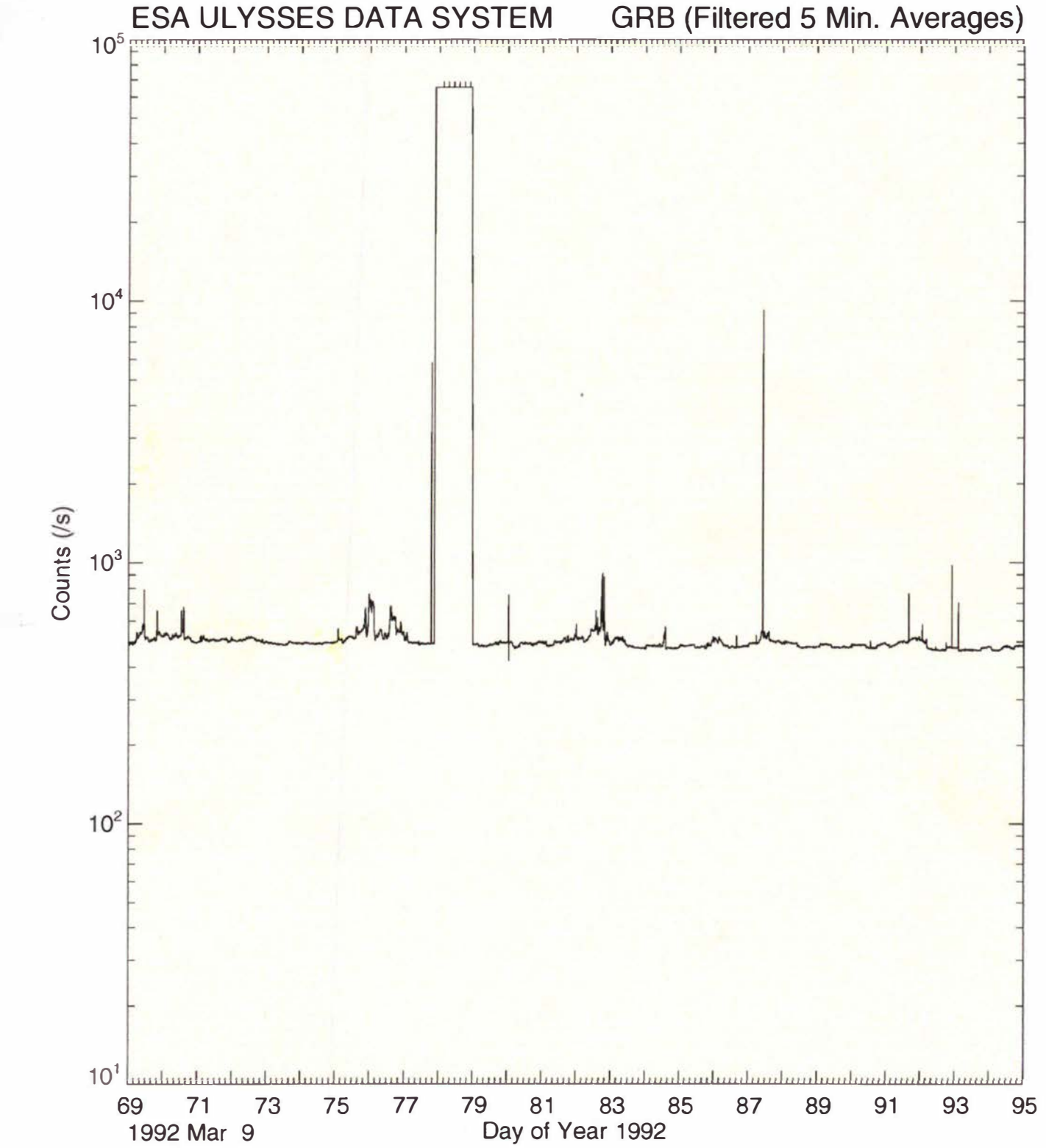
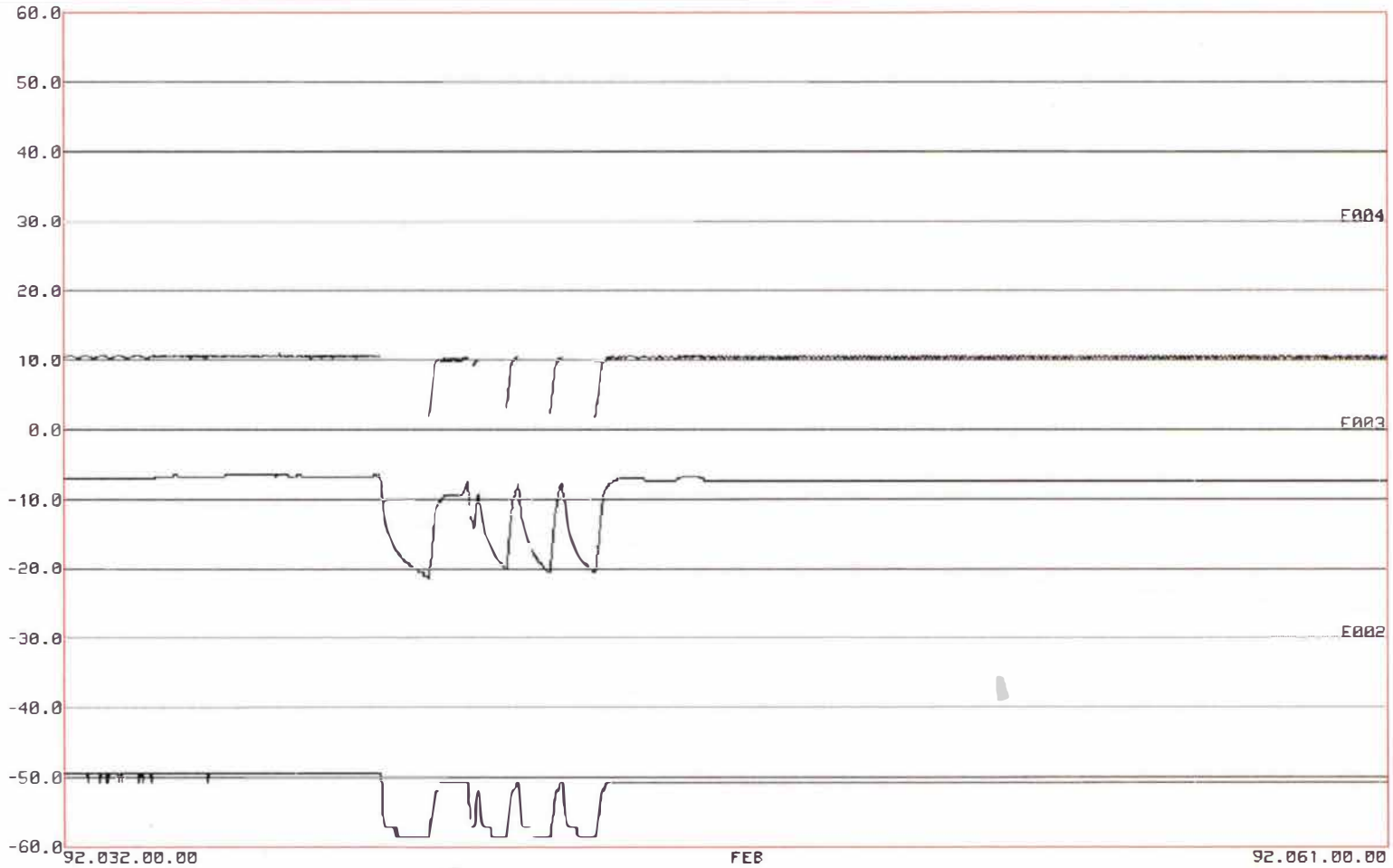


(AU)	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.39	5.39	5.39
Latitude (°)	-7.49	-7.59	-7.69	-7.79	-7.89	-7.98	-8.08	-8.18	-8.28	-8.38	-8.48	-8.58	-8.68	-8.77

Generated from IDL by Ulysses Data System on Thu Oct 16 13:21:22 1997

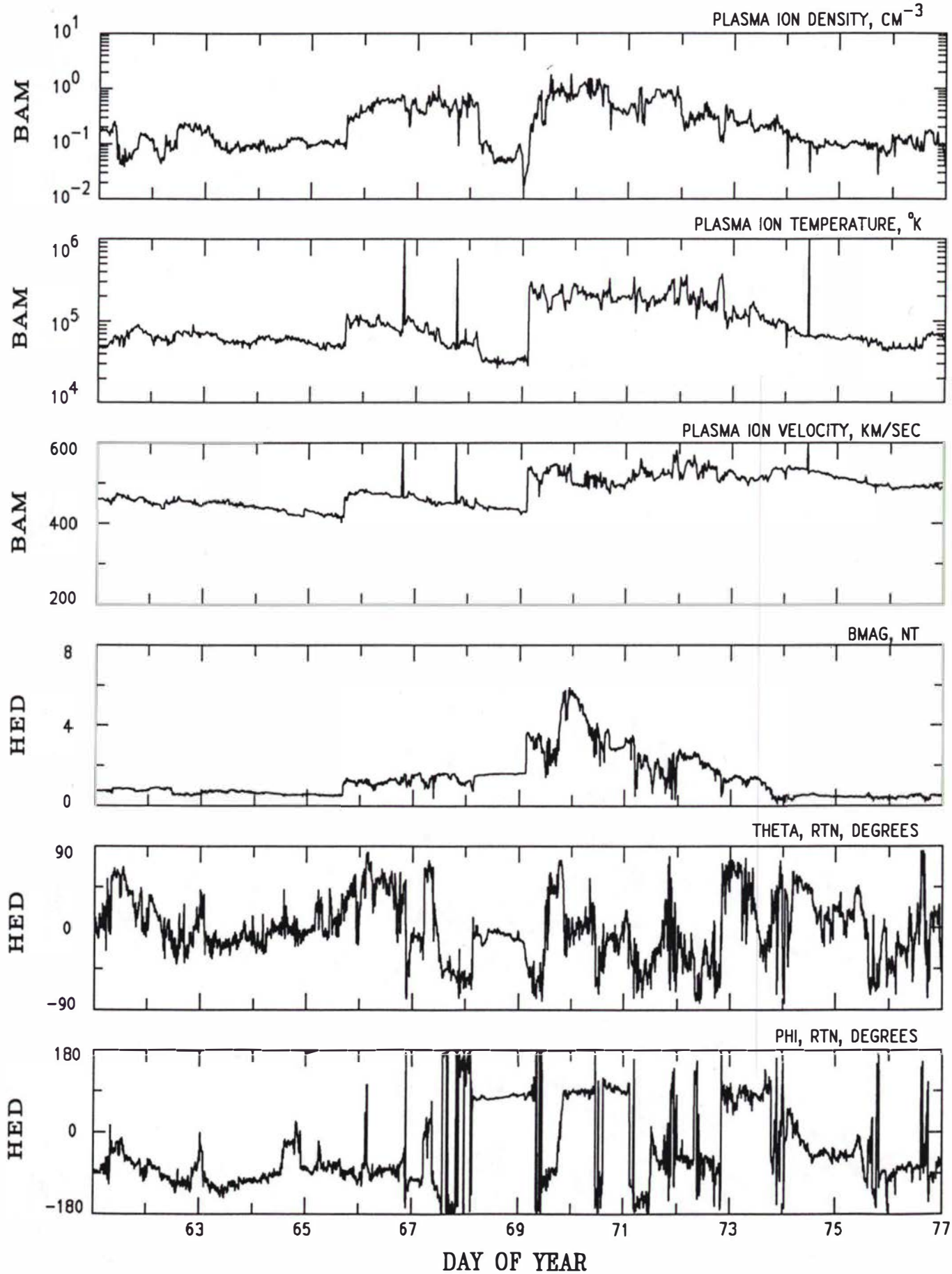
.92.061.00.11.03.874 HUS monthly long term thermal data 818 RET

E002 2ARADTMP S/C	-7.5	E003 2BSENTMP S/C	-50.7	E004 2ASENSTMP EX	10.18



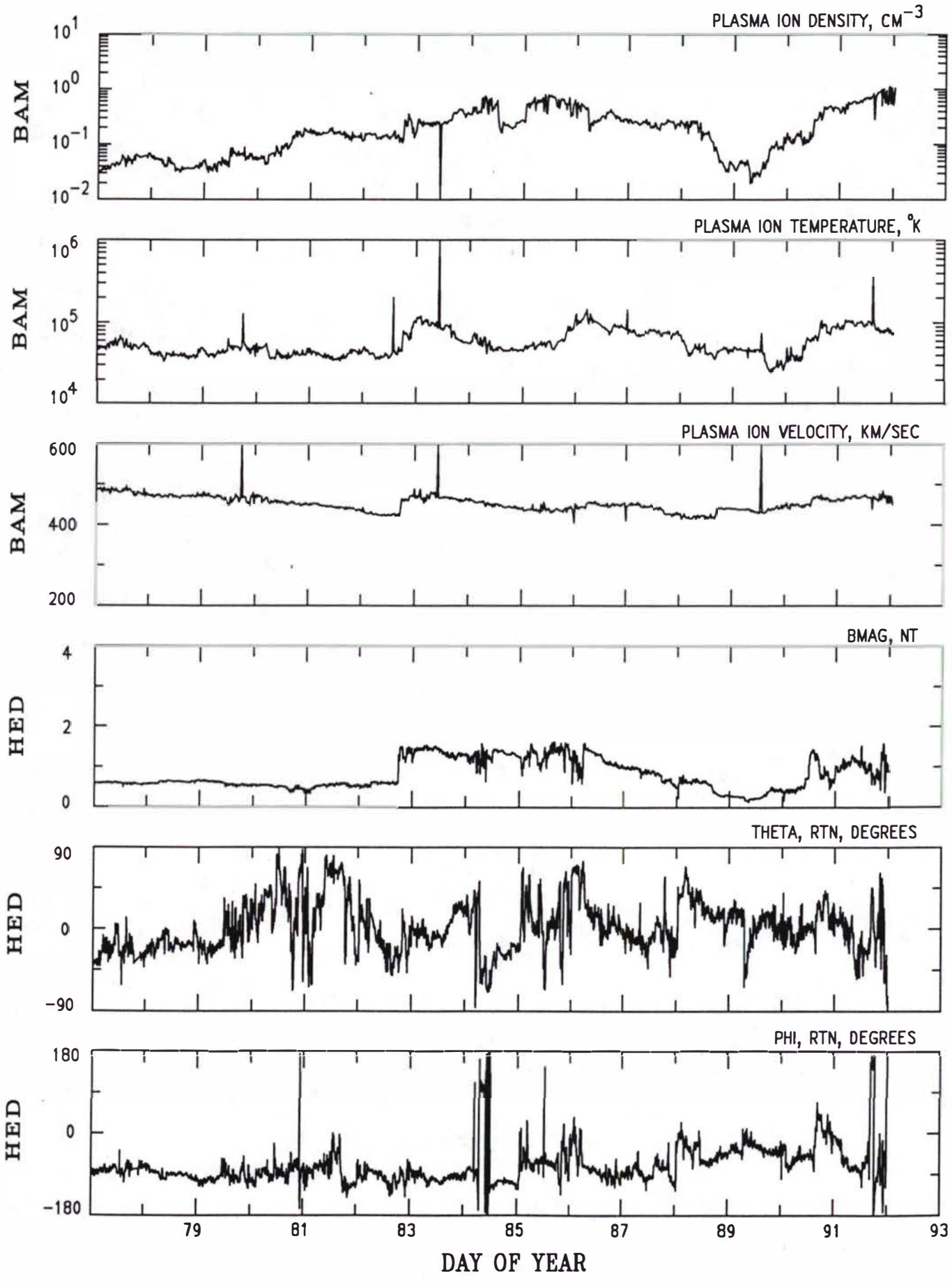
ULYSSES CDR - SOLAR WIND PLASMA AND MAGNETIC FIELD

92 061 MAR 1 00:00:00.000 - 92 077 MAR 17 00:00:00.000



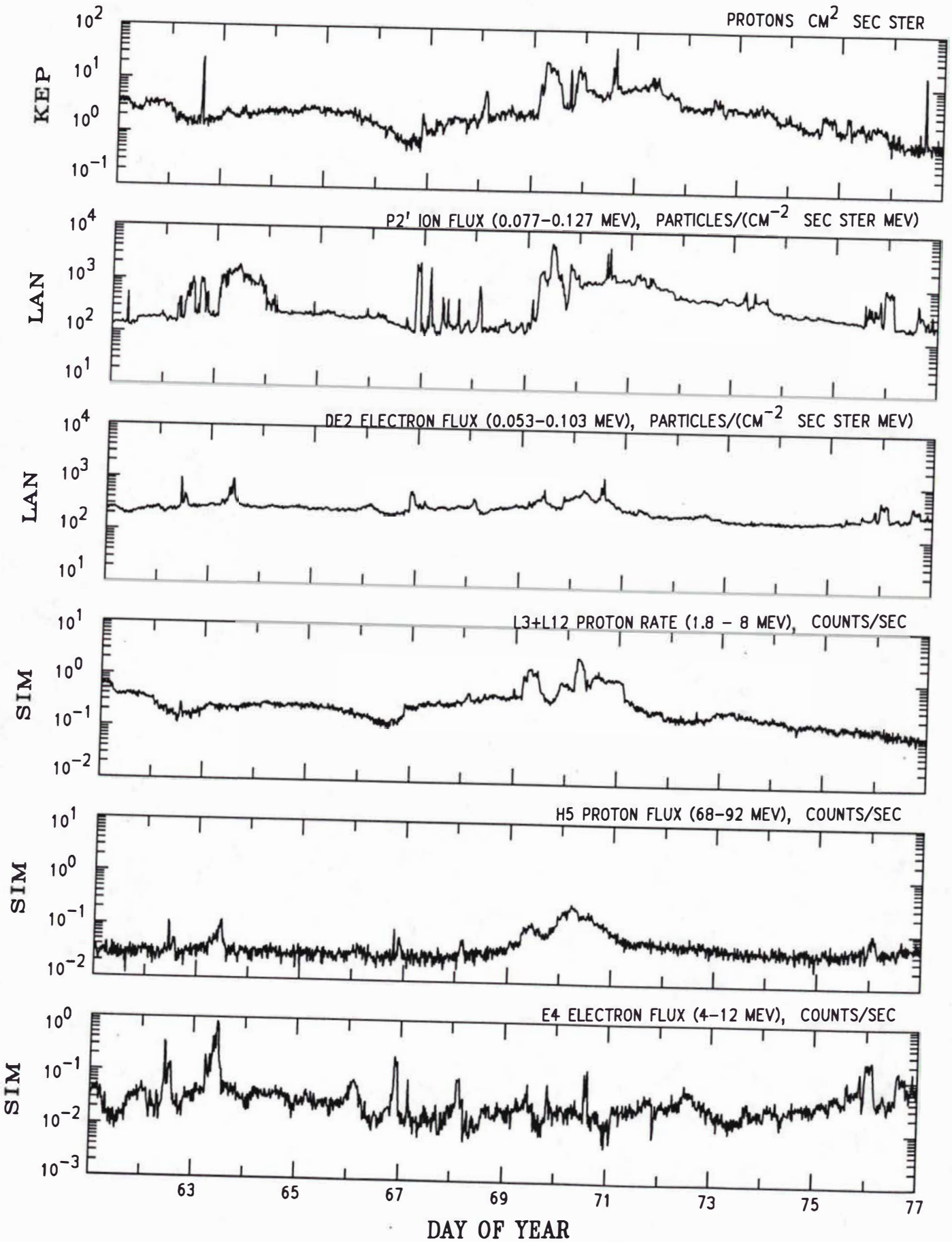
ULYSSES CDR – SOLAR WIND PLASMA AND MAGNETIC FIELD

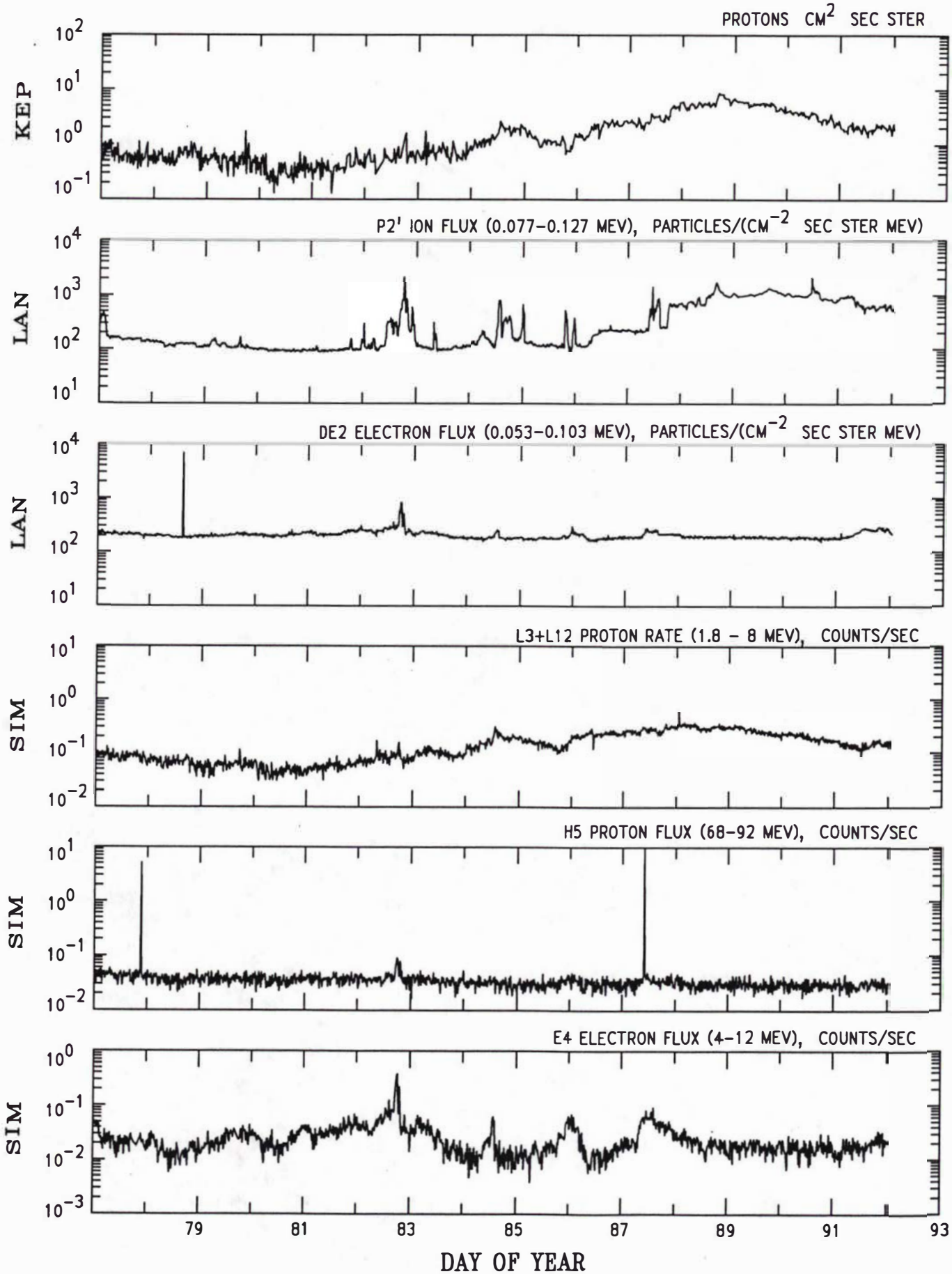
92 077 MAR 17 00:00:00.000 – 92 093 APR 2 00:00:00.000



ULYSSES CDR – ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

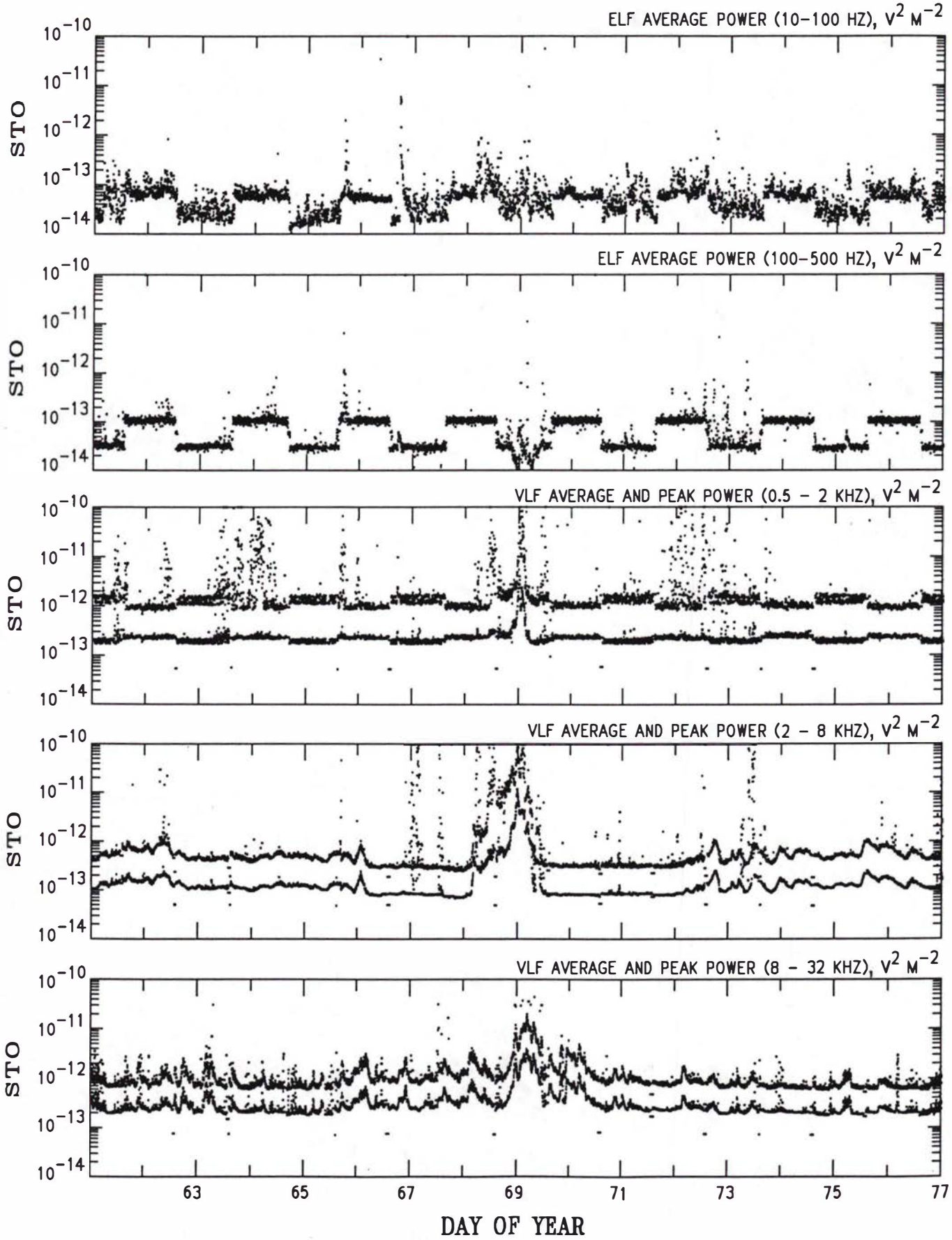
92 061 MAR 1 00:00:00.000 – 92 077 MAR 17 00:00:00.000




ULYSSES CDR - ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY
92 077 MAR 17 00:00:00.000 - 92 093 APR 2 00:00:00.000
PROTONS CM2 SEC STER
KEP
P2' ION FLUX (0.077-0.127 MEV), PARTICLES/(CM-2 SEC STER MEV)
LAN
DE2 ELECTRON FLUX (0.053-0.103 MEV), PARTICLES/(CM-2 SEC STER MEV)
LAN
L3+L12 PROTON RATE (1.8 - 8 MEV), COUNTS/SEC
SIM
H5 PROTON FLUX (68-92 MEV), COUNTS/SEC
SIM
E4 ELECTRON FLUX (4-12 MEV), COUNTS/SEC
SIM
79
81
83
85
87
89
91
93
DAY OF YEAR

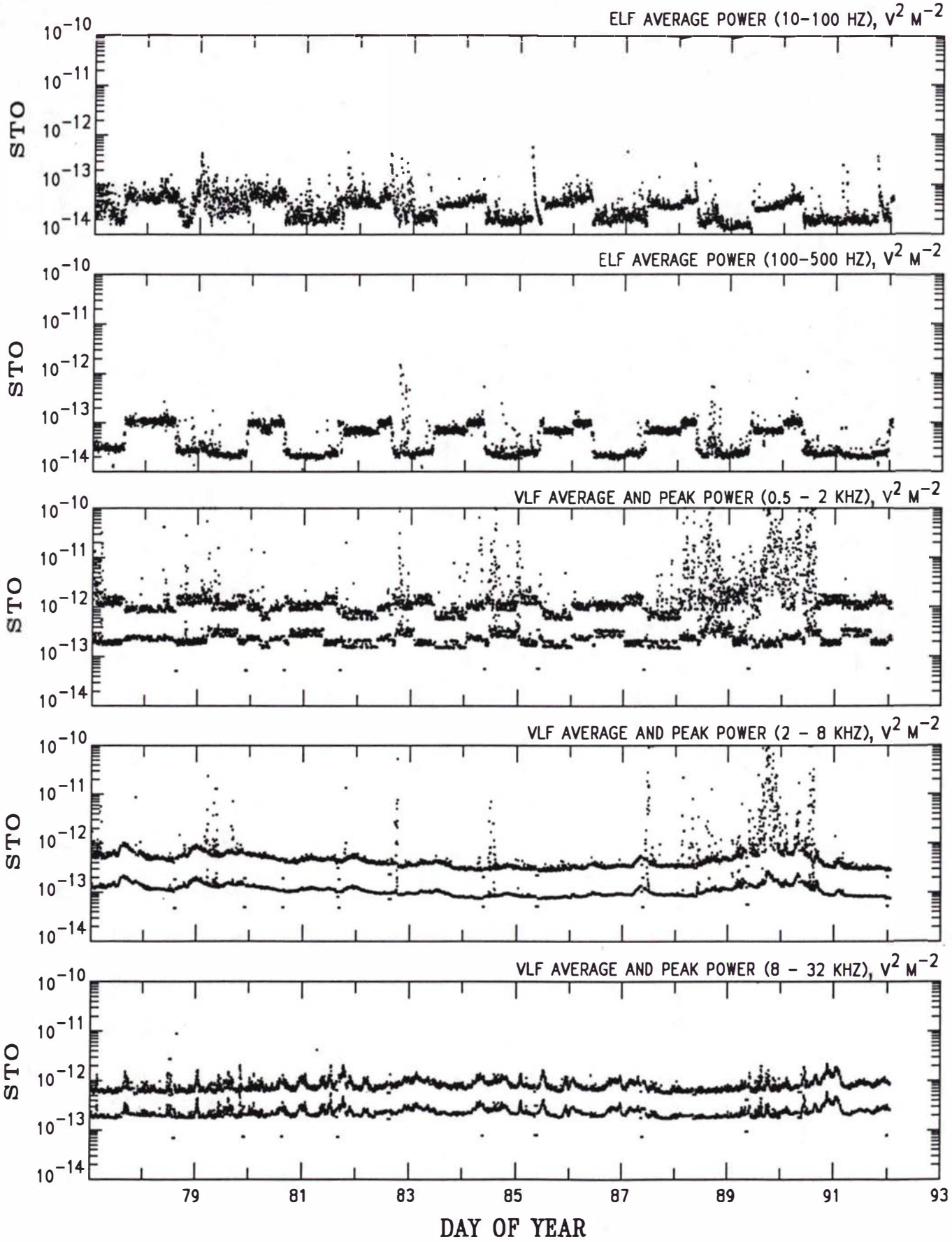
ULYSSES CDR - PLASMA WAVE

92 061 MAR 1 00:00:00.000 - 92 077 MAR 17 00:00:00.000



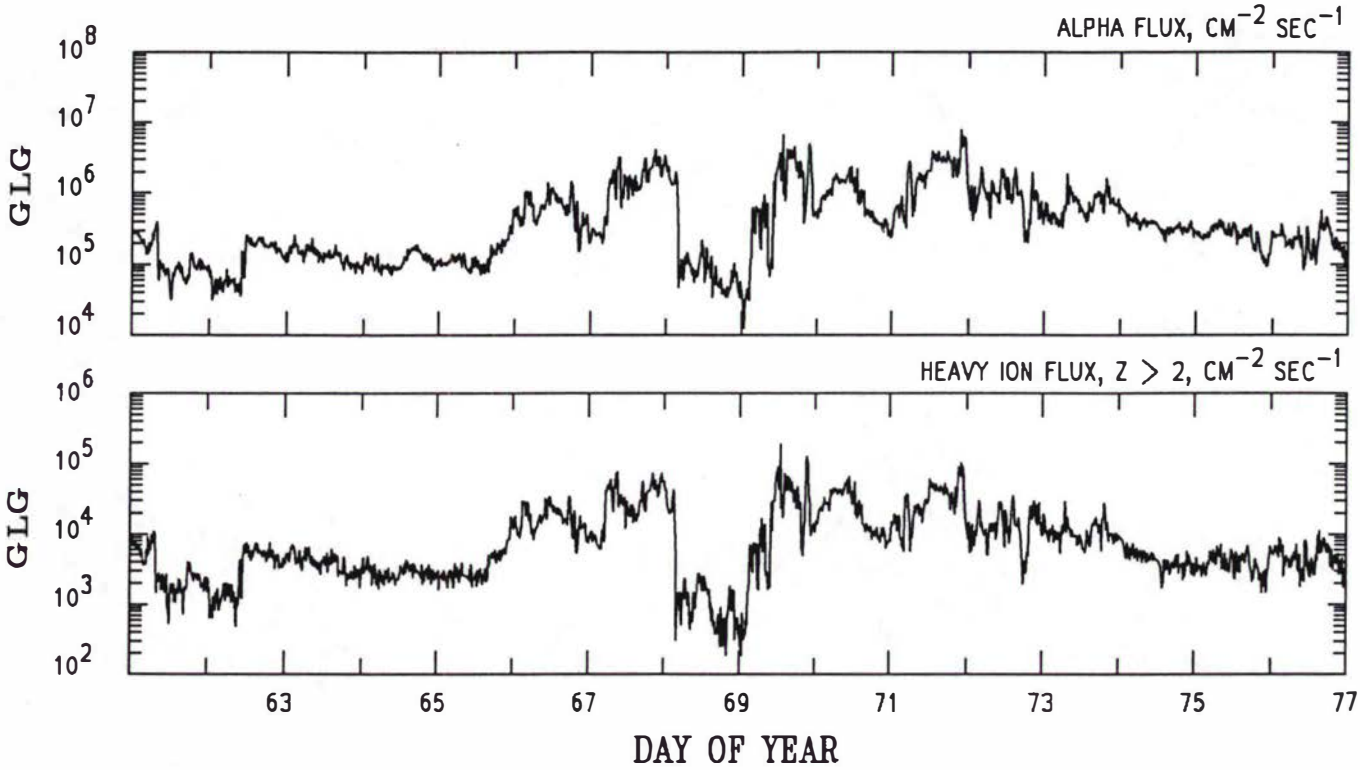
ULYSSES CDR - PLASMA WAVE

92 077 MAR 17 00:00:00.000 - 92 093 APR 2 00:00:00.000



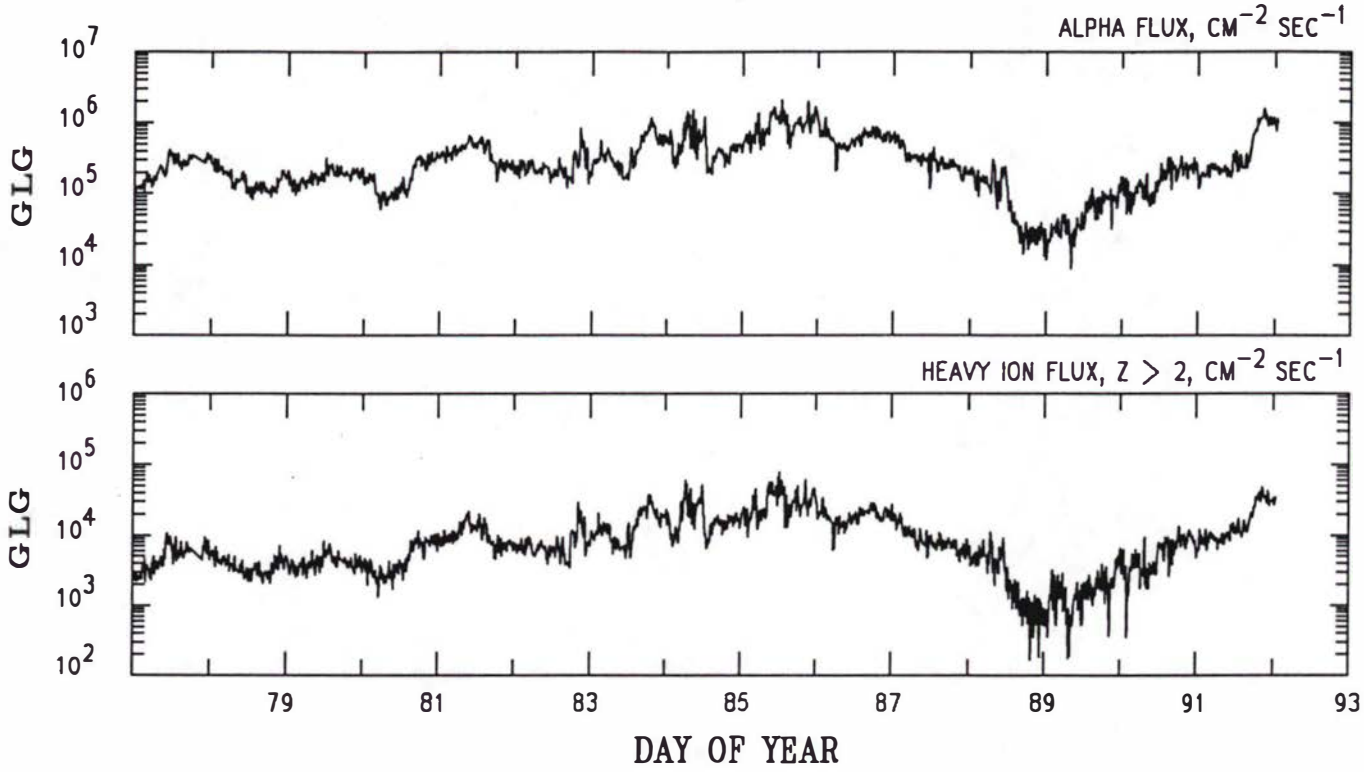
ULYSSES CDR – SOLAR WIND ION COMPOSITION

92 061 MAR 1 00:00:00.000 – 92 077 MAR 17 00:00:00.000



ULYSSES CDR – SOLAR WIND ION COMPOSITION

92 077 MAR 17 00:00:00.000 – 92 093 APR 2 00:00:00.000



From khurley@omni:.dna_node.jplgp.span Thu Nov 26 00:30:23 1992
Date: Thu, 26 Nov 92 00:20:10 -0800
From: khurley@omni:.dna_node.jplgp.span
To: "khurley@sunspot.ssl.berkeley.edu"%jpldig.span@JPLDIG.jpl.nasa.gov
Content-Length: 5100

1st Mar	Continuous 70m coverage for GWE.
2nd Mar	KEP EPAC IFC. Continuous 70m coverage for GWE.
3rd Mar	Continuous 70m coverage for GWE.
063.06:00	Revised STO daily commanding commences.
063.15:37	SAA Fail deadbands reloaded and failure flag reset.
4th Mar	KEP RAM dump. Continuous 70m coverage for GWE.
5th Mar	Continuous 70m or 34m coverage for GWE.
065.17:37	XSB 1+2 configuration for data gathering.
065.21:37	BAM-E configured to internal sun pulse mode to prevent entry into sleep mode.
065.21:45	Return to XBS1 only configuration.
065.21:50	BAM-E reconfigured to real sun pulse mode. DSS 12 maser failure. Uplink via DSS 12, downlink via DSS 15.
6th Mar	Slew to Earth path. Continuous 70m or 34m coverage for GWE.
	DSS 12 maser failure. Uplink via DSS 12, downlink via DSS 15.
7th Mar	Continuous 70m or 34m coverage for GWE.
8th Mar	Continuous 70m or 34m coverage for GWE.
9th Mar	KEP EPAC IFC. HED extra calibration. SIM HFT calibration. Continuous 70m or 34m coverage for GWE.
10th Mar	Continuous 70m or 34m coverage for GWE.
11th Mar	Earth pointing manoeuvre. HED calibration. Continuous 70m or 34m coverage for GWE.
12th Mar	Continuous 70m or 34m coverage for GWE.
13th Mar	Continuous 70m or 34m coverage for GWE.
14th Mar	Continuous 70m or 34m coverage for GWE.
	X-band receiver dropped lock. 11 minutes data lost. X-band receiver dropped lock due to a procedural error at DSS 12. 4 minutes data lost from DSS 12 and 51 minutes from DSS 42.
15th Mar	Earth pointing manoeuvre. Continuous 70m or 34m coverage for GWE.
16th Mar	KEP EPAC IFC. Continuous 70m or 34m coverage for GWE.
17th Mar	Data handling redundancy checkout.

The redundant Central Terminal Unit (CTU2) was configured and telemetry was lost for a few minutes as expected. After lock on telemetry was reestablished, the JPL Data Acquisition, Capture and Staging system (DACS) rejected the data because it was unable to find a sync pattern in the data.

