A Reproduced Copy

OF

Reproduced for NASA

by the

NASA Scientific and Technical Information Facility

N70-39447

(ACCESSION NUMBER) (THRU)

101 1

(PAGES) (CODE)

TMX-66313 15

(NASA CR OR TMX OR AD NUMBER) (CATEGORY)

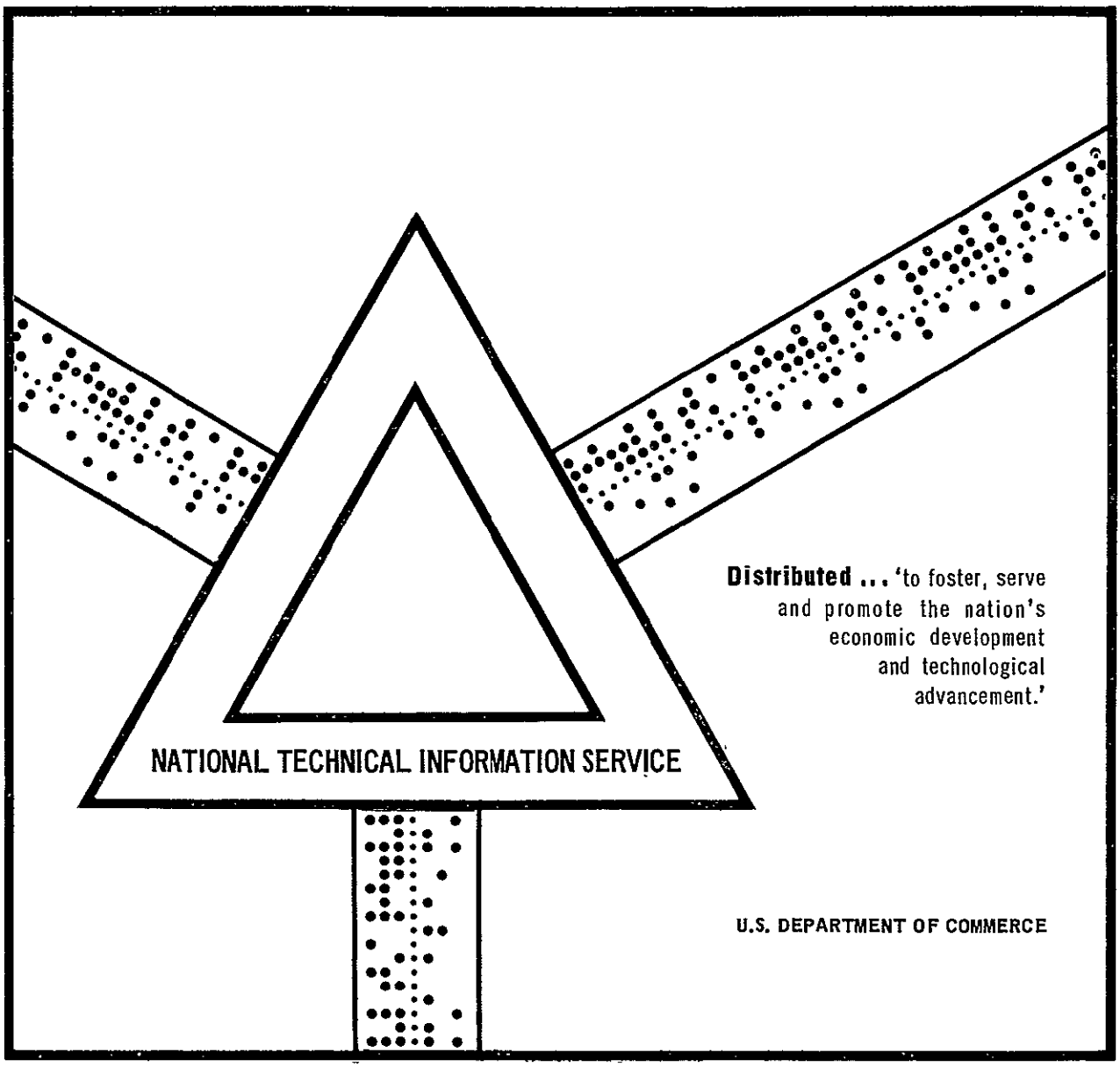
FACILITY FORM 602

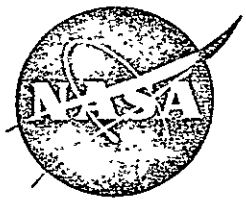
FFNo 672 Aug 65

1 SQT. 62715R

GLOSSARY OF TERMSPPERTINENT TO RELIABILITY AND QUALITY ASSURANCE AT KSC

1 June 1970





JOHN F. KENNEDY SPACE CENTER

GP-850
June 1, 1970

GLOSSARY OF TERMS PERTINENT TO RELIABILITY AND QUALITY ASSURANCE AT KSC

L2

Prepared by:

DIRECTOR, QUALITY ASSURANCE
PLANS AND POLICY OFFICE

PREFACE

The assurance of reliability and quality requires a common understanding of the terminology used for these purposes.

The definitions as presented herein are intended to provide an updated collection of terms and acronyms used at KSC for Reliability and Quality Assurance. Nothing contained herein should be construed to modify, or effect in any way, any existing contract or subcontract.

This initial listing of items has been prepared from released documents of NASA, KSC, and other Government agencies. The preferred usage is given; however, differences in definitions have been found and have been noted in Annex A for comparison.

Forms are provided in the back of this document to provide users with a simple and effective means of submitting comments, or recommendations for additions, deletions, or revisions to this document. Comments are solicited and should be forwarded to the Plans and Policy Office, Quality Assurance Directorate.

R. A. McDaris
Director, Quality Assurance

REVISION RECORD

Changes, revisions and supplements to this document will be issued as required, to ensure it usefulness. Since this document is not under a controlled revision, contact the Plans and P Office, Quality Assurance Directorate, to determine the latest revision date.

REVISION #	DATE	APPROVAL SIGNATURE	COMMENT

ACCEPTABLE QUALITY LEVEL (AQL)

A nominal value expressed in terms of percent defective or defects per hundred units, whichever is applicable, specified for a given group of defects of a product.

(SP-6001, MIL-STD-105)
See Annex A

ACCEPTANCE

The act of an authorized representative of the Government by which the Government assents to ownership by it of existing and identified supplies, or approves specific services rendered as partial or complete performance of the contract.

(NPC 200-1A, NASA PR 14.201, NPC 200-3, NHB 5330.7, K-AM-03, NHB 5300.4(1B), SP-6001)
See Annex A

ACCEPTANCE DATA PACKAGE

The Acceptance Data Package specifies the end-item results of requirements in manufacture, test, performance, integration, interfacing, and logistical support of an item or service. The package includes selected technical data, such as plans, drawings, standards, specifications, models, objectives, performance requirements, formulae, procedures, techniques, equipment, interface requirements, and procurement packages.

(KHB 4000.1A)

ACCEPTANCE NUMBER

The largest number of defectives (or defects) in the sample or samples under consideration that will permit the acceptance of the inspection lot.

(SP-6001)

ACCEPTANCE SAMPLING

The art or science that deals with procedures in which decisions to accept or reject lots or processes are based on the examination of samples.

(SP-6001)

ACCEPTANCE SAMPLING PLAN

A specific plan which states the sample sizes, and the criteria for acceptance, rejection, or the taking of another sample.

(SP-6001)

ACHIEVED RELIABILITY

The reliability demonstrated by the physical item. It consists of inherent reliability with any degradation that occurs in manufacture, shipping, handling, storage, maintenance, or use. Statement of achieved reliability must include specifications of conditions under which demonstrated.

(SP-6001)

ANALYSIS

See - Failure analysis
Failure mode analysis
Maintenance analysis
Mission analysis

ANALYTIC MODEL

A mathematical model which is represented by continuous, differentiable equations.

(SP-6001)

ANOMALY

A deviation from the common rule; an irregularity.

(Webster's Third New International Dictionary)

ARTICLE

A unit of hardware, or any portion thereof, required by the contract.

(NHB 5300.4(1B), NPC 200-1A, NPC 200-3; NHB 5330.7, NHB 5300.4(3A), SP-6502, SP-6001)

See Annex A

ATTRIBUTE

A characteristic or property which can be appraised only in terms of whether it does or does not exist.

(SP-6001)
See - Inspection by attributes

AUDIT

An examination and review to determine the degree of implementation of a requirement. (Also see Survey)

(KMI 5310.1C)
See - Annex A

AVERAGE OUTGOING QUALITY LIMIT

The maximum of the average outgoing qualities for all possible incoming qualities for a given sampling plan.

(MIL-STD-109B)
See - Annex A

AVERAGE SAMPLE NUMBER

The average number of sample units inspected per lot in reaching a decision to accept or to reject.

(SP-6001)

AVERAGE TOTAL INSPECTION

The average number of units inspected per lot, including all units in rejected lots (applicable when the procedure calls for 100 percent inspection of rejected lots).

(SP-6001)

BASELINE

The information approved for use as a foundation for accomplishing subsequent activities.

(NHB 7500.2)
See - Annex A
Baseline configuration
Configuration baseline
Design requirements baseline

BASELINE CONFIGURATION

The documented and approved design concept or arrangement of components as established at a given point in the procurement cycle for systems or equipment.

(SP-6001, SP-6502)

BLANKET PURCHASE AGREEMENT (BPA)

A simplified method of filling anticipated repetitive needs for small quantities of supplies or services by establishing "charge accounts" with qualified sources of supply. Blanket purchase agreements are designed to reduce administrative costs in accomplishing small purchases by eliminating the need for issuing individual purchase documents.

(NASA PR 3.605-1)
See - Annex A

BLOCK DIAGRAM

A line drawing with block outlines to designate units or functional groups for general arrangement studies, functional explanation, product familiarization, etc., within a system, set or item.

(SP-6001, SP-6502)

BURN IN (Debugging) - (See "Debugging")

See - Annex A

CALIBRATION

Comparison between two instruments or devices (one of which is a standard of known accuracy) to detect, correlate, report, and/or adjust any deviation in the accuracy of the instrument being compared.

(NHB 5300.2, KMI 5310.4)
See Annex A
Calibration cycle
Final calibration curve

CALIBRATION CYCLE

An established time interval between calibrations of standards or items of inspection, measuring, and test equipment.

(KMI 5310.4)
See Annex A

CALIBRATION TEST (See Calibration)

CANNIBALIZATION

The act of removing serviceable parts from one item of equipment in order to install them on another item of equipment.

(KHB 4000.1A)
See Annex A

CASE I PROCESS

Processes requiring certification (of personnel) by the supplier only.

(NMI 5330.5)

CASE II PROCESS

Processes wherein a NASA specification or contractual document requires certification (of personnel) by the supplier and the Government.

(NMI 5330.5)

CERTIFICATION

The act of competent authority in verifying that required training has been completed and specified knowledge and/or proficiency has been demonstrated.

(KMI 5310.6)
See Annex A
Process certification

CHARACTERISTIC

Any dimensional, visual, functional, mechanical, electrical, chemical, physical or material feature or property; and any control element which describes and establishes the design, fabrication and operating requirements of an article or material.

(NHB 5300.4(1B))
See Annex A
Mandatory Characteristic

CLASS I ENGINEERING CHANGE

All proposed engineering changes, in accepted and unaccepted complete end items, assemblies, or items to the lowest level of assembly provisioned, shall be designated as Class I changes in design whenever one or more of the following is affected:

a. Any proposed change to a drawing covering a unit of operational equipment that requires retrofit.

b. Specifications, price or fee, weight, guarantees, delivery, or test schedules (including the total specification tree and documents referenced in the specification).

c. Reliability and/or maintainability.

d. Performance as stated in either definite terms or goals, or as experienced in items in service use.

e. Interchangeability, or a change in category regarding substitutability or replaceability.

f. Safety, including fire protection/alarm capability.

g. Electrical interference to communication -electronic equipment or electromagnetic radiation hazards.

h. Changes to Ground Support Equipment (GSE) or facilities which have an effect on other Launch Vehicle Equipment Facilities, Class I or II Training Equipment, or Government Furnished Equipment.

i. Preset adjustments or preset schedules to the extent that (1) new identification must be assigned, or (2) operating limits are affected.

j. Systems, equipment, or facilities procured by organizations to the extent that other organizations must accomplish an engineering change to maintain compatibility at the interface.

k. Operational computer programs to the extent that a change must be incorporated into an existing program or a new program added for program use. Changes to maintenance or trainer programs shall be treated as effects on GSE or trainers.

l. A change of qualified vendors; e.g., a different or new source, applicable at the removal-reparable level of higher assemblies.

(K-AM-03)

CLASS II ENGINEERING CHANGES

Any engineering change not falling within the definition of Class I engineering change.

(K-AM-03)

CLASSES OF SHIPPING AND HANDLING

Class I, Class II, Class III, or Class IV shipping and handling categories are defined as follows:

Class I: Program critical and high cost items which, in the event of loss, damage, or delay in shipment, would seriously affect the program. (See "Program Critical Item")

Class II: Delicate or sensitive items not covered by Class I or Class III. These items are those that are damaged readily, by improper handling.

Class III: Items requiring special handling and monitoring. Class III items require a courier or monitoring instrumentation.

Class IV: Those items that can be transported or handled through the use of normal commercial transportation.

(NHB 6000.1(1A))
See Annex A

CLEANROOM

An enclosed area employing control over the particulate matter in air with the additional control of temperature, humidity, and pressure, as required.

(NHB 5300.2)

COMMERCIAL ITEMS

Supplies or services which normally are offered and sold to the public commercially by any supplier.

(SP-6001)

CONDITIONAL QUALIFICATION (See Qualification - Conditional)

CONFIDENCE FACTOR (See Confidence Level)

CONFIDENCE INTERVAL

A range of values estimated from a random sample on the premise that the range will include a sought-for true parameter if the sampling process were to be repeated many times.

(SP-6001)

CONFIDENCE LEVEL

The percentage of statements, tests, etc., expected to be correct. The certainty with which data from a small group apply to a specific confidence interval. By using appropriate data and a selected confidence coefficient, the expected correct answers can be obtained.

(SP-6001)

CONFIDENCE LIMITS

The upper and lower extremes of the confidence interval.

(SP-6001)

CONFIGURATION

The technical and physical description required to fabricate, test, accept, operate, maintain and logistically support systems or equipment.

(NPC 500-1, SP-6001, SP-6502)
See Annex A

CONFIGURATION BASELINE

An approved and defined point of departure for control of future changes in system or equipment performance and design. A baseline is documented by a specification and other documents and is technically defined by formal approval of the specification, or a part thereof, by the procuring organization.

(K-AM-03)

CONFIGURATION CONTROL

Systematic evaluation, coordination, approval or disapproval of all changes to the baseline configuration.

(SP-6001, SP-6502)
See Annex A

CONFIGURATION CONTROL BOARD

The functional body composed of representatives of KSC responsible for configuration control. It approves or disapproves all requests for change.

