# PDS Standards Reference Change Log

| Version | Section | Change |
|---------|---------|--------|
| 3.1 | 1.1 | PDS Data Policy added |
| | 2.3 | Reference coordinate standard expanded to support body-fixed rotating, body-fixed non-rotating, and inertial coordinate systems. |
| | 2.4 | Ring coordinate standard added. |
| | 3.0 | List of internal representations of data types moved to Appendix C |
| | 3.2 | EBCDIC_CHARACTER added to PDS Standard data types |
| | 5.2.3 | Minimal label option described |
| | 6.3 | Data set collection naming -- data processing level component made optional |
| | 6.4 | Data set naming -- added support for SPICE and Engineering, where no instrument component applies |
| | 10.0, ALL | PDS use of UNIX/POSIX forward slash separator for path names. VMS-style bracket notation replaced. |
| | 10.2.1 | Required file names for catalog objects included |
| | 12.5.4.2 | PDS use of double quotes clarified |
| | 13.2 | Use of Primitive objects described |
| | 14 | New chapter -- Pointer Usage |
| | 17 | New chapter -- PDS Usage of N/A, UNK, and NULL |
| | 19 | Logical Volume organization added |
| | Appendix A | Primitive Objects added |
| | Appendix A | Header object -- required and optional keyword lists changed Container object -- Column no longer a requried sub-object |

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| | Appendix B | Streamlined Catalog Object Templates with examples replace 3.0 set |
| | Appendix C | New appendix containing internal representations of data types (moved from Chapter 3) |
| | Appendix D | Outline and example for AAREADME.TXT added |
| | Appendix E | Version 3.0 Acronyms and Abbreviations modified and moved to this Appendix.  Spelling and Word Usage section deleted. |
| | Index | The document now features an index. |
| | ALL | No other substantive changes have been made to the standards since the release of Version 3.0. Throughout the document, clarifications have been made, typos corrected, some sections have been rearranged, and new examples have been supplied. |
| **Version** | **Section** | **Change** |
| 3.2 | | Release Date: 7/24/95 |
| | 5.1.2 | Label format discussion added<br>Noted that values in labels should be upper case (except descriptions). Fixed examples in Appendix A. |
| | 5.2.3, Appendix A | Noted that for data products using minimal labels, DATA_OBJECT_TYPE = FILE in the Data Set Catalog Template |
| | 6 | Added target IDs for DUST and SKY<br>Added instrument component values SEDR and POS<br>Noted that Data Set and Data Set Collection IDs and Names should be upper case. Fixed examples. |
| | 8 and 19 | Listed CALIB and GEOMETRY as recommended directory names (as opposed to required). |
| | 8.2 | SOFTWARE Subdirectory naming recommendation added |
| | 9.1 | Volumes may contain multiple versions of VOLINFO |

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| 9.2.1 | Increased maximum line length in text file to 78 characters plus CR/LF |
| 10.1 | Clarified file name spcification. Noted that file name must be upper case and that full stop character required |
| 10.2 | Added recommendation that file extension identify the data type of a file. Added .QUB as reserved file extension for spectral image qubes. Added SPICE file extensions to reserved file extension list. catalog pointer name and file name: SWINV.CAT Added LABINFO.TXT to list of required xxxINFO.TXT files. Added recommended xxx INFO.TXT file names for SOFTWARE subdirectories. |
| 10.2.3 and 5.1 | added note that detached label file (*.LBL) should have the same base name as the associated data file |
| 11.1.1 | Added PDS Extended Attribute Record (XAR) policy |
| 11.1.2 | Added recommendation that CDs be premastered using single-session, single-track format. |
| 11.1.3 | Added section on Packaging Software files on a CD-ROM |
| 14.1.2 | Added new example of structure pointer |
| 15 | Added recommendation that for VAX/VMS-compatible CDs, fixed length and variable length files be an even number of bytes. Removed reference to VMS restriction to an even number of bytes in section 15.2 |
| 15.1 | Removed discussion of use of BLOCK_BYTES and BLOCKING_TYPE (since this data element not in PSDD) |
| 15.3 | Added notation that CR/LF is required line terminator for PDS label and catalog files |
| 15.5 | Reworded first sentence. |
| 17.2 | Allow definition of numeric constants representing N/A, UNK, and NULL to be defined for use in an INDEX table. |
| 18 | replaced reference to PDS V1.0 with a general statement |

