

National Aeronautics and Space Administration  
Headquarters  
Washington, DC 20546-0001



May 23, 2012

Reply to Attn of:

Safety and Assurance Requirements Division

TO: Associate Administrator for Human Exploration Operations  
Mission Directorate

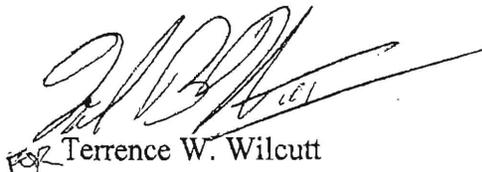
FROM: Chief, Safety and Mission Assurance

SUBJECT: Establishment of Ground Systems Development and Operations (GSDO)  
Safety and Mission Assurance (SMA) Requirements

During the past year, a team from the Kennedy Space Center (KSC) GSDO SMA organization and my office convened to identify the NASA-level SMA requirements which are applicable to overall GSDO activities. Requirement applicability was determined at the document, chapter, and requirement levels. The complete results of this effort are enclosed.

By this memorandum, per NPR 8715.3, paragraph 1.13, I am specifying that the SMA requirements listed in the enclosure are applicable to GSDO. Any SMA Technical Authority NPD, NPR, and NASA-STD requirements that are not specified as applicable in the enclosure are hereby determined to be not applicable, and further requirement relief requests are not required. However, when any of the documents listed in the enclosure are modified, the changes will have to be examined to determine applicability to GSDO. This activity will be especially important prior to issuing Requests for Proposals or contractual agreements. Additionally, this memorandum does not preclude the KSC Center Director from imposing additional requirements.

Thank you for your support in tracing NASA-level SMA requirements to GSDO. Please express my thanks to the KSC SMA organization for their superior work. This effort is already serving as a guide for helping other emerging NASA programs to quickly ascertain which SMA requirements are applicable to their program. Dr. John W. Lyver, IV, of my staff is coordinating the Office of Safety and Mission Assurance support for this effort. He can be reached at (202) 358-1155 or by e-mail at [JLyver@NASA.GOV](mailto:JLyver@NASA.GOV). An electronic copy of all of our analyses will be provided separately.



TER Terrence W. Wilcutt

Enclosure

cc:

Associate Administrator/Mr. Lightfoot

Chief Engineer/Dr. Ryschkewitsch

Chief Health and Medical Officer/Dr. Williams

Office of Safety and Mission Assurance/Dr. Stamatelatos

Dr. Lyver

bcc:

