STEREO IMPACT FLTC Decoder
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This pseudocode describes the decoding of STEREO IMPACT command stream as received from the spacecraft into telecommand packets. The command stream comes in FLTC blocks as described in the IMPACT to Spacecraft ICD. The FLTCs provide a fixed-length transfer layer into which the variable-length CCSDS telecommand packets are encoded by the spacecraft. These FLTCs are received periodically by the instrument, and are decoded as described below into CCSDS telecommand packets which are then routed to the instrument subsystems.

The pseudocode starts with the reception of an FLTC at step 1. At system reset, the state is initialized to "Not in Sync".

Step	Function
	New FLTC:
1	Based on the current state, go to step: • "Not in sync": Step 100 • "Waiting for TC": Step 200 • "Decoding TC": Step 300
	Not in Sync:
100	If this FLTC contains no new packet (code 0xFF), Done.
101	If this FLTC is not empty (not code 0xFE), go to step 110
102	Set state="Waiting for a TC", Done
110	Set FLTC pointer to first packet offset from FLTC header
111	Go to state 400
	Waiting for TC:
200	Check FLTC sequence counter; if in sequence, go to step 210
201	Log a command sequence Error
210	If this FLTC is empty (code 0xFE), Done.
211	If this FLTC first packet offset is zero, go to 220
212	Log a command format Error
213	Set state="Not in sync", Done
220	Set state="Decoding TC"
221	Set FLTC pointer to the start of FLTC data
222	Go to step 400
	Decoding TC:
300	Check FLTC sequence counter; if in sequence, go to step 310
301	Log a critical command sequence Error (lost TC)
302	Set state="Not in Sync"
303	Go to 100
310	If the FLTC is NOT empty (NOT code 0xFE) go to 320

311	Log a command format Error
312	Set state="Not in sync", Done
320	Set FLTC pointer to the start of FLTC data
321	Copy the next byte from the FLTC pointer into the Packet pointer
322	Increment FLTC & Packet pointers
323	If Packet pointer is not 6, go to step 340
324	If packet header is legal go to step 330
325	Log a bad packet header Error
326	Set state="Not in Sync"
327	Go to state 100
330	Set packet count equal to packet length in packet header+7
340	If packet pointer is greater than packet length go to step 350
341	If FLTC pointer has reached the end of the FLTC, Done
342	Go to step 321
350	Route the packet
351	If the FLTC pointer has reached the end of the FLTC go to state 360
352	If the byte at the FLTC pointer is NOT FILL (0xFF) go to state 400
360	Set state="Waiting for a TC", Done
	New Packet:
400	Set packet pointer to zero, packet count to 6
401	Set state="Decoding TC"
402	Go to step 321