(K-AM-03)
See Annex A

CONFIGURATION IDENTIFICATION

The technical documentation defining the approved configuration of systems and equipment.

(K-AM-03)
See Annex A

CONFIGURATION MANAGEMENT

The formal set of procedural concepts by which a uniform system of configuration identification, control, and accounting is established and maintained for all NASA systems/equipment and components thereof.

(NPC 500-1)
See Annex A

CONFIGURATION STATUS

The official NASA documented indication of the actual configuration of a serially numbered system or equipment at any given time in relation to an approved configuration.

(NPC 500-1)

CONTINGENCY SUPPORT REQUIREMENTS.

These requirements identify specific services or support which become known only due to a contingency that occurs during the conduct of a test or operation.

(KMI 8660.2A)

CONTRACT

A binding agreement between two or more persons or parties. A writing made by the parties to evidence the terms and conditions of a contract.

(Webster's Third New International Dictionary).
See Annex A

CONTRACT END ITEM DETAIL SPECIFICATION

A CEI specification is prepared for each end item of equipment categorized as an identification item. An "identification item" is one which satisfies the following criteria:

a. It can be qualified by inspection and/or simple demonstration.

b. Quality control at the production level can be the basis for verification of quality, and acceptance can be based on verification that the item conforms to the drawings.

c. Because of its use and simplicity of function and design, few design changes are anticipated once the product configuration baseline for the item is established.

(NPC 500-1)

CONTRACT END ITEM DETAIL SPECIFICATION (FACILITY) - (FCEI)

The FCEI specification is composed of two distinct parts, each of which has distinct and different uses in FCEI acquisition. Part I, facility criteria, is a product of a Program Definition Phase or requirements analysis, and is the engineering instrument used to contract for design and development of the FCEI. Part II of the FCEI specification, the construction bid package (contract, plans and specification), is a product of the design and development contract. Part II specifies the FCEI in terms of the detailed product configuration requirements of the facility suitable for contracting actual facility construction.

(NPC 500-1)

CONTRACT END ITEM DETAIL SPECIFICATION (PRIME EQUIPMENT)

The CEI (Prime equipment) specification specifies design, development, test and acceptance requirements for a single CEI type-model-series, which cannot be defined by the simplified formats of an identification specification or a requirements specification. The CEI specification is composed of two distinct parts, each of which has distinct and different uses in the contractual control of CEI acquisition. Part I is a product of a Program Definition Phase or requirements analysis, and is the engineering instrument used to contract for design and development of the CEI. Part II of the CEI specification is a product of the design and development contract. Part II specifies the CEI in terms of the detail product configuration requirements of the item qualified (or to be qualified) under the terms and conditions of the design and development contract.

(NPC 500-1)

CONTRACT END ITEM DETAIL SPECIFICATION (REQUIREMENT ITEMS)

A CEI specification is prepared for each end item of equipment categorized as a requirement item. A "requirement item" is one which satisfies the following criteria:

a. It has been developed.

b. It is in NASA inventory.

c. It is required to support an item or items being developed, either to be used with, or to be assembled into, that item(s).

(NPC 500-1).

CONTRACT SCHEDULE

That portion of a Government prime contract which describes the articles or services desired. Not to be confused with contract time-schedule or delivery schedule.

(NPC 200-1A, NPC 200-3, NHB 5330.7, NHB 5300.4(1B), SP-6001)

CONTRACTING OFFICER

Any Government employee who is currently designated a Contracting Officer with the authority to enter into and administer contracts and make determinations and findings with respect thereto, or with any part of such authority. The term also includes the authorized representative of the Contracting Officer acting within the limits of his authority.

(NHB 5300.4(1B))

See Annex A

CONTRACTOR

Any person, partnership, company or corporation (or any combination of these) which is a party to a contract with the United States.

(NPC 250-1)
See Annex A

CONTRACTOR-ACQUIRED PROPERTY

Property procured or otherwise provided by the contractor for the performance of a contract, title to which is vested in the Government.

(NHB 5300.4(1B))

CONTROLLED PROCESS

A process which yields samples whose characteristics remain consistently within the control limits of a shewhard chart.

(SP-6001)

CORRECTIVE ACTION

Action taken to correct all conditions that contribute to, and are inherent in, a nonconformance (includes flight readiness action and recurrence control action).

(KMI 5310.11, APD #44, AAPD #10)
See Annex A

CORRECTIVE ACTION REQUEST (CAR)

KSC Form 1-53, a form which is used by a directorate to request corrective action from another directorate when a nonconformance does not involve a failure or require design action.

(KMI 5310.11)

CORRELATION

The degree to which two or more variables are so related that a change in one is accompanied by a corresponding change in the other. The degree of concomitance is measured by the correlation coefficient.

(SP-6001)

CRITICAL

For the purposes of NHB 5300.6, parts, materials, operations, failure, etc., designated as critical are those which may affect the safety of the personnel, or the probability of overall mission success. (For AAP, criticality categories are shown in NHB 5300.5 and NHB 8080.3).

(NHB 5300.6)

CRITICAL DESIGN REVIEW (CDR)

A formal technical review of design which identifies specific engineering documentation for release to production and establishes a basis for provisioning, preparation of technical manuals, and other supporting activities dependent upon a detail design definition of a CEI.

(K-AM-03)
See Annex A

CRITICAL ITEM (See "Program Critical Item")

CRITICAL PARTS LIST

A listing of those parts whose failure would cause a degradation in mission success or crew safety.

(SP-6001)

CRITICAL SYSTEMS

Those GSE systems or portions of systems (including safety components) which, if they fail, will cause launch delay, launch scrub, loss of stages or spacecraft, or a hazard to astronauts or operating personnel. (See also "Criticality Categories for Nonconformances")

(KMI 5310.9)

CRITICALITY

Assignment of relative importance to hardware or systems.

(SP-6001, NHB 8080.1)

CRITICALITY CATEGORIES FOR NONCONFORMANCES

Categories of criticality for nonconformances are defined as follows:

Category 1 A nonconformance which could cause loss of life (flight or ground crew), stage or spacecraft.

Category 1S A nonconformance in a safety or hazard monitoring system which could cause the system to fail to detect, combat or operate when needed during the existence of a hazardous condition and could allow loss of life or loss of the vehicle.

Category 2A A nonconformance which can cause immediate mission flight termination or unscheduled termination at the next planned earth landing area. (For AAP - include loss of primary mission objectives.). This category is not extensively used on KSC designed hardware.

Category 2B A nonconformance which can cause a launch scrub.

Category 3 A nonconformance which can cause a launch delay. (For AAP - includes loss of secondary mission objectives.)

Category 4 A nonconformance which has none of the above effects.

(KMI 5310.11)

CURTAILED INSPECTION

Sampling inspection where, as soon as a decision is certain, the inspection of the sample is stopped. As soon as the rejection number for defectives is reached no further inspection is necessary. A first sample is always completed for the purpose of estimating the process average quality.

(SP-6001)

D

DATA REQUIREMENTS DESCRIPTION (DRD)

A detailed description of a type of document, its contents, and preparation information as authorized for use. DRD's are used to specify the preparation of each item as listed on the DRL.

(KHB 4000.1A)

DATA REQUIREMENTS LIST (DRL)

A listing of the minimum essential documents authorized for generation and publication on specific activities. DRL's are used to define the individual items of documentation required from contractors or other Centers.

(KHB 4000.1A)

DATE CODE

A symbol which indicates a specific date in code. A date code may consist of a series of numbers or letters that indicate day, week, month, or year.

(NHB 5300.4(1B))

DD FORM 250

A material receiving and inspection form used to indicate acceptance and/or inspection status of contracts.

(KMI 5114.1A)
See Annex A

DD FORM 250 (MODIFIED)

Same as above but prepared by a supplier with delegated agency approval of format, and also serves for billing.

(NHB 5330.7)

DEBUGGING

A reliability conditioning procedure which is a method of aging the equipment by operating it under specified environmental and test conditions in accordance with an established procedure in order to eliminate early failures and age or stabilize the equipment prior to final test and shipment. Also known as burn-in or infant mortality.

(SP-6001)
See Annex A ("Burn-In (Debugging)")

DEDICATED SUPPORT ITEMS*

Dedicated support items are those items of operational support which are used exclusively by one program/project, and are installed so that their design configuration is fixed and is not altered or changed from test to test by that program. Their operational configuration may be changed from time to time, but will remain constant from a design capability standpoint. Dedicated items are documented in the KPRD but never in the RD, and as such are not scheduled but expected to be available and operational during any test or operation (unless an outage is scheduled by the responsible support element). An agreement will be made and duly documented for each specific dedicated support item or system as appropriate.

(KMI 8660.2A)

DEDICATED SUPPORT REQUIREMENTS

These requirements identify specific services which, by agreement, are routinely available on a daily basis or support by systems of fixed configuration which are dedicated for a single program or test/launch complex.

(KMI 8660.2A)

DEFECT (See "Nonconformance")

See Annex A

DEGRADATION

Gradual deterioration in performance.

(SP-6001)
See Annex A

DEGRADATION FACTOR

The factor by which reliability is changed due to treatment of the equipment such as manufacture, maintenance, etc.

(SP-6001)

DEGRADATION FAILURE

A failure that results from a gradual change in performance characteristics of an equipment or part with time.

(SP-6001)

DERATING

A reduced level of application relative to designed capability.

(SP-6001)

DESIGN

As applies to a product, it is the engineering drawings and specifications which permit fabrication of the product.

(SP-6001)

*Editors Note: Title in reference document does not call out "ITEMS".

DESIGN CRITERIA

Standards upon which a design is based.

(SP-6502, SP-6001)

DESIGN RELIABILITY

The reliability inherent in the design. Generally, the maximum reliability that can be achieved if all equipment is produced, maintained, and operated exactly as specified. It is determined by the selection and application of materials, parts, and circuits and related to the application of environmental and operational stress.

(SP-6001)

DESIGN REQUIREMENTS BASELINE

A baseline for a CEI, a system segment, or a system which is technically defined by approval of Part I of the applicable specification(s).

(K-AM-03)
See Annex A

DESIGN REVIEW

Evaluation of a design delineated on drawings, specifications and other technical documents in conformance to the intended end use of the article or system.

(NHB 5330.7)
See Annex A

DESIGN REVIEW PROGRAM

A systematized and disciplined application of the broad technical competence of the contractor and the customer to a product. The program is intended to improve the product and to provide assurance to contractor and customer management, by formalized documentation of the decision logic, that the most satisfactory design has been selected to meet the program requirements.

(SP-6502)

DESIGN SPECIFICATION

A document prescribing criteria to be satisfied in designing a particular component, subsystem, or system (or part). Typical criteria include performance requirements under specified environments, interface requirements, size, weight, ruggedness, safety margins, derating factors, and apportioned reliability goal (with definition of failure).

(NPC 250-1, NHB 8080.1; SP-6502)

DESTRUCTIVE TESTING

Testing of any nature which may materially affect the life expectance of the item tested, whether or not failure occurs during the test.

(SP-6001)

DETAIL SPECIFICATION

A detail description of a particular model of an item prepared by the designer which cites all specific design and construction criteria.

(SP-6001, SP-6502)

DEVELOPMENT TEST

Test employed to generate engineering knowledge concerning a design or piece of equipment. Development testing will be used to determine and verify safety margins and explore modes of failure.

(SP-6001)
See Annex A

DEVIATION

A specific authorization, granted before the fact, to depart from a particular requirement of the specifications or related documents.

(KMI 5330.6)
See Annex A

DISCREPANCY (See "Nonconformance")

See Annex A

DISCREPANCY RECORD (DR)

A form for reporting a nonconformance including the associated hardware disposition and corrective action. Any contractor or KSC form which is used for this purpose will be considered a DR provided its use has been specifically described in an approved Reliability or Quality Assurance Plan.

(KMI 5310.11)

DISPOSITION

The processing of an item of hardware, usually a failed item after removal from an assembly. (First maintenance personnel will usually route a failed item to the 2nd level repair activity for inspection to determine if it is economically reparable or if it should be scrapped.)

(NHB 7500.2)

DOCUMENTATION

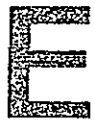
Information that is generated to record data required for control of design, production, procurement, maintenance, and supply of material, e.g.; drawings, specifications, handbooks, manuals, etc.

(NHB 8080.1, SP-6001)
See Annex A

DYNAMIC TEST

Ground test designed to determine the structural dynamic characteristics of stages or space vehicles (bending modes, structural feedback constants, damping constants, natural resonances, etc.) under simulated flight conditions. This test may be combination development test and qualification test.

(NHB 8080.1)



END ITEM

An aeronautical or space system or any of its principal system or subsystem elements, e.g., launch vehicle, spacecraft, ground support equipment, propulsion engine or guidance system. Also, articles covered by major subcontracts where publication (NHB 5300.4(1B)) is invoked by the NASA installation or by a system prime contractor. Also, articles which will be delivered direct to a Government Installation or provided as GFP (Government-furnished property) to a contractor.

(NHB 5300.4(1B))
See Annex A

ENGINEERING ORDER (EO)

A means of initiating, describing, and authorizing equipment design changes either in advance of, or concurrent with, the release of changed drawings to NASA equipment.

(K-AM-03)
See Annex A

ENGINEERING TEST

A test conducted by, or under supervision of, the technical service concerned, with a scientific approach where the objective of the test is to determine inherent structural, electrical, or other physical and chemical qualities of the system tested, including those of an environmental nature.

(SP-6001)

ENVELOPE DRAWING

An envelope drawing shows outline, overall and mounting dimensions, and other dimensions and data necessary to disclose mechanical, electrical, functional and physical interchangeability of items regardless of the detail design.

(SP-6001)

ENVIRONMENTAL TEST

Any production acceptance test (in-process test, manufacturing checkout, etc.) performed under environmental rigors other than ambient for the prime purpose of verifying the quality of flight hardware or ground equipment.

(NHB 8080.1)
See Annex A

ENVIRONMENTAL TOLERANCE

The ability of a system, or portion thereof, to operate within a specified range.

(SP-6001)

EQUIPMENT

One or more assemblies, or a combination of items, capable of independently performing a complete function.

(SP-6001, KHB 4000.1A)

F

FACI (First Article Configuration Inspection)

A coordinated effort culminating in a formal technical review that establishes the CEI Product configuration baseline.

(K-AM-03)
See Annex A

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.

(K-AM-030/4)

FAILURE

The inability of a system, subsystem, component or part to perform its required function. (Criteria for "required function" includes specified limits, conditions and duration.) A part, component, subsystem, or system cannot be classified as "failed" until it is subjected to a functional test or actual usage, and it does not perform as specified. However, an item may be classified as failed when there is discernible evidence of a failure which would obviously prohibit the item from performing its intended function. (Also see "Nonconformance")

(KMI 5310.11)
See Annex A

FAILURE ANALYSIS

The physical analysis of hardware that is accomplished by specially trained (laboratory) personnel and is conducted outside normal repair, refurbishment, or maintenance operations for the purpose of identifying failure mechanisms, failure modes, and, at times, failed parts.

