

#### PDS4 "Simple" Table Example

**PDS 2010 Tech Session** 

June 10, 2009

PDS 2010 Data Design WG

#### **Outline**

- The most basic of ASCII tables with a mix of numeric and character valued columns.
- Fixed-width columns.
- Well-defined PDS3 label.
- PDS4 label example shown here.

## **Phoenix Telltale Experiment**

- Added-on experiment that provides information about wind speed and direction through imaging a "weather vane".
- Data as delivered consisted of an Excel file.
- Data as archived included converting the Excel to a CSV file and manually fixing column widths.

# Telltale – example of a "simple" table structure

- A single table of 10 columns, no header, delimited by commas.
- Each record is fixed length and each column is fixed length.
- Some columns with "ASCII\_REAL" values have decimal points that do not "line up". This preserves the total byte length of the column.

#### What is different in PDS4?

- The table itself is unchanged.
- Labeling will be different depending on the implementation chosen but should retain the information from the PDS3 label.

#### **Chunk of table**

```
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567
 91,0.088, 91.06951,5.156,0.42,0.42656,125.547152, 4.7691,15300.0, "SS091A990R6M1.IMG"<CR><LF>
 91,0.088, 91.06951,5.156,0.42,0.42656,125.547152, 4.7691,15300.0, "SS091A990R6M1.IMG" < CR> < LF>
 91,0.088, 91.07029,5.155,0.42,0.42652,125.550546, 4.7692,15300.0, "SS091A990R6M1.IMG" < CR > < LF >
 91,0.089, 91.07105,5.155,0.42,0.42657,125.550344, 4.7692,15300.0, "SS091A990R6M1.IMG" < CR > < LF >
 91,0.377, 91.35854,2.225,0.72,0.56432,147.854445, 19.1305, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.377, 91.35919,2.010,0.64,0.51506,197.022189, 18.7507, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.378, 91.35978,1.928,0.70,0.52962,199.881316, 21.4121, 4314.6, "SS091AA00R6M1.IMG"<CR><LF>
 91,0.379, 91.36042,1.366,1.71,0.71758,185.232248,180.0000, 4314.6,"SS091AA00R6M1.IMG"<CR><LF>
 91,0.379, 91.36104,1.494,1.47,0.69841,179.932613, 81.2461, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.380, 91.36165,1.908,0.83,0.58457,171.164927, 25.8445, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.380, 91.36229,1.677,1.13,0.65682,169.245035, 42.4206, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.381, 91.36289,1.720,0.87,0.57686,237.047264, 30.6785, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.382, 91.36415,2.645,0.49,0.40090,323.650451, 10.7665, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.383, 91.36477,4.752,0.40,0.39856, 10.696469, 4.8413, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.384, 91.36543,4.521,0.40,0.39494,358.661558, 5.1823, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.384, 91.36604,3.427,0.39,0.38187, 13.809568, 6.6027, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.385, 91.36663,3.239,0.39,0.37979, 4.907225, 7.0238, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.385, 91.36729,2.826,0.42,0.39259,317.423490, 8.7466, 4314.6, "SS091AA00R6M1.IMG"<CR><LF>
 91,0.386, 91.36792,2.840,0.42,0.39058,321.608207, 8.6859, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 91,0.387, 91.36851,3.124,0.39,0.37922,339.039685, 7.3389, 4314.6, "SS091AA00R6M1.IMG"<CR><LF>
 91,0.387, 91.36917,3.317,0.39,0.37703,352.720837, 6.7690, 4314.6, "SS091AA00R6M1.IMG" < CR > < LF >
 <omitted 3700+ lines>
151,0.229,151.20464,2.980,0.43,0.40324,293.965171, 8.3952, 7140.0, "SS1520900R6M1.IMG" < CR > < LF >
151,0.230,151.20527,3.072,0.46,0.41565,268.822094, 8.6166, 7140.0, "SS1520900R6M1.IMG" < CR > < LF >
```

#### PDS 3 label fragment

```
PDS_VERSION_ID
                          = PDS3
            = FIXED_LENGTH
= 88
RECORD TYPE
RECORD BYTES
FILE RECORDS
                  = "CHAR_TABLE_COLLAPSED.TAB"
= "PHX-M-TT-5-WIND-VEL-DIR-V1.0"
^TABLE
DATA SET ID
                      = "PHOENIX"
MISSION_NAME
INSTRUMENT_HOST_NAME
INSTRUMENT_NAME
                      = "PHOENIX"
                      = "TELLTALE"
                         = "TELLTALE 91 151"
PRODUCT ID
TARGET_NAME
                         = "MARS"
SPACECRAFT_CLOCK_START_COUNT = "904250279.448"
SPACECRAFT_CLOCK_STOP_COUNT = "909588864.598"
                         = 2008-08-26T20:36:36.856
START TIME
                         = 2008-10-27T15:32:50.952
STOP TIME
PRODUCT CREATION TIME = 2009-04-15
OBJECT
                         = TABLE
  INTERCHANGE FORMAT = ASCII
  ROW BYTES
  ROWS
                         = 3727
                           = 10
  COLUMNS
```

