MASTER SCIENCE DATA LIST - 5.5 MINUTE AVERAGES

The master science data consists of a list of averages, computations corresponding to the averages and the corresponding time and ephemeris. The time represents that of the telemetry page closest to the midpoint. The averaging period is 4 albums at high bit rate (the normal case) and 1 album at low bit rate. This represents a time of approximately 5 minutes and 27 seconds. The first 5 items are stored as 32-bit integers; the remaining items are all stored as 32-bit real numbers.

Item #	Descriptive Name	# Samples in 4 Albums	Comments
1	MID Year	1	Time closest
2	MID DAY	1	to center of
3	MID Milliseconds	1	of average
4	MID Spacecraft Clock	1	S/C clock corresponding to MID time
5	MID PSC	1	Pseudo sequence counter corresponding to MID time

Item #	Descrip. Name	# Samples in 4 Albums	Comments
6	P1, P1 (9, *)	32	spin averaged
7	P2, R19, R2(12)	32	
8	P3, R20, R(13)	32	
9	P4, R21, R2(14)	32	
10	P5, R22, R2(15)	32	
11	✕ P6, R23, R2(16)	32	
12	✕ P7, R4, R4(4)	64	
13	✕ P8, R24, R2(17)	32	
14	✕ P9, R3, R4(3)	64	
15	P10, R13, R2(6)	32	
16	P11, R12, R2(5)	32	
17	A1, A1(9,*)	16	spin averaged
18	✕ A2, R11, R2(4)	32	
19	✕ A3, R10, R2(3)	32	
20	✕ A4, R9, R2(2)	32	
21	✕ Z3, R8, R2(1)	32	
22	A5, R7, R4(7)	64	
23	A6, R6, R4(6)	64	
24	✕ Z1, R5, R4(5)	64	
25	✕ Z2, R25, R2(18)	32	

Item #		Descrip. Name	# Samples in 4 Albums	Comments
2	21	E1	64	spin averaged, omitting solar sectors
27	22	(E2A)	32	spin averaged, omitting solar sectors
28	23	E2B, R17, R2(10)	32	
29	24	E2C, R18, R2(11)	32	
30	25	E3	32	spin averaged, omitting solar sectors
31	26	E4, R14 = R2(7)	32	
32	27	E5, R15 = R2(8)	32	
33	28	E6, R16 = R2(9)	32	
34		E1 Sec. I	64	
35		E1 Sec. II	64	
36		E1 Sec. III	64	
37		E1 Sec. IV	64	
38	33	E1 Sec. V	64	
39		E1 Sec. VI	64	
40		E1 Sec. VII	64	
41		E1 Sec. VIII	64	
42		E2A Sec. I	32	
43		E2A Sec. II	32	
44		E2A Sec. III	32	
45		E2A Sec. IV	32	
46		E2A Sec. V	32	
47		E2A Sec. VI	32	
48		E2A Sec. VII	32	
49		E2A Sec. VIII	32	

Item #	Descrip. Name	# Samples in 4 Albums	Comments
50	E3 Sec. Ia	8	SSO, Page 0 & SSO, Page 2, each album
51	E3 Sec. Ib	8	SS2, Page 0 & SS2, Page 2, each album
52	E3 Sec. 1C	8	SSO, Page 1 & SSO, Page 3, each album
53	E3 Sec. Id	8	SS2, Page 1 & SS 2, Page 3, each album
54	E3 Sec. IIa	8	
55	E3 Sec. IIb	8	
56	E3 Sec. IIc	8	
57	E3 Sec. IId	8	
58	E3 Sec. IIIa	8	
59	E3 Sec. IIIB	8	
60	E3 Sec. IIIc	8	
(	E3 Sec. IIId	8	
62	E3 Sec. IVa	8	
63	E3 Sec. IVb	8	
64	E3 Sec. IVc	8	
65	E 3Sec IVd	8	

Item #	Descrip. Name	# Samples in 4 Albums	Comments
66	E3 Sec Va	8	
67	E3 Sec Vb	8	
68	E3 Sec Vc	8	
69	E3 Sec Vd	8	
70	E3 Sec. VIa	8	
71	E3 Sec. VIb	8	
72	E3 Sec. VIc	8	
73	E3 Sec. VId	8	
74	E3 Sec. VIIa	8	
75	E3 Sec. VIIb	8	
76	E3 Sec. VIIc	8	
7	E3 Sec. VIId	8	
78	E3 Sec. VIIIa	8	
79	E3 Sec. VIIIb	8	
80	E3 Sec. VIIIc	8	
81	E3 Sec. VIIId	8	

Item #	Descrip. Name	# Samples in 4 Albums	Comments
82	E4 Sec. I	32	
83	E4 Sec. II	32	
84	E4 Sec. III	32	
85	E4 Sec. IV	32	
86	E4 Sec. V	32	
87	E4 Sec. VI	32	
88	E4 Sec. VII	32	
89	E4 Sec. VIII	32	
90	P1 Sec. I	32	
91	P1 Sec. II	32	
92	P1 Sec. III	32	
93	P1 Sec. IV	32	
94	P1 Sec. V	32	
9.	P1 Sec. VI	32	
96	P1 Sec. VII	32	
97	P1 Sec. VIII	32	
98	P8 Sec. I	16	
99	P8 Sec. II	16	
100	P8 Sec. III	16	
101	P8 Sec. IV	16	
102	P8 Sec. V	16	
103	P8 Sec. VI	16	
104	P8 Sec. VII	16	
105	P8 Sec. VIII	16	