Office of Safety and Mission Assurance/Mr. Whitmeyer  
Ms. Healey

KSC/Mr. Cabana

Mr. Romanella

Mr. Phillips

Mr. Branard

Mr. Gibson

NSC/Mr. Phillips

**Table of Documents Applicable to GSDO**

	<b>Document</b>	<b>Rev, Change #, Date</b>	<b>Document Title</b>	<b>Applicable?</b>	<b>Rationale &amp; Notes</b>
1	<u>NPD 8700.1</u>	E 10/28/08	NASA Policy for Safety and Mission Success	Yes Applicable per the note	Only paragraphs 5.f, 5.g, 5.j, & 5.k apply.
2	<u>NPD 8710.5</u>	D 3/12/08	Policy for Pressure Vessels and Pressurized Systems	Yes Applicable per the note	Only Chapter 1 and paragraphs 5.b, 5.c.5, 5.d, 5.e.11, 5.f, & 5.g apply.
3	<u>NPD 8720.1</u>	C 4/18/08	NASA Reliability and Maintainability (R&M) Program Policy	Yes Applicable per the note	Only paragraphs 5.c thru 5.e apply.
4	<u>NPD 8730.1</u>	C 6/27/11	Metrology and Calibration	Yes Applicable per the note	Only paragraphs 1.a thru 1.d apply.
5	<u>NPD 8730.2</u>	C 11/3/08	NASA Parts Policy	Yes Applicable per the note	Only Chapter 1, paragraphs 5.c, 5.e, & 5.f, and Attachment A apply.
6	<u>NPD 8730.5</u>	B 10/25/05 w/ Chg 1 revalidated 6/29/11	NASA Quality Assurance Program Policy	Yes Applicable per the note	Only paragraphs 1.b, 5.d, 5.e.1, 5.e.2, & Attachment A apply. <i>(Note: See lines 7 and 38 for NID modifications to NPD 8730.5)</i>
7	<u>NASA Interim Directive (NID 8730-98) to NPD 8730.5B</u>	Initial 10/17/11	Changes to NPD 8730.5B	Yes	This NASA Interim Directive fully applies to the GSDO. <i>(Note: See line 38 for further applicability of NID modification)</i>
8	<u>NPR 8000.4</u>	A 12/16/08	Agency Risk Management Procedural Requirements	Yes Applicable per the note	Only Chapter 3 and paragraph 2.2.b apply.
9	<u>NPR 8621.1</u>	B 5/23/06 w/ Chg 6 10/24/11	NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping	Yes Applicable per the note	Use of this document is as a part of the KSC Center Mishap Program.  Paragraphs 1.4.8, 1.4.9, 1.4.26, 1.4.27, 1.5.1, 1.6.1, 1.6.2, 2.2, 2.3.1, 2.3.2, 2.3.4, & 2.4.1 are directly applicable to GSDO.
10	<u>NPR 8705.2</u>	B 5/6/08 w/ Chg 3 11/10/11	Human-Rating Requirements for Space Systems	Yes	This document is applicable to GSDO to the extent determined by the Cross Program Human Rating Team.

	Document	Rev, Change #, Date	Document Title	Applicable?	Rationale & Notes
11	<u>NPR 8705.4</u>	Initial 6/14/04 w/ Chg 1 7/9/08 revalidate 7/8/08	Risk Classification for NASA Payloads	No	NPR 8705.4 has no direct requirements that are applicable to GSDO.
12	<u>NPR 8705.5</u>	A 6/7/10	Technical Probabilistic Risk Assessment (PRA) Procedures for Safety and Mission Success for NASA Programs and Projects	Yes  Meets intent per the note	NPR 8705.5 is directly applicable for GSDO Projects which exceed \$250M. When applicable all paragraphs apply except for 2.2.1.b.ii and 2.2.1.c.ii.
13	<u>NPR 8705.6</u>	B 5/24/11	Safety and Mission Assurance (SMA) Audits, Reviews, and Assessments	Yes  Applicable per the note	Use of this document is as a part of the KSC SMA audits process.  Paragraphs 2.2.7 and 3.2.6 are directly applicable to the GSDO.
14	<u>NPR 8715.1</u>	A 3/5/12	NASA Occupational Safety and Health Programs	No	Use of this document is part of the KSC worker protection program. There are no requirements directly applicable to GSDO.
15	<u>NPR 8715.3</u>	C 4/17/09 w/ Chg 7 2/25/11	NASA General Safety Program Requirements	Yes  Applicable per the note	Use of this document is as a part of the KSC SMA Program.  <i>See the addendum spreadsheet for specific requirements which are directly applicable to GSDO.</i>
16	<u>NPR 8715.5</u>	A 9/17/10	Range Flight Safety Program	No	Use of this document is as a part of the KSC Range Safety Program. There are no requirements directly applicable to GSDO.
17	<u>NPR 8715.6</u>	A 5/14/09 w/ Chg 1 5/14/09	NASA Procedural Requirements for Limiting Orbital Debris	No	NPR 8715.6 is not applicable to GSDO.
18	<u>NPR 8715.7</u>	Initial 5/30/08	Expendable Launch Vehicle (ELV) Payload Safety Program	No	Use of this document is as a part of KSC Range Safety Program. There are no requirements directly applicable to GSDO.
19	<u>NPR 8735.1</u>	B 12/28/07	Procedures For Exchanging Parts, Materials, and Safety Problem Data Utilizing the Government-Industry Data Exchange Program and NASA Advisories	No	Use of this document is as a part of the KSC GIDEP Program. There are no requirements directly applicable to GSDO.
20	<u>NPR 8735.2</u>	A 8/2/06 w/ Chg 1 8/9/10	Management of Government Quality Assurance Functions for NASA Contracts	Yes  Applicable per the note	Use of this document is as a part of KSC SMA quality program.  Only paragraph 1.2.4.a is directly applicable to the GSDO.

