



Lyndon B. Johnson Space Center

GSRP/PSRP Initial Contact Briefing

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NASA Ground Safety Review Panel (GSRP) and Payload Safety Review Panel (PSRP) Initial Contact Briefing



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- Payload-Specific Considerations
- Backup



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GSRP Points of Contact

(See attached for complete contact listing)

- Chairman (KSC-SA-C):
 - Mr. Paul D. Kirkpatrick, 321-867-6568, paul.kirkpatrick@nasa.gov
- Deputy Chairman (KSC-SA-C2):
 - Mr. James T. Minnear, 321-861-3690, james.t.minnear@nasa.gov
- Database Administrator:
 - Ms. Maxine Daniels, 321-867-5976, maxine.daniels-1@nasa.gov
- Lead Safety Engineers (SA-C1):
 - Bob Deliwala, 321- 867-6594, bhupendra.h.deliwala@nasa.gov
 - Ted Meade, 321-867-6569, theodore.b.meade@nasa.gov
 - Myles Moran, 321-861-5994, myles.p.moran@nasa.gov
 - Tom Tinsler - (321) 867-3644, tom.tinsler@nasa.gov



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PSRP Points of Contact

(See attached for complete contact listing)

- PSRP Chairs (JSC-OE):
 - Mr. Mike Surber, 281-483-4626, michael.r.surber@nasa.gov
 - Mr. Scott Wolf, 281-483-4096, scott.l.wolf@nasa.gov
 - Mr. Nathan Vassberg, 281-244-8389, nathan.j.vassberg@nasa.gov
- PSRP Executive Officers (JSC-NE141):
 - Mr. Richard Guidry, 281-244-5510, richard.w.guidry@nasa.gov
 - Mr. Patrick Mitchell, 281-244-6448, patrick.l.mitchell@nasa.gov
 - Mr. Dean Moreland, 281-483-5549, dean.moreland-1@nasa.gov
- Payload Safety Technical Leads (JSC-NA2450):
 - Mr. Ray Rehm, 281-335-2364, raymond.b.rehm@nasa.gov
 - Ms. Teresa Wong, 281-335-2365, teresa.k.wong@nasa.gov
- DMS System Administrator (JSC-NA2450):
 - Ms. Mindi Mudd, 281-335-2446, melinda.l.mudd@mail.nasa.gov
- Payload Safety Technical Writer Lead (JSC-NA2450):
 - Mr. Wayne Stauffer, 281-335-2402, p.w.stauffer@nasa.gov
- Payload Safety Engineers (JSC-NA2450):
 - TBD (Assigned on a payload-payload basis)