Item #	Descrip. Name	# Samples in 4 Albums	Comments
1	Al Sec. I	16	
107	Al Sec. II	16	
108	Al Sec. III	16	
109	Al Sec. IV	16	
110	Al Sec. V	16	
111	Al Sec. VI	16	
112	Al Sec. VII	16	
113	Al Sec. VIII	16	
114	A7 Sec. I	16	
115	A7 Sec. II	16	
116	A7 Sec. III	16	
117	A7 Sec. IV	16	
118	A7 Sec. V	16	
119	A7 Sec. VI	16	
120	A7 Sec. VII	16	
121	A7 Sec. VIII	16	
122	Zl Sec. I	16	
123	Zl Sec. II	16	
124	Zl Sec. III	16	
125	Zl Sec. IV	16	
126	Zl Sec. V	16	
127	Zl Sec. VI	16	
128	Zl Sec. VII	16	
129	Zl Sec. VIII	16	

Item #	Descrip. Name	# Samples in 4 Albums	Comments

tem #	Descrip. Name	# Samples in 4 Albums	Comments
1	$M, R1 = R\ 4(1)$	64	
131	$S, R2 = R4(2)$	64	
132	E4	32	spin averaged, all sectors
133	E1	64	solar sector only (see item 26)
134	E3	32	solar sector only (see item 30)
135	E1	64	spin averaged, all sectors
136	E2A	32	spin averaged, all sectors

Item #	Description
37t : 267	number of samples in the averages corresponding to items 6 thru 136.
58 thru 398	uncertainties of the averages corresponding to items 6 thru 136.
9 thru 529	range of values within the averages corresponding to items 6 thru 136.

Item #	Descriptive Name	# Samples in 4 Albums *	Comments
530	APP 5	2	Temperature
531	APP 6	2	D1 RMS Noise
532	APP 7	2	D2 RMS Noise
533	APP 8	2	D3 RMS Noise
534	APP 1	2	Calibrate Disable
535	APP 2	2	PMT Power Supply
536	APP 3	2	Gain Identification
537	APP 4	2	High Voltage Supply

* at low bit rate only 4 of the 8 APP's will have been read-out during the 5.5 minutes. However, the most recent values will be used for the other APP's.

Item #	Descriptive Name	Comments
538	Day of ephemeris	integer
539	milliseconds of day	integer
540	Geocentric longitude	Satellite position
541	Geocentric latitude	in degrees
542	Radial distance from center of the earth	km
543	GSE-X	satellite position in
544	GSE-Y	Geocentric Solar
545	GSE-Z	Ecliptic coordinates (km)
546	GSM-X	satellite position in
547	GSM-Y	Geocentric Solar
548	GSM-Z	Magnetospheric coordinates (km.)
549	GSE-X	moon position in
550	GSE-Y	Geocentric Solar
551	GSE-Z	Ecliptic coordinates (km)
552	GEI-X	Satellite position in
553	GEI-Y	Geocentric Equatorial
554	GEI-Z	Inertial coordinates (km)
555	GEI-X	sun position in
556	GEI-Y	Geocentric Equatorial
557	GEI-Z	Inertial coordinates (A.U.)
558	right ascension	satellite position in
559	declination	Celestial Inertial coordinates (degrees)
560	right ascension	velocity vector in
561	declination	Celestial Inertial coordinates (degrees)
562	magnitude of velocity	km/sec.
563	LSEP	satellite-earth-sun angle (degrees)
564	type of data item	1 = regular satellite data item
		2 - ascending node crossing data item
		3 = north point data item
		4 = descending node data item
		5 = south point data item
		6 = sunlight entrance data item
		7 = sunlight exit data item

565	spin period	seconds
566	right ascension	spin vector in
567	declination	celestial inertial
		coordinates (degrees)
568	sun time	the number of seconds
		between the beginning
		of the telemetry page
		and the first sun pulse.
569	theta SE	spin-axis solar ecliptic
570	phi SE	coordinates (degrees)

items 571 - 870 will be listed in the future. They are outputs of subroutine DETAIL.

ITEM #	FORTRAN NAME	DESCRIPTION
571	FJP(1,1)	proton differential flux at .394 MeV
572	FJP(2,1)	proton differential flux at .733 MeV
573	FJP(3,1)	proton differential flux at 1.408 MeV
574	FJP(4,1)	proton differential flux at 3.175 MeV
575	FJP(5,1)	proton differential flux at 6.2 MeV
576	FJP(6,1)	proton differential flux at 10.8 MeV
577	FJP(7,1)	proton differential flux at 19.45 MeV
578	FJP(8,1)	proton differential flux at 37.35 MeV
579	FJP(9,1)	proton differential flux at 72.25 MeV
580	FJP(10,1)	proton differential flux at 116.5 MeV
581	FJP(11,1)	proton differential flux at 345 MeV
582	FJP(1,2)	proton differential flux uncertainty at .349 MeV
583	FJP(2,2)	proton differential flux uncertainty at .733 MeV
584	FJP(3,2)	proton differential flux uncertainty at 1.408 MeV
585	FJP(4,2)	proton differential flux uncertainty at 3.175 MeV
586	FJP(5,2)	proton differential flux uncertainty at 6.2 MeV
587	FJP(6,2)	proton differential flux uncertainty at 10.8 MeV
588	FJP(7,2)	proton differential flux uncertainty at 19.45 MeV
589	FJP(8,2)	proton differential flux uncertainty at 37.35 MeV
590	FJP(9,2)	proton differential flux uncertainty at 72.25 MeV
591	FJP(10,2)	proton differential flux uncertainty at 116.5 MeV
592	FJP(11,2)	proton differential flux uncertainty at 345 MeV
593	FJA(1,1)	alpha differential flux at .908 MeV/nuc
594	FJA(2,1)	alpha differential flux at 1.455 MeV/nuc

