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APOLLO/SATURN
GUIDE FOR THE PREPARATION
OF SPECIFICATIONS

VOLUME II OF II VOLUMES
NEW EQUIPMENT AND MAJOR
MODIFICATIONS

MAY 1, 1967

APPROVED:



M. P. Gassman, Chief
Program Management Systems Integration

LIST OF EFFECTIVE PAGES

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SECTION I INTRODUCTION

1.1 PURPOSE

Volume II provides general instructions for the uniform preparation of Project, System, and Contract End Items (CEI) Specifications for Apollo/Saturn new equipment and major refurbishment at the Kennedy Space Center (KSC). Compliance with the requirements of this volume shall be mandatory for specifications covering major refurbishments and new equipment to be accepted by KSC 60 days after publication of this volume. This volume supplements K-AM-03 and should be incorporated, directly or by reference, in KSC Apollo/Saturn contracts for design of new Ground Support Equipment (GSE), Facilities. This guide is intended for use by design engineers and writers in the preparation of specifications for Apollo/Saturn equipment, under KSC design cognizance.

1.2 SCOPE

These instructions are applicable to specifications prepared in conformance with K-AM-03 for Apollo/Saturn new equipment and major refurbishments. Sections II through V of this volume provide the total allowed deviations to the requirements of K-AM-03 for the preparation of specifications. Volume I provides instructions for the preparation of specifications for "existing" Apollo/Saturn equipment.

1.3 APPLICABILITY

This document is applicable to all KSC organizations and their contractors when preparing project, system, CEI and Facility specifications for new equipment and major refurbishments on the Apollo/Saturn Program.

1.4 REFERENCES

K-AM-03, Apollo/Saturn Configuration Management Plan

K-AM-030/1, KSC Top Level Specification Tree

KSC Apollo Program Directive No. 2, dated December 8, 1965

KSC Apollo Program Directive No. 3, dated February 2, 1966

M200A, Defense Standardization Manual, dated September 3, 1962

KHB 8070.1, Uniform Format for Specifications and Standards

NPC 500-1, Apollo Configuration Management Manual

1.5 EXPLANATION OF TERMS

Appendix B of this document contains definition of basic terms used in this volume.

1.6 KSC UNIFORM FORMAT FOR SPECIFICATIONS AND STANDARDS

Uniform Format for Specifications and Standards, KHB 8070.1, establishes a standard format for the preparation of KSC developed specifications and standards for use when a specific program format has not been prescribed by higher authority. An example of program-prescribed format can be found in NPC 500-1, Apollo Configuration Management Manual (preface to KHB 8070.1, dated 6 October 1966). KHB 8070.1 is not applicable to Apollo/Saturn Project, System, and CEI Level Specifications. Specifications and standards for processes and materials prepared in accordance with KHB 8070.1 may be referenced in KSC Apollo/Saturn specifications as authorized standards for processes and material.

SECTION II REQUIREMENTS FOR UNIFORM SPECIFICATION PREPARATION

2.1 RELATIONSHIP TO EXHIBITS I THROUGH VI OF NPC 500-1

This section establishes uniform requirements for the preparation of specifications for new projects, systems, and CEIs under the design cognizance of KSC and for major refurbishment to existing equipment. This Section supplements the content, format, and standards of Exhibits I through VI and contains the requirements of Chapter 5, Defense Standardization Manual, M200A.

2.2 PARAGRAPH HEADINGS

Each paragraph and subparagraph of the specification shall be given a subject identification. The first letter of the first word in the paragraph heading shall be capitalized. A paragraph heading in any one section shall not be duplicated. Paragraph headings shall be underlined.

2.3 UNDERLINING

All requirements in a specification are important in obtaining the desired CEI. Where emphasis is desired, notes, cautions, or warnings shall be used as applicable. Text within a paragraph shall not be underlined nor capitals used in phrases or words for emphasis.

2.4 FIGURES AND TABLES

Figures (illustrations, graphs, etc.) may be used where it is necessary to describe the CEI more clearly and accurately than it can be described by the text. Illustrations shall not dimension a CEI and are not to be used unless the top assembly drawing fails to provide an adequate illustration of the general configuration of the CEI assembly. *Parts shown on figures shall be clearly identified.* Tables may be used to eliminate repetition or to show relationship clearly. Figures and tables should be used only for clarification and simplification.

Arabic numerals shall be used in designating figures and Roman numerals shall be used to number tables; e.g., Figure 4 and Table VI. All figures and tables shall be numbered consecutively throughout the specification and should be properly titled to indicate the contents. In general, figures and tables shall be placed in the body of the specification immediately following the paragraph or page where the reference first appears. If figures and tables are numerous, and locating as indicated above interferes with the correct sequencing of paragraphs or causes difficulty in understanding, they may be placed in numerical sequence at the end of the specification.

2.5 PROPRIETARY NAMES

Trade names, copyrighted names, or other proprietary names applying exclusively to the product of one company should not be used unless the CEI cannot be adequately described because of the technicality involved, construction, or composition. In such instances, one and if possible several, commercial products may be included, followed by the words "or equal" to ensure wider competition and that bidding will not be limited to a particular make specified. The same applies to manufacturer's part numbers or drawing numbers for minor parts when it is impractical to specify the exact requirements in the specification. Whenever possible, the particular characteristics required shall be included to define "or equal".

2.6 CONTRACTUAL AND ADMINISTRATIVE REQUIREMENTS

A specification shall not include contractual requirements (cost, time of delivery, instructions on reworking or resubmitting rejected items or lots, method of payment, liquidated damages, provision for items damaged or destroyed in tests, etc.).

2.7 EDITORIAL AND REPRODUCTION QUALITY

NASA approved standards for editorial and reproduction quality shall be observed in the preparation of the reproducible copy of the specification. A reproducible copy having the following defects is below the acceptable standard and can cause technical errors in the specification:

- a. **Incorrect spelling and punctuation.** Unless otherwise specified, the United States Government Printing Office Style Manual shall be used as a guide to capitalization, spelling, punctuation, etc. The Merriam-Webster New Collegiate Dictionary will be consulted when the Style Manual does not provide guidance. Except as noted herein, only proper names, titles, or publications will be capitalized, and then only the first letter of each word.
- b. **Careless corrections of typing errors.** Corrections must not be noticeable on the printed copy.
- c. **Uneven line work in illustrations.**
- d. **Mixed lettering and typing in figures.**
- e. **Discontinuous division lines in tables.**

2.8 WRITING STYLE

The writing style must preserve the technical accuracy of the specification. Vague and ambiguous words shall be avoided. The simple word or phrase which conveys the meaning should be preferred to the more complex. Inclusion of essential information shall be complete, either by direct statement or reference to other documents. Consistency in terminology and organization of material will contribute to the specification's clarity and usefulness. Sentences shall be short and concise as possible. Punctuation should aid in reading and prevent misreading. Well-planned word order requires a minimum of punctuation. When extensive punctuation is necessary for clarity, the sentence shall be rewritten. Sentences with compound clauses shall be converted into short and concise separate sentences.