(KMI 5310.10)
See Annex A

FAILURE ANALYSIS INSTRUCTION

A description of certain tasks, steps, or restrictions which are to be followed when performing failure analysis. This may include, but is not limited to:

(1) Performance of functional tests as required to confirm or attempt to isolate the failure.

(2) Disassembly sequences.

(3) Performance of special tests or examination, e.g., electrical, chemical, physical, metallurgical, X-ray, etc.

(4) Functional testing or examination of like or similar "good" hardware.

(5) Permissible degree of destruction which will be allowed.

(KMI 5310.10)

FAILURE ANALYSIS REPORT

A report describing a failure, the engineering investigation, the cause of the failure, the laboratory failure analysis, results, and the corrective action which will prevent recurrence.

(KMI 5310.10)

FAILURE CRITICALITY ANALYSIS

Study of the potential failures which might occur in any part of a space system in relation to other parts of the system to determine the severity of effect of each failure in terms of a probable resultant safety hazard, unacceptable degradation of performance, or loss of mission of a space system.

(NPC 250-1)

FAILURE EFFECT ANALYSIS

Study of the potential failures which might occur in any part of a space system to determine the probable effect of each on all other parts of the system and on probable mission success.

(NPC 250-1, NHB 8080.1)

FAILURE INVESTIGATION

The study of a specific failure which has occurred to determine the circumstances which caused the failure and to arrive at a course of corrective action which will prevent its recurrence.

(KMI 1058.3)

FAILURE MECHANISM

The physical process which results in a part or equipment failure.

(KMI 5310.10, SP-6001)

FAILURE MODE

The physical description of the manner in which a failure occurs, and the operating condition of the equipment at the time of the failure.

(NHB 8080.1, KMI 5310.10, SP-6001)
See Annex A

FAILURE MODE ANALYSIS

The study of a space system and working inter-relationships of the parts thereof under various anticipated conditions of operation (normal and abnormal) to determine probable location and mechanism by which failures will occur.

(NPC 250-1)
See Annex A

FAILURE MODE AND EFFECT ANALYSIS

An analysis of possible modes of failure, their cause, effects, expected frequency of occurrence and means of elimination.

(SP-6001)

FAILURE PRIORITIES (See "Criticality Categories for Nonconformances")

FAILURE RATE

Rate at which failures occur as a function of time. If the failure rate is constant, it is frequently expressed as the reciprocal of mean time between failure (MTBF).

(SP-6001)
See Annex A

FINAL CALIBRATION CURVE

Output characteristics of a measuring device or component obtained from a calibration test.

(SP-6001)

FINAL CONFIGURATION REVIEW

A formal technical review performed prior to the initiation of simulated countdown to verify that all changes approved since FACI have been incorporated, that the documentation has been updated, and that the configuration and related documentation are in complete agreement.

(K-AM-03)

FLIGHT ACCEPTANCE TEST

A test conducted to prove that the actual operational hardware intended for flight use has been fabricated in accordance with specifications. Tests are conducted under conditions expected to be encountered in actual operations.

(SP-6001)

FLIGHT ASSURANCE TEST

A test or series of tests to ascertain that an item of flight hardware meets specified environmental and performance criteria established to confirm that the specimen in question is flight-worthy. Flight assurance tests are conducted at the component subsystem or system level on specimens of hardware which have not been previously subjected to severe test or handling treatments, but which are identifical to the qualification test specimens in all physical respects and in the methods and controls used in their fabrication.

(NPC 250-1)

FLIGHT READINESS ACTION

Action taken to ensure that a nonconformance has been resolved for mission assigned hardware; however, recurrence control action may be incomplete.

(KMI 5310.11)
See Annex A

FUNCTIONAL ANALYSIS (FOR MAINTAINABILITY)

The investigation of alternative man and machine capabilities which may be used to satisfy established system requirements. The analytical basis for allocating activities to personnel and equipment so as to achieve optimum system performance.

(SP-6001)

FUNCTIONAL INTERFACE

Point of juncture involving specific system design characteristics. Requirements include, but are not limited to, structural loads, fluid flows, electrical circuit characteristics, and critical environmental conditions (natural or induced).

(K-AM-03)

FUNCTIONAL TEST

A test performed to demonstrate that the item operates as specified (required). When used to determine contract compliance, it is conducted in the manner specified in the contract.

(KMI 5310.12)
See Annex A

GOVERNMENT-FURNISHED EQUIPMENT (GFE)

(See "Government Furnished Property (GFP)")

GOVERNMENT-FURNISHED PROPERTY (GFP)

Property in the possession of, or acquired directly by the Government, and delivered or otherwise made available to the contractor.

(KHB 4000.1A, SP-6001)
See Annex A

GOVERNMENT INSPECTION

All quality assurance actions by Government inspectors to ascertain whether supplies or services conform to the technical requirements specified in the contract order or procurement action.

(KHB 8070.1)
See Annex A

GOVERNMENT PROPERTY

All property owned by or leased to the Government or acquired by the Government under the terms of a contract. Government property includes both Government-furnished property and contractor-acquired property.

(NHB 5300.4(1B))

GROUND QUALIFICATION TEST

The Ground Qualification Program test objective is to verify that the space vehicles and associated ground support equipment meet design specification requirements necessary to assure operational suitability at anticipated environments for their use cycles.

(NHB 8080.1)

GROUND SUPPORT EQUIPMENT (GSE)

That equipment on the ground including all implements, tools, and devices (mobile or fixed), required to inspect, test, adjust, calibrate, appraise, gage, measure, repair, overhaul, assemble, disassemble, transport, safeguard, record, store, or otherwise function in support of a space vehicle, either in the installation or operational phase, or in support of the guidance system used with space vehicles, or the like. The GSE is not considered to include land or buildings, or the guidance-station equipment itself. It does include the test and check-out equipment required for operation of the guidance-station equipment (including critical facilities, e.g., altitude chambers and electrical power distribution equipment).

(KMI 5310.9)
See Annex A

HARDWARE CRITICALITY CATEGORY

A class or division of hardware with the same criticality assignment. These categories are utilized for the purpose of establishing test requirements. (See: Table 3-1, Hardware Criticality Categories for Flight Hardware; and Table 3-2, Hardware Criticality Categories for Ground Support Equipment, of NHB 8080.1)

(NHB 8080.1)

HAZARDOUS OPERATION

An activity which could result in damage to property or personal injury because it involves, either singly or in combination, the following:

(1) Ordnance: Any operation involving the handling, transportation, installation, removal, closeout, or checkout of ordnance devices; and any operation or checkout of an ordnance system after ordnance items have been installed or connected.

(2) Propellants: Any operation involving propellant loading, unloading or flow, hookup, or disconnect, movement of loaded storage units or opening of contaminated systems.

(KMI 1710.13)

HUMAN ERROR

Inaccuracy, mistake, or inconsistency due to the inherent characteristics or man. (See also "Human-induced Failures")

(SP-6001)
See Annex A

HUMAN-INDUCED FAILURES

Those failures and malfunctions of equipment components directly attributable to some act or omission by a human operator. Examples of human-induced failure events include: Activation of the wrong control, rough handling, and incorrect wiring. Sources or human-induced failures may include: Poor design, incorrect process or test procedures, improper inspection, and inadequate training or supervision.

(SP-6506)

INSPECTION LOT

A collection of units of product manufactured or processed under substantially the same conditions and offered for inspection at one time or during a fixed period of time.

(SP-6001)
See Annex A

INSPECTION, MEASURING AND TEST EQUIPMENT

Equipment (including tooling) used to inspect, measure or test hardware to determine conformance to applicable design specifications. Tooling includes tools, gages, jigs and fixtures which measure dimensions, contours, or locations affecting quality characteristics.

(NHB 5300.2, KMI 5310.4, KHB 5330.1)

INSPECTION STATION

The place or point in a process at which inspection is performed.

(KHB 5330.1)

INSTALLATION NOTICE CARD (INC)

The official document used to inform the cognizant KSC organization that a particular modification has been installed, tested, verified, and accepted in accordance with its associated change instruction.

(K-AM-03)
See Annex A

INTEGRATION

The process of assuring that the major elements of a program be conceived, designed, assembled, tested, operated, and documented in such a manner as to be compatible with each other and to satisfy the program objectives.

(SP-6502, SP-6001)

INTEGRITY CONTROL

A formulized system established to insure that:

(1) Only authorized changes and modifications, performed in accordance with documentation released by Configuration Change Boards, are incorporated into mission-essential hardware and equipment.

(2) A current and accurate assessment of equipment configuration and inspection status is maintained continuously.

(3) Unauthorized access and/or work on controlled hardware and equipment is detected promptly.

(KMI 5310.7)

INDEPENDENT VARIABLE

Arbitrary variable which the designer has some freedom to establish. Once selected, the variable influences such system characteristics as performance and weight at the design point.

(SP-6001)

INGRESS

The act of, or the mechanism for, entrance to an enclosure. In spacecraft this can relate to the act of a crew member entering the space vehicle or it can describe the entrance chamber, pressure lock and hatchways.

(SP-6001)

IN-PROCESS INSPECTION

Inspection which is performed during the fabrication cycle.

(NHB 5300.4(1B))

INSPECTION

The process of measuring, examining, gaging, or otherwise comparing an article or service with specified requirements.

(NHB 5300.4(1B))
See Annex A
In-Process Inspection

INSPECTION BY ATTRIBUTES

Inspection wherein the unit of product is classified as defective or nondefective with respect to a given requirement or set of requirements specified in official documentation.

(KHB 8070.1)
See Annex A

INSPECTION BY VARIABLES

Inspection wherein certain quality characteristics of samples are evaluated with respect to a continuous numerical scale and expressed as precise points along this scale. Variables inspection records the degree of conformance or nonconformance of the unit with specified requirements for the quality characteristics involved.

(KHB 8070.1)
See Annex A

INSPECTION LEVEL

Used to indicate the relative number of sample units for a given amount of product. All other things being equal, a higher inspection level entails a lower risk of acceptance of a lot of inferior quality.

(SP-6001)

IDEP (INTERAGENCY DATA EXCHANGE PROGRAM)

An operation, sponsored jointly by NASA and the three military services, to collect test reports and failure analysis reports on parts and associated materials from Government agencies and contractors who make or sponsor these tests, and to publish and distribute summary test reports and related documents to participants.

(KMI 5210.3A)
See Annex A

IDENTIFICATION (FOR TRACEABILITY)

A controlled serial, log number, date code, or combined serial and lot number or date code which relates the article, assembly, model, or system to a particular lot of raw material, process, manufacturing date, cure date, receiving date, purchased lot, historical record, inspection or test data, calibration data, assembly process, matched articles, expiration data, operating time, X-ray, or other pertinent data.

(NHB 5300.1A)
(See Traceability)

IDENTIFICATION ITEM

A unit which can be qualified by inspection and/or simple demonstration. Once the item is in manufacture:

a. Quality control at the manufacturing level can be the basis for verification of quality, and

b. Acceptance can be based on verification that the item, as fabricated and assembled, conforms to the drawings, and

c. Acceptance testing to verify performance will not be specified, and

d. Few, if any, design changes are anticipated once the Product Configuration Baseline for the item is established.

(K-AM-03)

INDEPENDENT FAILURES

Those failures which occur or can occur without being related to the malfunctioning of associated items.

(SP-6001)

INTEGRITY CONTROL CHECK SHEET

A Government or contractor form used for recording work authority control numbers, date of entry, purpose of entry, authorization for entry, and quality status.

(KMI 5310.7)

INTERFACE

The point or area where a relationship exists between two or more parts, systems, programs, persons, or procedures wherein physical and functional compatibility is required.

(NHB 8080.1, SP-6001, SP-6502)
See Annex A

INTERFACE CONTROL DOCUMENT

Documents establishing joint agreements for interface requirements. They are considered "controlled" in that these interface requirements cannot be unilaterally changed.

(K-AM-03)

INTERFACE LEVELS (KSC)

LEVEL "A" INTERFACE. The point of juncture between two or more hardware end items or components which are under the design jurisdiction of two or more National Aeronautics and Space Administration centers.

LEVEL "B" INTERFACE. The point of juncture between two or more hardware end items or components for which two or more KSC directorates have design responsibility.

LEVEL "C" INTERFACE. The point of juncture between two or more hardware end items or components for which two or more organizations within one directorate have design responsibility.

(K-AM-03)

INVESTIGATION AND CORRECTIVE ACTION (ICAR)

A report of the investigation and corrective action which has been accomplished as a result of a UCR. KSC Form 14-14B (Investigation and Corrective Action) is used for this purpose on all UCR's involving KSC designed or procured hardware.

(KMI 5310.11)

J

JOINT OPERATING PROCEDURE (JOP)

A written procedure between a KSC activity and another Government activity that provides implementing instructions relative to a subject included in an existing interagency agreement between the two agencies.

(KMI 1410.4)

KSC ALERT COORDINATOR

The individual designated by the Director, KSC, to coordinate the KSC ALERT effort.

(KMI 5310.2A)

KSC IDEP COORDINATOR

The individual designated by the Director, KSC, to coordinate the KSC IDEP effort.

(KMI 5310.3A)

LAUNCH CRITICAL SPARES

A component, part or assembly to be used in replacing an item whose satisfactory operation has been determined to be mandatory to launch operations.

Note: The criteria to be used for selection of a launch critical spare is that (1) The item is mandatory for launch/mission, (2) The item is a first level maintenance item, (3) Once countdown has started, the failed part can be identified and removed and replaced part installed and verified in the system within 12 hours. (The 12-hour downtime is defined to be from fault detection through resumption of countdown.)

(KHB 4000.1A, K-AS-05)

LAUNCH CRITICAL SYSTEM

Any system with a Priority I, S, II, or III SFP potential, which is required to support the mission after the start of the countdown; which can cause loss of human life or vehicle, hazard to astronauts, launch holds or scrubs; or which will significantly decrease the probability of launch success. The use of redundancy to eliminate single point failure modes does not preclude the system's being considered critical.

(K-AS-05)

LAUNCH READINESS REVIEW*

The Launch Readiness Review is an assessment of the operational status of the vehicle and KSC facilities as to their readiness to support scheduled launch operations.

(K-AS-05)

*Editor Note: Taken from paragraph 6.1, General, of the referenced document.

See Annex A

LETTER OF DELEGATION

A letter of delegation is a formal written communication addressed to an agency setting forth those quality assurance and other contract administration services functions which are to be performed by the agency for NASA.

(NHB 5330.7)

LETTER OF REDELEGATION

A formal letter reassigning certain functions to an agency to support the delegated agency on behalf of the contracting officer on a subcontract. (Same as secondary delegation defined in NASA Procurement Regulation, Subpart 51.3)

(NHB 5330.7)

LEVELS OF PACKING

LEVEL A: Packing which will afford adequate protection during shipment, handling, indeterminate storage and worldwide distribution.