595	FJA(3,1)	alpha differential flux at 3.020 MeV/nuc
596	FJA(4,1)	alpha differential flux at 7.9 MeV/nuc
597	FJA(5,1)	alpha differential flux at 18.75 MeV/nuc
598	FJA(6,1)	alpha differential flux at 39.0 MeV/nuc
599	FJA(1,2)	alpha differential flux uncertainty at .908 MeV/nuc
600	FJA(2,2)	alpha differential flux uncertainty at 1.455 MeV/nuc
601	FJA(3,2)	alpha differential flux uncertainty at 3.02 MeV/nuc
602	FJA(4,2)	alpha differential flux uncertainty at 7.9 MeV/nuc
603	FJA(5,2)	alpha differential flux uncertainty at 18.75 MeV/nuc
604	FJA(6,2)	alpha differential flux uncertainty at 39.0 MeV/nuc
605	FJZM(1,1)	medium differential flux at 1.185 MeV/nuc
606	FJZM(2,1)	medium differential flux at 2.4 MeV/nuc
607	FJZM(1,2)	medium differential flux uncertainty at 1.185 MeV/nuc
608	FJZM(2,2)	medium differential flux uncertainty at 2.4 MeV/nuc
609	FJZH(1)	Iron Group differential flux at 5.475 MeV/nuc
610	FJZH(2)	Iron Group differential flux uncertainty at 5.475 MeV/nuc
611	FJE(1,1)	Electron integral flux > .016 MeV
612	FJE(2,1)	Electron integral flux > .030 MeV
613	FJE(3,1)	Electron integral flux > .085 MeV
614	FJE(4,1)	Electron integral flux > .220 MeV
615	FJE(5,1)	Electron integral flux > .500 MeV
616	FJE(6,1)	Electron integral flux > .800 MeV
617	FJE(7,1)	Electron integral flux > .016 MeV (North)
618	FJE(8,1)	Electron integral flux > .016 MeV (South)
619	FJE(1,2)	Electron integral flux uncertainty > .016 MeV
620	FJE(2,2)	Electron integral flux uncertainty > .030 MeV
621	FJE(3,2)	Electron integral flux uncertainty > .085 MeV

622	FJE(4,2)	Electron integral flux uncertainty > .220 MeV
623	FJE(5,2)	Electron integral flux uncertainty > .500 MeV
624	FJE(6,2)	Electron integral flux uncertainty > .800 MeV
625	FJE(7,2)	Electron integral flux uncertainty > .016 MeV (North)
626	FJE(8,2)	Electron integral flux uncertainty > .016 MeV (South)
627	FJX(1,1)	4 to 16 Å x-ray flux, (ergs/cm^2 sec)
628	FJX(2,1)	1.5 to 12 Å x-ray flux, (ergs/cm^2 sec)
629	FJX(3,1)	1.25 to 8.75 Å x-ray flux, (ergs/cm^2 sec)
630	FJX(1,2)	4 to 16 Å x-ray flux uncertainty (ergs/cm^2 sec)
631	FJX(2,2)	1.5 to 12 Å x-ray flux uncertainty (ergs/cm^2 sec)
632	FJX(3,2)	1.25 to 8.75 Å x-ray flux uncertainty (ergs/cm^2 sec)
633	FJXT(1,1)	Spare
634	FJXT(2,1)	Spare
635	FJXT(3,1)	Spare
636	FJXT(1,2)	Spare
637	FJXT(2,2)	Spare
638	FJXT(3,2)	Spare
639	FJXEM(1,1)	Spare
640	FJXEM(2,1)	Spare
641	FJXEM(3,1)	Spare
642	FJXEM(1,2)	Spare
643	FJXEM(2,2)	Spare
644	FJXEM(3,2)	Spare
645	RPAEQ(1,1)	p/α at 1.816 MeV/charge
646	RPAEQ(2,1)	p/α at 2.910 MeV/charge
647	RPAEQ(3,1)	p/α at 6.04 MeV/charge
648	RPAEQ(4,1)	p/α at 15.8 MeV/charge

649	RPAEQ(5,1)	p/α at 37.5 MeV/charge
650	RPAEQ(6,1)	p/α at 78.0 MeV/charge
651	RPAEQ(1,2)	uncertainty in p/α at 1.816 MeV/charge
652	RPAEQ(2,2)	uncertainty in p/α at 2.910 MeV/charge
653	RPAEQ(3,2)	uncertainty in p/α at 6.04 MeV/charge
654	RPAEQ(4,2)	uncertainty in p/α at 15.8 MeV/charge
655	RPAEQ(5,2)	uncertainty in p/α at 37.5 MeV/charge
656	RPAEQ(6,2)	uncertainty in p/α at 78.0 MeV/charge
657	RPAEN(1,1)	p/α at 0.908 MeV/nucleon
658	RPAEN(2,1)	p/α at 1.455 MeV/nucleon
659	RPAEN(3,1)	p/α at 3.02 MeV/nucleon
660	RPAEN(4,1)	p/α at 7.90 MeV/nucleon
661	RPAEN(5,1)	p/α at 18.75 MeV/nucleon
662	RPAEN(6,1)	p/α at 39.0 MeV/nucleon
663	RPAEN(1,2)	uncertainty in p/α at 0.908 MeV/nucleon
664	RPAEN(2,2)	uncertainty in p/α at 1.455 MeV/nucleon
665	RPAEN(3,2)	uncertainty in p/α at 3.02 MeV/nucleon
666	RPAEN(4,2)	uncertainty in p/α at 7.90 MeV/nucleon
667	RPAEN(5,2)	uncertainty in p/α at 18.75 MeV/nucleon
668	RPAEN(6,2)	uncertainty in p/α at 39.0 MeV/nucleon
669	RPAER(1,1)	p/α at 2.75 gauss-km
670	RPAER(2,1)	p/α at 3.49 gauss-km
671	RPAER(3,1)	p/α at 5.02 gauss-km
672	RPAER(4,1)	p/α at 8.12 gauss-km
673	RPAER(5,1)	p/α at 12.50 gauss-km
674	RPAER(6,1)	p/α at 18.0 gauss-km
675	RPAER(1,2)	uncertainty in p/α at 2.75 gauss-km
676	RPAER(2,2)	uncertainty in p/α at 3.49 gauss-km
677	RPAER(3,2)	uncertainty in p/α at 5.02 gauss-km