2.9 ABBREVIATIONS

Abbreviations shall be in accordance with Standard MIL-STD-12. However, abbreviations used in the titles of specifications shall be in accordance with Cataloging Handbook H4-1. Acronyms, shortened nomenclature, and abbreviations not contained in MIL-STD-12 may be used. The full nomenclature shall be spelled out in the specification text the first time, followed by the abbreviation in parentheses; i. e., Spacecraft (SC), Kennedy Space Center (KSC). Thereafter, the abbreviation can be used in text. This rule does not apply to abbreviations used for the first time in tables and equations. Abbreviations shall be used only when necessary and when their meanings are unquestionably clear. When in doubt, spell it out.

NOTE

Abbreviations, acronyms, and shortened nomenclature shall not be used in lieu of full nomenclature in Sections 1 and 2.

2.10 DEFINITIONS OF TERMS USED IN SPECIFICATIONS

Definition can be avoided in many cases if requirements are properly stated. When the meaning of one or more terms must be established in the specification, definitions may be placed in the text. However, it is clearer to list one or more definitions in Section 6, especially when the terms are used repeatedly throughout the specification; Section 6 shall follow the term to indicate the location of the definition; e. g., (see Section 6 for definition).

2.11 SYMBOLS

The only symbols that shall be used in the text are the degree $^{\circ}$, and the +, -, and \pm symbols to express ranges or tolerances. Other symbols may be used in equations and tables. Graphic symbols, when used in figures, shall be in accordance with military standards. Any symbol formed by a single character should be avoided if practical, since an error destroys the intended meaning. Do not use X when expressing size as a unit modifier: 2-by 4-by 6-inch board shall be used in place of 2 X 4 X 6-inch board.

2.12 NUMERALS

The following rules shall apply to the use of numerals within paragraphs:

a. Numerals shall be spelled out when used at the beginning of a sentence or paragraph heading. When practical, the sentence or heading should be rephrased to avoid beginning with any numeral.

b. Numerals under 10 shall be spelled out except when used with a unit of measure, time, or quantity.

EXAMPLE:

<u>Numerals Under 10</u>	<u>Numerals under 10 (with unit of measure, quantity and time)</u>	<u>Numerals Over 10</u>
One	1-inch board	12
Two	2-hour period	37
Three	3-gallon capacity	196

c. When used as a unit modifier, numeral and unit of measure shall be separated by a hyphen (see example).

d. A cipher shall be placed before the decimal point when there is no unit.

EXAMPLE: 0.01

0.5

e. When numerals are used in sequence, confusion must be avoided; "five 8-volt circuits", and "twenty-seven 15-volt circuits" shall be used in place of "5 8-volt circuits" and "27 15-volts circuits".

2.13 WORD USAGE

2.13.1 COMMONLY USED WORDS AND PHRASES. The following rules shall be followed for words and phrases that are frequently used in a specification:

- a. Referenced documents shall be cited thus:

In accordance with

As specified in

Conforming to.....

b. "Unless otherwise specified" shall be used to indicate an alternative course of action. The phrase shall always come at the beginning of the applicable paragraph or sentence.

c. When making reference to a requirement in the specification which is rather obvious (not difficult to locate), the simple phrase "as specified herein" is sufficient and should be used.

d. The phrase "...to determine compliance with..." or "...to determine conformance with..." should be used in place of "...to determine compliance to..." In any case, use the same wording throughout.

e. In stating positive limitations, the phrases shall be stated thus; "The diameter shall not be greater than..." or "The diameter shall not exceed...."

f. The emphatic form of verb shall be used throughout the specification; i.e., state in the Requirements Section, "The meter shall indicate..." and in the Quality Assurance Provisions Section, "The meter shall indicate zero by rotating the adjustment knob, and 220 alternating current volts applied." For specific test procedures, the imperative form may be used provided the entire method is preceded by "the following tests shall be performed," or related wording. Thus, "Rotate the adjustment knob to indicate zero and apply 220 vac."

g. Capitalize the first letter of the word "specification," "drawing," "bulletin," etc., only when they are used immediately preceding the number of a document; e.g., "...Specified in Specification MIL-E-1001", but "This specification supersedes...."

2.13.2 USE OF SHALL, WILL, MAY, AND SHOULD. Use "shall" whenever a specification expresses a provision that is binding. Use "should," "may," and "will"

wherever it is necessary to express nonmandatory provisions. "Will" may also be used to express a declaration of purpose on the part of KSC. It may be necessary to use "will" in cases of simple futurity; i.e., "Power for the motor will be supplied by the ship."

2.13.3 USE OF "AND/OR." The term "and/or" shall not be used in specifications. Specifications require definitive, precise language.

2.13.4 USE OF FLAMMABLE AND NONFLAMMABLE. The terms "flammable" and "nonflammable" shall be used in specifications in lieu of the terms "inflammable", "uninflammable", and "noninflammable".

2.14 REFERENCES

2.14.1 LIMITATIONS ON REFERENCES. Documents shall not be made a part of a specification by reference unless the items, materials, or services specified in the referenced documents are required in the quality and detail which these documents are designed to produce. The applicability of all referenced documents listed in Section 2 shall be defined in Sections 3, 4, 5, and 10, as appropriate. The extent of applicability of referenced documents should also be indicated. No reference document shall be defined in Sections 3, 4, 5, and 10 unless the reference document is listed in Section 2.

Unless specific exemption is made in the specification, all the requirements of a referenced document are applicable. Exemptions to a referenced document are made as follows:

EXAMPLE: "Thermistors shall be tested in accordance with method 107 of Standard MIL-STD-202. The following details and exceptions shall apply...."

2.14.2 CROSS REFERENCES. Cross references (references to parts within the specification) shall be held to a minimum. They shall be used only to clarify the relationship of requirements within the specification and to avoid inconsistencies and unnecessary repetition. The paragraph number shall be used as the cross reference. The word "paragraph" shall not appear.

EXAMPLE: "...when tested in accordance with 4.5.1."
"...(see 1.1)."

2.14.3 FOOTNOTES TO TEXT. Footnotes shall be used sparingly to convey additional information that is not properly a part of the text. They shall be placed at the bottom of the page containing the reference in the text.

2.14.4 FOOTNOTES TO TABLES AND FIGURES. Footnotes to a table or figure shall be placed below the table or figure. The footnotes may contain mandatory information that cannot be presented as data within a table. Footnotes shall be numbered (arabic) separately for each table. Where numerals will lead to ambiguity (i.e., in a chemical formula) upper case letters or asterisks may be used.

