pt font than 14 pt font
- No significant differences between vibration effects on lexical decision and magnitude comparison tasks
- No effects of vibration on follow-up trials
- Response times showed very similar pattern to errors

**Conclusions**

- For both number and letter processing, performance is significantly worse at both 0.5 g and 0.7 g for 10 pt font and at 0.7 g for 14 pt font.
- Vibration levels above 0.3 g (5- to peak) will significantly compromise the processing of alphanumeric symbology in the currently anticipated Orion display viewing conditions.