678	RPAER(4,2)	uncertainty in p/α at 8.12 gauss-km
679	RPAER(5,2)	uncertainty in p/α at 12.50 gauss-km
680	RPAER(6,2)	uncertainty in p/α at 18.0 gauss-km
681	RAMEQ(1,1)	Spare
682	RAMEQ(2,1)	Spare
683	RAMEQ(1,2)	Spare
684	RAMEQ(2,2)	Spare
685	RAMEN(1,1)	α/M at 1.185 MeV/nucleon
686	RAMEN(2,1)	α/M at 2.40 MeV/nucleon
687	RAMEN(1,2)	uncertainty in α/M at 1.185 MeV/nucleon
688	RAMEN(2,2)	uncertainty in α/M at 2.4 MeV/nucleon
689	RAMER(1,1)	Spare
690	RAMER(2,1)	Spare
691	RAMER(1,2)	Spare
692	RAMER(2,2)	Spare
693	RMHEN(1)	medium group/iron group at 5.475 MeV/nucleon
694	RMHEN(2)	uncertainty in medium group/iron group at 5.475 MeV/nuc
695	RMHER(1)	~~medium to iron ratio from formula~~ FE/O FROM TABLE LOOKUP
696	RMHER(2)	uncertainty in ~~medium to iron ratio from formula~~ FE/O
697	RMHEQ(1)	γ from Z1/Z2 and formula
698	RMHEQ(2)	uncertainty in γ from Z1/Z2 and formula
699	P1AD(1,1,1)	A_o for P1 angular distribution
700	P1AD(2,1,1)	C1 for P1 angular distribution
701	P1AD(3,1,1)	C2 for P1 angular distribution
702	P1AD(4,1,1)	C3 for P1 angular distribution
703	P1AD(1,2,1)	A4 for P1 angular distribution
704	P1AD(2,2,1)	δ1 for P1 angular distribution

705	P1AD(3,2,1)	$\delta 2$ for P1 angular distribution
706	P1AD(4,2,1)	$\delta 3$ for P1 angular distribution
707	P1AD(1,1,2)	uncertainty in A_o for P1 angular distribution
708	P1AD(2,1,2)	uncertainty in C1 for P1 angular distribution
709	P1AD(c,1,2)	uncertainty in C2 for P1 angular distribution
710	P1AD(4,1,2)	uncertainty in C3 for P1 angular distribution
711	P1AD(1,2,2)	uncertainty in A4 for P1 angular distribution
712	P1AD(2,2,2)	uncertainty in $\delta 1$ for P1 angular distribution
713	P1AD(3,2,2)	uncertainty in $\delta 2$ for P1 angular distribution
714	P1AD(4,2,2)	uncertainty in $\delta 3$ for P1 angular distribution
715	P8AD(1,1,1)	A_o for P8 angular distribution
716	P8AD(2,1,1)	C1 for P8 angular distribution
717	P8AD(3,1,1)	C2 for P8 angular distribution
718	P8AD(4,1,1)	C3 for P8 angular distribution
719	P8AD(1,2,1)	A4 for P8 angular distribution
720	P8AD(2,2,1)	$\delta 1$ for P8 angular distribution
721	P8AD(3,2,1)	$\delta 2$ for P8 angular distribution
722	P8AD(4,2,1)	$\delta 3$ for P8 angular distribution
723	P8AD(1,1,2)	uncertainty in A_o for P8 angular distribution
724	P8AD(2,1,2)	uncertainty in C1 for P8 angular distribution
725	P8AD(3,1,2)	uncertainty in C2 for P8 angular distribution
726	P8AD(4,1,2)	uncertainty in C3 for P8 angular distribution
727	P8AD(1,2,2)	uncertainty in A4 for P8 angular distribution
728	P8AD(2,2,2)	uncertainty in $\delta 1$ for P8 angular distribution
729	P8AD(3,2,2)	uncertainty in $\delta 2$ for P8 angular distribution
730	P8AD(4,2,2)	uncertainty in $\delta 3$ for P8 angular distribution
731	A1AD(1,1,1)	A_o for A1 angular distribution

732	A1AD(2,1,1)	C1 for A1 angular distribution
733	A1AD(3,1,1)	C2 for A1 angular distribution
734	A1AD(4,1,1)	C3 for A1 angular distribution
735	A1AD(1,w,1)	A4 for A1 angular distribution
736	A1AD(2,2,1)	$\delta 1$ for A1 angular distribution
737	A1AD(3,2,1)	$\delta 2$ for A1 angular distribution
738	A1AD(4,2,1)	$\delta 3$ for A1 angular distribution
739	A1AD(1,1,2)	uncertainty in A_o for A1 angular distribution
740	A1AD(2,1,2)	uncertainty in C1 for A1 angular distribution
741	A1AD(3,1,2)	uncertainty in C2 for A1 angular distribution
742	A1AD(4,1,2)	uncertainty in C3 for A1 angular distribution
743	A1AD(1,2,2)	uncertainty in A4 for A1 angular distribution
744	A1AD(2,2,2)	uncertainty in $\delta 1$ for A1 angular distribution
745	A1AD(3,2,2)	uncertainty in $\delta 2$ for A1 angular distribution
746	A1AD(4,2,2)	uncertainty in $\delta 3$ for A1 angular distribution
747	A6AD(1,1,1)	A_o for A6 angular distribution
748	A6AD(2,1,1)	C1 for A6 angular distribution
749	A6AD(3,1,1)	C2 for A6 angular distribution
750	A6AD(4,1,1)	C3 for A6 angular distribution
751	A6AD(1,2,1)	A4 for A6 angular distribution
752	A6AD(2,2,1)	$\delta 1$ for A6 angular distribution
753	A6AD(3,2,1)	$\delta 2$ for A6 angular distribution
754	A6AD(4,2,1)	$\delta 3$ for A6 angular distribution
755	A6AD(1,1,2)	uncertainty in A_o for A6 angular distribution
756	A6AD(2,1,2)	uncertainty in C1 for A6 angular distribution
757	A6AD(3,1,2)	uncertainty in C2 for A6 angular distribution
758	A6AD(4,1,2)	uncertainty in C3 for A6 angular distribution