After checking the ground configuration, it was decided to switch back to CTU1. This action restored telemetry.

Checking of experiments showed that BAM-E was not nominal with several analogue and status parameters out of limits, including the high voltage parameter. The high voltage was switched off, followed by switch-off of the instrument. Further analysis by the Bame team revealed that the instrument had entered "sleep mode" but had been partially "woken" by a command to return it from internal clock operation to using sun sensor data for timing purposes.

Analysis of the raw hex dump of the CTU2 telemetry showed that a sync pattern was present but with 1 bit always in error. The DACS was set for a Bit Error Tolerance (BET) of 0 and therefore had rejected all data. Data was recalled from the groundstation to the DACS with a BET of 1. Telemetry for the whole of the CTU2 period was recovered but analysis of the data shows some peculiarities.

1) Sync word was E990 not EB90.

2) Spacecraft clock has both negative and positive steps in it - further investigation showed that this was caused by 2 adjacent bits being "stuck together" (the state of one bit influencing the state of the other).

3) Shifts in some analogue parameters (not in ADC reference voltages, however) and changes in some status parameters, which gave rise to many out-of-limits.

4) GLG sync word was 106F not 146F.

Further analysis of the raw telemetry dump revealed that in the least significant nibble of the even telemetry bytes the middle two bits were always the same i.e. 00 or 11, never 01 or 10. This accounts for all of the above observations. The cause of this phenomenum is under investigation.

Upon switching from CTU2 to CTU1, the redundant CTU/experiment interfaces were selected autonomously on board, cause the loss of all HUS science data.

Continuous 70m or 34m coverage for GWE.

18th Mar

S-band switch-off.
Continuous 70m or 34m coverage for GWE.
BAM-E Switch on.
Switch back to prime CTU/experiment interface.

19th Mar

Earth pointing manoeuvre.
End of continuous coverage.
HUS switch-off and on again.

20th Mar

Routine operations.

21st Mar

KEP GAS neutral gas scan.

22nd Mar

Earth pointing manoeuvre.

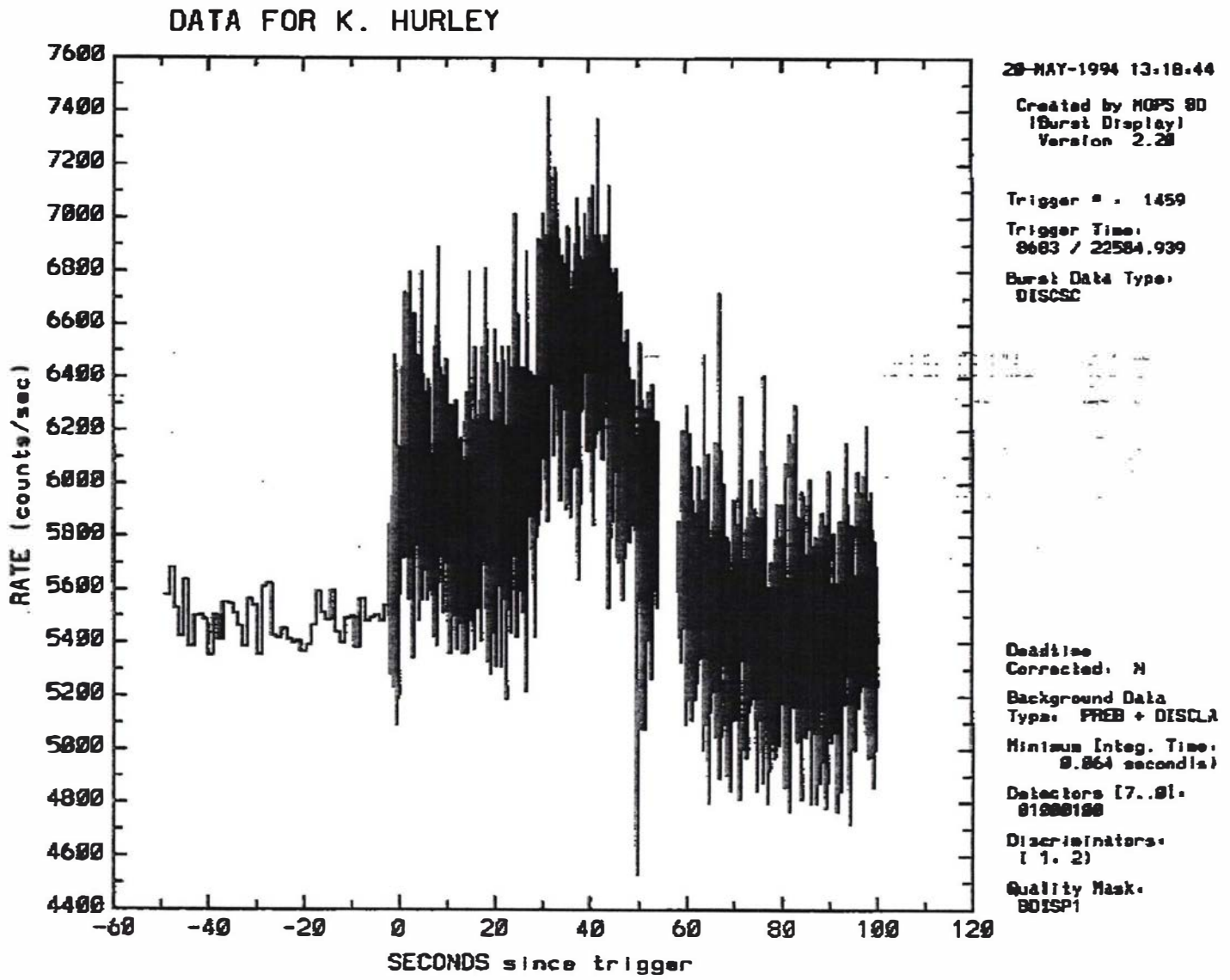
23rd Mar	KEP EPAC IFC. KEP GAS Jupiter Scan, -HV.
24th Mar	Routine operations.
25th Mar	Earth pointing manoeuvre. KEP GAS Jupiter Scan, +HV. HED Calibration.
26th Mar	KEP GAS LiF Evaporation.
27th Mar	KEP GAS Jupiter Scan, +HV.
28th Mar	Earth pointing manoeuvre. KEP GAS Jupiter Scan, -HV.
29th Mar	KEP GAS Neutral Gas Scan, -HV. Earth pointing manoeuvre.
30th Mar	KEP EPAC IFC.
31st Mar	Earth pointing manoeuvre. KEP GAS Full Sky Scan, -HV.

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST #  1456
EVENT OF 1992 MAR  1 DAY OF YEAR= 61
EVENT CROSSING TIME AT BATSE      : 41662. S. OR 11:34:22.0
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 338.000   22.900
EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  1/ 3/  92 IS:
RA=  158.740 DEC=     8.916 DIST=     4.412 AU
BATSE-ULYSSES DISTANCE =  660000792. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 31.82 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1870.57 SECS.
CROSSING TIME AT ULYSSES     IS 43533. S. OR   12:05:32 +/-  279.96 SECONDS
```

No

P.01/01
05-20-1994 13:52 2055447754
05-20-94 11:52AM P001 #28
2055447754
R=95%



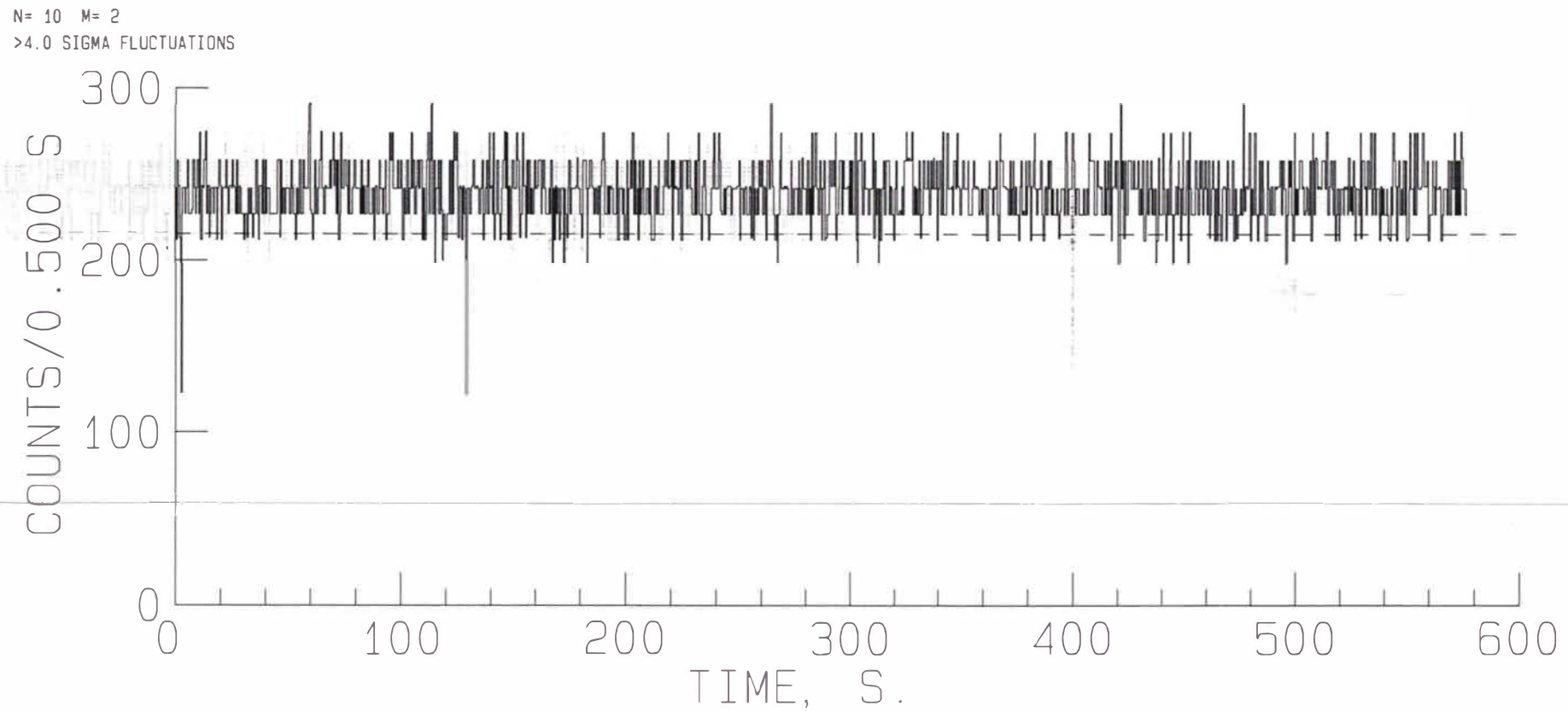
14/ 4/93

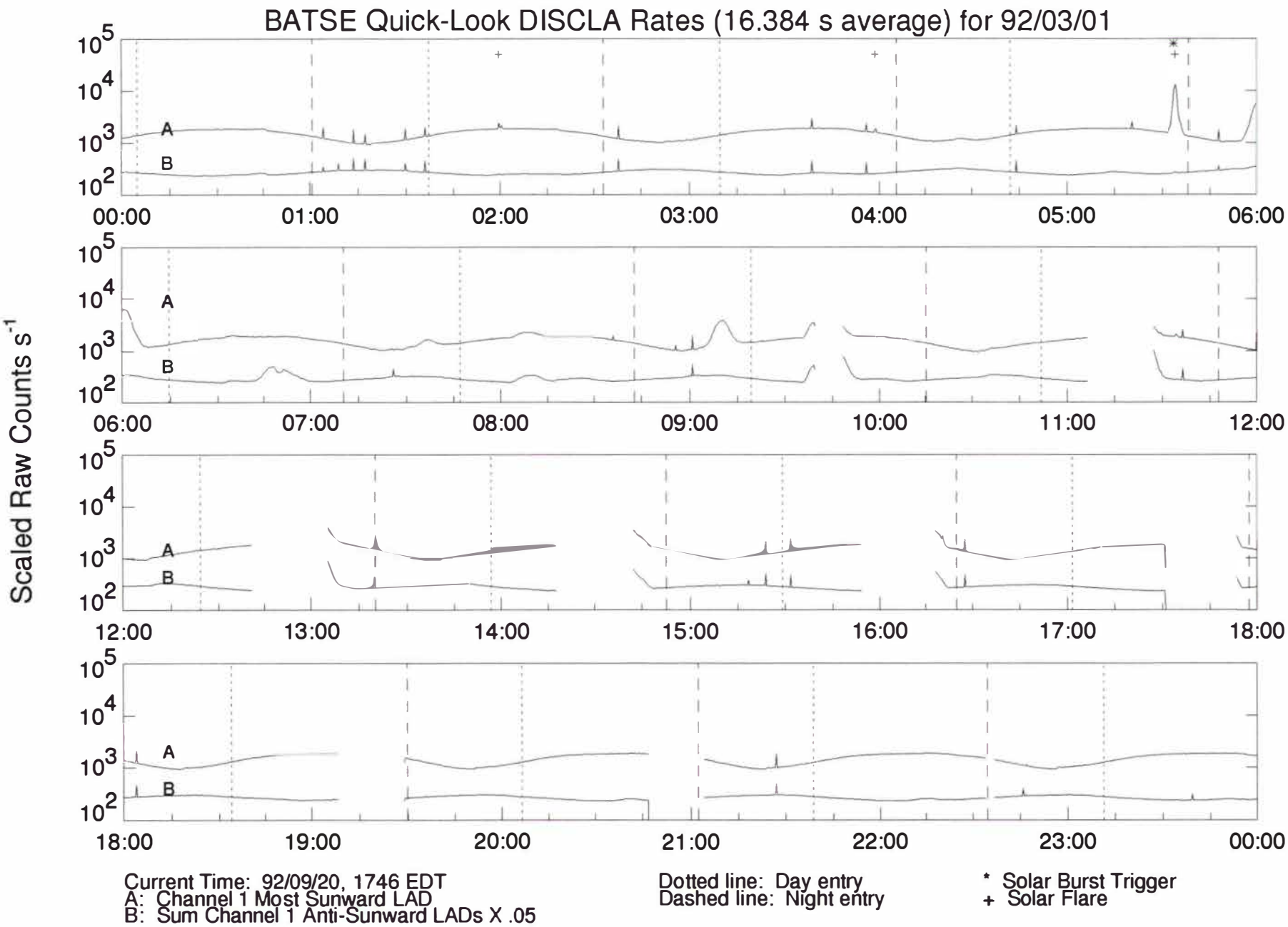
ULYSSES RT

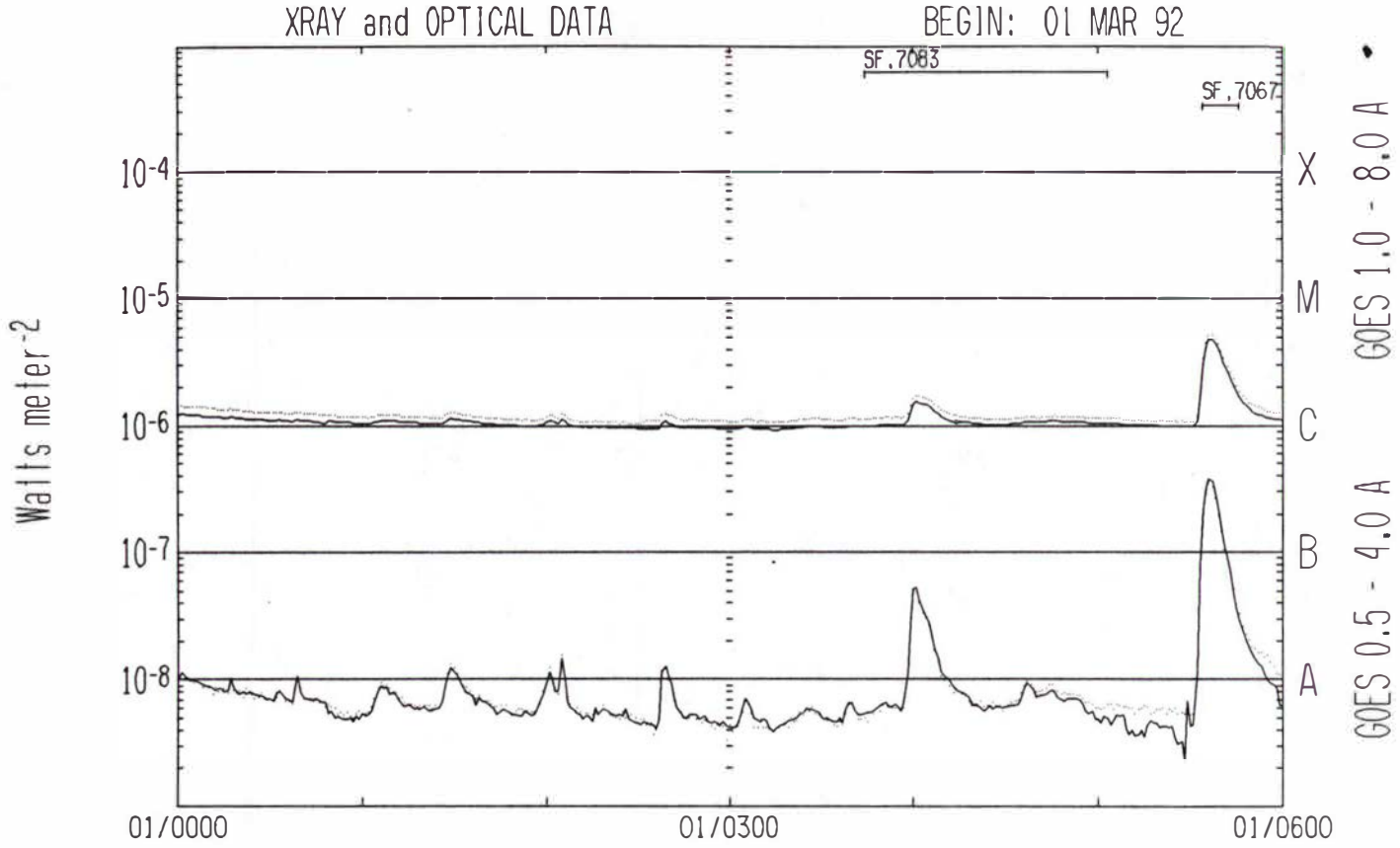
1/ 3/92 43236.133 s

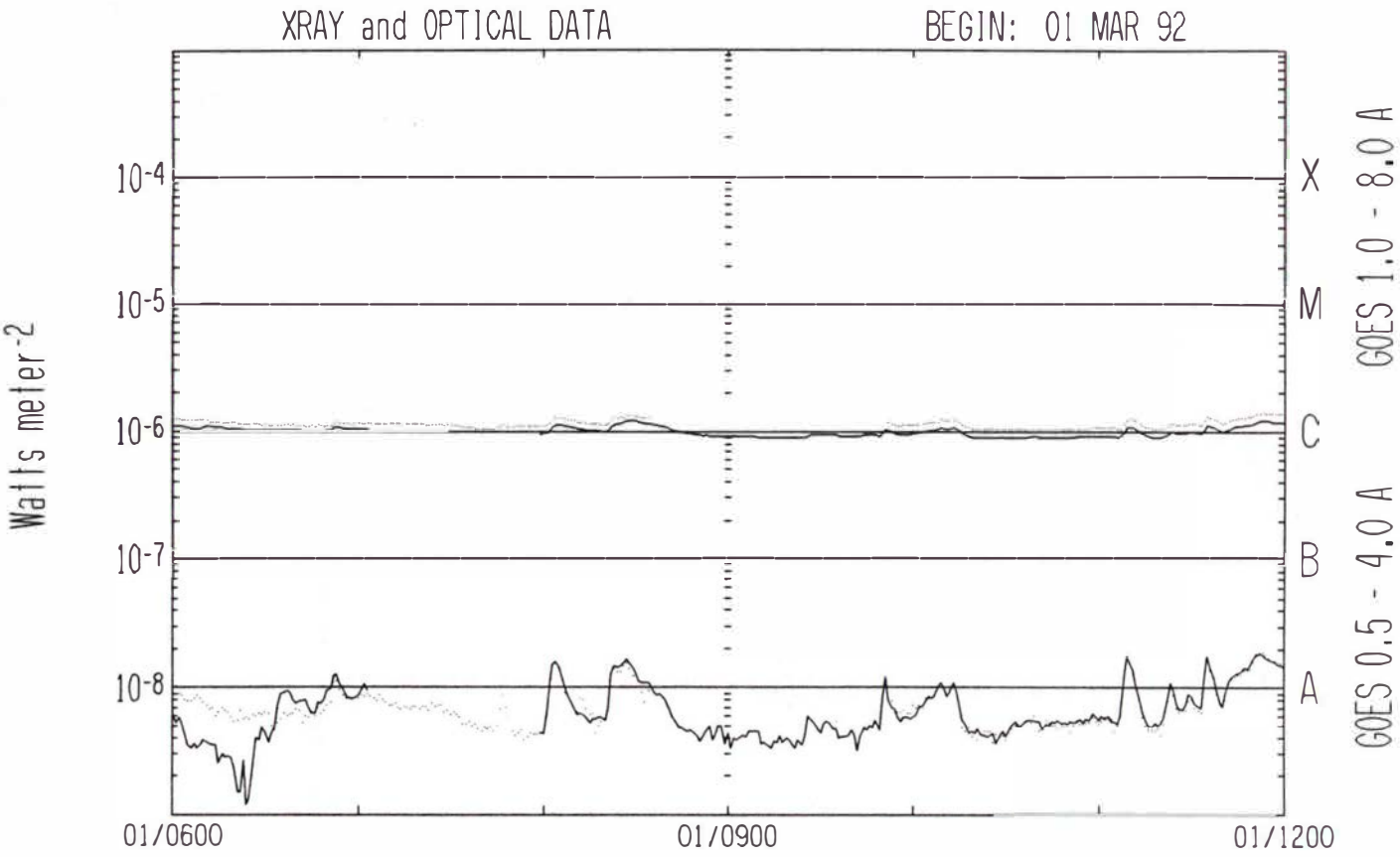
0.250 S INTERVALS REGROUPED BY 2

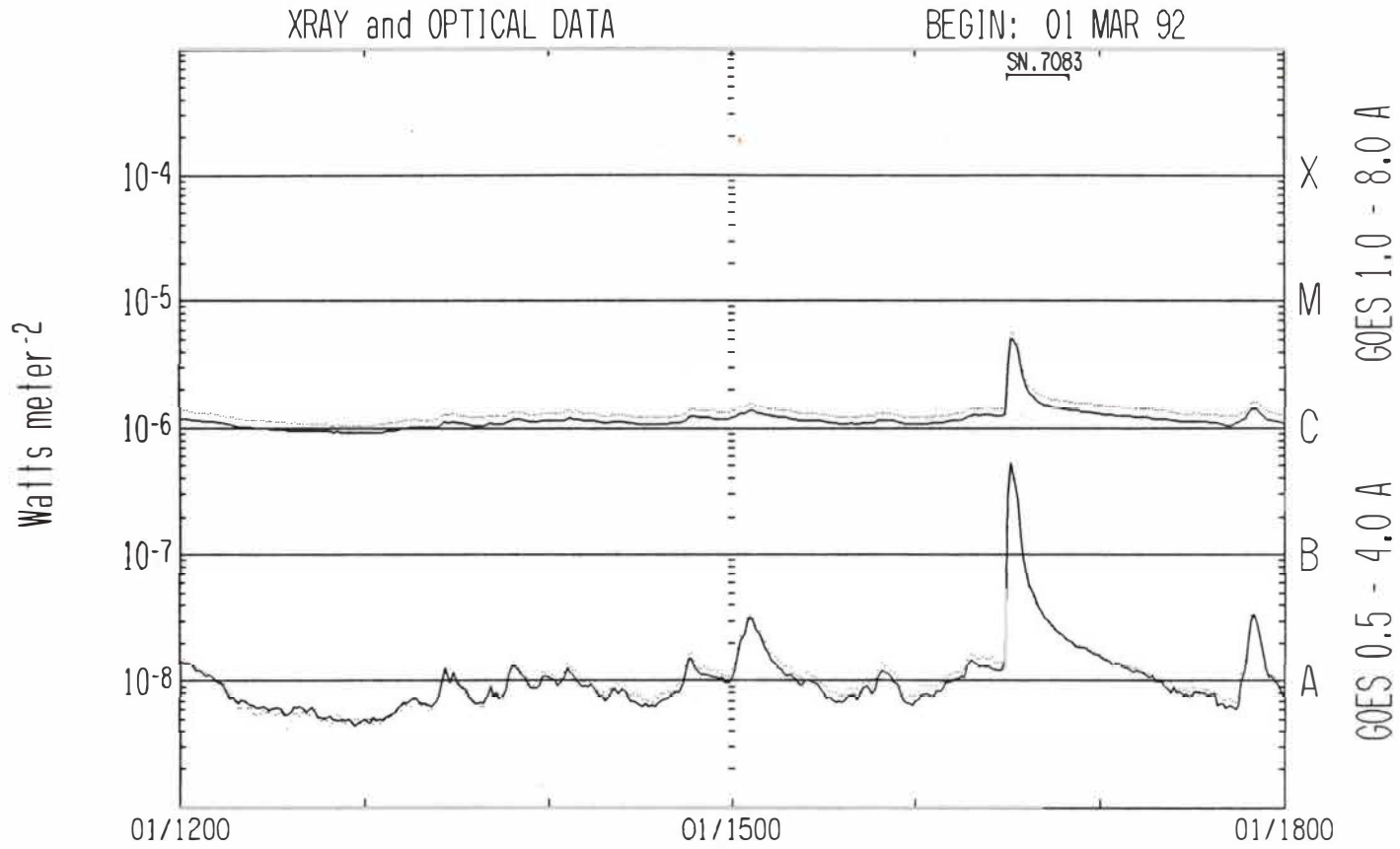
0- 0 keV

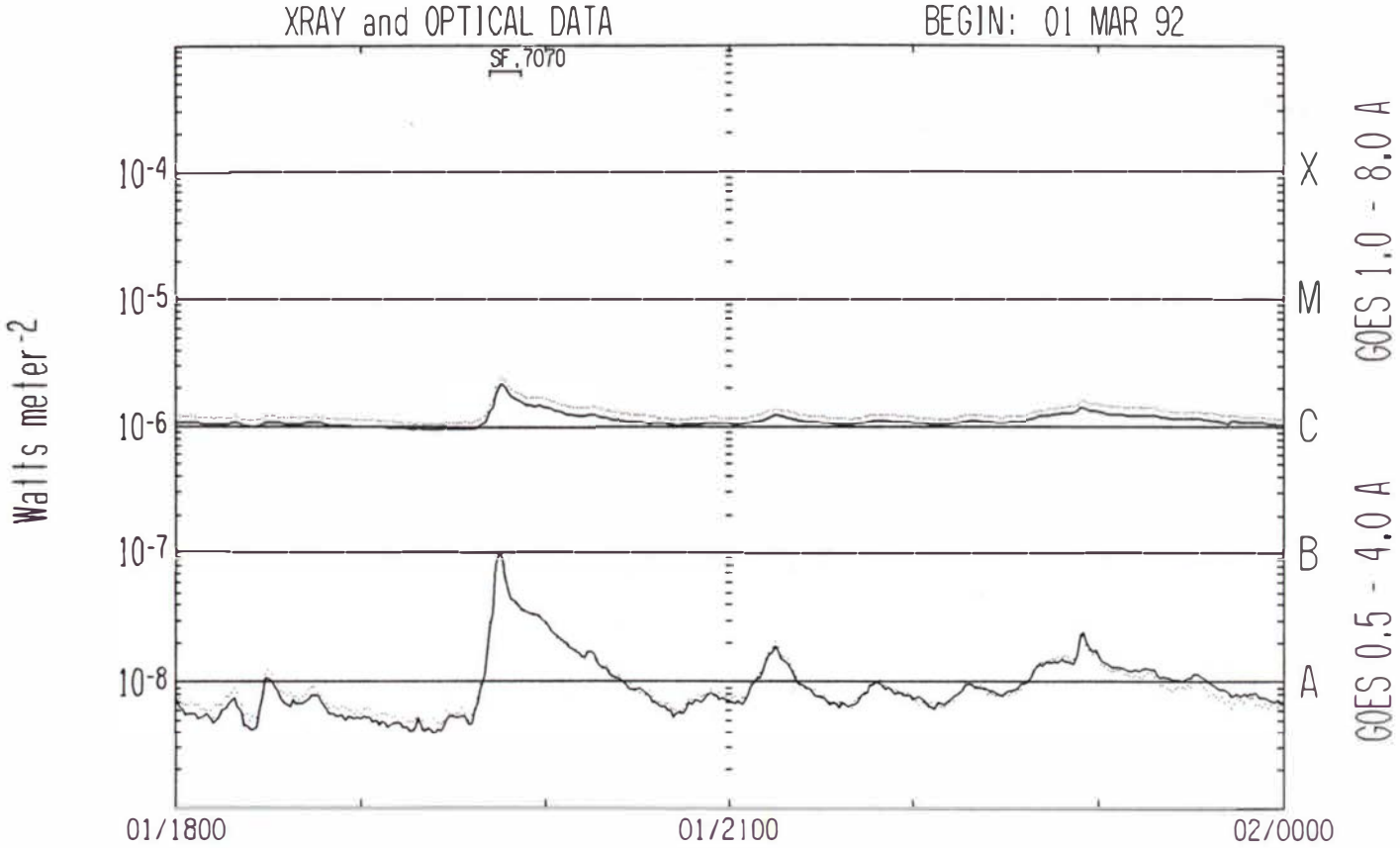



BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/01
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1746 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

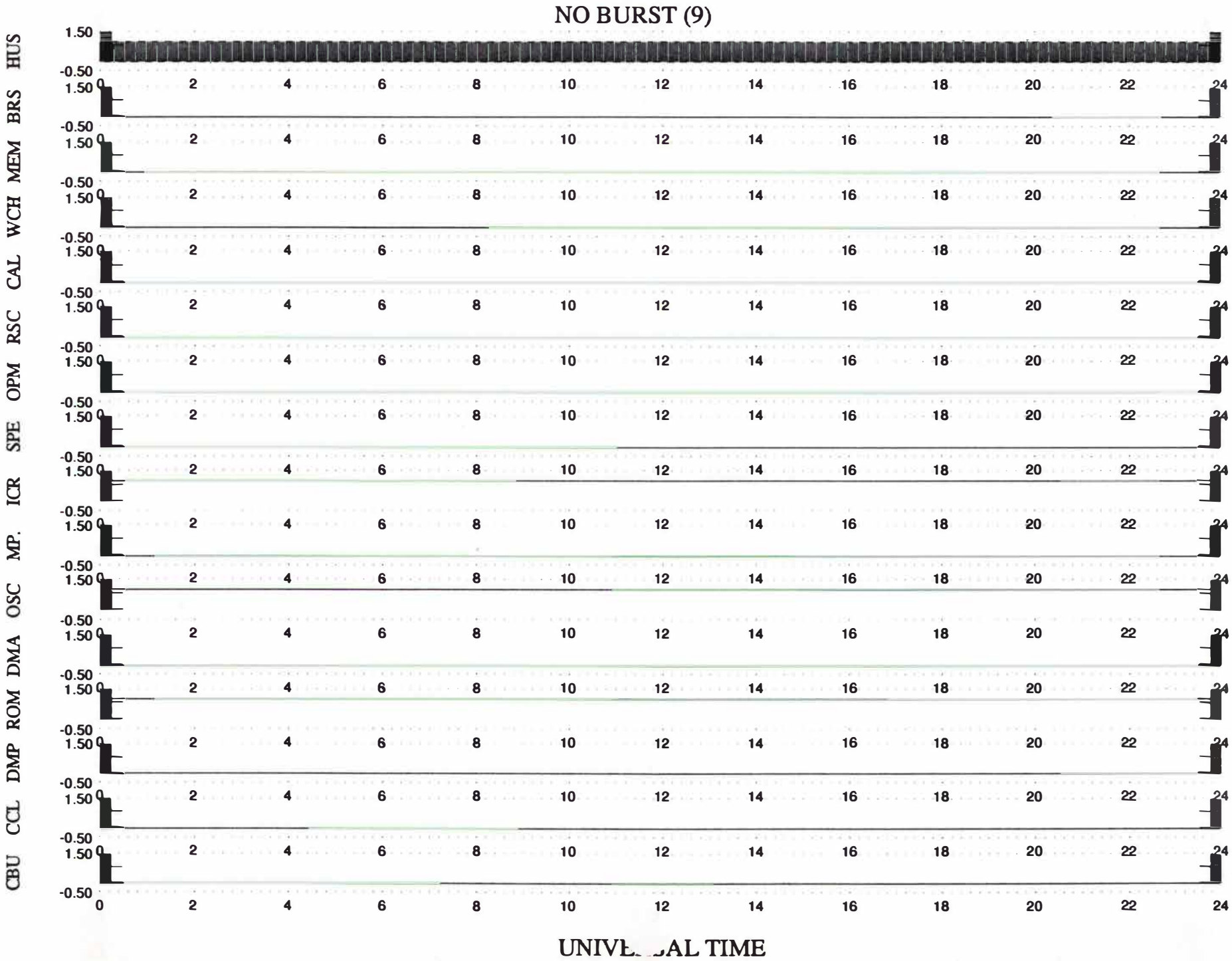

XRAY and OPTICAL DATA
BEGIN: 01 MAR 92
SF.7083
SF.7067
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
01/0000
01/0300
01/0600


XRAY and OPTICAL DATA
BEGIN: 01 MAR 92
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
01/0600
01/0900
01/1200


XRAY and OPTICAL DATA
BEGIN: 01 MAR 92
SN.7083
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
01/1200
01/1500
01/1800

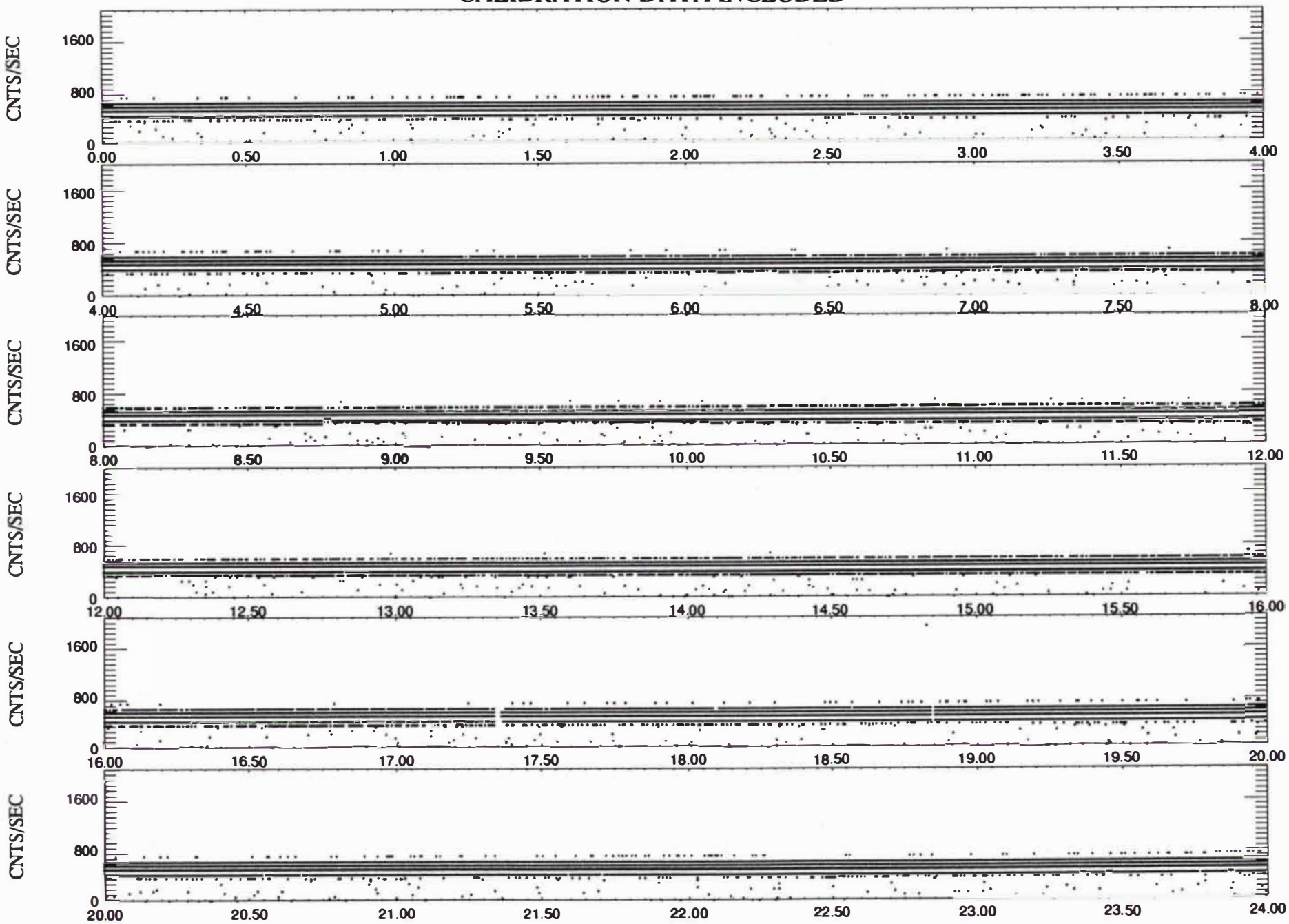

XRAY and OPTICAL DATA
BEGIN: 01 MAR 92
SF.7070
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
01/1800
01/2100
02/0000

HUS MODES EDR day 61, year 1992 to day 61, year 1992 4/15/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 61, year 1992 to day 61, year 1992 4/15/92

CALIBRATION DATA INCLUDED



UNIV. AL TIME

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          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST #  1458
EVENT OF 1992 MAR  2 DAY OF YEAR= 62
EVENT CROSSING TIME AT BATSE     :   884. S. OR 00:14:44.1
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 122.100  -63.800
EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  2/ 3/  92 IS:
RA=  158.514 DEC=    8.939 DIST=    4.412 AU
BATSE-ULYSSES DISTANCE =  660107008. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=102.21 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -465.84 SECS.
CROSSING TIME AT ULYSSES    IS   418. S. OR   00:06:58 +/-  416.55 SECONDS
```