LEVEL B: Packing which will afford adequate protection against multiple domestic shipments and covered storage.

LEVEL C: Packing which will afford protection against damage during direct shipment from the supply source to the first receiving activity for immediate use.

(NHB 6000.1 (1A))
See Annex A

LIFE TEST

Those tests conducted to verify and qualify hardware from an endurance of life standpoint. Life test shall be conducted at design levels for the required operational cycles.

(SP-6001)
See Annex A

LIMITED LIFE ARTICLES

Articles whose usefulness is limited to a specified time or cycle.

(NHB 5300.4(1B))
See Annex A

LOGISTICS CRITICAL COMPONENTS

Components of a CEI are designated logistic critical when:

a. Replacement or repair of the component is complicated by short supply.

b. At a spares selection conference, NASA identifies the components for multiple source procurement or reprocurement.

(NPC 500-1)

LOT

Consists of units of product manufactured to the same requirements of contract, drawings, and specifications under the same manufacturing methods. Maximum and minimum lot sizes shall be to specific instructions.

(SP-6001)
See Inspection Lot

LOT QUALITY

The ratio of the number of units defective to the total number of units.

(SP-6001)

LOT SIZE

A specific quantity of similar material, collection, or similar units from a common source. In inspection work, the quantity offered for inspection and acceptance at any one time. It may be a collection of raw material, parts, or subassemblies inspected during production or a consignment of finished product to be sent out for service.

(SP-6001)

MAINTAINABILITY

The quality of the combined features of item design and installation which facilitates the accomplishment of inspection, test, servicing, repair and overhaul with minimum time, skill, and resources.

(NHB 7500.1, SP-6001)
See Annex A

MAINTAINABILITY REQUIREMENT

A comprehensive statement of required characteristics, expressed in quantitative terms, to be incorporated in system, subsystem, and component design.

(SP-6001)

MAINTENANCE

The function of retaining material in or restoring it to operating condition. It includes repair cycle activities at any level, as well as the servicing cycle and refurbishment.

(KMI 7500.1)
See Annex A
Unscheduled Maintenance (Corrective Maintenance)

MAINTENANCE ANALYSIS

The process of identifying required maintenance functions and determining the most effective means of accomplishing these functions.

(SP-6001)

MAINTENANCE GROUND EQUIPMENT (MGE)

The ground support equipment which is used in support of maintenance operations for vehicle, payload, stages, OGE, facilities, or other MGE.

(NHB 7500.1, KHB 4000.1A)

MAINTENANCE LEVELS

Maintenance levels as they apply to KSC programs are defined as follows:

First Level Maintenance - Those maintenance actions which are accomplished directly on the system installed hardware. This includes system fault isolation, repair in place, remove and replace subsystems or components replenish, inspect, etc.

Second Level Maintenance - Those maintenance actions which are required in direct support of First Level Maintenance. This involves disposition and/or repair of First Level Maintenance items and is accomplished in shops at KSC.

Third Level Maintenance - This maintenance is essentially the same as Second Level Maintenance; however, it is accomplished in a remote location (factory or overhaul facility). It generally involves particular technical skills and/or equipment which are not economically practical at the First Level Maintenance site.

(KHB 4000.1A)

MAJOR COMPONENT

A component whose reliability is considered particularly critical to the reliability of the subsystem or system in which it is used and which is designated as a major component in the approved Reliability Program Plan for the contract.

(NPC-250-1)

MAJOR DEFECT

(See "Major Nonconformance")

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.

(K-AM-030/4)

MAJOR NONCONFORMANCE

Any nonconformance that could affect matters such as safety to facilities or individuals, reliability, durability, performance, interchangeability, weight (where weight is a significant factor) or the basic design intent. Material substitution is defined as a major nonconformance.

(KMI 5330.5, KMI 5330.6)
See Annex A

MALFUNCTION

Failure of a product to give satisfactory performance.

(See also "Nonconformance")
(SP-6001)

MANDATORY CHARACTERISTIC

Specific characteristic which shall be subjected to examination or test on each article or process.

(NHB 5330.7)
See Annex A

MATERIAL REVIEW BOARD (MRB)

A decision making team composed of one contractor representative whose primary responsibility is design; one contractor representative whose primary responsibility is product quality; and one Government quality representative acting on behalf of KSC, who determine or recommend disposition of nonconforming articles prior to acceptance by the Government.

(KMI 5330.5, KMI 5330.6)
See Annex A

MEAN TIME BETWEEN FAILURES (MTBF)

The total measured operating time of a population of equipments divided by the total number of failures.

(SP-6001)
See Annex A

MEAN TIME TO FAILURE

The measured operating time of an equipment divided by the total number of failures.

(SP-6001)

MEAN TIME TO FIRST FAILURE

The average time to the first failure based on several equipments.

(SP-6001)

MEAN TIME TO REPAIR

A parameter of the maintainability function and can be used as an index of maintainability in a manner analogous to the use of mean-time-between failures (MTBF) as an index of reliability.

(SP-6001)

METROLOGY

The science and technology of measurement of any parameter of weight, mass, length, chemical and electrical unit, and physical constant. This technology includes the selection, utilization, and control of equipment used to provide measurement, and also includes assurance of a valid relationship between measured values and values of measurement established by national reference standards and international agreements.

(NHB 5300.2)

MINIMUM MATERIAL SIZE

The limit at which a part contains the minimum amount of material. The minimum external limit and the maximum internal limit.

(SP-6001)

MINIMUM TOLERANCE

A specified allowance which, when subtracted from a basic dimension, defines the smallest acceptable dimension.

(SP-6001)

MINOR DEFECT

(See "Minor Nonconformance" and "Nonconformance")

MINOR NONCONFORMANCE

Any nonconformance other than major that does not reduce the usability of an item for its intended purpose, or is a departure from established standards having no significant bearing on the effective use or operation of the product or associated units.

(KMI 5330.5)

MISSION ANALYSIS

A comprehensive evaluation of all the parameters which affect the events of a mission.

(SP-6001, SP-6506)

MISSION CRITICAL

The designation given that in-line operational equipment whose malfunction may result in damage to the system, injury to personnel-substantial time loss or mission failure.

(NHB 7500.2)

MISSION ESSENTIAL

Indispensable to the successful completion of the mission.

(KMI 5310.7)

MISSION-ESSENTIAL SUPPORT EQUIPMENT

Mission-essential support equipment is defined as satisfying any of the following:

1. Equipment used in a closed loop with the system where failure would degrade the mission or imperil personnel.
2. Equipment used when transferring toxic or explosive fluids, in which failure could result in personnel hazards or affect mission success.
3. Equipment used as a last check prior to installation whose failure would result in lowering the probability of mission success or compromising personnel safety.

(NHB 5300.4 (3A))

MISSION PROFILE

A time-sequence description of the events required, as well as the necessary locations and conditions of their occurrence, in order to accomplish the objectives of the mission.

(SP-6506)

MODIFICATION

A modification is a change in the configuration of a system or equipment that is accomplished by the specifications of a system or equipment, and by altering items already produced.

All changes to previously delivered systems/equipment (including GFAE), and delivered spares required to correct deficiencies revealed after the date of completion of the test program are modifications, regardless of the method of generation.

(NPC 500-1)
See Annex A

MODIFICATION INSTRUCTIONS

(KSC Form 21-122) The form used to transmit a modification instruction package from the design agency to the operating agency. The form will be initiated by the design engineering originating agency and will bear the Engineering Change Proposal (including all companion ECP's and supplements) and/or Configuration Control Board Directive number, a system description to completely define the modification, a summary of documents contained in the package, associated modification instructions, special instructions, kit delivery information, etc.

(KMI 8040.1)
See Annex A

MODIFICATION INSTRUCTION PACKAGE

A package containing all of the software necessary to accomplish a modification to the equipment, system and/or facility. The package contains the modification instruction, engineering drawings and specifications, special installation instructions, parts lists, installation notice cards, retest requirements, quality requirements, recommended spares, etc.

(KMI 8040.1)
See Annex A

MODIFICATION KIT

A package containing all of the parts and materials necessary to accomplish a modification. The package will include a parts list checked and certified by the appropriate quality organization inspecting the kitting (DD Form 250).

(KMI 8040.1)
See Annex A

MODIFICATION PACKAGE

The documentation (Modification Instruction Package) and hardware (Modification Kit) required for implementation of a change.

(K-AM-03)

MODIFICATION REVIEW

An examination of the design activity which results in assurance that the proposed solution to the problem fully recognizes requirements stated by the responsible KSC organization.

(K-AM-03)

MULTIPLE SAMPLING

Sampling inspection in which, after each sample the decision may be to accept, to reject, or to take another sample. Usually a prescribed maximum number is provided. After this number of samples has been taken a decision to accept or reject must be reached. Note, multiple sampling as defined here is sometimes called sequential sampling or group sequential sampling. The term multiple sample is preferred.

(SP-6001)

MULTIPLE SAMPLING PLAN

Under a multiple sampling plan, results of the inspection of one or more successive samples from an inspection lot may be required to determine its acceptability. A multiple sampling plan consists of three or more sample sizes with associated acceptance and rejection criteria.

(SP-6001)

N

NASA CRITICAL ITEM LABEL

A standardized, distinctive label, prominently displayed on the exterior of all Class I, Class II, and Class III interior packages and exterior shipping containers. The purpose of the labels is to alert all shipping and handling personnel of the criticality of the item to the manned space effort.

(NHB 6000.1 (1A))

NASA (OR CONTRACTOR) REFERENCE STANDARDS

Reference standards representing the highest level of accuracy available within the KSC or NASA (or contractor) facilities. These are standard references against which lower level standards are compared, and are calibrated to national reference standards or are defined and sanctioned by international agreements.

(KMI 5310.4)
See Annex A

NATIONAL REFERENCE STANDARDS

The highest level national references which are: standards maintained by the National Bureau of Standards; acceptable standards maintained by other recognized agencies where an NBS reference is not available; or values of natural physical constants, such as, the acceleration due to gravity or standard reference materials.

(NHB 5300.2, KMI 5310.4)

NONCONFORMANCE

Any deviation from established requirements. This includes all defects, discrepancies, anomalies, malfunctions, and failures. (Synonymous with unsatisfactory condition.)

(KMI 5310.11)
See Annex A
Major Nonconformance
Minor Nonconformance

NONCOMPETITIVE PROCUREMENT

Procurement of supplies and services from one person or firm to the exclusion of all other persons or firms.

(KMI 5104.1C)

NON-DESTRUCTIVE TESTING

Testing of a nature which does not impair the usability of the item.

(NHB 8080.1, SP-6001)

NON-STANDARD PART

One for which no published standard or specification exists.

(SP-6001)

NORMAL DISTRIBUTION

The fundamental frequency distribution of statistical analysis. The principal characteristics of the normal law are:

(1) It is symmetrical. Negative and positive deviations of equal magnitude are equally likely to occur.

(2) It is a continuous function rather than a discrete function. It assigns a definite probability to every deviation. There are no excluded cases.

(3) There is just one most probable result, and this is identical with the first expectation of the variable.

(SP-6001)

NORMAL INSPECTION

Inspection which is used when there is no significant evidence that the quality of product being submitted is better than or poorer than specified requirements.

(SP-6001)

OBJECTIVE QUALITY EVIDENCE

Any fact or facts pertaining to the quality of articles or services based on observations, measurements or tests which can be fully verified.

(NPC 200-1A, NHB 5330.7)

OPERATING CYCLE

A complete sequence of operations required for normal functions of an item of equipment, or for limited test purposes.

(SP-6001)

OPERATIONAL STATUS

The status of an item of flight hardware which has completed flight qualification and is ready to perform flight missions other than flight testing of the item itself.

(NHB 8080.1)

OPERATIONS AND MAINTENANCE INSTRUCTIONS

Data specifically organized to cover assembly and checkout, test, operating and maintenance of vehicle system/equipment. This includes items commonly known as technical manuals, support manuals, O&M manuals, handbooks or data packages.

(NHB 7500.1, KHB 4000.1A)

OPERATIONS SUPPORT PLAN (OSP)

The KSC OSP is a support document which responds to the mission requirements contained in the PSRD or to the OSRD when and if that document is used by OMSF. This document is prepared, published, and maintained by the Kennedy Space Center.

(KMI 8660.2A)

ORGANIZATIONAL IDEP CONTACT POINTS

The individual assigned by the respective directors to coordinate their organization's IDEP effort.

(KMI 5310.3A)

P

PACKAGING

Application or use of adequate protective measures to prevent damage from physical hazards during transportation and storage including application of packages and wraps, cushioning, and complete identification marking of unit and intermediate containers. It is used also in the general sense to embrace the complete operation-- preservation, packaging, packing, and marking.

(NHB 6000.1(1A))
See Annex A
Packaging
Preservation
Levels of Preservation and Packaging

PACKING

The final placement of items or packages in exterior shipping containers or other media, including necessary blocking, bracing, cushioning, weatherproofing, exterior strapping, and marking.

(NHB 6000.1(1A))
See Annex A
Levels of Preservation and Packaging

PARTS AND MATERIALS

All kinds of items, whether standard or of special design, related to space vehicles and ground support equipment. The term "parts and materials" includes:

(1) All mechanical, Pneumatic, hydraulic, electrical and electronic parts, microcircuits, and integrated modular subassemblies.

(2) Materials, processes and procedures associated with the items set forth in subparagraph (1) above, such as ferrous and non-ferrous metals, plastics, sealants, lubricants, insulation, solders, fluxes, shielding, hose, and hydraulic fluids.

(KMI 5310.2A)

PARTS OR MATERIALS APPLICATION PROBLEM

The term "A parts and materials quality or application problem" means a failure, malfunction, or unspecified deterioration (degradation or contamination) of the item involved during any phase of its life cycle. The term "problem" applies to unexpected defects or malfunctions of items used in equipments which might lead to failures in other equipments. This excludes routine discrepant parts and materials detected in acceptance or receiving inspections of parts or materials.

(NMI 5310.1A)

PERCENT DEFECTIVE

The percent defective of any given quantity of units of product is one hundred times the number of defective units of product contained therein divided by the total number of units of product, i.e.: Percent Defective =

$$\frac{\text{Number of Defectives} \times 100}{\text{Number of units inspected}}$$

(MIL-STD-109B)
See Annex A

PERSONNEL CERTIFICATION

(See "Certification")

PREDICTIVE TEST

A test employing non-destructive measurement techniques to identify units which will exhibit submarginal performance in service.

(SP-6001)

PREFERRED PARTS LIST

A list of preferred parts developed from historical data obtained from qualification testing; receiving records; maintenance records; and contractor, industry and government service lists, such as IDEP. (Lists should be continuously reviewed and updated.)

(See "Qualified Parts List")

PREFERRED SOURCE LISTS

A list of procurement sources that have been qualified and approved for supplying preferred parts. (Lists should be reviewed and updated to control the source of procured materials.)

PRELAUNCH CHECKOUT

Checkout of missile and ground equipment to determine readiness to launch may include a countdown and a flight readiness firing with all launch complex equipment operating, but not including actual launching of the vehicle.