759	A6AD(1,2,2)	uncertainty in A4 for A6 angular distribution
760	A6AD(2,2,2)	uncertainty in $\delta 1$ for A6 angular distribution
761	A6AD(3,2,2)	uncertainty in $\delta 2$ for A6 angular distribution
762	A6AD(4,2,2)	uncertainty in $\delta 3$ for A6 angular distribution
763	Z1AD(1,1,1)	A_o for A1 angular distribution
764	Z1AD(2,1,1)	C1 for Z1 angular distribution
765	Z1AD(3,1,1)	C2 for Z1 angular distribution
766	Z1AD(4,1,1)	C3 for Z1 angular distribution
767	Z1AD(1,2,1)	A4 for Z1 angular distribution
768	Z1AD(2,2,1)	$\delta 1$ for Z1 angular distribution
769	Z1AD(3,2,1)	$\delta 2$ for Z1 angular distribution
770	Z1AD(4,2,1)	$\delta 3$ for Z1 angular distribution
771	Z1AD(1,1,2)	uncertainty in A_o for Z1 angular distribution
772	Z1AD(2,1,2)	uncertainty in C1 for Z1 angular distribution
773	Z1AD(3,1,2)	uncertainty in C2 for Z1 angular distribution
774	Z1AD(4,1,2)	uncertainty in C3 for Z1 angular distribution
775	Z1AD(1,2,2)	uncertainty in A4 for Z1 angular distribution
776	Z1AD(2,2,2)	uncertainty in $\delta 1$ for Z1 angular distribution
772	Z1AD(3,2,2)	uncertainty in $\delta 2$ for Z1 angular distribution
778	Z1AD(4,2,2)	uncertainty in $\delta 3$ for Z1 angular distribution
779	E1AD(1,1,1)	A_o for E1 angular distribution
780	E1AD(2,1,1)	C1 for E1 angular distribution
781	E1AD(3,1,1)	γ for P1/P2
782	E1AD(4,1,1)	γ for P2/P3
783	E1AD(1,2,1)	A4 for E1 angular distribution
784	E1AD(2,2,1)	$\delta 1$ for E1 angular distribution
785	E1AD(3,2,1)	γ for P4/P5
786	E1AD(4,2,1)	γ for P5/P7

787	E1AD(1,1,2)	uncertainty in A_o for E1 angular distribution
788	E1AD(2,1,2)	uncertainty in C1 for E1 angular distribution
789	E1AD(3,1,2)	uncertainty in γ for P1/P2
790	E1AD(4,1,2)	uncertainty in γ for P2/P3
791	E1AD(1,2,2)	uncertainty in A4 for E1 angular distribution
792	E1AD(2,2,2)	uncertainty in δ1 fof E1 angular distribution
793	E1AD(3,2,2)	uncertainty in γ for P4/P5
794	E1AD(4,2,2)	uncertainty in γ for P5/P7
795	E2AD(1,1,1)	A_o for E2 angular distribution
796	E2AD(2,1,1)	C1 for E2 angular distribution
797	E2AD(3,1,1)	γ for A3/A4
798	E2AD(4,1,1)	γ for A4/A5
799	E2AD(1,2,1)	A4 for E2 angular distribution
800	E2AD(2,2,1)	δ1 for E2 angular distribution
801	E2AD(3,2,1)	γ for A5/A6
802	E2AD(4,2,1)	p/α from P5/A4 and formula
803	E2AD(1,1,2)	uncertainty in A_o for E2 angular distribution
804	E2AD(2,1,2)	uncertainty in C1 for E2 angular distribution
805	E2AD(3,1,2)	uncertainty in γ for A3/A4
806	E2AD(4,1,2)	uncertainty in γ for A4/A5
807	E2AD(1,2,2)	uncertainty in A4 for E2 angular distribution
808	E2AD(2,2,2)	uncertainty in δ1 for E2 angular distribution
809	E2AD(3,2,2)	uncertainty in γ for A5/A6
810	E2AD(4,2,2)	uncertainty in p/α from P5/A4 and formula
811	E3AD(1,1,1)	A_o for E3 angular distribution
812	E3AD(2,1,1)	C1 for E3 angular distribution
813	E3AD(3,1,1)	C2 for E3 angular distribution

814	E3AD(4,1,1)	C3 for E3 angular distribution
815	E3AD(1,2,1)	A4 for E3 angular distribution
816	E3AD(2,2,1)	$\delta 1$ for E3 angular distribution
817	E3AD(3,2,1)	$\delta 2$ for E3 angular distribution
818	E3AD(4,2,1)	$\delta 3$ for E3 angular distribution
819	E3AD(1,1,2)	uncertainty in A_o for E3 angular distribution
820	E3AD(2,1,2)	uncertainty in C1 for E3 angular distribution
821	E3AD(3,1,2)	uncertainty in C2 for E3 angular distribution
822	E3AD(4,1,2)	uncertainty in C3 for E3 angular distribution
823	E3AD(1,2,2)	uncertainty in A4 for E3 angular distribution
824	E3AD(2,2,2)	uncertainty in $\delta 1$ for E3 angular distribution
825	E3AD(3,2,2)	uncertainty in $\delta 2$ for E3 angular distribution
826	E3AD(4,2,2)	uncertainty in $\delta 3$ for E3 angular distribution
827	E4AD(1,1,1)	A_o for E4 angular distribution
828	E4AD(2,1,1)	C1 for E4 angular distribution
829	E4AD(3,1,1)	C2 for E4 angular distribution
830	E4AD(4,1,1)	C3 for E4 angular distribution
831	E4AD(1,2,1)	A4 for E4 angular distribution
832	E4AD(2,2,1)	$\delta 1$ for E4 angular distribution
833	E4AD(3,2,1)	$\delta 2$ for E4 angular distribution
834	E4AD(4,2,1)	$\delta 3$ for E4 angular distribution
835	E4AD(1,1,2)	uncertainty in A_o for E4 angular distribution
836	E4AD(2,1,2)	uncertainty in C1 for E4 angular distribution
837	E4AD(3,1,2)	uncertainty in C2 for E4 angular distribution
838	E4AD(4,1,2)	uncertainty in C3 for E4 angular distribution
839	E4AD(1,2,2)	uncertainty in A4 for E4 angular distribution
840	E4AD(2,2,2)	uncertainty in $\delta 1$ for E4 angular distribution