	Document	Rev, Change #, Date	Document Title	Applicable?	Rationale & Notes
21	<u>NASA-STD 2202-93</u>	Initial 4/93	Software Formal Inspections Standard	No	NASA-STD 2202-93 is not applicable to GSDO.
22	<u>NASA-STD 8709.20</u>	Initial 8/6/10	Management of Safety and Mission Assurance Technical Authority (SMA TA) Requirements	No	Use of this document is as a part of the KSC SMA program. There are no requirements directly applicable to GSDO.
23	<u>NASA-STD 8709.22</u>	Initial 8/6/10 w/ Chg 1 1/7/11	Safety & Mission Assurance Acronyms, Abbreviations, & Definitions	No	Use of this document is as a part of the KSC SMA program. There are no requirements directly applicable to GSDO.
24	<u>NASA-STD 8719.7</u>	Initial 1/30/98	Facility System Safety Guidebook	No	Use of this document is as a part of the KSC SMA program. There are no requirements directly applicable to GSDO.
25	<u>NASA-STD 8719.9</u>	Initial w/ Chg 1 5/9/02	Standard for Lifting Devices and Equipment	No	Use of this document is as a part of the KSC SMA program. There are no requirements directly applicable to GSDO.
26	<u>NASA-STD 8719.10</u>	Initial 11/16/06	Standard for Underwater Facility and Non-Open Water Operations	No	Use of this document is as a part of the KSC SMA program. There are no requirements directly applicable to GSDO.
27	<u>NASA-STD 8719.11</u>	A 11/19/08	Safety Standard for Fire Protection	No	Use of this document is as a part of the KSC SMA program. There are no requirements directly applicable to GSDO.
28	<u>NASA-STD 8719.12</u>	Initial 8/93 w/ Chg 2 12/12/11	Safety Standard for Explosives, Propellants, and Pyrotechnics	No	Use of this document is as a part of the KSC SMA program. There are no requirements directly applicable to GSDO.
29	<u>NASA-STD 8719.13</u>	B w/ Chg 1 7/8/04	Software Safety Standard	Yes Applicable per the note	Use of this document is as a part of the KSC software engineering/quality process. Only paragraph 4.1.1.2 is directly applicable to GSDO.
30	<u>NASA-STD 8719.14</u>	A 12/8/11	Process for Limiting Orbital Debris	No	NASA-STD 8719.14 is not applicable to GSDO.
31	<u>NASA-STD 8719.17</u>	A 11/6/09	NASA Requirements for Ground-Based Pressure Vessels and Pressurized Systems (PV/S)	No	Use of this document is as a part of the KSC SMA facility program. There are no requirements directly applicable to GSDO.
32	<u>NASA-STD 8719.24 with Annex</u>	Initial 8/26/11 w/ Chg 1 10/28/11	NASA Expendable Launch Vehicle (ELV) Payload Safety Requirements	No	Use of this document is as a part of the KSC Range Safety Program. There are no requirements directly applicable to GSDO.
33	<u>NASA-STD 8729.1</u>	Initial 12/1/98	Planning, Developing and Managing an Effective Reliability and Maintainability (R&M) Program	Yes	NASA-STD 8729.1 is fully applicable to GSDO.