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PSRP & RELATED PERSONNEL

PAYLOAD SAFETY GROUP		PSRP & RELATED PERSONNEL				
NAME		PHONE	DISCIPLINE	M/C	FAX/PAGER	
PAYLOAD SAFETY GROUP PAC: 48151 POC: JF FAX: 284-244-8232 (9-5)		PSRP PAYLOAD SAFETY REVIEW PANEL				
NAME		PHONE	DISCIPLINE	M/C	FAX/PAGER	
MORELAND, D.W. [DEAN] - GROUP LEAD	485-5543	284-483-4626	PSRP CHAIR	OE	284-244-7983	
GUIDRY, R.W. [RICHARD]	244-5518	284-244-8393	PSRP CHAIR	OE		
WOLF, S.L. [SCOTT]	244-5518	284-483-4836	PSRP CHAIR	OE	284-244-7983	
MITCHELL, P.L. [PATRICK]	244-5448	284-483-5543	EXECUTIVE OFFICER/GROUP LEAD	HE145/0E	284-244-8232	
SCIENCE APPLICATIONS INTERNATIONAL CORP. POC PAC: 84458 FAX: 284-355-2488		GUIDRY, R.W. [RICHARD]	284-244-5518	EXECUTIVE OFFICER	HE145/0E	
NAME		MITCHELL, P.L. [PATRICK]	284-244-5448	EXECUTIVE OFFICER	HE145/0E	
NAME		CHILDRESS, J.H. [MARK]	284-483-5467	MISSION OPERATIONS	DA8	
NAME		KNUTSON, D.L. [DENNIS]	284-483-4400	MISSION OPERATIONS	DA8/USA	
NAME		HODLES, D.A. [DAMIEK]	284-355-2423	EVA OFFICE	HA2458	
NAME		SHEA, M. [MATT]	284-355-2442	EVA OFFICE	HA2458	
NAME		SPAHN, R.L. [BOB]	284-483-3887	SPACE J/LIFE SCIENCES DIRECTORATE REP.	SH	
NAME		NEWKIRK, K.	284-483-5583	ALTERNATE SPACE J/LIFE SCIENCES REP.	SP	
NAME		CHALAVINI, S. [SAM]	284-218-3111	ALTERNATE SPACE J/LIFE SCIENCES REP.	LMS0	
NAME		MOHLER, R. E.	284-218-3142	ALTERNATE SPACE J/LIFE SCIENCES REP.	LMS0	
NAME		KIRKPATRICK, P. D. [PAUL]	324-827-5558	GSRP CHAIRMAN	KSC/SA-C	
NAME		MIMMER, J. T. [JAMES]	324-864-3638	GSRP DEPUTY CHAIRMAN	KSC/SA-C1	
NAME		RICKARD, J. [JUDY]	284-483-3768	ASTRONAUT OFFICE	CP	
NAME		JOHNSON, A. E. [JIMMIE]	256-544-8852	ISS PLS. ENG. INTEGRATION	HSFC/VP	
NAME		JOHNSON, P. T. [PAUL]	256-364-6466	ISS PLS. ENG. INTEGRATION	DOE/ING/25-28	
NAME		KUNKEL, S. [STEVEN]	284-483-4556	CARGO INTEGRATION	MO2	
NAME		KOTILA, C.L. [CARL]	284-483-8578	CARGO INTEGRATION EMI	MO2	
NAME		WOOD, W. V. [WALT]	284-288-5844	CARGO INTEGRATION	USM/788D	
NAME		HIGGEE, D. [DONALD]	284-244-2353	ENGINEERING DIRECTORATE	EA441	
NAME		DEHAL, L. [LEO]	284-483-8487	ENGINEERING DIRECTORATE	EA441	
NAME		HEINING, G. [GARY]	284-483-8533	ENGINEERING DIRECTORATE	EA441	
NAME		RUMMELT, J. [JOH]	284-483-5818	ENGINEERING DIRECTORATE	EA441	
ISS GSRP MEMBERS AND LOCAL REPRESENTATIVES		ISS GSRP MEMBERS AND LOCAL REPRESENTATIVES				
NAME		PHONE	ORGANIZATION	M/C	FAX NUMBER	
NAME		CHANG, V. [VICTOR]	914-458-326-4733	CSA		
NAME		BROWN, R. G. [ROBERT]	284-244-8157	CSA LOCAL REP	OR	
NAME		SCODRA, T. [THOMAS]	814-517-155-4344	ESA	814-517-155-4192	
NAME		FESTA, F. [FABRIZIO]	814-517-155-8344	ESA		
NAME		OSAWA, M. [MASAYUKI]		JAXA	814-81-29-858-3354	
NAME		MIZUNO, H. [HIROYASU]	284-288-8222	JAXA LOCAL REP	OS	
NAME		AZEEV, M. [MIKHAIL]		RSC-E	256-364-6166	
ISS GSRP MEMBERS AND LOCAL REPRESENTATIVES		ISS GSRP MEMBERS AND LOCAL REPRESENTATIVES				
NAME		PHONE	DISCIPLINE	M/C	FAX/PAGER	
NAME		CLARK, G [GAIL]	485-8653	ELECTRICAL POWER	EP	
NAME		DARRELL, M. [MICHAEL]	485-8846	SA ACOUSTICS	SP2	
NAME		GROUNDS, P. F. [PHYLIS]	485-7473	EHE ANALYSIS		
NAME		HELLNER, T.W. [TODD]	485-1334	BATTERIES	ESCG/JACOBS	
NAME		LAWSON, S. J. [SHELBY]	244-8188	BIOSAFETY REVIEW BOARD ALTERNATE REP	WLS/SP	
NAME		MORENO, F. [FRANK]	485-1288	MATERIALS	ES4	
NAME		PATTERSON, A [ANN]	485-3367	EHE	USA	
NAME		BROWN, G. A. [TONY]	464-5435	MATERIALS	ESCG/JACOBS	
NAME		DURNS, S. [SUE]	485-4544	ROBOTICS	ER4	
NAME		BYRNE, G. J. [GREG]	485-8588	MICRO-METEOROID ENVIRON	SS	
NAME		CHLADAK, J. [JOHN]	485-4528	ROBOTICS	ERS	
NAME		CHRISTIANSEN, E.L. [ERIC]	485-5311	MICRO-METEOROID ENVIRON	SS	
NAME		COLLINS, T. [TOM]	226-6633	EHE ANALYSIS		
NAME		CROWE, M. [MARIZELA]		IENR	During	
NAME		DEKOME, KEAT	485-1455	LASERS	ERS	
NAME		DERVAY, J. P. [JOE]	485-7382	HEALTH CARE/EMERGENCIES	SD	
NAME		DIERICH, G. S. [GREG G]	244-8478	ELSS		
NAME		DIFARD, R. [ROCKY]	244-8454	JCT	OB/PAR	
NAME		DOREMUS, R. C. [BOB]	485-8288	SHUTTLE FERRY FLIGHT SAFETY	HX	
NAME		ECUSOZZA, R. M. [ROBERT]	244-7381	ELECTRICAL POWER	EPS	
NAME		ESTES, L. R. [LYNDA]	485-8345	GLASS	ES2	
NAME		FISHER, R. [RICK]	244-7637	JCT	ODE/LH	
NAME		FITTS, D. J. [DAVID]	485-6647	HUMAN FACTORS	SP	
NAME		FLAHAUT, M. [MARK]	485-6762	THERMAL	ES3	
NAME		FLORES-MAUGHLIN, J. [JOHN]	244-6524	LASERS/RADIATION	SD/AVYLE LADS	
NAME		FORT, V. A. [VINCE]	485-6331	LDS & STRCTRL DYM	ES2	
NAME		FORTH, S. C. [SCOTT]	485-2488	FRACTURE CONTROL	ES4	
NAME		GARCIA, H. [NECTOR]	244-5113	TOXICOLOGY	WGL/HEP/37A	
NAME		GARDNER, P. [PENNY]	464-5728	MATERIALS/CONTAINMENT	ESCG/JACOBS	
NAME		GILMORE, A. L. [ADAM]	485-8436	HSWG CHAIRMAN	ESS	
NAME		GRYGIER, M. [MIKE]	485-6338	LOADS/DYNAMICS	ESS	
NAME		HALL, C. [CHARIS]	464-5565	STRUCTURES/LOADS/DYNAMICS	ESCG/JACOBS	
NAME		HALL, C. S. [CHARLES]	464-5438	MATERIALS (NON-METALLIC)	ESCG/JACOBS	
NAME		PHONE	DISCIPLINE	M/C	FAX/PAGER	
NAME		BOYER, M. [MELISSA]	226-6733			
NAME		BUTLER, W. C. [CHRIS]	256-544-2835			
NAME		COROS, L. [LUCY]	226-4256			
NAME		COTTON, L. J. [LARRY]	226-4354			
NAME		CREECH, L. [LISA]	244-8567			
NAME		DOMINGO, M. [HENRY]	226-5602			
NAME		DURHAM, J. [JEFF]	226-4585			
NAME		GALL, L. [LISA]	226-4247			
NAME		GOLICK, R.K. [RICH]	226-4465			
NAME		HAAS, A. [AMY]	256-364-2281			
NAME		HOLLER, P. [PATTH]	226-4837			
NAME		HOPPER, M. [JOY]	256-364-5881			
NAME		KUPRICH, C. [CHUK]	226-4338			
NAME		LUFKIN, S. [SUSAN]	226-4462			
NAME		HILEY, R. R. [BOB]	226-4368			
NAME		HAGY, M. [MICKIE]	256-544-8851			
NAME		OSTROWSKI, T. [TOM]	244-8233			
NAME		REID, W. [VIN]	226-4883			
NAME		SANG, J. D. [JULIETTE]	226-4365			
NAME		THOMSON, S. [SHEILA]	256-364-2928			
NAME		VOSS, D. R. [DAVE]	226-6843			
NAME		WHITEHEAD, S. [SCOTT]	244-6245			



