University of Michigan
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TIDI Data Processing Software **File Naming Conventions Summary**	CAGE No. Drawing No. Project Contract No. Page	0TK63 055-3545K TIDI NASW-5-5049 1 of 16

REVISION RECORD			
Rev	Description	Date	Author
L	▪ Post-review editorial changes ▪ Initial revision identification is R01 (not R00) in table 2	10 Dec 2003	D. Gell
K	▪ Corrected Examples to conform with production version identification	22 Oct 2003	M. Cooper
J	▪ Updates naming convention for Event Summary File	19 Aug 2003	E. Wolfe
I	▪ Add convention for cross talk model files	11 June 2003	D. Gell
H	▪ Add section on production product file version identification ▪ Modify naming convention for production products to remove unnecessary information from name and to display version identification ▪ Add naming convention for background and background model (shapes) files	25 April 2003	
G	▪ Modify revision scheme ▪ Add software versions for level 1 data files	3 Mar 2003	
F	▪ Modify revision scheme ▪ Add versions ▪ Stream only on tmLogger	17 Sept 2002	
E	▪ Document tmLogger Stream ID and add revision ▪ Modify file name inheritance ▪ Add convention for log files	25 May 2000	
D	▪ Added engineering and EPET trend filename conventions ▪ Added the production control log file naming conventions	2 May 2000	
C	▪ Changed extension for profile file to avoid conflicts with IDL source code	13 April 2000	

REVISION RECORD			
Rev	Description	Date	Author
B	▪ Added vector profile file type ▪ Added RTGRT data source	5 April 2000	
A	Added notes about file name inheritance to LOS and Profile file names	11 Feb 1998	
	Initial Release	3 Feb 1998	

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1. References

1. Musko, S., "TIDI Flight Software Instrument Parameter Dictionary", TIDI File 055-3903
2. Cooper, M., "Production Control Requirements", TIDI File 055-3942
3. Skinner, W., "TIDI EPET Specification", TIDI File 055-3734E
4. "TIMED Project Data Management Plan", APL Document: 7363-9330

2. Introduction

This file specifies the naming conventions currently used by the TIDI data processing system. All files produced by the TIDI data processing system shall be named in accordance with this convention. It also describes the method used to identify the versions of the production data products.

The typographical conventions are used in this document to indicate which components of a file name are tokens to replaced with values appropriate to the file and which portions are to be included exactly as specified. Portions of file names displayed in the **`bold courier font`** are to be exactly as shown. Portions in *`italic courier font`* are to be replaced with a value according to the rules of this convention. Items enclosed in brackets *`[_thusly]`* are optional.

3. Version Identification of Production Products

Appendix G of the TIMED Project Data Management Plan (PDMP, ref. 4) recommends a method for version identification of the production data products. The identification is through 4 global attributes included in cataloged TIMED files containing Data Product Version, Software Version, Product Format Version, and Calibration Version. The project data management plan specifies that Software and Calibration version numbers be of the form `MM.mm` where "MM" is the two digit major revision and "mm" is the two digit minor revision. The Data Product version and the Data Format Version are three digit numbers. Version information in the TIMED central catalog must be in the formats that the PDMP specifies. The method that TIDI has adopted is similar, but the formats for identifiers is different and a mapping from the TIDI internal version information to the TIMED catalog version information is required.

3.1 The Software Version

The TIDI software version is composed of major and minor version numbers in the form:

`MM.mm`

where "MM" is the major version and "mm" is the minor version. The major version number is incremented whenever there is a major change to the program that will likely affect the quality of the data product. The minor version number in incremented for bug fixes, interface changes or other changes that do not substantially change the quality of the data. The major version number is 00 for pre-release development versions. The minor version number is set to 00 when a major version is released and incremented by 1 with each change (01, 02, …). The software version does not require any transformation from the TIDI convention to the TIMED convention.

3.2 Data Product Format Version

The TIDI data product format version is composed of major and minor version numbers in the form

```
MM.mm
```

where "MM" is the major version and "mm" is the minor version. The major version changes when the software to read the file changes and the minor version changes when the contents change. Since the production data products are netCDF files, a well designed reader program will be forward compatible in the sense that additional variables in a new version of a netCDF file do not interfere with reading variables that were in the previous version. The major version number of the Data Product Format Version will, therefore, be incremented whenever the major version number of the Software Version is incremented. The minor version number will be incremented whenever a variable is added or removed from the file format. The minor version number is set to 00 when a major version number is changed and incremented by 1 with each change (01, 02, …).

