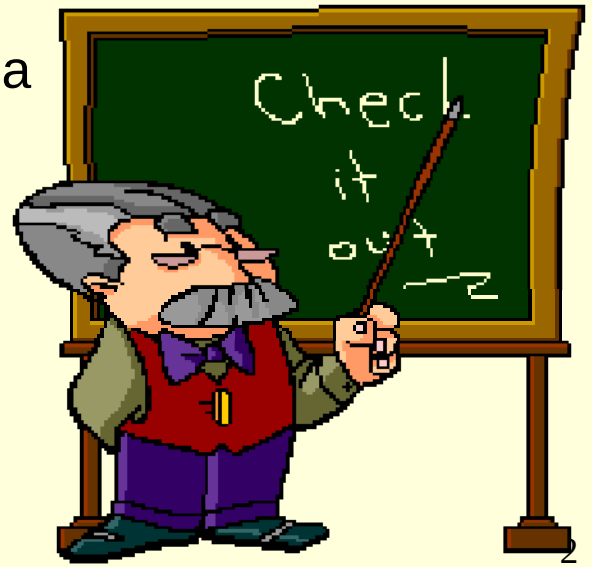
Product Definition Data (PDD) and Part Number System Training

CM Training Session 3D

This training presentation provides a generic Boeing tailored implementation of the applicable CM subject matter generally based upon Boeing's implementation of recognized international, industry and US Government standards and regulations. Your applicable Boeing Business Unit implementation of CM is available via the published PROs, BPIs, and supporting process guidance documentation used by your business unit, division, and program. More detailed information about CM processes may be garnered from the Boeing CM Wiki at URL: https://wiki.web.boeing.com/confluence/display/cm/CM+Overview.

Agenda

- Definitions
- What is the Basis for PDD Number Assignment?
- BDS-1022/BDS-1025 PDD and Part Number Schema
- BDS-1025 Part Number Re-identification
- BDS-503 PDD and Part Number Schema
- BDS-503 Part Number Re-identification
- What is the Basis for Document Number Assignment?
- BDS-1022 Document Number Schema
- BDS-1020/BDS-503 Document Number Schema
- References/Resources
- Summary



Definitions

- **Fit** - The ability of an item to physically interconnect with or become an integral part of another item utilizing the same attachment or mounting and mating surface. Attachments, connectors, wiring, and tubing shall not require any rework to install on or to the item. Final fit, that is, adjustment, rigging, or the use of shims is allowed only when permitted by the installation instructions.
- **Form** – The shape, size, dimensions, mass, weight, and other physical parameters which uniquely characterize an item. Other physical parameters shall include the ability of the item to function continuously in all respects within the original design envelope. The design envelope includes all movement in an aircraft due to vibration and/or shock together with any normal operating movement throughout the design temperature range. Note: For software, form denotes the language and the media.
- **Function** - The actions and properties which an item is designed to perform and possess, including, but are not limited to, performance, operation, safety, strength, reliability, compatibility, and maintainability.
- **Interchangeability** – That quality which allows a part to replace or be replaced by the existing part, irrespective of part number, wherever installed.
- **Interchangeable Item** - An item which possesses such functional and physical characteristics as to be equivalent in performance, reliability, and maintainability, to another item, thus capable of being exchanged for the other item without selection for fit or performance, and without alteration of the items themselves or of adjoining items, except for adjustment. The replacing part must meet all physical, functional, and structural requirements of the part it replaces and be installed by the application of the normal means of attachment. The use of trimming, cutting, filing, reaming, drilling, shimming and forming during installation are specifically precluded. No tools other than those normally available to service mechanics are required for installation of the item. No operations or alterations except designed adjustments are required on supporting/surrounding structure in order to install the item.
- **Item** - A non–specific term used to denote any product including materials, parts, assemblies, equipment, accessories, and computer software
- **Part or Identifying Number** - According to ASME Y14.100, the Part or Identifying Number (PIN) is an identification assigned by the original design activity or by the controlling nationally recognized standard for the purpose of uniquely identifying a specific item. The PIN is the same as, or is based on, the controlling drawing number (or CAD 3D Model number). A unique identification number assigned to each part, assembly, installation, and collector, configuration of which is defined on a drawing. The PIN does not include the drawing revision identifier, drawing size, or activity identification.
- **Repairable Item** - An item that is supported by spare parts or maintenance manuals so that it may be maintained in service
- **Site or Program Identifiers** - Under the Boeing BDS-503 and BDS-1020 numbering schemas, a unique identifier for a site or program issued for use as the first three characters of a site or program's drawing or document numbers. Under BDS-1022 numbering schema, a unique identifier for a program issued for use as the fourth character, of a program's drawing numbers. The BCA identifier for "D-series" documents is "6" as in D6-XXXXX.

What is the Basis for PDD Number Assignment?

- Product Definition Data (PDD) and Part Numbering:
  - In General, PDD and Part Numbering is based on generally accepted requirements from industry standards:
    - PDD – American Society of Mechanical Engineering (ASME) Y.14 series of Product Definition Standards (PDS), specifically ASME Y14.100
    - Hardware (HW) product part numbering
      - ASME PDS Standard – ASME Y14.100
      - Government Electronics and Information technology Association (GEIA)
        - » Standard – EIA-649-A
        - » Handbook – GEIA-HB-649
      - Air Transport Association (ATA) Specification 2000
    - Software (SW) product part numbering
      - GEIA
        - » Standard – EIA-649-A
        - » Handbook – GEIA-HB-649
      - Institute of Electrical and Electronics Engineers (IEEE) standards
        - » IEEE 12207.0
        - » IEEE 12206.2
      - American Radio INC (ARINC) Report 665
      - ATA Specification 2000
  - Industry standards don't necessarily agree on a single numbering schema, format, or size to be used as a standard

What is the Basis for PDD Number Assignment?

- Product Definition Data (PDD) and Part Numbering: (continued)
  - Boeing has used industry standards for PDD and product/part numbering and documented the requirements in Boeing PDS:
    - The Boeing PDS are authorized by Boeing PRO-1499
    - Companywide direction to use BDS-503, Numbering System, with a phased-in implementation, to recognize the needs of legacy programs:
      - IDS implementation:
        - » All new programs use BDS-503
        - » Legacy programs as authorized by program/site PDS portal
      - BCA implementation:
        - » All new programs use BDS-503
        - » 787 program use BDS-503 + Departure D01
        - » All “Legacy” BCA programs use both (1) BDS-1022 + Program unique departures and (2) BDS-1025 + Program unique departures (For specific BCA program application see BCA PDS portal: https://psds.web.boeing.com/psds/bds/main.jsp)
        - » However, in BCA there are groups which use other standards, for example the BCA Loadable SW numbering schema is based on ARINC 665 as documented in D6-55562-5, -6, and -8 series of standards
      - Questions on the applicable requirements should be directed to the site PDS focals identified at the Boeing Companywide Product Definition Standards Committee (CPDSC) web portal (URL: http://bps.web.boeing.com/cpdsc/members.html)
      - Numbering schema implemented by a business unit/program is dependent on PDS standard required for implementation on that program
    - Elements of the same drawing/part shall share the same Series (e.g., Root) Number (e.g., PL, MM, DL, IL, ID, and WL data items that share the same Program Prefix and Root Number are part of the same drawing or model/part)

What is the Basis for Part Number Assignment?

