Standards Change Request

Change minimum value for detector_temperature   **SCR3-1150.v1**

Provenance:

Date: 2009-07-27
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Problem:

In the Planetary Science Data Dictionary (PSDD), the detector_temperature keyword was originally assigned default units of K (Kelvin) and a minimum value of 0. The Messenger Mercury Dual Imaging System (MDIS) is using this keyword with non-default units of degrees Celsius as specified in their labels using standard unit notation of "<DEGC>". The values typically shown in their labels are negative, and are therefore flagged as erroneous by validation software.

Current Urgency:

There has been one release of Messenger MDIS data containing the above notation. The validation of the data was problematic due to numerous error messages resulting from the described problem, which could potentially be obscuring other errors. A solution to this problem is being sought before the next data release in March of 2010.

Proposed Solution:

The original proposed solution of updating the definition for this keyword in the PSDD to have a minimum value of -273 was rejected by the Tech Group on the grounds that it would make the minimum value and default units inconsistent with one another. While there are plans underway for the PSDD to have the capacity to handle multiple unit designations for a single keyword in PDS4, no such capability is present under PDS3.

The Tech Group then decided that a software solution to this problem should be sought. One potential solution was to provide validation software with the capability of performing unit conversions on the fly to verify that values provided in labels accompanied by non-default units were consistent with the default units and range limits provided in the PSDD. After consulting with Sean Hardman, it was agreed by the group that such a solution was not a high enough priority to warrant the cost of the changes to the common tool library.

A less costly change to the validation software involves changing the conditions under which unit and value errors are flagged. The following approach was selected by a consensus of the Tech Group: in the event that non-default units are detected in a label AND a default range of values is specified in the PSDD, a warning message will be issued by validation software.

This SCR directs the Engineering Node Development Team to make the appropriate changes to the VTool validation software.

Impact Assessment:

PDS Standards Reference – none

Archive Preparation Guide – none

Proposer's Archive Guide – none

Planetary Science Data Dictionary – none

PDS tools – The change described above under "Proposed Solution" will need to be implemented in the VTool validation program. This change is expected to require one day of effort.

PDS Web Site – none

External Agencies / Interfaces – none

Compliance/compatibility with ODL and ISO Standards – none

Additional Information:

None.

Requested Changes:

VTool will be modified such that when it encounters the use of non-default units in a label, if the PSDD also specifies a default range for that keyword, a warning message will be issued.