



NASA Procedural Requirements

COMPLIANCE IS MANDATORY

NPR 8705.2B
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 2016

[Printable Format \(PDF\)](#)

Request Notification of Change (NASA Only)

Subject: Human-Rating Requirements for Space Systems (w/change 4 dated 8/21/2012)

Responsible Office: Office of Safety and Mission Assurance

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Appendix D. Human-Rating Certification Package

The form of the HRCP is a compilation of pertinent plans and documents, plus presentation material to help guide reviewers through the package. The HRCP is not intended to duplicate/repackage existing program documentation but rather provides a summarization of information the details of which can be found in referenced documents or other data sources and as appropriate justification/explanation/augmentation for information that isn't available in other documentation). The HRCP must be maintained under configuration management (especially to referenced/linked material) to clearly track changes made between milestones.

The material provided prior to and during each milestone review will be considered draft and for review/comment. An update will be provided after all changes resulting from the review have been incorporated. The postreview HRCP will be maintained in a location and in a manner that supports review by designated Technical Authorities and JSC Center Director representatives and designated review panel members.

The final HRCP submitted for approval and granting of a Human-Rating Certification will be provided in a manner as prescribed by the Program Management Council.

HRCP Content	SRR	SDR	PDR	CDR	ORR
A description of the systems for which Human-Rating Certification will be requested.	X				
A description of each reference mission for which Human-Rating is being pursued.	X				
A link to the Safety and Mission Assurance Plan and the documented safety analysis processes.	I	U	U	U	
A description of the program's philosophy as it relates to utilization of the crew's capabilities to execute the mission, prevent aborts, and prevent catastrophic events.	X				

An explanation of how the program plans to implement the NPR 8705.2, Chapter 3, requirements or the trade studies/analysis to determine implementation; and a matrix that traces the capability described in the Chapter 3 requirements to the program requirements (highest level where the capability is implemented).	I	U	U	U	
A description of the Human-Systems Integration Team and their authority within the program.	X				
A list of standards mandated by the Technical Authorities as relevant to human-rating with a status of Technical Authorities approval.	X				
A summary of significant waivers and exceptions to the additional standards mandated by the Technical Authorities and a link to the location of the waivers and exceptions.	X				
A list of all requested waivers and exceptions of NPR 8705.2 certification (Chapter 2) and technical (Chapter 3) requirements, with justification and disposition, and access to the waivers and exceptions.	I	U	U	U	U
A summary of how safety analysis related to prevention of catastrophic events influenced the system architecture, system design, and the crew survival approach.		I	U	U	
A description of the approach to crew survival for each mission phase of each reference mission being taken by the program; the system capabilities or the trade studies/analysis to determine implementation; and a matrix that traces the capabilities to the program requirements (highest level where the capability is implemented).		I	U	U	
Probabilistic safety requirements derived from the Agency-level safety goals and thresholds, including any top-level allocations.	I	U	U	U	U

A summary of the evaluation of the effectiveness and likelihood of success of crew survival strategies.		I	U	U	U
A ranking of the safety risks to which the space system crew is subjected, and an assessment of the achievement of probabilistic safety requirements derived from the Agency-level safety goals and thresholds.		I	U	U	U
A summary of the level of failure tolerance implemented in the system to include a discussion of the use of dissimilar redundancy and backup systems/subsystems to prevent catastrophic events with special rationale for dynamic flight phases.		I	U	U	U
An explanation of how crew workload will be evaluated for the reference missions.		I	U	U	
The preliminary plan for the flight test program with the number and type of flights.		X			
A summary of the usability and human-system performance testing performed to date and the influence on the system design with links to the detailed test results.			I	U	
A summary of the human error analysis performed to date and the influence on the system design with links to the detailed analysis results.			I	U	U
An updated Flight Test Program with flight objectives linked to program development/validation needs.			I	U	
<ul style="list-style-type: none"> • A plan, with rationale, for verification and validation of the following: <ul style="list-style-type: none"> • Implementation of capabilities identified for crew survival. • Implementation of NPR 8705.2, Chapter 3 requirements. • Critical (sub)system performance. • Integrated performance of critical (sub)systems. 	I	U	U	U	U

<ul style="list-style-type: none"> • Critical software performance, security, and safety. • Implementation of the standards cited in paragraph 2.2.5. 					
The configuration control and maintenance plan for the system					X
<p>A summary of the verification and validation results for the following (with links to the detailed results):</p> <ul style="list-style-type: none"> • Implementation of capabilities identified for crew survival. • Implementation of NPR 8705.2, Chapter 3 requirements. • Critical (sub)system performance. • Integrated performance of critical (sub)system performance. • Critical software performance, security, and safety. • Integrated human-system performance. • Implementation of the standards cited in paragraph 2.2.5. 					X
A summary of the flight test results for each test objective with links to the detailed test reports.					X
A description of how the crew workload for the reference mission was validated and determined to be acceptable.					X
A summary of how the safety analysis related to loss of crew was updated based on the results of validation/verification and used to support validation/verification of the design in circumstances where testing was not accomplished.					X

X - One time item
 I - Initial release of item
 U - Update of item

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