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PMIC Contact: NSFC PMIC Safety Contact: 281-483-8838 Realtime Code: 255-877-8472					
NAME	PHONE (SS)				
SAFETY:					
HOUSE, D. [DAVID]	544-4324	JAMES, J. T. [JOHN]	483-7422	TOXICOLOGY	SF
LONG, M. [MICHAEL]	544-4354	JEEVARAJAN, J. A. [JUDY]	483-4528	BATTERIES	EPS 483-6537/888-351-5219
MOORE, M. [MICHAEL]	351-1855	KOTILA, C. L. [CARR]	483-8378	SHUTTLE EHE	M02
MOORE, R. [RAYMOND]	351-1153	LAM, C.W. [CHU-WING]	483-7223	TOXICOLOGY	Wgls/HEF/37A Fax:281-483-3858/Pg:715-754-3357/C:11832-549-8237
ROBERTS, D. [DRENDA]	351-1835	LANGFORD, S. D. [SHANNON]	483-2437	TOXICOLOGY	Wgls/SF Fax: 281-483-3858, Pg: 877-385-8566
OPS LEADS:		LEE, K. [KRISTOPHER]	483-2328	FLUIDS/SYSTEM	EP
MOORE, G. [GARY]	351-1155	MACATANGAY, A. V. [ARIEL]	244-1644	ECLSS	SF
GRIFFS, D. [BETH]	351-1326	MAHA, W. D. [WILLIAM]	451-5711	P/L DAY P/PLSH/CRYOS	ESCG/JACODS FAX 281-461-5838
REYNOLDS, C. [CAROL]	351-8285	MARTINEZ, ADRIEN [MICK]	451-5428	MATERIALS/FRACTURES	ES4/Jeeba
SEIF, N. M. [NANCY]	351-1427	MALLISTER, R. W. [DILL]	483-7585	SAFETY	HE131
STEVENS, W. [WADE]	351-1886	McCOLLUM, M. [MATT]	256-544-2341	ISS EMI/LEAD	MSFC/OD
WRIGHT, W. C. [WYME]	351-1682	McDONALD, P. [PAT]	451-5583	STRUCTURES/LOADS/DYNAMICS	ESCG/JACODS
Please Click on Name for Email Address		McDOUGAL, A. [ALAN]	483-8851	MSWG CO-CHAIRMAN	
		McHAHON, J. [JIM]	483-8834	GLASS & SHATTERABLE CONCERNS	EA341
		MAGY, K. [KORNEI]	483-3518	STRUCTURES	
		NG, T. [TORY]	451-5572	SHUTTLE SWG	ESCG/JACODS 483-8476
		NGUYEN, H. [HUNG]	483-3757	STRUCTURES	ES311
		PEDLEY, MIKE	483-8313	MATERIALS [NON-METALLIC]	ES4
		PERRY, J. L. [JAY]	256-544-2738	ECLSS	MSFC/ES22
		PICCO, C. [CHARLES]	244-8332	LASERS/RADIATION	SDW/VLE LABS
		PIERSON, D. L. [DUANE]	483-7466	BIOSAFETY REVIEW BOARD CHAIRMAN	SF
		PIPKINS, D. L. [DON]	483-5346	AVIONICS	EV
		QAZI, S [SAJID]	483-8886	STRUCTURES & MECH [ISS]	ES5/Jeeba
		RAMANATHAN, R. [RAGHUPATHY]	483-8484	TOXICOLOGY	Wgls/HEF/37A Fax: 281-483-3858, Pg: 715-787-3378
		REYNOLDS, T. [TYRELL]	451-5878	EPDC	
		RHODES, P. [BRYAN]	451-5477	SHUTTLE/ISS COMM/TRACKING/RP/FREQUENCY MGMT	ESCG/JACODS
		RICE, K. [KREG]	226-6728	EMI [ISS]	DevOps/MS-28
		RICKMAN, S. [STEVE]	483-8867	THERMAL	ES
		ROBERTSON, B. R. [BRANDAN]	483-3732	MSWG CO-CHAIRMAN	ES3
		ROSS, S. B. [STUART]	451-5718	MECHANISMS	ES/ESCG/JACODS Hc: JESEP
		ROTTER, HENRY [HANK]	483-5834	THERMAL	WE
		RUSSELL, D. G. [DON]	451-5444	AVIONICS	ESCG/JACODS Pg: 281-615-8118
		RUSO, D. M. [DAVE]	483-3785	HUMAN FACTORS/SAFACUSTICS	SF
		SHWIN, C. F. [CHARLES]	483-7282	CPMS CHAIRMAN	SA
		SCULLY, R. C. [BOB]	483-1433	JSC EME	EV
		SEMOHES, E. J. [EDDIE]	244-5187	RPWG/RADIATION	SD3
		SHAH, C. [CATHY]	483-8124	SHUTTLE/ISS COMM/TRACKING/RP/FREQUENCY MGMT	EV
		SHUHATOVICH, A. [ALLA]	483-2887	FRACTURE CONTROL	ES4/ESCG JE36
		SIMON, T. [TOM]	483-7547	CRYOS	EP
		SMITH, J. [JAMES]	483-1242	STRUCTURES/JAXA	ES
		TAYLOR, D. [DEHEEN]	483-8847	STRUCTURES/ESA	ES2
		VAN DERALEN, M. [MARY]	483-3338	RADIATION	SD3
		WAGNER, HOWARD	483-3848	CRYOS	EA43
		WEYLAND, M. D. [MARK]	483-6133	RPWG	SD
		WILLIAMS, D. E. [DAVE]	483-5338	ECLSS	EC6
		WONG, W. [WILLY]	483-7461	BIOSAFETY REVIEW BOARD REP	WLS/SF

