

# IMPACT Beacon Telemetry Packet

APID 270h

Revision: AA

2006-Mar-6

**NOTE: Bytes are swapped by the spacecraft/MOC: swap byte pairs before decoding packet!**

Module	Format	Length	Description
SYSTEM	0 1 1 1 0 0 0 0	1	Version=000, Type=0, Secondary Header=1, Apid = 270h
SYSTEM	0 0 0 0 1 0 1 0	1	
SYSTEM	c c c c c c c c	1	Packet Sequence Control = 11B.
SYSTEM	1 1 c c c c c c	1	APID Counter Field = 'c' counts each APID separately.
SYSTEM	0 0 0 0 1 0 0 1	1	Application Data Field length (less 1) = 265 ##### hex
SYSTEM	0 0 0 0 0 0 0 1	1	
SYSTEM	Clock 2	1	Extended 6-byte Secondary Header Format
SYSTEM	Clock 1 (MSB)	1	Time stamp of first MAG sample averaged into first telemetry sample
SYSTEM	Clock 4 (LSB)	1	
SYSTEM	Clock 3	1	
SYSTEM	Subsecs (LSB)	1	
SYSTEM	Subsecs (MSB)	1	
BEACON	ISCStatus	1	Spacecraft Status (see TMSOH for description)
	InterfaceActive	1	Instrument Interface Activity (see TMSOH for description)
	SWEAModeID	1	SWEA Mode ID (from parameter table). Set by ground command to identify LUT, etc.
	STEModeID	1	STE Mode ID (from parameter table). Set by ground command to identify LUT, etc.
	IAutoLUT	1	SWEA/STE LUT generation mode (see SOH)
	SWEADHKP	1	SWEA digital housekeeping (see ApID 213)
MAG	IMAGHKP	2	Mag status from first sample (see TMSOH)
	X	2	First sample average, Mag X, MAG21 format (10 second average, started at packet header time)
	Y	2	First sample average, Mag Y, MAG21 format
	Z	2	First sample average, Mag Z, MAG21 format
	...	30	5 more MAG samples averages, like the first one, in time order
SWEAMom	N	2	Moment data compressed to 16 bits using Moment Compression
	NVx	2	data computed from 2-second accumulation 60 seconds after the packet header time
	Nvy	2	

	NVz	2	
	NPxx	2	
	Npyy	2	
	NPzz	2	
	Npxy	2	
	NPxz	2	
	Npyz	2	
	NHx	2	
	Nhy	2	
	NHz	2	
	V0	2	Analyzer V0 value
SWEAPAD	MagAz	1	MAG averaged over same 2-second interval as PAD data, and used to select PAD anode:
	MagEl	1	Magnetic field azimuth in SWEA coords, degrees*256/360; Anode 0 = 0-22.5 degrees
	PAD Ea,D0,A0	1	Magnetic field elevation, 0-180 degrees, degrees*256/360, 0 degrees = sunward
	PAD Ea,D0,A8	1	PAD accumulation for energy bin 0, deflection (elevation) angle 0, anode 0, 2-second accumulation sta
	PAD Ea,D1,A0	1	Two energy bins: bin a followed by bin b. These are selected from the 7 normal PAD energy bins
	...	20	Deflection angle 0 is the first of 6 deflection angles, starting with the most anti-sunward deflection
	...		Anode 0 corresponds to the anode corresponding to MAGAz modulo 8
	PAD Eb,D5,A8	1	Anode8 is Anode0 plus 8, 180 degrees around
			Counters log-compressed, data is averaged over energy (into 7 bins) but not sweeps
STE		5	STE-U non-solar energy spectra, 5E, log compress, *
		5	STE-U solar energy spectra, 5E, log compress
		5	STE-D energy spectra, 5E, log compress
		1	STE-U+STE-D combined LLD rate
HET			SEP Beacon; Byte order will be LSB first if packet is swapped
		2	Electrons 0.7-4 MeV - sum of sw bins 6-8
		2	Protons 13-21 MeV - sum of sw bins 9-12
		2	21-40 MeV - sum of sw bins 13-18
		2	40-100 MeV - sum of sw bins 81-82
		2	He 13-21 MeV/n - sum of sw bins 24-27
		2	21-40 MeV/n - sum of sw bins 20-22
		2	40-100 MeV/n - sum of sw bins 86-87
		2	C+O 30-52 MeV/n - sum of sw bins 35-39, 42-46
		2	52-74 MeV/n - sum of sw bins 40-41, 47-48
	2	Fe 52-74 MeV/n - sum of sw bins 73-74	

		2	Livetime	
		2	Stop. efficiency (TBD)	
		2	Pen. efficiency (TBD)	
		2	HET status (TBD)	
SIT		2	He	0.02 - 0.04 MeV/nuc.
		2		0.08 - 0.16
		2		0.32 - 0.64
		2		1.29 - 2.56
		2	CNO	0.02 - 0.04
		2		0.08 - 0.16
		2		0.32 - 0.64
		2		1.29 - 2.56
		2	Fe	0.02 - 0.04
		2		0.08 - 0.16
		2		0.32 - 0.64
		2		1.29 - 2.56
LET		2	Protons	1.8 - 3.0 MeV
		2		A-side, 3.0 - 6.0 MeV
		2		B-side, 3.0 - 6.0 MeV
		2		6 - 12 MeV
		2	4He	1.8 - 3.0 MeV/nuc.
		2		A-Side, 3.0 - 6.0
		2		B-Side, 3.0 - 6.0
		2		A-Side, 6.0 - 12
		2		B-Side, 6.0 - 12
		2	3He	1.8 - 3.0 MeV/nuc.
		2		3.0 - 12 MeV/nuc.
		2	CNO	3.0 - 6.0 MeV/nuc.
		2		6.0 - 12 MeV/nuc.
		2		12 - 27 MeV/nuc.
		2	Fe	3.0 - 6.0 MeV/nuc.
		2		6.0 - 12 MeV/nuc.
		2		12 - 27 MeV/nuc.
		2		27 - 52 MeV/nuc.
		2	Front-end Electronics Livetime counter (scaled from 24 to 16 bits per STEREO-CIT-003)	

		2	Trigger rate, 16-bit compressed. The compression scheme is as described in the LET Science Frame F
		2	Hazard rate, 16-bit compressed
		2	Accepted Event Rate, 16-bit compressed - (with or without PHA data? - TBR)
		2	TBR - dynamic threshold mode, other relevant status info
SEPT		2	Electrons 0.02 - 0.05 MeV direction 1
		2	direction 2
		2	direction 3
		2	direction 4
		2	0.05 - 0.1 MeV all directions summe
		2	0.1 - 0.2 MeV all directions summe
		2	0.2 - 0.4 MeV direction 1
		2	direction 2
		2	direction 3
		2	direction 4
		2	Ions 0.02 - 0.1 MeV direction 1
		2	direction 2
		2	direction 3
		2	direction 4
		2	0.1 - 0.5 MeV all directions summe
		2	0.5 - 2.5 MeV all directions summe
		2	2.5 - 7 MeV direction 1
		2	direction 2
		2	direction 3
		2	direction 4
		4	Status bits (1 bit/channel; 20 channels + 12 spare)
SEP		2	Status
STE	STEDHKP	1	STE Digital Housekeeping (see ApID 220 for definition); sampled at end of accum interval
SYSTEM	Checksum	1	Sum of all 272 bytes should equal zero
		<b>272</b>	<b>Total Length of the Packet</b>

\* All STE beacon data scaled to avoid saturation. Normal scale factor is divide by 8



rting 60 seconds after the time in packet header



Format Doc.