

MIL-M-38310B (USAF)
AMENDMENT ?
15 January 1976
SUPERSEDING
AMENDMENT 1
15 June 1974

MILITARY SPECIFICATION
MASS PROPERTIES CONTROL REQUIREMENTS FOR
MISSILE AND SPACE VEHICLES

This amendment forms a part of Military Specification MIL-M-38310B (USAF), 1 July 1971.

PAGE 1

Delete "FSC 1830" and substitute "FSC 1810".

1.1, delete and substitute:

"1.1 General. This document provides a means to establish a system for the management of mass properties during the conceptual, validation, (full scale) development, production, and deployment for surface-to-surface ballistic vehicles, space launch vehicles, spacecraft, satellites and reentry vehicles, or portions thereof. It is designed to facilitate rapid establishment and reporting of data for the weight/performance relationship critical to validation and full-scale development; to permit the acquisition of systematized, traceable, verifiable, and controllable mass properties of these systems and subsystems during the production and deployment phases for use in operational integrated system targeting and planning or R&D and to enable parametric extrapolation from the reported systems to newly evolving systems."

1.2, line 4: Add "(See Tailoring Guide - Table 3)".

3.1.2, line 6: Insert, "performance" following "design".

PAGE 2

3.1.3, line 1: Delete "life cycle".

★ Following 3.1.3, add new paragraphs:

"3.1.4 Specified Mass Properties Base. The specified mass properties base shall be as approved by the procuring activity."

"3.1.5 Weight Growth Allowances. The contractor shall develop and substantiate appropriate weight growth allowances consistent with prior experience."

3.2.2.6: Delete.

PAGE 3

★ 3.2.2.7, delete and substitute:

"3.2.2.7 Weight Growth Allowance Depletion. The contractor shall develop a planned approach for the control and reporting of the depletion of weight growth allowances over the time period from contract authority to proceed to contract completion."

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★ Following 3.2.3.11, add new paragraph:

"3.2.3.12 Reference Base. The system mass properties base at the initiation of the contract shall be defined for reference purposes only. This base has no control implications."

★ 3.2.4.1, delete and substitute:

"3.2.4.1 Control Parameters. The time projected weight shall be used as weight control parameter; all other mass properties shall utilize the specified mass properties base for control and reporting."

★ 3.2.4.1.1: Delete.

★ 3.2.4.1.2: Delete.

★ 3.2.4.1.3: Delete.

PAGE 5

★ 3.2.4.2.5, line 2: Delete "contractual".

3.3.2, line 1: Delete "Contract End Item" and substitute "Configuration Item".

PAGE 6

3.4, delete and substitute:

"3.4 Documentation. Data that are submitted in accordance with the Contract Data Requirements List (CDRL) shall conform to the requirements of this document, unless otherwise specified by the procuring activity."

3.4.1, delete and substitute:

"3.4.1 Types of Reports Required. The required reports are described by the following general types. Their specific composition is set forth in the CDRL and may vary according to the phase of procurement. Tables 1 and 3 may be used as guides in establishing the reports, contents and schedules. The report elements shall be as described in paragraph 3.4.3 unless otherwise specified by the procuring activity."

PAGE 7

3.4.1.2, line 5: Delete "Development" and substitute "Full Scale Development".

3.4.2.1.3: Delete first sentence and substitute "Unless otherwise specified or approved by the procuring activity, the definitions in paragraph 6.3 and the functional code in Appendix B will be used to provide a uniform basis for mass properties comparisons and to facilitate preparation of mass properties summaries." Second sentence: Delete "stage" and substitute "step".

★ 3.4.3.3.1(b) (2): Delete "nominal".

★ 3.4.3.3.1(b) (3): Delete "nominal".

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★ 3.4.3.3.1(d), delete and substitute:

"3.4.3.3.1(d) Graphs presenting the current weight with respect to the time projected weight and the specified weight as typified in Figure 3."

PAGE 10

3.4.3.5(i), line 2: Delete "layout analysis,".

PAGE 11

★ 3.7.3.7.2: Delete "3.7.3.7.2" and substitute "3.4.3.7.2".

PAGE 12

3.4.3.7.3, line 4: Add "when available." after "reliability and effectivity."

PAGE 13

★ 3.4.3.13, line 2:

Delete", including contingency and growth," and substitute "and weight growth allowance".

PAGE 14

3.4.3.14, line 2: Delete "stage" and substitute "step".

PAGE 15

3.4.3.19(c): Delete "Accuracy or".

★ 3.4.3.19(d): Delete "Existing tolerance on the current value." and substitute "The difference between the limiting mass property value (b) with it's most adversely (plus or minus) uncertainty from (c)."

PAGE 16

★ 3.4.3.21(b), line 3: Delete "and contingency".