JSC PSRP PERSONNEL UPDATED 7/15/10



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Key Documents

- **NSTS/ISS 13830C**, *“Payload Safety Review and Data Submittal Requirements for Payloads Using the Space Shuttle / International Space Station”*
 - Describes the safety review process and safety data package (SDP) data requirements
 - Applicable to flight and ground safety reviews
- **KNPR 8715.3, Chapter 20**, *“KSC Safety Practices Procedural Requirements”*
 - Replaces KHB 1700.7, Space Shuttle Payload Ground Safety Handbook
- **NSTS 1700.7B**, *“Safety Policy and Requirements for Payloads Using the Space Transportation System (STS)”*
 - Top level NASA requirements imposed on all Shuttle payloads
- **NSTS 1700.7B ISS Addendum**, *“Safety Policy and Requirements for Payloads Using the International Space Station”*
 - Top level NASA requirements imposed on Space Station payloads
- **NSTS/ISS 18798B**, *“Interpretations of NSTS/ISS Payload Safety Requirements”*
 - Published collection of interpretation letters on specific payload flight safety requirements
- **JSC 26943**, *“Guidelines for the Preparation of Payload Flight Safety Data Packages and Hazard Reports for Payloads Using the Space Shuttle”*
 - Provides guidance to payload customer for preparing successful SDP’s and hazard reports (HR)



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Key Documents Cont'd

- **JSC 27472**, *“Documents for Submission of Data Needed for Toxicological Assessment of Chemicals to be flown on Manned Spacecraft”*
- **JSC 63828**, *“Biosafety Review Board Operations and Requirements Document”*
- Documents are available on the GSRP homepage, Payload Flight Safety homepage or available upon request.
 - <http://kscsma.ksc.nasa.gov/GSRP/index.htm> (**Public**)
 - <http://sma.jsc.nasa.gov/pce> (**JSC internal**)



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Key Roles

Assure that all Ground Support Equipment (i.e. all non-flight hardware) and Flight Hardware (Payloads, Experiments, Elements, GFE, Cargo, Basic Hardware, etc.) are safe in the ground and flight environments and that all Programmatic safety requirements are met.

➤ GSRP

- Covers the processing time from arrival at launch site until final departure after return.

➤ PSRP

- Covers the transport (launch and return) phases and on-orbit operations



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GSRP/PSRP Responsibilities

- Review Payload for Adequate Safety Implementation:
 - Conduct safety reviews and technical interchange meetings (TIM's)
 - Review safety data packages
 - Approve / Sign flight safety hazard reports
 - Perform technical audits of payload hardware, operation, and hazard potential
 - Resolve safety issues involving design or operations
 - Coordinate interpretations of safety requirements

- Payload Safety Engineer (PSE) Support Responsibility to GSRP/PSRP
 - Single point of contact for safety
 - Conduct technical reviews of payload safety data packages
 - Assess payloads for compliance with NASA payload safety requirements
 - Coordinate detailed technical assistance on specific safety issues
 - Conduct safety working groups



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GSRP Membership

- GSRP Chair (SA-C)
- GSRP Safety Engineer (SA-C1)
- KSC Payload Safety Operations (SA-C1)
- KSC Payload Quality Assurance (SA-C2)
- KSC Shuttle S&MA Division (SA-B)
- KSC Mission Manager (UB-R)
- KSC Shuttle Processing Directorate (PH-M2)
- KSC Center Operations Directorate (TA-C2)
- KSC ISS Utilization (UB-R1)
- KSC Engineering (NE-O-C)
- KSC ISS Operations (UB-R2)
- JSC ISS S&MA/Program Risk Office (OE)
- JSC Shuttle Payload Safety (NC)
- NASA HQ, Office of Safety & Mission Assurance
- KSC CAPPS (Boeing)
- KSC Space Flight Operations Contract (SFOC)
- USAF 45th Space Wing (SESL)