2.15 TOLERANCES

Where a tolerance is appropriate for a specific value, the tolerance shall not be expressed as a percent; i.e., 95 to 105 volts shall be used in place of 100 volts (+ 5%); or if there is a strong desire to indicate a nominal value, 100 (+ 5) volts. If a figure of table is included in the specification showing values, these values shall not be repeated in the text.

2.16 NOTES, CAUTIONS, AND WARNINGS

Notes, cautions, and warnings shall be centered. The headings shall be capitalized and underlined. The text shall be indented 15 spaces on a standard typewriter from the right and left hand margins.

a. Note - A note shall be used to highlight an operating procedure, condition, etc.

EXAMPLE:

NOTE

The only operating control on the electronic tachometer is the lens assembly. It is focused by loosening the thumbscrew in the top front of the housing and sliding the lens in or out.

b. Caution - Operating procedures, practices, etc., which will result in damage to or destruction of equipment if not strictly observed.

EXAMPLE:

CAUTION

Disconnect the electronic tachometer from the associated frequency meter before performing the following operations.

c. Warning - Operating procedures, practices, etc., that will result in personal injury or loss of life if not carefully and strictly observed.

EXAMPLE:

WARNING

The COMMON test lead and the AC probe ground clip lead are connected directly to chassis. When making voltage measurements, always connect the COMMON test lead or the AC probe ground clip lead to ground of the equipment under test.

2.17 FORMAT FOR REPRODUCTION TYPING

Figure 2-1 provides a sample format for reproduction typing for specification text pages.

2.18 INCLUSION OF QUALITY ASSURANCE PROVISIONS

2.18.1 APPLICABLE DOCUMENTATION. Section 4 of Part I and Part II specifications shall normally include, as a minimum, applicable content of NPC 500-10 "Apollo Test Requirements," NPC 200-3, and NPC 250-1. Where specific requirements are less stringent, exception can be made to the nonapplicable parts of these documents. Requirements shall be specified for the formal verification of the performance, design, and construction of the equipment.

2.18.2 INSPECTION REQUIREMENT. Since KSC procurements for new equipment, facilities, and major refurbishments normally require Government in-process and acceptance inspection, the contents of the following paragraph should be included in Section 4 of Part II specifications.

Any required Government in-process and acceptance inspection shall be performed at the contractor's plant (or on site, if applicable) by representatives of the John F. Kennedy Space Center Quality Engineering and Control Division or a designated Government inspector. The extent of inspection will depend upon the level of quality and workmanship of the items. Final inspection and acceptance will take place at KSC.

2.18.3 ASSISTANCE IN PREPARATION OF QUALITY ASSURANCE PROVISIONS. During the preparation of specifications, the KSC Quality Assurance and Control Division (RJ), will, on request, provide assistance to KSC design organizations in defining adequate quality assurance requirements for specifications.

Specification No. _____

Release Date _____

Page II-2 of II- _____

SECTION 3. SECTION HEADINGS ARE ALL CAPITALS WITHOUT UNDERSCORING.

New paragraphs which are part of the section heading shall be indented 5 spaces on a standard typewriter. Text shall be single spaced.

3.1 First Paragraph Title and All Following Subparagraph Headings are Underscored with Initial Capital Letters for Each Word of the Heading. Paragraphs and subparagraphs shall not be indented and lines shall begin under the first letter of the paragraph.

3.1.1 Subparagraph Heading

3.1.1.1 Subparagraph Heading

3.1.1.1.1 Subparagraph Heading

3.1.1.1.2 Subparagraph Heading

3.1.1.2 Subparagraph Heading

3.1.2 Subparagraph Heading

3.2 Second Paragraph Title

3.2.1 Subparagraph Heading

3.2.1.1 Subparagraph Heading

3.2.1.2 Subparagraph Heading

3.2.2 Subparagraph Heading

Figure 2-1. Sample Format, Typing Standard for Text Pages.

2.18.4 ADEQUACY OF QUALITY ASSURANCE PROVISIONS. Concurrence in the adequacy of the quality assurance provisions of the specification shall be obtained from the cognizant KSC quality assurance organizations before approval of the specification.

SECTION III PREPARATION OF PROJECT AND SYSTEM SPECIFICATIONS

3.1 PROJECT SPECIFICATIONS

Project specifications shall be prepared in accordance with Exhibit I of NPC 500-1 and the requirements of Section II of this volume (Appendix A provides correction for errata in Exhibit I.)

3.2 SPECIFICATIONS FOR FACILITY SYSTEMS

Specifications for systems classified as Facilities shall be prepared in accordance with Section V of this volume.

3.3 SPECIFICATIONS FOR GROUND SUPPORT EQUIPMENT SYSTEMS

New systems and systems undergoing major refurbishment shall be subdivided into individual CEIs. The requirements of paragraph 6.2.3 of Exhibit XI (NPC 500-1) shall be observed in the selection of CEIs within the system. The requirements of Exhibit I, as supplemented by Section II of this volume, shall be observed in the preparation of specifications. Section IV provides the requirements for specifications for individual CEIs within the system. (Appendix A provides correction of errata in Exhibit I.)

SECTION IV PREPARATION OF CONTRACT END ITEM SPECIFICATIONS

4.1 APPLICABILITY

This Section provides guidelines for the preparation of specifications for Contract End Items of Ground Support Equipment (GSE). Section V provides guidelines for the preparation of specifications for Facility CEI's.

4.2 SELECTION OF APPROPRIATE EXHIBIT

Background data for the selection of the applicable exhibit for CEI specifications is provided in paragraphs 1.0 through 6.2 of Exhibit XI of NPC 500-1. Table 4-1 provides a ready reference to the exhibits and is intended only as an aid in preliminary selection of the applicable exhibit. After making the preliminary selection of an exhibit, the specification writer should research the data outlined in the source column of Table 4-1 to ensure that the selected exhibit fulfills all the requirements for the existing equipment which must be specified.

4.3 PRIME EQUIPMENT

CEI specifications should be prepared according to the simpler format of Exhibit IV, V, or VI of NPC 500-1 whenever possible. Exhibit II should only be used when the CEI of equipment strictly falls within the definition of prime equipment as defined in the paragraphs referenced in the Source column of Table 4-1.

The requirements of Exhibit II and Section II of this volume shall be observed in preparation of prime equipment specifications. (Appendix A contains corrections of errata in Exhibit II.)