(NHB 8080.1)

PRELAUNCH TEST

(See "Prelaunch Checkout")

PRELIMINARY DESIGN REVIEW (PDR)

This is a formal, technical review of the basic design approach for a contract end item. The PDR is accomplished prior to, or very early in, the detail design phase in order to establish the system compatibility of the design approach. The primary product of a preliminary design review is formal identification of specific engineering documentation which establishes the physical and functional interface relationship of the CEI to other system equipment/facilities.

(NPC 500-1)
See Annex A

PRESERVATION

Application or use of adequate protective measures to prevent deterioration from environmental hazards, including, as applicable, the use of appropriate cleaning and drying methods, preservatives, and wrapping for protection from chemical danger.

(NHB 6000.1(1A))
See Annex A
Levels of Preservation and Packaging

PROCESS

See Case I Process
See Case II Process
See Controlled Process

PROCESS CERTIFICATION

A written statement based on objective quality evidence that a process conforms to specified requirements.

(NHB 5300.4(1B))

PROCUREMENT CLASSIFICATIONS

Category 1 - Space systems, major subsystems, and complex assemblies, as described in Quality Publication NPC 200-2; and test and checkout equipment, instrumentation, and launch facilities used in launching, operating, and maintaining vehicles or craft in space, including those for static test.

Category 2 - Materials, parts, components, and services for the space systems listed in Category 1; and test equipment used for ground testing but not included in Category 1.

Category 3 - All other procurements.

(NASA PR 1.5002)

PROCUREMENT DATA PACKAGE

A collection of related data items that provide information required for the procurement of a specific item. Depending upon the complexity, criticality, and cost of the item, the procurement data package may contain all or some of the following data items:

(1) Specifications, drawings, schematics, sketches, brochures, catalog pages, photographs, item descriptions, or other descriptive data containing salient characteristics that permit positive, accurate identification of the item in the required configuration.

(2) Inspection, test, and calibration requirements documentation, including requirements for supplier certification and/or source inspection.

(3) Cleaning, preservation, packaging, shelf life, marking and shipping requirements documentation.

(4) Receiving inspection requirements documentation.

(KMI 7500.1)

PROCUREMENT DOCUMENTS

(See "Procurement Request")

PROCUREMENT REQUEST

Includes KSC Form 7-49 (Request for Supplies/Equipment or Turn-In), KSC Form 19-33 (Procurement Request), and other pertinent documents that supplement these forms, e.g., proposed statements of work, contract clauses and schedules. (See also KHB 4000.1 and KMI 5150.2)

(KMI 5310.12)

PROCURING ACTIVITY

The element of a Government agency or department which maintains cognizance, control, and administration of a contract entered into by the Government agency or department.

(SP-6001)

PRODUCT CONFIGURATION BASELINE

(See "Configuration Baseline")

PROGRAM CRITICAL ITEM

An item of equipment or a part for which the lack of immediate issue on-call at the demand source would affect adversely program/project schedules, safety, or reliability.

(NHB 6000.1(1A))
See Annex A

PROGRAM REQUIREMENTS DOCUMENT - KSC (KPRD)

The KPRD is a KSC document for levying program requirements on KSC support elements. It sets forth the basic and generally unchanging needs of the total program. Support requirements which are required to support a test or operation but which are "dedicated" to that program and thus need not be scheduled up for individual tests will be included in the KPRD. The program requirements contained in the document are used primarily for planning and should be provided in as much detail as possible at the time of entry. However, requirements should be identified as soon as they are known regardless of the detail that is then available. "Dedicated" support for individual tests should be provided in as complete detail as suggested by the individual form provided.

(KMI 8660.2A)

PROGRAM SUPPORT PLAN (PSP)

The OMSF Program Support Plan (PSP) is a support document which responds to the program requirements contained in the PSRD. This document is prepared, published, and maintained by the OMSF Operations Support Requirements Office (OSRO) from inputs provided by the various NASA support centers and DOD.

(KMI 8660.2A)

PROGRAM SUPPORT PLAN - KSC (KPSP)

The KPSP provides a response to the KPRD, and is thus also program oriented.

(KMI 8660.2A)

PROGRAM SUPPORT REQUIREMENTS

These requirements identify the broad capabilities that KSC must have or obtain to support the program or project. These requirements continue throughout the life of the program/project, and normally do not identify the requirements for a specific vehicle, flight or test.

(KMI 8660.2A)

PROGRAM SUPPORT REQUIREMENTS DOCUMENT (PSRD)

The OMSF Program Support Requirements Document (PSRD) is a publication of the NASA/DOD standardized Manned Space Flight Support Documentation System, and is prepared, issued and maintained by the OMSF Operations Support Requirements Office (OSRO) from inputs provided by the various NASA centers and DOD. The PSRD is the document that established the requirements necessary for support of a manned program and its missions. The Launch Support Request (LSR), Prelaunch Support Request (PLSR), and Flight Support Request (FSR) are the means used to levy requirement changes to the final PSRD published revision for a particular mission.

(KMI 8660.2A)

QUALIFICATION

Determination that an article or material is capable of meeting all prescribed design requirements.

(NHB 5300.4(1B))
See Annex A

QUALIFICATION - CONDITIONAL

Conditional qualification is interpreted as that stage of the overall qualification program in which authorization is granted for initiation of fabrication of deliverable items which may be incorporated into and tested in higher levels of assemblies.

(SP-6001)

QUALIFICATION DATA

The complete body of data obtained in the qualification testing of a part, component, subsystem or system.

(NPC 250-1)

QUALIFICATION TEST

A test or series of tests conducted to determine whether a part, component, subsystem, or system meets qualification requirements.

(NPC 250-1)
See Annex A

QUALIFIED PART

A part that has been subjected to a specific qualification test(s) and thereby determined to be capable of meeting an established specification.

See Annex A

QUALIFIED PARTS LIST

A list of qualified parts and their respective manufacturers.

See Annex A

QUALITY ASSURANCE

A planned and systematic pattern of all actions necessary to provide adequate confidence that the end item will meet all specified requirements.

(NHB 5300.4(1B))
See Annex A

QUALITY CONTROL

A management function to control the quality of articles to conform to quality standards.

(NPC 200-1A, NPC 200-3, NHB 5330.7, SP-6506)
See Annex A

QUALITY STATUS STAMPS - NASA

Stamps required for indicating the quality status of NASA equipment, components, materials, and documents. The stamps are issued in sets of three (to indicate conformance, nonconformance, and void). They are made of one material and in one size, and have the same installation symbol and alpha-numeric designation.

(1) Conformance Stamp: A triangle stamp used to indicate that articles and/or accompanying documents satisfy NASA requirements and conform to prescribed criteria including design intent.

(2) Nonconformance Stamp: A hexagon stamp used to indicate that articles and/or documents have been inspected and/or tested, but do not conform to requirements. Such articles and documents are subject to further corrective actions, inspections, tests, investigations, processing, or contract actions.

(3) Void Stamp: A D-shaped stamp used to indicate that previous contractor and/or Government inspections, tests, and accompanying documents are void.

(KMI 5330.1B)
See Annex A

QUALITY SURVEILLANCE

The technical direction and monitoring of a contractor's quality assurance and inspection functions, or of quality assurance and inspection functions delegated to another Government agency or NASA installation, to assure compliance with the contractual and/or delegated requirements. (Note - Any direction which alters the terms or conditions of the contract or delegation will be provided through appropriate contract administration channels.)

(KHB 5330.1, KMI 5330.3)

QUALITY SURVEILLANCE ORGANIZATION

A KSC element organizationally responsible for quality surveillance.

(KHB 5330.1)
See Annex A

QUALITY SURVEILLANCE TECHNICAL REPRESENTATIVE (QSTR)

A KSC representative assigned or delegated to perform quality assurance or quality control functions defined herein as quality surveillance.

(KMI 5330.3)
See Annex A

QUALITY WORK AUTHORIZATION LOG

Equipment log book containing integrity check sheets.

(KMI 5310.7)

R

RANDOM SAMPLE

One in which each item in the lot has an equal chance of being selected in the sample.

(SP-6001)

RANDOM VARIABLE

A variable, either discrete or continuous, which may assume any one of a number of values, each of which has a fixed probability of occurrence.

(SP-6001)

REAL TIME

Time in which reporting on events or recording of events is simultaneous with the events.

(SP-6001)

RECALL SYSTEM (CALIBRATION)

A documented system to insure that all standards and inspection, measuring, and test equipment are recalled from the users at predetermined intervals for the purpose of calibration.

(NHB 5300.2, KMI 5310.4)

RECEIVING DOCUMENT

(See "DD Form 250")

RECURRENCE CONTROL ACTION

The action taken to prevent recurrence of the nonconformance on existing and follow-on hardware.

(KMI 5310.11, AAPD #10, APD #44)

REDUNDANCY

The existing of more than one means for accomplishing a given task. Parallel redundancy applies to systems where both means are working at the same time to accomplish the task, and either of the systems is capable of handling the job itself in case of failure of the other system. Standby redundancy applies to a system where there is an alternate means of accomplishing the task that is switched in by a malfunction sensing device when the primary system fails.

(SP-6001)

REFURBISHMENT

The cleaning, repair, replacement of parts, and other renovation activities required to restore equipment or a facility to usable condition.

(NHB 7500.1)
See Annex A

REJECTION NUMBER

A number associated with each sample of an attributes sampling plan. An inspection lot is rejected for an inspection if the total number of defectives is equal to or greater than the rejection number associated with that sample.

(SP-6001)

RELIABILITY

The probability that system, subsystem, component, or part will perform its required functions under defined conditions at a designated time and for a specified operating period.

(SP-6001, SP-6506, NPC 200-3, NHB 5330.7, NHB 8080.1, NPC 200-1A, NPC 250-1)

RELIABILITY APPORTIONMENT

The assignment (by derivation from the contractual reliability requirement) of reliability goals to systems, subsystems and components within a space system which will result in meeting the over-all contractual reliability requirement for the space system if each of these goals is attained.

(NPC 250-1)
See Annex A

RELIABILITY ASSESSMENT

An analytical determination of numerical reliability of a system or portion thereof. Such assessments usually employ mathematical modeling, use of directly applicable results of tests on system hardware, and some use of estimated reliability figures.

(NPC 250-1, NHB 8080.1, SP-6001)

RELIABILITY DEMONSTRATION TEST

A statistically designed test, with specified confidence level, to demonstrate that an item meets the established reliability requirements.

(NHB 8080.1)

RELIABILITY PREDICTION

An analytical prediction of numerical reliability of a system or portion thereof similar to a reliability assessment except that the prediction is normally made in the earlier design stages where very little directly applicable test data is available.

(NPC 250-1)

REMEDIAL ACTION

Action to correct a nonconforming article or material.

(NHB 5300.4(1B))
See Annex A

REPAIR

Operations performed on a nonconforming article to place it in usable and acceptable condition. Repair is distinguished from rework.

(NHB 5300.4(1B), NHB 5300.4(3A))

REPAIR TURN-AROUND TIME

The total accumulated time required to package and ship an item to the repair facility, accomplish the repair, and return the repaired item to the supply system.

(NHB 7500.1)

REQUALIFICATION

Repetition of qualification testing of an item using new test specimens to determine whether the item still meets qualification requirements. Usually conducted after a design or material change in the item or when there is reason to doubt that it is still representative of the item originally qualified.

(NPC 250-1)

REQUEST FOR SUPPORT

Task orders, work orders, or any other document that requires the expenditure of labor and/or materials or requires services to be furnished.

(KMI 5330.4)

REQUEST FOR IMPACT

An official document used to request and report the evaluation and impact that a proposed change to Apollo/Saturn systems, equipment, and/or facilities will have on an organization's design, operations, maintenance, or other responsibilities.

(K-AM-03)

REWORK

The reprocessing of articles or material that will make it conform to drawings, specification or contract.

(NHB 5300.4(3A))
See Annex A

SAMPLE

A sample consists of one or more units of product drawn from a lot or batch, the units of the sample being selected at random without regard to their quality.

(MIL-STD-105D)

SAMPLE SIZE

The number of units in a sample. Also used in the sense of the number of observations in a sample.

(NHB 8080.1, SP-6001)
See Annex A

SAMPLING PLAN

A specific plan which states the sample sizes, and the criteria for accepting, rejecting or taking another sample to be used in inspecting a lot.

(SP-6001)
See - Acceptance Sampling Plan
Multiple Sampling Plan

SCRAP

Property that has no reasonable prospect of being sold except for the recovery value of its basic material content.

(KHB 4000.1A)

SCREENING

Test operations performed near rated capacity of the part to provide for detection of defects or incipient failures. Tests of 100% of the parts may include nondestructive shock, centrifuge, temperature, pressure, leak detection, electrical measurement and other tests of failure modes.

(NHB 5300.6)

SECONDARY FAILURE

A cessation of ability of an item to perform its required function due to the malfunction of another item. Secondary failure is one which occurs as a product of an independent failure.

(SP-6001)

SEQUENTIAL SAMPLING

(See "Multiple Sampling")

SEQUENTIAL TEST

The measurement by statistical hypothesis of a sequence of samples where it is decided at each step in the sequence to accept the hypothesis, to reject the hypothesis, or to take an additional sample.

(SP-6001)

SERIAL NUMBER

A number used with a Contract End Item number to denote each unit in a mission-design series and is the engineering effectivity to which technical and management actions are specifically addressed. A serial number is also used with an item identification and part number to denote each unit in a family of noninterchangeable parts which, when reworked or modified to be interchangeable, are reidentified the same.

(K-AM-03)

SHELF LIFE

Storage or nonoperational time that can be accumulated on items before they are placed in operation, use, or before one of the following actions must be taken: (1) Visual inspection; (2) Functional testing; (3) Overhauling; (4) Scrapping or rejuvenating.

(KHB 4000.1A)
See Annex A

SHIPPING AND HANDLING

(See "Classes of Shipping and Handling")

SINGLE SAMPLING

Sampling inspection in which a decision to accept or to reject is reached after the inspection of a single sample.

(SP-6001)

SINGLE FAILURE POINT

A single item of hardware which, if it fails, would lead directly to loss of life or loss of mission.

(KMI 5310.9, K-AM-03)
See Annex A

SKEWNESS

Non-symmetry in a frequency distribution.

(SP-6001)

SOURCE AGENCY

Agency at the plant of the actual producer of the purchased articles.

(NPC 200-1A, NHB 5330.7)

SOURCE CONTROL DRAWING

A drawing which specifies configuration, design, and test requirements for an item (other than Military standard items) and which further specifies the sources from which the item shall be obtained.

(K-AM-03)
See Annex A

SOURCE INSPECTION (GOVERNMENT OR CONTRACTOR)

Inspection at the plant of the actual supplier of articles, materials, or services.