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PSRP Membership

- Chair (3) - International Space Station Safety and Mission Assurance Office (OE)
- Safety & Mission Assurance Directorate (NA)
 - S&MA ISS Division (NE)
 - ✓ Executive Officer (NE14)
 - ✓ Payload Flight Safety Engineer (NA2450)
 - ✓ Technical Writer (NE141)
- Flight Crew Operations Directorate (CB)
- Mission Operations Directorate (DO)
- Engineering Directorate (EA)
- Space Shuttle Systems Integration Office (MO)
- Space and Life Sciences Directorate (SA)
- Extravehicular Activity Project Office (NT)
- Others as needed (*Including ISS International Partners, as required*)



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Payload Organization Responsibilities

- Ensure the total safety of the payload, including the interaction between the payload elements
- Perform a comprehensive safety analysis of the payload
- Understand the safety requirements of NSTS 1700.7B and the ISS Addendum and KNPR 8715.3, Chapter 20
- Demonstrate via payload design features that requirements are properly implemented
- Understand the data submittal requirements of NSTS/ISS 13830C
 - GSRP: Submittal time – 55 days prior to first use (10 days to meet safety on-the-shelf requirement + 45 days for review)
- Develop and submit the safety data package (SDP) and hazard reports (HR)
 - May show compliance to OSHA Standard Laboratory Practices in Ground Safety Data



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Payload Organization Responsibilities Cont'd

- Participate in the safety reviews and working groups
- Present the safety analysis and hazard reports to the GSRP/PSRP
- Provide the payload Verification Tracking Log (VTL) and updates (JSC Form 764)
- Provide a Certificate of NSTS/ISS Payload Safety Compliance (JSC Form 1114A)



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Payload Flight Safety Certification

➤ Payload Organization

- Successful completion of the Phase III Ground Safety Review 30 days prior to delivery to KSC:
 - ✓ Approval of Certification for Ground Safety of Basic Hardware (KSC 20-201 Rev A)
- Successful completion of the Phase III Flight Safety Review (FSR):
 - ✓ Approval of all hazard reports (HR) (JSC Form 1230 or JSC Form 542B)
 - ✓ Closure of all action items (AI)
 - ✓ Approval of Non-Compliance Reports (NCR) (if necessary)
 - ✓ Approval of Fire Prevention, Detection and Suppression (JSC Form 1428)
- Submit Certificate of NSTS/ISS Payload Safety Compliance (JSC Form 1114A and/or JF-906)
- Submit payload flight safety verification tracking log (VTL) (JSC Form 764)
 - ✓ Track completion of all open safety verifications identified at the Phase III FSR

➤ PSRP

- Tracks the safety status of all payloads by flight
- Provides Certificate of Flight Readiness (CoFR) statement to STS/ISS Programs



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Post Phase III Review / Delivery to KSC Activities

- Closeout of safety VTL
 - Log should be completed no later than 4 pm on last business day prior to launch
 - ✓ If not possible special reporting procedures must be followed
 - Report to PSRP all anomalous verification results or failures
- Maintain configuration control
 - Changes to design or operations that impact ground/flight safety
 - ✓ Must be submitted to GSRP/PSRP
 - ✓ Will require a Delta Phase III FSR
- Submit certificate of NSTS/ISS payload safety compliance (JSC Form 1114A/JF-906)
 - Signed by program, payload or mission manager
 - Ground certificate
 - ✓ 30 Days prior to the start of ground processing
 - Flight certificate
 - ✓ 10 Days prior to FRR or SORR (whichever comes first)
- The Phase III FSR process (HR's, AI's, NCR's) must be completed 30 days prior to the delivery of the payload to KSC
 - Applies to series/reflight payloads also



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DMS Background and System Access

- The payload flight safety data management process system is a web-based electronic system
- NASA JSC S&MA has developed an in-house supported Web-based system for electronic receipt, distribution, and management of payload safety data packages
- The DMS can be accessed through the Payload Flight Safety home page: <http://sma.jsc.nasa.gov/pce/> or directly accessed through: <https://psrp.jsc.nasa.gov/default.asp>
- Access is encrypted; User ID and password are required
- DMS requires use of a proxy account for users without access inside the JSC firewall
- Active payloads will be maintained on the server
- Inactive payloads will be archived, but still remain available via the Query function
- GSRP website can be accessed at: <http://kscsma.ksc.nasa.gov/GSRP/index.htm>



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DMS User Roles

- System Administrator - provides user access, assigns payload attributes, receives SDP's and moves them to the active file area, designates assigned PSE's, archives documents, queries, reports
 - *DMS System Administrator: Melinda (Mindi) Mudd*
 - Phone: 281-335-2446
 - E-Mail: melinda.l.mudd@mail.nasa.gov
 - Fax: 281-335-2486
- Payload Organization (PO) - uploads SDP's, performs queries & reports, identifies any export control sensitivity and proprietary information (in accordance with NSTS 13830, Section 4.3.1.1) issues
- Payload Safety Engineer (PSE) - modifies payload attributes, sets distribution, manages review process (comments, attachments, action items, meetings), performs queries & reports
- GSRP/PSRP Support Personnel - review SDP's and provide comments to PSE, perform queries & reports



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GSRP Hazardous Materials

- Identification of all material being used is required.
- Submission of Material Safety Data Sheets is required
- Approval by JSC Toxicology is NOT sufficient for ground processing
- Submission of proprietary data is not required but must be immediately available on site