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| 19 | Added SOFTWARE subdirectory recommendations |
| 19 | Recommend that an archive volume be based on a single version of the PDS standards. Volume organization guidelines added. |
| 19.2 | Clarified requirements for files & directories when logical volumes used |
| 19.3 | INDEX table standard update |
| 19.3 | use of axx- and bxx- prefixes in required file names clarified |
| 19.4, Appendix A | fixed examples--Volume and Volume set names capitalized |
| 19.5.1 | Volume set ID formation rule modified. |
| Appendix A | updated COLUMN, BIT_COLUMN, and HISTOGRAM objects required and optional keyword lists to be consistent with Table 3.1 |
| Appendix A | Added ALIAS and INDEX_TABLE objects |
| Appendix A | Added examples of COLUMN objects having ITEMs |
| Appendix A | Clarified use of ROW_SUFFIX_BYTES and ROW_PREFIX_BYTES for SPARE fields in Tables with fixed length records |
| Appendix A | Clarified the requirements for VOLUME objects for Logical volumes |
| Appendix A | Fixed examples using HEADER object to conform to current standard. Modified description of Header object to eliminate confusion.. |
| Appendix B | Inventory, Software_Inventory and Target templates added |
| Appendix B | Removed incorrect example of use of Personnel template |
| Appendix D | INDXINFO.TXT and SOFTINFO.TXT outlines and examples added |
| Appendix D.1 | Modified example of AAREADME.TXT to include rules on how pointer statements are resolved. |

| | Appendix E and F | Added Appendix E - NAIF Toolkit Directory Structure. Acronyms and Abbreviations moved to Appendix F. |
| | ALL | corrected typos, clarified text, added rationale for some standards, updated examples to conform to latest standards |
| | Change Log | Version 3.1 change log updated--some items were missing |

| **Version** | **Section** | **Change** |
|---|---|---|
| 3.3 | | Release Date: 6/1/99 |
| | 1.0 | Added DVD as new medium |
| | 1.3 | Changed Version to 3.3 |
| | 1.6 | Updated/corrected references |
| | 1.7 | Added reference to PDS web page |
| | 2.0 | Added definition for IAU |
| | | Clarified text |
| | 2.3 | Corrected punctuation |
| | 2.7 | Fixed punctuation for references |
| | 3.4 | Corrected punctuation |
| | 3.7 | Corrected spelling and punctuation |
| | 4.0 | Added Section headers for Primary & Secondary Objects |
| | 4.1 | Corrected paragraph formatting |
| | 5.1.2 | Added paragraph about ASCII character set |
| | | Added paragraph about Label Padding |
| | | Fixed math in calculating start byte of 8th record |
| | | Aligned keyword/values |
| | 5.2.2 | Corrected grammar |
| | 5.2.3 | Removed "'"in the Data Set catalog template. |
| | 5.3.1 | Changed Version to 3.3 |
| | 5.3.2 | Modified last paragraph |
| | 5.3.3 | Listed examples of primary and secondary objects |
| | 5.3.3.2 | Changed 'bottom' to 'following' |
| | 5.3.4 | Removed AMMOS as an example |
| | 5.3.4.1 | Removed SPACECRAFT_NAME as valid keyword |
| | 5.3.4.3 | Removed SPACECRAFT_NAME as valid keyword. |
| | 5.3.5 | Changed PDS has developed and continues to develop... |
| | | Added example for a pointer (^DESCRIPTION) |
| | 5.3.6 | Aligned keyword/values |
| | | Clarified statement |
| | 5.3.7 | Changed: needed for conformance |
| | 6.0 | Prioritized organizations that PDS works with |
| | 6.1 | Provided definition for Data Set Collection and removed MGN example. |