- Part Number assignment requirements:
  - Part Number is based on the PDD (CAD 3D model or drawing) number plus a suffix identifier (a.k.a. dash number)
  - Per ASME Y14.100 the following requirements are associated with part numbers – since the Boeing PDS are based upon the ASME Y14 series of standards they are applicable:
    - The Part or Identifying Number (PIN):
      - Is an identification assigned by the original design activity or by the controlling nationally recognized standard for the purpose of uniquely identifying a specific item
      - Is the same as, or is based on, the controlling drawing number
      - Does not include the drawing revision identifier, drawing size, or activity identification
      - Is widely recognized to be limited to 32 characters in length (Note: ATA SPEC2000 limits the part number to 15 characters – BCA follows this ATA limitation)
      - May be associated with prefixes and suffixes for such purposes as indicating the existence of available variations to a basic item and when this occurs the combination is subject to the same structure and length limitations of the basic PIN
    - Each item (detailed part/assembly/installation/SW) is identified as follows:
      - An item defined by a standardization document is identified by the document PIN
      - An item defined by a standardization document containing a part identification system and used without alteration is identified by that specification part identification and applicable specification number
      - Design activities using items other than their design without alteration or selection identify such items by the original design activity item identification (i.e., PIN)
      - All other items shall be assigned a design activity item identification (i.e., PIN)

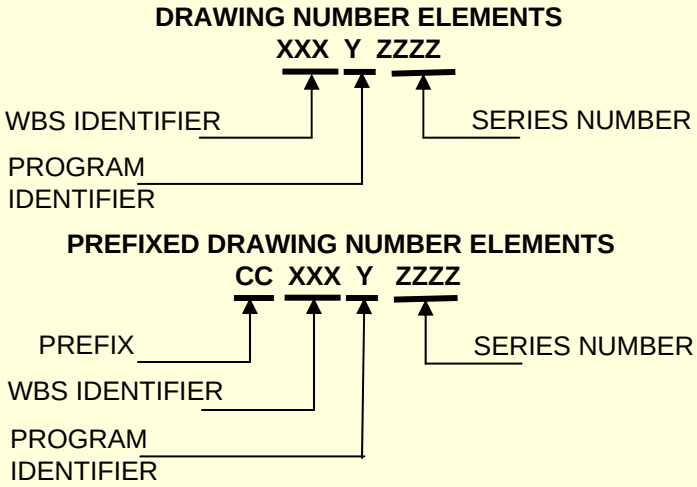
BDS-1022/BDS-1025 Based PDD and Part Number Schema and BDS-1025 Part Number Re-identification Requirements

BDS-1022/BDS-1025 PDD and Part Number Schema

- Product Definition Data (PDD) and Part Numbering: (continued)
  - Sample PDD number schema based on BDS-1022 (continued)
    - Two types of numbering systems are used in BCA:
      - A significant numbering system based on the document *Standard Work Breakdown Structure (WBS) and Dictionary,* D6–48033. This system is used for design on new airplane programs and for selected improvements to older airplane programs. It provides for a family tree for planning, scheduling, estimating, budgeting, tracking, rapid data retrieval, reporting, and cost accumulation
      - A numbering system based on non–standard WBS documents or drawing size and originating division with a sequential system for other data (See BDS-1022 for details)
    - Only the BCA “standard WBS numbering system is addressed here
      - The “WBS Identifier” is the first three digits, covering WBS levels 2, 3 and 4
      - The “Program Identifier” is the fourth digit, covering WBS level 1
      - The “Series Number” is the last four digits, covering either:
        - » WBS levels 5, 6, and 7
        - » Non-intelligent numbers assigned from a sequential log by an approved BCA part number check-out tool (See CMA for assistance)

BDS-1022/BDS-1025 PDD and Part Number Schema

- Sample Boeing Product Definition Data (PDD) and Part Numbering
  - Sample PDD number schema based on BDS-1022 requirements – see applicable PDS for numbering schema used for your site/program. (Note: Actual number format = XXXYZZZZ)



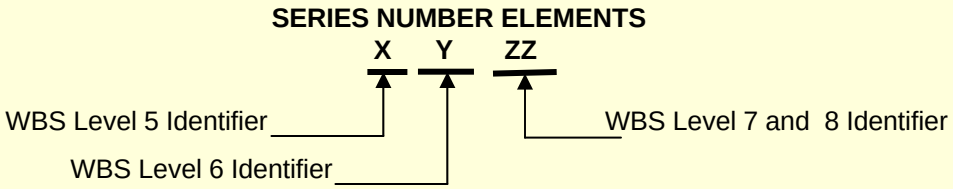
- Prefix:
  - For PDD, a prefix shall be used to identify Computer Aided Design (CAD) three dimension (3D) models, Associated Lists (AL) and drawings types prepared at a level of fidelity below formal developmental/production drawings
  - The following drawing prefixes are authorized:
    - » PL – Parts List
    - » SK – Sketch Drawing
    - » LO – Layout Drawing
    - » S – Specification Control Drawing
    - » W – Technical Work Statement Document
    - » WL – Wiring List
    - » D – Document
    - » E – Engineering Advance Material Request (EAMR)
    - » [blank] – Drawing (or part number when dash number is appended to a drawing number)

BDS-1022/BDS-1025 PDD and Part Number Schema

- Product Definition Data (PDD) and Part Numbering: (continued)
  - Sample PDD number schema based on BDS-1022 (continued)
    - WBS Identifier
      - The first digit, WBS level 2, identifies major elements as follows:
        - 0 – Integration and Assembly
        - 1 – Structures
        - 2 – Systems
        - 3 – Propulsion
        - 4 – Payloads
        - 5 – Test/Development and Evaluation
        - 6 – Commercial Aviation Services
        - 7 – System II (Expanded Series)
        - 8 – Modification Programs
        - 9 – Management
      - The second and third digits, WBS levels 3 and 4, identify element sub–divisions and are assigned from the applicable model's WBS document
    - Program Identifier
      - The fourth digit, WBS level 1, identifies the program. Currently active identifiers are:
        - A – 737 Program
        - B – 747–400 BCF
        - T – 767 Program
        - U – 747–100, –200, –300, –400, and –8, see SECTION 1.5
        - W – 777 Program
        - Z – 787 Program

BDS-1022/BDS-1025 PDD and Part Number Schema

- Product Definition Data (PDD) and Part Numbering: (continued)
  - Sample PDD number schema based on BDS-1022 (continued)
    - Series Number
      - A four digit sequence, which covers digits 5 through 8 of the part number
      - WBS based significant numbering four digits are assigned as follows:
        - » Digit #5 – WBS level 5, per program unique WBS document (See BDS-1022)
        - » Digit #6 – WBS level 6, per program unique WBS document (See BDS-1022)
        - » Digit #7 – WBS level 7, per program unique WBS document (See BDS-1022)
        - » Digit #8 – WBS level 8, per program unique WBS document (See BDS-1022)