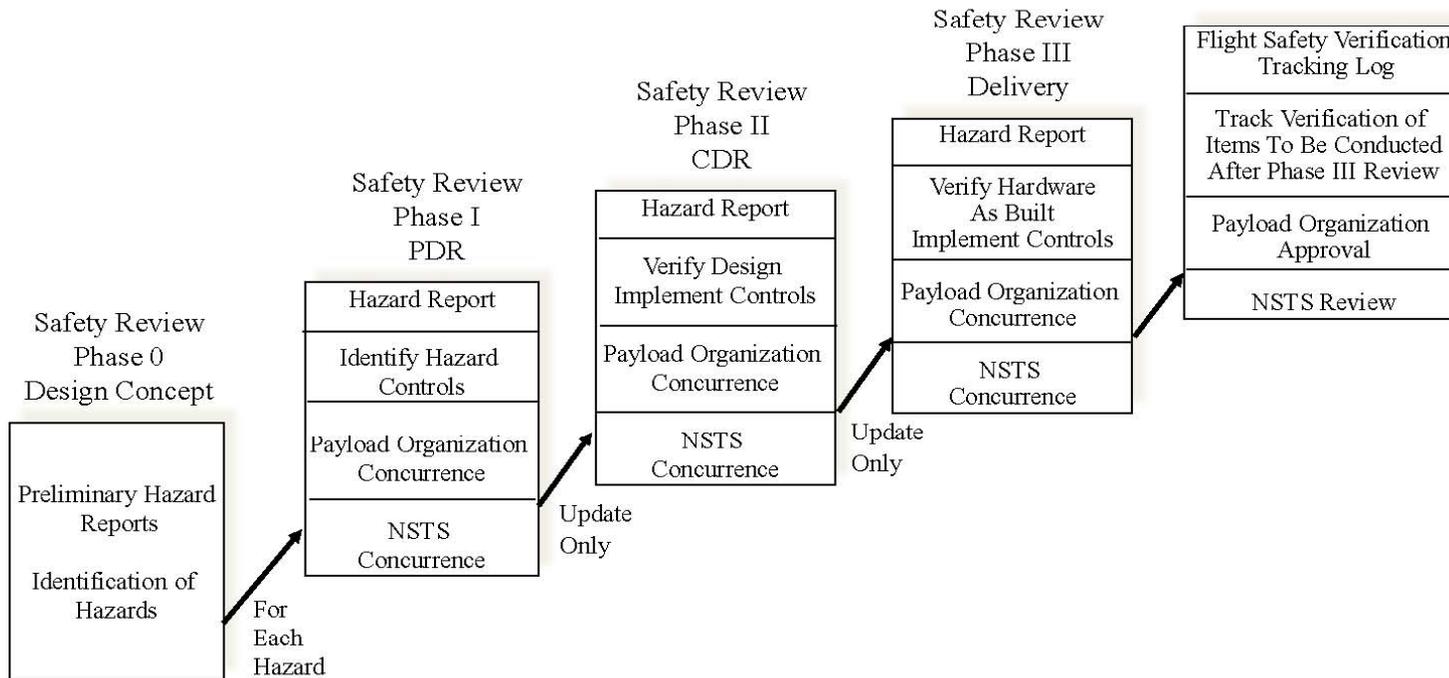
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Payload Safety Review Process





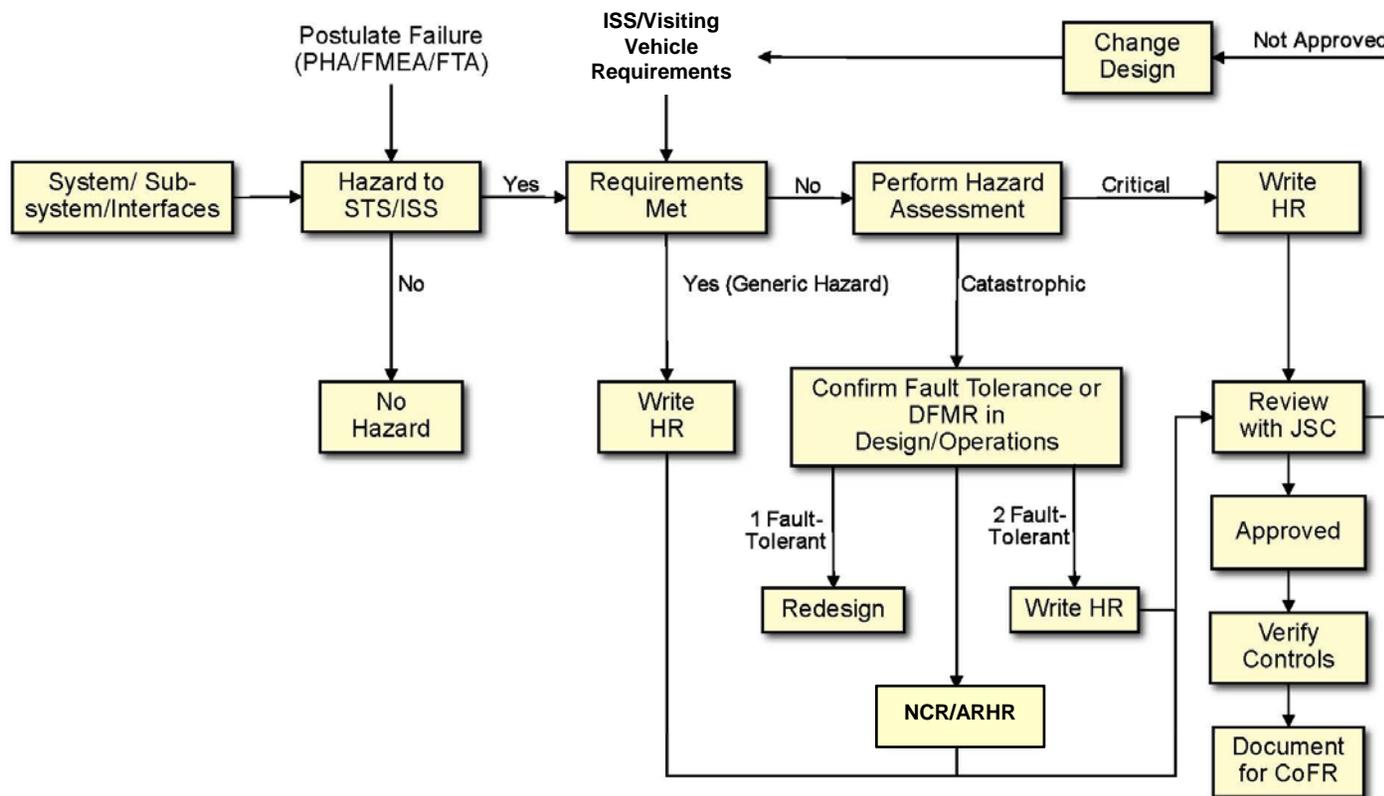
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Hazard Identification Process