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| | Corrected spelling (considerations) and punctuation |
| 6.2 | Added acronyms for data set name and identifier |
| 6.3 | Changed paragraph from future tense to past tense |
| 6.4 | Section 5 - comets |
| | Section 6 - added acronyms to list |
| | Section 6 - corrected spelling (ephemeris) |
| | Section 7 - corrected spelling (gravity) |
| | Section 8 - clarified version number rules |
| 7.0 | Updated paragraph |
| 7.1 | Clarified statements about date/time formats |
| 7.2.1 | Added PDS preference for convention |
| 7.3.1 | Corrected grammar |
| | Reformatted paragraph |
| 7.3.2 | Corrected grammar |
| | Updated paragraphs |
| 8.1 | Corrected grammar (standards directory) |
| | Added EXTRAS directory |
| | Added Browse and Data directory descriptions |
| 8.2 | Section 4 - Better examples of directory names |
| | Section 5 - Reformatted paragraph |
| | Section 8 - Corrected spelling and grammar |
| 8.3 | Changed to valid keywords |
| 8.4 | Corrected grammar (data are) |
| 9.0 - 9.3.3 | Complete rewrite of Documentation Standard |
| | Added HTML standards |
| 10.0 - 10.1 | Added ISO 9660 Level 2 description |
| | Added ";1" to Level 1 description |
| 10.2.1 | Clarified required file names paragraphs |
| | Added TARGET_CATALOG pointer to list |
| 10.2.2 | VOLDESC.SFD file becomes deprecated |
| 10.2.3 | Described detached label |
| | Corrected grammar (its) |
| 10.2.4 | Added extensions and changed SPICE extensions |
| | Corrected spelling (postscript) and grammar (data that have) |
| 11.1.1 | Changed chapter name |
| 12.1 | Aligned equal signs |
| 12.1.1.1 | Added reference |
| 12.2 | Reformatted paragraph |
| 12.3 | Spelling |
| 12.3.1 | Corrected punctuation (1.234E2) |
| 12.3.1.2 | Corrected value (16#+4B#) |
| | Reformatted paragraph |
| 12.3.1.3 | Corrected value (1.234E3) |
| 12.3.2 | Updated paragraphs |
| 12.3.2.1 | Clarified date format |
| 12.3.2.3 | Clarified paragraph |

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| 12.3.2.4 | Changed year to 4 digits |
| 12.3.2.5 | Updated paragraph |
| 12.3.2.5.1 | Corrected value (1990-158T15:24:12z) |
| 12.3.3.1 | Corrected value ("::=") |
| 12.3.4 | Added examples |
| 12.3.5 | Corrected punctuation and grammar (units) |
| 12.4 | Corrected punctuation |
| 12.4.1 | Corrected grammar (the the) |
| | Aligned equal signs |
| 12.4.2 | Aligned equal signs |
| 12.5.2 | Reformatted asterisks to not be superscript |
| | Corrected value (60.15) |
| 12.5.3.1 | Corrected grammar (affect) |
| | Reformatted paragraphs |
| 12.5.4 | Corrected value (IO) |
| | Added valid quoted strings |
| 12.5.4.1 | Clarified paragraph |
| 12.5.5 | Reformatted asterisk to not be superscript |
| | Corrected spelling (eccentricity) |
| | Changed to valid keyword |
| 12.5.6 | Corrected value (removed 1st bracket "[") |
| | Changed to valid keyword |
| 12.6 | Reformatted paragraphs |
| 12.7 | Reformatted paragraphs |
| 12.7.1 | Corrected grammar (sections detail) |
| 12.7.2 | Corrected grammar ("is that are") |
| 13.1 | Added required keywords to definition |
| 14.1.1 | Corrected grammar (occurs) |
| 14.1.2 | Corrected punctuation |
| | Corrected value (^STRUCTURE) |
| | Changed paragraph numbering |
| 14.2 | Reformatted pointer rules |
| 15.0 | Reformatted paragraph and table |
| 15.2 | Changed paragraph numbering |
| 15.3 | Changed paragraph numbering |
| 16.0 | Corrected grammar |
| 16.2 | Clarified paragraph |
| | Changed case of #mark# |
| 17.1 | Changed case of title (and) |
| 17.1.2 | Corrected punctuation (information) |
| 17.2 | Corrected case of title (and) |
| 18.0 | Corrected SI Units (electricity potential, etc) |
| | Updated paragraph |
| 19.1 | Corrected grammar (volume types) |
| | Corrected grammar (up to the) |
| 19.3 | Corrected grammar (an SFDU) |