The TIDI data product format version and the TIMED catalog data product format version are formed differently. The TIDI version is a major-minor number combination and the TIMED catalog version is a 3 digit number. The TIMED catalog data product version will be formed from the TIDI value by adding the minor number to the product of the major number and 100:

```
TIMED DPFV = 100 x MM + mm
```

3.3 Data Product Version

The TIDI data product version is a 3 digit number that is incremented whenever the software version or the data product format version changes. In the TIMED PDMP, this item is incremented when the major software version number or the data product format version changes, which is insufficiently specific for TIDI. The Data Product Version number for TIDI products will be incremented whenever the software version, data product format version is changed.

3.4 Calibration Version

The calibration information used by the TIDI production processing is uniquely identified by the name of the instrument parameter file (IPF) used in the processing. The name of this file will be included in the global attributes of each production data processing product. No version number will be specified, hence the value 99 will be used in the TIMED catalog.

4. File Name Elements

TIDI file names are made up of a file description string and a file type string separated by the period "." character. The file description is a series of strings concatenated together. The underscore character "_" is used to separate the components of the description.

Elements of a file description may include time stamps, date stamps, data source identifiers, data stream identifiers, version indicators and revision indicators. All times are specified using the TIMED standard ASCII format, with fractional seconds omitted, as shown below:

```
yyyydoyhhmmss
```

where "yyyy" is the year, "doy" is the day of the year, and "hhmmss" is the time of day in hours, minutes and seconds. Date stamps are specified using the TIMED standard ASCII format with the time of day omitted as shown below:

yyyydoy

The output file of one process generally inherits the source and time or date stamps of the input file description.

The data source is specified by one of the mnemonics listed in Table 1, below. The data stream identifier is a single alphabetic character used to differentiate between concurrently collected level 0 data. The revision letter, used in some file descriptions, is a single alphabetic character added to the file name to ensure that the files are named uniquely. The initial instance of some file names will not include the revision letter or its leading underscore character. Other elements of the file descriptions are defined in each of the specific conventions.

Version fields used in the names of production product files (LOS, PRF and VEC), consist of a single letter version type identifier followed by the version number string. The version type identifiers are described in Table 2. Other elements of the file descriptions are defined in each of the specific conventions.

Table 1, Data Sources

Source Mnemonic	*Description*
RT	Real-time data transmitted from the TIMED Mission Data Center
RTGRT	Real-time data transmitted from the TIMED Mission Data Center, with times converted to estimated ground receipt time
PB	Flight recorder playback data transmitted from the TIMED Mission Data Center
TEST	Real-time data transmitted from the TIMED Integration and Test system
SCSIM	Real-time data transmitted from the TIDI spacecraft simulator
SCEMUL	Real-time data transmitted from the TIMED provided spacecraft emulator
SCISIM	Simulated data from the science simulator
SWSIM	Simulated data from the instrument software simulator

Table 2, Version Identifiers	
Identifier	*Description*
P*MMmm*	The data product format version indicator, formed by appending data product format major version "MM" and the data product format minor version "mm" to the literal P
S*MMmm*	The software version indicator, formed by appending the software major version "MM" and the data software minor version "mm" to the literal S
D*nnn*	The data version indicator, formed by appending the data version number to the literal D
R*rr*	The file revision indicator, formed by appending the revision number to the letter R. The revision number is chosen to make the file name unique. The revision number, "rr" is initially 01 and is incremented each time the a particular data product version, software version, data version combination is rerun.

5. Naming Conventions

The following tables define the naming conventions for each of the TIDI production data products.

Table 3, Level 0 (TM Packet Store)	
TIDI_*source_start_gndtime_sid[_rev]*.**TLØ**	
field	*description*
TIDI	A literal string indicating that the file is a TIDI product
source	the source of the data, listed in Table 1
start	The time contained in the first TIDI TM packet recorded in the file
gndtime	The ground receipt time, if available, of the first TIMED CCSDS telemetry packet contained in the file, otherwise the literal Ø
sid	The tmLogger stream id, used to discriminate between files created in simultaneous multiple tm logging sessions
rev	The file revision letter, chosen to make the file name unique
TLØ	A literal string indicating that the file is a TIDI level Ø file

Table 4, Background File	
TIDI_*source*_*start*_*gndtime*_*sid*[_*rev*]**.BGD**	
field	*description*
TIDI	A literal string indicating that the file is a TIDI product
source	the source of the data, listed in Table 1
start	The time contained in the first TIDI TM packet recorded in the file
gndtime	The ground receipt time, if available, of the first TIMED CCSDS telemetry packet contained in the file, otherwise the literal Ø
sid	The tmLogger stream id, used to discriminate between files created in simultaneous multiple tm logging sessions
rev	The file revision letter, chosen to make the file name unique
BGD	A literal string indicating that the file is a TIDI level background file
The file description portion of the name through the ground receipt time shall be identical to that of the level 0 file from which the background data was extracted.	