NO - this is a ~ 50-80s long event - our weak RI must be unrelated

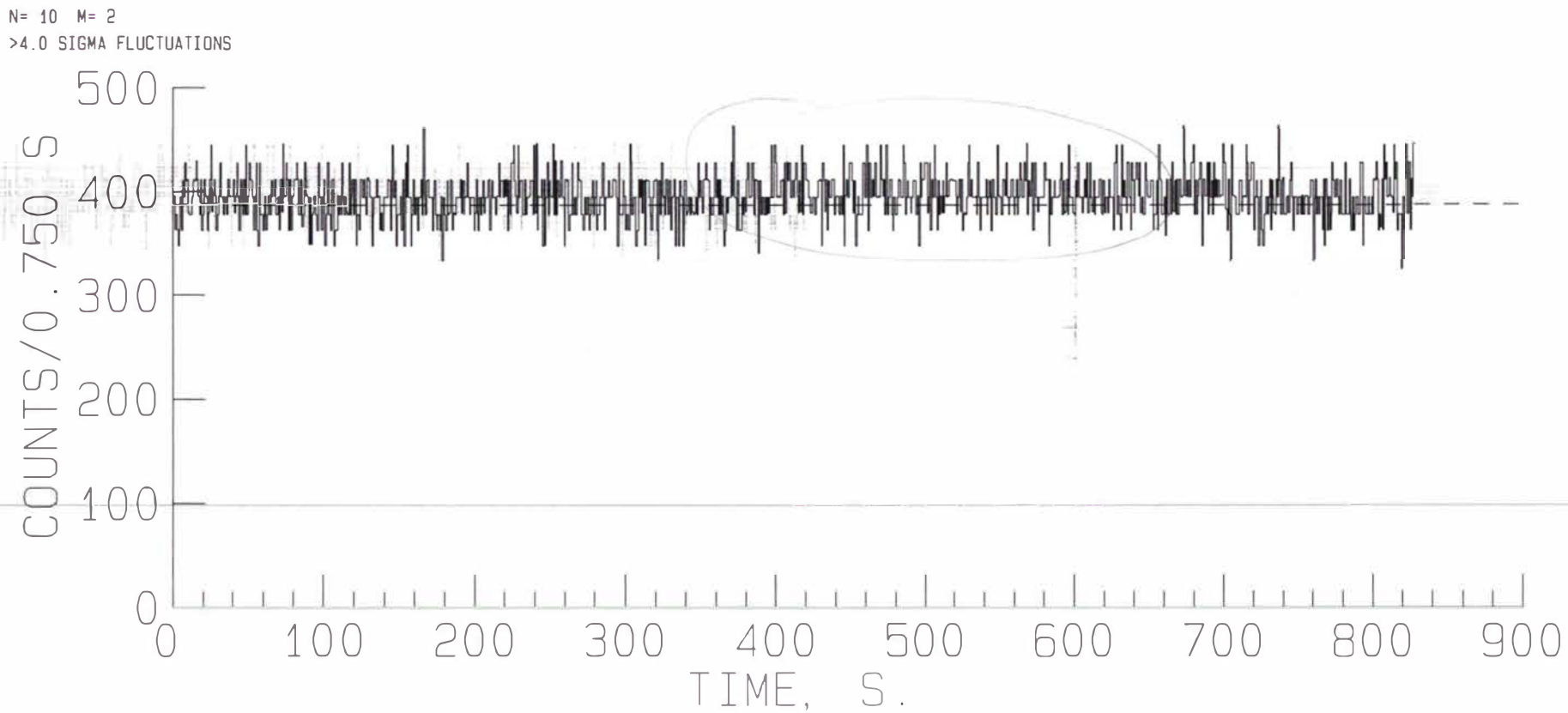
14/ 4/93

ULYSSES RT

2/ 3/92 0.103 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST #  1459
EVENT OF 1992 MAR  2 DAY OF YEAR= 62
EVENT CROSSING TIME AT BATSE      : 22585. S. OR 06:16:24.9
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 345.700   17.200
EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  2/ 3/  92 IS:
RA=  158.514 DEC=     8.939 DIST=     4.412 AU
BATSE-ULYSSES DISTANCE =  660107008. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 27.09 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1960.37 SECS.
CROSSING TIME AT ULYSSES     IS 24545. S. OR   06:49:05 +/-  253.84 SECONDS
```



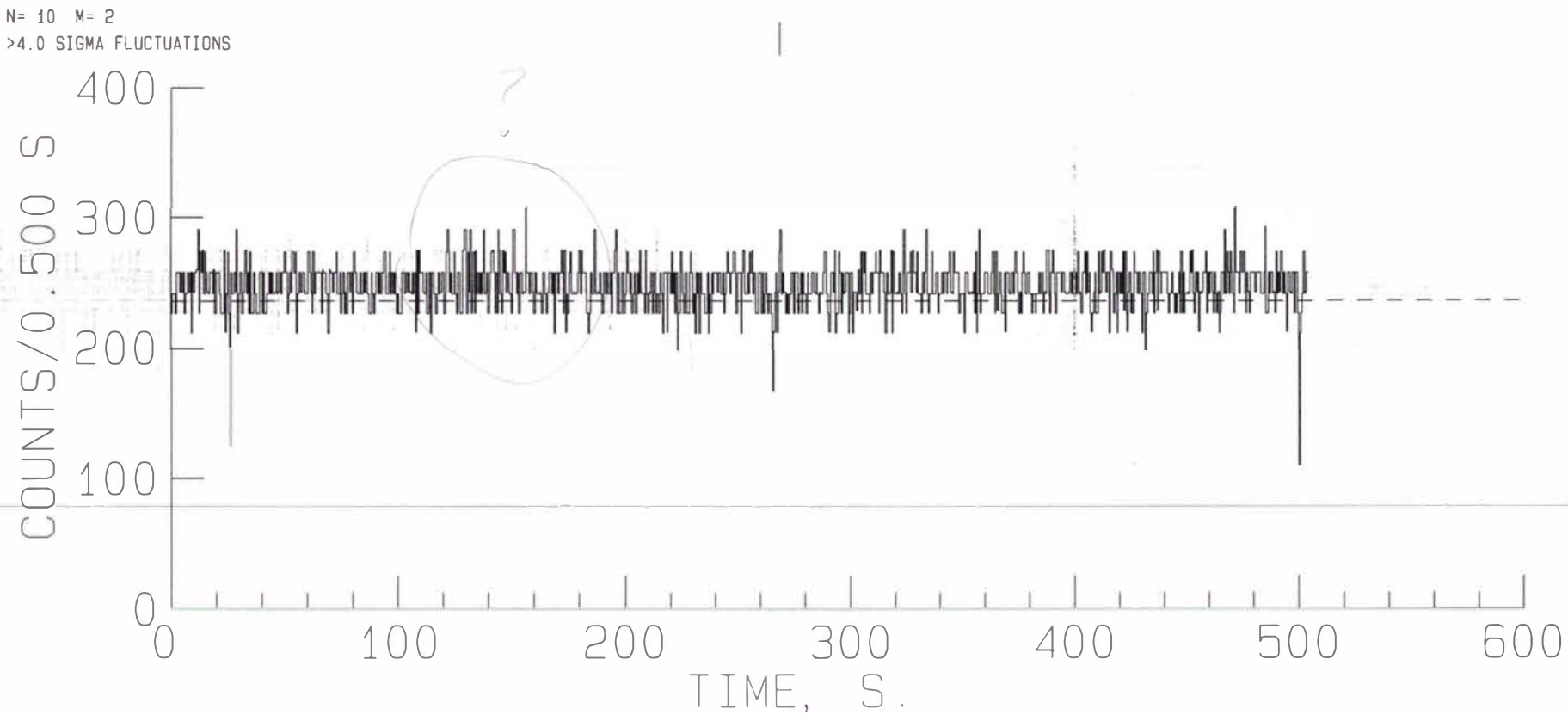
14/ 4/93

ULYSSES RT

2/ 3/92 24300.025 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV



FAXCOVER

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DATE: Nov 23, 1993 Page 1 of 2

From: Alberto J. CASTRO-TIRADO

TO : Kevin HURLEY

FAX no
Name : 510 643 8640

Dear Kevin.

Thank you for you answer. Enclosed I send you the list of CONFIRMED 69 GRBs plus 14 CANDIDATES. Now you may fill the WATCH response in the Master GRB list for WATCH-GRANAT in the period 1/1/90 – 25/9/92.

GRB 920321 (at 13:00:44) is a ≤ 1 s burst in WATCH data, so I think it could be the same event seen by Ulysses. We do not have better time resolution.

The other repeater is 900126/920311. The two error boxes are separated by 1°, at ~ α = 08 GG δ = −38 (1450.0)

Kind regards, Alberto

First GRANAT/WATCH Gamma-Ray Burst Catalogue

[illegible] (yymmdd)	U.T. (hh:mm:ss)
900118	17:40:48
900120	20:37:33
900123a	01:42:13
900123b	18:44:17
900126	18:04:27
900222	11:56:35
900308	09:32:02
900327	10:24:28
900404	17:54:36
900413	10:11:21
900708a	11:30:21
900708b	18:44:53
900901	01:35:47
900925	20:25:22
900929	01:49:18
901009	00:15:46
901015b	08:44:48
901027	04:21:07
901112	14:57:37
901116	01:42:10
901119	18:08:32
901219	21:52:43
910117	00:57:51
910122	15:13:40
910202	20:57:35
910219	11:45:25
910310	13:02:06
910312	12:43:09
910425	00:37:52
910517	05:02:20
910627	04:29:24
910717a	04:44:07
910717b	13:07:25
910721	19:30:12
910723	14:06:20
910814	19:14:31
910815	14:24:32
910817	17:09:26
910818	13:44:46
910821	10:33:36
910901	05:24:14
910925	03:35:36
910927	23:26:53
911016	11:03:31
911018	05:32:00
911022	04:14:58
911202	20:28:51
911205	23:04:41
911209	18:36:00
920105	17:41:17
920116	18:30:35
920130	00:29:47
920302	06:16:54
920307	00:18:06
920311	02:20:20
920325	17:17:37
920615	14:24:56
920714	13:04:52
920718a	14:41:16
920718b	21:32:47
920720	05:53:04
920723a	01:00:44
920723b	20:03:11
920814	06:10:25
920902	00:29:04
920903a	01:36:15
920903b	23:28:52
920925a	19:40:44
920925b	20:45:14
920925c	22:46:14

CANDIDATES

900415	06:20:58
900603	06:20:50
900616	03:56:50
900618	23:12:22
900625	22:04:16
900628	11:17:53
900815	11:35:12
900914	04:46:40
901015a	02:42:16
910408	22:24:18
910414	07:38:27
910816	01:57:40
920314	05:48:32
920721	13:00:49
920721	06:17:25

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

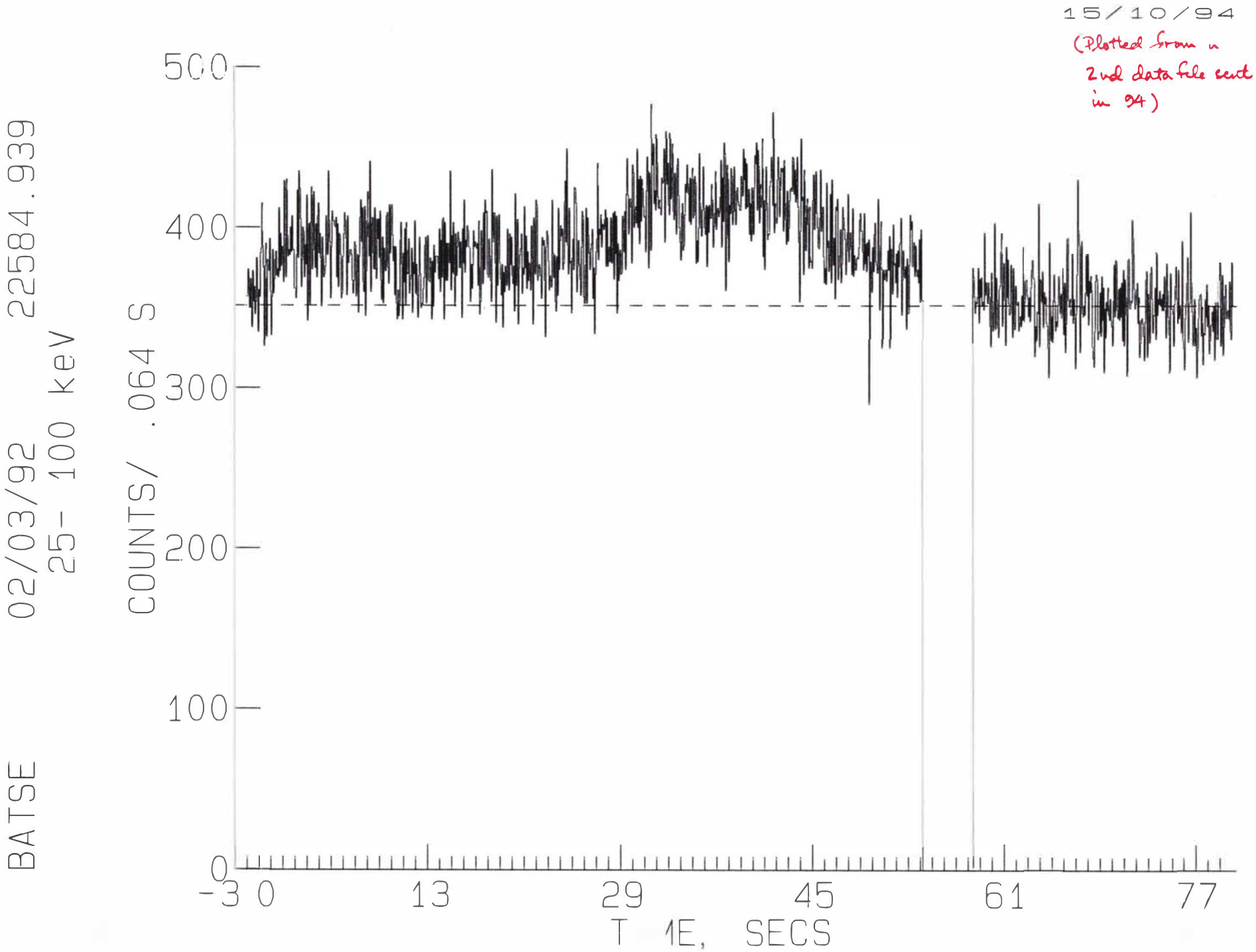
REGARDS,

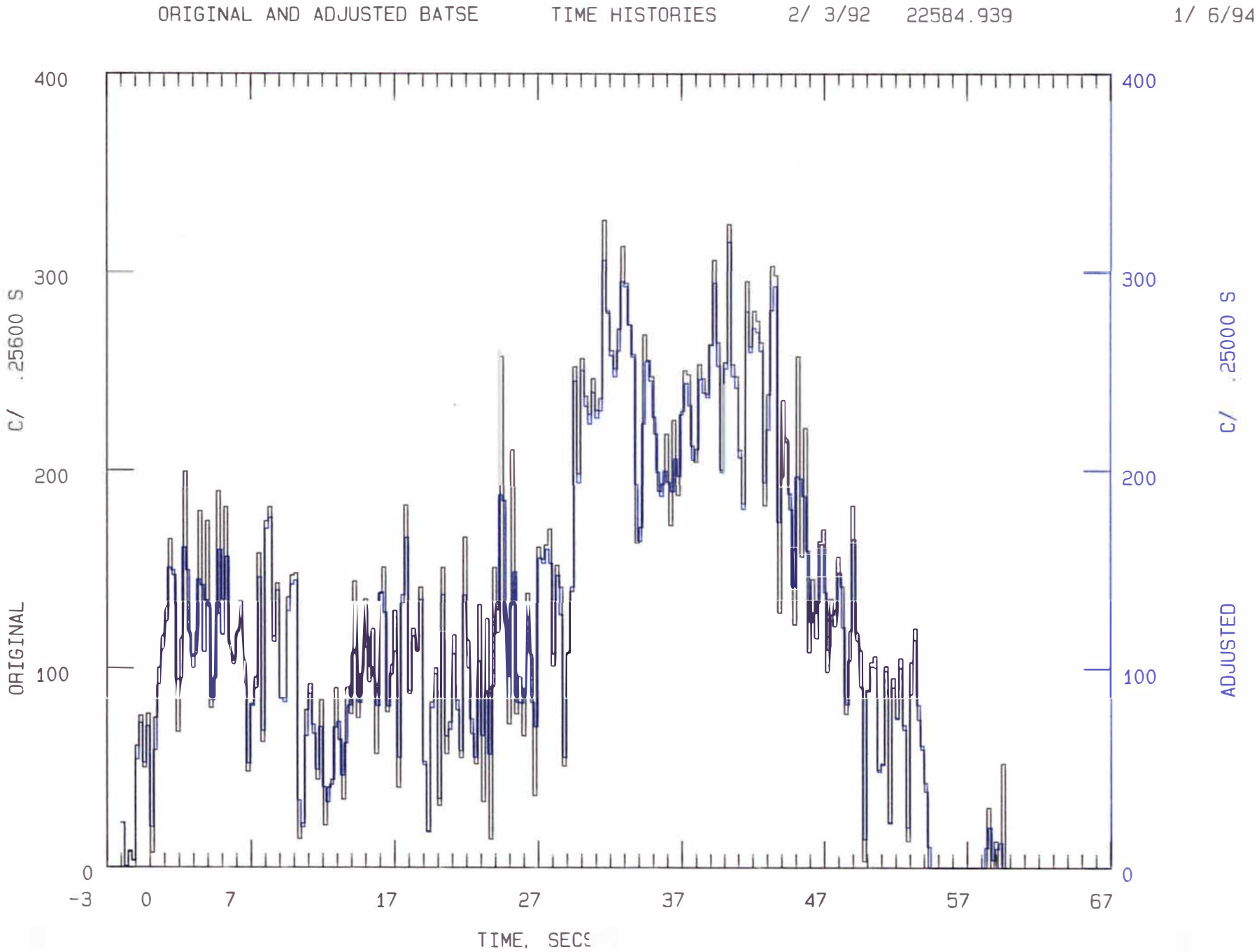
RAY

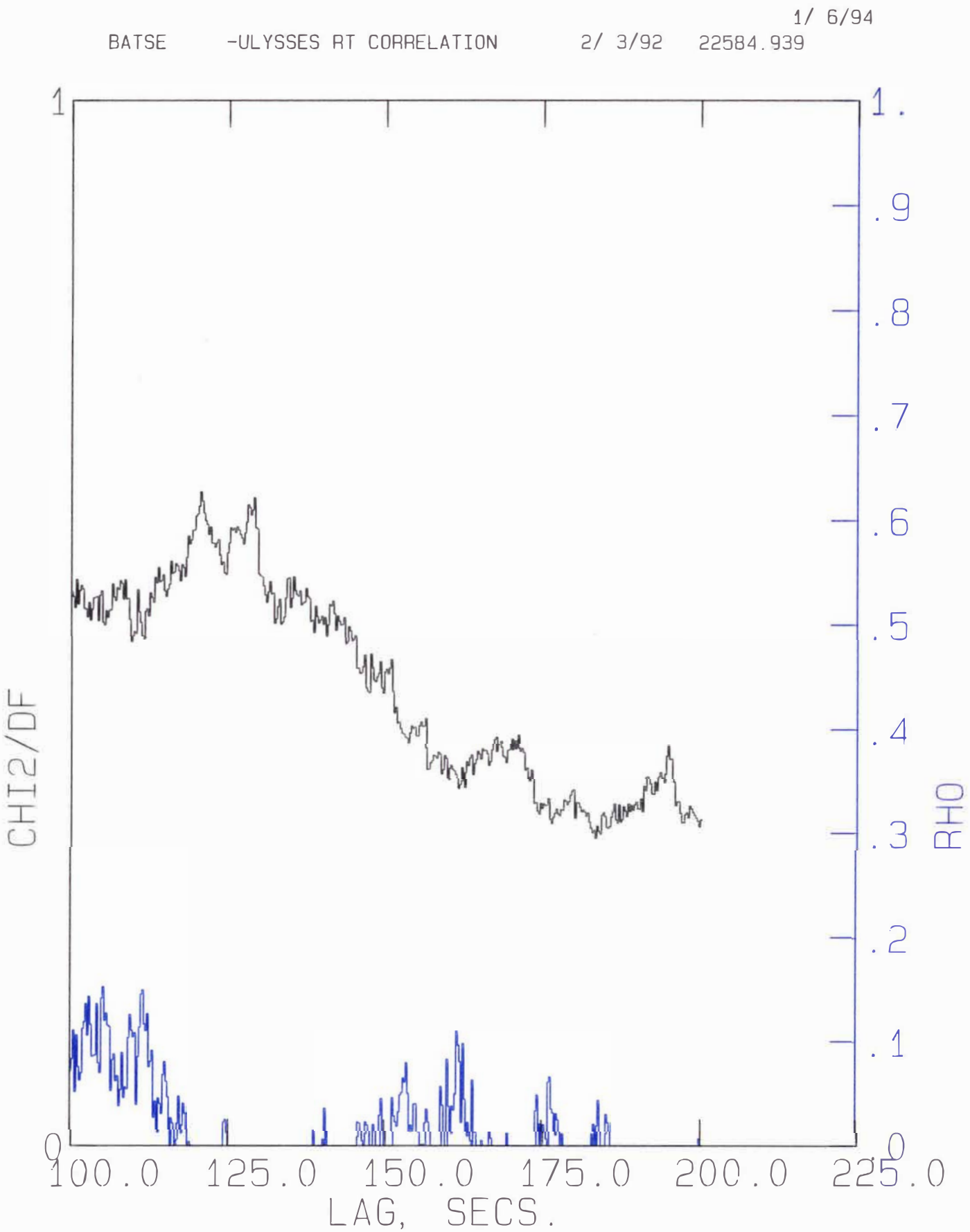
From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-mail11d v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

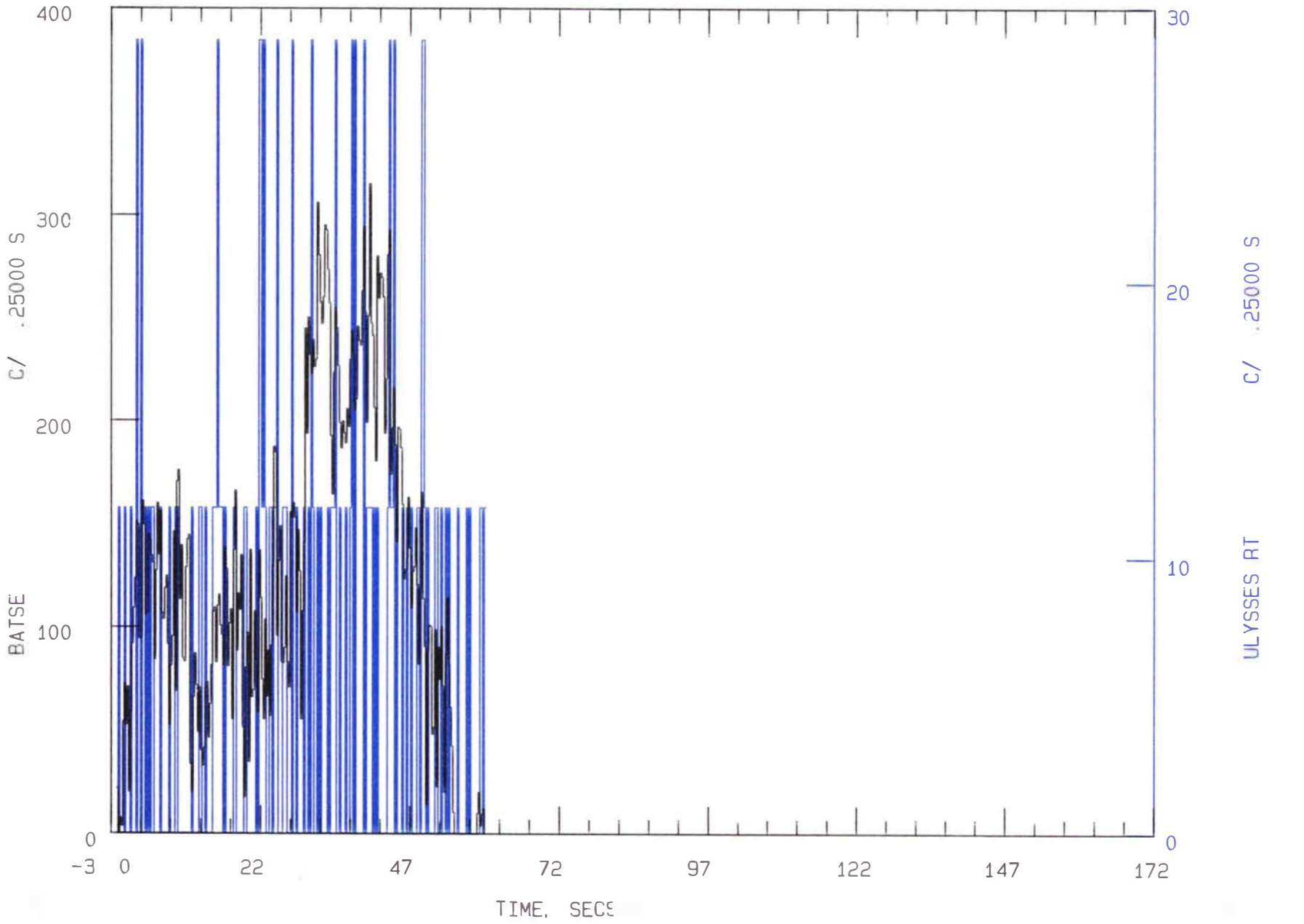
KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF
RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

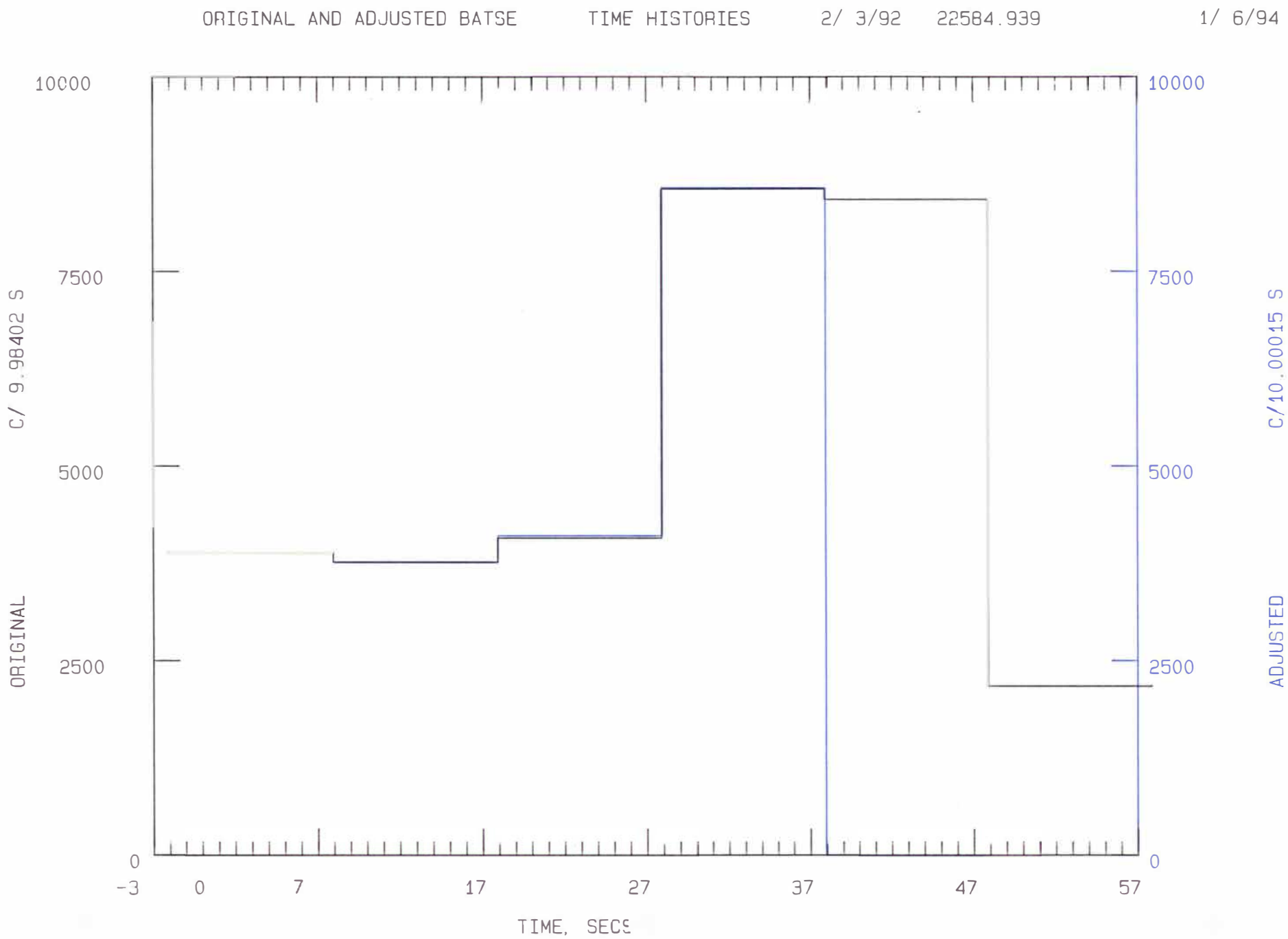
DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O

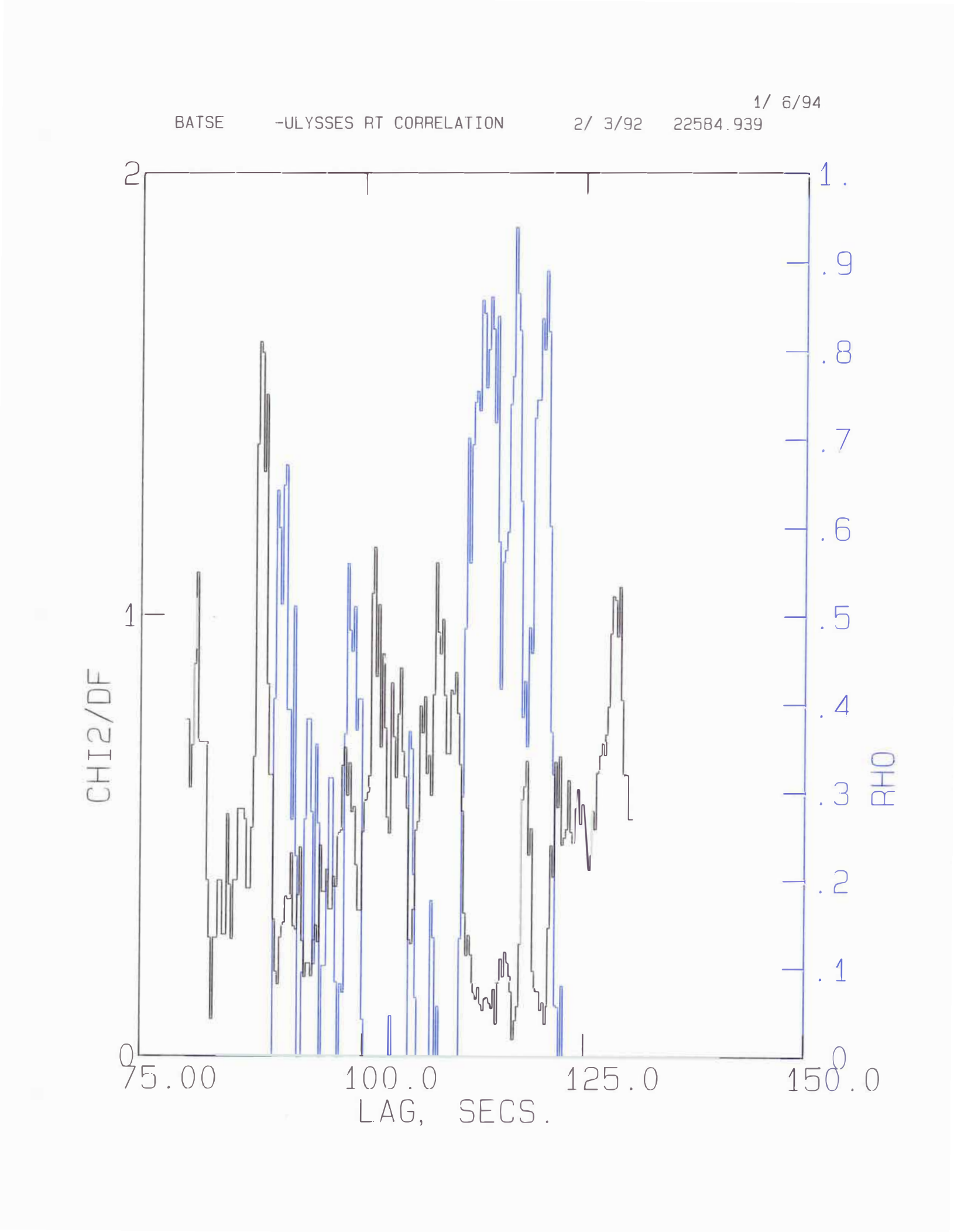

15/10/94
(Plotted from a 2nd data file sent in 94)
BATSE 02/03/92 22584.939
25- 100 keV
COUNTS/ .064 S
500
400
300
200
100
0
-30
13
29
45
61
77
TIME, SECS

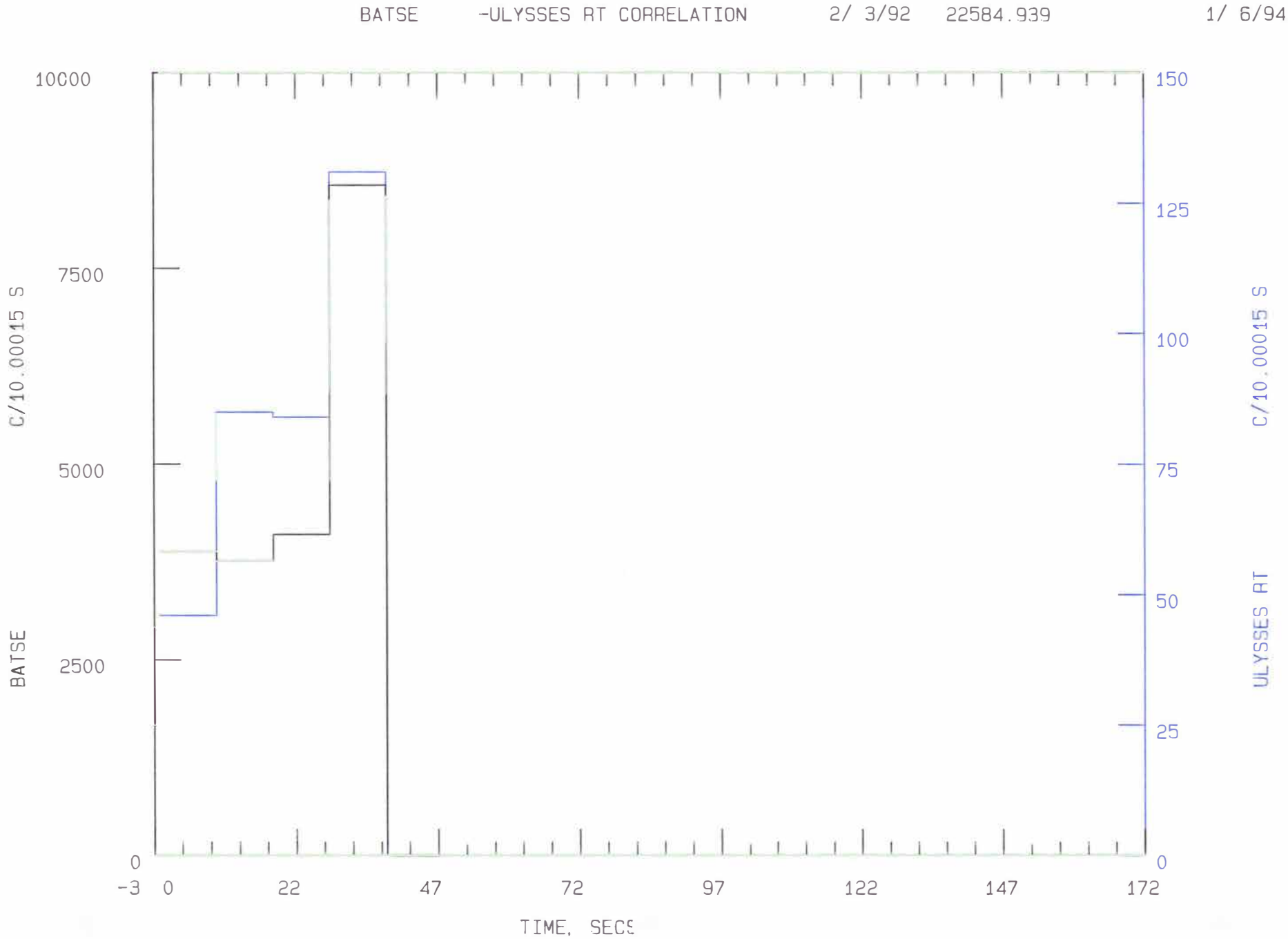

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 2/ 3/92 22584.939 1/ 6/94
400
300
200
100
0
C/ .25600 S
ORIGINAL
400
300
200
100
0
C/ .25000 S
ADJUSTED
-3
0
7
17
27
37
47
57
67
TIME, SECS

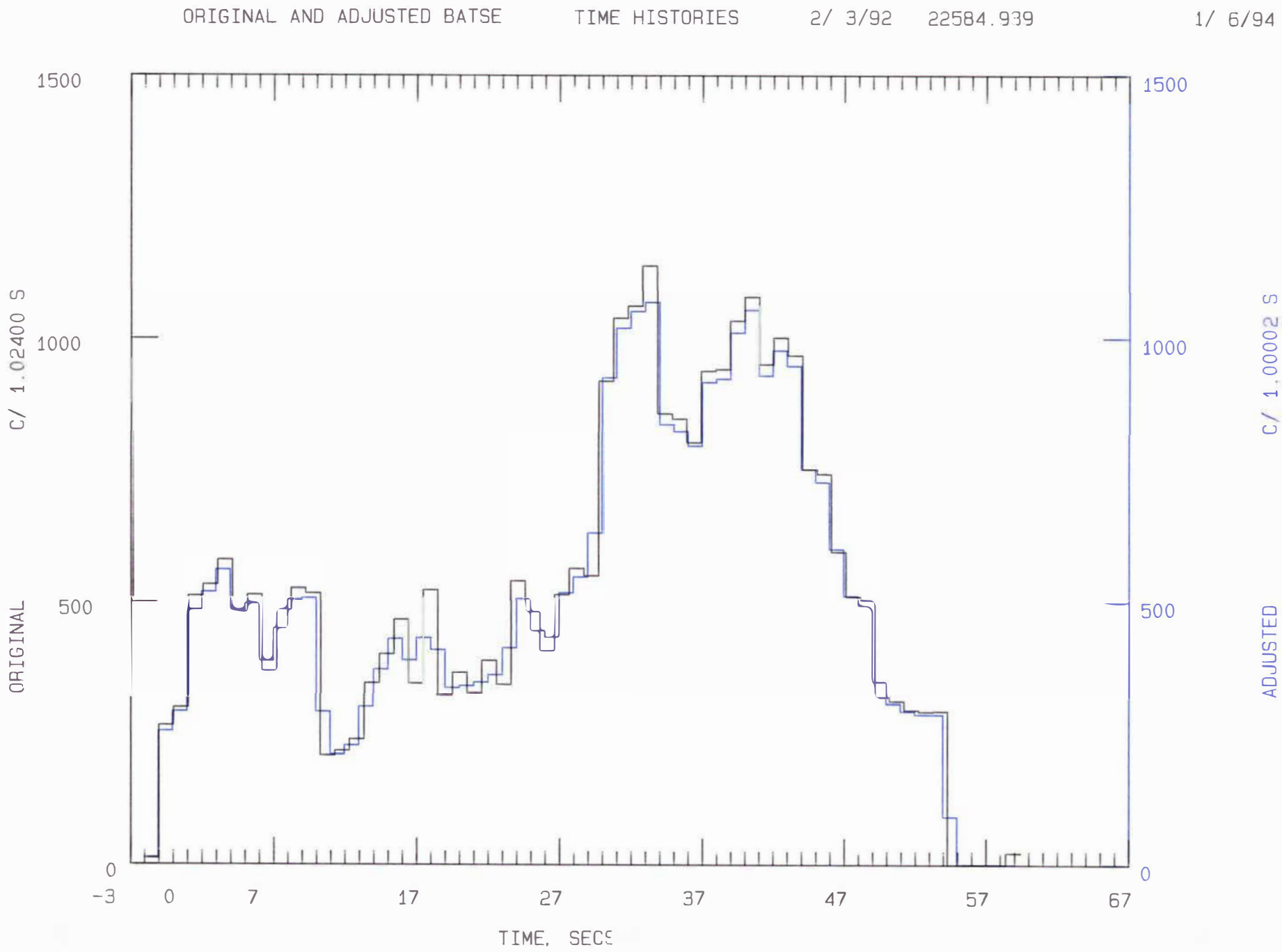

1/ 6/94
BATSE -ULYSSES RT CORRELATION 2/ 3/92 22584.939
1
0
CHI2/DF
1.
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
RHO
100.0
125.0
150.0
175.0
200.0
225.0
LAG, SECS.

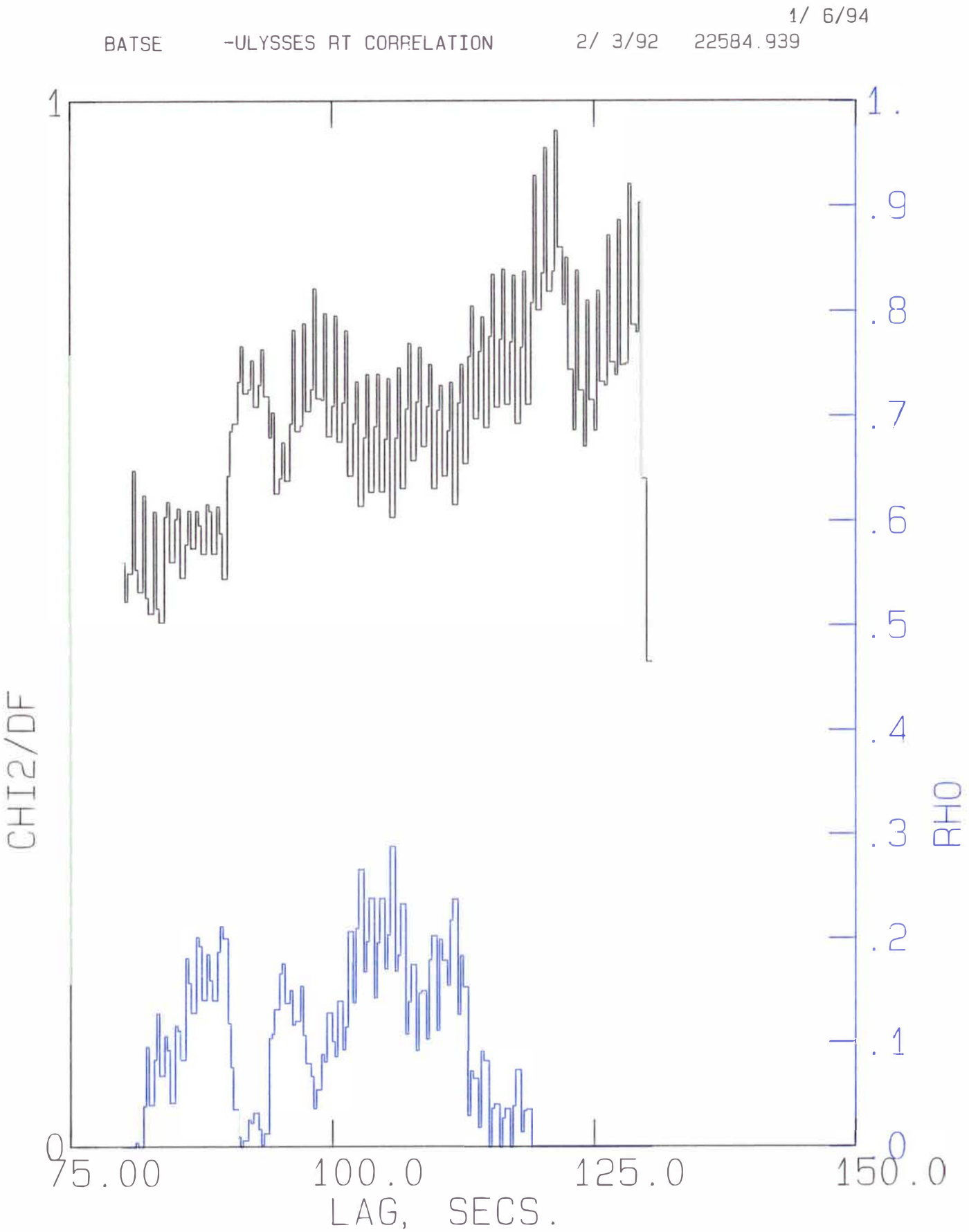

BATSE -ULYSSES RT CORRELATION 2/ 3/92 22584.939 1/ 6/94
400
300
200
100
0
-3
0
22
47
72
97
122
147
172
30
20
10
0
C/ .25000 S
BATSE
C/ .25000 S
ULYSSES RT
TIME, SECS

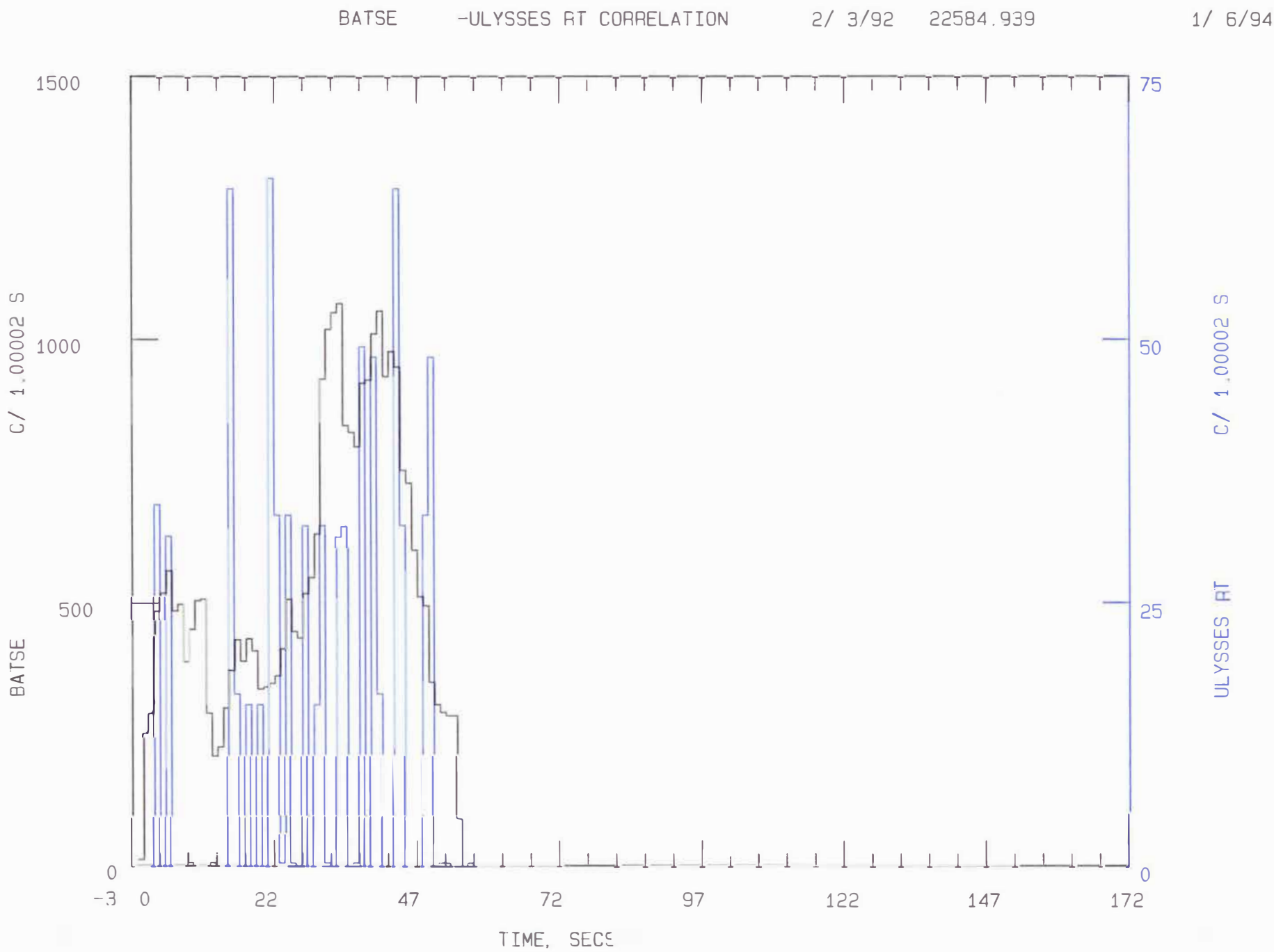

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 2/ 3/92 22584.939 1/ 6/94
10000
7500
5000
2500
0
C/ 9.98402 S
ORIGINAL
10000
7500
5000
2500
0
C/10.00015 S
ADJUSTED
-3
0
7
17
27
37
47
57
TIME, SECS


1/ 6/94
BATSE -ULYSSES RT CORRELATION 2/ 3/92 22584.939
2
1
0
CHI2/DF
1.
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
RHO
75.00
100.0
125.0
150.0
LAG, SECS.


BATSE -ULYSSES RT CORRELATION 2/ 3/92 22584.939 1/ 6/94
10000
7500
5000
2500
0
C/10.00015 S
BATSE
150
125
100
75
50
25
0
C/10.00015 S
ULYSSES RT
-3
0
22
47
72
97
122
147
172
TIME, SECS

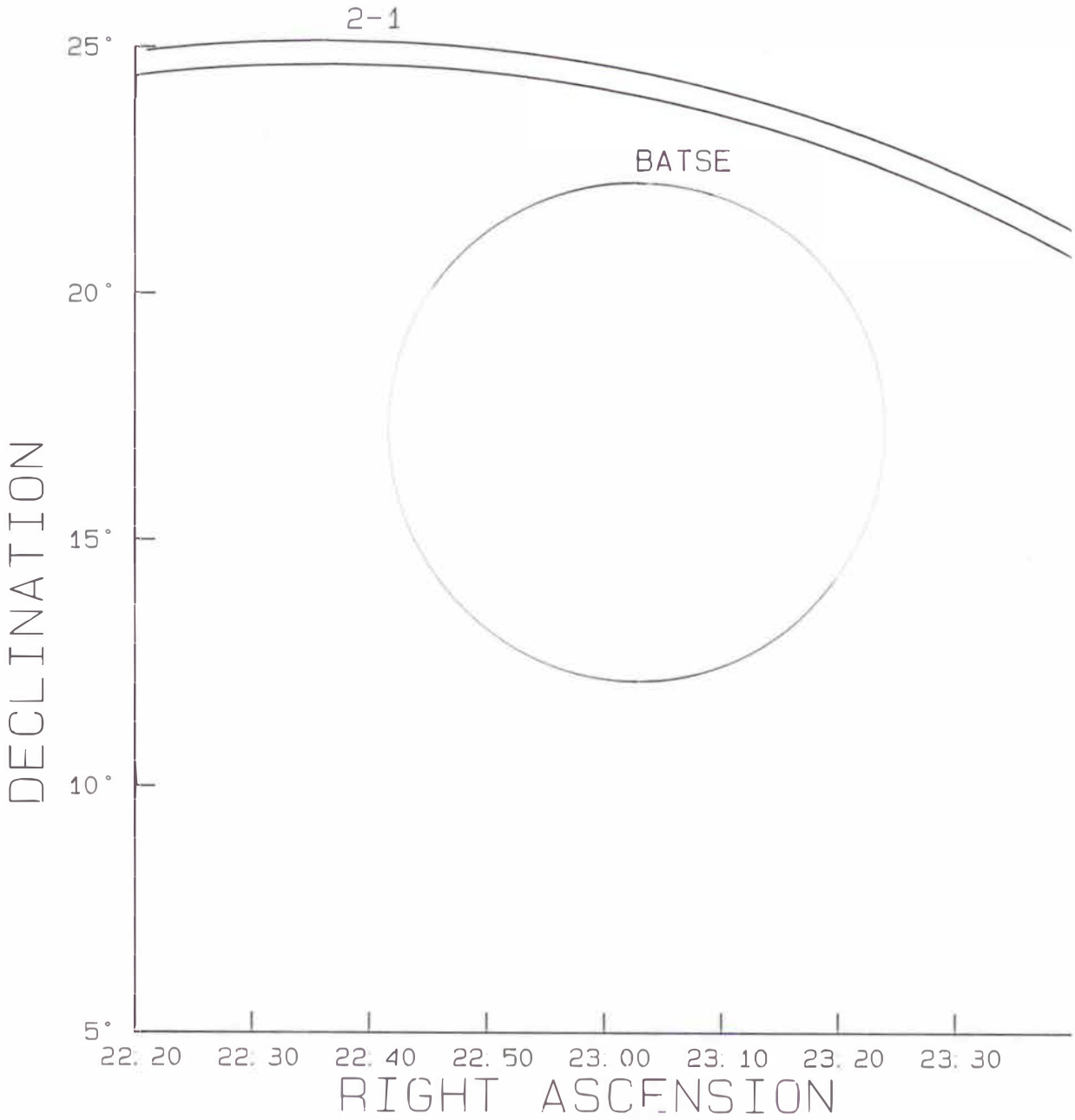

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 2/ 3/92 22584.939 1/ 6/94
1500
1000
500
0
ORIGINAL
C/ 1.02400 S
1500
1000
500
0
ADJUSTED
C/ 1.00002 S
-3
0
7
17
27
37
47
57
67
TIME, SECS


1/ 6/94
BATSE -ULYSSES RT CORRELATION 2/ 3/92 22584.939
1
0
CHI2/DF