	Document	Rev, Change #, Date	Document Title	Applicable?	Rationale & Notes
34	<u>NASA-STD 8739.1</u>	A 3/4/08 w/ Chg 2 3/29/11	Workmanship Standard for Polymeric Application on Electronic Assemblies	No	Use of this document is as a part of the KSC quality workmanship program. There are no requirements directly applicable to GSDO.
35	<u>NASA-STD 8739.4</u>	Initial 2/9/98 w/ Chg 6 3/29/11	Crimping, Interconnecting Cables, Harnesses, and Wiring	No	Use of this document is as a part of the KSC quality workmanship program. There are no requirements directly applicable to GSDO.
36	<u>NASA-STD 8739.5</u>	Initial 2/9/98 w/ Chg 2 3/29/11	Fiber Optic Terminations, Cable Assemblies, and Installation	No	Use of this document is as a part of the KSC quality workmanship program. There are no requirements directly applicable to GSDO.
37	<u>NASA-STD 8739.8</u>	Initial w/ Chg 1 5/5/05	Software Assurance Standard	Yes  Applicable per the note	Use of this document is as a part of the KSC software engineering/quality process.  Only paragraph 5.1 is directly applicable to GSDO.
38	<u>IPC J-STD-001E &amp; IPC J-STD-001ES</u>	Initial 12/1/10	Requirements for Soldered Electrical and Electronic Assemblies	No	Use of this document is as a part of the KSC quality workmanship program. There are no requirements directly applicable to GSDO. <i>(Note: Documents added to NPD 8730.5 per line 7 above.)</i>

### Addendum to the GSDO Traceability of SMA Requirements

NPR 8715.3 Paragraph	Requirement ID	Applicable?
1.2.1.a-1.2.1.i	45566 - 45574	Yes
1.2.1.j	45576	No
1.2.1.k	45577	Yes
1.2.1.L, 1.3, 1.4, & 1.5.2	45578 - 45640, 45642 - 45651, & 59173 - 59177	No
1.5.2.a - 1.5.2.d	45652 - 45655 & 45641	Yes
1.5.2.e - 1.5.2.f	45656 - 45657	No
1.5.2.f.1 - 1.5.2.f.5	45658 - 45662	Yes
1.5.2.f.6	45663	No
1.5.2.f.7 - 1.5.3	45664 - 45668	Yes
1.6.1.1 - 1.6.2.1.c	45672 - 45678	No
1.6.2.1.d	45680	Yes
1.6.2.1.e	45681	No
1.6.2.1.f - 1.7.2.2.a	45682 - 45713	Yes
1.7.2.2.b	45714	No
1.7.2.2.c - 1.7.3.1.c	45718 - 45720 & 57236	Yes
1.7.3.1.d	45721	No
1.7.4	45723	Yes
1.8 - 1.12.3	45728 - 45778	No
1.12.4	45779	Yes
1.14.3.a - End of Chapter 1	59196 - 59211 & 59273 - 59293	No
2.2.1	45818	Yes
2.2.2	45819	No
2.5.1.1	45892 - 45895	Yes
2.5.1.2	45897 - 45899	No
2.5.1.3 - End of Chapter 2	45901 - 45976	Yes
3.1 - 3.4	45981 - 46028	No
3.5.1	46031	Yes
3.6.1	46035 - 46043	No
3.6.2.a	46045	Yes
3.6.2.b - 3.7	46046 - 46066	No
3.8.2	46070 - 46080	Yes
3.8.3 - 3.14	46081 - 46152	No
3.14.2	46195	Yes
3.14.3.1	46197	No
3.14.3.2 - 3.14.6	46198 - 46214	Yes
3.14.7.1 - 3.14.7.2	46254 - 46226	No
3.15.3	46230	Yes
3.15.4 - 3.17.4	46232 - 46279	No
3.17.5	46280	Yes
3.18.1 - End of Chapter 3	60203 - 60228	No
Chapter 4	46285 - 46314	No
Chapter 5	46322 - 46378	No
Chapter 6	46383 - 46523	No
Chapter 7	46528 - 46613	No
Chapter 8	46625 - 46662	No
9.2	46666 - 46667	No
9.3.1.a	46670	Yes
9.3.1.b - End of Chapter 9	46671 - 46716	No
Chapter 10	46727 - 46765 & 60271	No
Chapter 11	57254 - 57279	No