      - **NOTES:**
        - » Each program establishes the minimum level of WBS significance to include in the serial number
        - » Individual design groups may extend the level of significance beyond program requirements
        - » Program may choose to use non-significant numbering for (1) digits 5 – 8; (2) digits 6-8, with digit 5 covering WBS level 5; digits 7 and 8, with digit 5 covering WBS level 5 and digit 6 covering WBS level 6 as documented in the program management plan/CM plan (or program equivalent)
        - » Use of the “S” and “D” prefixes requires a reduction in the number of digits used for the “Series Number” from four to three, addressing WBS elements 5, 6, and 7 (Level 8 is deleted)
        - » Use of the “W” and “E” prefixes uses the full four digits, addressing WBS elements 5, 6, 7, and 8
      - Non-significant numbering
        - » Non-significant series of sequential numbers assigned by program identifier
        - » Begins with 0000 and goes through 9999 – Note: leading zeros are not considered significant and are thus dropped (e.g., -1 and not -0001)
        - » Assigned by release group using the PDM/release system, or program equivalent

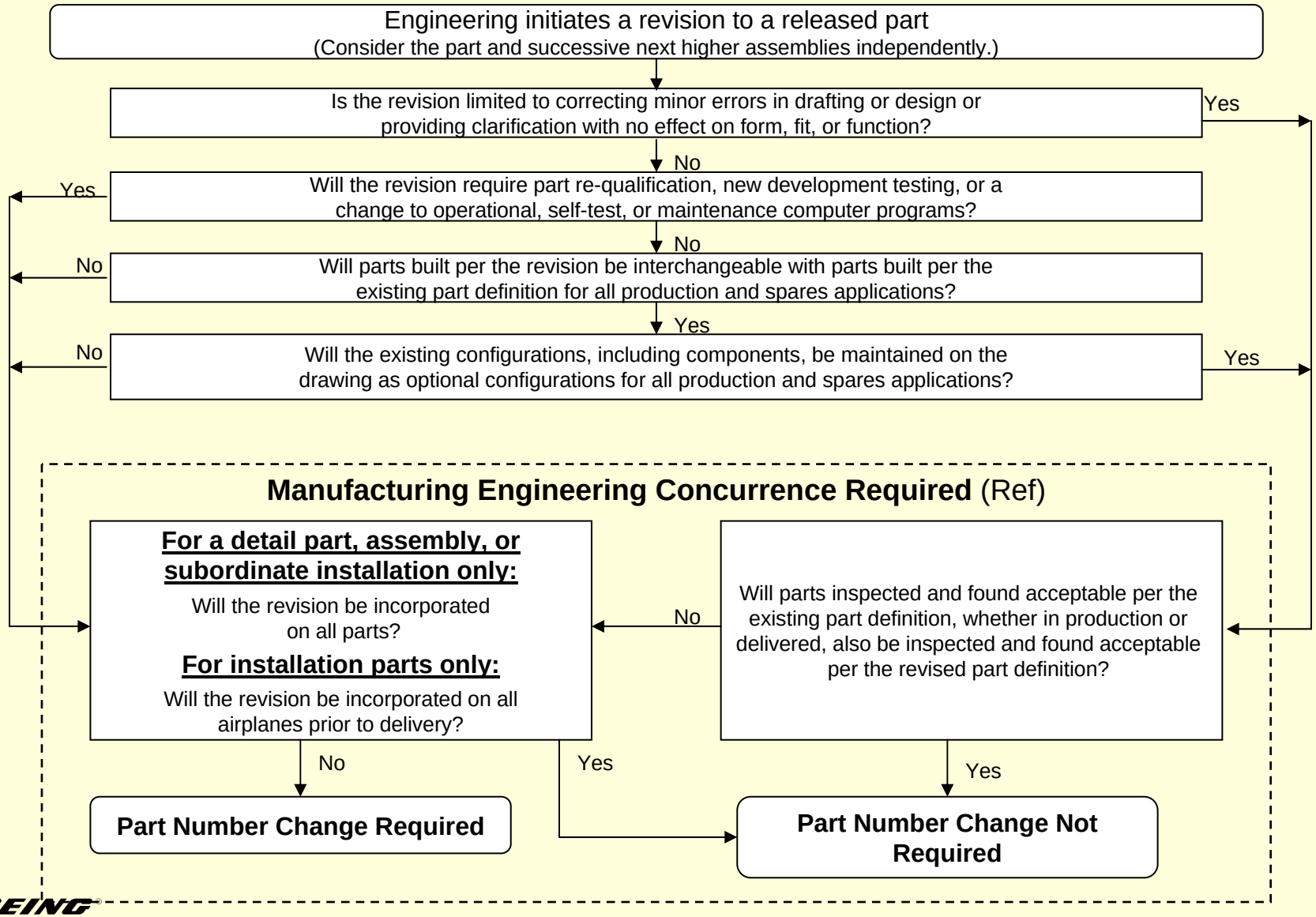
BDS-1025 Part Number Re-identification

- BDS-1025 Part Number Re-identification (a.k.a. Part Number Roll):
  - General criteria for part number changes:
    - When requirements for a part are revised, a part number change is required
    - Part number changes maintain configuration control
    - Part number changes may also be used for accountability reasons:
      - Increasing visibility of prior configurations
      - Maintaining separate configurations for spares
      - Managing commitments
      - Managing commitments of material substitutions and part substitutions when testing is required to determine the Point Design Allowables of an existing material used in a new application
    - A part number change may affect successive next higher assemblies:
      - Each level in the product structure (i.e., affected higher level assembly/installation) must be evaluated starting at the item first affected and going up the product structure to the level where interchangeability is re-established
      - The same part number re-identification evaluation process is used at each level
      - Evaluation at each level in the product structure ends only where interchangeability is re–established or with a part number change on the affected higher level assembly/installation
      - Drawing must be revised at the next level above where interchangeability is re-established to reflect that the use of both the old and the new product is acceptable for use by including both in the parts list
      - When interchangeability is not re-established the part number must be re-identified (roll) all the way to the deliverable end item

BDS-1025 Part Number Re-identification

- BDS-1025 Part Number Re-identification (a.k.a. Part Number Roll):
  - **Requirements for part number changes**
    - A part number change is required for any revision to a released part definition that affects the form, fit, or function of existing parts, which includes:
      - Any revision affecting the operating envelope, physical dimensions, material, interior or exterior finish, material strength, corrosion resistance, fatigue or service life
      - Any revision that requires part requalification, new development testing, or a change to operational, self–test, or maintenance computer programs
      - Any revision that would cause parts built per the revised part definition to not be interchangeable with parts built per the existing part definition
    - A revision to the released part definition may not require a part number change if any of the following conditions exist:
      - The revision is to a detail part/assembly/subordinate installation and Manufacturing Engineering commits that the revision will be incorporated on all parts
      - The revision is to an installation part and Manufacturing Engineering commits that the revision will be incorporated on all airplanes prior to delivery
      - The revision has no effect on existing parts and Manufacturing Engineering concurs that parts inspected and found acceptable per the existing part definition, whether in production or delivered, would also be acceptable per the revised part definition.
      - Examples of revisions having no effect on existing parts include a revision that:
        - » Corrects minor errors or provides clarification without affecting form, fit, or function
        - » Maintains the existing configurations(s), including components, on the drawing as optional configuration(s) for all existing production and spares applications