(NHB 5300.4(1B))

SPARE PARTS CATEGORY

A subdivision of spare parts, as follows:

(a) Maintenance Parts are those spare parts (except for bulk items and standard parts) which can be installed in an end item at the outplant Apollo Program test and launch sites without jeopardizing the reliability of the end article supported, using the programmed capabilities of on-site personnel, equipment and facilities.

(b) Repair Parts are those spare parts (except for bulk items and standard parts) which are required to return reparable maintenance parts to a serviceable condition.

(c) Bulk Items and Standard Parts are raw and semi-fabricated materials and low-cost items which are commercially available or which conform to the requirements of Government standards. They include:

(1) Raw and semi-fabricated materials, such as sheet, bar, rod, tubing, extrusions; and paint, lubricants and other preservative compounds.

(2) Industry standards parts which are low cost; nonreparable and readily available in the open market from established sources for off-the-shelf procurement.

(3) All Government standard parts made to MS-AN-JAN-USAF-MIL-NAF-NAS specifications and which are identified by MS-AN-JAN-USAF-MIL-NAF-NAS part numbers.

(NHB 7500.1)

SPARES CHANGE NOTICE (SCN)

A form utilized by a NASA or contractor organization to revise or recommend spares for procurement and introduction into the physical inventory system for eventual use in supporting the end article, and/or to recommend adjustment of previous spares provisioning actions. The use of the form generally stems from an engineering change.

(KHB 4000.1A)

SPECIFICATION

A clear, accurate description of the technical requirements for a material, product, or service, including the procedure by which it will be determined that the requirements have been met. Procurement specifications shall also contain requirements for preservation, packaging and packing as applicable.

(KMI 8070.1)
See Annex A

SPECIFICATION CHANGE NOTICE (SCN)

That form used to effect changes to specifications. Specification Change Notices shall be submitted with the related Engineering Change Proposals.

(K-AM-03)

STANDARD

A description which establishes engineering or technical limitations and applications for materials, processes, methods, designs, engineering practices, or any related criteria deemed essential to achieve the highest practical degree of uniformity in materials or products, or interchangeability of parts used in those products, and which may be used for procurement actions.

(KMI 8070.1)
See Annex A

STANDARDS AND SPECIFICATIONS

The term, when used collectively, means a number of documents maintained in a systematic file for specific referral and/or citation as design criteria for KSC operations and for contractor bid purposes associated with equipment purchases or facilities construction.

(KMI 8070.1)

STANDARD DEVIATION

A measure of the variability of a group in terms of the dispersion of individual scores around the average or mean score.

(SP-6001)

STANDARDIZATION

A process of establishing by agreement, engineering, criteria, terms, practices, item configuration and processes to achieve the greatest practicable uniformity, assure the minimum variety of such items and practices, and to effect the optimum interchangeability of equipment parts and components.

(SP-6001)

STATISTICAL ACCEPTANCE TEST

A procedure designed to determine, with a prescribed accuracy, whether a characteristic of a product is in conformity with acceptance criteria set forth for that product.

(SP-6001)

SUBSYSTEM

A major functional subassembly or grouping of items or equipment which is essential to operational completeness of a system.

(SP-6001)

SUPPLIER

A subcontractor, at any tier, performing the services or producing the contract articles for the contractor.

(NHB 5300.4(1B))
See Annex A

SUPPORT GSE

Support GSE is GSE that is essential to launch operations but does not directly connect to the vehicle; for example, launch complex communications, television (nondata), range type instrumentation, mobile service structure, crawler-transporter, etc.

(K-AM-05/3)

SURVEY

An evaluation of performance through a comprehensive review of systems, procedures, and actions. A survey may include one or more audits.

NOTE: Day-to-day and week-to-week surveillance actions are not audits or surveys.

(KMI 5310.1C)
See Annex A

SYSTEM

One of the principal functioning entities comprising the project hardware and related operational services within a project or flight mission. Ordinarily, a system is the first major subdivision of project work. Similarly, a subsystem is a functioning entity within a system. A system also may be a procedural entity which accomplishes a specific task, e.g., a quality system.

(NPC 200-3, NPC 200-1A, NHB 5330.7)
See Annex A

SYSTEM STANDARD

An instrument which is an integral part of a unit of ground support equipment (GSE) or an integral part of a separate and complete instrumentation system which is used to calibrate or to monitor the accuracy of other instruments mounted in the same or separate systems.

(KMI 5310.4)

SYSTEMS COMPATIBILITY TEST

A test to determine the physical, functional and operational compatibility of stages, stage and IU, launch vehicle and spacecraft, modules, spacecraft and LES, space vehicle and ground support equipment and systems within the ground support equipment.

(NHB 8080.1)

SYSTEMS ENGINEERING

The process of applying science and technology to the study and planning of a system so that the relationships of various parts of the system and the utilization of various subsystems are fully established before designs are committed.

(SP-6001, SP-6502)

SYSTEMS INTEGRATION

The management process by which the systems of a project (for example, the launch vehicle, the spacecraft and its supporting ground equipment and operational procedures) are made compatible, in order to achieve the purpose of the project or the given flight mission.

(NPC 200-1A, NPC 200-3, NHB 5330.7)

SYSTEMS TRAINING

- The engineering, technical, management, job skills and procedures training necessary for the direct support and execution of a Program (e.g., Apollo/Saturn) or any of its systems, subsystems, components, or modifications; training in interfaces between systems; and training on ground support equipment and materials peculiar to a system.

  (KMI 3410.2)

TASK ORDER

A written contractual instrument authorized by the general work scope of the contract, which is separately issued in order to provide sufficiently detailed definition of the work requirement to enable the contractor to commence performance and/or permit obligation of appropriate funds. This includes specifications, criteria and work statements associated with the task orders.

(KMI 5310.12)
See Annex A

TEAR DOWN INSPECTION

An inspection in which a component, subassembly or assembly is disassembled down to its parts, so that each part may be nondestructively inspected to determine if it is made according to its applicable documentation, or to determine the effect of environmental or other tests upon each part.

(SP-6001)

TECHNICAL OPERATING PROCEDURE (TOP)

Any engineering document that provides detailed instructions to personnel, or authorizes work to be accomplished by personnel, for the operational checkout, verification, modification, or replacement of equipment. TOP's are divided into two categories, as follows:

(1) Category I TOP's: Documents which provide detailed instructions for verifying functional operation of Ground Support Equipment (GSE) and Ground Support Equipment Systems; and procedures which provide detailed instructions for operational checkout, servicing, handling, and transporting space vehicle or space vehicle components during pre-launch and launch operations. Test and Checkout Procedures (TCP's) are examples of Category I TOP's.

(2) Category II TOP's: Documents which authorize work, provide engineering instructions, and establish a method of work control. (This category is not applicable for major tests or checkouts.) This type procedure may be written for a "one-time" operation to perform special tests or authorize temporary installations, removals, or replacements. Test Preparation Sheets (TPS's) and Work Orders are examples of Category II TOP's.

(KMI 1710.3)

TEST AND CHECKOUT (INCLUDING LAUNCH) SUPPORT REQUIREMENTS

These requirements identify specific support needed for a test operation. They identify which program/project requirements are needed for the execution of the specific test; they do not necessarily establish a need for new resources.

(KMI 8660.2A)

TEST ANOMALY

An unexplained event, result, or condition occurring in a test, either on the test specimen or test system, which in some way makes uncertain the result of the test or some attribute of the test specimen.

(NHB 8080.1)

TRACEABILITY

A reliability and quality assurance term for any scheme that enables a product to be identified back to the exact time and place or origin. Useful in the recall of material being investigated for production deficiencies or irregularities.

(NHB 7500.2)
(See "Identification for Traceability")
See Annex A

TRACEABILITY CODE

A code assigned to an item relating to traceability characteristics of the item, i.e., traceability by lot number, serial number or no traceability required.

(KHB 4000.1A)

TRANSFER STANDARD

Any standard employed to transmit accuracies from a NASA (or contractor) reference standard to a working standard.

(KMI 5310.4, NHB 5300.2)

UNSATISFACTORY CONDITION

See - Nonconformances

UNSATISFACTORY CONDITION REPORT (UCR)

A form used to report hardware failures and those hardware nonconformances which may require design action. KSC Form 14-14A (Unsatisfactory Condition Report) is used for this purpose when KSC designed or procured hardware is involved.

(KMI 5310.11)
See Annex A

UNSCHEDULED MAINTENANCE (CORRECTIVE MAINTENANCE)

Any maintenance which is required as a result of malfunction, regardless of the circumstances under which these malfunctions were discovered.

(NHB 7500.1)

VALIDATE

To grant official sanction by signature.

(KMI 5310.11)
See Annex A

VEHICLE ACCEPTANCE TEST

System and subsystem test to ensure vehicle specification compliance before vehicle is accepted for flight use.

(SP-6502)

W

WAIVER

Granted use or acceptance, after the fact, of an article that does not meet specified requirements.

(KMI 5330.5)
See Annex A

WORK AROUND

A device or procedure for accomplishing tasks out of scheduled sequence to minimize delays caused by inability to perform planned work.

(NHB 7500.2)

WORK AUTHORITY

Documentation, properly authorized, which allows access to, and/or work to be performed upon, hardware and equipment under integrity control.

(KMI 5310.7)

WORK ORDER

Any communication from an authorized Government representative (usually the KSC contract technical manager, or technical representative) further defining, or specifying the performance of, specific subtasks or subelements of the work required to accomplish the overall mission of the particular contractor.

(KMI 5310.12)
See Annex A

WORKING STANDARD

Any standard used in the calibration of inspection, measuring, and test equipment.

(KMI 5310.4)

ANNEX A

A

ACCEPTABLE QUALITY LEVEL (AQL)

A nominal value expressed in terms of percent defective or defects per hundred units, whichever is applicable, specified for a given group of defects related to items or a product being inspected.

(KHB 8070.1)

ACCEPTANCE

The act of an authorized representative of the Government by which the Government assents to its ownership of existing and identified articles or approves specific services rendered as partial or complete performance of the contract.

(SP-6502)

ARTICLE

The end item or items to be delivered under contract.

(KHB 4000.1A)

AUDIT

Examination and verification that procedures, processes, personnel and hardware conform to requirements.

(NHB 5330.7)

AVERAGE OUTGOING QUALITY LIMIT

The maximum average outgoing quality (AOG) for a sampling plan.

(SP-6001)

BASELINE

The prerequisite information which serves as a foundation for accomplishing subsequent activities.

(NHB 7500.1)

BLANKET PURCHASE AGREEMENT (BPA)

A charge account established with a vendor for a specified period not to exceed one (1) year.

(KMI 5104.2)

BURN-IN (DEBUGGING)

After the equipment has been installed in the test facility and the test setup has been determined to be operating properly, each equipment may be operated for a period of time, determined by the contractor, not to exceed 24 hours of equipment operation or the time required to complete 3 environmental cycles, whichever is less, to eliminate initial defects and to stabilize performance. Failures occurring during this period, and the time of the failures, shall be recorded but not used in determining MTBF. However, all failures shall be subjected to analysis.

(MIL-R-22973)

C

CALIBRATION

The act of comparing an instrument, device or dial with a standard to determine its accuracy, capability or graduations or for devising a scale.

Comparison between two instruments or devices (one of which is a standard of known accuracy) to detect, correlate or adjust any variation in the accuracy of the instrument being compared.

(NHB 7500.1, NHB 7500.2)

CALIBRATION CYCLE

An established interval between calibrations of standards or inspection, measuring and test equipment.

(NHB 5300.2)

CANNIBALIZATION

The authorized removal of a specific part or component from one end item for installation on another end item to meet priority requirements, including the obligation of recording the removal; replacing the specific cannibalized part or component, and accomplishing those tests necessary to demonstrate that the cannibalized end item has been restored to its original acceptance status.

(APD #36)

A maintenance modification or repair method in which the required parts are removed from a similar system or assembly for installation on another.

(SP-6001)

CERTIFICATION

The act of competent authority in verifying that required training has been completed and specified proficiency has been demonstrated.

(NMI 5330.5)

The act of verifying that personnel have completed required training and have demonstrated specified proficiency.

(NHB 5330.7)

The act of competent authority in verifying and documenting that personnel have completed required training and have demonstrated specified proficiency and have met other specified requirements.

(NHB 5300.4(3A))

The act of adjudging the serviceability of an item after repair or modification.

(NHB 7500.2)

CHARACTERISTIC

Any dimensional, visual, functional, mechanical, electrical, chemical, physical or material feature or property; and any process-control element which describes and establishes the design, fabrication and operating requirements of an article.

*(NPC 200-1A, NPC 200-3, KHB 5330.1)

CLASSES OF SHIPPING AND HANDLING

Class I, Class II, Class III, or Class IV shipping and handling categories shall apply to components, parts, and associated equipment and shall be defined as follows:

Class I - Program critical items which, in the event of their loss, damage, or delay in shipment, would seriously impact the program schedule.

Class II - Delicate or sensitive items not covered by Class I or by Class III. These items are those that are readily damaged by improper handling. Examples of Class II items are electronic devices.

Class III - Items requiring special handling and monitoring. Class III items require a courier or monitoring instrumentation, and the details shall be defined by the procuring activity.

Class IV - Those items that can be transported or handled through the use of normal commercial transportation.

(APD #34)

CONFIGURATION

The complete technical description required to fabricate, test, accept, operate, maintain, and logistically support systems and equipment.

(K-AM-03)

The complete technical description required to fabricate, test, accept, operate, maintain, and logistically support an article.

(NHB 5300.4(1B)

CONFIGURATION CONTROL

Systematic evaluation, coordination, and approval or disapproval of proposed changes to any baseline.

(NPC 500-1)

Systematic evaluation, coordination, approval, or disapproval of proposed changes to any configuration baseline.

(K-AM-03)

CONFIGURATION CONTROL BOARD (CCB)

The functional body within the CMO of the Project Office or equipment directorate, responsible for configuration control.

These boards will be chaired by the project director or his designated representative. It is not a voting board. The Program Director or a CCB chairman acting on his behalf, is responsible for making all decisions.

(NPC 500-1)

CONFIGURATION IDENTIFICATION

The technical documentation defining the approved configuration of systems/equipment under design, development, test and manufacturing.

(NPC 500-1)

The technical documentation defining the approved configuration of systems or equipment under development, test, and production.

(SP-6001)

CONFIGURATION MANAGEMENT

The formal set of procedural concepts by which a uniform system of configuration identification, control, and accounting is established and maintained for the configuration of all Apollo/Saturn equipment, systems, and facilities.

(K-AM-03)

CONTRACT

The prime contract executed by the Government and the prime contractor which, in addition to the terms and conditions thereof, includes, by reference or otherwise, specifications, drawings, exhibits, and other data necessary to its proper performance.

(NPC 200-1A, NPC 200-2, NPC 200-3, NHB 5300.4(1B), NHB 5330.7)

The contractual agreement formally executed by the Government and the prime contractor which requires performance of services and/or delivery of a product at a cost to the Government, in accordance with terms and conditions set forth therein.

