## 0.1 XTCD - 6-bin XTC Output Bank

The 6-bin XTC2 card has implemented level 2 buffers from which the data sent to the finders can be retrieved. The XTCD bank is formatted by the TDC crate controller, but because access to the level 2 buffers is not done by block VME reads, it is likely that this bank will not be constructed for other than diagnostic purposes.

Each TDC instruments 96 channels corresponding to 8 consecutive cells. The structure of the XTCD bank is shown in table 1. Data from each XTC card is stored in the format shown in Table 2 in which the first word identifies the module from which the data was obtained, and the subsequent words contain the data from level 2 buffers on the XTC2 card. The module identifier will be the same the one in the COTD bank fragment containing data from the TDC on which the XTC2 daughter board is mounted. Each XTC2 card has 72 8-bit level 2 buffers, the contents of which are stored in order in the 18 32-bit words that follow the header word. The first 12 bytes contain data from time bin 0, the second set of 12 bytes contains data from time bin 1, and so on. Within a group of bytes corresponding to a single time bin, each bit represents the data associated with that time bin for a single TDC channel. The order in which the TDC channels are stored is related to the order in which the data is transmitted from the TDC transition module to the finder modules which is not purely sequential. Table 3 describes the mapping between TDC channels and bit XTC2 buffer bit numbers.

## 0.2 XSFD - Stereo Finder Data

The stereo finders receive data over optical fibers from the transition boards on TDC's that read out the outermost 3 stereo superlayers. The bank format is shown in Table 4.

Stereo finder data words are mapped directly from the stereo finder VME address space for the Level 2 buffers. There will be a total of 141 32-bit words of data, consisting of a 32-bit header word, 20 32-bit words of segment information and 120 32-bit words of wire data from the input buffers. The order with which wire data is stored in the bank will be fully specified at a later date.

| |
|---|
| "XTCD" |
| Bank number |
| Bank version |
| Bank length |
| Bank type (I*4) |
| Number of blocks (=20) |
| Pointer to block 0 |
| Pointer to block 1 |
| ... |
| Pointer to block 19 |
| Pointer to end of data |
| Block 0: Number of cards (=6) |
| Pointer to card 0 |
| ... |
| Pointer to card 5 |
| Pointer to end of block |
| XTC data |
| ... |
| XTC data |
| ... |
| Block 19: Number of cards (=3) |
| Pointer to card 0 |
| ... |
| Pointer to card 2 |
| Pointer to end of block |
| XTC data |
| ... |
| XTC data |

Table 1: Structure of the XTCD bank. The number of cards per block varies from 3 to 10 depending on how many TDC's are used to instrument the stereo superlayers.

| Module identifier | | | |
|---|---|---|---|
| $w_3^{(0)}$ | $w_2^{(0)}$ | $w_1^{(0)}$ | $w_0^{(0)}$ |
| $w_7^{(0)}$ | $w_6^{(0)}$ | $w_5^{(0)}$ | $w_4^{(0)}$ |
| $w_{11}^{(0)}$ | $w_{10}^{(0)}$ | $w_9^{(0)}$ | $w_8^{(0)}$ |
| $w_3^{(1)}$ | $w_2^{(1)}$ | $w_1^{(1)}$ | $w_0^{(1)}$ |
| $w_7^{(1)}$ | $w_6^{(1)}$ | $w_5^{(1)}$ | $w_4^{(1)}$ |
| $w_{11}^{(1)}$ | $w_{10}^{(1)}$ | $w_9^{(1)}$ | $w_8^{(1)}$ |
| ... | | | |
| $w_3^{(5)}$ | $w_2^{(5)}$ | $w_1^{(5)}$ | $w_0^{(5)}$ |
| $w_7^{(5)}$ | $w_6^{(5)}$ | $w_5^{(5)}$ | $w_4^{(5)}$ |
| $w_{11}^{(5)}$ | $w_{10}^{(5)}$ | $w_9^{(5)}$ | $w_8^{(5)}$ |

Table 2: XTC data words.

| XTC2 bit | TDC channel |
|---|---|
| 0-15 | 0-15 |
| 16-31 | 48-63 |
| 32-47 | 16-31 |
| 48-63 | 64-79 |
| 64-79 | 32-47 |
| 80-95 | 80-95 |

Table 3: Mapping betwixt XTCD data word bits and TDC channels.

| |
|---|
| “XSFD” |
| Bank number |
| Bank version |
| Bank length |
| Bank type (I*4) |
| Number of blocks (=2) |
| Pointer to block 0 |
| Pointer to block 1 |
| Pointer to end of data |
| Block 0: Number of cards (=18) |
| Pointer to card 0 |
| ... |
| Pointer to card 17 |
| Pointer to end of block |
| Finder data |
| ... |
| Finder data |
| ... |
| Block 1: Number of cards (=18) |
| Pointer to card 0 |
| ... |
| Pointer to card 17 |
| Pointer to end of block |
| Finder data |
| ... |
| Finder data |

Table 4: Structure of the XSFD bank.