4.4 SPECIFICATIONS FOR IDENTIFICATION ITEMS, EXHIBIT IV OF NPC 500-1

Guidelines for the selection of applicable exhibits for CEI specifications are provided in Table 4-1. The requirements of Exhibit IV of NPC 500-1 and Section II of this volume shall be observed in the preparation of specifications for Identification Items. (Appendix A contains corrections of errata in Exhibit IV.)

4.5 SPECIFICATIONS FOR REQUIREMENT ITEMS, EXHIBIT V OF NPC 500-1

Guidelines for the selection of CEI specifications are provided in Table 4-1). The requirements of Exhibit IV of NPC 500-1 and Section II of this volume shall be observed in the preparation of Requirement Item specifications. (Appendix A contains corrections of errata in Exhibit V.)

Table 4-1. Criteria for Classification of CEI and Selection of Applicable Exhibit

CEI Classification and Applicable Exhibit	Criteria	Source of Criteria (Exhibit No. and Paragraph)
	<p><u>NOTE</u></p> <p>Criteria presented in this table is summary in form and is intended only as a guideline. After preliminary selection of CEI classification referenced data - Source of Criteria, Column 3 - should be studied.</p>	
Identification Item: Exhibit IV	<ol style="list-style-type: none"> 1. It can be qualified by inspection/simple demonstration. 2. <u>Once in manufacture</u> - Quality Control can be the basis for quality verification; acceptance can be based on one-for-one relationship between drawings and hardware; acceptance testing to verify performance has not been specified. 3. Because of its use, interfaces and simplicity of function and design, few design changes are anticipated after product configuration baseline has been established. 	IV: 1.0 thru 3.0 and 6.0
Requirements Items: Exhibit V	<ol style="list-style-type: none"> 1. The item has been developed: i.e., in Government inventory or "off the shelf." 2. It is an item which is Government Furnished Equipment (GFE). CEIs being developed for the Apollo/Saturn program by another contractor or agency cannot be considered as being "in" inventory. 3. It is used with or assembled into an equipment being developed. 	V: 1.0 thru 3.0 and first and second paragraphs of 6.0

Table 4-1. Criteria for Classification of CEI and Selection of Applicable Exhibit

CEI Classification and Applicable Exhibit	Criteria	Source of Criteria (Exhibit No. and Paragraph)
Critical Component: Exhibit VI	Components identified as critical by NASA and cognizant contractor. There are two classes of critical components: Engineering Critical and Logistics Critical.	VI: 1.0 thru 3.0 and 6.0
Prime Equipment: Exhibit II	<ol style="list-style-type: none"> 1. Equipment designated as a deliverable Contract End Item which cannot be specified using the simplified formats for Identification Items (IV) or Requirements Items (V). 2. The more complex contractor-designed CEIs that require extensive functional tests while in the assembled condition. 	II: 1.0 thru 3.0

4.6 SPECIFICATIONS FOR CRITICAL COMPONENTS, EXHIBIT VI

Guidelines for the selection of the appropriate exhibit for CEI specifications are contained in Table 4-1. Specifications for critical components shall be prepared in accordance with the requirements of Exhibit VI of NPC 500-1 and Section II of this volume. Critical Component specifications (Exhibit VI) shall be prepared for all critical components identified in Project, System, and Prime Equipment specifications.

4.6.1 FORMAT FOR CRITICAL COMPONENT SPECIFICATIONS. Exhibit VI modifies the format of Exhibit II for the preparation of Critical Component specifications. (Appendix A contains corrections for errata to Exhibit VI and Exhibit II.)

4.6.2 CONFIGURATION CHART AND SPECIFICATION CHANGE LOG. Since Engineering Change Proposals (ECP) are addressed to the CEI in which the Critical Component is installed, Critical Component specifications will not have a configuration chart or a configuration change log.

SECTION V FACILITY CEI SPECIFICATIONS, EXHIBIT III

5.1 BACKGROUND

Exhibits I through VI of NPC 500-1 provide a uniform specification program for Apollo/Saturn equipment and facilities. Exhibit III governs the preparation of specifications for Facility CEIs. While the basic requirements for Facility CEI specification preparation are the same as for project, system, and CEI level specifications, the format requirements for Facility CEI specifications are different. Major differences for Part I and Part II Facility CEI specifications are outlined in 5.2 and 5.3.

5.2 PART I, FACILITY CEI SPECIFICATIONS

Part I, Facility Criteria, is a product of a definition phase or requirements analysis and is the instrument used to contract for the design and development of the Facility CEI. Part I, Facility Criteria specifications shall be prepared in accordance with the format established by paragraph 6.2 of Exhibit III. The requirements of Section II of this volume shall also be observed in the preparation of Facility Contract End Item (FCEI) specifications.

5.3 PART II, FACILITY CEI SPECIFICATIONS

Exhibit III does not provide a format for Part II Specifications. The construction bid package (contract, plans, and specifications) is the Part II Facility CEI Specification. Architectural and Engineering (A&E) drafting standards govern the preparation of drawings. Compliance with the terms of Part II of the Facility CEI Specification (construction bid package) is determined by standard construction control procedures. Special testing, quality control procedures, and performance verification requirements for the adequacy of special or unique facility provisions (established in Part I of the Facility CEI Specification) shall be included.

5.4 ELEMENTS IN A FACILITY CEI SPECIFICATION

A complete Facility CEI specification contains the following elements:

- a. Title page (see Appendix A for format)
- b. Configuration chart
- c. Specification change log
- d. Cover page for Part I specification (see Appendix A for format)
- e. Part I specification
- f. Cover page for Part II specification (see Appendix A for format)
- g. Construction Bid Package (Part II specification)

APPENDIX A
CORRECTION OF ERRATA IN EXHIBITS I THROUGH VI

A.1 CORRECTION OF ERRATA

This appendix corrects typographical and editorial errors in Exhibits I through VI. Identification requirements for specification title pages contained in 6.3.2 of Exhibit XI (NPC 500-1) have also been included. The sample title and cover pages for Exhibits I, II, III, and VI contained in this appendix supersede the sample formats in the Exhibits. Minor corrections for the title pages of Exhibits IV and V, respectively, are delineated in A.6 and A.7.

A.2 USE OF ERRATA SHEETS

Constant referencing between the Exhibits (I through VI) and the errata sheets in the following paragraphs can be a confusing and time consuming activity. The specification writer may decide to correct his copy of the Exhibits. Inserted corrections (red-lined or other suitable method) should be distinctive so that the identity and source of the correction can always be recognized by the reader.

A.3 CORRECTION OF ERRATA IN EXHIBIT I

The following list provides typographical and editorial corrections for errata contained in Exhibit I.