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How do we treat unapproved hardware??





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Backup Material



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Classification of Payloads

- Outlined in NSTS/ISS 13830C
- Basic (Category 1 & 1230) payloads
 - All identified hazards/controls are “standard” as specified on form JF-907 “Multilateral Category 1 Constraints” and Form 1230 “Flight Payload Standardized Hazard Control Report”
 - No unique hazards / hazard reports (HR)
- Intermediate payloads
 - In addition to the Form 1230 standard hazards, the payload has unique hazards and requires unique HR's
 - Unique hazards have proven and/or passive controls and standard verification methods



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Classification of Payloads (cont.)

➤ Complex payloads

- In addition to the Form 1230 standard hazards and unique passively controlled hazards, the payload also has unique hazards with active controls/must work functions, operational hazard controls; or passive hazards with non-standard control and verification methods
- Three or more formal safety reviews with the PSRP
 - ✓ Typically face-to-face reviews, but telecons may be held after the first review if appropriate
 - ✓ Splinter and/or Working Group meetings with technical support may be required before and during reviews to discuss major issues

➤ Series / Reflight payloads

- “Reflight hardware” are payloads or elements of payloads that have previously flown and are manifested for reflight
- “Series hardware” are payloads or elements of payloads which are of the same or similar design to previously flown hardware



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Hazard Reports

- **Hazard** - a potential risk situation caused by an unsafe act or condition
 - Identified by Phase 0 - conceptual design phase
- **Causes** - itemize identified causes (environment, personnel error, component failure, procedural deficiency, subsystem malfunction, etc.)
 - Identified by Phase 0 - conceptual design phase
- **Controls** - design features, safety devices, procedures, etc., that reduce, prevent or eliminate hazard
 - Identified by Phase I - preliminary design review (PDR)
- **Verifications** - methods used to assure effectiveness of the hazard controls
 - Identified by Phase II - critical design review (CDR)
- **Status** - identifies results of completed tests, analysis, inspections and references reports by number and date. Any open verifications are transferred to a verification tracking log (VTL)
 - Identified by Phase III - delivery



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Hazard Reports (cont.)

- Standard hazards documented on JSC Form 1230
- Unique hazards documented on JSC Form 542B
- Fire Detection and Suppression on JSC Form 1428
- Safety Verification Tracking Log (SVTL) on JSC Form 764
- All forms are available on the Payload Flight Safety homepage
 - <http://wwwsrqa.jsc.nasa.gov/pce/> **(JSC internal)**



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HR Development - JSC Form 1230*

HR form addressing 16 hazards with standard controls (use current Rev)

- Sections for description of hazard and hazard controls should not be modified
- Verifications should demonstrate compliance with safety requirements
 - Indicate specific tests, analyses, or inspections
 - If standard controls are not applicable, a unique hazard report is necessary
 - Attach data to JSC Form 1230 to support verifications

Structural Failure (1)

- Only applicable for stowage hardware

Structural Failure of Sealed Containers (2)

- Include reference to all the sealed containers

Structural Failure of Vented Components (3)

- Include reference to all the vented containers

Sharp edges, Corners, and/or Protrusions (4)

- Include as an attachment a list of all sharp edges

* JF-1230 template currently in revision



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Shatterable Materials Release (5)

- Include a note listing all shatterable materials

Flammable Materials (6)

- Requires a unique HR if testing is done

Materials Offgassing (7)

- Requires a unique HR if PO does analysis

Nonionizing Radiation (8)

- Non-transmitters - Requires unique HR if the payload does not meet the ICD
- Lasers - Include ANSI specification: power level, class, max voltage

Batteries (9)

- List all battery types, capacity, configuration, and manufacturer's specifications
- Note cell type: some cells require unique HR

Touch Temperature (10)

- Include detail on how the payload meets letter MA2-95-048



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Electrical Power Distribution (11)

- Provide schematics that include wire size and fusing
- Include bonding and grounding diagrams

Ignition of Flammable Atmospheres in the Shuttle Payload Bay (12)

- Control ignition sources per letter NS2/81-MO82

Rotating Equipment (13)

- Reference all rotating equipment, list diameters, rpm, energy, and materials

Mating/Demating of Powered Connectors (14)

- Show how letter MA2-99-170 is being met

Contingency Return and Rapid safing (15)

- Develop rapid safing assessment and reference in verifications



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Payload Flight Safety Technical Requirements Overview

➤ Design for failure tolerance

- Catastrophic hazards

- ✓ No combination of two failures or operator errors shall result in potential for disabling or fatal injury, or loss of vehicle, ground facilities, or STS/ISS equipment (2 Fault Tolerant)
- ✓ Functions must be controlled by three independent inhibits whenever the hazard potential exists
- ✓ If inhibits can be removed via telemetry, one inhibit must preclude operation by non-RF command or be encrypted
- ✓ One electrical inhibit must be in return leg of circuit
- ✓ At least two of three inhibits must have status monitored
 - ❖ Monitoring not required if function power is deenergized and control circuits are disabled
 - ❖ If loss of function is a hazard, no two failures shall cause loss of that function

- Critical hazards

- ✓ No single failure or operator error shall result in vehicle damage, personnel injury, or use of contingency or emergency procedures (1 Fault Tolerant)
- ✓ Functions must be controlled by two independent inhibits whenever hazard potential exists
- ✓ Monitoring of inhibits may be imposed on a case by case basis



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Technical Requirements (cont.)