BDS-1025 Part Number Re-identification

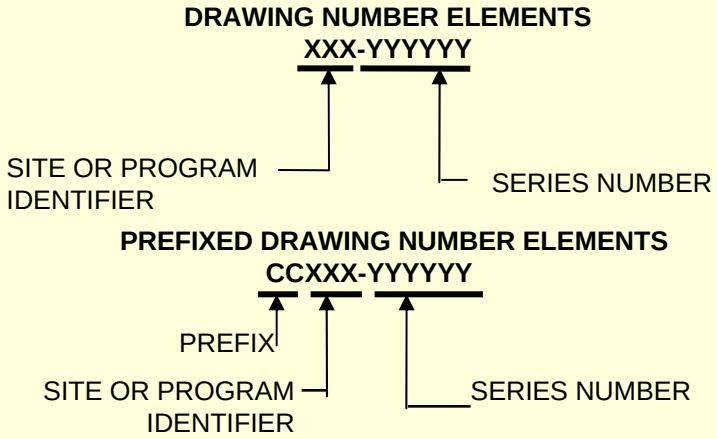


BDS-503 PDD and Part Number Schema

BDS-503 Based
PDD and Part Number Schema
and
Part Number Re-identification Requirements

BDS-503 PDD and Part Number Schema

- Sample Boeing Product Definition Data (PDD) and Part Numbering
  - Sample PDD number schema based on BDS-503 requirements – see applicable PDS for numbering schema used for your site/program



- Prefix:
  - For PDD, a prefix shall be used to identify Computer Aided Design (CAD) three dimension (3D) models, Associated Lists (AL) and drawings types prepared at a level of fidelity below formal developmental/production drawings
  - The following CAD 3D model prefixes are authorized:
    - MM – Master Model
  - The following drawing fidelity prefixes are authorized:
    - EX – Experimental Drawing
    - SK – Sketch Drawing
    - LO – Layout Drawing
    - TD – Tooling Drawings
    - [blank] – Drawing (or part number when dash number is appended to a drawing number)

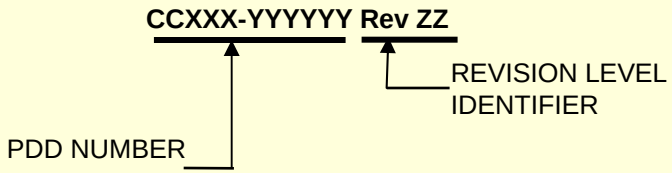
BDS-503 PDD and Part Number Schema

- Product Definition Data (PDD) and Part Numbering: (continued)
  - Sample PDD number schema based on BDS-503 requirements (continued)
    - Prefix: (continued)
      - The following AL prefixes are authorized:
        - » DL Data List
        - » IL Index List
        - » ID Indentured List
        - » PL Parts List
        - » WL Wire List
    - Site or Program Identifier
      - Constitutes the first three characters of the PDD (e.g., drawing number) and follows the prefix, when a prefix is used
      - Characters are alphanumeric
      - Letters used are uppercase, with the letters I, O, Q, S, X, and Z not used.
      - Under the CPDSC, Boeing Product Standard Services – Product Definition Standards issues site or program identifiers, with no duplicate site or program identifiers issued
    - Series Number
      - Non-significant series of sequential numbers
      - Begins with 10000 and goes through 99999
      - Assigned by release group using the PDM/release system, or program equivalent

BDS-503 PDD and Part Number Schema

- Product Definition Data (PDD) and Part Numbering: (continued)
  - Sample PDD revision level identification schema based on BDS-503 PDD requirements

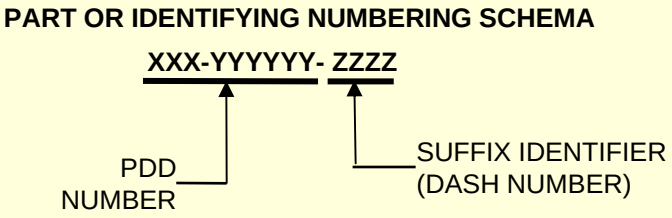
PDD REVISION LEVEL IDENTIFICATION SCHEMA



- Revision Level Indicator
  - Revision Letter shall be a sequential alpha character for each unique PDD combination of data type, program prefix, and series (e.g., root) number
  - Initial PDD release revision level indicator is “blank” followed by Rev A, etc.
  - Note: Elements of the same drawing/part may have non-identical Revision letters

BDS-503 PDD and Part Number Schema

- Product Definition Data (PDD) and Part Numbering: (continued)
  - Sample Part number schema based on BDS-503 requirements – see applicable PDS for numbering schema used for your site/program
    - Based on PDD number with a suffix appended to form the part number
    - PDD Number, if the PDD is a:
      - CAD 3D model - delete “MM” prefix from the PDD number and add the part number suffix
      - Drawing - use the full PDD number and add the part number suffix
    - Suffix Identifier:
      - Assign the end product of the drawing the first suffix identifier beginning with -0001
      - The remaining suffix identifiers (“dash numbers”) on multi-detail drawings are assigned in sequence, -0003, -0005, -0007, -0009, -0011, -0013, etc.
      - A suffix identifier shall be assigned to each part and assembly depicted on the drawing, thus creating that part/assembly’s PIN
      - Once assigned, and the drawing released, suffix identifiers shall not be re-assigned
      - Do not reuse suffix identifiers, removed from the drawing, except to reinstate the original item
      - Do not use suffix identifiers previously omitted
      - Suffix Number shall be a numeric field and only apply to the MM/drawing Data Type (i.e., the part “dash” number) to form the part number