<u>Reference Location</u>	<u>Correction</u>
Title Page for Exhibit I Specifications	Title page shall be in accordance with Figure A-1 of this Appendix.
Paragraph 2. SCOPE	Change the third sentence from the end of the paragraph to read: "Contract End Items will be identified by the cognizant Center Project Office, Center Design Agency, or design contractor in accordance with Exhibit XI." Change the last sentence to read: "The specification relationships are depicted in the Specification Tree (Sample only), Figure 1."
Paragraph 6. PROCEDURAL REQUIREMENTS	
First paragraph	Delete this paragraph.

Specification No. _____

Revision No. _____

Release Date _____

Page 1 of _____

PERFORMANCE AND DESIGN REQUIREMENTS

FOR

(Identification number of System or Project being specified)

(Approved nomenclature for System or Project being specified)

FOR

(For System Specification - insert identification number and approved nomenclature of the Project to which the System belongs: For Project Specification - insert "The Apollo Program.")

APPROVED BY _____
(Preparing Agency)

APPROVED BY _____
(KSC Organization)

APPROVAL DATE _____

APPROVAL DATE _____

CONTRACT NUMBER _____

Approved for use on the Apollo Program:

(Design Code Identification No.)

Assistant for Systems Engineering, DB

NOTE: The approval block for the Assistant for Systems Engineering (DB) will be inserted only when Exhibit II is used to specify a system identified in the KSC Apollo Specification Tree, K-AM-030/1.

Figure A-1. Sample Title Page for Project and System Specifications, Exhibit I

<u>Reference Location</u>	<u>Correction</u>
First sentence of second paragraph	Delete "Program Specifications."
<u>"Preparation of Section 1, Scope"</u>	Change the first sentence to read: "Section 1 shall begin with the statement contained in Example 'A'."
Paragraph 3.1.2.2	Change the first sentence to read: "A list of the primary and secondary functional areas shall be specified herein."
Paragraph 3.1.2.3	Change the first sentence to read: "This paragraph shall include a descriptive list of Contract End Items which comprise the System."
Paragraph 3.3.1.4	Change the paragraph title to read: "Contract End Items" (Project or System Specifications only).
EXAMPLE "A"	
Paragraph 3.1.1.3	After paragraph 3.1.1.3, insert the following paragraph numbers and headings: 3.1.1.3.1 <u>Training Contracts End Items and Facilities Requirements</u> 3.1.1.3.2 <u>Personnel Training</u>
Paragraph 3.1.2.2	Change paragraph title to read: " <u>Primary and Secondary Functional Areas List.</u> "
Paragraph 3.1.3.2.2	Change paragraph title to read: " <u>Maintenance and Repair Cycle.</u> "
Paragraph 3.1.3.6	Change paragraph title to read: " <u>Human Performance.</u> "
Paragraph 3.2.1.10	After paragraph 3.2.1.10, <u>Storage</u> ; insert the following paragraph number and title: "3.2.2 Design Engineering Areas."

Reference Location

Correction

NOTE: This paragraph should contain subparagraphs (as required) in accordance with paragraph 6., subparagraph 3.2.2.1 through 3.2.2.5 of Exhibit I.

A.4 CORRECTION OF ERRATA IN EXHIBIT II

Typographical and editorial errors in Exhibit II should be corrected in accordance with the following list:

Reference Location

Correction

Title and Cover Pages for Exhibit II

Title and cover pages for Exhibit II specifications shall be in accordance with Figures A-2 through A-5 of this Appendix.

Page II-2, Paragraph 6,
PROCEDURAL REQUIREMENTS

The first sentence shall be changed to add "NPC 500-1, May 18, 1964" after word "manual."

Page II-5, lines 8 and 9

Change "Sample Format B" to read: "See Figures A-2 through A-5 of Appendix A to Volume II of K-AM-030/4."

SCOPE

Add the following note:

"NOTE: If the nomenclature of certain CEIs becomes lengthy, an abbreviated or acronymic form may be used after the CEI nomenclature has been fully spelled out in the SCOPE paragraph."

The rules in MIL-STD-12 apply.

Page II-6, lines 3 and 4

Delete the words: "Where System Engineering procedures are a part of the contract."

Page II-12, at the end of paragraph
3.2.1.2

Add the following sentence: "Within this paragraph shall be included a complete list of all Interface Control Drawings and other Interface Control Documents and their revision letters."

Specification No. _____

Revision No. _____

Release Date _____

Page 1 of _____

CONTRACT END ITEM SPECIFICATION
(Prime Equipment)

PERFORMANCE, DESIGN

AND

PRODUCT CONFIGURATION

REQUIREMENTS

(CEI Number)

(Approved Nomenclature for CEI)

FOR

(Identification Number and Approved
Nomenclature for Project or System to which
the CEI belongs)

Figure 2. Sample Title Page for Prime Equipment Specification, Exhibit II

Specification No. _____

Revision No. _____

Release Date _____

Page I-1 of I- _____

CONTRACT END ITEM DETAIL SPECIFICATION

PART I

PERFORMANCE AND DESIGN REQUIREMENTS

(CEI Number)

(Approved Nomenclature for CEI)

FOR

(Identification Number and Approved Nomenclature
for the System or Project to which the CEI belongs)

APPROVED BY _____
(Preparing Activity)

APPROVED BY _____
(KSC Design Organization)

DATE _____

APPROVAL DATE _____

CONTRACT NUMBER _____

Approved for use on the Apollo Program:

(Design Activity Identification Code
Number)

Assistant for Systems Engineering, DB

NOTE: The approval block for the Assistant for Systems Engineering (DB) will be inserted only when Exhibit II is used to specify a system identified in the KSC Apollo Specification Tree, K-AM-030/1.

Figure A-3. Sample Cover Page for Part I CEI Specification for Prime Equipment, Exhibit II

Specification No. _____

Revision No. _____

Release Date _____

Page II-1 of II- _____

CONTRACT END ITEM DETAIL SPECIFICATION
(Prime Equipment)

PART II

PRODUCT CONFIGURATION AND TEST ACCEPTANCE REQUIREMENTS

(CEI Number)

(Approved CEI Nomenclature)

FOR

(Identification Number and Approved Nomenclature
for the System or Project to which the CEI belongs)

APPROVED BY _____
(Preparing Activity)

APPROVED BY _____
(KSC Organization)

DATE _____

APPROVAL DATE _____

CONTRACT NUMBER _____

Approved for use on the Apollo Program:

(Preparing Activity Design Code
Identification Number)

Assistant for Systems Engineering, DB

NOTE: The approval block of the Assistant for Systems Engineering (DB) will be inserted only when Exhibit II is used to specify a system identified in the KSC Apollo Specification Tree, K-AM-030/1.

Figure A-4. Sample Cover Page for Part I CEI Specification for Prime Equipment, Exhibit II

Reference Location

Correction

Page II-25, line 5

Change "Sample Format C" to read: "For title page and cover pages (Part I and Part II) see Appendix A of K-AM-030/4, Volume 2."