PAGE 17

3.4.3.25(d), line 2: Delete "weapon".

PAGE 18

3.4.3.27: Delete.

3.4.3.28, line 2: Delete "specific".

PAGE 19

★ 3.4.3.30, line 1: Delete "Growth Allowance Depletion." and substitute "Weight Growth Allowance Depletion."

3.4.4: Delete.

3.4.4.1: Delete.

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3.4.4.2: Delete.

3.4.4.3: Delete.

PAGE 20

6.1, line 1: Delete "Intended Use" and substitute "Evaluation of Contractor's Mass Properties Control Capability." Line 6: Delete "within six months", and delete "annually" and substitute "periodically".

Following 6.1, add new paragraph:

"6.1.1 Independent Analysis of Mass Properties Data. Contractor data will be independently reviewed and, where appropriate, independently verified by the procuring activity or its designated representative. In particular, this effort will provide input data to the independent stability and control analysis that is intended to be conducted on all programs to verify the equivalent contractor generated analysis. The fact that these independent analysis are being performed, or the results of such analyses, will not relieve the contractor of any contractual responsibilities."

6.3.1: Delete.

PAGE 21

6.3.4: Delete and substitute:

"Current Mass Properties. The current value of mass properties based on all known elements of the item but excluding any growth allowance."

★6.3.8: Delete.

6.3.11: Delete.

6.3.12: Delete.

PAGE 22

★6.3.14, delete and substitute:

"6.3.14 Specified Weight. The maximum weight allowed by the procuring activity, usually a contractual requirement."

6.3.15, line 2: Delete "predicted or calculated."

★6.3.18: Delete.

6.3.21: Delete.

PAGE 23

6.3.28, line 2: Delete "disconnecting or".

★6.3.29, delete and substitute:

"6.3.29 Time Projected Weight. The projection of the weight with respect to time beginning with the negotiated weight at authority to proceed and extending to contract completion."

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★6.3.35, delete and substitute:

"6.3.35 Weight Growth Allowance. The weight allowance to account for weight changes due to development and manufacturing problems, changes in design requirements and other in-scope causes that are not identifiable at that time."

PAGE 25

TABLE 1, Item number 27: Delete.

★ TABLE 1, Item number 30: Delete "Growth Allowance Depletion" and substitute "Weight Growth Allowance Depletion".

PAGE 26

Add new TABLE 3 (Page 6 of 11).

PAGE 27

★ Following 3.1.3, add:

"3.1.4 Specified Mass Properties Base2".

"3.1.5 Weight Growth Allowance.....2".

3.2.2.6: Delete.

★3.2.2.7: Delete "Growth Allowance Depletion" and substitute "Weight Growth Allowance Depletion".

★ Following 3.2.3.11, add:

"3.2.3.12 Reference Base.....4".

★ "3.2.4.1: Delete "System Mass Properties Base" and substitute "Control Parameters".

★3.2.4.1.1: Delete.

★3.2.4.1.2: Delete.

★3.2.4.1.3: Delete.

PAGE 29

3.4.3.27: Delete.

★3.4.3.30: Delete "Growth Allowance Depletion" and substitute "Weight Growth Allowance Depletion".

3.4.4: Delete.

3.4.4.1: Delete.

3.4.4.2: Delete.

3.4.4.3: Delete.

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GUIDANCE ON APPLICABILITY OF TASKS TO TYPES OF EFFORTS AND CONTRACTS

NOTE: This guidance has no contractual status and should not be construed as restrictive to bidder's proposals or contract specifications.

A - Generally Applicable

P - Possibly applicable

MAIN TASK PARAGRAPH INCLUSIVE OF SUBPARAGRAPHS, EXCEPT WHEN MARKED "(Only)"		CONCEPTUAL/ FUNDED STUDIES	VALIDATION/ FULL SCALE DEVELOPMENT		PRODUCTION/ DEPLOYMENT
			STUDY & ANALYSIS	HARDWARE DEVELOPMENT/ PROTOTYPE TESTING	
NUMBER	DESCRIPTION				
3.1.2	Development of Objectives	A	A	A	
3.1.3	Development of Limits	A	A	A	
3.2.1	Studies	A	A	A	
3.2.2	Planning	P	A	A	
3.2.2.5	Personnel (Only)		A	A	
3.2.3	Cognizance	A	A	A	P
3.2.3.1	Monitoring (Only)		A	A	P
3.2.3.5	Supplemental Data	A	A	A	P
3.2.3.7	Identification of Changes	P	A	A	A
3.2.4	Control	A	A	A	
3.2.4.2	Improvement Action	A	A	A	P
3.2.4.2.3	Problem Definition (Only)			A	P
3.2.4.2.4	Corrective Action (Only)			A	P
3.2.4.2.5	Limiting Condition Analysis	A	A	A	A
3.3	Verification			A	
3.4	Documentation (See Table 1)	A	A	A	A
3.4.3.2.5	Verification Plan	P		A	P
4.	Quality Assurance Provisions	P	A	A	A
5.	Preparation for Delivery	A	A	A	A
6.1	Evaluation of Contractor's Mass Properties Control Capability		P	A	
6.1.1	Independent Analysis of Contractor's Mass Properties Data			A	P

TABLE 3. TAILORING GUIDE

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PAGE 29

★ Following 6.1, add:

"6.1.1 Independent Analysis of Mass Properties Data . . . 20"

6.3.1: Delete.

