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.

Label Orientation
The purpose of the study was to investigate the effects of label orientation.

Studies Planned for FY09
Follow-up on alignment studies from FY08, further investigating left-aligned versus data-aligned labels for performance differences. The experimental task will be varied, and eye tracking will be used to gather higher precision data.

Displays – Auditory displays

Three studies examined the suitability of candidate alarm sounds for four types of alarms: class 1 emergency (fire-smoke and depressurization), class 2 warning and class 3 caution. Crew participants were asked to rate the sounds on a 5-point suitability scale.

Emergency (Class 1): This is the most serious type of event. It is used in a life-threatening condition that requires immediate action in order to protect the crew.

Warning (Class 2): This is a less serious than emergency. It is used in situations where additional personnel may need to respond.

Caution (Class 3): This is a condition that requires immediate attention.

Results indicate that the most suitable alarm sound types are based on currently-used alarms.

Studies Planned for FY09
FY09 studies will build on FY08 experiments, attempting to validate previous results, compare results with speech alarms, and examine the impacts of hearing these sounds in a suit.

Speech Communication Under Vibration
This is a new area of work that will begin in FY09. The question of interest is: To what extent will the intelligibility of crewmembers’ speech communication with ground control during launch be degraded as a result of vibration? If speech communication intelligibility from crew to ground is degraded severely enough, there are important implications for developing displays for non-verbal means of communication during launch. The need is particularly severe during launch since solutions to off-nominal conditions may require descriptions of situations and acknowledgment of commands under high vibration conditions.