SCOPE

Add the following note:

"NOTE: If the nomenclature of certain CEIs becomes lengthy, an abbreviated or acronymic form may be used after the CEI nomenclature has been fully spelled out in the SCOPE paragraph."

The rules in MIL-STD-12 apply.

Page II-26, Paragraph (d),
Section 3, REQUIREMENTS

Change to add the following clause after tolerances: "which characterize the CEI itself without regard to other equipment or systems in which it is used."

After paragraph (d) and before the last paragraph of the Section, add the following paragraph: "This Section shall define the minimum standard of quality and workmanship which the CEI must meet to be acceptable. The requirements shall provide a definite basis for rejection in those cases where quality and workmanship are such that the CEI is unsuitable for the purpose intended."

Page II-32, Section 6, NOTES

After the words "the CEI," add the following clause: "definitions, abbreviations, procedural information, and similar miscellaneous information which does not properly belong in other sections of the specification."

A.5 CORRECTION OF ERRATA IN EXHIBIT III

The following list provides corrections for editorial and typographical errors in Section I of Exhibit III.

<u>Reference Location</u>	<u>Correction</u>
Title and cover pages for Exhibit III Specifications	See Figures A-5 through A-7 of this appendix.
Page III-I-2, paragraph 6.1, last line of the first paragraph.	Delete the last sentence. See Figures A-5 through A-7 of Appendix A to Volume II of K-AM-030/4 for the format of the Title Page and introductory pages for Facility CEI Specifications.
Page III-I-9, paragraph 6.3	Change paragraph heading to read: "Preparation of Facility Contract End Item Detail Specifications, Part II, Facility Design."
Page III-I-11, Sample Format "A"	Delete Sample Format "A" and substitute format in Figures A-5 through A-7 of Appendix A to Volume II of K-AM-030/4.
Page III-I-1, paragraph 4	<p>The Apollo Program CMO (APOH) has not provided reference documents for paragraph 4. The following documents are to be considered as reference material for the purpose of interpreting the requirements of this Exhibit but do not form a part of this Exhibit:</p> <p>NPC 325-1, Design Criteria and Construction Standards.</p> <p>AFR 87-1 through 87-3, 27 December 1962, "Acquisition of Real Estate."</p> <p>AFR 88-3, 4 February 1960, "New Construction."</p> <p>AFR 88-15, 2 September 1963, "Facility Design and Construction."</p> <p>AFM 85-26, 24 May 1957, "Military Construction Program."</p> <p>NPC 500-2, Facilities Drafting Manual, July 1964.</p>

Specification No. _____

Revision No. _____

Page 1 of _____

**CONTRACT END ITEM DETAIL SPECIFICATION
(Facility)**

CRITERIA AND DESIGN

(CEI Number)

(Approved Nomenclature for CEI)

FOR

**(Identification Number and Approved
Nomenclature for the System or Project
to which the Facility CEI belongs)**

Figure A-5. Title Page for Facility CEI Specification, Exhibit III

Specification No. _____

Revision No. _____

Release Date _____

Page I-1 of I- _____

CONTRACT END ITEM DETAIL SPECIFICATION
(Facility)

PART I

CRITERIA

(Facility CEI Number)

(Approved Nomenclature for Facility CEI)

FOR

(Identification Number and Approved
Nomenclature for the System or Project
to which the Facility CEI belongs)

APPROVED BY _____
(Preparing Activity)

APPROVED BY _____
(KSC Organization)

DATE _____

APPROVAL DATE _____

CONTRACT NUMBER _____

Approved for use on the Apollo Program:

(Preparing Activity Design Code No.)

Assistant for Systems Engineering, DB

NOTE: The approval block of the Assistant for Systems Engineering (DB) will be inserted only when Exhibit III is used to specify a facility identified in the KSC Apollo Specification Tree, K-AM-030/1.

Figure A-6. Cover Page for Part I Facility CEI Specification, Exhibit III

Specification No. _____

Revision No. _____

Release Date _____

Page II-1 of II- _____

CONTRACT END ITEM DETAIL SPECIFICATION
(Facility)

PART II

DESIGN

(CEI Number)

(Approved CEI Nomenclature)

FOR

(Identification Number and Approved
Nomenclature for the System of Project
to which the Facility CEI belongs)

APPROVED BY _____
(Preparing Activity)

APPROVED BY _____
(KSC Organization)

DATE _____

APPROVAL DATE _____

CONTRACT NUMBER _____

Approved for use on the Apollo Program:

(Preparing Activity Design Code No.)

Assistant for Systems Engineering, DB

NOTE: The approval block of the Assistant for Systems Engineering (DB) will be inserted only when Exhibit III is used to specify a facility identified in the KSC Apollo Specification Tree, K-AM-030/1.

Figure A-7. Cover Page for Part II Facility CEI Specification, Exhibit III

A.6 CORRECTION OF ERRATA IN EXHIBIT IV

In addition to the data shown in Sample Format "A" of Exhibit IV, the title page of the specification shall contain the following:

a. The Design or Federal Supply Code (contractor or KSC Design Organization) identification number from the H-4 Cataloging Handbook should be inserted in the Preparing Agency block.

b. The designation number and nomenclature of the System (or Project) into which the identification item is installed will be inserted (on an additional line) after the CEI number.

Cover pages are not required for Part I and Part II of specifications prepared in accordance with Exhibit IV.

A.7 CORRECTION OF ERRATA IN EXHIBIT V

In addition to the data shown in Sample Format "A" of Exhibit IV, the title page of the specification shall contain the following:

a. The Design or Federal Supply Code (contractor or KSC Design Organization) identification number from the H-4 Cataloging Handbook should be inserted in the Preparing Agency block.

b. The designation number of the System (or Project) into which the requirement item is installed will be inserted (on an additional line) after the CEI number.

Introductory pages are not required for Part I and Part II specifications prepared in accordance with Exhibit V.

A.8 CORRECTION OF ERRATA IN EXHIBIT VI

For title page and cover pages for Critical Components, see Figures A-8 through A-10 of this Appendix.

A.9 ADDITIONS TO ERRATA LIST

Typographical errors, editorial errors, and inconsistencies in Exhibits I through VI should be referred to the CMO (DC) for resolution and inclusion in this appendix.

Specification No. _____

Revision No. _____

Page 1 of _____

ENGINEERING (or LOGISTIC) CRITICAL COMPONENT SPECIFICATION

PERFORMANCE AND DESIGN

AND

PRODUCT CONFIGURATION AND ACCEPTANCE TEST

REQUIREMENTS

(Critical Component Identification No.)