PAGE 30

★ 6.3.8: Delete.

6.3.11: Delete.

6.3.12: Delete.

★ 6.3.14: Delete "Limit Nominal Weight" and substitute "Specified Weight".

★ 6.3.18: Delete.

6.3.21: Delete.

★ 6.3.29: Delete "Target Weight" and substitute "Time Projected Weight".

★ 6.3.35: Delete "Weight Contingency" and substitute "Weight Growth Allowance".

★ Figure 2: Delete "Sample" and substitute "Example of"

★ Figure 3: Delete "Weight Relationship" and substitute "Example of a Weight Control Graph".

Following Table 2, add:

"Table 3 Tailoring Guide 26"

PAGE 31

Appendix B: Delete "Functional Code" and substitute "Functional Code Guide".

PAGE 33

★ Delete and substitute new Page 33 (New Figure 3).

PAGE 34

Delete "Proposed Statement of Work, 27, 3.2.2.6".

★ Add vertical line and arrows between top and bottom paragraph numbers.

PAGE B-1

Delete "FUNCTIONAL CODE" and substitute "FUNCTIONAL CODE GUIDE".

B 30.0, line 1: After "code system" insert "except where deviations are approved by the procuring activity.", and lines 1 and 2, delete "stage or module".

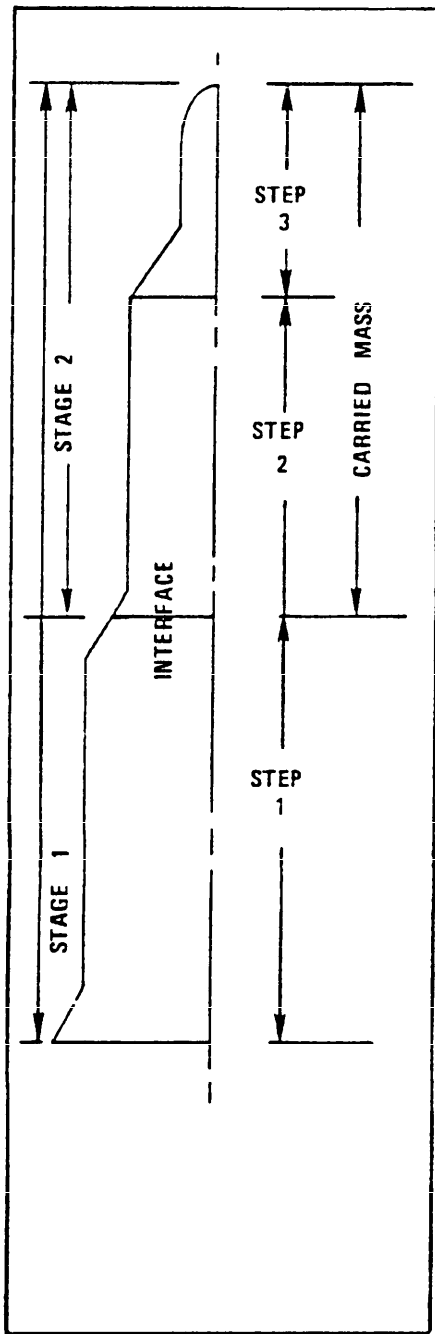
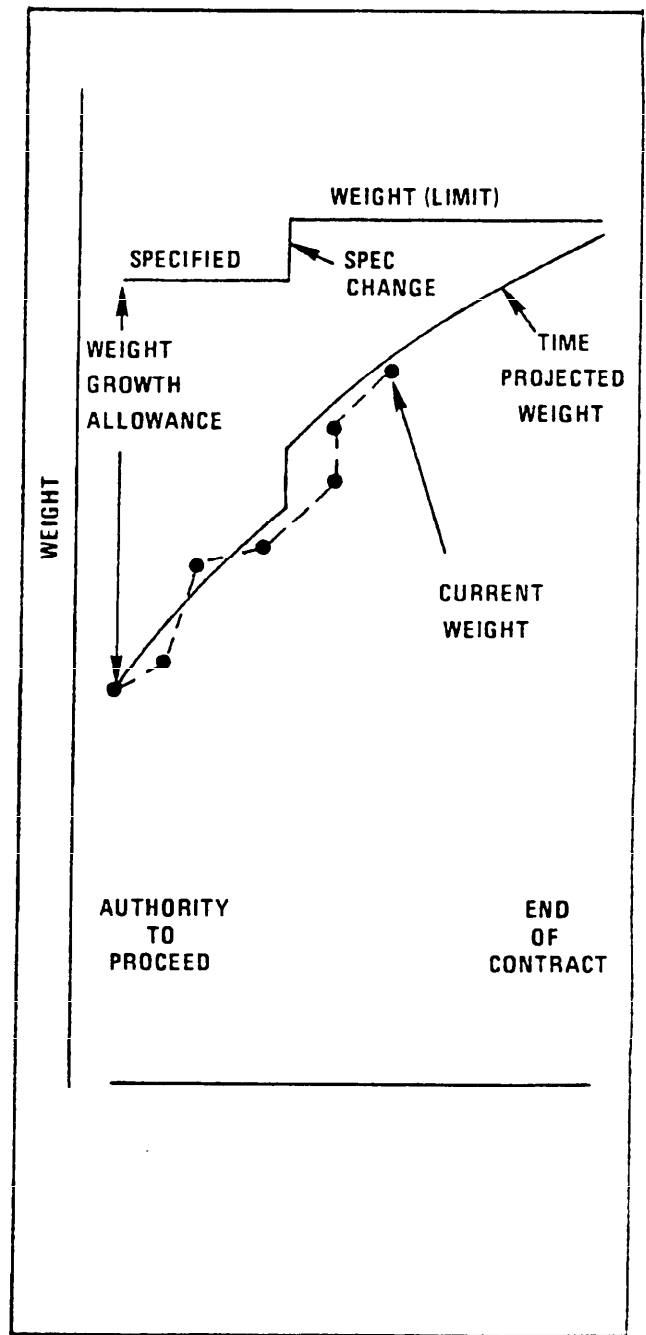