#### PDS3 label fragment continued

```
OBJECT
                        = COLUMN
                        = "SOL"
 NAME
 DATA TYPE
                        = ASCII INTEGER
 START BYTE
                        = "I3"
 FORMAT
                        = "N/A"
 UNIT
                = "PHOENIX Sol number"
 DESCRIPTION
                    = COLUMN
END OBJECT
OBJECT
                        = COLUMN
                        = "LTST"
 NAME
 DATA TYPE
                      = ASCII REAL
 START BYTE
 BYTES
                        = "F5.3"
 FORMAT
                        = "N/A"
 UNIT
                      = "Local True Solar Time"
 DESCRIPTION
END OBJECT
                      = COLUMN
OBJECT
                        = COLUMN
                        = "LMST"
 NAME
               = ASCII REAL
 DATA TYPE
 START BYTE
            = 11
 BYTES
 FORMAT
                   = "F9.5"
                   = "N/A"
 UNIT
                 = "Local Mean Solar Time"
 DESCRIPTION
END OBJECT
                        = COLUMN
```

```
##PDS4#
/* ***** LABEL TEMPLATE - PRODUCT TABLE CHARACTER ***** */
OBJECT = PRODUCT TABLE CHARACTER;
  OBJECT = IDENTIFICATION SECTION;
    LABEL REVISION NOTE = "20090101:1.0 - initial version;
                         20090102:1.1 - added another column";
    PDS VERSION ID = "PDS4.0";
    PRODUCT CREATION TIME = 2009-04-15;
                      = "PHOENIX Mars Wind Experiment";
    TITLE
                       = "http://URN:PHX-M-TT-5-WIND-VEL-DIR-
    URN
                         V1.0:PDS4 ATM PRODUCT TABLE CHARACTER ID:1.0";
                       = "1.0";
    VERSION
  END OBJECT = IDENTIFICATION SECTION;
  OBJECT = DESCRIPTION SECTION;
    DESCRIPTION = "ANNOTATION FOR THE PRODUCT GOES HERE.";
  END OBJECT = DESCRIPTION SECTION;
  OBJECT = CIRCUMSTANCES_OF_OBSERVATION_SECTION;
                             = "Observation Intent";
    COMMENT
    SPACECRAFT_CLOCK_START_COUNT = "904250279.448";
    SPACECRAFT CLOCK STOP COUNT = "909588864.598";
                       = 2008-08-26T20:36:36.856;
    START TIME
                      = 2008-10-27T15:32:50.952;
    STOP TIME
  END OBJECT = CIRCUMSTANCES OF OBSERVATION SECTION;
```

```
#PDS4#
/* ****** LABEL TEMPLATE - PRODUCT TABLE CHARACTER ***** */
OBJECT = PRODUCT TABLE CHARACTER;
  OBJECT = IDENTIFICATION SECTION;
   LABEL REVISION NOTE = "20090101:1.0 - initial version;
                        20090102:1.1 - added another column";
    PDS_VERSION_ID = "PDS4.0";
    PRODUCT CREATION TIME = 2009-04-15;
                      = "PHOENIX Mars Wind Experiment";
    TITLE
                      = "http://URN:PHX-M-TT-5-WIND-VEL-DIR-
    URN
                        V1.0:PDS4 ATM PRODUCT TABLE CHARACTER ID:1.0";
                      = "1.0";
    VERSION
  END OBJECT = IDENTIFICATION SECTION;
```

```
OBJECT = DESCRIPTION_SECTION;

DESCRIPTION = "ANNOTATION FOR THE PRODUCT GOES HERE.";

END_OBJECT = DESCRIPTION_SECTION;

OBJECT = CIRCUMSTANCES_OF_OBSERVATION_SECTION;

COMMENT = "Observation Intent";