(Approved Nomenclature for Critical Component)

FOR

**(CEI Number and Approved Nomenclature for
CEI to which Critical Component belongs)**

Figure A-8. Sample Title Page for Engineering (or Logistic) Critical Component Specification, Exhibit VI

Specification No. _____

Revision No. _____

Release Date _____

Page I-1 of I- _____

ENGINEERING CRITICAL COMPONENT SPECIFICATION

PART I

PERFORMANCE AND DESIGN REQUIREMENTS

(Critical Component Identification No.)

(Approved Nomenclature for Critical Component)

FOR

(CEI Number and Approved Nomenclature of
CEI in which the Critical Component is
installed)

APPROVED BY _____
(Design Activity)

APPROVED _____
(KSC Organization)

DATE _____

APPROVED DATE _____

CONTRACT NUMBER _____

(Design Activity Code Identification No.)

Figure A-9. Cover Page for Part I Engineering Critical Component Specification,
Exhibit VI

Specification No. _____

Revision No. _____

Release Date _____

Page II-1 of II _____

ENGINEERING (or LOGISTIC, as applicable)

CRITICAL COMPONENT SPECIFICATION

PART II

PRODUCT CONFIGURATION

AND

ACCEPTANCE TEST REQUIREMENTS

(Critical Component Identification No.)

(Approved Nomenclature for Critical Component)

FOR

(CEI Number and Approved Nomenclature for the CEI
in which the Critical Component is installed)

APPROVED BY _____
(Design Activity)

APPROVED BY _____
(KSC Organization)

DATE _____

APPROVAL DATE _____

CONTRACT NO. _____

(Design Activity Code Identification No.)

Figure A-10. Cover Page for Part II Specification Engineering (or)Logistics)
Critical Component, Exhibit VI

APPENDIX B DEFINITION OF TERMS

Exhibit XVII to NPC 500-1 provides definitions for many terms used in this guide. The following definitions supplement Exhibit XVII.

Existing Equipment

Systems and Contract End Items (CEI) of Ground Support Equipment (GSE) and Facilities accepted by KSC procuring agencies that are now in integrated testing or are operational at KSC.

Facility

Real property which includes land, and whatever is erected upon or affixed to land, including those items of Real Property Installed Equipment (RPIE) or "installed property" attached to or installed in real property by the Corps of Engineers or a construction contractor. It includes those fixtures and items, normally required for the functional use of a structure, that are built into, or permanently affixed to the structure or RPIE, the removal of which would impair the usefulness, comfort, or safety of the facility.

Ground Support Equipment (GSE)

All equipment required on the ground to make a manned space flight system, support system, subsystem, or end item of equipment operate in its intended environment. This includes all equipment required to install, launch, arrest, guide, control, direct, inspect, test, adjust, calibrate, appraise, gauge, measure, assemble, disassemble, handle, transport, safeguard, store, actuate, service, repair, overhaul, maintain, or operate the system, subsystem, end item, or component.

Ground Support Equipment System

A composite of equipment, skills, and technique used to perform a function in support of integration testing, checkout, or operation of an Apollo/Saturn launch

vehicle. A Ground Support Equipment system may be a single CEI or a system identified on the KSC Top Specification Tree, K-AM-030/1.

Major Modification

An extensive design change authorized to a project, system, or CEI only when all the following conditions exist:

- a. New performance functional requirements or new design requirements are established.
- b. The NASA organization or design contractor is released from formal control to the previously established baseline.
- c. A new baseline is established by the modification effort.

Normal Method of Specification Preparation

The preparation of specifications in strict compliance with the requirements of the applicable Exhibit (I through VI) on referencing of documents in a specification.

Selected Source Documents

Items selected from engineering data developed during the Definition and Acquisition of the facility or equipment being specified (paragraph 1.7 and 1.8 of Volume I). Selected source documents may be used in specifications for existing KSC Saturn/Apollo equipment and facilities. Selected source documents may include drawings, acceptance test procedures, calibration procedures, product or purchase specifications, operations and maintenance manuals, process and material specifications, and Marshall Space Flight documents establishing requirements for KSC Ground Support Equipment and facilities.

Specification

A document intended primarily for use in procurement which clearly and accurately describes the essential and technical requirements for items, materials or services, including the procedures by which it will be determined that the requirements have been met.

System

A system is a composite of all related equipment, facilities material, support services, and personnel required for the operation of the system so that it becomes a self-sufficient unit in its intended operational and support environment.

System Specification

A performance/design specification prepared in accordance with Exhibit I of NPC 500-1 for a segment of Apollo/Saturn equipment. This equipment is identified as a system in the KSC Top Specification Tree K-AM-030/1, when the segment being specified is (1) divided into Contract End Items and (2) the identified Contract End Items are specified individually in detail specifications. K-AM-030/1 uses the prefix "SS" to identify System Specifications.

APPENDIX C
REFERENCE DOCUMENTS FOR THE PREPARATION OF SPECIFICATIONS

C.1 APPLICABLE DOCUMENTS

Reference documents that are generally applicable or useful for the preparation of specifications for Apollo/Saturn equipment and facilities at KSC are listed in the following paragraph. A complete list of reference documents is beyond the scope of this guide; however, NASA/KSC directive and design contracts have, in specific cases, made documents listed herein a requirement in specification preparation.

C.2 NASA DOCUMENTS

C.2.1 Program Documentation

SE 005-001-1, (updated periodically by SCN)	Apollo Program Specification (classified confidential)
NHB 5300.1A July 1966 October, 1965	Apollo Reliability and Quality Assurance Program Plan
NHB 7500.1 November 1, 1965	Apollo Logistics Requirements Plan
M-D MA 500-11 (SE 010-000-1) September 10, 1965	Apollo Flight Mission Assignments (classified confidential)
M-DE 8020.008B April, 1965	Natural Environment and Physical Stan- dards for the Apollo Program
M-D MA 500 January 1, 1966	Apollo Program Development Plan
NPC 500-10 May 20, 1964	Apollo Test Requirements
IA01	Apollo Inter-Center Control Document Log (published periodically)
SE 008-001-1 June, 1965	Project Apollo Coordinate System Standards

SP-6001 August, 1963	Apollo Terminology
NPC 400, Rev. 7 June 27, 1966	NASA Procurement Regulation
NPC 200-3 April, 1962	Inspection System Provisions for Suppliers of Space Materials, Parts, Components, and Services
NPC 200-1A June, 1964	Quality Assurance Provisions for Govern- ment Agencies
NPC 200-2 April, 1962	Quality Program Provisions for Space Systems Contractors
NPC 200-4 August, 1964	Quality Requirements for Hand Soldering of Electrical Connections
NPC 250-1 July, 1963	Reliability Program Provisions for Space System Contractors
NPC 500-1 May 18, 1964	Apollo Configuration Management Manual
NPC 500-2 July 1, 1964	Facilities Drafting Manual
NPC 500-6 August 1, 1964	Apollo Documentation Administration Instruction
NPC 523 April, 1965	Design Criteria and Construction Standards for Facilities
NMI 1052.31 January 7, 1965	Webb-McNamara Agreement
23-1-1	NASA Management Manual Regulation
23-1-3	NASA Management Manual Regulation
23-1-6	NASA Management Manual Regulation

