



## HUMAN HEALTH AND PERFORMANCE

Exploring Space | Enhancing Life

# Human Rating – Human Error Analysis

Human Error Analysis (HEA) is a systematic approach to evaluate human actions, identify potential human error, model human performance, and qualitatively characterize how human error affects a system, per The Human Rating Requirements for Spaceflight: NPR 8705.2C.

### Renowned Skills and Unique Capabilities

The goal of the Human Error Analysis (HEA) analysis is to identify where system improvements are needed to reduce the frequency/consequences of error in order to improve the overall system - identify and eliminate or control sources of human error (including flight crew and ground crew error).

HEA reduces the contribution of human error to loss-of-crew (LOC) and loss-of-mission (LOM) through the use of task analysis, hazard analysis, risk assessment, and testing and analyses to identify sources, consequences, and mitigations for human error. This includes qualitative good design practices, qualitative and quantitative outcomes of tests, quantitative findings from analyses.

NASA has used human error analysis to mitigate the contribution of human error, examples include:

- Display Formats design and test - Text positioning, units display, consistent significant digits and colors, information flow, etc. all contribute to the reduction in error probability.
- Legibility Testing – clear legible labels/



displays in different environments yield less errors.

- Digital Volt Meter (DVM) display – change to display altitude in kft, unit used during descent
- Search and Rescue (SAR) radio added to the Crew Survival Kit (CSK) – to avoid disconnection or dropping the radio during the emergency egress operation
- Potable Water Dispenser display, point of use valve – added to prevent over fill, point of use to avoid accidental leakage of water into the cabin

Johnson Space Center



For the benefit of all

For more information:  
NASA Human Health and Performance Directorate  
[www.nasa.gov/hhp/](http://www.nasa.gov/hhp/)

#### Points of Contact

Jurine Adolf

[jurine.a.adolf@nasa.gov](mailto:jurine.a.adolf@nasa.gov)

281 483-2541



William Foley

[william.a.foley@nasa.gov](mailto:william.a.foley@nasa.gov)

281.792.7512