Table 5, Line of Sight File	
TIDI_*source*_*sdate*_**P***MMmm*_**S***MMmm*_**D***nnn*_**R***rr*.**LOS**	
field	*description*
TIDI	A literal string indicating that this is TIDI science data
source	the source of the data, listed in Table 1
sdate	The date contained in the first TIDI TM packet recorded in the file
P*MMmm*	The data product format version indicator
S*MMmm*	The software version indicator
D*nnn*	The data version indicator, formed by appending the data version number to the literal D
R*rr*	The file revision indicator
LOS	A literal string indicating that the file is a TIDI line of sight data

Table 6, Profile File

TIDI_*source*_*sdate*_**P***MMmm*_**S***MMmm*_**D***nnn*_**R***rr*.**PRF**	
field	*description*
TIDI	A literal string indicating that this is TIDI science data
source	the source of the data, listed in Table 1
sdate	The date contained in the first TIDI TM packet recorded in the file
P*MMmm*	The data product format version indicator
S*MMmm*	The software version indicator
D*nnn*	The data version indicator
R*rr*	The file revision indicator
PRF	A literal string indicating that the file is a TIDI profile file
The file description portion of the name through the start date shall be identical to that of the LOS (level 1) file from which the Profile (level 2) file was created.	

Table 7, Vector File

TIDI_*source*_*sdate*_**P***MMmm*_**S***MMmm*_**D***nnn*_**R***rr*.**VEC**	
field	*description*
TIDI	A literal string indicating that this is TIDI science data
source	the source of the data, listed in Table 1
sdate	The date contained in the first TIDI TM packet recorded in the file
P*MMmm*	The data product format version indicator
S*MMmm*	The software version indicator
D*nnn*	The data version indicator
R*rr*	The file revision indicator
VEC	A literal string indicating that the file is a TIDI vector profile file
The file description portion of the name through the start date shall be identical to that of the Profile (level 2) file from which the Vector (level 3) file was created.	

Table 8, Background Model (shapes) File	
TIDI_*idate*_*fdate*_**G***n*_**O***n*_**P***MMmm*_**S***MMmm*_**D***nnn*_**R***rr*.**shp**	
field	*description*
TIDI	A literal string indicating that this is TIDI science data
idate	The initial date of data used in creating the background model
fdate	The final date of data used in creating the background model.
G*n*	The gain of the background measurements from which the EOFs were determined.
O*n*	The order (number of EOFs) of the background model
P*MMmm*	The data product format version indicator
S*MMmm*	The software version indicator
D*nnn*	The data version indicator
R*rr*	The file revision indicator
shp	A literal string indicating that the file is a TIDI background model file.

Table 9, Cross-Talk Model File	
TIDI_*idate*_*fdate*_**F***nn*_**Y***d*_**P***MMmm*_**S***MMmm*_**D***nnn*_**R***rr*.**XTK**	
field	*description*
TIDI	A literal string indicating that this is TIDI science data
idate	The initial date to which the cross talk model applies.
fdate	The final date to which the cross talk model applies.
F*nn*	The filter wheel configuration number to which the model applies
Y*d*	The direction of flight (yaw state) to which the model applies. F(forward) B(backward) A(all directions)
P*MMmm*	The data product format version indicator
S*MMmm*	The software version indicator
D*nnn*	The data version indicator
R*rr*	The file revision indicator
XTK	A literal string indicating that the file is a TIDI cross-talk model file.

Table 10, Event Log File	
TIDI_*source_start_gndtime_ver[_rev]*.**ELO**	
field	*description*
TIDI	A literal string indicating that the file is a TIDI product
source	the source of the data, listed in Table 1
start	The time contained in the first TIDI TM packet recorded in the file
gndtime	The ground receipt time, if available, of the first TIMED CCSDS telemetry packet contained in the file, otherwise the literal Ø
ver	The data version indicator letter. The letter is incremented each time the version of the data is changed
rev	The file revision letter, chosen to make the file name unique
ELO	A literal string indicating that the file is a TIDI detailed event log
The file description portion of the name through the ground receipt time shall be identical to that of the level 0 file from which the event log was created.	