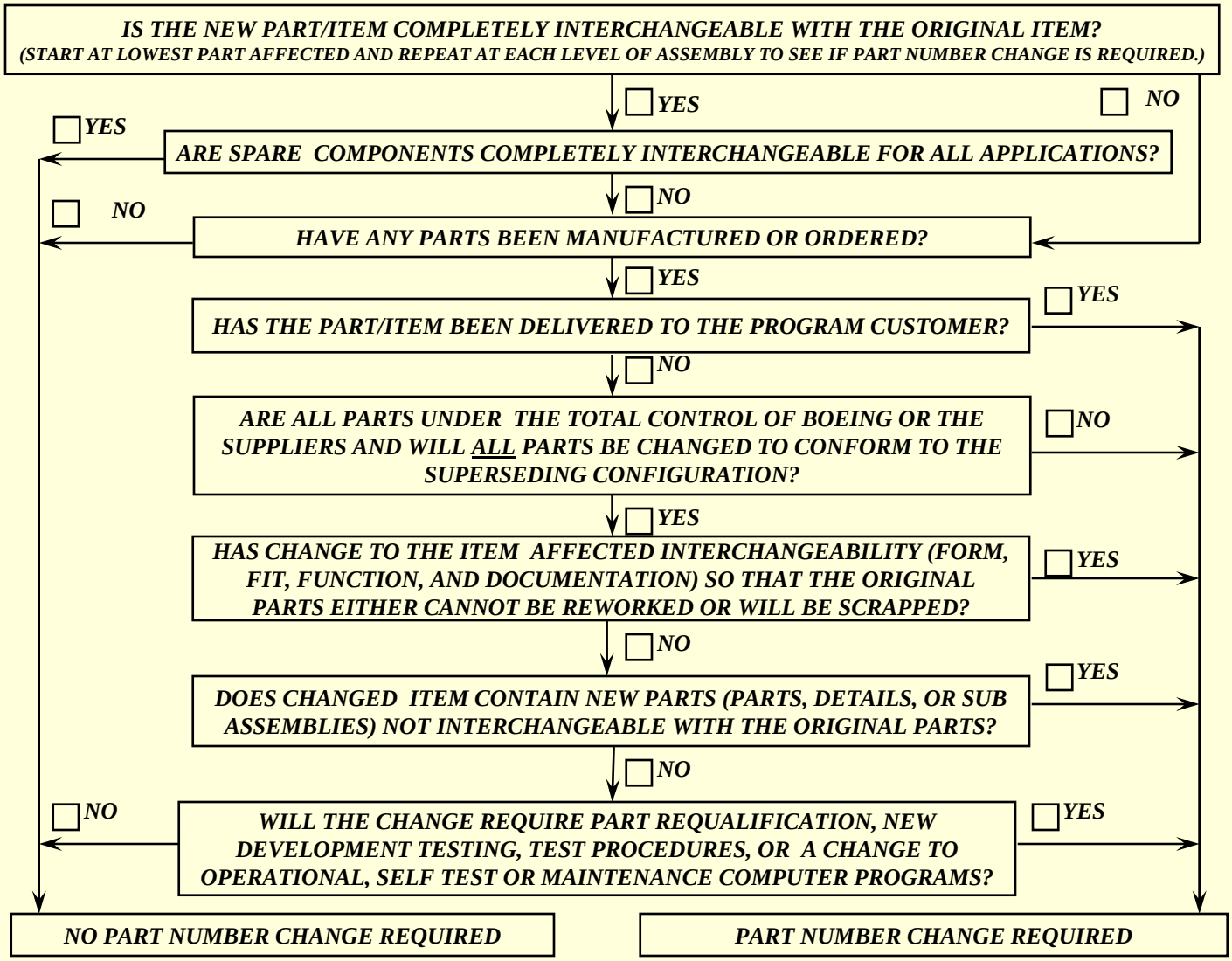
BDS-503 Part Number Re-identification

- General Part Number change requirements:
  - Part number changes (i.e., part re-identification, assigning a new PIN) :
    - Are used to:
      - Distinguish one configuration of an item from a different configuration of that item
      - Maintain configuration control in production and on delivered products
    - Affect successive next higher assemblies, ending only where interchangeability is re–established, meaning either the original or new item may be used in all units of all next higher assemblies
    - Are required/permitted only when a design change affects:
      - The design of an item, or its material, manufacturing process, or protective finish is changed in such a manner that the original item and the new item are not completely interchangeable with the previous version for all applications
      - Performance or durability such that previous versions must be discarded/modified for reasons of safety/malfunction
      - A repair/replacement/spare part within an item so that it is no longer interchangeable with the current version of the part in the item
      - An item such that the new version of the item is:
        - » Not limited in use where the previous version of the item was limited in use or application (e.g., in specific articles or models of articles)
        - » Limited in use where the previous version of the item was not limited in use or application (e.g., in specific articles or models of articles)
      - An item in such a way that it necessitates a change to an operational test, self-test, or maintenance test computer program

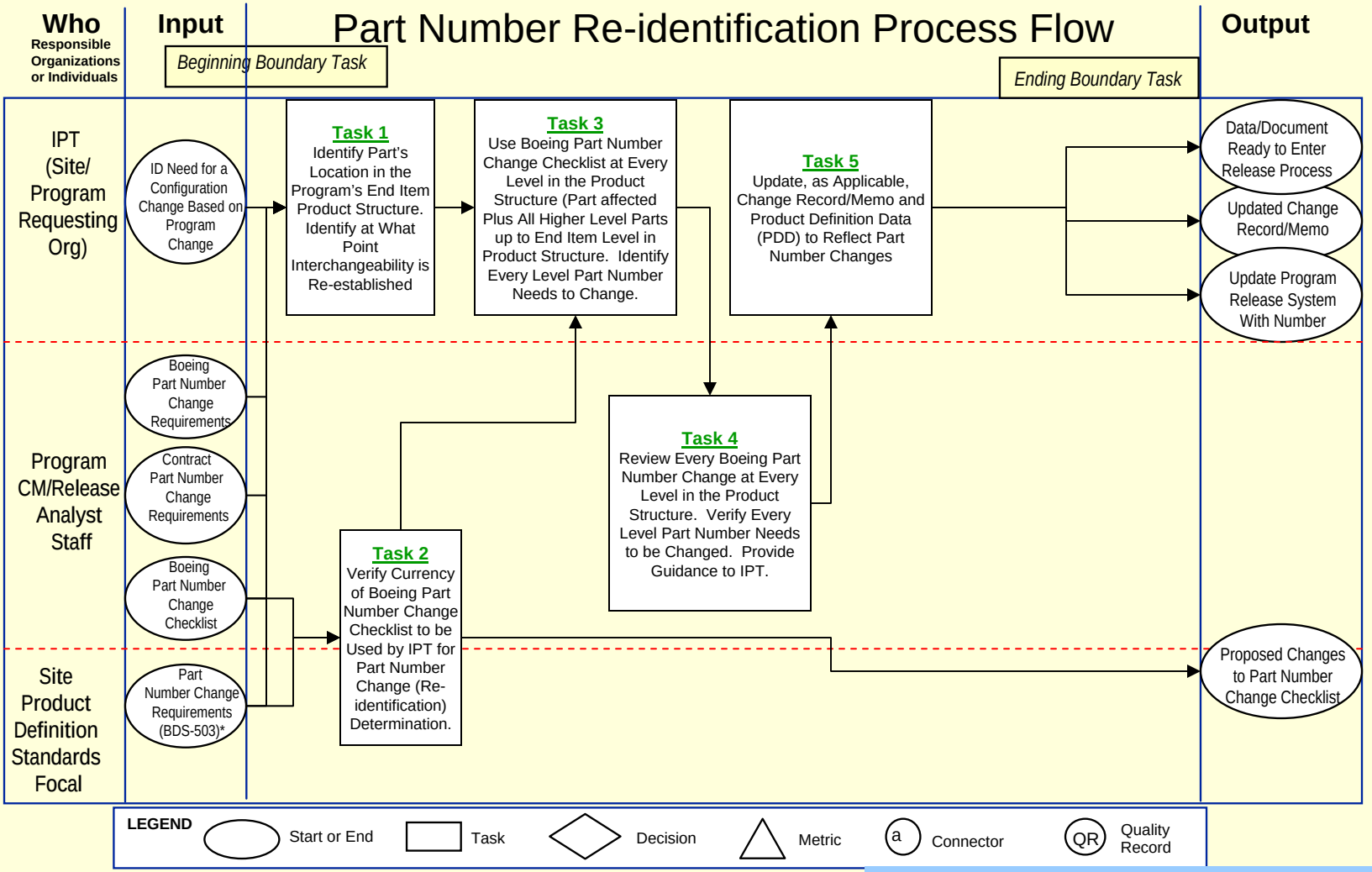
BDS-503 Part Number Re-identification

- General Part Number change requirements:
  - For the purposes of determining if a part number needs to be changed (i.e., re-identified, rolled) interchangeability is understood to include, in addition to configuration of the item, the performance, reliability, and maintainability of the changed item, to another item of similar or identical purposes such that the new item is capable of being exchanged for the other item without selection for fit or performance, and without alteration of the items themselves or of adjoining items, except for adjustment
  - The decision to change part number may be waived only when Configuration Management, Manufacturing Engineering and Quality Assurance agrees that a part or identifying number change is not needed

BDS-503 Part Number Re-identification



BDS-503 Part Number Re-identification



Note: * For BCA programs see BCA web portal for applicable Product Definition Standard

Boeing Document Requirements
(Applicable to BCA and other Boeing units)

What is the Basis for Document Number Assignment?