|  | Corrected spelling (global) |
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|  | Updated Catalog and Index definitions |
|  | Added description of the EXTRAS directory |
|  | Added Preferred Method for supplying PDS catalog objects |
| 19.4.1 | Corrected grammar (data have been) |
|  | Changed case of value (ID) |
| 19.5 | Corrected spelling (radiometry) |
|  | Corrected value (VOLUME_SET_NAME) |
|  | Corrected value (VOLUME_SET_ID) |
| 19.5.1 | Reformatted paragraph |
| 19.7 | Corrected case of value (IDs) |
| 20.0 - 20.6 | Complete rewrite of Zip Compression |
| Appendix A | Added URL to Cold Fusion pages |
| A.1 | Updated definition for ALIAS |
|  | Corrected spelling (subobject) |
| A.2 | Added and changed Optional keywords |
|  | Reformatted paragraphs |
|  | Corrected spelling (the time) |
| A.3 | Changed Optional keywords |
|  | Corrected spelling (created) |
| A.5 | Added TARGET to Optional Objects |
|  | Clarified use of CATALOG.CAT |
|  | Formatted paragraph |
| A.7 | Formatted paragraph |
|  | Changed Optional keywords |
| A.8 | Updated paragraph |
| A.10 | Changed case of keyword values to uppercase |
| A.11 | Corrected grammar (on a) |
|  | Corrected grammar (on the medium) |
| A.12 | Removed incorrect statements |
|  | Updated example |
| A.13 | Changed Optional keywords |
| A.14 | Removed a Required keyword |
|  | Added Optional keywords |
| A.15 | Changed value to keyword (GAZETTEER_TABLE) |
|  | Corrected grammar (the breath & upper right) |
|  | Added Optional Keywords section |
|  | Added Optional Objects section |
|  | Added trailing double quote to DESCRIPTION section |
| A.16 | Corrected paragraph to reflect proper file name |
|  | Changed value to be enclosed in double quotes |
| A.18 | Added Required and Optional Keywords and Objects sections |
| A.19 | Added BAND_NAME keyword |
|  | Added Optional keyword |
|  | Changed values to be keyword (CHECKSUM) |
|  | Changed values to be keyword (SCALING_FACTOR) |

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| A.20 | Changed paragraphs |
| | Changed case of keyword values to uppercase |
| A.21 | Reformatted paragraphs |
| | Removed Optional Keyword |
| | Added Optional Objects |
| | Corrected example (see additional example in A.27.1) |
| A.23 | Added example for CORE_ITEM_TYPE |
| | Corrected FILE_RECORDS to be accurate |
| | Corrected invalid keyword (SUB_SOLAR_AZIMUTH) |
| A.24 | Corrected grammar (data that vary) |
| A.26 | Corrected grammar (data are) |
| | Corrected punctuation (The Tookit) |
| A.27 | Corrected grammar (meta-data which are) |
| | Updated section numbers to reflect location (spares) |
| | Repaired examples (byte lengths) |
| A.28 | Line length to 72 chars |
| | Added Required and Optional Objects |
| | Repaired example |
| A.29 | Updated Optional keyword |
| | Changed case of keyword values to uppercase |
| Appendix B | Changed paragraph |
| | Changed text description length to be 80 characters from 72 |
| | Added text formatting standards |
| B.1 | Corrected punctuation |
| | Repaired example |
| B.2 | Reformatted paragraph |
| | Reformatted and repaired example |
| B.3 | Corrected spelling (DESCRIPTION) |
| | Reformatted paragraph |
| | Reformatted and repaired example |
| B.4 | Corrected spelling (description & instrument) |
| | Reformatted paragraph |
| | Reformatted and repaired example |
| B.5 | Corrected grammar (properties of the) |
| | Reformatted paragraph |
| | Reformatted and repaired example |
| B.6 | Repaired example |
| B.7 | Reformatted paragraph |
| | Reformatted and repaired example |
| B.8 | Repaired example |
| B.10 | Corrected spelling (package) |
| | Replaced example of SOFTWARE_INVENTORY template |
| B.11 | Corrected grammar (target catalog) |
| | Corrected grammar (SURFACE_GRAVITY) |
| | Repaired example |
| Appendix C | Minor corrections throughout text |