1.
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
RHO
75.00
100.0
125.0
150.0
LAG, SECS.

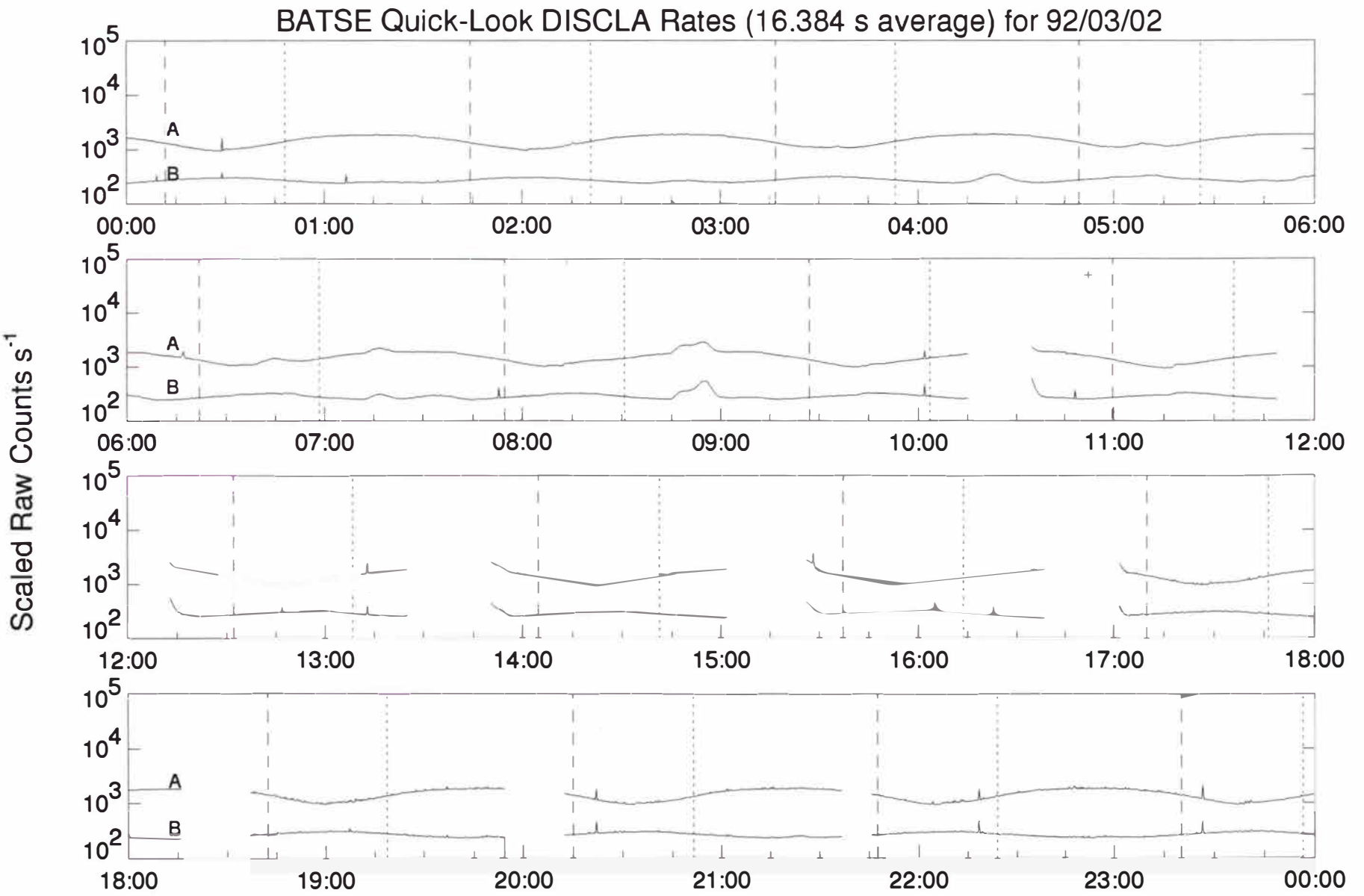

BATSE -ULYSSES RT CORRELATION 2/ 3/92 22584.939 1/ 6/94
1500
1000
500
0
C/ 1.00002 S
BATSE
75
50
25
0
C/ 1.00002 S
ULYSSES RT
-3
0
22
47
72
97
122
147
172
TIME, SECS

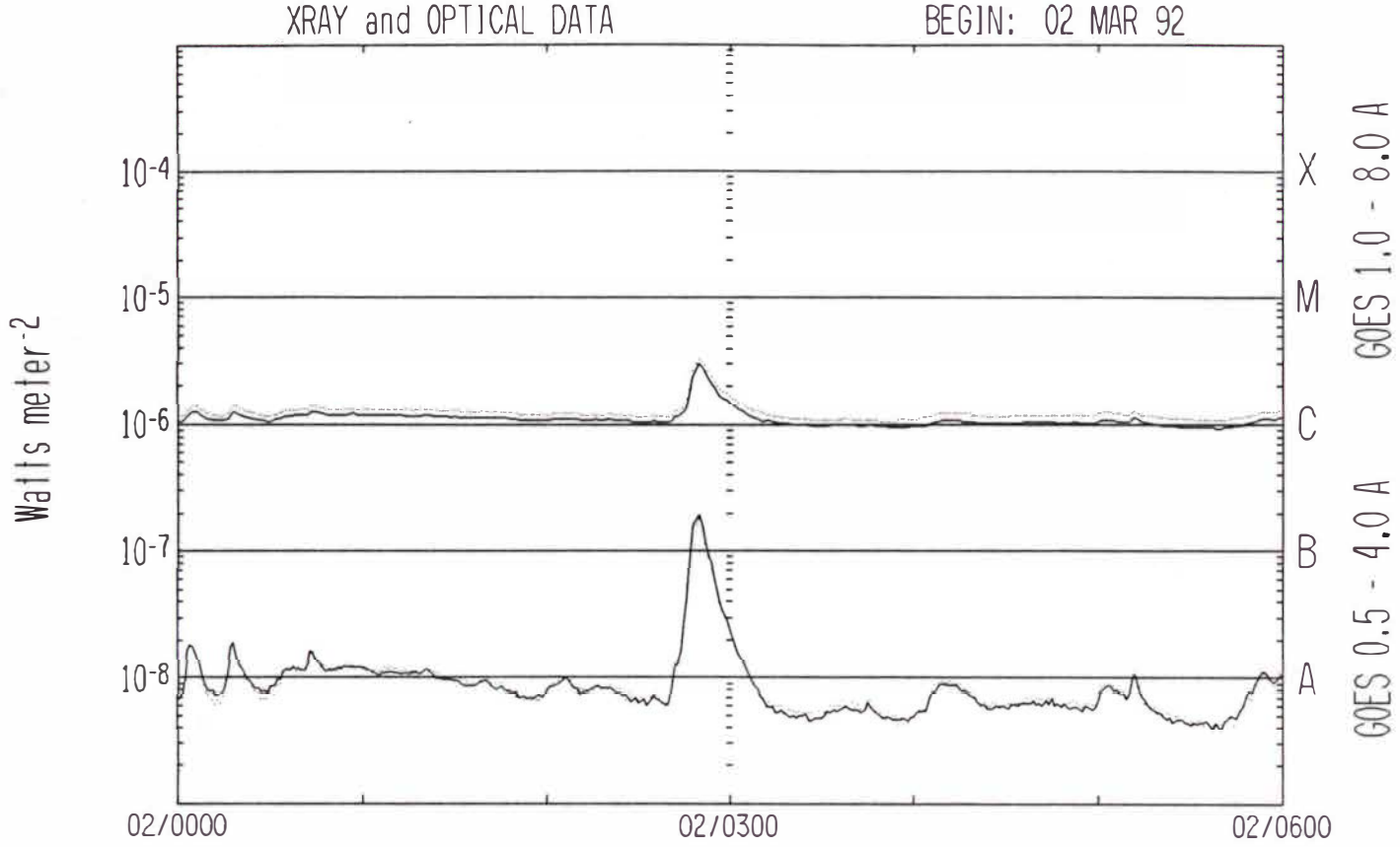
EVENT OF MAR 2, 1992 6:45

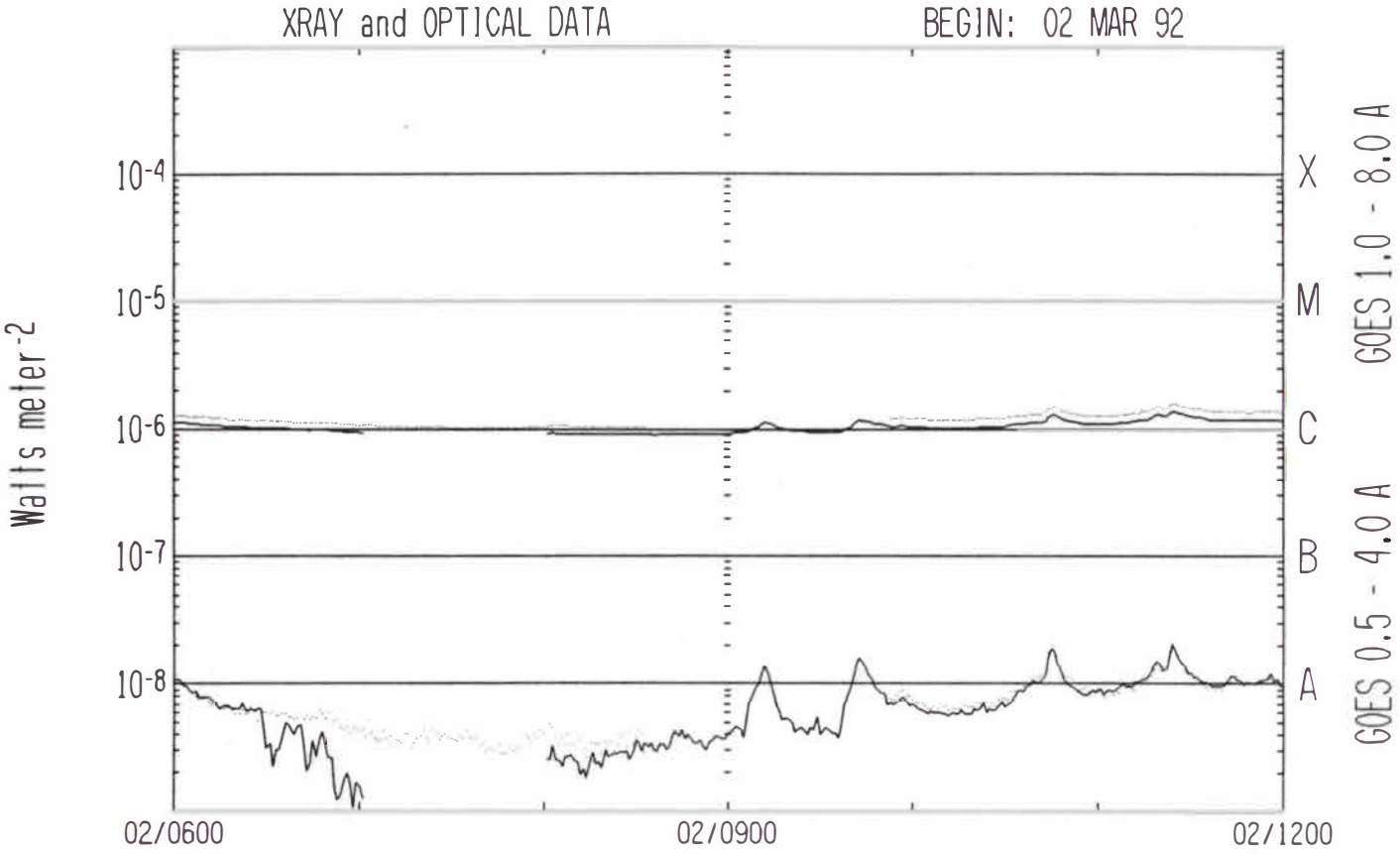
1/ 6/94

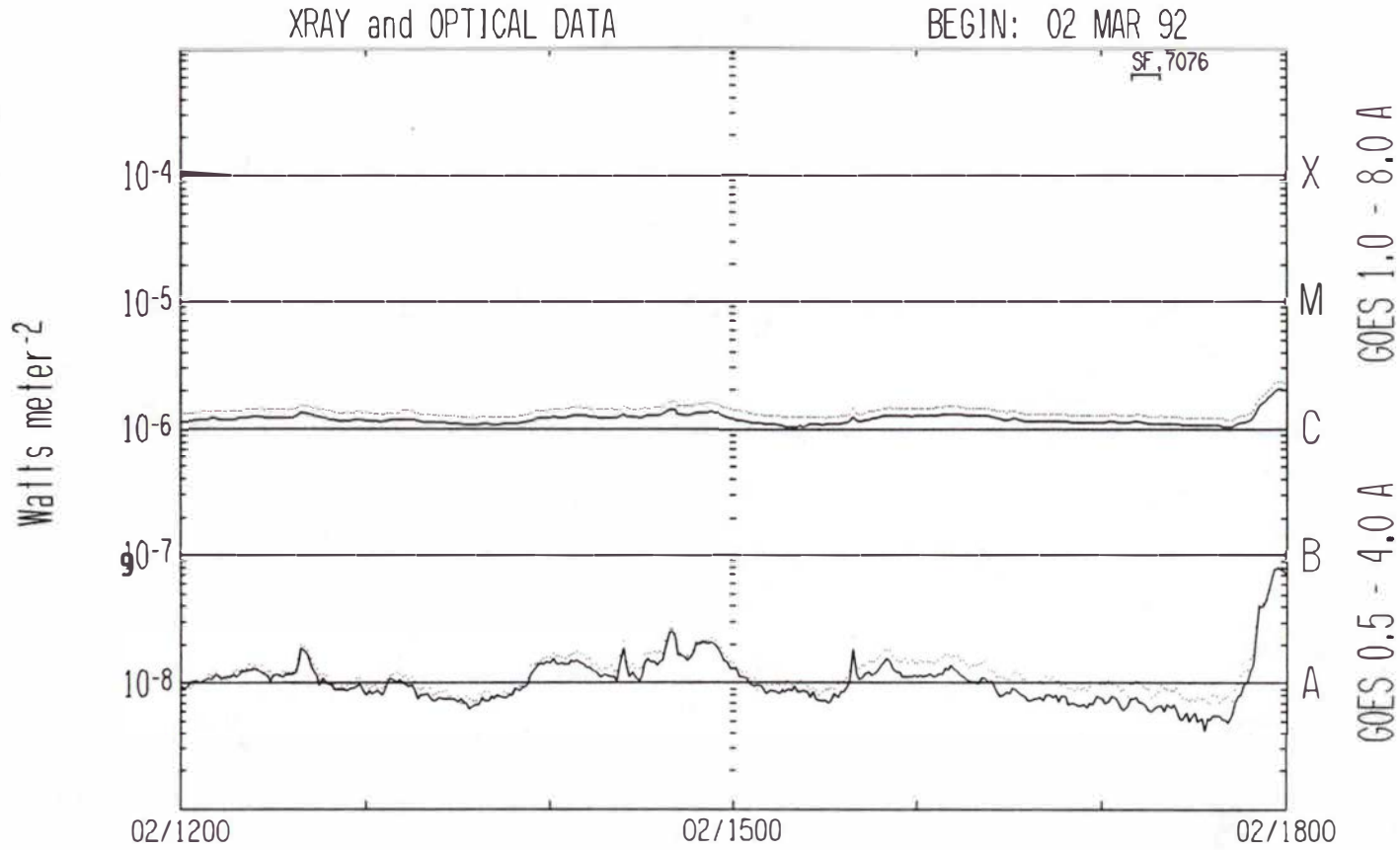


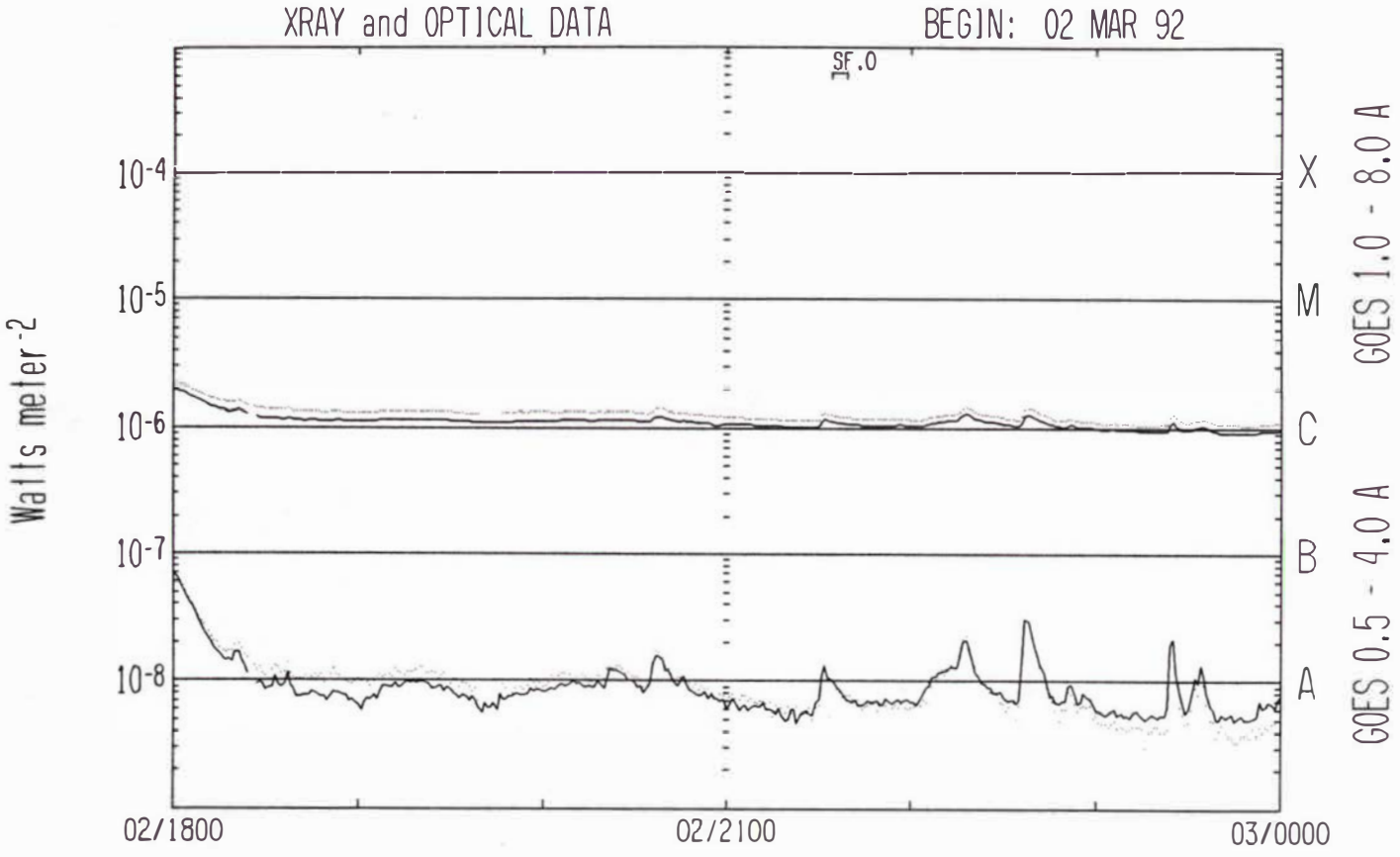
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/02
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1747 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare


XRAY and OPTICAL DATA
BEGIN: 02 MAR 92
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
02/0000
02/0300
02/0600

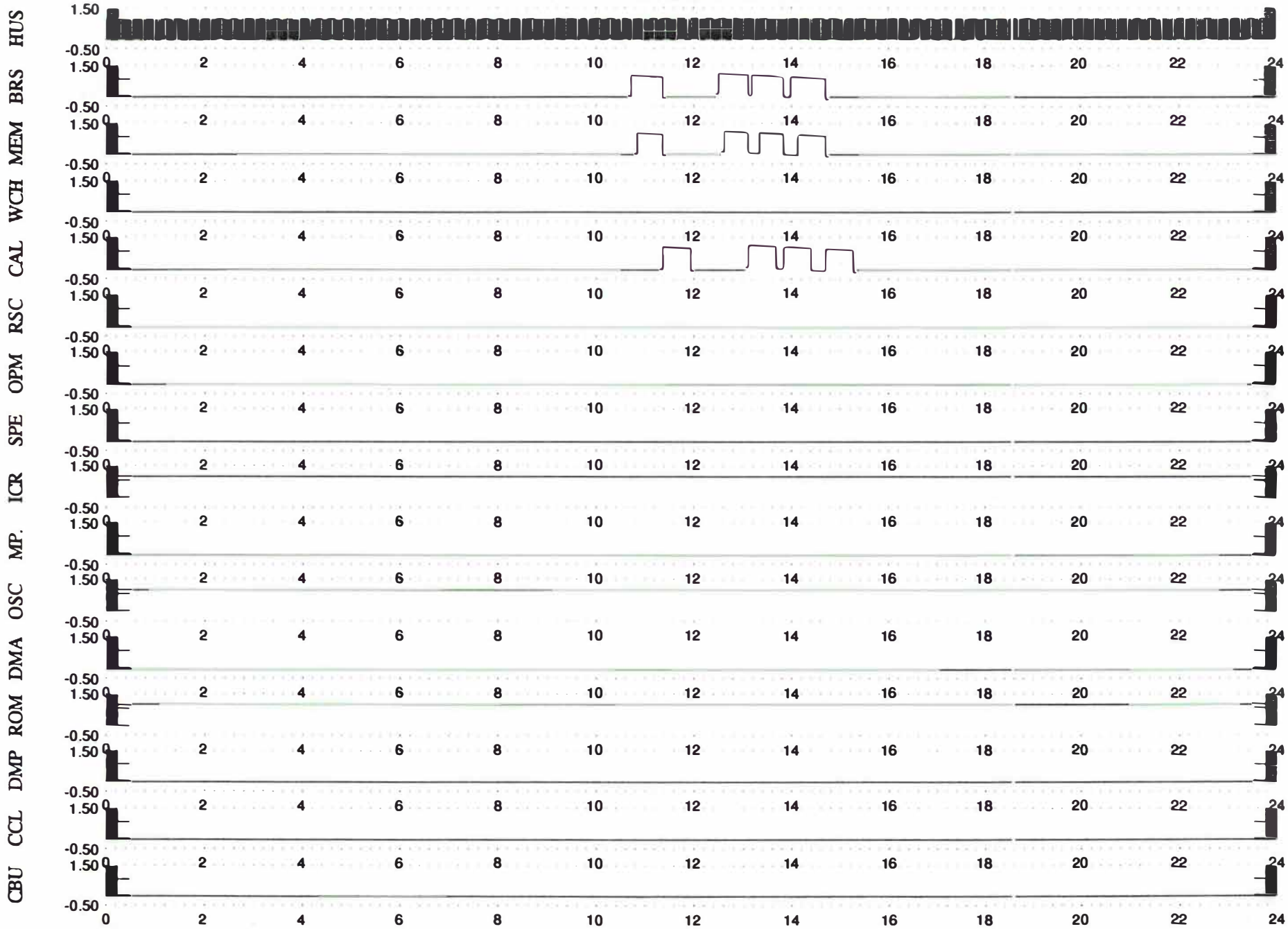

XRAY and OPTICAL DATA
BEGIN: 02 MAR 92
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
02/0600
02/0900
02/1200


XRAY and OPTICAL DATA
BEGIN: 02 MAR 92
SF,7076
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
02/1200
02/1500
02/1800


XRAY and OPTICAL DATA
BEGIN: 02 MAR 92
SF.0
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
02/1800
02/2100
03/0000

HUS MODES EDR day 62, year 1992 to day 62, year 1992 4/15/92

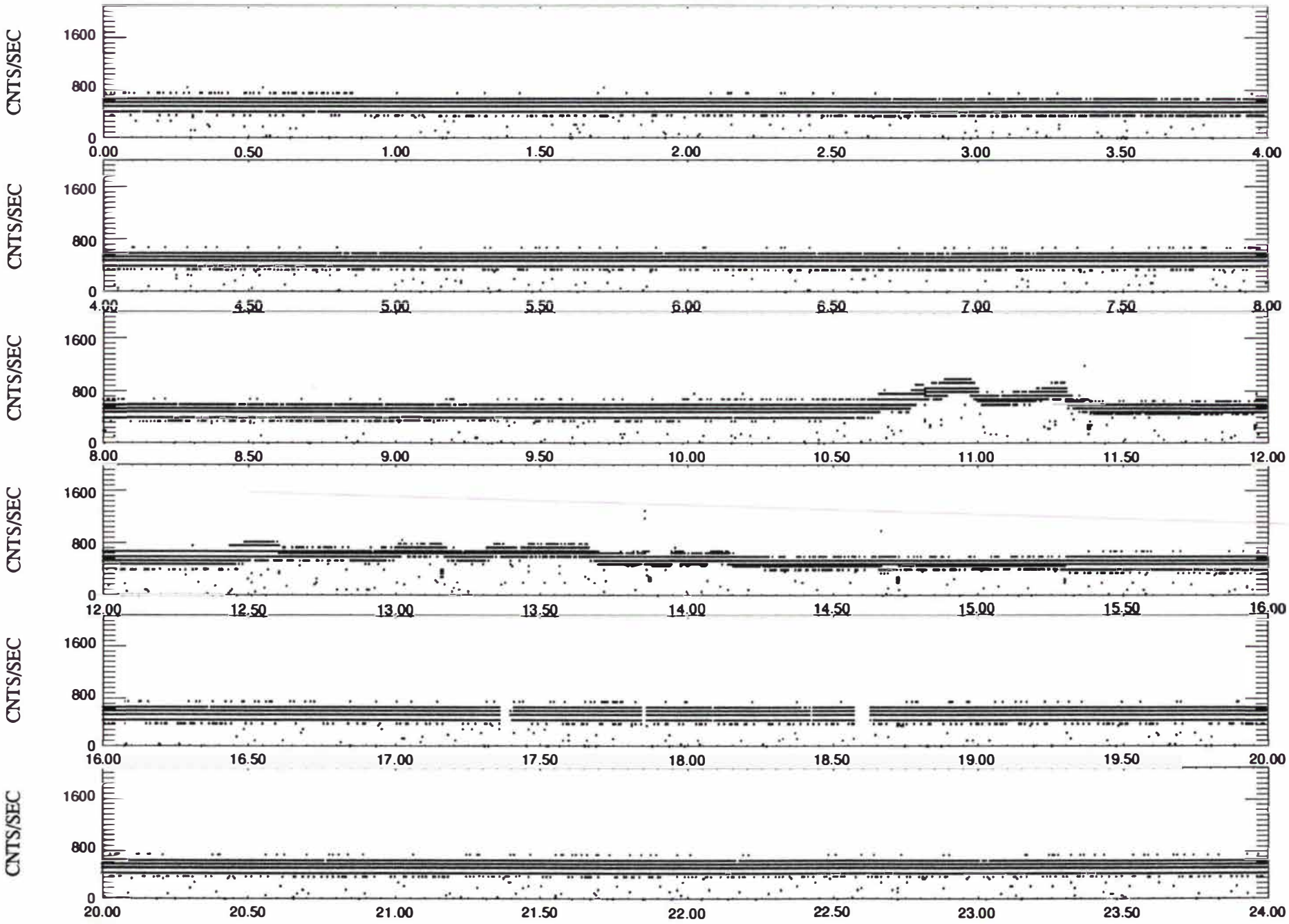
BURST NUMBER 10 - 13



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 62, year 1992 to day 62, year 1992 4/15/92

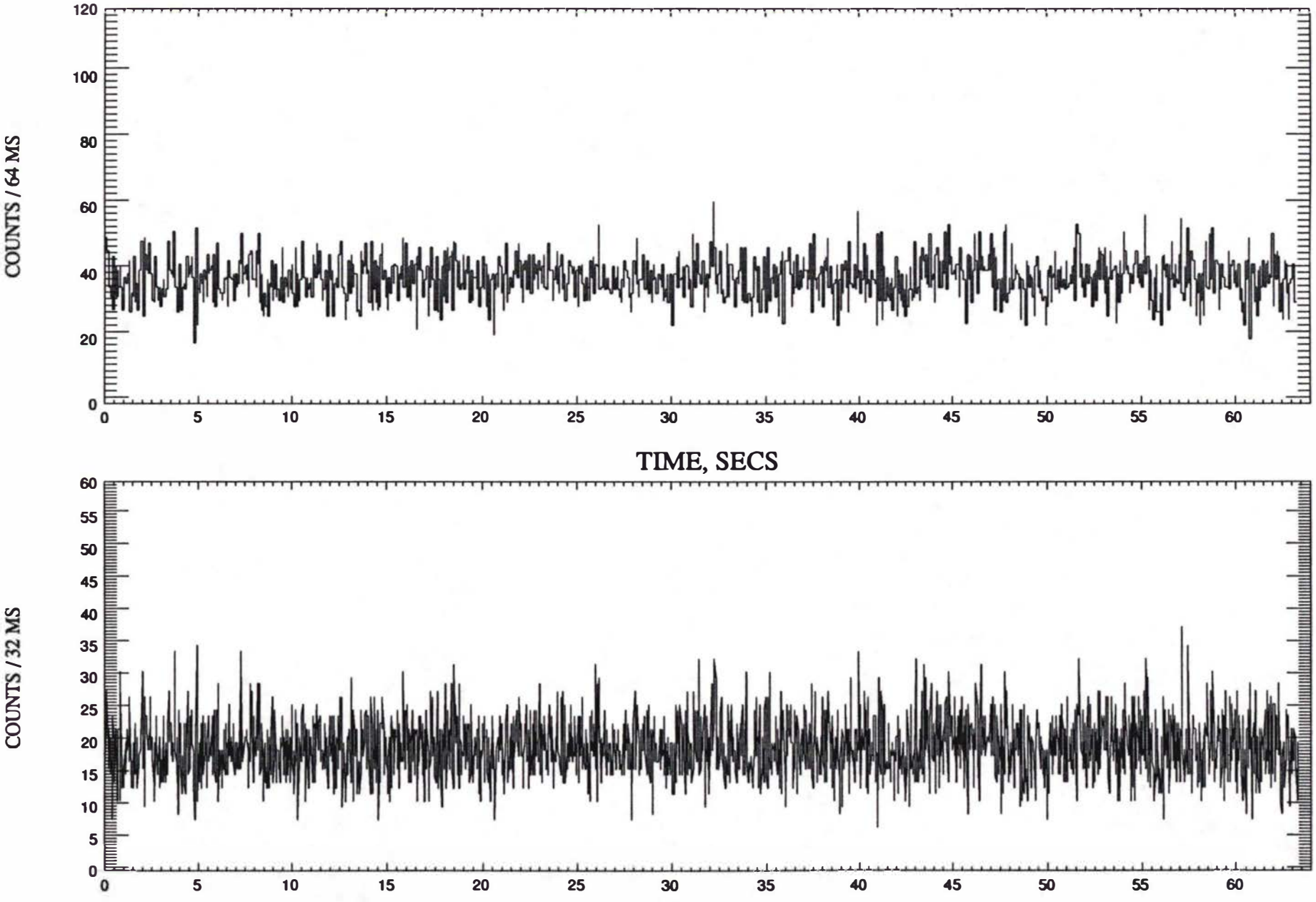
CALIBRATION DATA INCLUDED



UNIVl AL TIME

HUS 2A TRIGGERED DATA EDR day 62, year 1992 5/6/92

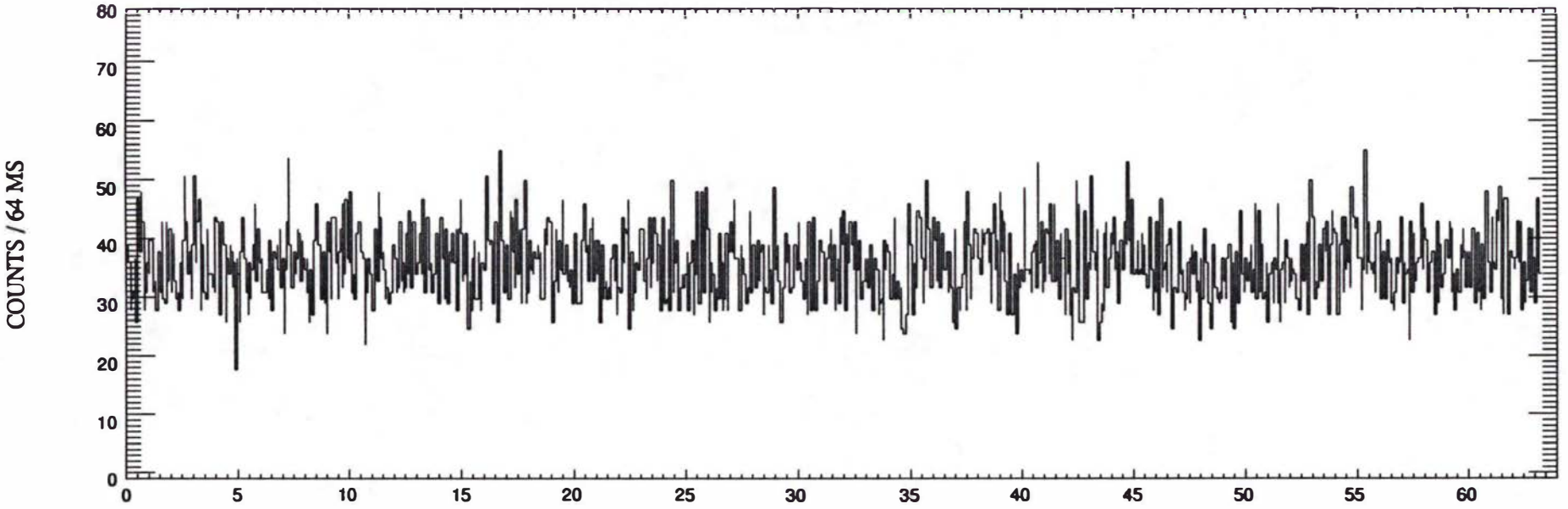
Burst Counter 10 at UT=10.666809162564 h=38400.513 s

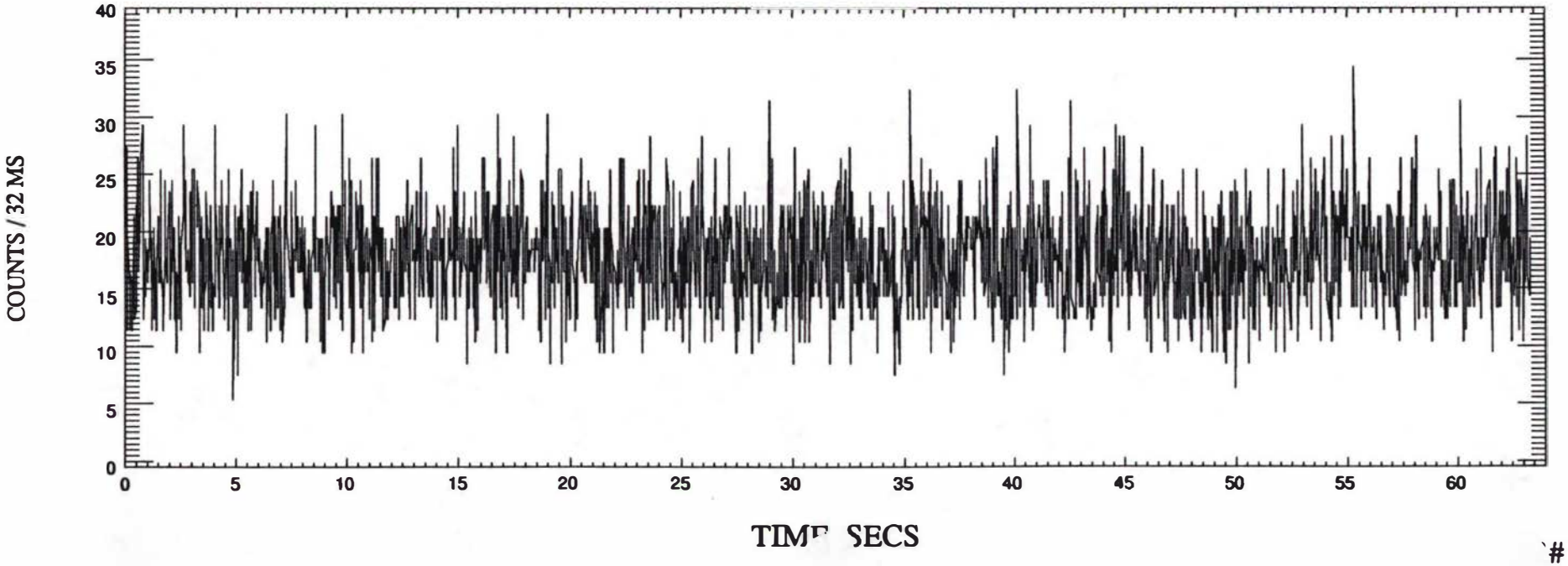


B# 1

HUS 2A TRIGGERED DATA EDR day 62, year 1992 5/6/92

Burst Counter 11 at UT=12.447603946262 h=44811.374 s

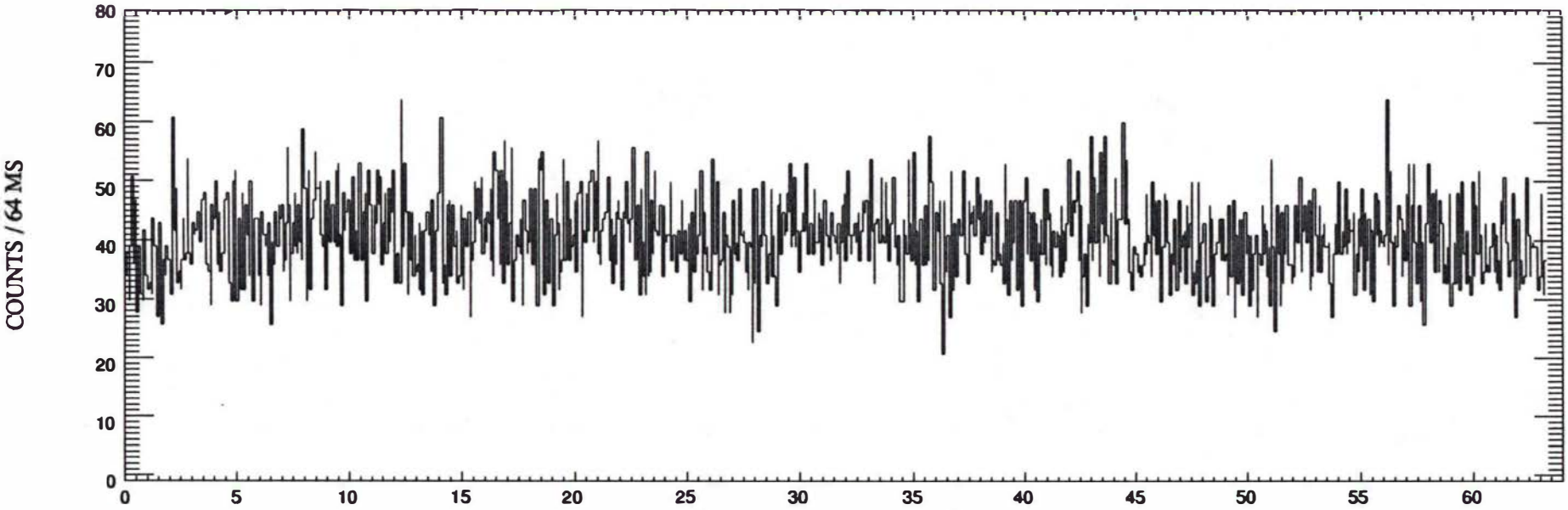


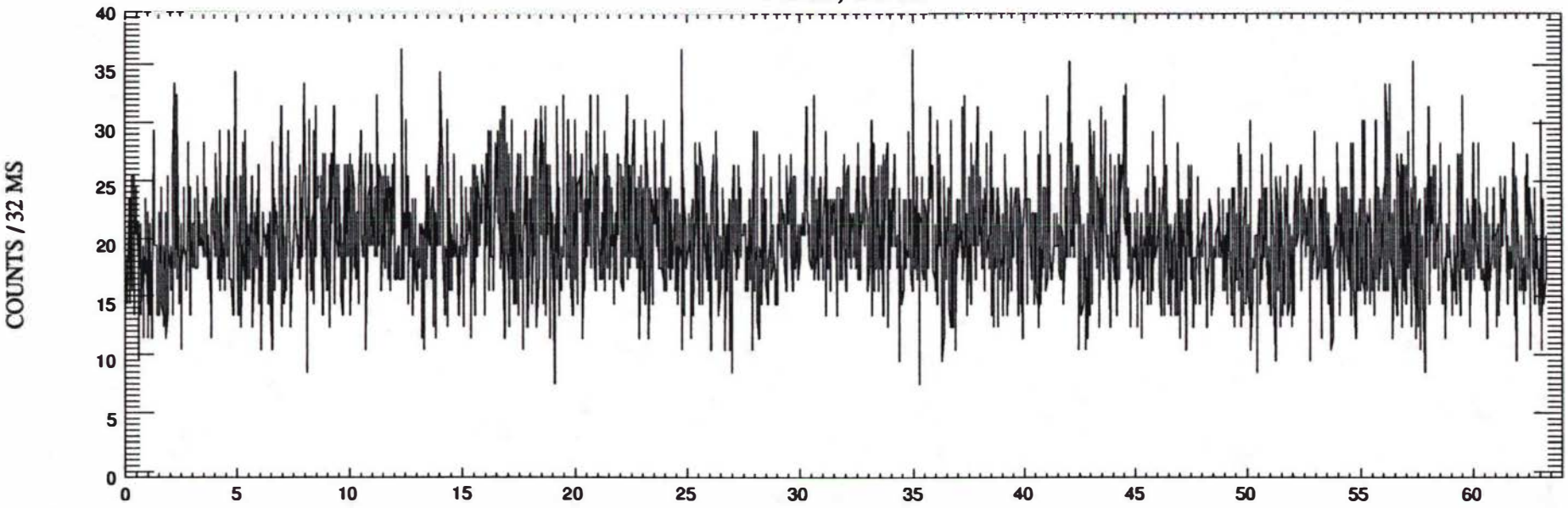


2

HUS 2A TRIGGERED DATA EDR day 62, year 1992 5/6/92

Burst Counter 12 at UT=13.154593298170 h=47356.536 s

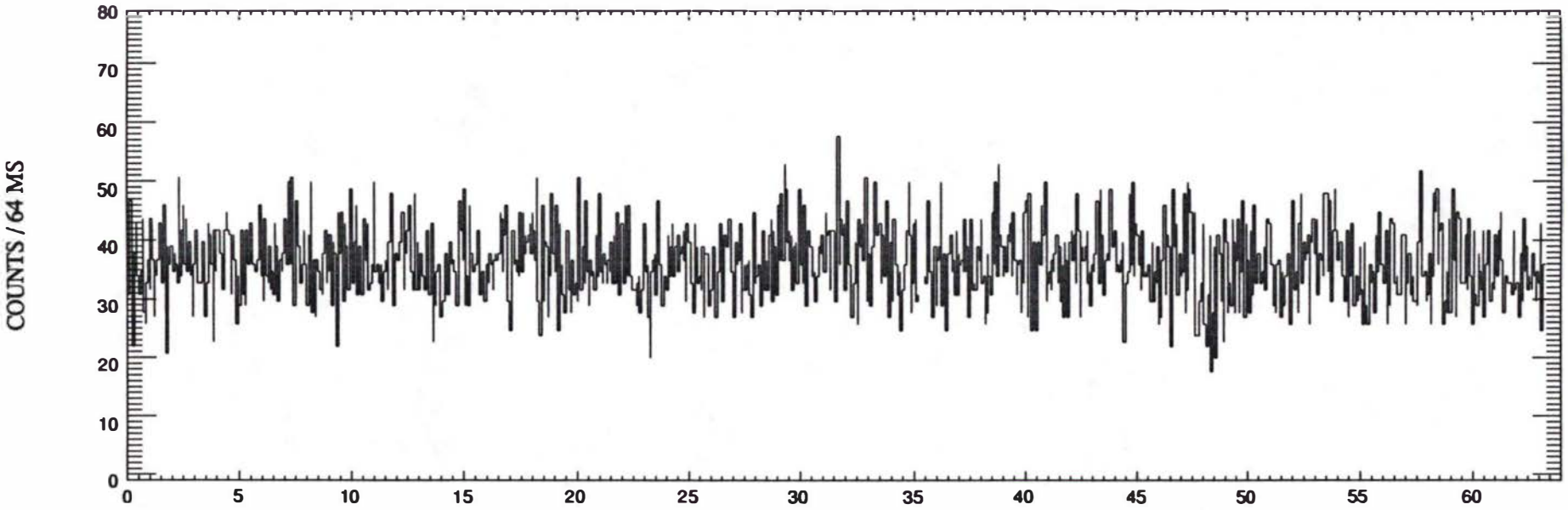


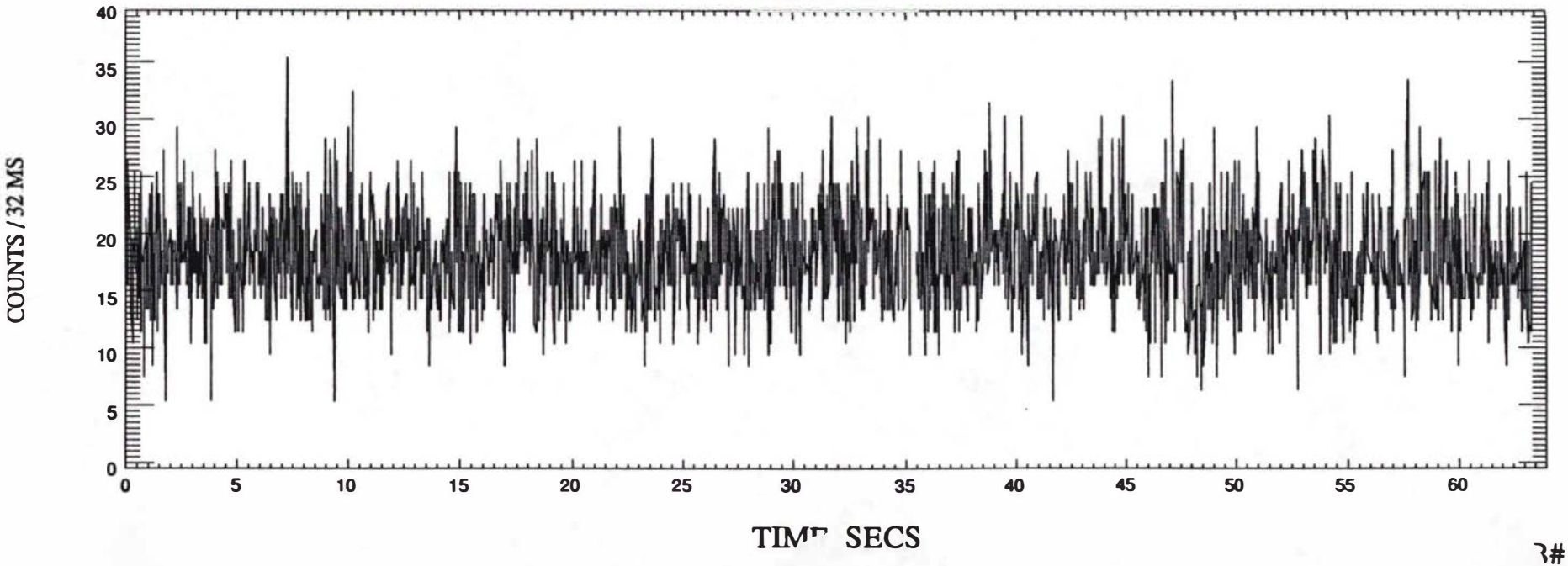


3# 3

HUS 2A TRIGGERED DATA EDR day 62, year 1992 5/6/92

Burst Counter 13 at UT=13.962352116903 h=50264.468 s





R# 4

BATSE time corrected 10/02

Date: Jul 10 2002

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? No

2. BATSE Data

☐ BATSE ephemeris for T_0?

☐ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included?

3. NEAR Data

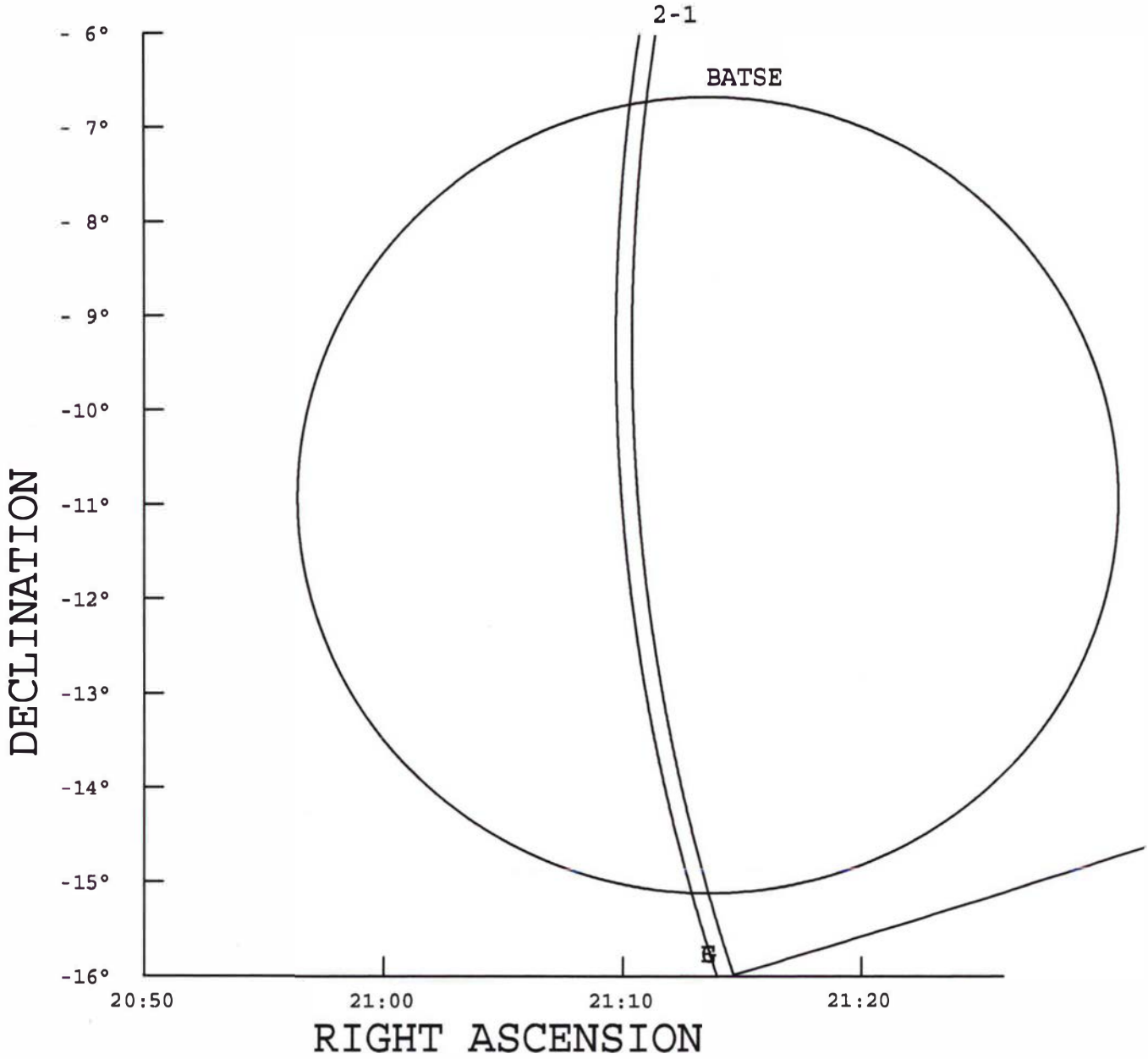
☐ Final, correct time used? (Files postmarked vwx@bocc1, from from Teresa Sheets, postmarked May 2 1999 or later have the correct time; files on website have incorrect times)

☐ BATSE >100 keV data used for NEAR correlation?

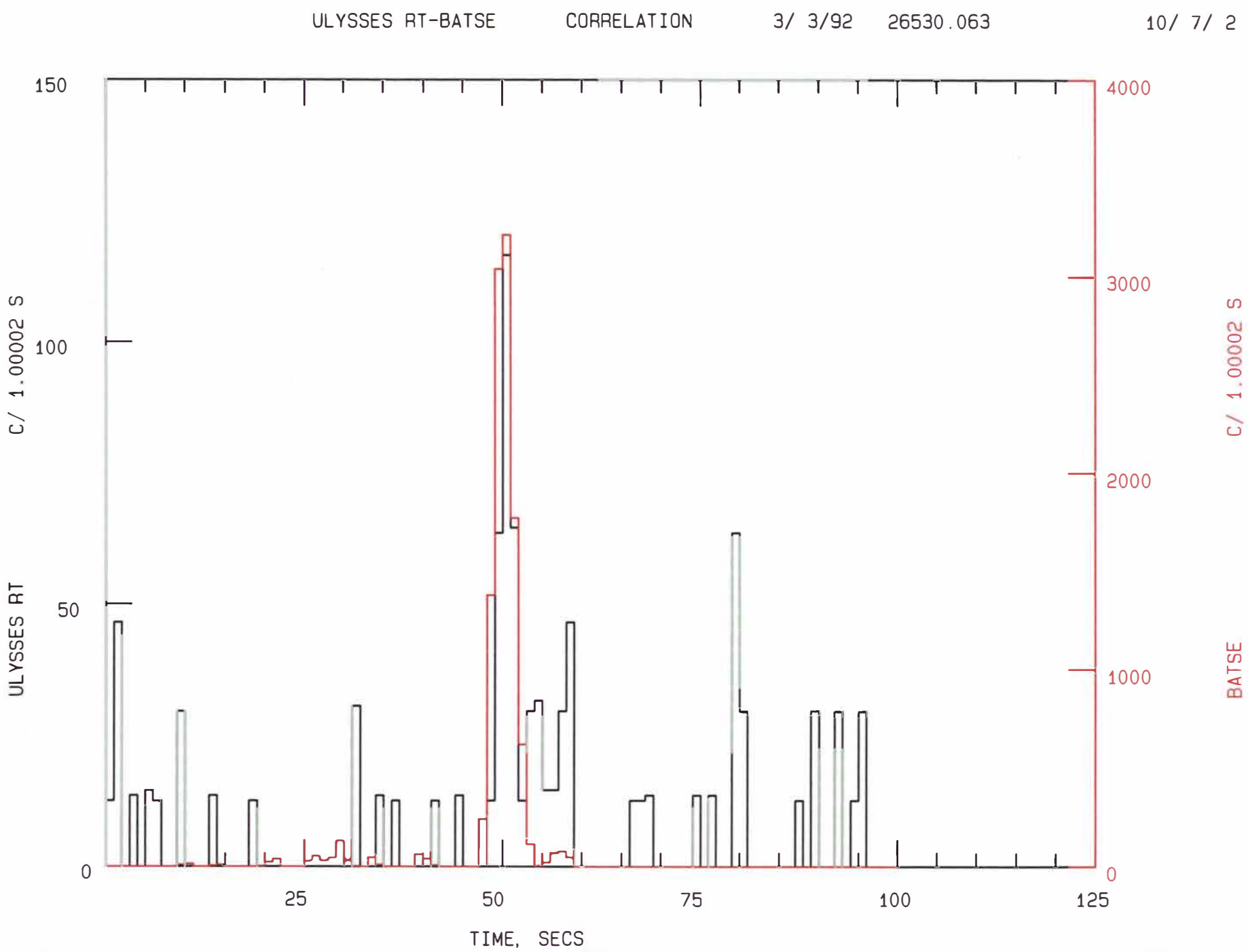
☑ ACCESS database updated?

EVENT OF MAR 3, 1992 6:48

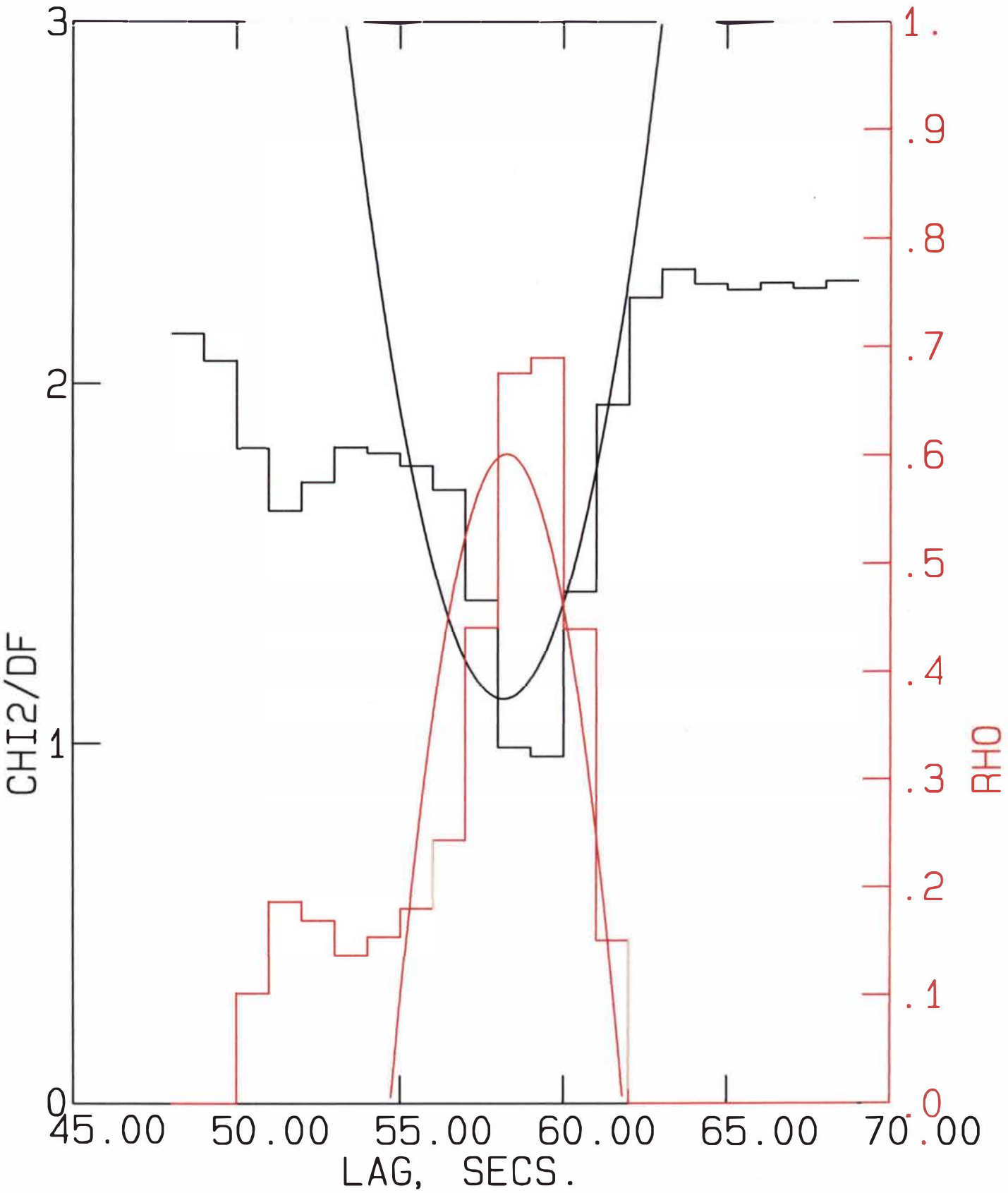
10/ 7/ 2



N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 BATSE 2 ULYSSES


ULYSSES RT-BATSE CORRELATION 3/ 3/92 26530.063 10/ 7/ 2
150
100
50
0
C/ 1.00002 S
ULYSSES RT
4000
3000
2000
1000
0
C/ 1.00002 S
BATSE
25
50
75
100
125
TIME, SECS

ULYSSES RT-BATSE CORRELATION 3/ 3/92 26530.063

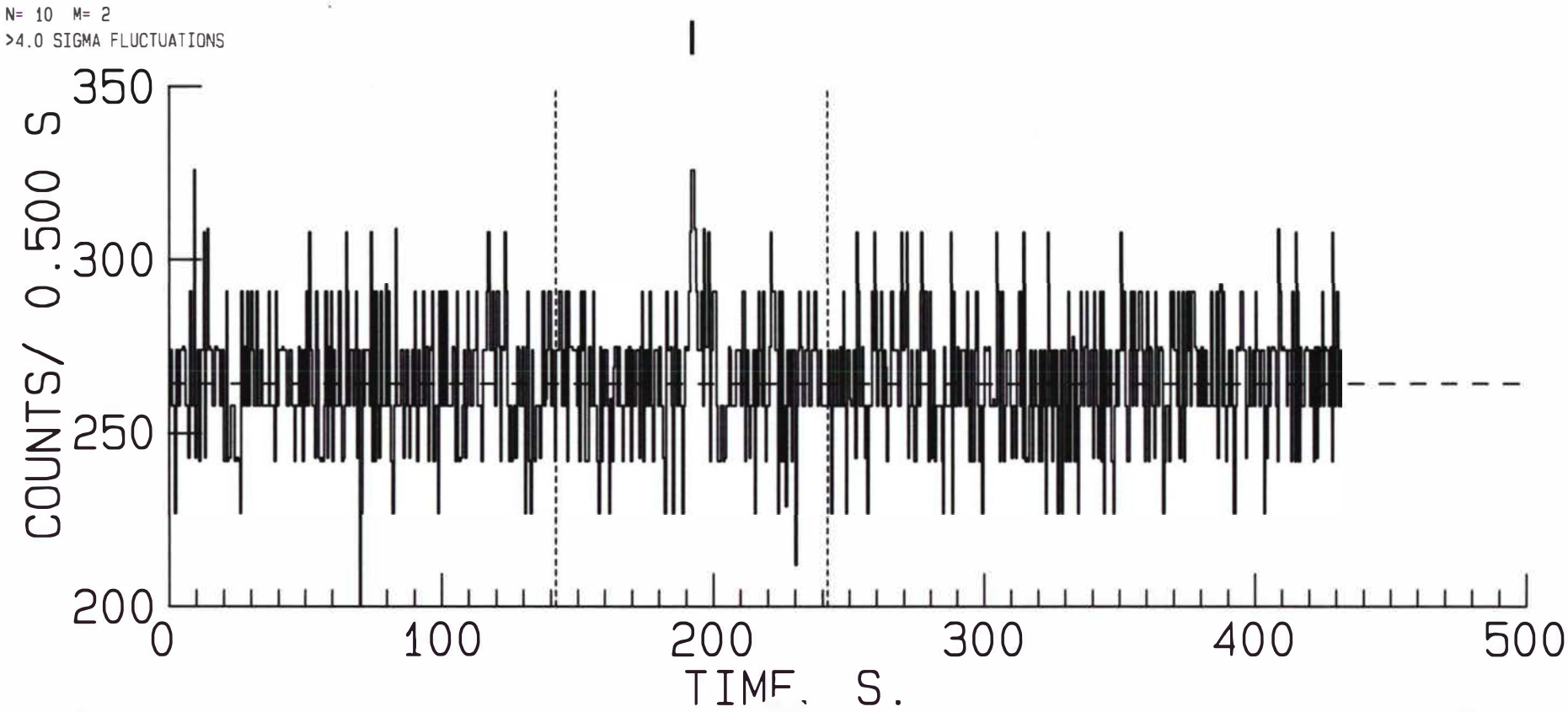


ULYSSES RT 10/ 7/ 2

3/ 3/92 26388.062 s

0.250 S INTERVALS REGROUPED BY 2

24- 164 keV



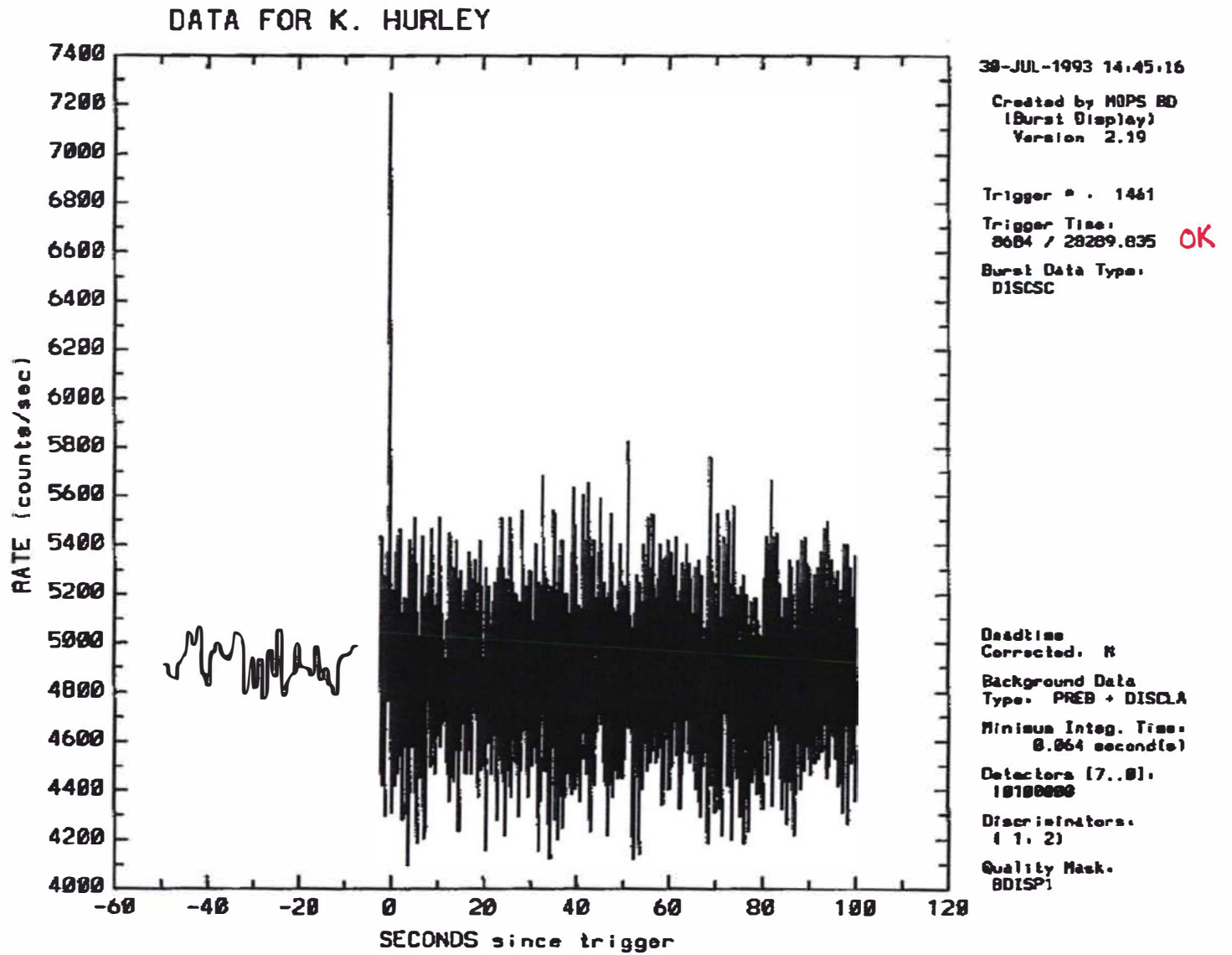
Dezalay -> KH 7/93

DATE	U.T.	Nr UGB	Event Nature
1992-01-22	09:19:43.748	395-a	Solar Flare
1992-01-25	08:57:27.156	397-a	GRB
1992-01-26	15:27:47.181	398-a	Solar Flare
1992-01-30	09:36:04.439	400-a	Solar Flare
1992-02-05	13:16:18.413	401-a	Solar Flare
1992-02-06	18:55:30.506	402-a	Solar Flare
1992-02-07	11:54:15.583	402-b	Solar Particles
1992-02-07	13:57:21.179	402-c	Solar Particles
1992-02-08	03:03:12.168	403-a	Unknown
1992-02-08	~03:15	403-b	Solar Flare ?
1992-02-10	09:53:52.511	404-a	GRB
1992-02-11	04:22:31.263	405-a	Solar Flare
1992-02-11	20:56:14.388	406-a	Unknown
1992-02-11	21:11:06.397	406-b	Unknown
1992-02-12	05:28:23.479	406-c	Unknown
1992-02-14	23:07:22.311	408-a	Solar Flare
1992-02-15	21:29:26.098	409-a	Solar Flare
1992-02-16	12:32:56.671	409-b	Solar Flare
1992-02-18	18:44:19.178	411-a	GRB
1992-02-20	04:20:06.490	412-a	Unknown
1992-02-29	19:21:17.526	415-a	GRB
1992-03-03	10:52:09.629	417-a	Unknown
1992-03-03	11:43:17.434	417-b	Unknown
1992-03-03	~11:56	417-c	Unknown
1992-03-07	16:44:00.135	420-a	Solar Particles
1992-03-11	02:20:27.297	422-a	GRB
1992-03-11	12:23:20.018	422-b	Solar Flare ?
1992-03-25	17:17:36.626	430-a	GRB
1992-04-04	22:37:28.456	434-a	GRB
1992-04-05	07:41:37.612	434-b	GRB
1992-04-13	11:58:56.617	440-a	Unknown
1992-04-14	23:22:42.474	441-a	GRB
1992-04-20	02:12:27.422	444-a	GRB
1992-04-24	19:18:18.006	447-a	Solar Flare
1992-05-19	16:28:38.427	449-a	GRB
1992-06-22	07:05:04.644	468-a	GRB

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST #  1461
EVENT OF 1992 MAR  3 DAY OF YEAR= 63
EVENT CROSSING TIME AT BATSE      : 28290. S. OR 07:51:29.8
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 163.900   40.800
EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  3/ 3/  92 IS:
RA=  158.289 DEC=     8.962 DIST=     4.414 AU
BATSE-ULYSSES DISTANCE =  660265584. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=147.77 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1863.15 SECS.
CROSSING TIME AT ULYSSES     IS 26427. S. OR   07:20:26 +/-  225.60 SECONDS
```