- Documentation
  - For Boeing PRO-127 establishes the requirements for document preparation, release, distribution, and retrieval
    - Authorizes use of “D-series” documents and unique controlled number or alphanumeric identifier for each document
    - Establishes requirements/responsibilities for preparation/registration/release/ distribution/tracking/maintenance/retention/retrieval of “D-series” documents
    - Provides requirements visibility, compliance with legal requirements and accountability for company documents
  - D-series documents:
    - Include those documents which are:
      - Used to support Boeing processes and product information
      - Released through a common enterprise wide process, which includes tracking, retention, retrieval, and distribution both inside and outside Boeing
      - Assigned unique ID numbers based on program/aircraft model/business function
    - Characteristics
      - D-series numbers are typically assigned to documents that are used by multiple organizations within the company and have one or more of the following characteristics:
        - » Contain substantive technical, scientific, engineering, financial, manufacturing, or business information
        - » Affect the fit, form, or function of Boeing products
        - » Requires configuration control
        - » Requires distribution outside the company

What is the Basis for Document Number Assignment?

- Documentation (continued)
  - D-series documents: (continued)
    - Characteristics (continued)
      - D-series documents include, but are not restricted to, the following:
        - » Compliance documents
        - » Engineering/technical/scientific documents
        - » Financial documents
        - » Manufacturing documents
        - » Proposals
        - » Reports
    - The following writing types are not to be prepared as “D-series documents”:
      - Memos, letters, and coordination sheets
      - Brochures, pamphlets, presentations, and marketing materials
      - Personal desktop procedures, checklists, and computer printouts
      - PDD:
        - » Parts lists
        - » Drawings
        - » Other product definition data in the form of book-form drawings
      - Policies, procedures and processes that should be controlled and released through Boeing Policies, Procedures, and Processes per PRO-1
      - Parts, process, PDS and other standards that should be released through the Product Standards Data System (PSDS), see URL: https://psds.web.boeing.com/psds/servlet/Psds?action=DisplayMainMenu

What is the Basis for Document Number Assignment?

- Documentation (continued)
  - Per PRO-127, D950-10249-1 is the standard for “D-series” document numbering system:
    - “D-series” documents are defined as any document containing substantive technical, scientific engineering, financial, manufacturing, or business information and are commonly used by multiple organizations within the company and are identified by a D-series number
    - D950-10249-1 - "Document Preparation, Release, and Distribution,” is the source of detailed requirements for preparing and releasing D-series documents
    - Document number requirements:
      - Documents are identified as “D-series” documents
      - Number assignment requirements include:
        - » Unique identification number for each document assigned by the appropriate document release organization
        - » Obtaining document numbers from appropriate data management group, in conjunction with appropriate document release group, for programs governed by contractual document delivery criteria
        - » Lists of some document numbering and document release organizations are available at the following web site: http://documentrelease.web.boeing.com/ - Check program CM for guidance
      - The document number is the identifier, consisting of a unique combination of characters, by which a document can be released, indexed, and retrieved

What is the Basis for Document Number Assignment?

- Documentation (continued)
  - Per PRO-127, Boeing uses D950-10249-1 as the standard for all "D-series" documents, including numbering system: (continued)
    - Document number requirements: (continued)
      - Per D950-10249-1 the authority for document numbering conventions addressing the parts of a document number are:
        - » BDS-1020, "Numbering System" for IDS
        - » BDS-1022, "Numbering System–Commercial" for BCA
        - » Note: D950-10249-1 needs to be updated to include document numbering conventions for programs that have implemented BDS-503 since the new PDS standard only addresses PDD and not documents as was the case with BDS-1020/1022
      - For BCA requirements are documented in BDS-1022 or as otherwise noted in the applicable BCA program web portal
      - Address questions on document numbers to local document release organization
    - For BCA document numbering schema is generally based on BDS-1022 – see applicable PDS for numbering schema used for your site/program
      - For BCA programs using a Work Breakdown Structure (WBS) system:
        - » The WBS number or the standard "D6" numbering schema may be used to generate the document number see BDS-1022
        - » Boeing direction is don't use significant numbering system, except program designator, thus use of WBS number in document numbering schema should be discouraged
        - » Document numbers are similar to SCD numbers except the prefix used is "D" instead of the "S" prefix for Specification Control Drawings.
        - » Documents are often assigned a dash number indicating a volume number or a related document on the same general subject
      - There are three approved numbering schemas used within BCA:
        - » WBS/program centric document numbering
        - » BCA centric document numbering
        - » Boeing BCA entity document numbering (see D950–10660–1 for designator)

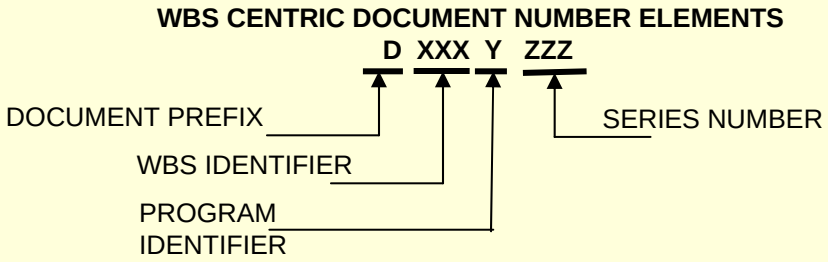
What is the Basis for Document Number Assignment?

- Documentation (continued)
  - Per PRO-127, Boeing uses D950-10249-1 as the standard for “D-series” document numbering system: (continued)
    - Without the proper use of the document number:
      - Attempts to retrieve the document fail
      - Compliance to CM requirements are compromised
      - Product integrity can be compromised by the misuse of document numbers
  - Items to consider:
    - Documentation standards which are contractually mandated on a program shall take precedence over Boeing internal company standards
    - When explicit program contract documentation standards do not exist:
      - All program deliverable documentation shall follow the Boeing internal company requirements in PRO-127 and D950-10249-1
      - Non-deliverable/Boeing internal documentation shall follow the Boeing internal company requirements in PRO-127 and D950-10249-1
    - Program documentation (e.g., documents, specifications) numbering is to be assigned by program release system and shall comply with the applicable contract, regulatory, and Boeing requirements
  - Therefore, it is extremely important to obtain a document number for each document intended for release and use document numbers properly