841	E4AD(3,2,2)	uncertainty in $\delta 2$ for E4 angular distribution
842	E4AD(4,2,2)	uncertainty in $\delta 3$ for E4 angular distribution
843	RPAAD(1,1,1)	P1/A1 for sector 1
844	RPAAD(2,1,1)	P1/A1 for sector 2
845	RPAAD(3,1,1)	P1/A1 for sector 3
846	RPAAD(4,1,1)	P1/A1 for sector 4
847	RPAAD(5,1,1)	P1/A1 for sector 5
848	RPAAD(6,1,1)	P1/A1 for sector 6
849	RPAAD(7,1,1)	P1/A1 for sector 7
850	RPAAD(8,1,1)	P1/A1 for sector 8
851	RPAAD(1,2,1)	P8/A6 for sector 1
852	RPAAD(2,2,1)	P8/A6 for sector 2
853	RPAAD(3,2,1)	P8/A6 for sector 3
854	RPAAD(4,2,1)	P8/A6 for sector 4
855	RPAAD(5,2,1)	P8/A6 for sector 5
856	RPAAD(6,2,1)	P8/A6 for sector 6
857	RPAAD(7,2,1)	P8/A6 for sector 7
858	RPAAD(8,2,1)	P8/A6 for sector 8
859	RPAAD(1,1,2)	uncertainty in P1/A1 for sector 1
860	RPAAD(2,1,2)	uncertainty in P1/A1 for sector 2
861	RPAAD(3,1,2)	uncertainty in P1/A1 for sector 3
862	RPAAD(4,1,2)	uncertainty in P1/A1 for sector 4
863	RPAAD(5,1,2)	uncertainty in P1/A1 for sector 5
864	RPAAD(6,1,2)	uncertainty in P1/A1 for sector 6
865	RPAAD(7,1,2)	uncertainty in P1/A1 for sector 7
866	RPAAD(8,1,2)	uncertainty in P1/A1 for sector 8
867	RPAAD(1,2,2)	uncertainty in P8/A6 for sector 1

868	RPAAD(2,2,2)	uncertainty in P8/A6 for sector 2
869	RPAAD(3,2,2)	uncertainty in P8/A6 for sector 3
870	RPAAD(4,2,2)	uncertainty in P8/A6 for sector 4
871	RPAAD(5,2,2)	uncertainty in P8/A6 for sector 5
872	RPAAD(6,2,2)	uncertainty in P8/A6 for sector 6
873	RPAAD(7,2,2)	uncertainty in P8/A6 for sector 7
874	RPAAD(8,2,2)	uncertainty in P8/A6 for sector 8
875	RAMAD(1,1)	A1/Z1 for sector 1
876	RAMAD(2,1)	A1/Z1 for sector 2
877	RAMAD(3,1)	A1/Z1 for sector 3
878	RAMAD(4,1)	A1/Z1 for sector 4
879	RAMAD(5,1)	A1/Z1 for sector 5
880	RAMAD(6,1)	A1/Z1 for sector 6
881	RAMAD(7,1)	A1/Z1 for sector 7
882	RAMAD(8,1)	A1/Z1 for sector 8
883	RAMAD(1,2)	uncertainty in A1/Z1 for sector 1
884	RAMAD(2,2)	uncertainty in A1/Z1 for sector 2
885	RAMAD(3,2)	uncertainty in A1/Z1 for sector 3
886	RAMAD(4,2)	uncertainty in A1/Z1 for sector 4
887	RAMAD(5,2)	uncertainty in A1/Z1 for sector 5
888	RAMAD(6,2)	uncertainty in A1/Z1 for sector 6
889	RAMAD(7,2)	uncertainty in A1/Z1 for sector 7
890	RAMAD(8,2)	uncertainty in A1/Z1 for sector 8
891	GM2AD(1)	E2B/E2C
892	GM2AD(2)	uncertainty in E2B/E2C
893	FJM(1)	M scintillator count rate
894	FJM(2)	uncertainty in M-scintillator count rate

895	FJS(1)	S scintillator count rate
896	FJS(2)	uncertainty in S scintillator count rate
897	DM(1)	p/α from P4/A3 and formula
898	DM(2)	uncertainty in p/α from P4/A3 and formula
899	DM(3)	α/M from A3/Z2 and formula
900	DM(4)	uncertainty in α/M from A3/Z2 and formula

CPME DECOM Tapes

7/26/72 - Mel Banks said 4 days (approximately) per tape. (many 58 ft.)

9594 bytes/Alabama = 5.5 minutes

$9594 \times 8 = 76752$ bits / 6 = 12792 frames

12792 frames / 800 BPI = 16 inches + .75" gap

$= 16.75$ inches / 5.5 minutes

$2000'/tape = \dfrac{24000 \text{ inches/tape}}{16.75 \text{ inches}/5.5 \text{ min.}} = 1432 \times 5.5 \text{ mins/tape}$

$= 7880 \text{ mins/tape}$

$= \boxed{5.4 \text{ days/tape}}$

$2500'/tape \quad \dfrac{27600 \times 5.5}{16.75} = 9012 \text{ mins/tape}$

$= 6.2 \text{ days}$

CYME Archive tapes

1 LRECL - (2 albums) = 14,508 bytes

1 Phys. Rec (4 albums) = 29,016 "

$29,016 \text{ frames} / 1600 = 18.135 " + .75' \text{ gaps}$
$= \underline{19} " / 5.5 \text{ mins}$

