JADE - Computer Note No. 16

- G. Hughes
- H. Wriedt
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Data Format of the Tagging Banks

(Input and output banks)

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Note: The lay-out of the tagging system and the numbering scheme of drift-chambers, lumonitors, and lead-glass blocks is described in JADE-note no. 35.

A. Input Data

The tagging system input data are distributed in four different banks:

- (i) the latches bank, LATC,
- (ii) the scalers bank, SCAL,
- (iii) the tagging ADCs bank, ATAG, and
- (iv) the tagging drift chambers bank, TAGC.
- A.1 Format of tagging data in the latches bank, LATC (see also JADE note no. 32)

The accidental luminosity coincidences and the luminosity coincidences latches are stored in CAMAC word 19 according to the following scheme:

wanta

bit no.	contents		
o :	accidental	coincidence	LA1
7	11	11	LA8
8	coincidence	e Ll	
:			
15	11	L8	

The luminosity scintillator latches are stored in the CAMAC word 20 according to the following scheme:

bit no.	contents	
0	counter	1 A
:		
7	11	8A
8	11	1 B
:		
15	11	8B

The lead glass energy sum latches are stored in the CAMAC word 21 (which is not yet foreseen in JADE note 32) according to the following scheme:

bit no.	contents
0	lead glass sum IS above threshold
1	" " 2S " "
2	" AS " "
11	" " DS " "
12	" " at -Z (SMZ) above lower threshold
13	"
14	"
15	"

A.2 Format of tagging data in the scalers bank, SCAL)

The contents of 33 scalers are stored in the scalers bank, SCAL, according to the following scheme:

```
CAMAC word
                   contents of scaler
(not yet fixed) L1 = 1A · 1B · 5B · 1S · 5S during data taking
                   L2 = 2A \cdot 2B \cdot 6B \cdot 2S \cdot 6S"
                   L8 = 8A \cdot 8B \cdot 4B \cdot 8S \cdot 4S"
                  LMZ = L1 + L2 + L3 + L4
                  LPZ = L5 + L6 + L7 + L8
                   LS = LMZ + LPZ
                  not yet used
                  LD1 = 1A \cdot 1B \cdot 5B \cdot 1S \cdot 5S " dead time
                  LD2 = 2A \cdot 2B \cdot 6B \cdot 2S \cdot 6S ""
                  LD8 = 8A \cdot 8B \cdot 4B \cdot 8S \cdot 4S " "
                  LDM = LD1 + LD2 + LD3 + LD4
                  LDP = LD5 + LD6 + LD7 + LD8 ""
                                                     11 11
                  LDS = LDM + LDP
                  not yet used
                 LA1 = 1A \cdot 1B \cdot 1S \cdot (6B \cdot 6S + 7B \cdot 7S + 8B \cdot 8S)
                         during data taking
                 LA2 = 2A \cdot 2B \cdot 2S \cdot (5B \cdot 5S + 7B \cdot 7S + 8B \cdot 8S)
                         during data taking
                 LA8 = 8A \cdot 8B \cdot 8S (1B \cdot 1S + 2B \cdot 2S + 3B \cdot 3S)
                         during data taking
                 LAM = LAI + ... + LA4
                 LAP = LA5 + ... + LA8
                 LAS = LAM + LAP
                 not yet used
```

A.3 Format of tagging ADCs bank, ATAG (see also JADE-note no. 32)

type	word	contents	meaning
I x 4	INDA-3	ATAG	name of the bank
	-2	0	no. of the bank
	-1	NP	pointer to the next bank of same name
J	0	NW	number of data words in the bank
$I \stackrel{\checkmark}{x} 2$		∫ IB	bank descriptor
	+1	20	empty
		/ IPM	pointer to the first data word in
i	+2	{	-Z-part (always +1)
		IPZ	pointer to the first data word in
			the +Z-part
6		IPL	pointer to the first data word of
			the luminosity scintillators
27	+3	(
+		LAST	pointer to the last data word +1
f	+4	3	ADC-address
	:	-	ADC-content
12 54	+NW	S	ADC-address
× ×	. 2010	_	ADC-content

ADC-addresses 0 to 95 correspond to the lead glass blocks on the -Z-side (blocks 0, 47, 48, and 95 are ficticious);

ADC-addresses 96 to 191 correspond to the lead glass blocks on the +Z-side (blocks 96, 143, 144, and 191 are ficticious);

ADC-addresses 192 bo 207 correspond to the 16 luminosity counter scintillators, 1A, ..., 8A, 1B, ..., 8B;

ADC-addresses 216 to 227 correspond to the 12 tagging lead glass sums, 1S, 2S, AS, ..., 7S, 8S, DS;

ADC-addresses 228 and 229 correspond to the tagging lead glass sums on the -Z-side, SMZ, and on the +Z-side, SPZ, respectively.

A.4 Format of tagging drift chambers bank, TAGC (see JADE-note no. 32)

type	word contents	meaning
I x 4	INDB-3 TAGC	name of the bank
	- 2 0	no. of the bank
	-1 NP	pointer to the next bank of same name
J	o nw	number of data words in the bank
I x 2	+1 { IB	bank descriptor
i 	(0	empty
	+2	TDC-value and wire address """" TDC-value and wire address
	+NW	" " " (is 0, if number of CAMAC data words is odd)

The format of the data words is the following:

bits contents
0-3 drift time
8-15 address (possible range: 0 to 255)

B. Output Data

and

The tagging system output data are stored in 6 different banks, of which 5 have the same name:

the tagging lead-glass cluster bank, ACLS, (77)
and the tagging system bank, TAGG, (76)
which actually consists of 5 banks:
TAGG/O contains general information,

TAGG/1 " the cluster map,

TAGG/2 " cluster information,

TAGG/3 " lumonitor information,

TAGG/4 " track information.