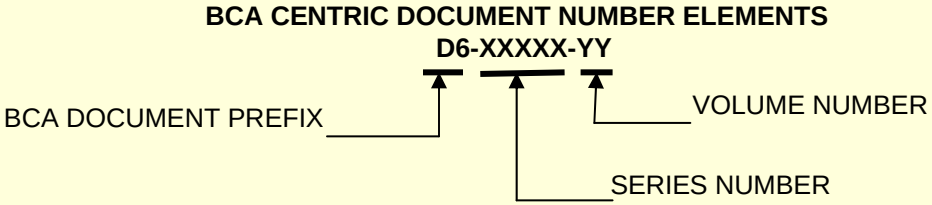
BDS-1022 Based
Document Numbering Schema

BDS-1022 Document Number Schema

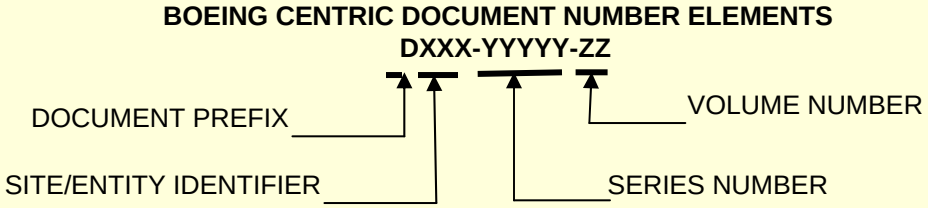
- Documentation
  - Sample of the three BCA document number schemas based on BDS-1022 requirements for formal D-series documents:
    - WBS/program centric document numbering:



    - BCA centric document numbering:



    - Boeing centric document numbering:

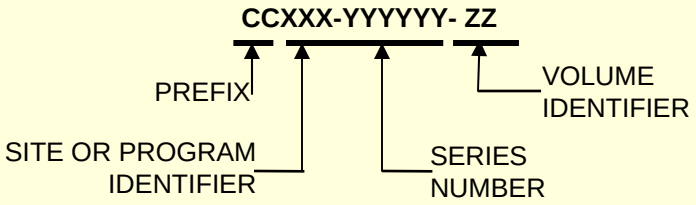


BDS-1020/BDS-503 Based Document Numbering Schema

BDS-1020/BDS-503 Document Number Schema

- Documentation
  - Sample document number schema based on BDS-1020 and an extrapolation of BDS-503 PDD requirements for formal program documents, including D-series documents

DOCUMENT NUMBERING SCHEMA

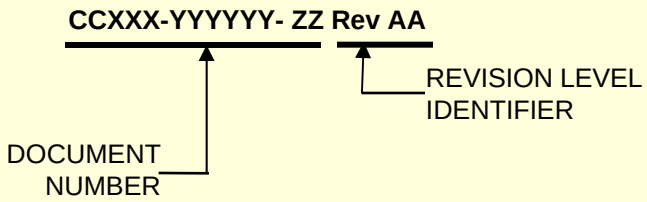


- Prefix:
  - "D" – for D-series documents
  - "S" – for Specifications
  - "T" – for Test documents (or program may use D-series documents instead)
  - "SW" – for Software documents (or program may use D-series documents instead)
  - Use of "D" prefix for Test/Software documents must be documented in the program CM planning document required by PRO-1268/PRO-86
- Site or Program Identifier is assigned by CPDSC
- Series Number
  - Size of "Series Number" in BDS-1020 is 5 digits, while in BDS-503 is 6 digits
  - Non-significant series of sequential numbers, beginning with 10000 through 99999
  - Assigned by release group/program document release system
- Volume Number - The Volume Number shall be a numeric field with the first or only volume being –1, with succeeding volumes numbered consecutively by the originator (i.e., –2, –3, etc.) and shall apply only to documents and specifications

BDS-1020/BDS-503 Document Number Schema

- Documentation
  - Sample document revision level identification schema based on BDS-1020 and an extrapolation of BDS-503 PDD requirements for formal program documents, including D-series documents

DOCUMENT REVISION LEVEL IDENTIFICATION SCHEMA



  - Revision Level Indicator
    - Revision Letter shall be a sequential alpha character for each unique combination of document and volume number
    - Initial document release revision level indicator is “blank” followed by Rev A, etc.

References/Resources

ANSI/GEIA-649-2004	National Consensus Standard for Configuration Management
ASME Y14.100	Engineering Drawing Practices
GEIA-HB-649	Implementation Guide for Configuration Management
NASA-STD-0005	NASA Configuration Management Standard
MIL-HDBK-061A	Configuration Management Guidance

Summary

The selection and control of product (i.e., PDD, document, and part) numbers allows one to distinguish the configuration of one product from another as well as the configuration of that product throughout its life cycle.

Changes to the configuration of an item of PDD or documentation are controlled by the revision level process, thus a change is identified from the previous version by a change in the revision level to the next revision level indicator (e.g., roll revision level A to revision level B).

Changes to the configuration of a part is controlled by the part number re-identification (i.e., part number roll, part number change) process, thus a change to a part is identified from the previous version of that part by a new part number (e.g., roll the "-1" part number suffix to the "-3" part number suffix).