SPACECRAFT_CLOCK_START_COUNT = "904250279.448";

SPACECRAFT_CLOCK_STOP_COUNT = "909588864.598";

START_TIME = 2008-08-26T20:36:36.856;

STOP_TIME = 2008-10-27T15:32:50.952;

END_OBJECT = CIRCUMSTANCES OF OBSERVATION SECTION;
```

```
OBJECT = DATASET_SECTION;

DATA_SET_ID = "PHX-M-TT-5-WIND-VEL-DIR-V1.0";

END_OBJECT = DATASET_SECTION;

OBJECT = INSTRUMENT_SECTION;

INSTRUMENT_NAME = "TELLTALE";

END_OBJECT = INSTRUMENT_SECTION;

OBJECT = MISSION_SECTION;

MISSION_NAME = "PHOENIX";

END_OBJECT = MISSION_SECTION;

OBJECT = TARGET_SECTION;

TARGET_NAME = MARS;

END_OBJECT = TARGET_SECTION;

OBJECT = INSTRUMENT_HOST_SECTION;

INSTRUMENT_HOST_ID = PHX;

END_OBJECT = INSTRUMENT_HOST_SECTION;
```

```
OBJECT = TAGGED TABLE CHARACTER SET;
   OBJECT = TAGGED_TABLE_CHARACTER;

OBJECT = TABLE_CHARACTER;

DATA_LOCATION = ("PHX_M_TT_TABLE_FILE",1);

LOCAL_IDENTIFIER = "PHX_M_TT_TABLE";

FILE_TYPE = CHARACTER;

NUMBER_OF_FIELDS = 10;

NUMBER_OF_ROWS = 3727;

ROW_BYTES = 88;

OBJECT = TABLE_CHARACTER_FIELD;
        END_OBJECT = TABLE_CHARACTER_FIELD;
          OBJECT = TABLE CHARACTER FIELD;
             BJECT = TABLE_CHARACTER_FIELD;

FIELD_NAME = "LTST";

FIELD_NUMBER = 2;

FIELD_DATA_TYPE = ASCII_REAL;

FIELD_LOCATION = 5;

FIELD_LENGTH = 5;

FIELD_FORMAT = "F5.3";

FIELD_MIN_PHYSICAL = 0.088078704;

FIELD_MAX_PHYSICAL = 0.230243056;

FIELD_UNIT = "N/A";

FIELD_DESCRIPTION = "Local True Solar Time";

ND_OBJECT = TABLE_CHARACTER_FIELD;
          END OBJECT = TABLE CHARACTER FIELD;
```

```
OBJECT = TAGGED_TABLE_CHARACTER_SET;
OBJECT = TABLE_CHARACTER;

DATA_LOCATION = ("PHX_M_TT_TABLE_FILE",1);
LOCAL_IDENTIFIER = "PHX_M_TT_TABLE";
FILE_TYPE = CHARACTER;
NUMBER_OF_FIELDS = 10;
NUMBER_OF_ROWS = 3727;
ROW_BYTES = 88;
```

```
OBJECT = TABLE_CHARACTER FIELD;
     FIELD_NAME = "SOL";
   FIELD_NAME = "SOL";

FIELD_NUMBER = 1;

FIELD_DATA_TYPE = ASCII_INTEGER;

FIELD_LOCATION = 1;

FIELD_LENGTH = 3;

FIELD_FORMAT = "I3";

FIELD_MIN_PHYSICAL = 91;

FIELD_MAX_PHYSICAL = 151;

FIELD_UNIT = "N/A";

FIELD_DESCRIPTION = "PHOENIX Sol number";

ND_OBJECT = TABLE_CHARACTER_FIELD:
END_OBJECT = TABLE_CHARACTER_FIELD;
OBJECT = TABLE CHARACTER FIELD;
   FIELD_NAME = "LTST";

FIELD_NUMBER = 2;

FIELD_DATA_TYPE = ASCII_REAL;

FIELD_LOCATION = 5;
   FIELD_LOCATION - 5,

FIELD_LENGTH = 5;

FIELD_FORMAT = "F5.3";

FIELD_MIN_PHYSICAL = 0.088078704;

FIELD_MAX_PHYSICAL = 0.230243056;

FIELD_UNIT = "N/A";

FIELD_DESCRIPTION = "Local True Solar Time";
END OBJECT = TABLE CHARACTER FIELD;
```

```
OBJECT = some kind of optional attribute class;
   keyword = value;
END_OBJECT = some kind of optional attribute class;
OBJECT = FILE_SECTION;
OBJECT = FILE_CHARACTER_FIXED;
   LOCAL_IDENTIFIER = "PHX_M_TT_TABLE_FILE";
   CHECKSUM = "OffOa5ddOf3ea4e104bOeae98c87f36c";
   FILE_SIZE = 111;
   FILE_NAME = "PDS4_ATM_TABLE_CHAR.TAB";
   FILE_TYPE = CHARACTER;
   MAX_RECORD_BYTES = 3727;
   RECORD_TYPE = FIXED;
   END_OBJECT = FILE_CHARACTER_FIXED;
   END_OBJECT = FILE_SECTION;
END_OBJECT = PRODUCT_TABLE_CHARACTER;
```