RI

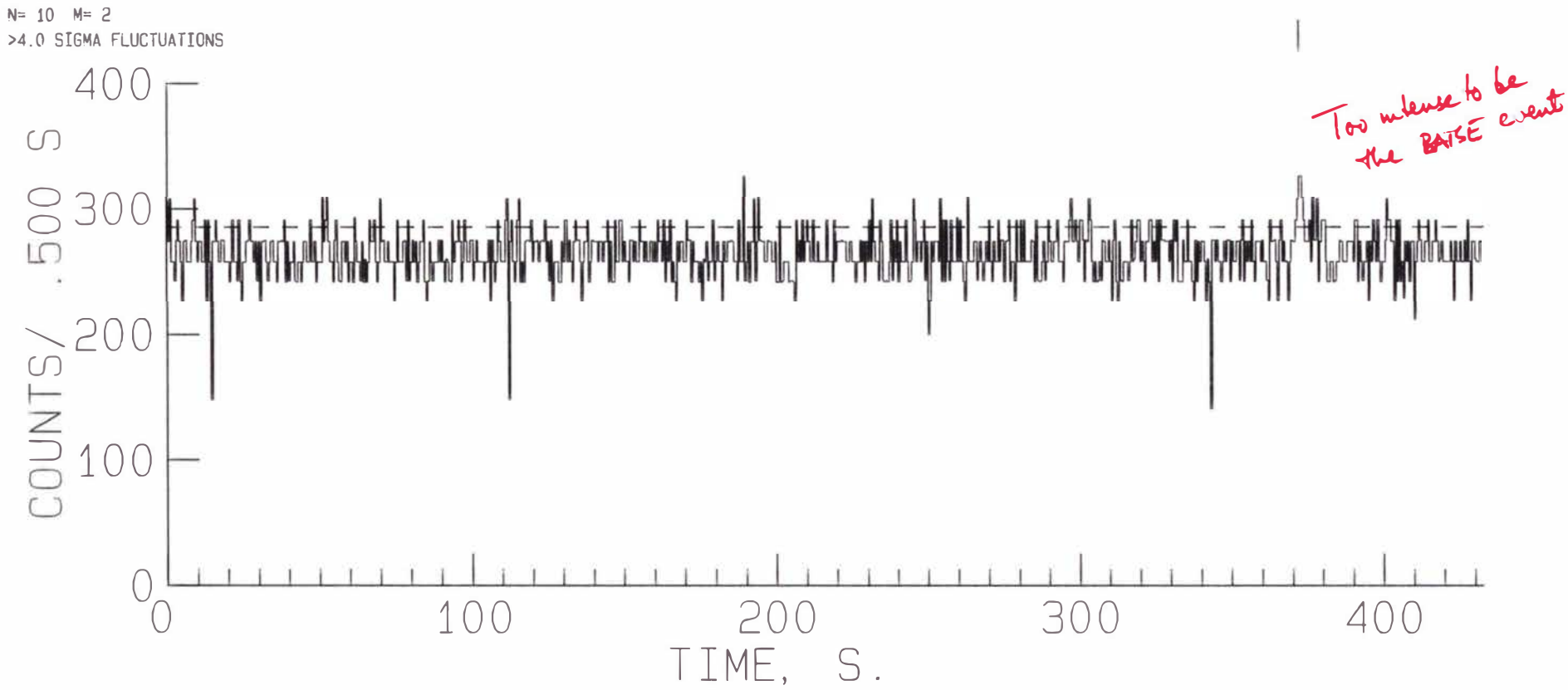

DATA FOR K. HURLEY
RATE (counts/sec)
7400
7200
7000
6800
6600
6400
6200
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
-60
-40
-20
0
20
40
60
80
100
120
SECONDS since trigger
30-JUL-1993 14:45:16
Created by MOPS BD
(Burst Display)
Version 2.19
Trigger # . 1461
Trigger Time:
8684 / 28289.835
OK
Burst Data Type:
DISCSC
Deadtime
Corrected. N
Background Data
Type. PREB + DISCLA
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
10100000
Discriminators:
(1, 2)
Quality Mask.
BDISP1