Figure 2. Example of Missile Step-Stage Relationship



★ Figure 3. Example of a Weight Control Graph

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PAGE B-5

★ Following B. 40. 16, add new paragraph:

"B. 40. 16. 1 Weight Growth Allowance. The weight allowance to account for changes due to development and manufacturing problems, changes in design requirements and other in-scope causes that are not identifiable at this time."

PAGE B-6

★ Following 16, add:

"16a. Weight Growth Allowance".

PAGE B-7

★ Delete "1. 19 - Contingency".

★ Delete "1. 20 - Growth".

PAGE B-11

★ Delete "2. 19 - Contingency".

★ Delete "2. 20 - Growth".

PAGE B-12

★ Delete "3. 19 - Contingency".

★ Delete "3. 20 - Growth".

PAGE B-14

★ Delete "4. 19 - Contingency".

★ Delete "4. 20 - Growth".

PAGE B-18

★ Delete "5. 19 - Contingency".

★ Delete "5. 20 - Growth".

PAGE B-20

★ Delete "6. 19 - Contingency".

★ Delete "6. 20 - Growth".

PAGE B-22

★ Delete "7. 19 - Contingency".

★ Delete "7. 20 - Growth".

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PAGE B-23

★ Delete "8.19 - Contingency".

★ Delete "8.20 - Growth".

PAGE B-24

★ Delete "9.19 - Contingency".

★ Delete "9.20 - Growth".

PAGE B-25

★ Delete "10.19 - Contingency".

★ Delete "10.20 - Growth".

PAGE B-26

★ Delete "11.19 - Contingency".

★ Delete "11.20 - Growth".

PAGE B-27

★ Delete "12.19 - Contingency".

★ Delete "12.20 - Growth".

PAGE B-28

★ Delete "13.19 - Contingency".

★ Delete "13.20 - Growth".

PAGE B-29

★ Delete "14.19 - Contingency".

★ Delete "14.20 - Growth".

PAGE B-30

★ Delete "15.19 - Contingency".

★ Delete "15.20 - Growth".

PAGE B-31

★ Delete "16.19 - Contingency".

★ Delete "16.20 - Growth".

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★ Following 16, add new functional code:

FIRST GENERATION	16A. WEIGHT GROWTH ALLOWANCE
SECOND GENERATION	THIRD GENERATION

BACK COVER

★ Add Return Addressee:

"SAMSO/AWZ
P.O. Box 92960, Worldway Postal Center,
Los Angeles, CA 90009".

★ Delete addressee and substitute:

"SAMSO/AWZ
P.O. Box 92960, Worldway Postal Center,
Los Angeles, CA 90009".

NOTE: The margins of this amendment are marked with a star to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

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FSC 1810

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