(NPC 250-1)

The agreement formally executed by the Government and the prime contractor which requires performance of services and/or delivery of a product at a cost to the Government, in accordance with terms and conditions set forth therein.

(SP-6502)

For purposes of this Instruction, any order or agreement for purchase of personal property and services, including contract, purchase orders, letter contracts, task orders, and any supplements thereto.

(KMI 5114.1A)

A legally binding document executed by the Government and the prime contractor which, in addition to the terms and conditions thereof, includes by reference or otherwise, specifications, drawings, exhibits and other data necessary to its proper performance.

(SP-6001)

CONTRACTING OFFICER

Any employee of NASA who is currently designated a Contracting Officer with the authority to enter into and administer contracts and make determinations and findings with respect thereto, or with any part of such authority. The term also includes the authorized representative of the Contracting Officer acting within the limits of his authority.

(KHB 8070.1)

The individual assigned to administer the terms and conditions of a contract.

(KHB 4000.1)

The official designated and appointed by reference (a) responsible for negotiation and administration of contracts, purchase orders, letters-of-intent, and NASA-Defense Purchase Requests (for services and materials contracted for through such agencies as the Air Force and Corps of Engineers); and as defined in the "Definition" clause of contracts, includes any authorized representative acting within the limits of his authority.

(KMI 5400.2)

Any officer or civilian employee authorized to enter into and administer contracts and to make determinations and findings with respect thereto.

(SP-6001)

CONTRACTOR

Any person, partnership, company, or corporation (or any combination of these) which is a party to a contract with the United States Government.

(SP-6502)

Individuals or concerns who enter into a prime contract with the Government.

(SP-6001)

The individual(s) or concern(s) who enters into a prime contract with the Government.

(NPC 200-1A, NPC 200-3, NHB 5300.4(1B), NHB 5330.7)

CORRECTIVE ACTION

Action taken to prevent recurrence of a nonconformance, or action taken to correct a technical performance deficiency. It is not action taken to rework or repair an item.

(KHB 5330.1)

CRITICAL DESIGN REVIEW (CDR)

The critical design review is a formal technical review of the design of a contract end item (CEI). The CDR is accomplished when the detail design is essentially complete in order to formally establish the design as the basis for supporting activities, e.g., preparation of provisioning documentation, preparation of technical manuals, actual provisioning of initial spares, etc. The primary product of the CDR is formal identification and NASA approval of specific engineering documentation which defines the design of the CEI, and which will be released for manufacturing of the unit that establishes the product configuration baseline ("first article," or equivalent).

(NPC 500-1)

The comparative evaluation of worth of parameters, such as producibility, time, schedule, cost, weight, geometric space envelope, performance, reliability, and maintainability, in order to achieve optimum over-all system effectiveness.

(SP-6001)

D

DD FORM 250

The Department of Defense form Materials Inspection and Receiving Report used to indicate acceptance or inspection status of articles, services, or documentation shipped.

(NHB 5330.7)

DEFECT

A condition of any material, part, or product in which one or more characteristics do not conform to the specified requirements.

(KMI 1058.3)

A condition of any hardware in which one or more characteristics do not conform to the specified requirements. (This does not include failures.)

(APD #44, AAPD #10)

Any nonconformance of the unit of product with specified requirements.

(SP-6001)

DEGRADATION

The deterioration of quality or ability to perform within established limits.

(NHB 5300.4(1B))

DESIGN REQUIREMENTS BASELINE

The design requirements baseline is established at the beginning of the Acquisition Phase and consists of the composite of design requirements for a single contract end item contained in an approved Part I to the detail specification for the CEI. Part I of the specification for each CEI is a product of the Definition Phase. Since Part I of the specification for essentially all CEI's is available at a single point in time, the design requirements baseline for all CEI's can be clearly identified as a system baseline.

(NPC 500-1)

DESIGN REVIEW

A progressive review, starting after the design study and continuing through the prototype stage. Provides an assessment of reliability and reliability trends by use of applicable tests and prediction techniques.

(SP-6001)

DEVELOPMENT TESTS

Development tests are performed to assure the proper functioning of the components of the system. Specific test objectives include: determination of feasibility of design approach, evaluation of hardware performance under simulated or actual environmental conditions, and evaluation of hardware failure modes and safety factors.

(NHB 8080.1)

DEVIATION

A departure from requirements to specification, standard procedure or other documentation requirements, made to the contract and detailed in the contractual document.

(KHB 8070.1)

A specific authorization granted before the fact, to depart from a particular requirement of specifications or related documents.

(NHB 8080.1, NHB 5330.7, NHB 5300.4(3A), NPC 200-3, SP-6001, SP-6502, K-AM-03)

DISCREPANCY

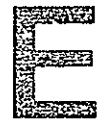
Failure or defect.

(APD #44, AAPD #10)

DOCUMENTATION

That means by which the Government or industry controls or supports, in written or otherwise documented form, the development, design and production of products, equipment, or materials (including the implementation and management of any effort or service provided for under contract).

(NHB 8070.1)



END ITEM

A space system or any of its principal system or subsystem elements, e.g., launch vehicle, spacecraft, ground support system, propulsion engine, or guidance system. Also, articles covered by major subcontracts where NPC 200-2 is invoked by the NASA installation or by a system prime contractor. Also, articles which will be delivered direct to a Government installation or provided as GFP to a contractor.

(NPC 200-1A, NPC 200-3, NHB 5330.7, SP-6502)

A combination of parts, assemblies, accessories, or attachments, which are integrated to form an equipment that accomplishes a specific function when put to use. An end item is complete within itself and classified as such for purposes of separate manufacture, procurement, drawings, specifications, storage, issue, maintenance, or use.

(SP-6001)

A combination of components, assemblies, or parts, ready for its intended use.

(KHB 8070.1)

A physical element of the Apollo Program Space Vehicle System (spacecraft module, flight stage, launch vehicle, AGE, etc.). It is a functional entity physically related and selected for the purpose of system development, procurement, and logistics. The following criteria shall be used in the identification of an end item:

a. An end item shall be procurable by the Government to a single specification.

b. An end item shall be identified by a single top drawing which has been prepared in conformance with appropriate military specifications.

c. An end item shall be identified by a separate and distinct part number and serial number.

d. The physical and functional characteristics of an end item shall be such that its configuration can be controlled and documented economically regardless of the number of changes approved and/or incorporated therein.

e. The location of the distinct/separate parts of an end item should be such that they are not remotely located with respect of one part to another, i.e., black boxes should be located in the same AVE system compartment, same maintenance area, etc.

f. By definition, magnetic tapes and card decks used with checkout equipment are classified as end items and subject to change control.

(NHB 7500.1)

ENGINEERING ORDER (EO)

A notice of an approved design or documentation change to a previously released design drawing or specification.

(KHB 4000.1A)

ENVIRONMENTAL TESTS

Environmental Tests are tests designed to measure the integrity of hardware under simulated or actual service conditions, such as shock, vibration, temperature, etc.

(NHB 8080.3).

EQUIPMENT

A general term usually referring to a CEI (contract end item) or aggregation of CEI's and usually used to differentiate the CEI from a facility, identification, or requirements item.

(K-AM-03)

F

FACI (FIRST ARTICLE CONFIGURATION INSPECTION)

The First Article Configuration Inspection (FACI) is a formal technical review which establishes the product configuration baseline for the contract end item. The primary product of the FACI is formal acceptance, by the procuring agency, of Part II of the end item detail specification as an audited and approved document.

(NPC 500-1)

A formal technical review which establishes the product configuration baseline.

(SP-6502)

FAILURE

The inability of a system, subsystem, component, or part to perform its required function.

(SP-6001)

The inability of a system, subsystem, component, or part to perform its required function. (Criteria for "Required Function" includes specified limits, conditions, and duration.)

(KMI 1058.3, APD #44, AAPD #10, NHB 8080.1, KMI 5310.10)

An occurrence, produced by sudden or gradual deterioration, which causes equipment performance to deviate from specified limits.

(NHB 7500.2)

FAILURE ANALYSIS

Laboratory analysis of the discrepant hardware to verify the failure and to determine the cause, mode and mechanisms of failure.

(KMI 1058.3, APD #44, AAPD #10)

The study of a specific failure which has occurred to determine the circumstances which caused the failure and to arrive at a course of corrective action which will prevent its recurrence.

(NPC 250-1)

FAILURE MODE

A manner in which an item can fail.

(NHB 5300.6)

The manner in which the malfunction of a component, assembly or system occurs.

(NHB 7500.2)

FAILURE MODE ANALYSIS

An extensive program to isolate all known failure modes and to identify these failure modes with the appropriate materials, production processes, production controls, and environments or design.

(SP-6001)

FAILURE RATE

Rate at which failures occur as a function of time. If the failure rate is constant, it is frequently expressed as the reciprocal or meantime between failures.

(KHB 4000.1A)

FLIGHT READINESS ACTION

Action taken to ensure that a nonconformance has been resolved for mission assigned hardware.

(APD #44)

FUNCTIONAL TEST

Functional Tests are tests designed to measure overall performance requirements for the intended end use of the complete end item.

(NHB 8080.3)

A test performed to demonstrate that the article operates as required.

(NHB 5300.4(1B))

FUNCTIONAL TEST

A test performed to demonstrate that the operation of the item tested is as specified (required).

(NHB 8080.1, SP-6001)

GROUND SUPPORT EQUIPMENT

Equipment used to prepare, test and checkout launch vehicles and spacecraft prior to launch. Also that used to launch, operate and maintain vehicles and spacecraft in space. This includes static firing test equipment and other test equipment for ground tests whether or not operational during flight operations.

(NPC 200-1A)

Equipment used to prepare, test and checkout launch vehicles and spacecraft prior to launch. Also that used to launch, operate and maintain vehicles and spacecraft in space.

(NHB 5330.7)

All nonflight implements or devices which perform a function in direct support of the Apollo mission. It does not include facilities or real property equipment.

(NHB 7500.2)

All non-flight implements or devices required to inspect, test, adjust, calibrate, appraise, gage, measure, repair, overhaul, assemble, disassemble, transport, safeguard, record, store, actuate, or otherwise perform a function in support of the space vehicles during (1) tests at factory subsequent to manufacturing completion, (2) prelaunch, launch and postlaunch operations at test sites, and (3) major development tests such as house spacecraft tests, propulsion tests, and environmental tests. This includes equipment required to support ground support equipment as defined herein.

(KHB 4000.1A)

GOVERNMENT-FURNISHED PROPERTY (GFP)

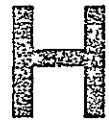
Property in the possession of, or acquired directly by the Government and subsequently delivered or otherwise made available to the contractor.

(NHB 5300.4(1B))

GOVERNMENT INSPECTION

Inspection performed, witnessed or participated in by the Government inspector.

(SP-6001)



HUMAN ERROR

.Noncompliance of personnel with accepted and/or authorized procedure. Does not include design error.

(AAPD #10)

Editor's Note: Not recommended since it limits error to procedure usage.

IDEP (INTERSERVICE DATA EXCHANGE PROGRAM)

An operation jointly sponsored by the three military services to collect test reports on parts and associated materials from Government agencies and contractors who make or sponsor these tests, and to publish and distribute summary test reports and related documents to participants. Participation by Government installations and contractors is voluntary. They are neither charged by IDEP for services received nor are they reimbursed for costs of reports submitted.

(NMI 5310.2)

INSPECTION

The examination (including testing) of supplies and services (including, when applicable, raw materials, documents, data components, and intermediate assemblies) to determine whether the supplies and services conform to technical requirements specified.

(KHB 8070.1)

The process of measuring, examining, testing, gaging, or otherwise comparing the unit of product with the applicable requirements.

(SP-6001)

The examination, including testing, of contract work, articles, and services to determine conformance to contract requirements.

(NPC 200-1A, NPC 200-3, NHB 5330.7)

INSPECTION BY ATTRIBUTES

Inspection wherein the unit of product is classified simply as defective or non-defective with respect to a given requirement or set of requirements.

(SP-6001)

INSPECTION BY VARIABLES

Inspection wherein a specified quality characteristic of a unit or product is measured on a continuous scale and recorded.

(SP-6001)

INSPECTION LOT

A collection of units of products from which a sample is drawn and inspected to determine compliance with the acceptability criteria.

(KHB 8070.1)

INSTALLATION NOTICE CARD

The form (KSC Form 14-119) which, when properly executed, serves as a notice that the modification is installed, tested and/or checked out and accepted. It will be approved by the cognizant operating directorate's quality organization.

(KMI 8040.1)

INTERFACE

The junction points or the points within or between systems or subsystems where matching or accommodation must be properly achieved in order to make their operation compatible with the successful operation of all other functional entities in the space vehicle and its ground support.

(NHB 5330.7, NPC 200-1A, NPC 200-3)

The point at which responsibility for a continuing function changes from one authority to another, or the demarcation line between two physical elements which must have continuity of form, fit or function.

(NHB 7500.1)

LAUNCH READINESS REVIEW (LRR)

An assessment of the operational status of the vehicle and KSC facilities as to their readiness to support scheduled launch operations.

A major milestone review.

LEVELS OF PACKING

Level A Pack. Packing which affords adequate protection against damage during shipment, handling, indeterminate storage and worldwide redistribution.

Level B, Limited Pack. Packing which affords adequate protection against damage during multiple shipments, handling under cover and storage in warehouse or in other structures giving equivalent protection.

Level C, Minimum Pack. Packing which affords adequate protection at the lowest rate against damage during direct domestic shipment from the supply source to the first receiving activity for immediate use. This level shall conform to applicable carrier rules and regulations and may be the supplier's commercial practice, provided the latter meets the requirements of this level.

(NMI 6410.1, NHB 8080.1)

LEVELS OF PRESERVATION AND PACKAGING

Level A, Package. Preservation and packaging which affords adequate protection against corrosion, deterioration and physical damage during shipment, handling, or indeterminate storage. This level is for storage periods exceeding one year and normally for export shipments.

Level B, Limited Package. Preservation and packaging which affords adequate protection against known conditions which are less hazardous than those which Level A is designed to meet but for which Level C would be inadequate. This level is normally for storage of one year or less.

Level C, Minimum Package. Preservation and packaging which affords adequate protection against corrosion, deterioration and physical damage during shipment from supply source to the first receiving activity for immediate use. This level may conform to the supplier's commercial practice, provided the latter meets the requirements of this level.

(NMI 6410.1)

Level A: Preservation and packaging that will protect against corrosion, deterioration, and physical damage during shipment, handling, intermediate storage, and world-wide redistribution.

Level B: Preservation and packaging that will protect against conditions less hazardous than Level A is designed to meet, but which require more protection than for Level C.

Level C: Preservation and packaging that will protect against corrosion, deterioration, and physical damage during shipment from supply source to first domestic receiving activity for immediate use.

Level D: Packing requirements that may be used by KSC agencies to provide for ocean shipment and covered storage at destination where the end item is to be used at the initial receiving activity. This level in general will conform to the applicable carrier rules and regulations and may be supplier's commercial practice when such meets the requirements of this level.