ULYSSES RT 7/ 8/93

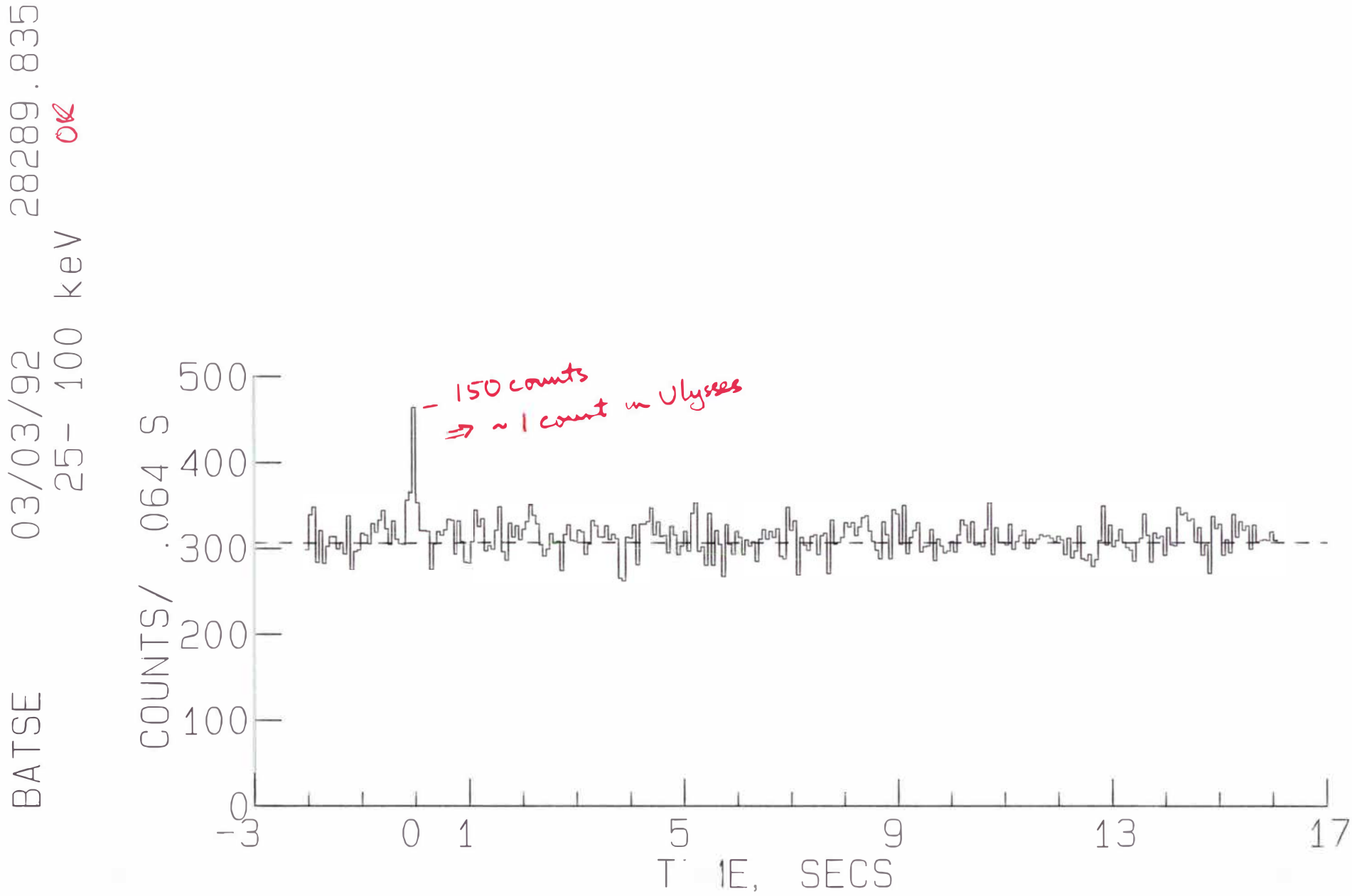
3/ 3/92 26208.057 s

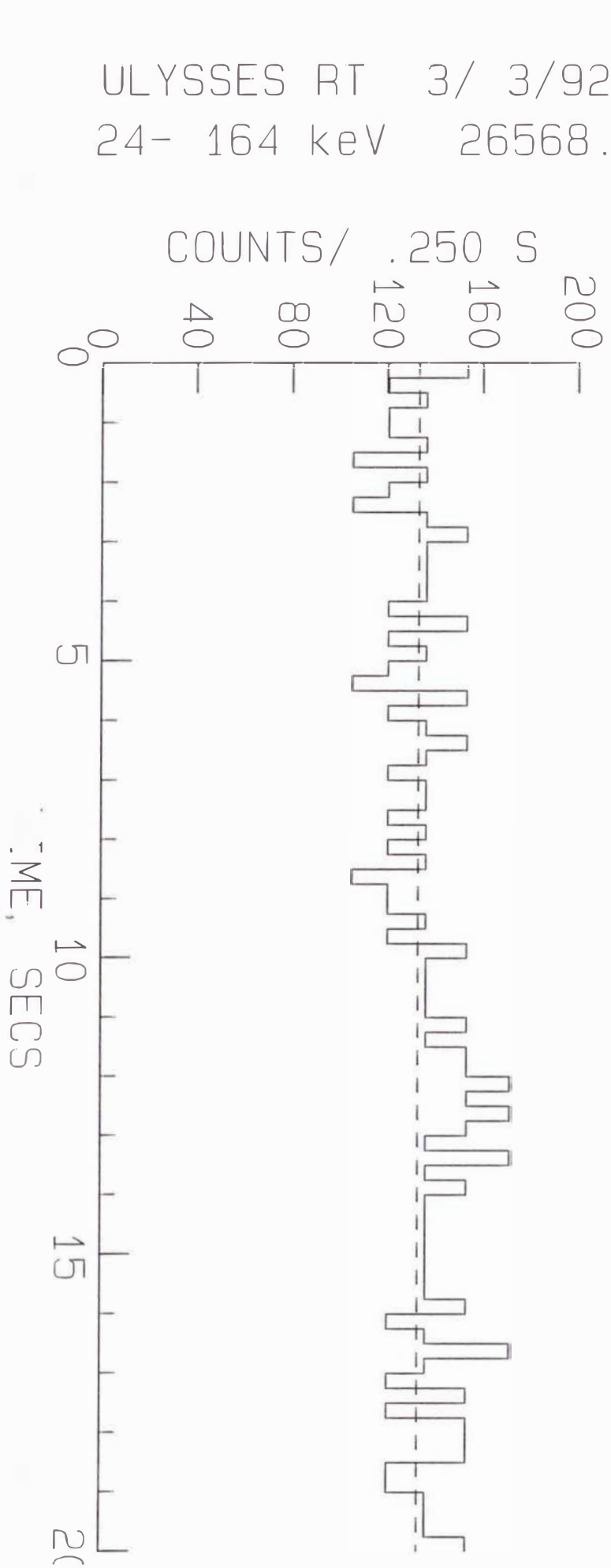
.250 S INTERVALS REGROUPED BY 2

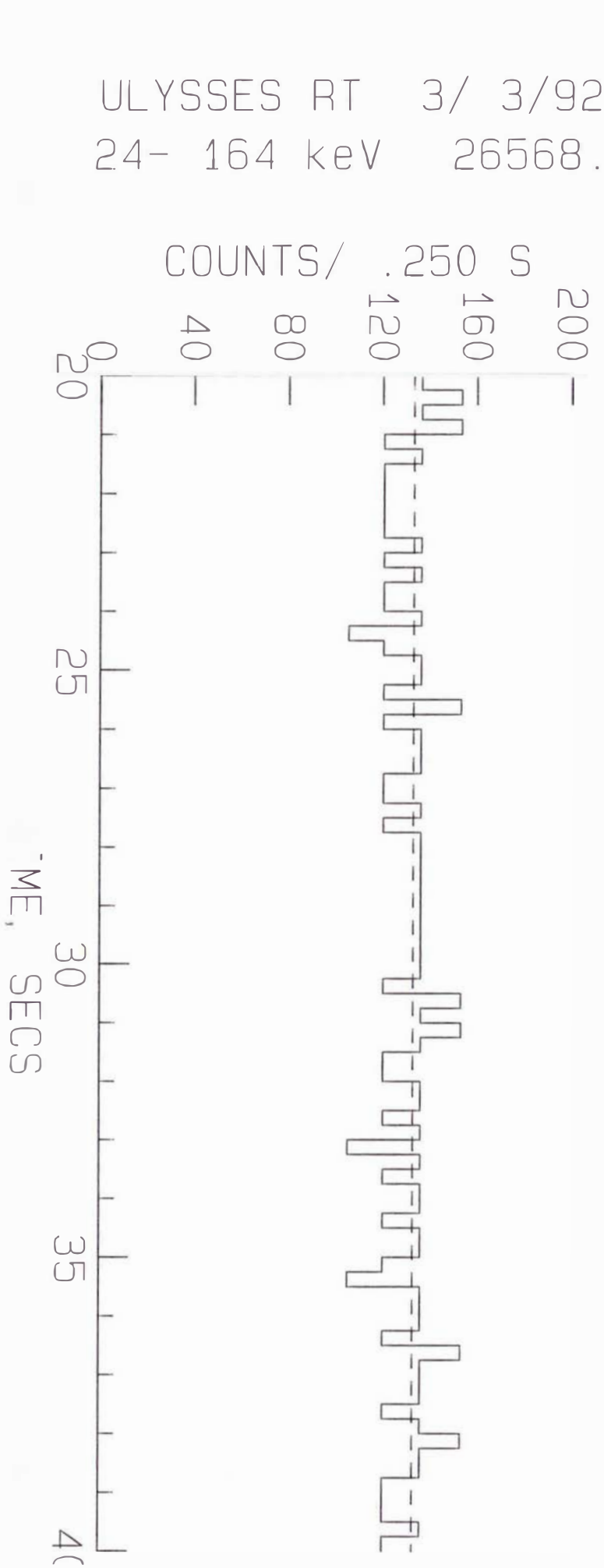
24- 164 keV



7/ 8/93


BATSE 03/03/92 28289.835
25- 100 keV
OK
COUNTS/ .064 S
500
400
300
200
100
0
150 counts
⇒ ~ 1 count in Ulysses
-3
0
1
5
9
13
17
TIME, SECS