$2000' / \text{tape} = \dfrac{24000 "}{19 " / 5.5 \text{ mins}} = \dfrac{24000 \times 5.5}{19 "} \text{ mins} / \text{tape}$

$= 6947 \text{ mins} / \text{tape}$

$\boxed{= 4.8 \text{ days} / \text{tape}}$

Decom tape will
contain 4 days/tape

Vector Size for Averages

Linearizing produces 130×4 items (520) plus 33 ephemeris items;

In addition subroutine DETAIL will add 200 items for a total of:

$$
\begin{array}{r}
520 \\
33 \\
\underline{200} \\
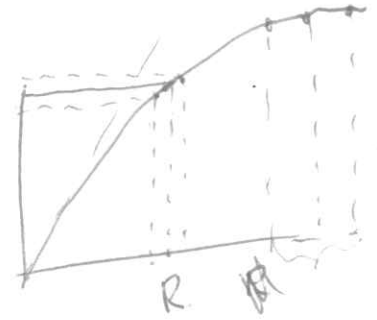753 \text{ items} = 3012 \text{ Bytes}
\end{array}
$$

for each vector, whether it be 4 albums, 1hr, etc.

$$
\begin{array}{lll}
1 \text{ day's worth of hr'ly ave} & = & 72288 \\
1 \quad " \quad " \quad " \quad 3hr \quad " & = & 24096 \\
1 \quad " \quad " \quad " \quad 24 \quad " \quad " & & \underline{3012} \\
& & 99,396 \text{ BYTES}
\end{array}
$$

5) Plots — we must decide what to do; 4020 plots — of what? be reasonable!

↓ PA

a) 5 minute data

b) long term

6) Lets get the R vs. r_i corrections defined

↓ PA

CALL RVSR (RATE, UNC RATE, FLAG, TRATE, TUANCRATE)

7) Special events → lets straighten out the logic — a running average, or a ~~4 album ex.~~

4 album ok

8) Calibration data — what values are to be used for the Y_{A_i}, Y_{B_i}, & Y_{C_i}? Raw, uncorrected record counts; same with discretization error; a corrected counting rate, r_i or R_i? I assume that some or all of the data in the CAL albums is to be omitted from the averages. What is?

CAL record is logically different. units 1 etc.

in the

NO CAL DATA IN AVERAGES.

1) Don'T you want access to better time resolution
than / 5.5 minute averages? & do not think it
valid to have archive tape contain raw counts, etc.
from DECOM tape. (I agree)

SAVE DECOM. & NO DECOM. ON ARCHIVE

2) We need to resolve what TPA will get for
Kansas; MST for all data, only specific
events, etc; for what computer?

Same with C. W. ARCHIVES OF ALL?
Rus r? GM TUBES

3) We will keep original DECOM, won'T we? YES?

4) How to process Sum tape? & use MST
a) if tapes arrive out of order, we mustwait,
or else use two tape units to merge
data

b) even if processed in order, it is
possible that a tape will have to
be re-seen, necessitating a merge.

c) Remember, that somehow individual (unaveraged)
values must be saved for the hours that overlap two ty-

Suggestions

3. Make '4 album 4020 plots when DECOM tape is being processed, but limit them to a reasonable number of *5 or 10* channels - say 20 to 30 at most. From these, choose interesting events for additional plots - either of the '4 album form - or point for point, using the Archive tape as input.

4. Following is a list of tape units required:

Full System
- 1-9 - CW archive
- 1-7 - DECOM
- 1-9 MST
- 2-9 Sum Tape
- 1-7 - Plot tape

- 4-9 track T.U.
- 2-7 " T.U
- 6

refined ✓
- 2-9 - CW archive
- 1-7 DECOM
- 1-9 MST
- 1-7 Plots

Suggestions

1. Have Archive tape contain corrections, R rates, etc. and no raw DECOM data; Rather, have C.W. store DECOM tapes and access them separately. (If merged, there would be 2 tapes anyway). He can be supplied with a program enabling him to decompress DECOM tapes into "r" if desired. Retain a copy of archive tape

   Yes, TPA *Yes, TPA*

2. Do not form long term averages; compute 5.5 minute (4 altern.) averages & attach items from TPA; enter → "DETAIL". After a month's worth of DECOM data have been analyzed, extract a program that will compute 1HR, 3HR, 24 hr ave. and attach info. from DETAIL. The output of a month's data can be a file on a 12 file tape for each year. At this time plots of this data can be made.

   OK

4020 Plots

4 Days (1 tape) of 5.5 minute averages

is $\frac{4 * 1440}{5.5}$ points = 1047 points

If 4020 frame were structured to have
550 points across and two plots on
the same frame, then an entire tape of
5.5 minute averages could be represented
in 1 frame/item.

The problem arises in the number
of items to be plotted, since all will
have to be saved until the end of the
tape before plotting can begin.

If all 130 telemetry items were to be plotted,
& plotting else, then 130 * 1047 = 136,110
items would need to be saved; this
is equivalent to 544K bytes of storage
and 130 pictures

TABLE III

Definition of Data Output
From Averaging Program

Ref. I.D.	Descrip. Name	# Samples in 4 Albums	Comments
1	P1 $P1(9,*)$	64	Sector Sum $AVE. RATE$
2	P2 $R19 = R2(12)$	32	
3	P3 $R20 = R(13)$	32	
4	P4 $R21 = R2(14)$	32	
5	P5 $R22 = R2(15)$	32	
6	P6 $R23 = R2(16)$	32	
7	P7 $R4 = R4(4)$	64	
8	P8 $R24 = R2(17)$	32	
9	P9 $R3 = R4(3)$	64	
10	P10 $R13 = R2(6)$	32	
11	P11 $R12 = R2(5)$	32	
12	A1 $A1(9,*)$	16	Sector Sum $AVE. RATE.$
13	A2 $R11 = R2(4)$	32	
14	A3 $R10 = R2(3)$	32	
15	A4 $R9 = R2(2)$	32	
16	A5 $R8 = R2(1)$	32	
17	A6 $R7 = R4(7)$	64	
18	A7 $R6 = R4(6)$	64	
19	Z1 $R5 = R4(5)$	64	
20	Z2 $R25 = R2(18)$	32	
21	E1	64	Sector Sum, Omitting Solar Sectors
22	E2A	32	Sector Sum, Omitting Solar Sectors