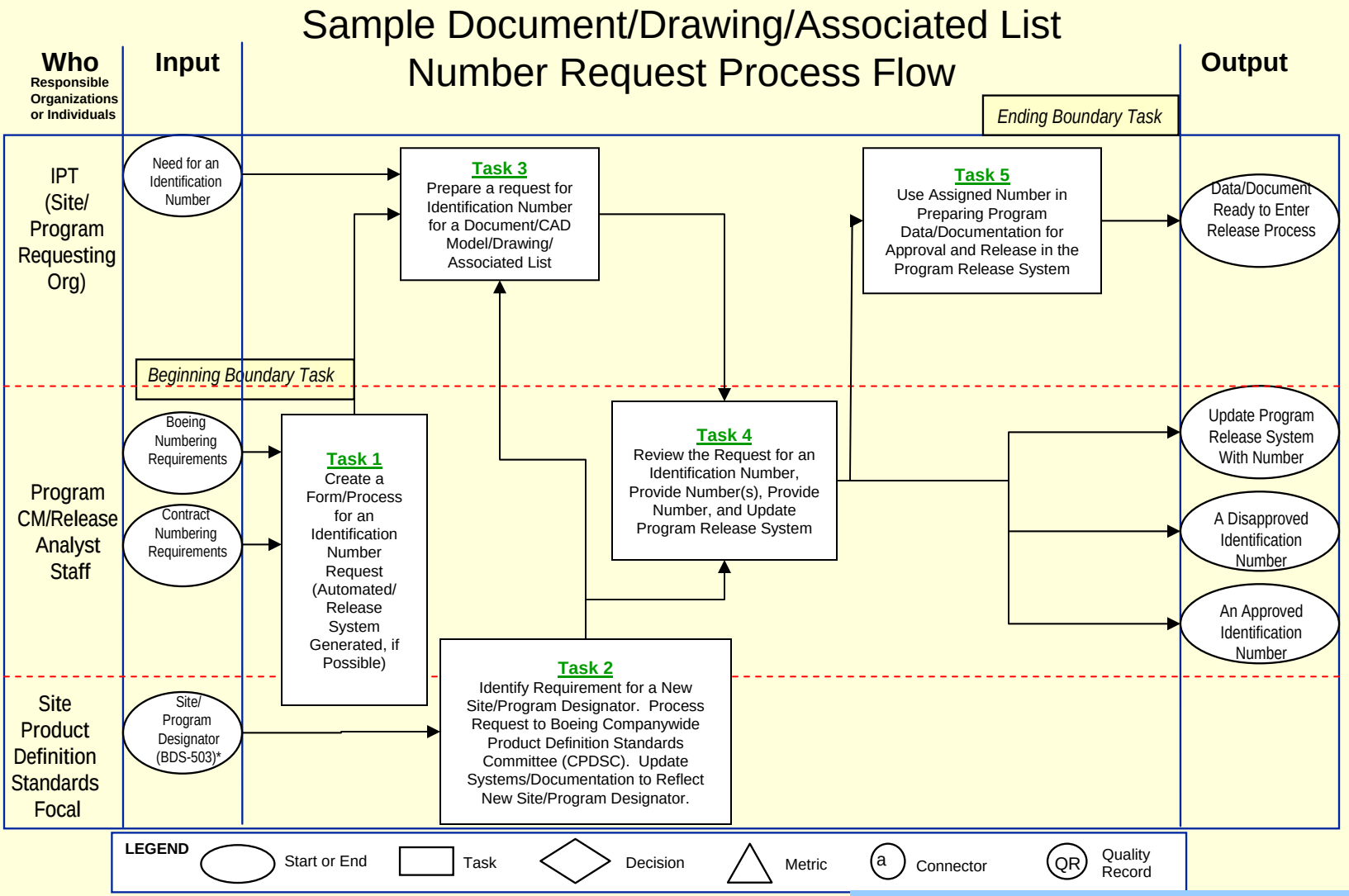
Challenge

That's it . . .Before you leave, be sure to:

- Sign the attendance sheet
- Complete course evaluation form

Backup – Sample Process Steps

Back-up Sample Process Flow



Note: * For BCA programs see BCA web portal for applicable Product Definition Standard

Backup– Sample Process Steps

Sample Process

1. Create a Request Form for an Identification Number

Roles: CM Analyst and PLM Functional Manager.

Input: Requirements for Identification Number.

Output: Approved Identification Number Request Form Available to Program.

The CM Functional Management organization (a.k.a. Core CM) is responsible for the creation of a Product Definition Data (PDD)/document identification number assignment request form. The applicable program release system and the corresponding requirements shall also be incorporated into the request form. Once the request form is created the CM Analyst obtains CM Functional Management approval to publish the Program Identification Number Request form to make accessible to the requesting program (e.g., in the Boeing Forms Library per PRO-3019, Management of Company Forms). Note: This form/process should be programmed into the program Product Data Management (PDM) system or PDD/document number assignment tool to automate the process.

Step	Action
a.	Create (CM Function Role) a request form for the Program organizations to request an identification number.
b.	Use (CM Function Role) applicable requirements (e.g., BDS-503) for identification numbers when creating a request form for program usage.
c.	Use (CM Analyst Role) the applicable program release system and the corresponding requirements required to assign an identifying number.
d.	Use (CM Function Role) BDS-503 which details the minimum requirements normally required when requesting an identifying number.
e.	Receive (CM Function Role) approval to publish the request for Identification Number form in the Boeing Forms Library.
f.	Coordinate (CM Function Role) with the Site Boeing Forms Library to publish as a Program Identification Number Request Form per PRO-3019.

Backup– Sample Process Steps

Sample Process

2. Request a Program/Site Designator

Roles: CM Analyst, Program CM Manager, CM Function Management, Site Companywide Product Definition Standards Committee (CPDSC) Focal.

Input: Initiation of a New SED Program (External Input).

Output: Assigned Boeing Program Designator.

CM Function is responsible for requesting the assignment of the Program/Site Designator upon the initiation of a new Site or program. The Program identifies the need for a program designator. It is processed and approved by the CM Function/Site CPDSC focal and submitted to the Boeing CPDSC. The Boeing CPDSC assigns the Program/Site Designator and notifies the CM Function organization, who in turn notify the Program CM manager.

Step	Action
a.	Identify (CM Analyst/CM Manager Roles) the establishment of a new program/site and the requirement for a Site/Program Designator.
b.	Document (CM Analyst/CM Manager Roles) the requirement for a Site/Program Designator and forward it to CM Function Management.
c.	Process (CM Function Management Role) and approve the request for a Site/Program Designator and forward it to the Boeing CPDSC for review and approval.
d.	Review (CPDSC Focal Role) and approve the request for a Site/Program Designator. Coordinate with the Boeing CPDSC to obtain an assigned Site/Program Designator. Provide the assigned Site/Program Designator to the CM Function Management.
e.	Notify (CM Function Management Role) the Program CM Manager of the assigned Site/Program Designator.
f.	Update (CM Analyst Role) program numbering requirements documentation and Program PDM system to reflect the assigned Site/Program Designator.

Backup– Sample Process Steps

Sample Process

3. Prepare a Request for an Identification Number

Roles: Program Team (e.g., IPT) Member.

Input: Identify a need for a Drawing/Document/EO Number and the Approved Identification Number Request Form Available in the Site Boeing Forms Library).

Output: Completed Identification Number Request Form.

When a need for a Computer Aided Design (CAD) 3D Model/Drawing/Associated List/ Document number is identified the requesting organization shall complete a Program Identification Number Request that is located in the Site Boeing Forms Library. The requesting organization will then submit the completed request form to the Program CM. Note: This form/process may be programmed into the Program PDM system.

Step	Action
a.	Recognize (IPT Role) the need for an identifying number.
b.	Access (IPT Role) the Site Boeing Forms Library to prepare a request for an identification number or PDM/release tool/program number assignment tool.
c.	Submit (IPT Role) the completed request to the Program CM Organization either manually, via e-mail, or electronically in the program PDM/release tool/program number assignment tool.

Backup– Sample Process Steps

Sample Process

4. Review the Request for an Identification Number and Update Program Release System Documentation

Roles: Release Analyst and CM Manager.

Input: Completed Identification Number Request Form.

Output: Assignment of an Identifying Number or Disapproval. Updated Program Release System to Include Assigned Number.

Receive, review and disposition the request for a program number for an item of data/documentation. Provide the number to the requestor. (Note: This step may be automated within the program PDM/release tool/program number assignment tool.)

Step	Action
a.	Receive (CM Manager Role) a request for an identification number from an IPT in a Program.
b.	Assign (CM Manager Role) a Release Analyst, within the program release system, to review and process the request for an identification number.
c.	Review (Release Analyst Role) the identification number request and determine if the request is valid based upon the applicable requirements (e.g., BDS-503, Program CMP).
d.	Disposition (Release Analyst Role) the request once the validity of the request has been determined:: 1. Approve the request, assign the applicable identifying number, and update the documentation required for the program release system. 2. Disapprove the request, document the reason for disapproval, and update the documentation required for the program release system.
e.	Return (Release Analyst Role) the approved/disapproved request to the Site/Program Requesting Organization/provide notification via the Program PDM tool. If the request is approved the assigned identification number will be included with the returned request/activated in the PDM tool.

Backup– Sample Process Steps

Sample Process

5. (Reference) Use Identification Number Provided for Data/Document Preparation, Approval, and Release in the Program Release System

Roles: Release Analyst and CM Manager.

Input: Assigned Identifying Number.

Output: Data/Documentation With Assigned Number Incorporated .

Drawing/Document number requestor adds number to applicable item of data/documentation and process for release per the program release process.