ULYSSES RT 3/ 3/92
24- 164 keV 26568.066 S
COUNTS/ .250 S
0
40
80
120
160
200
0
5
10
15
20
TIME, SECS


ULYSSES RT 3/ 3/92
24- 164 keV 26568.066 S
COUNTS/ .250 S
0
40
80
120
160
200
20
25
30
35
40
TIME, SECS

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

 BATSE BURST # 1462
EVENT OF 1992 MAR  3 DAY OF YEAR= 63
EVENT CROSSING TIME AT BATSE      : 84779. S. OR 23:32:58.6
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 269.660  -18.710
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  3/ 3/  92 IS:
RA=  158.289 DEC=    8.962 DIST=    4.414 AU
BATSE-ULYSSES DISTANCE =  660265584. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL    DIRECTION= 66.99 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  860.94 SECS.
CROSSING TIME AT ULYSSES    IS 85640. S. OR 23:47:19.5 +/-  415.02 SECONDS
```

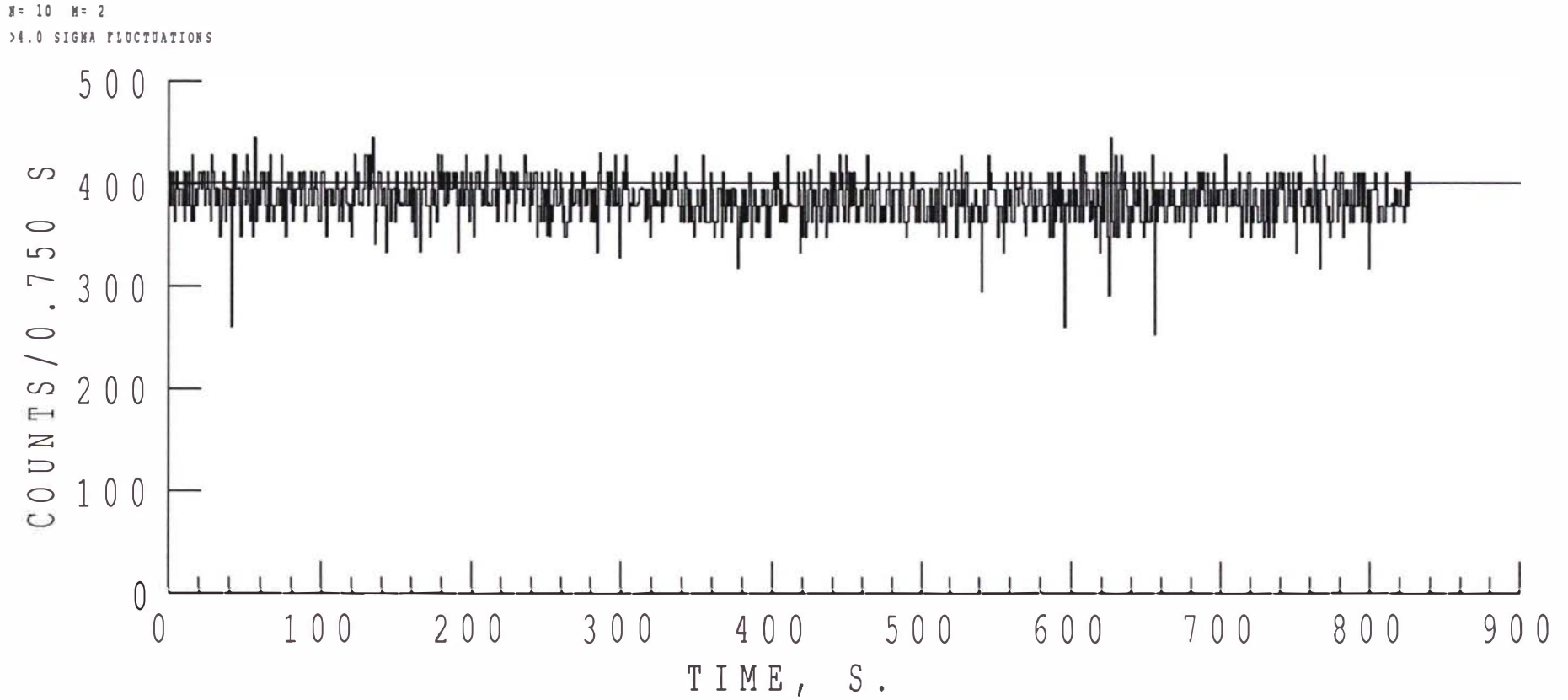
9/11/95

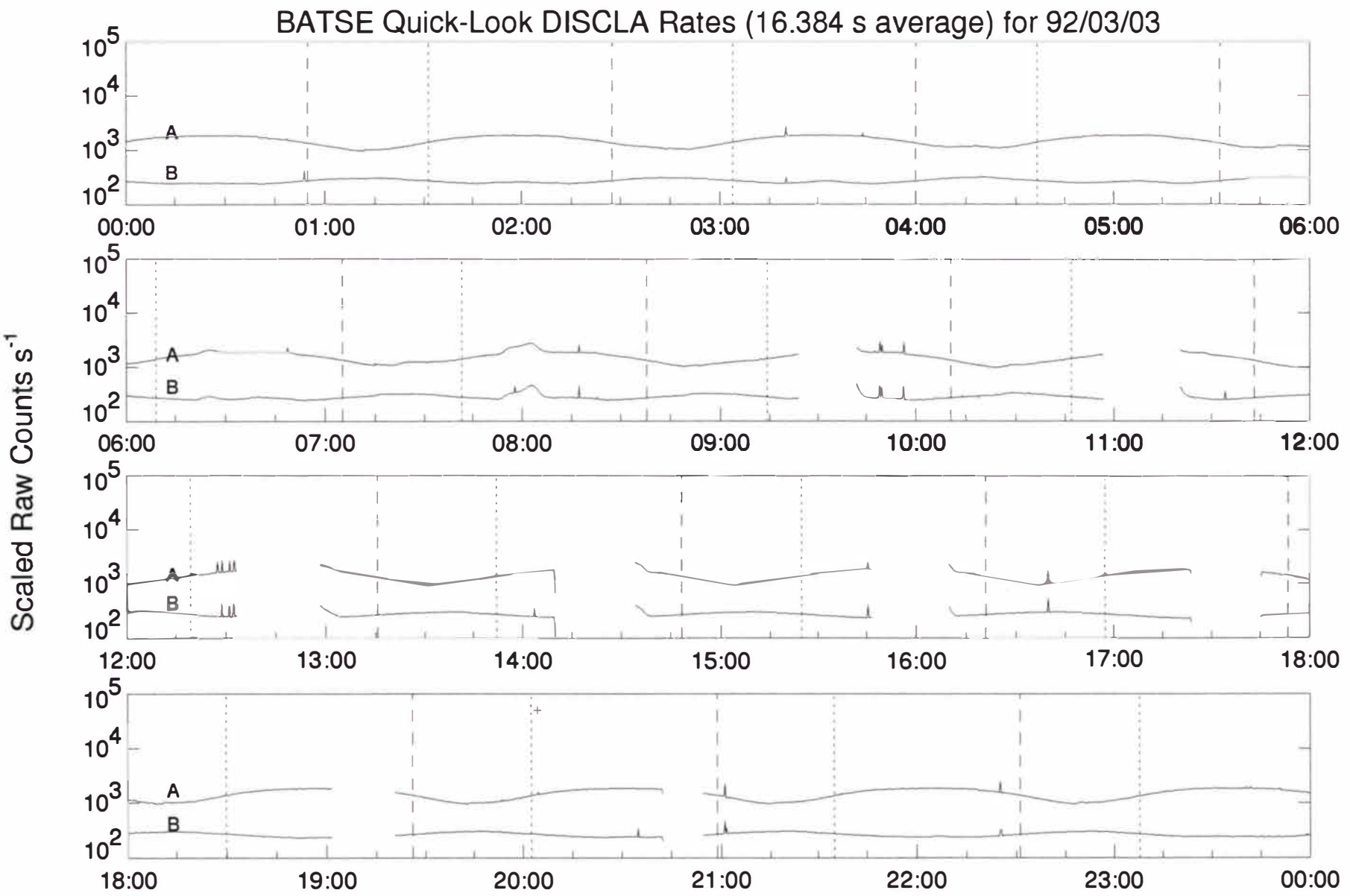
ULYSSES RT

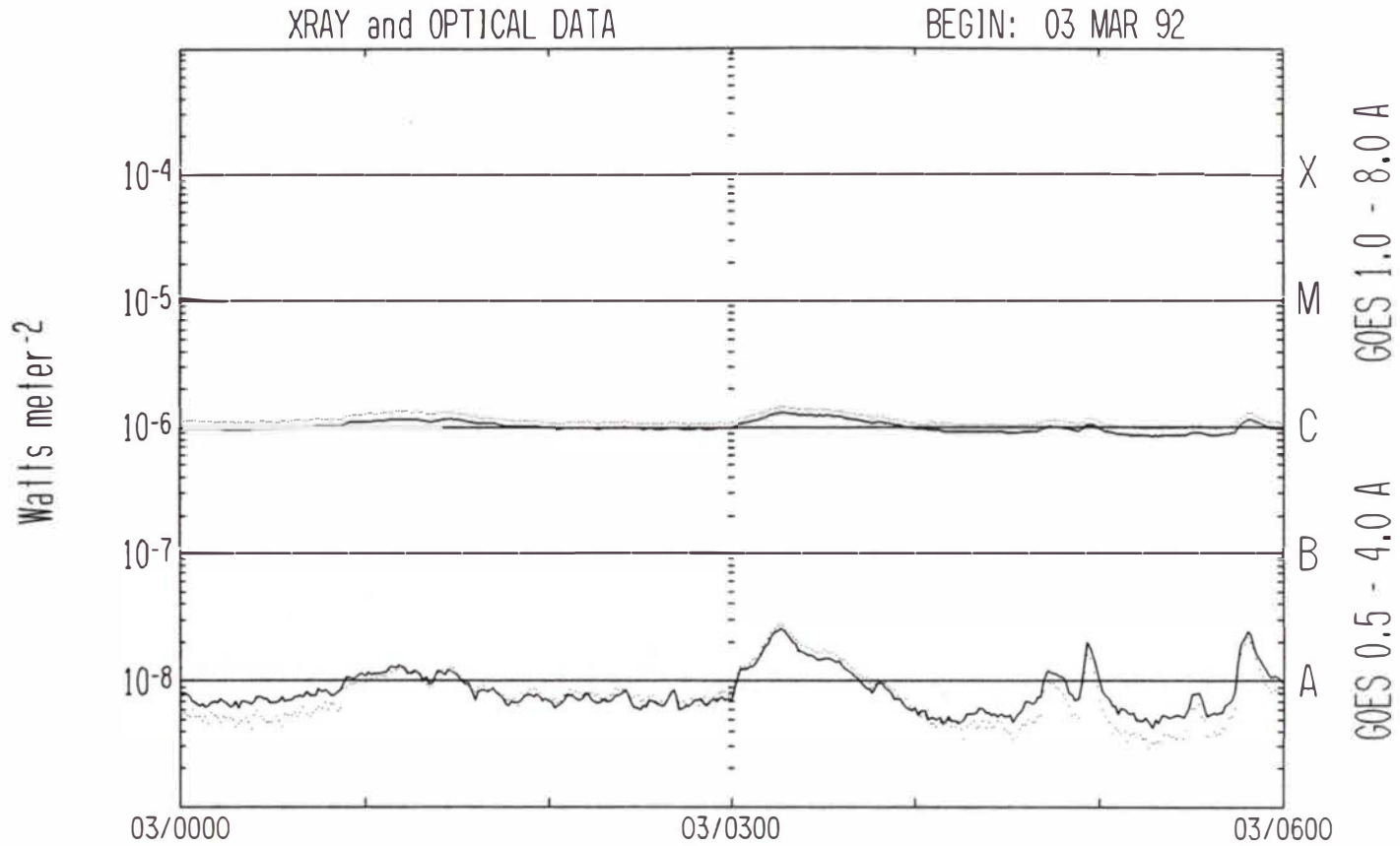
3/ 3/92 85212.086 s

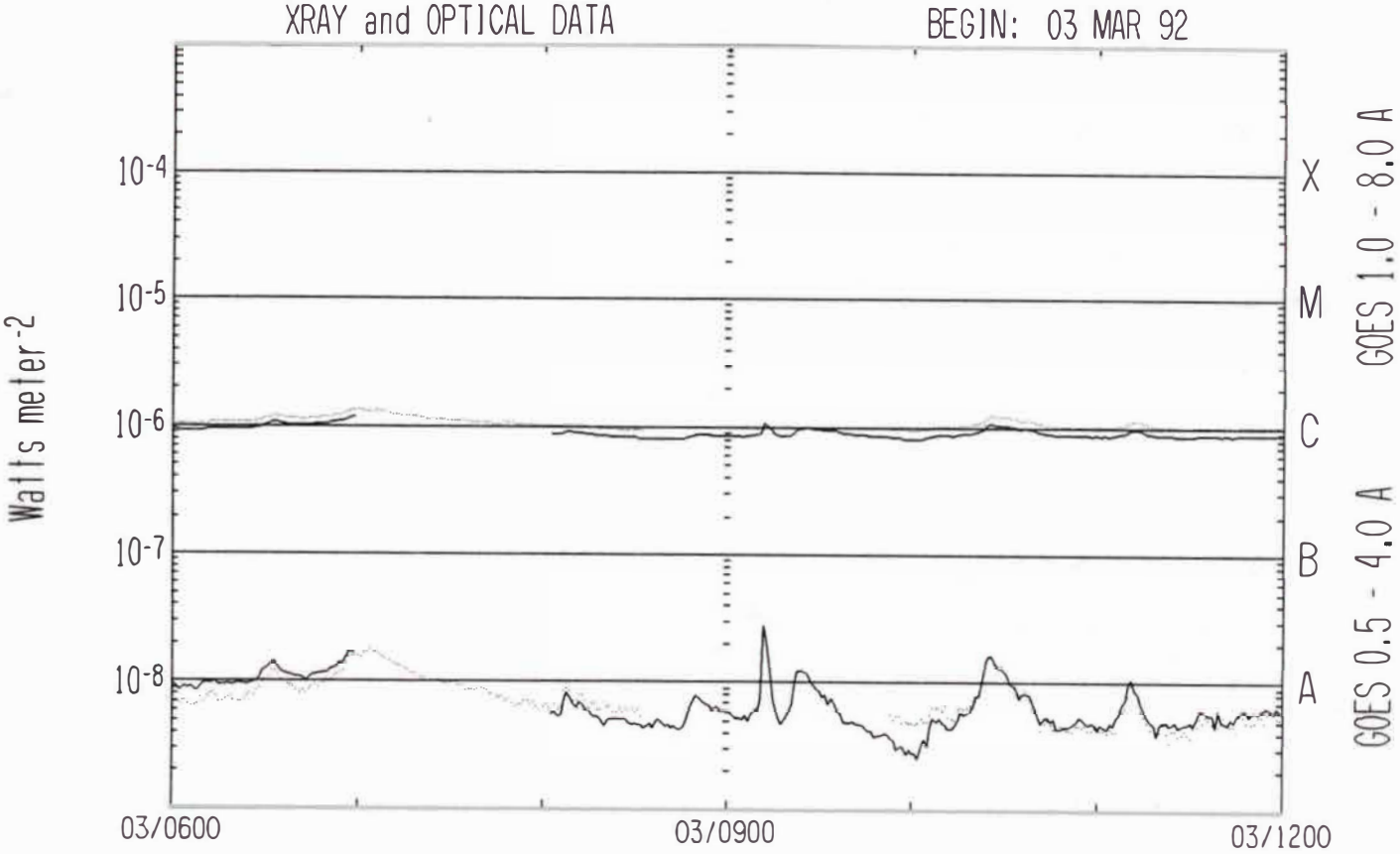
0.250 S INTERVALS REGROUPED BY 3

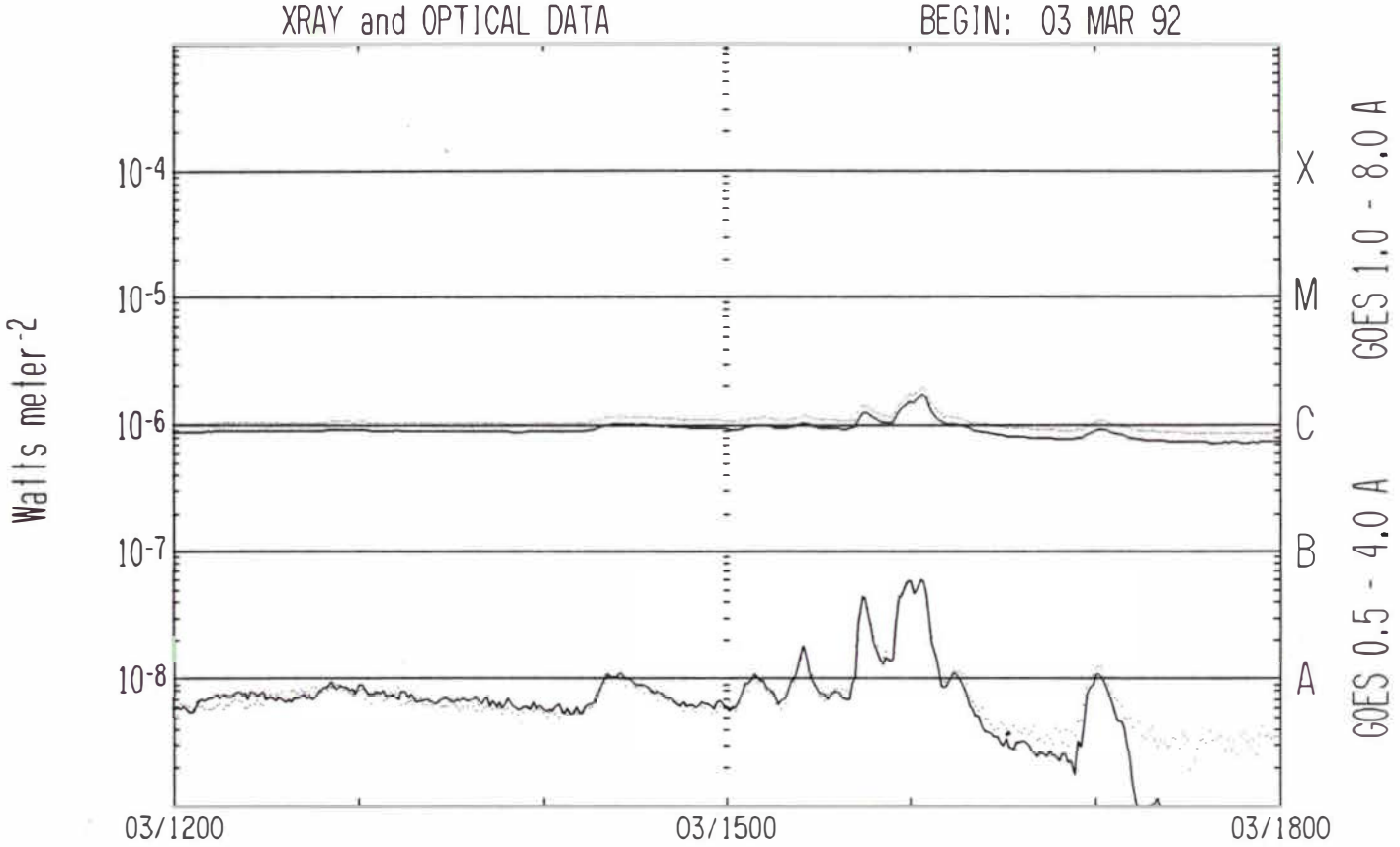
0- 0 keV

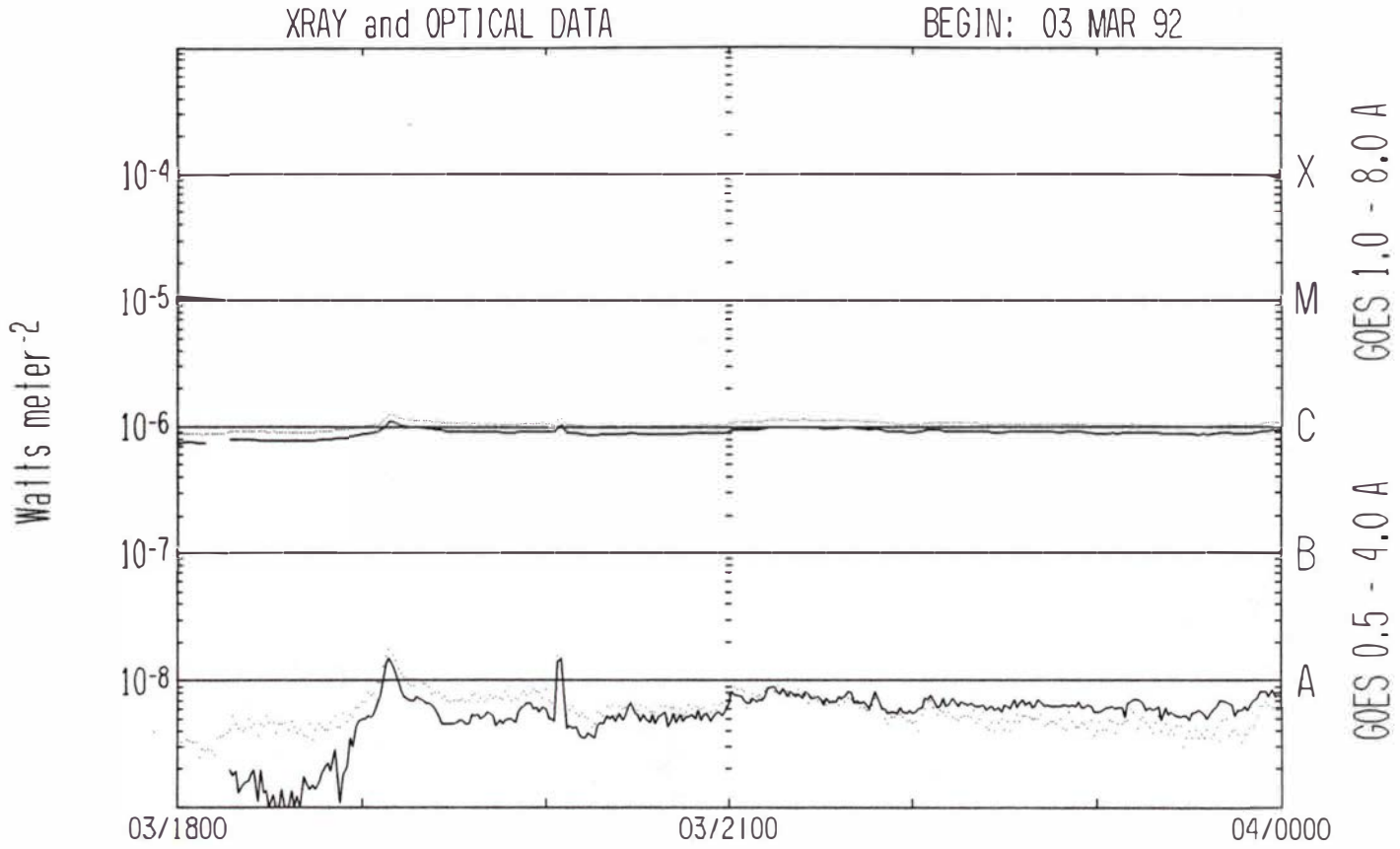



BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/03
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1748 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare


XRAY and OPTICAL DATA
BEGIN: 03 MAR 92
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
03/0000
03/0300
03/0600

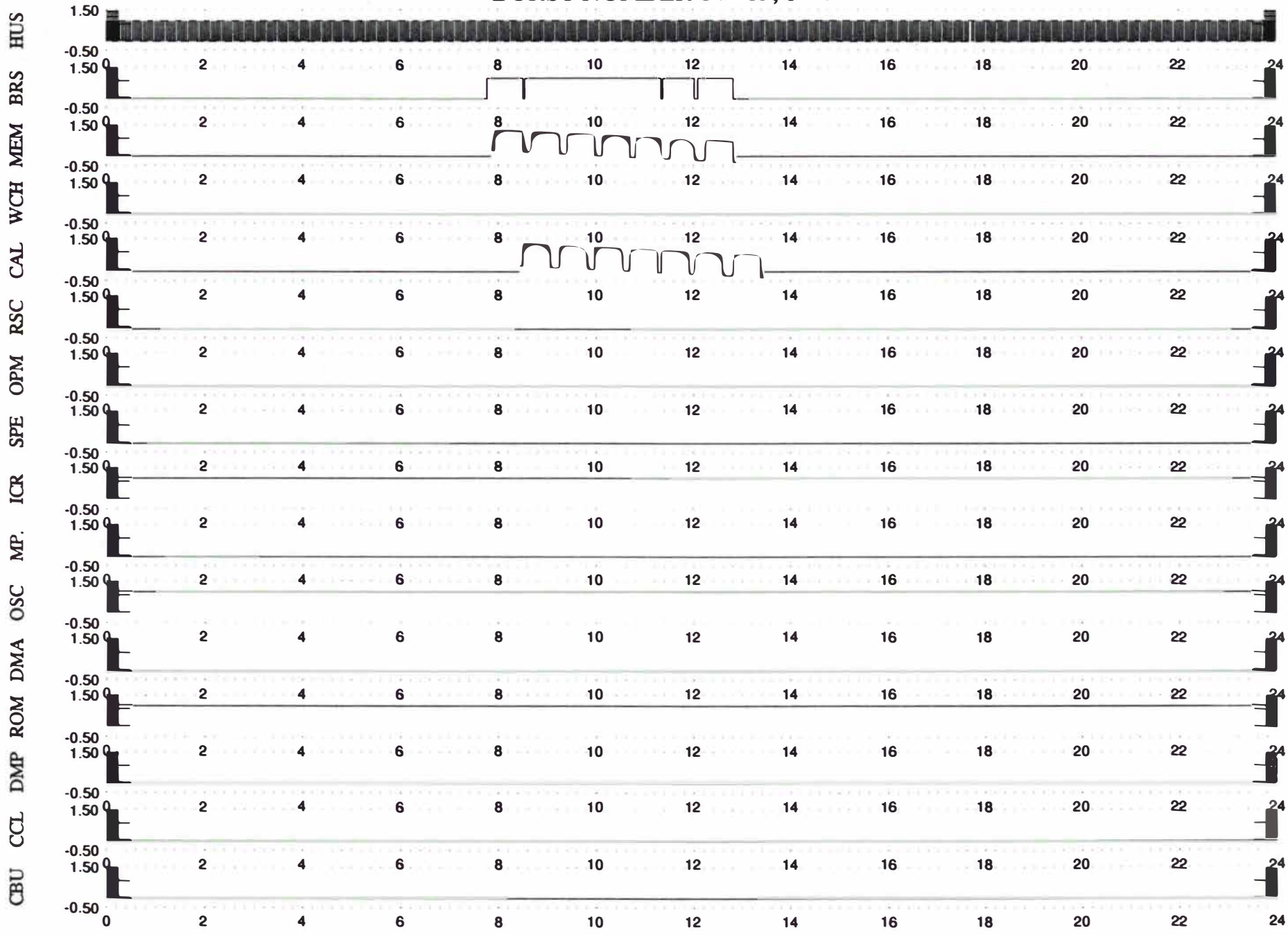

XRAY and OPTICAL DATA
BEGIN: 03 MAR 92
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
03/0600
03/0900
03/1200


XRAY and OPTICAL DATA
BEGIN: 03 MAR 92
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
03/1200
03/1500
03/1800


XRAY and OPTICAL DATA
BEGIN: 03 MAR 92
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
03/1800
03/2100
04/0000

HUS MODES EDR day 63, year 1992 to day 63, year 1992 4/15/92

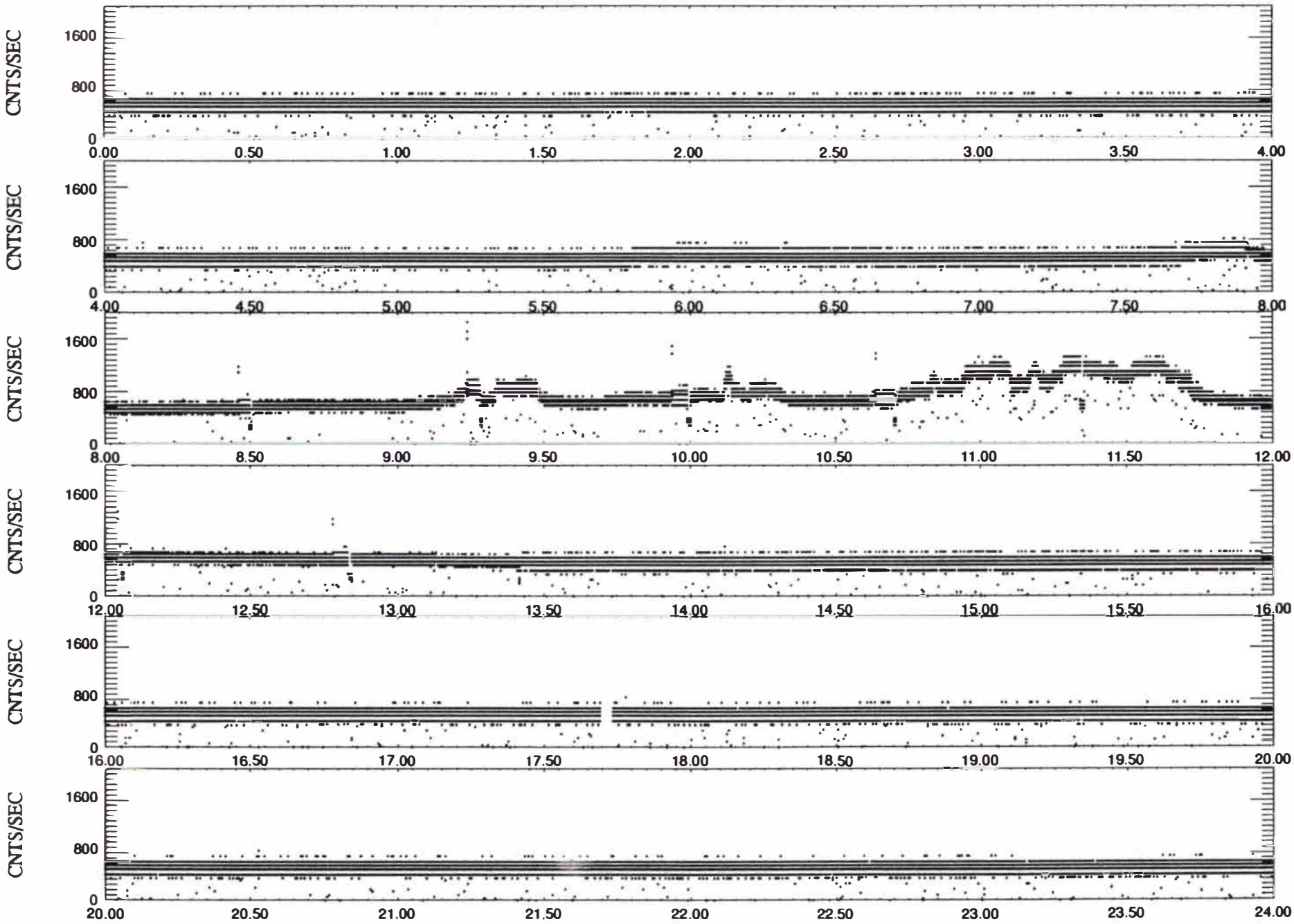
BURST NUMBER 14 - 15, 0 - 4



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 63, year 1992 to day 63, year 1992 4/15/92

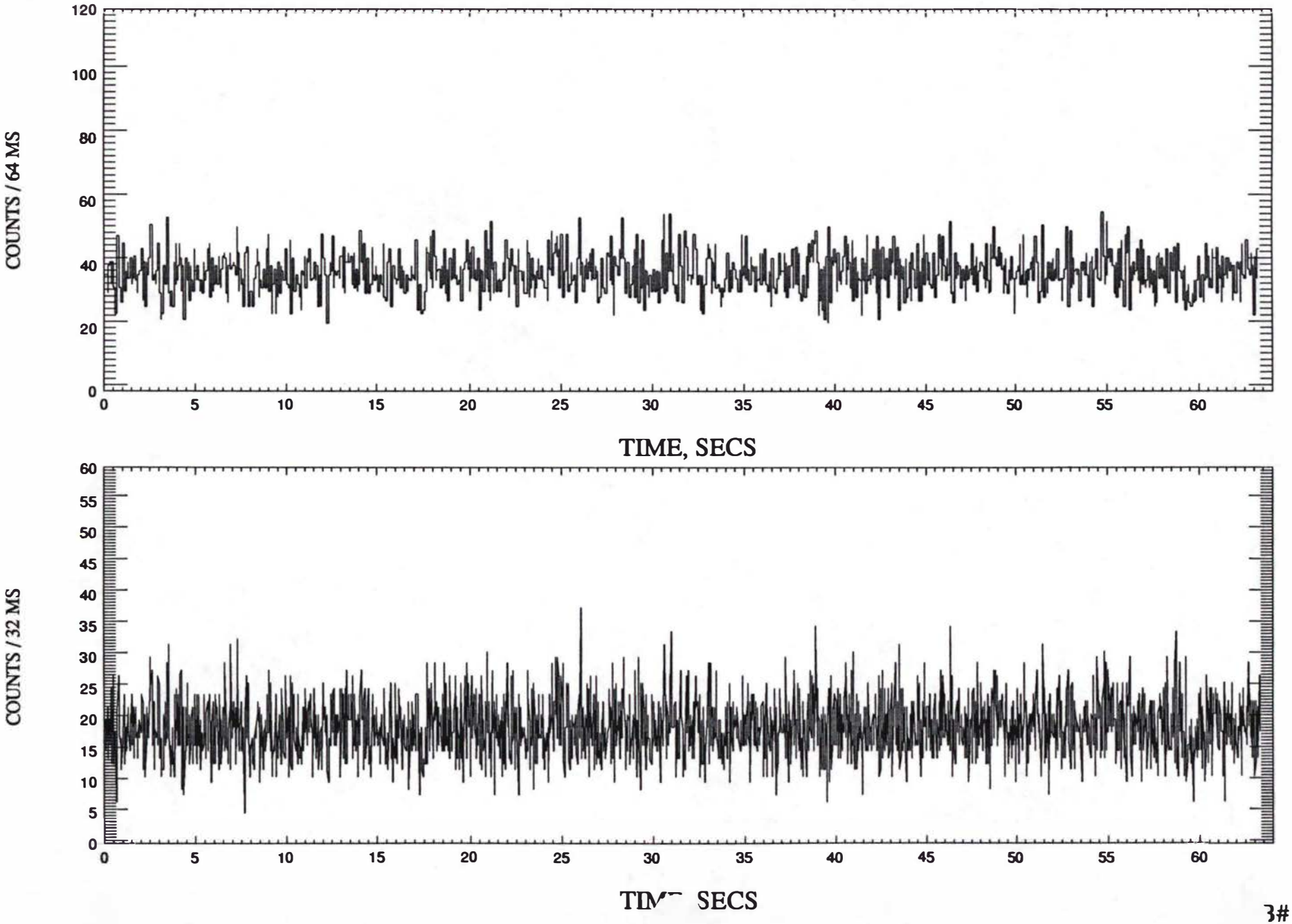
CALIBRATION DATA INCLUDED



UNIVE AL TIME

HUS 2A TRIGGERED DATA EDR day 63, year 1992 5/6/92

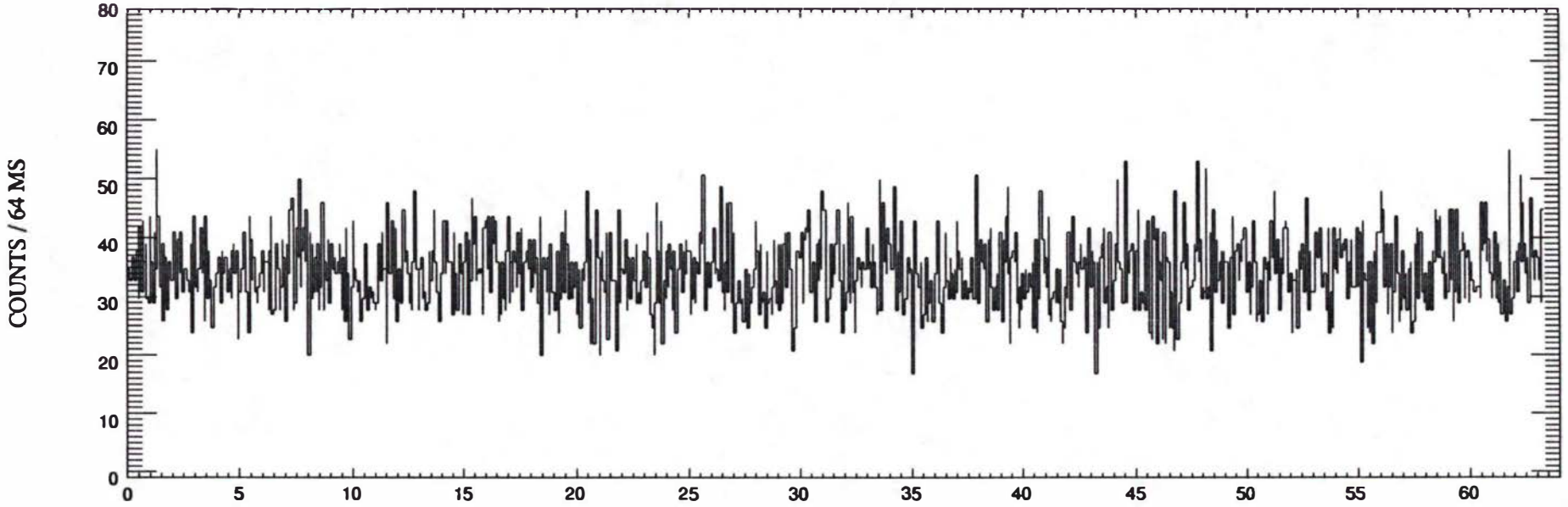
Burst Counter 14 at UT= 7.762941318088 h=27946.589 s

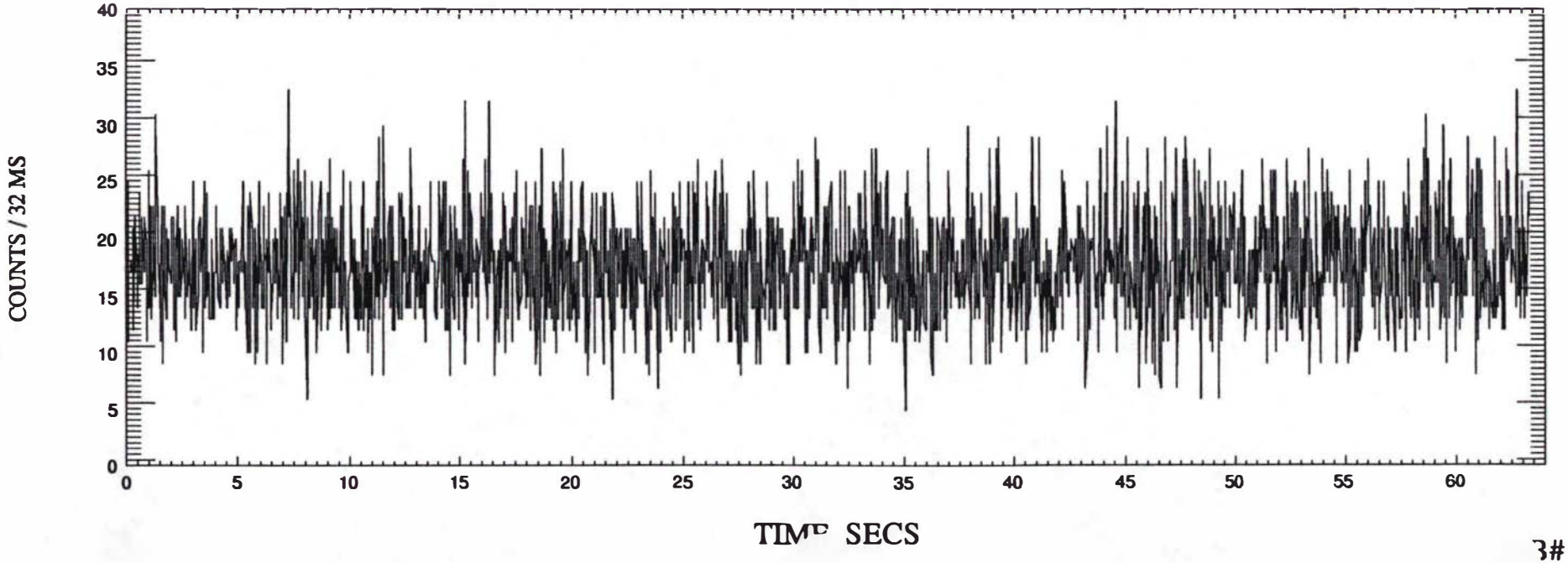


3# 1

HUS 2A TRIGGERED DATA EDR day 63, year 1992 5/6/92

Burst Counter 15 at UT= 8.529515240987 h=30706.255 s

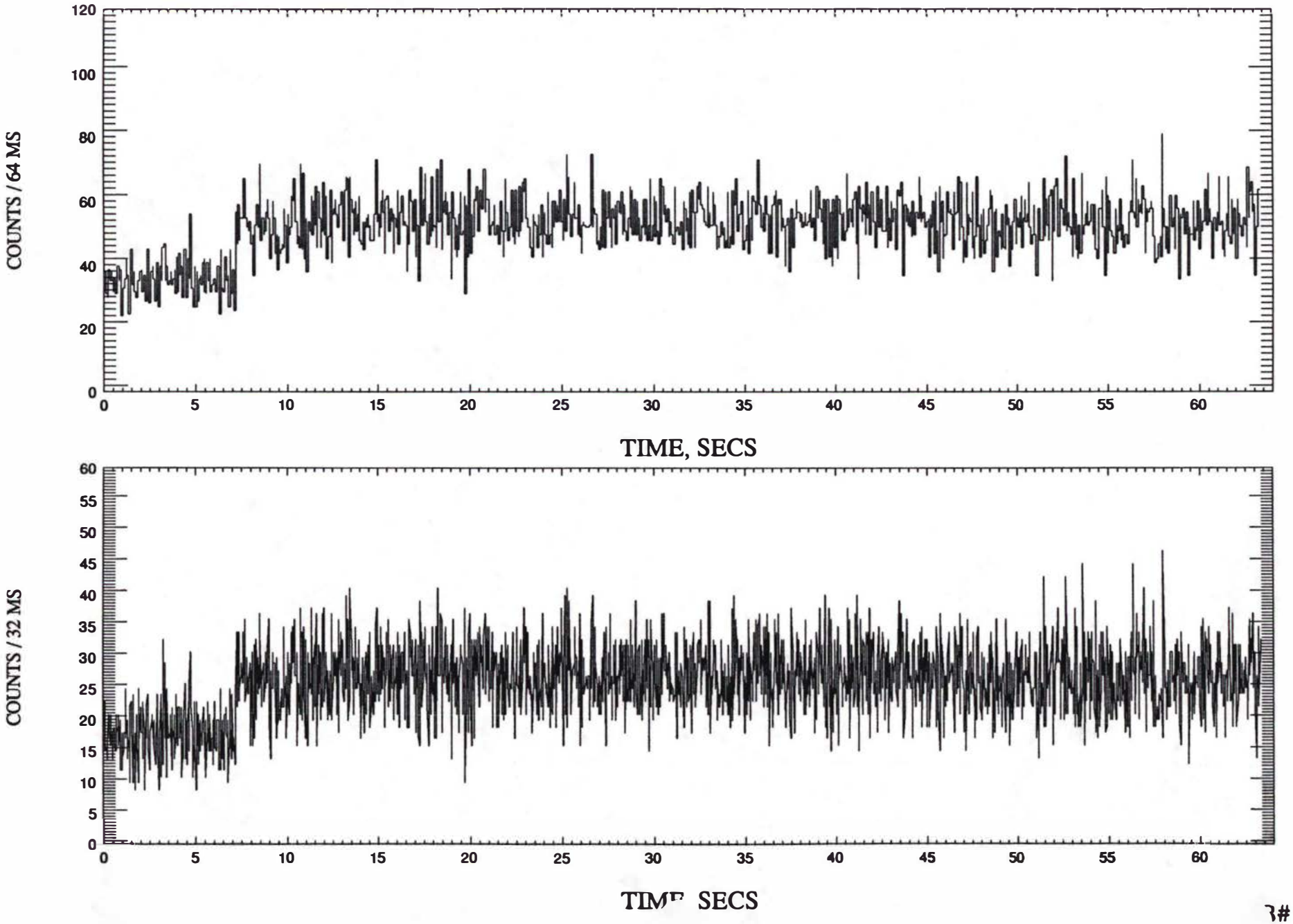




3# 2

HUS 2A TRIGGERED DATA EDR day 63, year 1992 5/6/92

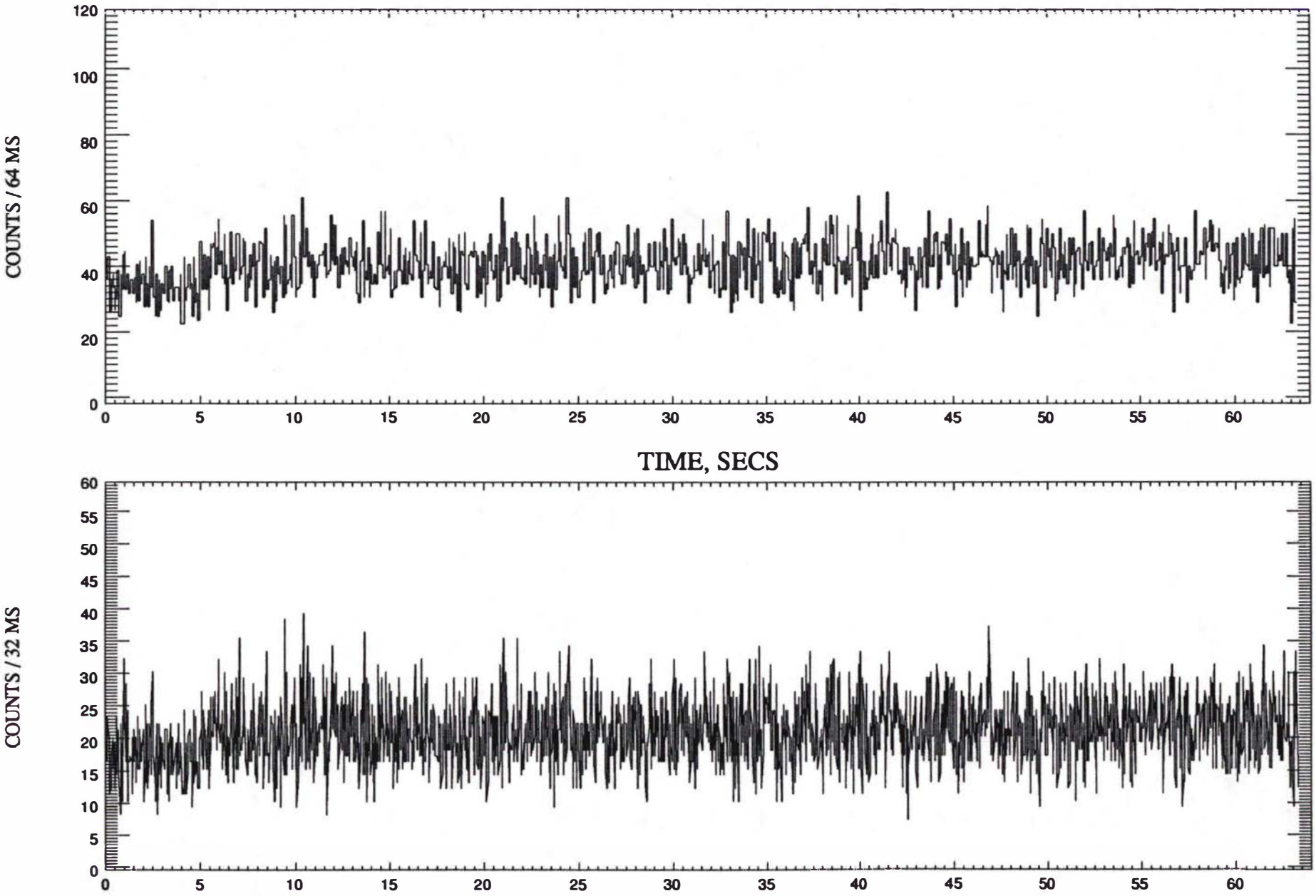
Burst Counter 0 at UT= 9.234319267273 h=33243.549 s



3# 3

HUS 2A TRIGGERED DATA EDR day 63, year 1992 5/6/92

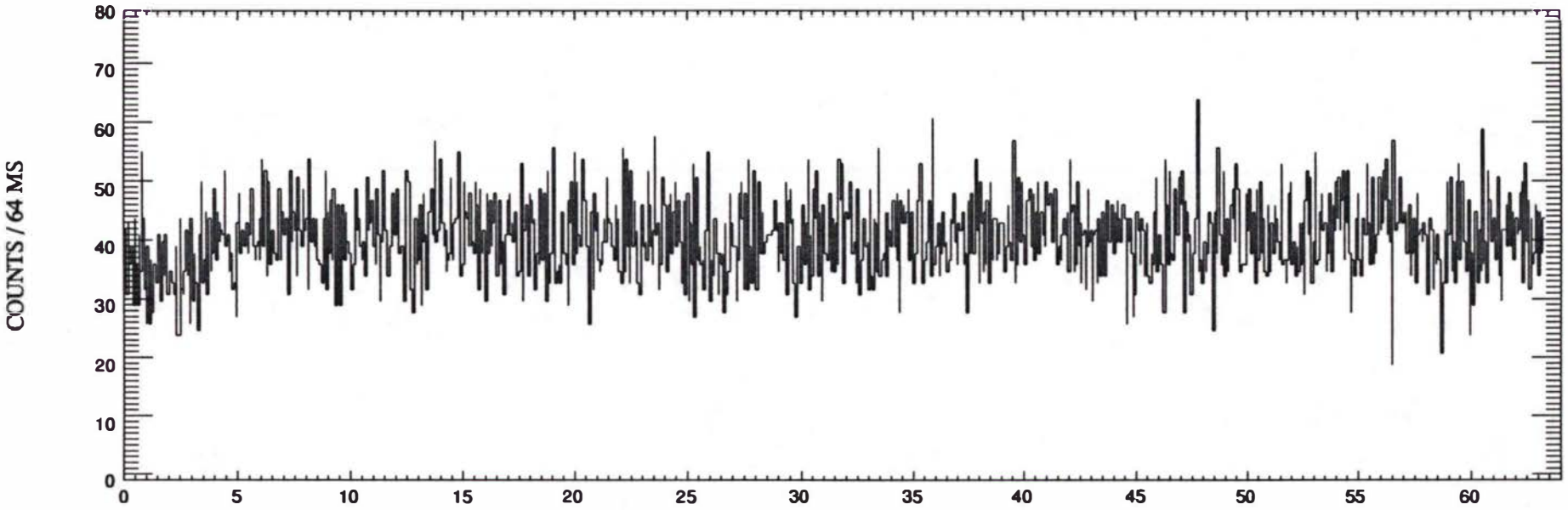
Burst Counter 1 at UT= 9.937178844876 h=35773.844 s

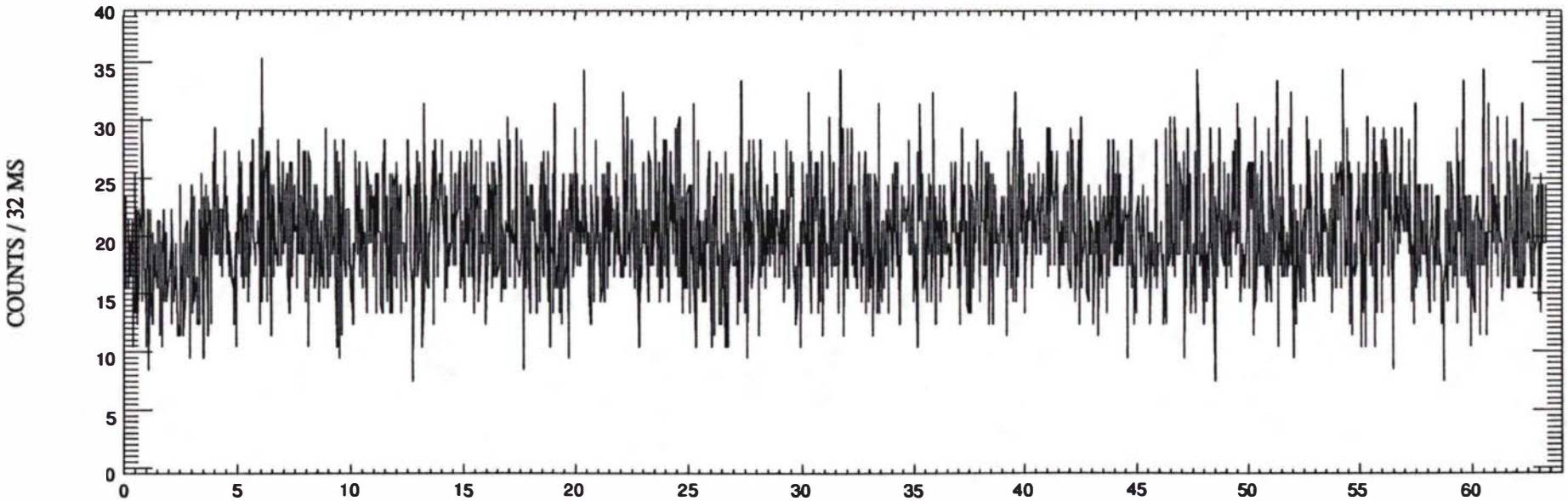


B# 4

HUS 2A TRIGGERED DATA EDR day 63, year 1992 5/6/92

Burst Counter 2 at UT=10.639862645467 h=38303.506 s

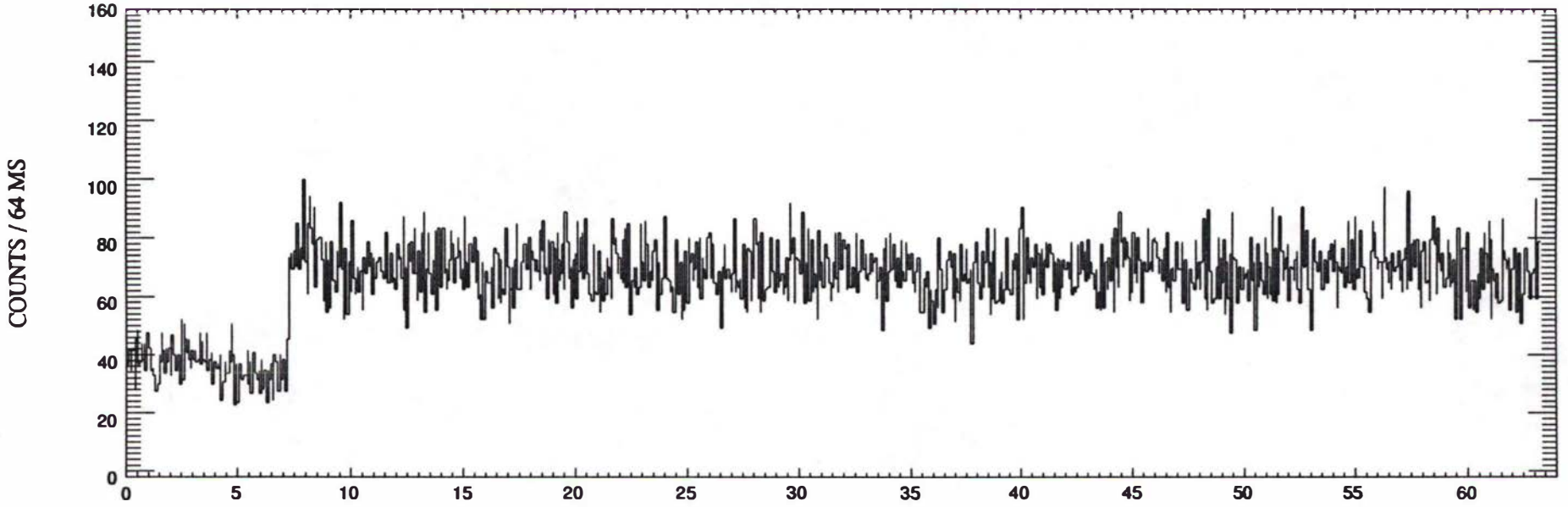


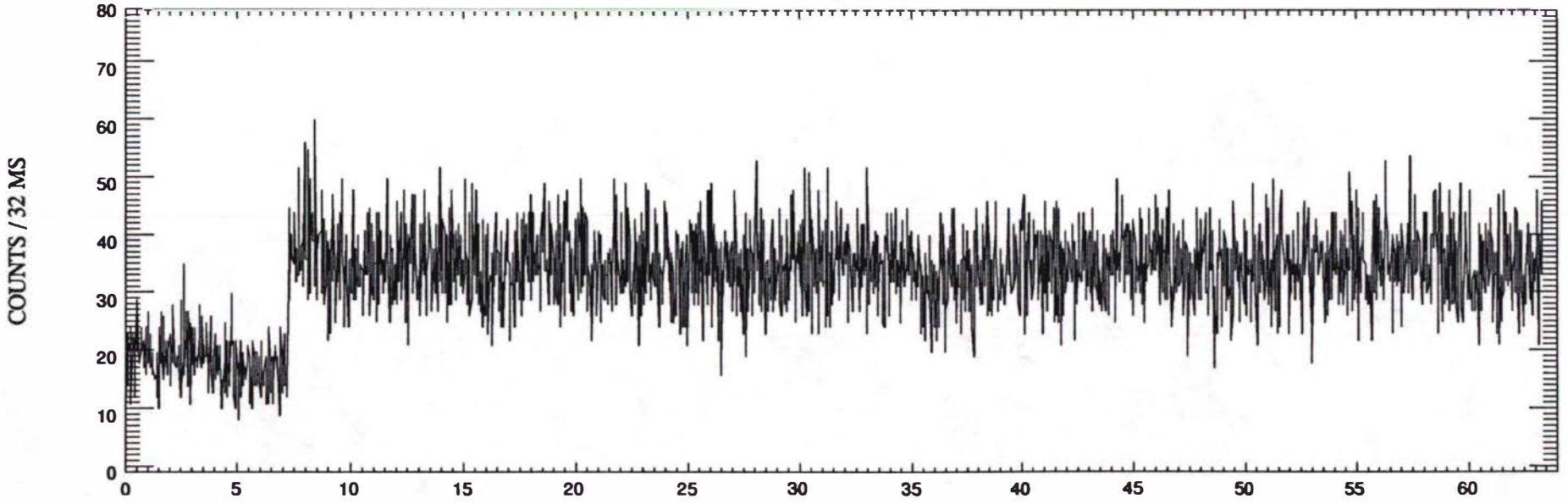


B# 5

HUS 2A TRIGGERED DATA EDR day 63, year 1992 5/6/92

Burst Counter 3 at UT=11.341014323764 h=40827.652 s

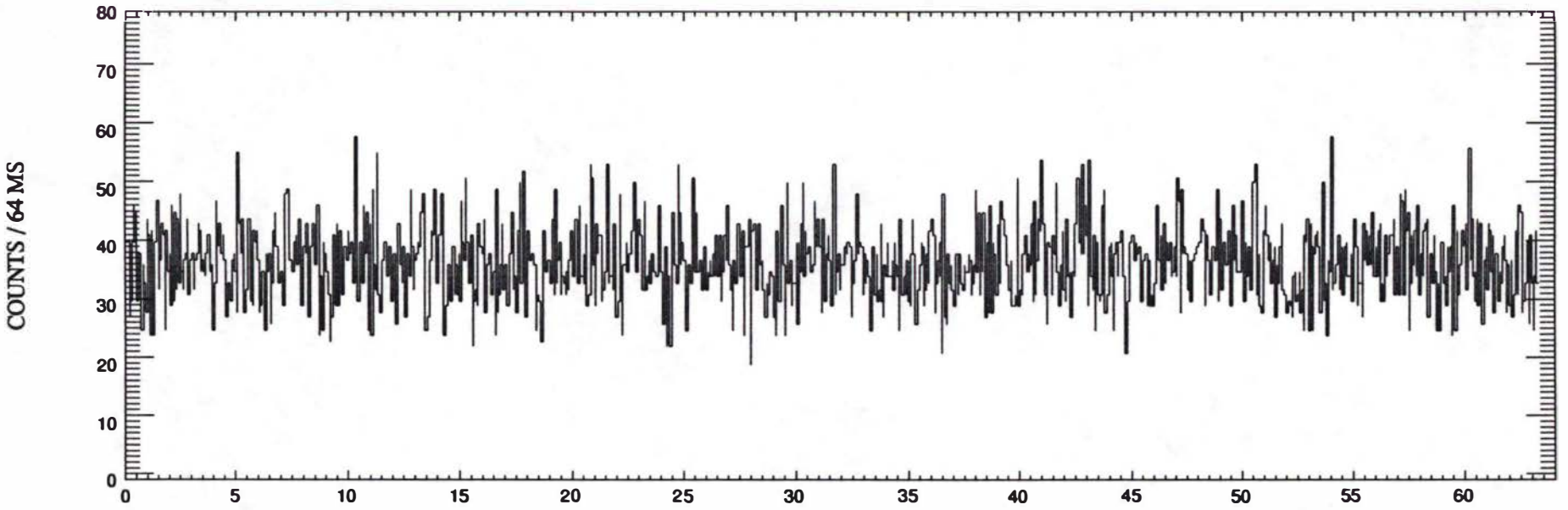




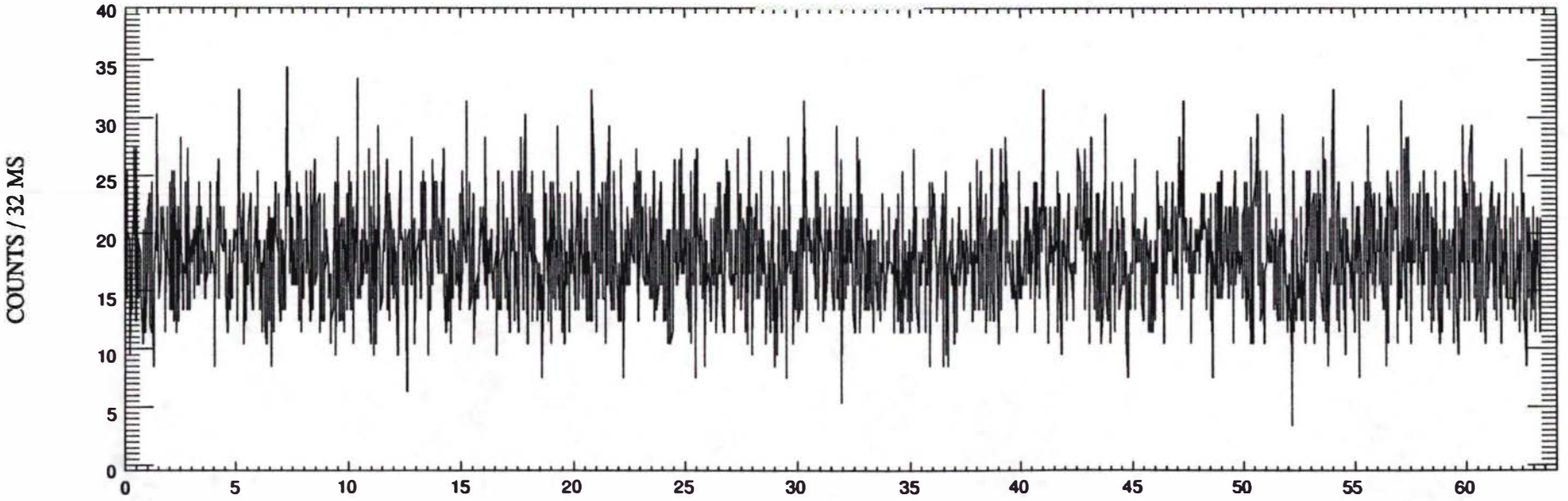
3# 6

HUS 2A TRIGGERED DATA EDR day 63, year 1992 5/6/92

Burst Counter 4 at UT=12.076521475050 h=43475.477 s



TIME, SECS



TIME SECS

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

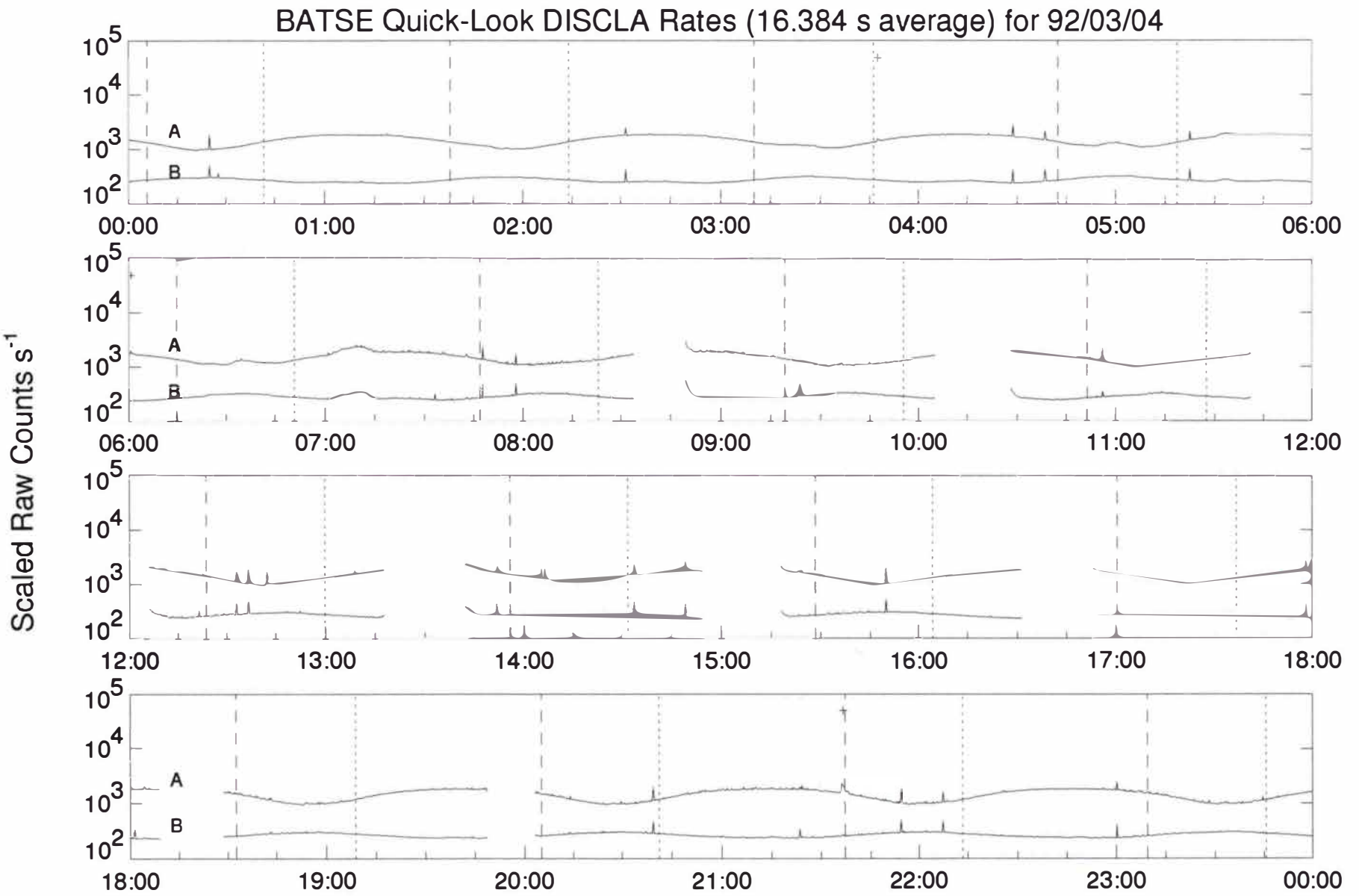
REGARDS,

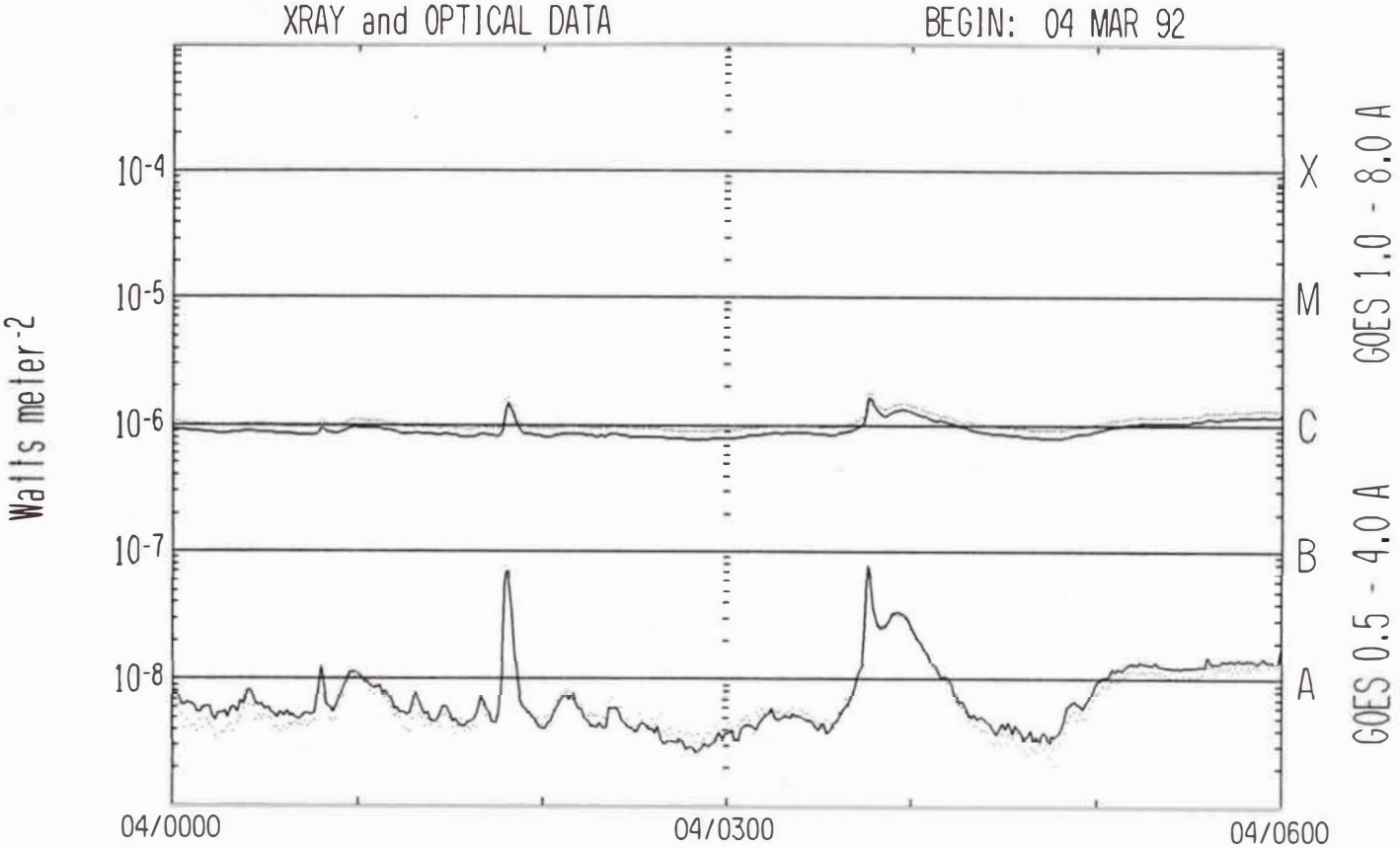
RAY

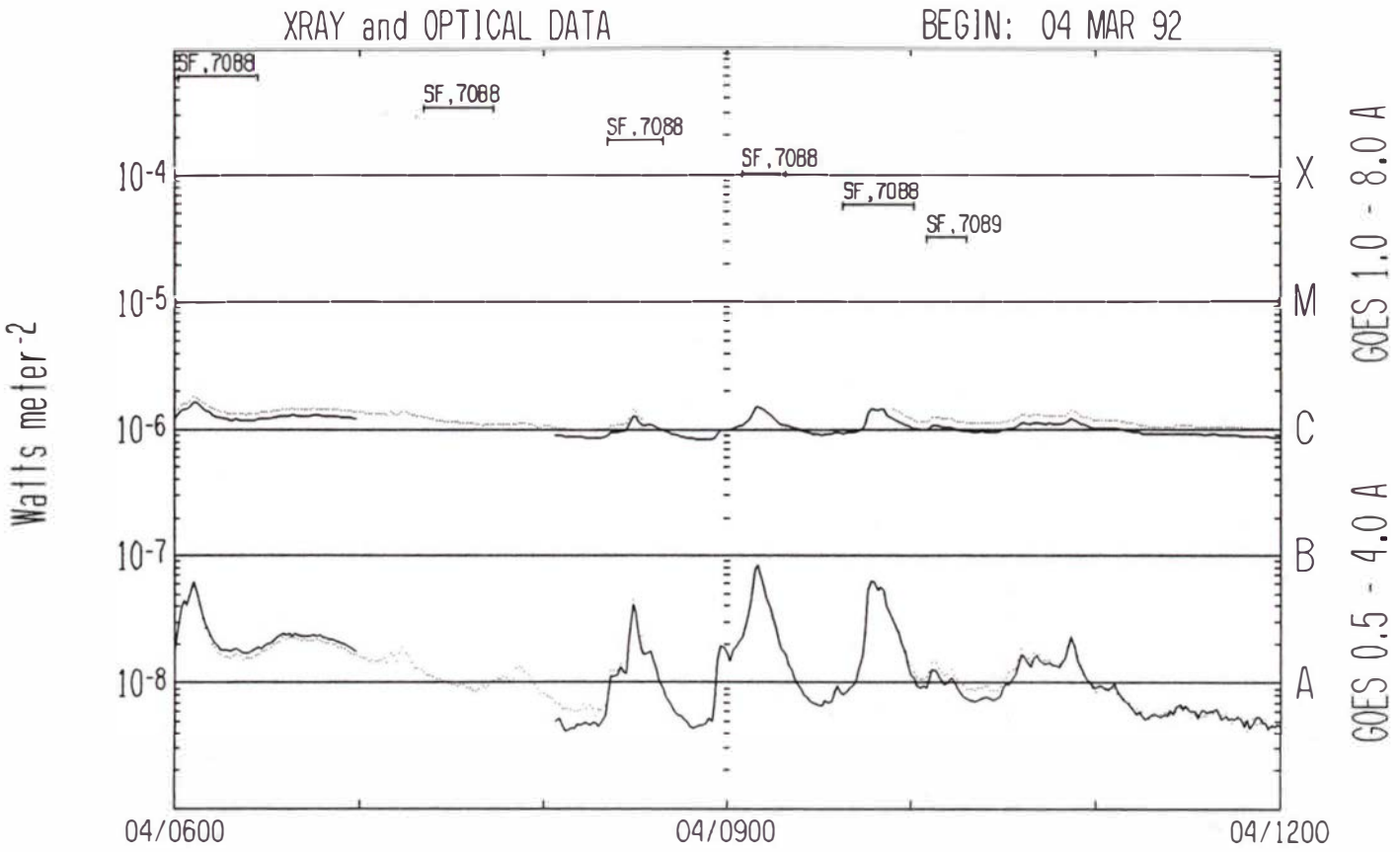
From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
          (utk-mail11d v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

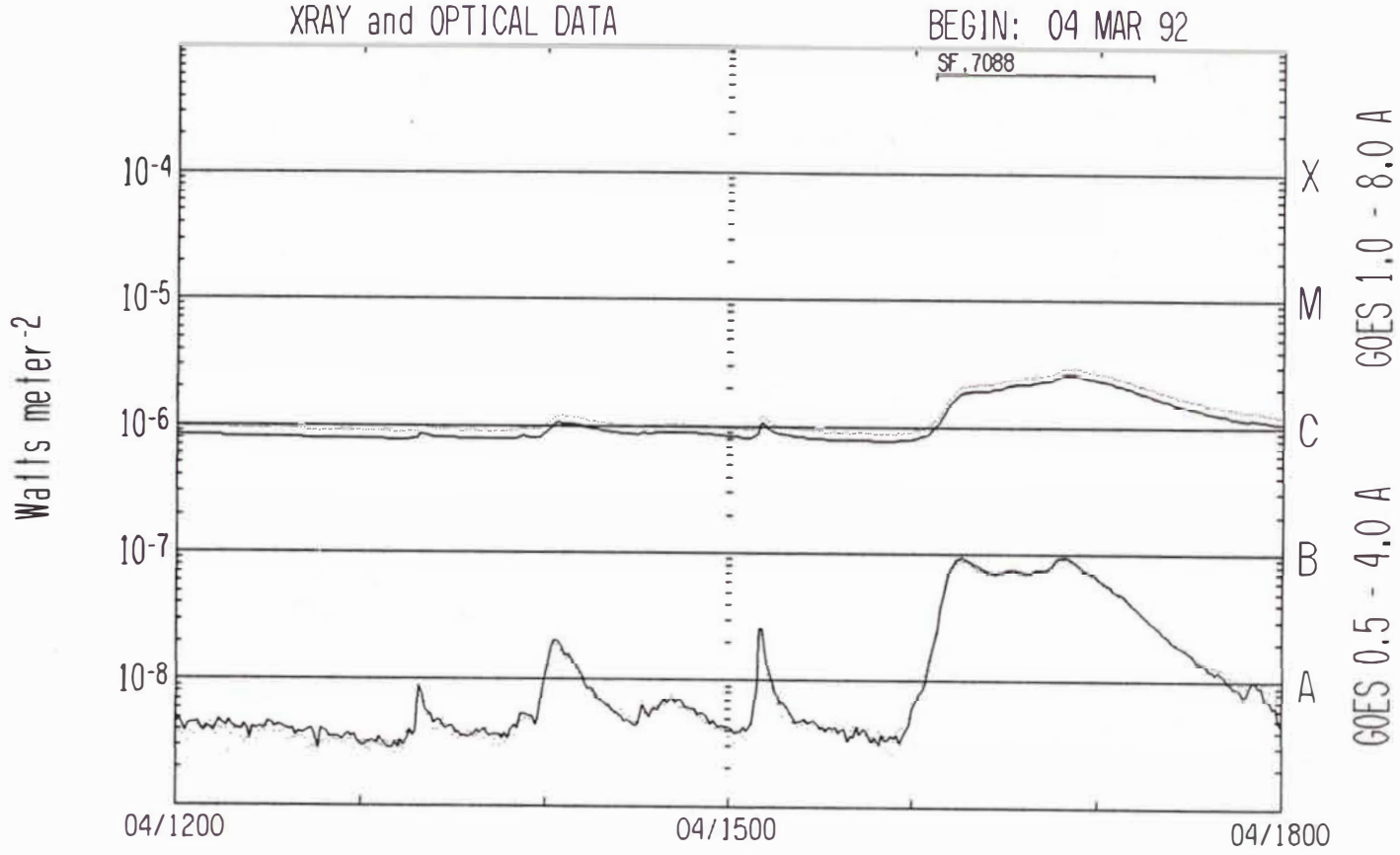
KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF
RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

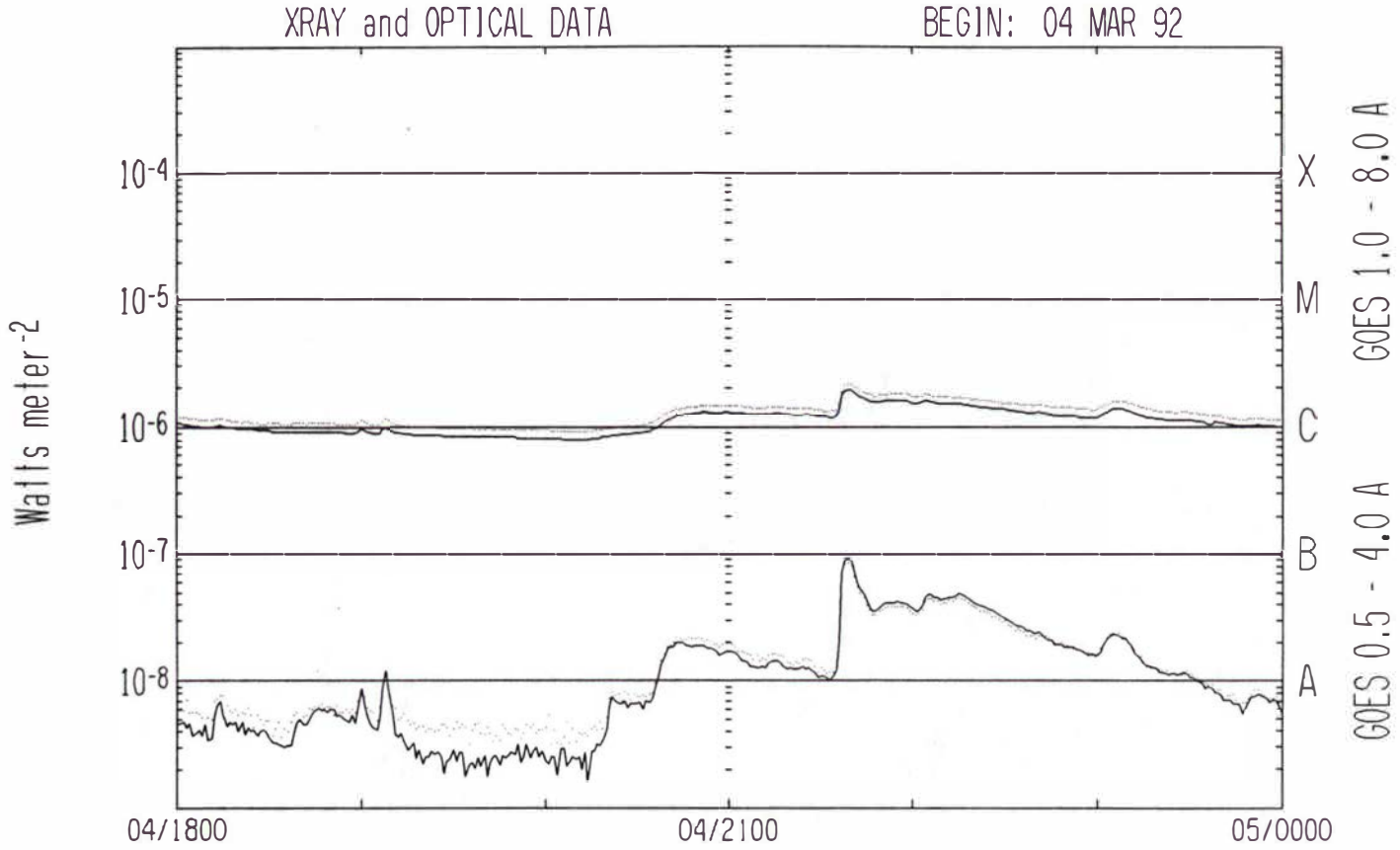
DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/04
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1749 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare


XRAY and OPTICAL DATA
BEGIN: 04 MAR 92
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
04/0000
04/0300
04/0600

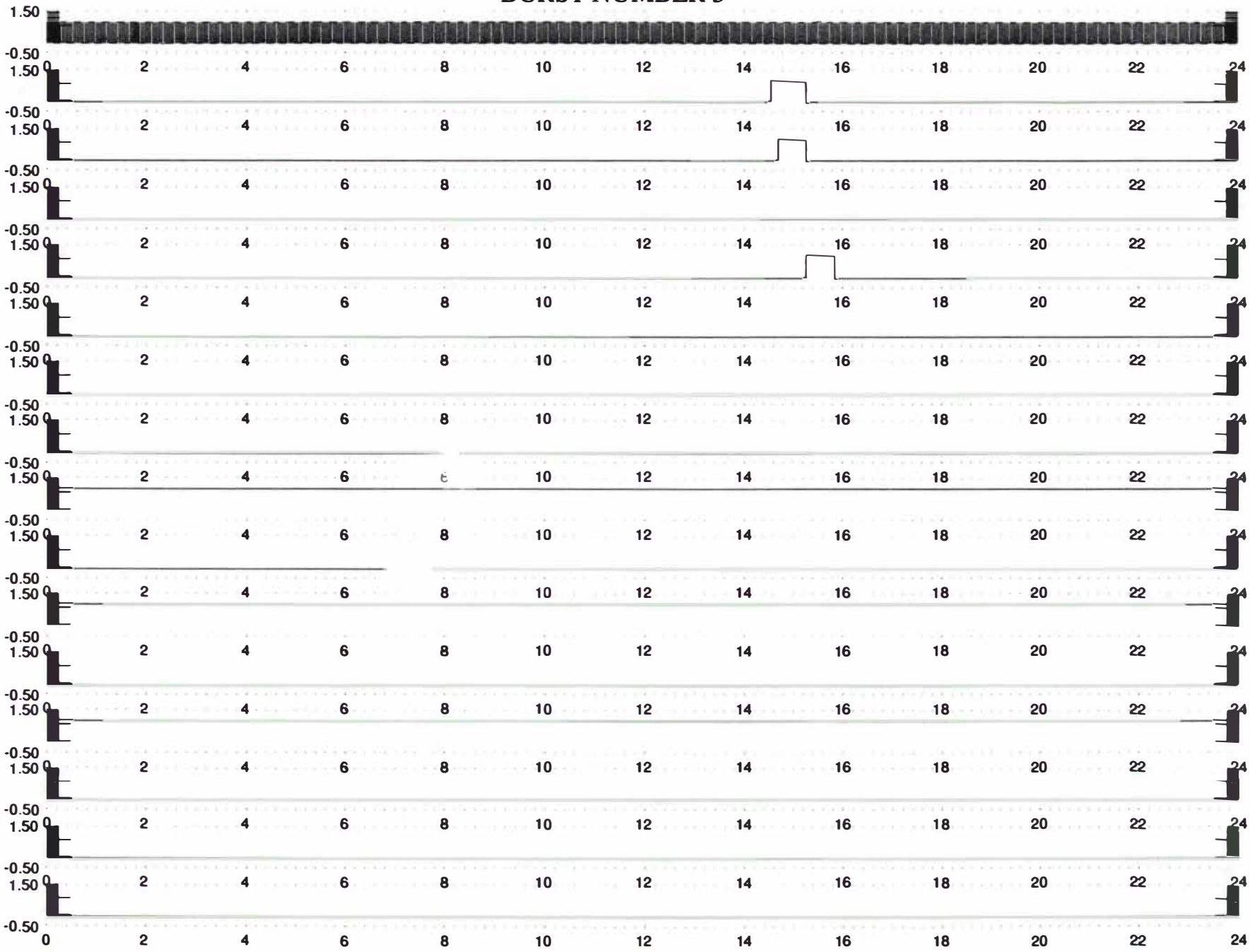

XRAY and OPTICAL DATA
BEGIN: 04 MAR 92
SF,7088
SF,7088
SF,7088
SF,7088
SF,7088
SF,7089
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
Watts meter-2
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
04/0600
04/0900
04/1200


XRAY and OPTICAL DATA
BEGIN: 04 MAR 92
SF,7088
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
04/1200
04/1500
04/1800


XRAY and OPTICAL DATA
BEGIN: 04 MAR 92
Watts meter-2
10-4
10-5
10-6
10-7
10-8
X
M
C
B
A
GOES 1.0 - 8.0 A
GOES 0.5 - 4.0 A
04/1800
04/2100
05/0000

HUS MODES EDR day 64, year 1992 to day 64, year 1992 4/15/92

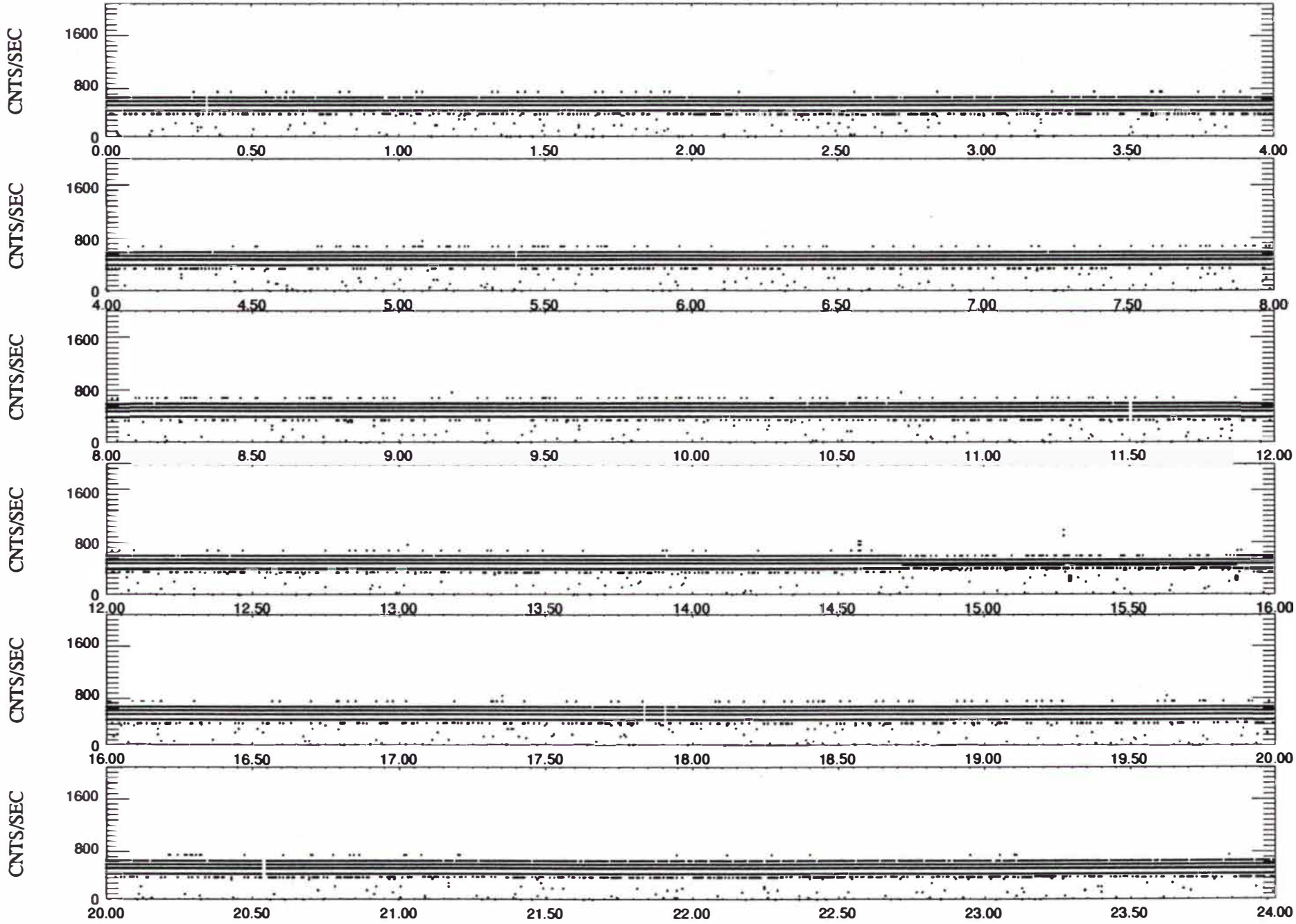
BURST NUMBER 5



UNIVE AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 64, year 1992 to day 64, year 1992 4/15/92

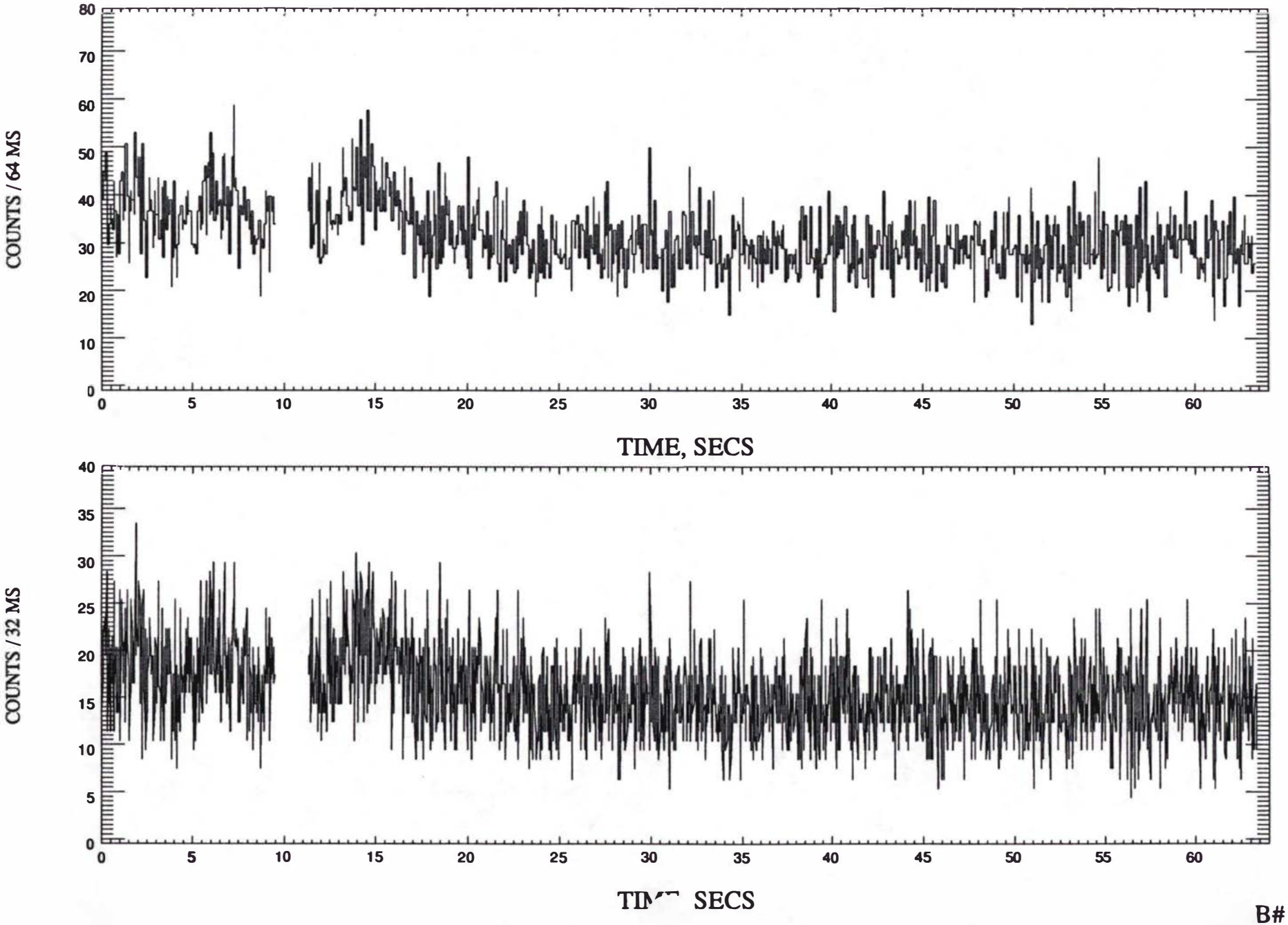
CALIBRATION DATA INCLUDED



UNIVE AL TIME

HUS 2A TRIGGERED DATA EDR day 64, year 1992 5/6/92

Burst Counter 5 at UT=14.571354009840 h=52456.874 s



B# 1

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST #  1463
EVENT OF 1992 MAR  5 DAY OF YEAR= 65
EVENT CROSSING TIME AT BATSE      :  3642. S. OR 01:00:42.1
COORDINATES ARE     .000     .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 268.400   59.800
EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  5/ 3/  92 IS:
RA=  157.840 DEC=     9.008 DIST=     4.417 AU
BATSE-ULYSSES DISTANCE =  660742808. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 87.76 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=    86.30 SECS.
CROSSING TIME AT ULYSSES     IS  3728. S. OR   01:02:08 +/-  433.67 SECONDS
```