TABLE III (Cont'd)

Ref. I.D.	Descrip. Name	# Samples in 4 Albums	Comment
23	E2B R17 = R2(10)	32	
24	E2C R18 = R2(11)	32	
25	E3	32	Sector Sum, Omitting Solar Sectors
26	E1 Sec. I	64	
27	E1 Sec. II	64	
28	E1 Sec. III	64	
29	E1 Sec. IV	64	
30	E1 Sec. V	64	
31	E1 Sec. VI	64	
32	E1 Sec. VII	64	
33	E1 Sec. VIII	64	
33	E2A Sec. I	32	
34	E2A Sec. II	32	
35	E2A Sec. III	32	
36	E2A Sec. IV	32	
37	E2A Sec. V	32	
38	E2A Sec. VI	32	
39	E2A Sec. VII	32	
40	E2A Sec. VIII	32	
41	E3 Sec. Ia	8	
42	E3 Sec. Ib	8	
43	E3 Sec. Ic	8	
44	E3 Sec. Id	8	
45	E3 Sec. IIa	8	
46	E3 Sec. IIb	8	
47	E3 Sec. IIc	8	
48	E3 Sec. IId	8	

Handwritten annotations:

add 3 to all R#'s

26-29

33-37

$R17 = R2(10)$
$R18 = R2(11)$

26	E 4	$R14 = R2(7)$
27	E 5	$R15 = R2(8)$
28	E 6	$R16 = R2(9)$

add ☆ # to all #'s

41-45

45-49

same as for sector 1

seq. 2, Page 0 & seq. 2, Page 2 each Album
seq. 10, Page 0 & seq. 10, Page 2, " "
seq. 2, Page 1 & seq. 2, Page 3, " "
seq. 10, Page 1 & seq. 10, Page 3 " "

TABLE III (Cont'd)

Ref. I.D.	Descrip. Name	# Samples in 4 Albums	Comments
49	E3 Sec. IIIa	8	
50	E3 Sec. IIIb	8	
51	E3 Sec. IIIc	8	
52	E3 Sec. IIId	8	
53	E3 Sec. IVa	8	
54	E3 Sec. IVb	8	
55	E3 Sec. IVc	8	
56	E3 Sec. IVd	8	
57	E3 Sec. Va	8	
58	E3 Sec. Vb	8	
59	E3 Sec. Vc	8	
60	E3 Sec. Vd	8	
61	E3 Sec. VIa	8	
62	E3 Sec. VIb	8	
63	E3 Sec. VIc	8	
64	E3 Sec. VId	8	
65	E3 Sec. VIIa	8	
66	E3 Sec. VIIb	8	
67	E3 Sec. VIIc	8	
68	E3 Sec. VIId	8	
69	E3 Sec. VIIIa	8	
70	E3 Sec. VIIIb	8	
71	E3 Sec. VIIIc	8	
72	E3 Sec. VIIId	8	
73 77	E4 Sec. I	32	

TABLE III (Cont'd)

Ref. I.D.	Descrip. Name	# Samples in 4 Albums	Comments
74	E4 Sec. II	32	
75	E4 Sec. III	32	
76	E4 Sec. IV	32	
77	E4 Sec. V	32	
78	E4 Sec. VI	32	
79	E4 Sec. VII	32	
80	E4 Sec. VIII	32	
81 85	P1 Sec. I	32	
82	P1 Sec. II	32	
83	P1 Sec. III	32	
84	P1 Sec. IV	32	
85	P1 Sec. V	32	
86	P1 Sec. VI	32	
87	P1 Sec. VII	32	
88	P1 Sec. VIII	32	
89 93	P10 Sec. I	16	
90	P10 Sec. II	16	
91	P10 Sec. III	16	
92	P10 Sec. IV	16	
93 P8	P10 Sec. V	16	
94	P10 Sec. VI	16	
95	P10 Sec. VII	16	
96	P10 Sec. VIII	16	
97 101	P11 Sec. I	16	
98 A1	P11 Sec. II	16	

TABLE III (Cont'd)

Ref. I.D.	Descrip. Name	# Samples in 4 Albums	Comments
99	P11 Sec. III	16	
100	P11 Sec. IV	16	
101	P11 Sec. V	16	
102 *A1*	P11 Sec. VI	16	
103	P11 Sec. VII	16	
104	P11 Sec. VIII	16	
105 *109*	A1 Sec. I	16	
106	A1 Sec. II	16	
107	A1 Sec. III	16	
108	A1 Sec. IV	16	
109	A1 Sec. V	16	
110 *A96*	A1 Sec. VI	16	
111	A1 Sec. VII	16	
112	A1 Sec. VIII	6	
113 *117*	A6 Sec. I	16	
114	A6 Sec. II	16	
115	A6 Sec. III	16	
116 *Z1*	A6 Sec. IV	16	
117	A6 Sec. V	16	
118	A6 Sec. VI	16	
119	A6 Sec. VII	16	
124 120	A6 Sec. VIII	16	
125	M $R1 = R4(1)$	64	
126	S $R2 = R4(2)$	64	

TABLE III (Cont'd)

Ref. I.D.	Descrip. Name	# Samples in 4 Albums	Comments
121	APP 5	1	Temperature
122	APP 6	1 ～2	D1 RMS Noise
123	APP 7	1	D2 RMS Noise
124	APP 8	1	D3 RMS Noise
125	APP 1	1	Calibrate Disable
126	APP 2	1	PMT Power Supplies
127	APP 3	1	Gain Identification *maybe not any*
128	APP 4	1	High Voltage Supply