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## FEB PERFORMANCE DATA TRANSMISSION

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**Brookhaven National Laboratory**

**U.S. Department of Energy**

USDOE Office of Science (SC)

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No. 159

FEB PERFORMANCE DATA TRANSMISSION

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December 17, 1979

Data on the performance of the Fast Beam is transmitted to the experimenters via a Datacon link to a "Datacon-Camac" unit<sup>1</sup> on an AGS cycle-by-cycle basis. The data is collected and transmitted by a program called GRITTY<sup>2</sup> running on the AGS PDP-10 and contains information on intensities, efficiencies and radiation losses. A pulse train is also sent to the experimenters to "sync" the beam burst with the data transmitted.

Datacon Data Transmission

The data is normally transmitted 200 ms after  $t_0$  containing information gathered during the previous AGS cycle. "The Datacon and Camac operations are asynchronous with respect to each other."<sup>1</sup> A LAM is generated with each transmission but may be disabled by the user. The information is transmitted on address  $1460_8$  of PPA<sup>4</sup> (Datacon-Camac local address =  $60_8 = 1460_8 \text{ modulo } 400_8$ ). The labels for the data are listed in Appendix A. Note the radiation monitors in Group II and the first five of Group III are the "standard" FEB monitors. Camac specifications are given in Ref. 1.

"Sync" Pulse Train

Though transmitted synchronously (about 200 ms after  $t_0$ ) with the AGS cycle, the data does not necessarily describe the previous cycle. Heavy usage of the PDP-10 may cause missed cycles and the transmitted data is from some previous cycle. A measure of the CAMAC write efficiency is available as part of GRITTY's printed output (see Appendix B). A burst of 100 kC clock pulses is

sent every machine cycle starting at 400 ms after  $t_0$  (approximately 200 ms before extraction). The number of pulses in this burst will be incremented by one every machine cycle modulo 1000. This number of counts is the "Pulse Number" (Group I #1). Thus, to sync data, the burst is counted by the experimenter to label that pulse and the Datacon information may be matched to this pulse off-line.

References

1. EP&S Technical Note #80, R. Frankel and D. Lowenstein, A Datacon-CAMAC Module for the DIBBUK Control System, March 16, 1976.
2. AGS Chaos (Software) Note, Gritty-B, R. Warkentien, April 1976.
3. FEB System Equipment Diagram, Dwg. No. D09-E-746-4.
4. This device is commonly labeled as INFOO.

mn

Distribution:

Dept. Admin.  
Dept. S&P  
Experimenters

Appendix A

Data Tables - Group I Data

<u>Word</u>	<u>Contents</u>
1	Pulse Number
2	Internal Beam (Giga protons)
3	External Beam (U15) (Giga protons)
4	Momentum ( $\times 10$ MeV/c)
5	Late Beam Loss (Shaving) (Giga protons)
6	Extraction Efficiency ( $\% \times 100$ )
7	Transport Efficiency ( $\% \times 100$ )
8	Ring Losses ( $\% \times 100$ )
9	Radius (mm)
10	E10 Losses/Internal beam ( $\% \times 100$ )
11	H10 Losses/Internal beam ( $\% \times 100$ )
12	Total Radiation Loss (Arbitrary Units)
13	AGS Rep Period (ms)
14	Extraction Time (ms after $t_0$ )
15	Current Time (Jiffies) (1/60 sec.)
16	Zeros (Nothing)

Group II Data (Radiation Losses) (Arbitrary Units)

1	E10	
2	H10	
3	U15	
4	U116	(UP2)
5	U135	(UQ4)
6	U157	(UQ5)
7	U180	(UQ6)
8	U210	(UQ7)
9	U265	
10	U290	(8° US)
11	U320	(8° DS)
12	U360	(UQ8)
13	U392	(UQ9)
14	U465	(UD4A)
15	U510	(UQ10)
16	U570	

Group III Data (Radiation Losses) (Arbitrary Units)

1	U622	
2	U695	(UQ11)
3	U755	
4	U790	(UD7)
5	U795	(UQ14)
6	Spare	
7	Spare	
8	8 <sup>0</sup> Pressure	

EXTB	13	MOM	15	SHAVE	0	XTEFF	7977	TREFF	527	RINGL	339	RADIS	15	E10L	-243
H10L	-179	TOTRD	33	RLE10	2	RLH10	3	UL015	2	UL116	2	UL135	2	UL157	2
UL180	2	UL210	2	UL265	3	UL290	3	UL320	0	UL360	0	UL392	3	UL465	3
UL510	3	UL570	4	UL622	0	UL695	1	UL755	0	UL790	1	UL795	0	SPR	0
SPR	0	8DEGP	156	EXTIM	1802	LCBM	2								

CAMAC EFFICIENCY FROM 18-DEC-79 09:33 14.9 TO 18-DEC-79 09:33 23.4

EFF 0% WITH 5 AGS CYCLES & 0 CAMAC WRITES

Appendix B