B.1 Format of tagging lead-glass cluster bank, ACLS

This bank contains the addresses and energy values in GeV of the lead-glass ADCs, reordered in such a way that blocks belonging to the same cluster are grouped together.

Of each cluster the block with the maximum energy deposited in will be the first in the data belonging to that cluster.

type	word	contents	meaning	
$I \times 4$	INDC-3	ACLS	name of the ban	ık
	-2	0	no. of the bank	
	-1	NP	pointer to the	next bank of same name
	0	NW	number of data	words in the bank
I x 2	+1	identifier o	of the program	version no. bank generation date and time, according to: ddmmy, e.g. 31129 means: 31.12.79
	+2	IPM IPZ 0	-Z-part (always	first data word in the +1) first data word in the -Z-part
	+3	[IPL	pointer to the	last data word +1
Ļ		3	ADC-address	
	+4	5	ADC-content in	GeV
1	:	8	ADC-address	*
1	+NW	*	ADC-content in	GeV

B.2 Format of tagging system banks, TAGG

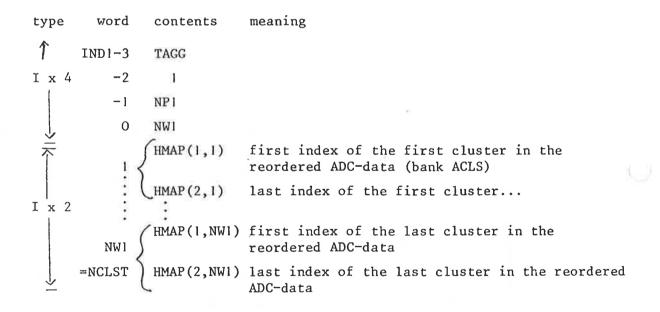
B.2.1 General information bank, TAGG/O

type	word	contents	meaning
I x 4	INDØ-3	TAGG	name of the bank
Ì	-2	Ø	no. of the bank
	-1	NPØ	pointer to the next bank of same name
	0	NWØ	number of data words in the bank
<u>v</u>	1	Identifier	version no. bank generation date and time, according to: ddnmy, e.g. 31120 means: 31.12.198

	type	word	contents	meaning
	I x 2	2	NTRACK	number of tracks
			NTRZMI	" " in the -Z-part
		3	NTRZPL	"
		, [NCLST	" clusters
		4	NCLZMI	" in the -Z-part
		4	NCLZPL	" " +Z-part
,		5	NNEUT	" " with no track nor lumonitors
		, (ICOL	" collinear pairs of clusters
			ITYPE	event type: 0, if no decision is made
		(l for γγ-candidate
		6		2 for Bhabha-candidate
)		<pre>3 for accidental candidate :</pre>
			IER	flag for error messages:
		1		O, if no message
		1		10, if drift chambers not in use
	ļ	Č	ICORR	1, if detailed energy correction is done
	į	7 /		O, if not
			IPBLAT	16 bit word for Pb-glass sums latches
	į.	,	not yet used	
		8 {	п - г	
		9 {	33 luminosity	trigger scalers plus three unused one yet
		26		(same scheme as in SCAL)
	Andrew State Control	27	NWPCL	number of words used per cluster for the cluster information (13, at present)
	1.7		NWPTR	number of words used per track for the track information (10, at present)
	\checkmark	850		
				a a

type	word	contents	meaning
R x 4	28	ACOLAN	acollinearity angle (in radian) between tracks (or clusters) with highest energy in each part of the detector (ACOLAN = 2π , if there are tracks/clusters only in one part of the detector)
	29	ETOT	total energy in GeV
	30	ETOTZM	" in the -Z-part
	31	ETOTZP	"
	32	ENTOT	" of clusters without tracks and lumonitors
	33	ENTOTM	" " without tracks and lumonitors in the -Z-part
\downarrow	34	ENTOTP	" without tracks and lumo- nitors in the +Z-part

B.2.2 Cluster map bank, TAGG/1



B.2.3 Cluster information bank, TAGG/2

type word contents meaning

I x 4 IND2-3 TAGG

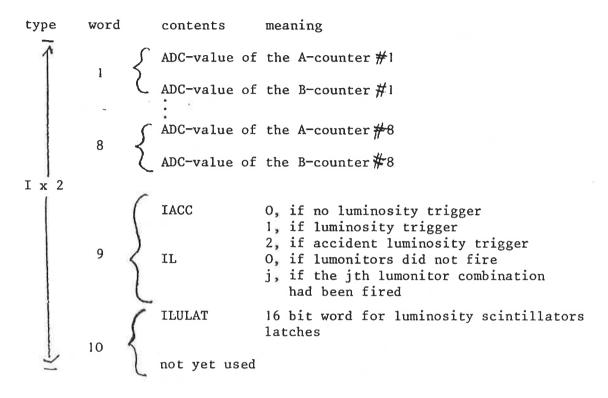
-2 2

-1 NP2

0 NW2

The cluster information for the n.th cluster can be obtained by means of NWPCL: $IB = (N-1) \times NWPCL$

B.2.4 Lumonitor information bank, TAGG/3



B.2.5 Track information bank, TAGG/4

The track information for the m-th track can be obtained by means of NWPTR:

