LV1b Packet Converter Specifications

Version Tracking

Date	Notes
11/15/01	Created by Nathan and Andrew.

Discussion

We're writing this program in order to convert LV1b data to a variety of formats.

Input to the program:

LV1b SRAM and downlink data which consists of:

```
0x10    GPS Packet
0x20    Flight Computer Status Packet
0x4n    Message packet, where n is the number of message 0x0 - 0xF corresponding to 1 - 16 messages.
0x5a    IMU full data packet (low pass filtered data if downlink)
0x5b    IMU delta-encoded data packet (low pass filtered data if downlink)
0x60    Null packet
```

Difference between SRAM and downlink packets: LPF on IMU data and checksum at end of packet before footer.

Output:

Output as:

- Comma delimited file for MATLAB/Excel.
- LV2 CAN messages to simulate LV2 FC.
- (Possibly only XML output and use XSLT for parsing above outputs)

Notes:

- Write GPS messages as useful values.
- Write FCS messages as byte values.

Switches:

Switch	Description
-2	Output file type. Default = comma delimited, switch = LV2 binary CAN messages.
-F	Input File Type. Default = SRAM, switch = downlink.
-P[1,2,4,5,6]	Packets to convert. Default = all.
-D[F,U]	IMU data output format -requires having P5 selected. Default = Separate Full and delta packets, F = Full packets only, U = "undelted" IMU data.
-C[F, D]	Checksum behavior - for downlink input files only ("-F"). Default = Off, F = flag good or bad, D = delete bad.
-T	Pseudo-timestamp (starts at zero, increments by packet time). Default on, switch = off.
-A	FC Message output format -requires having P4 selected. Default = byte values, switch = ASCII messages.

Program call:

```
pktcnv [switches] <output Filename>
```

Example: Put all Packet 1 GPS messages in a file called GPSMSGS.TXT:

```
pktcnv -P1 GPSMSGS.TXT
```

Example: Convert all IMU messages to a combined IMU ASCII data file

```
pktcnv -P5 -DU IMUVALUES.TXT
```