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|            | C.5           | Corrected spelling (exponent-as-stored)   |
|            | C.10          | Corrected spelling (imaginary)            |
|            | Appendix E    | Corrected sentence (source code for)      |
|            |               | Corrected spelling (spacit)               |
|            |               | Corrected grammar (These data are)        |
|            |               | Corrected punctuation                     |
|            | Appendix F    | Corrected CD-WO nomenclature              |
|            |               | Added DE (Data Engineer)                  |
|            |               | Corrected spelling (Principal)            |
|            | Appendix G    | Added SAVED Data as new section           |

| Version | Section | Change |
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| 3.4     |         | Release Date: 06/15/2001 |

Technical editing of the entire document (Chapters 1-20, Appendices A-G) was performed by Anne Raugh under contract to JPL. This editing focused on correcting awkward language, making examples consistent with the text, clarifying apparent internal inconsistencies, and in general ensuring a more readable document. Substantive changes to the standards themselves were specifically prohibited. Document changes made by Raugh were reviewed by Lyle Huber (ATMOS) and Ron Joyner (CN). Cases in which the intention of the original document could not be determined by the above team were referred to Steve Hughes (CN), who acted as both historian and final arbiter.

On May 04, 2001, Ann Raugh, Richard Simpson, Lyle Huber, Steve Hughes, and Ron Joyner met at New Mexico State University to discuss and arbitrate the final set of changes to be incorporated into this document.

| Version | Section | Change |
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| 3.5     |         | Release Date: 10/15/2002 |
|         | 19.4.1  | Changed length of VOLUME_ID from 9 chars to 11 chars |
|         | 19.5.1  | Changed formation rule for VOLUME_SET_ID |
|         | B.1.6   | Modified to include ARCHIVE_STATUS keyword |
|         | B.7.1   | Modified to include ARCHIVE_STATUS keyword |
|         |         | Modified to include DATA_SET_TERSE_DESC keyword |
|         | B.31    | Amended Reference section to include more definitive language on what is appropriate to cite, what is not, and how to cite each type of reference. |

| Version | Section | Change |
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| 3.6     |         | Release Date: 08/01/2003 |
|         | 3.1     | Modified to include FIELD data element |
|         | 3.2     | Modified to include FIELD data element |
|         | 3.8     | Modified to include SPREADSHEET object |

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| 4.0 | Modified to include SPREADSHEET as primary object |
| 5.5 | Added definition for Locally Defined Data Elements |
| 5.5.1 | Added Justification for Locally Defined Data Elements |
| 5.5.2 | Added Identification for Locally Defined Data Elements |
| 5.5.3 | Added Review and Use of Locally Defined Data Elements |
| 7.3.1 | Modified 1$^{st}$ two paragraphs to clarify GMT/UTC relationship |
| 7.4(6) | Added Note for Greenwich time |
| 10.2.3 | Modified list to include CSV as reserved file extension |
| 12.2.3 | Modified use of Colon in assignment statements (namespace) |
| 12.4.2 | Modified to include namespace_identifier:element_identifier |
| 12.6 | Modified to include namespace_identifier:element_identifier |
| 19.3.3.2 | Modified to include Optional use of Data Dictionary Files |
| A.2.5 | Removed 'Z' from time value |
| A.13.2.1 | Added Note for PARMS as alias to PARAMETERS group |
| A.14 | Added FIELD object (sub-object of SPREADSHEET) |
| A.15 thru A.26 | Renumbered sections (the old A.14 became A.15, etc) |
| A.15.5 | Removed 'Z' from time value |
| A.17.5 | Removed 'Z' from time value |
| A.25 | Modified UTC / GMT for LEAPSECONDS |
| A.27 | Added SPREADSHEET object |
| A.23.4 | Removed 'Z' from time value |
| A.24.5 | Removed 'Z' from time value |
| A.25.5 | Removed 'Z' from time value |
| A.26.5 | Removed 'Z' from time value |
| A.28 thru A.30 | Renumbered sections (the old A.27 became A.28, etc) |
| A.28.4.1 | Removed 'Z' from time value |
| A.28.5.1.3 | Removed 'Z' from time value |
| B.1.6 | Modified to include CITATION_DESC data element |
| B.7.1 | Modified to include CITATION_DESC data element |
| B.7.5.3 | Modified to include CITATION_DESC formation rule |
| B.7.5.4 | Renumbered from B.7.5.3 |