Standards Change Request

Pointer/Object Ambiguity in the Standards Reference **SCR 3-1127.v6**

Provenance:

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Title: Pointer/Object Ambiguity in the Standards Reference (SCR3-1127.v1-v4)

Date: 2007-07-31 (submitted)
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Problem:

As labels become more complicated, we frequently encounter the case of multiple objects of the same basic type (IMAGE or TABLE, e.g.) being described in the same label. By convention PDS has always used unique identifiers for objects of similar type, which are formulated by pre-pending a descriptive modifier to the base type (as is done in the occasional SR example). Recent interaction with the Rosetta mission, however, has pointed out two major logical holes in the PDS label (and possibly ODL) standards: 1. There is no requirement in the SR that object identifiers be unique within an ODL file. 2. There is no statement in the SR that object identifiers in PDS labels must end, or even contain, the base object type. Similarly, there is no statement in the SR that requires that pointers and objects with the same name should be mapped to each other based on their sequence in the file.

Current Urgency:

Medium.

Proposed Solution:

Modify the text of the Standards Reference to stipulate that object identifiers must be unique within the containing label.

Impact Assessment:

PDS Standards Reference – Changes as described in "Requested Changes"

Archive Preparation Guide – no impact

Proposer's Archive Guide – no impact

Planetary Science Data Dictionary – no impact

PDS tools - Must be modified to check for and report duplicates.

PDS Web Site – no impact

External Agencies – ROSETTA was known to be using non-unique identifiers (possibly without the base object type) in 2007. PDS should expect to encounter labels with these non-compliant features as the ROSETTA data become available through interagency sharing.

External Interfaces – no impact?

Compliance/compatibility with ODL and ISO Standards – no impact

Additional Information:

Tests on PDS tools revealed the following. Input was a product containing two dissimilar tables having the same OBJECT = TABLE identifier.

(a) NASAVIEW was able to display both tables if pointers were in the same order as the object definitions. If the pointers were swapped, NASAVIEW tried to display the first table using parameters from the second definition, and vice versa.

(b) LVTool reported "WARNING ... a parameter named TABLE already exists ..."

(c) VTool issued no warning or error related to the two tables.

Sections within PDS Standards Reference which refer to Object Pointers

4.1 Data Product File Configurations
Examples
5.1.1 Labeling methods
5.2.1 Attached and Detached Labels
5.2.2 Combined Detached Labels
5.2.3 Minimal Labels
5.3 Detailed Label Contents Description
5.3.3 Data Object Pointers
5.3.3.1 Use of Pointers in Attached Labels
12.1 About the ODL Specification
12.4.3 Pointer Statement
14.1.1 Data Location Pointers (Data Object Pointers)
14.2 Rules for Resolving Pointers
A.17.5 Example

Figures which use Pointers
Figure 5.2 PDS Attached / Detached Label Structure
Figure 5.6 Data Object Pointers – Detached & Combined Labels

Requested Changes:

Change section "5.3.3.1 Use of Pointers in Attached Labels" to insert the text:

The <object_identifier> is the unique name assigned to the object description.

before
See Chapter 12, Object Description

Change section " 5.3.3.2 Use of Pointers in Detached and Combined Detached Labels" by inserting:
(e) The <object_identifier> is the unique name of an object description.

after:
(d) Records and bytes are numbered from 1.

Add a section

12.4.4.2 PDS Requirements on OBJECT Identifiers in Labels

All object identifiers within a single label (attached or detached) that are referenced in data object pointers must be unique, and must end in a defined object type. The syntax for such an object identifier is:

[<prefix>_]<defined_object_type>

Where the *defined_object_type* is an object defined in the *Planetary Science Data Dictionary* and <prefix> is an optional ODL identifier. The following are all valid examples of PDS object identifiers:

IMAGE
DARK_IMAGE
BAD_PIXEL_IMAGE
TABLE
PARAMETER_TABLE

So, for example, if a label contains only a single IMAGE object definition, then it may use the identifier “IMAGE”. If there is more than one IMAGE object in a label, only one may be called simply “IMAGE”; the others must each have a unique prefix added to distinguish between them.

The object identifier in a data object pointer statement must correspond to exactly one object identifier in the same label.

In the introductory text of "Chapter 14. Pointer Usage" change:

Pointer statements begin with a caret (“^”) and the name of a PDS object or element.

to:

Pointer statements begin with a caret (“^”) and the identifier assigned to an object or the name of an element.

Change the text of section "14.1.1 Data Location Pointers (Data Object Pointers)" from:

The most common use of pointers is for linking object descriptions to the actual data. The syntax of these pointers depends on whether the label is attached or detached from the data it describes.

to:

The most common use of pointers is for linking object descriptions to the actual data. This is called a "data object pointer." A Data Object pointer begins with a caret (“^”) followed by the identifier assigned to the object description within the label. The

syntax for the values assigned to these pointers depends on whether the label is attached or detached from the data it describes.

Correct the example in "A.26.5 Example"

Change:

OBJECT = SPECTRUM
…
END_OBJECT = SPECTRUM

to:

OBJECT = TOTAL_INTENSITY_SPECTRUM
…
END_OBJECT = TOTAL_INTENSITY_SPECTRUM