(KHB 8070.1)

Level A: The degree of preservation, packaging, and packing which will assure adequate protection of an item against corrosion, deterioration, and physical damage during multiple shipment, handling, and storage for a period exceeding 1 year or under unknown conditions. This level is normally used for overseas or worldwide shipment.

Level B: The degree of preservation, packaging, and packing which will assure adequate protection of an item against corrosion, deterioration, and physical damage during multiple shipment, handling, and enclosed storage for a period not exceeding 1 year.

Level C: The degree of preservation, packaging, and packing which will assure adequate protection of an item against corrosion, deterioration, and physical damage during shipment from the supply source to the first receiving activity for immediate use, or environmentally controlled storage which is consistent with the requirements of the item.

(APD #39)

LIFE TEST

Life tests are tests designed to measure the endurance/performance of the complete end item or parts thereof.

(NHB 8080.3)

LIMITED LIFE ARTICLES

Article or material which, due to composition, environment, or performance, is useful or functional for a specified time and then requires replacement.

(NHB 5330.7)

Items that because of their nature have a life which exceeds the ground checkout time plus the mission time, but which normally would require replacement or refurbishing before the next mission.

(SP-6001)

M

MAINTAINABILITY

The quality of the combined features of equipment design and installation which facilitates the accomplishment of inspection, test, checkout, servicing, repair, and overhaul with a minimum of time, skill and resources in the planned maintenance environments.

(NPC 250-1)

That quality of the combined features of equipment design and installation which facilitates the accomplishment of inspection, test, checkout, servicing, repair, and overhaul with a minimum of time, skill, and resources in the planned maintenance environments (ref. NPC 250-1). Maintainability includes both "serviceability" and "repairability." This manual emphasizes the former term in its discussions of maintainability, since serviceability is essentially an equipment design characteristic important in assuring reliability and effective system performance.

(SP-6506)

A characteristic of design and installation which is expressed as the probability that an item will be retained in or restored to a specific condition within a given period of time when the maintenance is performed in accordance with prescribed procedures and resources.

(K-AM-03)

MAINTENANCE

The function of retaining material or in restoring it to a serviceable condition.

(SP-6001, SP-6506, NHB 8080.1)

The function of retaining material in or restoring it to operating condition. It includes repair cycle activities at any level as well as the servicing cycle.

(NHB 7500.1)

The function of retaining material in or restoring it to operating condition. It includes repair cycle activities at any level of maintenance as well as the servicing cycle.

(KHB 4000.1A)

MANDATORY CHARACTERISTIC

A characteristic that the QSO must verify by inspection or by witnessing of tests.

(KHB 5330.1)

MAJOR NONCONFORMANCE

Any nonconformance that could affect matters such as safety to facilities or individuals, reliability, durability, performance, interchangeability, weight, or the basic design intent. Material substitution is defined as a major nonconformance.

(KHB 5330.1)

MATERIAL REVIEW BOARD (MRB)

A Contractor/Government activity established to determine or recommend the disposition of nonconforming articles or material.

(KMI 1058.3)

A decision-making team composed of one contractor representative whose primary responsibility is design, one contractor representative whose primary responsibility is product quality and one Government representative acting on behalf of NASA who determine or recommend disposition of nonconforming articles.

(NHB 5330.7)

MEAN TIME BETWEEN FAILURES

The average operating hours between failures when the system/equipment is used in its intended environment.

(NHB 7500.1)

MINOR NONCONFORMANCE

Any nonconformance other than major that does not reduce the usability of the product for its intended purpose or is a departure from established standards having no significant bearing on the effective use or operation of the product or associated units.

(KHB 5330.1, KMI 5330.6)

MODIFICATION

Any alteration that changes capabilities or characteristics of equipments.

(SP-6001)

A change in the physical configuration of a system or equipment to enhance its performance, serviceability, maintainability, handling, etc.

(NHB 7500.2)

MODIFICATION INSTRUCTION

Document used to convey design engineering requirements for each Modification Instruction Package to the responsible KSC operations and maintenance organization.

(K-AM-03)

MODIFICATION INSTRUCTION PACKAGE

- The engineering documentation required to accomplish and document the installation of a modification to a particular CEI or other specifically defined equipment which requires installation at KSC.

  (K-AM-03)

MODIFICATION KIT

- An item composed of a group of articles which is issued as a unit for accomplishing an alteration to an equipment.

  (SP-6001)

  The hardware associated with a Modification Package.

  (K-AM-03)

NASA (OR CONTRACTOR) REFERENCE STANDARD

Measurement standards representing the highest level of accuracy available within the NASA (or Contractor) facilities. These are standard references against which lower level standards are compared, and are calibrated to national reference standards or are defined and sanctioned by international agreement.

(NHB 5300.2)

NONCONFORMANCE

A condition of any material, part, or product in which one or more characteristics do not conform to the specified requirements.

(K-AM-03)

Any departure of an article from specified requirements. The departure may be functional, such as observed in performance tests; or workmanship, such as observed by visual and dimensional checks.

(KHB 5330.1)

Failure or defect.

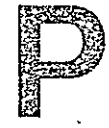
(KMI 1058.3, AAPD #10, APD #44)

A condition of any article, material, or service in which one or more characteristics do not conform to requirements. Includes failures, discrepancies, deficiencies, defects, and malfunctions.

(NHB 5300.4(1B))

A condition of any article, material, or service in which one or more characteristics do not conform to requirements. Includes failures, discrepancies, deficiencies, defects, and malfunctions.

(KMI 5330.6)



PACKAGING

The cleaning, drying, preserving methods, protective wrappings, cushioning, interior containers, exterior containers, and identification markings required to prevent or reduce deterioration.

(KHB 4000.1A)

Application or use of adequate protective measures to prevent damage from physical hazards or conditions, including: wrappings for protection from physical danger, cushioning, and complete identification marking of unit and intermediate containers.

(APD #39)

PACKING

The final placement of items or packages in exterior shipping containers or other media including the necessary blocking, bracing or cushioning, weatherproofing, exterior strapping and marking.

(APD #39)

The selection or construction of the shipping container and assembly of items or packages therein, including any necessary blocking, bracing, or cushioning, weatherproofing, exterior strapping, and marking of shipping container for identification of contents.

(NMI 6410.1)

PERCENTAGE DEFECTIVE

That portion of a lot which is defective. This is the figure of merit in the population domain which characterizes quality control measurements and differentiates it from reliability.

(SP-6001)

PRELIMINARY DESIGN REVIEW

A formal review of the preliminary design of a system segment or CEI to establish system compatibility of design, identify specific engineering documentation, and define physical and functional interface relationships between a CEI and other systems, equipment, or facilities.

(K-AM-03)

PRESERVATION

Application or use of adequate protective measures to prevent deterioration from environmental hazards or conditions including, as applicable, the use of appropriate cleaning and drying methods, preservatives, and wrapping for protection from chemical danger.

(APD #39)

PRESERVATION AND PACKAGING

The application or use of effective protective measures to prevent damage of any kind, including the use of appropriate preservatives, protective wrapping, cushioning, identification, and marking up to, but not including, the shipping container.

(NMI 6410.1)

PROGRAM CRITICAL ITEM

Program critical items are those meeting one or more of the criteria listed below:

(a) Items of close tolerance, delicate construction, or perishable nature which if damaged, deteriorated, or contaminated would result in premature failure or malfunction of the equipment in which it is to be installed or to which it is related.

(b) Items not covered by (a) above but which, if damaged, deteriorated, or contaminated, would endanger personnel, equipment, or facilities by creating unsafe or hazardous operating conditions.

(c) Items not meeting the criteria of (a) or (b) above but which are so constructed that damage, deterioration, or contamination would result in excessive repair or overhaul costs, or create production or test delays because of long procurement lead time for replacement items.

(APD #39)

A part for which the lack of immediate issue on-call at the demand source would adversely affect program schedules, safety or reliability.

(NHB 7500.1)

QUALIFICATION

The successful completion of qualification tests.

(NHB 8080.1)

The determination, expression, or measurement of a quantity.

(NHB 7500.1)

Determination by a series of tests and examination of documents and processes that a part, component, subsystem, or system is capable of meeting performance requirements prescribed in the purchase specification or other documents specifying what constitutes adequate performance capability for the item in question.

(NPC 250-1, SP-6502)

QUALIFICATION TEST

A test of parts, components, subassemblies, and higher levels of assembly which is performed to demonstrate that the design is inherently capable of meeting the established requirements. Tests are designed to locate significant failure modes and to determine the effects of varied stress levels, combinations of tolerances, and drift of design parameters, and combinations and sequences of environments. Destructive tests and inspection of disassembled articles are included.

(SP-6001)

QUALIFIED PART

A part suited for procurement as revealed by designated test.

(SP-6001)

QUALIFIED PARTS LIST

A listing of all qualified parts used in the contractors equipment, including method of qualification and stage of qualification. (Conditional qualification vs complete qualification).

(SP-6001)

QUALITY ASSURANCE

A planned and systematic pattern of all actions necessary to provide adequate confidence that the end items will perform satisfactorily in actual operations.

(NPC 200-1A, NPC 200-3, NHB 5330.7)

A planned and systematic pattern of all actions necessary to provide adequate confidence that the CEI's will perform satisfactorily in actual operations.

(K-AM-03)

QUALITY CONTROL

A factory-oriented operation for causing a process to manufacture a uniform product within specified limits of percent defective in accordance with the design requirements.

(SP-6001)

QUALITY STATUS STAMPS (NASA)

Stamps (with a NASA symbol) which have been provided by NASA for agency indication of quality status of NASA space systems, components, materials, services, and documents.

(NHB 5330.7)

QUALITY SURVEILLANCE ORGANIZATION (QSO)

The KSC organizational element responsible for the technical direction and monitoring of a contractor's quality assurance and inspection functions, or of quality assurance and inspection functions delegated to another Government agency or NASA installation, to assure compliance with the contractual and/or delegated requirements.

(KMI 5310.7)

QUALITY SURVEILLANCE TECHNICAL REPRESENTATIVE (QSTR)

The representative assigned in accordance with KMI 5330.3 and KN 1142.23.

(KHB 5330.1)

REFURBISHMENT

The cleaning, repair, replacement of parts, and other renovation activities required to restore equipment or a facility to usable condition after launch.

(KHB 4000.1A)

RELIABILITY APPORTIONMENT

Method of budgeting the overall reliability objective among subordinate items.

(SP-6001)

REMEDIAL ACTION

The action taken to restore nonconforming hardware to operational status.

(APD #44)

REWORK

The continuation of processing of articles and materials that will make them conform to drawings, specifications, procedures, or contract.

(NHB 5300.4(1B)

SAMPLE SIZE

The number of units of product in the sample.

(MIL-STD-105D)

SHELF LIFE

The anticipated time during which an unused item retains its capacity to operate normally.

(NHB 7500.1)

Storage or nonoperational time that can be accumulated on items before they are placed in operating use or before one of the following actions must be taken: visual inspection, functional testing, overhauling, scrapping, or rejuvenating.

(SP-6001)

SINGLE FAILURE POINT

A potential failure at a single point in any equipment, system, subsystem, component, function, or procedure which would cause a component failure in one of the five priority categories of mission impact.

(K-AS-05)

SOURCE CONTROL DRAWING

An engineering drawing defining vendor substantiation testing. The drawings are applicable to vendor designed parts only.

(SP-6001)

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 these requirements have been met.

(K-AM-03, K-AM-030/4)

STANDARD

A document that establishes engineering and technical limitations and applications for items, materials, processes, methods, designs, and engineering practices.

(K-AM-03)

SUPPLIER

A contractor, subcontractor or other source producing or providing articles or services required in connection with the prime contract.

(NPC 250-1)

A contractor or subcontractor actually performing the services or producing the contract articles.

(NPC 200-3, NPC 200-1A, NHB 5330.7, NHB 5300.4 (3A))

SURVEY

An evaluation of agency or supplier performance through a comprehensive review of their systems, procedures and actions to ascertain conformance to drawings, specifications or contract documents. A survey may include one or more audits.

(NHB 5330.7)

SYSTEM

A documented method for the consistent performance of a task or associated group of tasks.

(NHB 5300.2)

One of the principle functioning entities comprising the project hardware and related operational services within a project or flight mission. Ordinarily, a system is the first major subdivision of project work. Similarly, a subsystem is a major functioning entity within a system. (A system may also be an organized and disciplined approach to accomplish a task, e.g., a failure reporting system.)

(NPC 250-1, SP-6502)

Any combination of parts, assemblies and sets joined together to perform a specific operational function or functions.

(NHB 7500.1)

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

(K-AM-03)

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.

(K-AM-030/4)

TASK ORDER

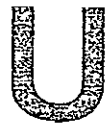
A task order is a written contractual instrument, within the general scope of the contract, which is separately issued in order to provide sufficiently detailed definition of the work statement to enable the contractor to commence performance and/or to permit obligation of appropriated funds.

(K-AM-050/3)

TRACEABILITY

That distinction attached to a product, process, or activity which is established by ensuring that the product, process or activity may be identified and traced back through a system of records (standards, drawings, specifications) to the exact time and place of origin.

(KHB 4000.1A)



UNSATISFACTORY CONDITION REPORT

The document used to report a nonconformance to requirements, procedures, or accepted standards, including defects and failures.

(K-AM-03)

VALIDATE

To affix a seal/signature as evidence that the requirements for inspection, test/retest, etc., have been accomplished.

(K-AM-03)

WAIVER

Any relaxation of existing requirements.

(SP-6001)

Granted use or acceptance of an article which does not meet specified requirements.

(NPC 200-3, NHB 5330.7, SP-6502, NHB 5300.4(3B), K-AM-03)

Granted use or acceptance, after the fact, of an article which does not meet specified requirements.

(KMI 5330.6)

WORK ORDER

A work order is any communication from an authorized Government representative, usually the KSC operations manager or technical representative, further defining and specifying the time for performance of specific sub-tasks or sub-elements of the work required to accomplish the overall mission of the particular contractor.

(K-AM-050/3)

PROPOSAL FOR ADDITION, REVISION, OR DELETION TO THE

GLOSSARY OF TERMS PERTINENT TO

RELIABILITY AND QUALITY ASSURANCE AT KSC

This form is available to provide the user with a convenient method of submitting comments, additions, deletions, or revisions to aid in keeping the KSC terminology current and useful. Please submit your proposals to:

Quality Assurance Directorate
Plans and Policy Office (QA-PLN)
Room 3379
KSC Headquarters Building

GLOSSARY OF TERMS PERTINENT TO RELIABILITY AND QUALITY ASSURANCE AT KSC

WORD OR TERM		ABBREVIATION (if any)
PROPOSED ACTION ADDITION ☐ REVISION ☐ DELETION ☐	SOURCE OF DEFINITION ORIGINAL ☐ OTHER (state below)	SYMBOL (if any)

DEFINITION (if available)

SUBMITTED BY	DATE

ORGANIZATION

ADDRESS

NASA-KSC JUNE/70