Table 11, Daily Summary File	
TIDI_*start[_rev]*.**SUM**	
field	*description*
TIDI	A literal string indicating that the file is a TIDI product
start	The time contained in the first TIDI TM packet recorded in the file
rev	The file revision letter, chosen to make the file name unique
SUM	A literal string indicating that the file is a TIDI daily summary file

Table 12, Overpass Files	
TIDI_*statd_initime[_rev]*.**type**	
field	*description*
TIDI	A literal string indicating that this is TIDI data
staid	A string of up to 12 characters identifying the ground station
initime	The initial valid time
rev	The file revision letter, chosen to make the file name unique
type	"OPRED", A literal string indicating that the file is an overpass prediction file "OPASS", A literal string indicating that the file is an actual overpass file

Table 13, Engineering Trend Files	
param_yyyydoy_gran.**TND**	
field	*description*
param	A literal string indicating the engineering parameter that's been trended - a list of possible parameter names are given in Ref 1 - although only a subset are routinely used (Ref 1)
yyyydoy	The first date found in the trend file, where *yyyy* is the four digit year and *doy* is the day of year
gran	The granularity of the data contained in the trend file
TND	A literal string indicating that the file is a TIDI engineering trend file

Table 14, Optical EPET Trend Files	
***procedure*_trend.dat**	
field	*description*
procedure	A string indicating the engineering parameter that's been trended - choices include: ▪ *back_fit* (background) ▪ *bias_ii* (inferred bias) ▪ *bias* ▪ *dark_fit* (dark count) ▪ *emi_emc* (testing) ▪ *photon_transfer* ▪ *spectral_fit* ▪ *white_fit* (white light)
trend.dat	A literal string indicating that the file is a TIDI engineering trend file

Table 15, Mechanical EPET Trend Files	
epetMechTrend.*var*	
field	*description*
epetMechTrend	A literal string indicating that it is a Mechanical EPET trend file
var	A string indicating which type of data is in the file - choices include: 'fw' for filter wheel, 'shut' for shutter, and 'tel' for telescope position data

Table 16, Generic Log File	
*program/YYYY/[type-]***D***nnn_sdate_rtime*.**LOG**	
field	*description*
program	The name of the program producing the log [directory].
YYYY	The year contained in the 'start' parameter [directory].
type-	An optional type of log file, used if the creating program produces more than one log file.
D*nnn*	The data version of the input data processed by the program creating the logfile.
sdate	The time contained in the first TIDI TM packet recorded in the file processed by the program.
rtime	The time at which the creating program was run.
LOG	A literal string indicating that the file is a program log file.
The ***sdate***, and data version **D**nnn fields of the name shall be identical to those of the data file presented to the program that produced the log file.	

6. Examples

A packet storage (level 0) file containing playback data taken by the instrument starting at midnight UTC on 15 January 2000 and received on the ground at 09:23 UTC on 16 January 2000 is named as follows:

```
TIDI_PB_2000015000000_2000016092300_O.TL0
```

Two level 0 files created during I&T at different times with the spacecraft clock reset so that the TIDI packet times were identical are named as follows:

```
TIDI_TEST_1999150091545_1998365140000_O.TL0
TIDI_TEST_1999150091545_1999001140000_O.TL0
```

A level 0 file created by the science simulator, with data beginning at midnight UTC on 21 June 2001 is named:

```
TIDI_SCISIM_20001172000000_0_O.TL0
```

Subsequent processing of the file `TIDI_PB_2000015000000_2000016092300_O.TL0` results in line of sight, profile, vector, and events files containing version 1 data named:

```
TIDI_PB_2000015_P0350_S0350_D030_R01.LOS
TIDI_PB_2000015_P0101_S0100_D003_R01.PRF
TIDI_PB_2000015_P0101_S0103_D004_R01.VEC
TIDI_PB_2000015_P0106_S0103_D009_R01.ELO
```

Should the level 0 file be processed again, the resulting files revision number would be incremented and the filename would be as follows:

```
TIDI_PB_2000015_P0350_S0350_D030_R02.LOS
TIDI_PB_2000015_P0101_S0100_D003_R02.PRF
TIDI_PB_2000015_P0101_S0103_D004_R02.VEC
TIDI_PB_2000015_P0106_S0103_D009_R02.ELO
```

Should the invert program be re-run the resulting file name would have the revision number incremented again:

```
TIDI_PB_2000015_P0101_S0100_D003_R02.PRF
```

A daily summary file created with data starting in the example level 0 file would be named

```
TIDI_2000016092300_A.SUM
```

An overpass prediction file containing predictions for Wallops Island can be named

```
TIDI_WFF_2001152_A.OPRED
```

if “WFF” is chosen as the identifier for Wallops Island.

An engineering trend file containing data for the CCD temperature would be named

```
CCD_Temp_1999222_600.TND
```

An optical EPET trend file of the dark count would be named

```
dark_fit_trend.dat
```

A mechanical EPET trend file of the filter wheel position data would be

```
epetMechTrend.fw
```

A detailed log file produced by the retrieve program run at 12:45:15 UT on 4 July 2002 with version 4 data starting at midnight on 2 July 2002 would be named:

```
retrieve/2002/D004_2002183_2002185124515.LOG
```

If the program is re-run at 15:30:00 UT on 6 Jul 2004 using the same input file, the log file name would be:

```
D004_2002183_2002186153000.LOG
```