SP-80-D
June 1, 1964

Guide for Environmental Protection When Using Electrical Ground Equipment Within the Areas of Saturn Complexes Where Hazardous Areas Exist

SP-4-38-D
July 27, 1964

Shock and Vibration Environments and Test Specification Levels, Ground Support Equipment, Launch Complex 39

SP-153-D
November 2, 1964

Compressed Gas Handbook

M-DE-8000.006
(CM018-001-1)
June 1, 1963

OMSF Directive, Mass Properties Standards

Apollo/Saturn IB
PSRD #4200

Apollo/Saturn IB Program Support Requirements Document #4200 (revised periodically)

Apollo/Saturn V
PSRD #3000

Apollo/Saturn V Program Support Requirements Document #3000 (revised periodically)

C.2.2 KSC Documentation

K-AM-02, Rev. 2, Change 2
September 23, 1966

Apollo/Saturn Logistics Support Requirements Plan

K-AM-03
January 26, 1966

Apollo/Saturn Configuration Management Plan

K-AM-030/1
January 5, 1966

KSC Apollo/Saturn Top Specification Tree

KMI-1050.1
May 19, 1966

KSC/MSFC Agreements

KSC/MSFC Agreements

KMI-1052.1
March 9, 1965

KSC/ETR Agreements

KSC-STD-122 (MA) May 15, 1966	Standard Determining Criticality Numbers for Priority I, II, III Components
KSC-STD-131 February 1, 1966	Pneumatic and Hydraulic Mechanical Com- ponents and Parts, Electrical
KSC-STD-132 November 22, 1965	Potting and Molding Electrical Cable Assembly Terminations
KSC-STD-140A June 17, 1966	Grounding and Bonding Electrical Stan- dards
KSC-STD-164 September 17, 1964	Environmental Test Methods for Ground Support Equipment Installations at Cape Kennedy
KSC-C-123 Amendment 3 July 12, 1965	Cleanliness Levels, Cleaning, Protection and Inspection Procedures for Parts, Field Parts, Assemblies, Subsystems for Pneumatic Use in Support Equipment
KSC-F-124 May 5, 1965	Fittings (Pressure Connections), Flared Tube, Specifications for
KSC-S-126 February 15, 1965	Sealing of Electrical Components for Enclosures, Specifications for
KSC-E-165A April 15, 1966	Electrical Ground Support Equipment Fabrication
KSC-W-179	Welding Stainless Steel and Invar Pipe, Tubing, and Associated Fittings, Speci- fication for
KSC-W-180	Welding of Aluminum Alloy Pipe, Tubing, and Associated Fittings, Specification for
KSC-D-327 February 7, 1966	Drawings, Engineering, and Associated Lists
KD1A0133 No. 7 March 1, 1966	Engineering Procedures - Interface Control Documents

75M09473	Brazing of Steels, Copper, Copper Alloys, Aluminum, Nickel Alloys, and Magnesium Alloys, Procedure for
KSC-S-101 August 24, 1964	Semiconductor Devices, General Specification
KSC-M-117 March 31, 1965	Specification Motors, A-C, Integral Horsepower, for GSE
K-AM-041/1 June 1, 1965	Apollo/Saturn Specification for Operations and Maintenance Manuals
K-AM-030/1 January 5, 1966	KSC Apollo/Saturn Top Specification Tree
(No Identification Number Assigned)	KSC/GSE Manual for Drafting and Design (Draft)
K-IB-02.16	Apollo/Saturn IB Support Directive SD4200
K-V-05.16	Apollo/Saturn V Support Directive
K-IB-02.17	Apollo/Saturn IB Requirements Document RD4200
K-V-05.17	Apollo/Saturn V Requirements Document
K-V-02	Apollo/Saturn V KSC Provided GSE Dev. Qual. and Acceptance Test Requirements and Plan
K-V-03	Apollo/Saturn V GSE Validation Test Requirements
K-AM-05	Apollo/Saturn Reliability and Quality Assurance Plan
KHB 8070, 1	Uniform Format for Specifications and Standards

C.3 MILITARY DOCUMENTATION

M-200A	Defense Standardization Manual
MIL-B-5087B (ASG) October 15, 1964	Bonding, Electrical, and Lightning Protection, for Aerospace Systems
MIL-E-6051C Amendment 1 September 10, 1964	Electrical-Electronic System Compatibility for Interference Control Requirements for Aeronautical Weapon System, Associated Subsystems and Aircraft.
MIL-I-6181D November 25, 1959	Interference Control Requirements, Aircraft Equipment
MIL-M-45765(M1) April 1, 1963	Maintainability Requirements for Missile Systems and Equipment
MIL-STD-143A May 14, 1963	Specifications and Standards, Order of Precedence for the Selection of
MIL-STD-447 May 28, 1959	Definitions of Interchangeable Substitute and Replacement Items
MIL-STD-454A	Standard General Requirements for Electronic Equipment
MIL-STD-803A-1 January 27, 1964	Human Engineering Design Criteria for Aerospace Systems and Equipment, Part 1 Aerospace System Ground Equipment
MIL-STD-803A-2 December 1, 1964	Human Engineering Design Criteria for Aerospace Systems and Equipment, Part 2 Aerospace Systems Facilities and Facilities Equipment
MIL-STD-826 January 20, 1964	Electromagnetic Interference Test Requirements and Test Methods
MIL-STD-1247A August 17, 1964	Identification of Pipe, Hose, and Tube Lines for Aircraft, Missile, and Space Systems

AFR 87-1 through 87-3
December 27, 1962

Acquisition of Real Estate

AFR 88-3
February 4, 1960

New Construction

AFR 88-15
September 2, 1963

Facility Design and Construction

AFM 85-26
May 24, 1957

Military Construction Program

C.4 OTHER PUBLICATIONS

NBS 30

National Electrical Safety Code

NFPA 75

National Electrical Code

NOTE

Copies of specifications, standards, drawings, and publications listed herein are available at the Kennedy Space Center (KSC) Library.

DISTRIBUTION LIST K-AM-030/4

This is the initial distribution at the date of printing. If changes in distribution are required, contact Configuration Management Office (DC-3).

Kennedy Space Center

Scientific and Technical
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RC-423 (6)

RH-141

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Total: 79

I-V-P-(6)