➤ Design For Minimum Risk (DFMR)

- Payload hazards which are controlled by compliance to specific NSTS 1700.7B requirements other than fault tolerance
- Applicable systems
 - ✓ Structures
 - ✓ Pressure vessels
 - ✓ Lines and fittings
 - ✓ Pyrotechnic devices
 - ✓ Mechanisms
 - ✓ Materials
 - ❖ Flammability
 - ❖ Toxicity/Biological Safety
- Special verification data defined in NSTS 13830C
 - ✓ Design and test specifications
 - ✓ Flammability assessments
 - ✓ Fracture control plans
 - ✓ Structural verification plans
 - ✓ Stress analyses



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Technical Requirements (cont.)

➤ Hazard Reduction Sequence

- The order of precedence for reducing hazards is listed below:

1) Design for Minimum Hazard

- ❖ Ensure safety through design features and materials selection
- ❖ If possible, design out the hazard

2) Safety Devices

- ❖ Control hazards by using automatic safety devices in the system
- ❖ Examples: thermal cut-off switches, circuit breakers

3) Warning Devices

- ❖ Detect hazardous condition and generate warning signal
- ❖ Develop plan for emergency control / corrective action
- ❖ Examples: caution and warning alarm, temperature strips

4) Special Procedures

- ❖ Develop special procedures to counter hazardous conditions



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Technical Requirements (cont.)

- **Environmental compatibility**
 - Safety for all worst case natural and induced environments
 - Environments defined in payload integration plan and interface control documents
- **Orbiter / ISS services**
 - Must be safe without services
 - Must maintain failure tolerance
 - Monitoring continued after loss if feasible
- **Critical services used for failure tolerance**
 - Identify in ICD / IRD
 - Identify in hazard reports
 - Summarize use in payload safety data package
 - Post-mate test requirements and procedures for verification
 - On-orbit verifications for systems that cannot be tested on the ground



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Technical Requirements (cont.)

➤ Control of hazardous functions

- General

- ✓ Inadvertent operation or loss of function
- ✓ Examples of hazardous function
 - ❖ Appendage deployments
 - ❖ Thermal control systems
 - ❖ Valve openings
 - ❖ Laser operations

- Inhibits

- ✓ Physical interruption between energy source and function
- ✓ Independent - no single credible failure, event, or environment can eliminate more than one inhibit

- Controls

- ✓ Device or function that operates an inhibit
- ✓ Are not considered inhibits for failure tolerance requirements
 - ❖ Controls for valves in liquid propulsion systems are exceptions



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Technical Requirements (cont.)

- Monitors
 - ✓ Used to determine safety status
 - ✓ Directly related to monitored device
 - ✓ Loss of input or failure causes status change
 - ✓ Available during ground processing as necessary
- Real-time monitoring
 - ✓ Required when changing configuration of inhibits
 - ✓ When crew action would be required
 - ✓ Monitoring link and communication link must be continuous if not monitored directly by flight crew
- Near real-time monitoring
 - ✓ Available on a periodic basis (normally once per orbit)
 - ✓ Available on-board or from telemetry to ground
 - ✓ Cannot use local visual indicators during crew sleep



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Technical Requirements (cont.)

- Functions resulting in critical hazards
 - Inadvertent operation or loss of function
 - ✓ Two independent inhibits required
 - ✓ Monitoring of inhibits generally not required
- Functions resulting in catastrophic hazards
 - Inadvertent operation or loss of function
 - ✓ Three independent inhibits required
 - ✓ One non-RF controlled inhibit or encrypted rf link
 - ✓ One inhibit in ground circuit of function
 - ✓ Two of three inhibits must be monitored



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Technical Requirements (cont.)

- Specific requirements defined for
 - Inadvertent deployment, separation, or jettison
 - Planned deployment/extension functions
 - RF radiation from transmitter systems
 - Fire protection
 - Electrical connectors
- Rapid safing
 - Must be considered per 18798B letter MA2-96-190, "Contingency Return and Rapid Safing"
 - Payload design must not impede emergency IVA egress to remaining contiguous pressurized volumes or block hatch closure
 - Crew must be able to egress experiment apparatus in 30 seconds
 - Crew must be able to egress ISS module within 3 minutes of declared emergency



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Technical Requirements (cont.)

- Additional technical requirements
 - Structural design
 - ✓ Factor of safety greater than 1.4 (1.5 For ISS on-orbit loads)
 - ✓ Fracture control imposed for catastrophic hazard
 - ✓ Stress corrosion
 - Pressure systems
 - Materials
 - ✓ Flammability
 - ✓ Offgassing
 - ✓ Fluid compatibility
 - ✓ Toxicity/Biological safety
 - Pyrotechnics
 - Electrical systems (including batteries)
 - EVA
 - Payload commanding
 - Fire prevention, detection, and suppression