NO

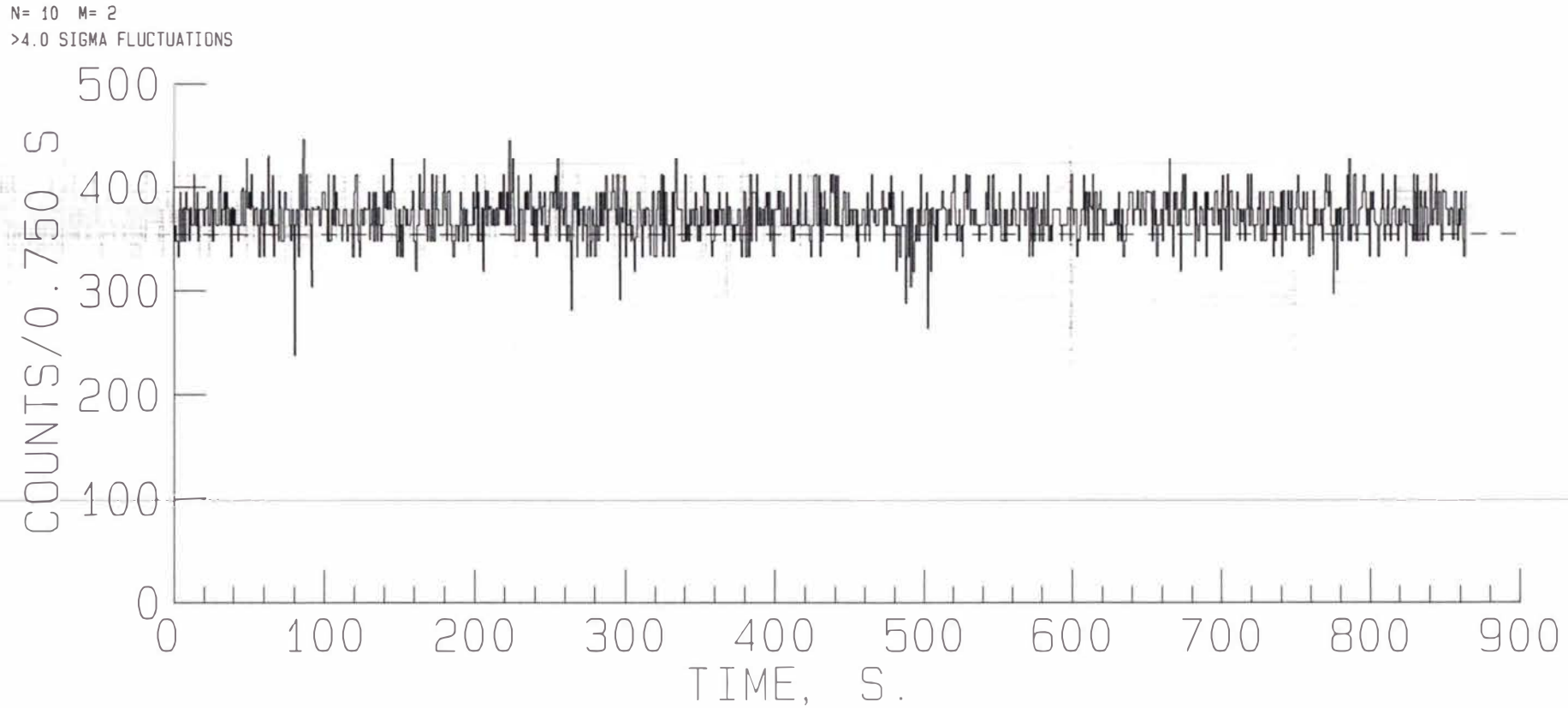
14/ 4/93

ULYSSES RT

5/ 3/92 3312.164 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



From khurley@space6.ssl.berkeley.edu Mon Oct 12 08:21:07 1992
Date: Mon, 12 Oct 92 07:16:15
From: khurley@space6.ssl.berkeley.edu
Content-Length: 321

MESSAGE FOR RENE HUDEC

Dear Rene,

I have now searched the Ulysses data for events corresponding to the following BATSE bursts:

Aug 29, Sep2, Nov29, Dec 28, 1991; Jan 21, Feb24, Feb27, and Mar 5, 1992.

As I suspected, there were no corresponding Ulysses bursts, no doubt because the BATSE events were too weak.

Kevin

From kouveliotou%8868.span@Sdsc.Edu Fri Oct 2 16:32:09 1992
Date: Fri, 2 Oct 92 23:34:49 GMT
From: kouveliotou%8868.span@Sdsc.Edu (Chryssa Kouveliotou NASA/MSFC (205) 544-7711)
To: khurley@sunspot.ssl.berkeley.edu
X-St-Vmsmail-To: HURLEY
Content-Length: 461

Dear kevin,
here is a partial answer to your request. The remaining I will get
from M. Brock, and send it on Monday (hopefully).
The trigger #, times (corrected for the 2 sec delay), RA and dec of
Rene's events are:

910829	741	81582	57	22
910902	752	82535	300	-2
911129	1129	64791	44	1
911228	1244	62526	281	40
920121	1308	79009	31	34
920224	1435	77880	170	14
920227	1446	63976	243	15
920227	1447	75000	198	46
920305	1463	3642	294	57

Chryssa

From @space6.ssl.berkeley.edu,@cmsa.berkeley.edu:ASTMPH@CSEARN.BITNET Sun Aug 30 15:12:21 1992
Date: Mon, 31 Aug 92 00:12:33 MDT
From: Petr Pravec <ASTMPH%CSEARN.BITNET@cmsa.berkeley.edu>
Subject: msg from Rene Hudec
To: khurley@space6.ssl.berkeley.edu
Content-Length: 1712

to: Kevin Hurley < khurley@spece6.ssl.berkeley.edu>

Dear Kevin:

we have found the following positional coincidences between BATSE GRB and OT records:
GRB 920224 OT 910407 In 2 mag, but count rates not too bad. Get BATSE data + check
GRB 911228 OT 910719 Get BATSE data
GRB 920505 OT 910811 " " "
GRB 920121 OT 910917 " " "
i.e. these GRB and OT coincides positionally within the given optical and gamma ray error boxes. However, the error boxes we have for these GRB are large and so the coincidences may be accidental only. Please let me know whether or not are the positions of these GRBS known more accurately by triangulation method. I have already asked Chryssa but she recommended to ask you directly as owner of this information.
The same information would be also important for those GRBS we have simultaneous plates :
911025, 911027, 911127, 911202, 911209, ~~911210~~, 920110, 910511, 910809
910505, 910829, 910902, 911129, 911228, 920121, 920209, 920224, 920227, 920305
and 920505 Same as above

For these GRB, we have between 1 and 9 Plates taken simultaneously and covering the position. However, the BATSE errors are large (14 deg dia) and hence the search for optical counterparts is very laborious and difficult. If you would have a more precise position determined by triangulation, then we could investigate this box more carefully.
Naturally, I guarantee you that this information willnot be given to any other person and will be used for the proposed search only. In the case of any discovery , publication etc. you will be considered as co-author and asked for permission prior release.
Regarding the release of HCO plates, I have send an email message to Martha Hazen . She will contact you when necessary . Thank you.

Kind regards Rene Hudec

911025 No
911027 No
911127 Yes ✓
911202 Yes ✓
911209 Yes ✓
911210 Maybe
920110 Yes ✓
910511 No ✓
910809 ~~Yes~~ No
910505 ~~Yes but I suspect - but it's not~~
910829 Get BATSE data + look
910902 " "
911129 " "
911228 " "

920121 Get BATSE data + look
920209 No - in 2 mag
920224 See above comment
920227 Get BATSE data + look
920305 "

From @space6.ssl.berkeley.edu,@cmsa.berkeley.edu:ASTMPH@CSEARN.BITNET Thu Sep 3 22:10:38 199
Date: Fri, 04 Sep 92 07:10:41 MDT
From: "R.Hudec" <ASTMPH%CSEARN.BITNET@cmsa.berkeley.edu>
To: khurley@space6.ssl.berkeley.edu
Content-Length: 1333

to: Kevin Hurley < space6.ssl.berkeley.edu>

Dear Kevin,
thanks for your message from Aug 31.
Today, I got an e-mail message from Martha Hazen < martha@cfa3>. She is ready to prepare the HCO plates for the trip. So now Roland should contact Martha and give a concrete date when the plates should be released. The problem is that, although I have send him many messages and even letters in the last months, I never got answer from him. Could you please try to help here ? Martha is informed and kindly agrees to release and prepare the plates.

Regarding the GRB detected by BATSE, here is a list of events for which we have some hints for coincidences and/or simultaneous optical data:

GRB date		UT,s	
910511		79390	NO
910809	#658	03507	Request BATSE α δ
911025		77116	NO
911027	#942	06313	Request BATSE α δ
911127		15730	YES
911209		03410	NO
910505		72918	OT candidate NO
910823	#717	75686	Get BATSE α δ
910829	#741	81584	Get BATSE α δ
910902	#752	82537	Get BATSE α δ
911129	#1129	64793	Get BATSE α δ
911228	#1244	62528	CC Get BATSE α δ
920121		79011	C Get BATSE α δ
920209		78046	Get BATSE α δ
920224		77882	C Get BATSE α δ
920227		75002	Get BATSE α δ
920305		3644	Get BATSE α δ
920505		78891	C Get BATSE α δ

C denotes that positional coincidence with previously mentioned OT has been found. CC denotes that 2 such coincidences were found.

Kinde regards, Rene Hudec

Request Sep 9

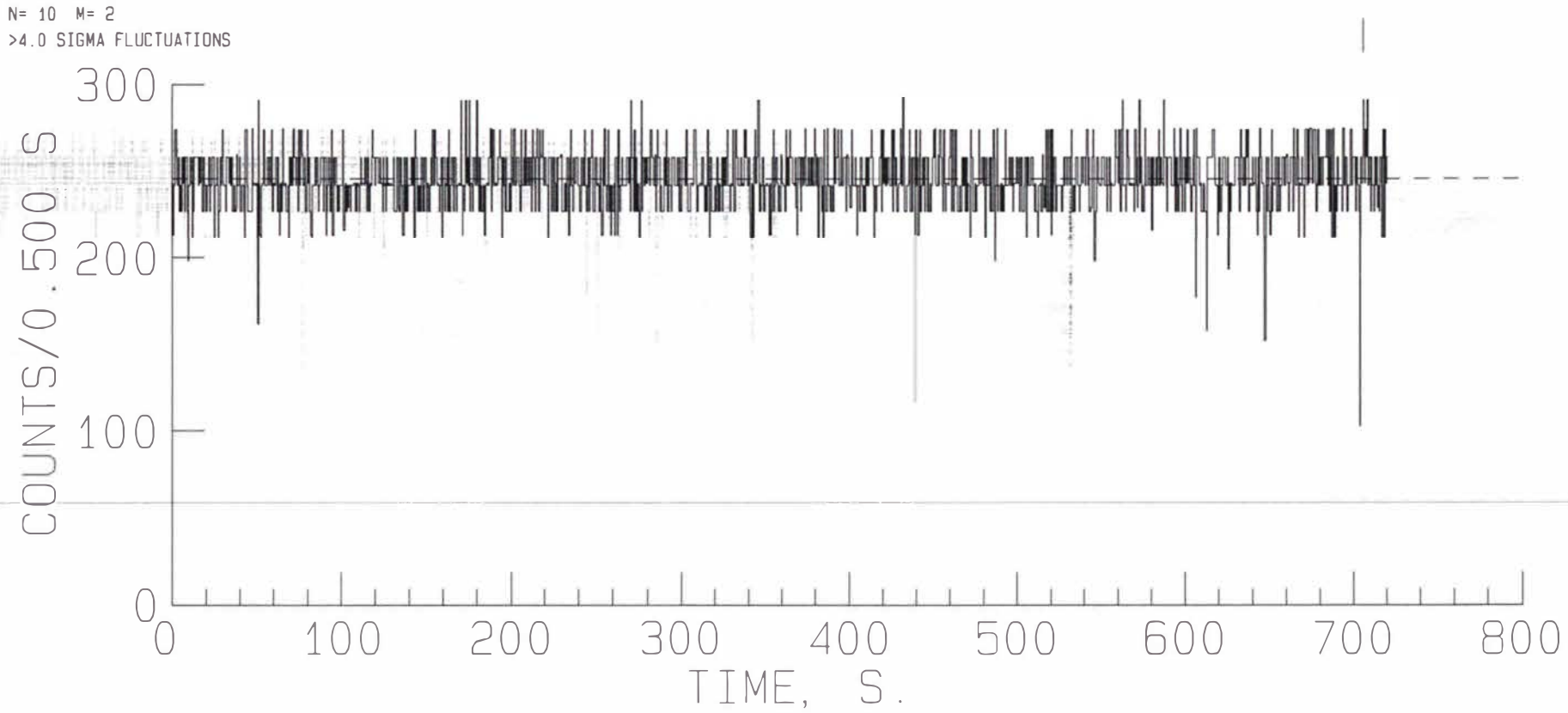
```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST #  1465
EVENT OF 1992 MAR  5 DAY OF YEAR= 65
EVENT CROSSING TIME AT BATSE     : 35275. S. OR 09:47:55.3
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 263.500  -58.500
EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  5/ 3/  92 IS:
RA=  157.840 DEC=    9.008 DIST=    4.417 AU
BATSE-ULYSSES DISTANCE =  660742808. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 74.17 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  601.25 SECS.
CROSSING TIME AT ULYSSES    IS 35877. S. OR   09:57:56 +/-  427.27 SECONDS
```

ND

14/ 4/93

ULYSSES RT
5/ 3/92 34704.207 s
0.250 S INTERVALS REGROUPED BY 2
0- 0 keV



```
          ********************
          *CATSEARCH PROGRAM*
          ********************

 ATSE BURST # 1466
EVENT OF 1992 MAR  5 DAY OF YEAR= 65
EVENT CROSSING TIME AT BATSE      : 36174. S. OR 10:02:54.1
COORDINATES ARE    0.000    0.000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 134.380    80.520
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON  5/ 3/  92 IS:
RA=  157.840 DEC=     9.008 DIST=     4.417 AU
BATSE-ULYSSES DISTANCE =  660742808. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL     DIRECTION=107.68 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -669.26 SECS.
CROSSING TIME AT ULYSSES     IS 35505. S. OR 09:51:44.8 +/-  404.42 SECONDS
```

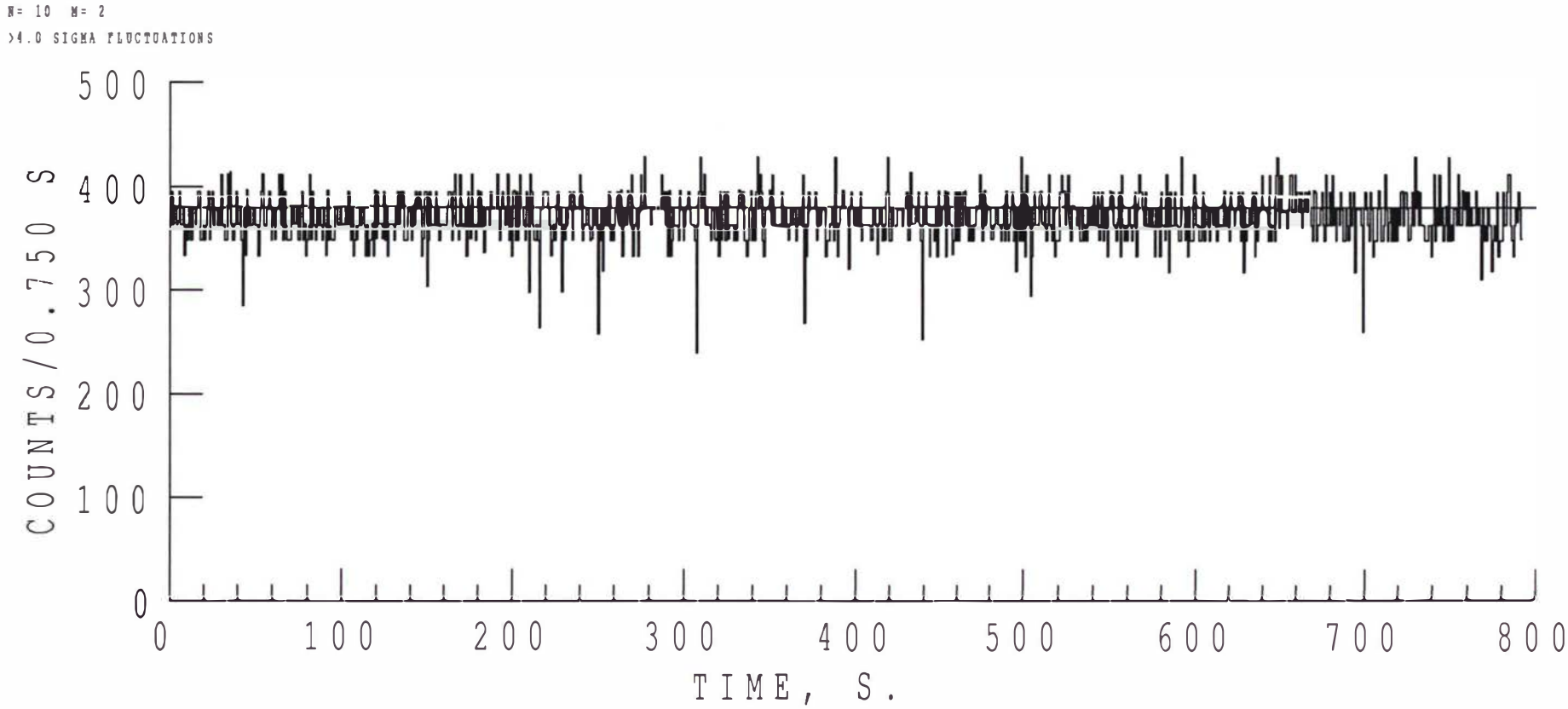
9/11/95

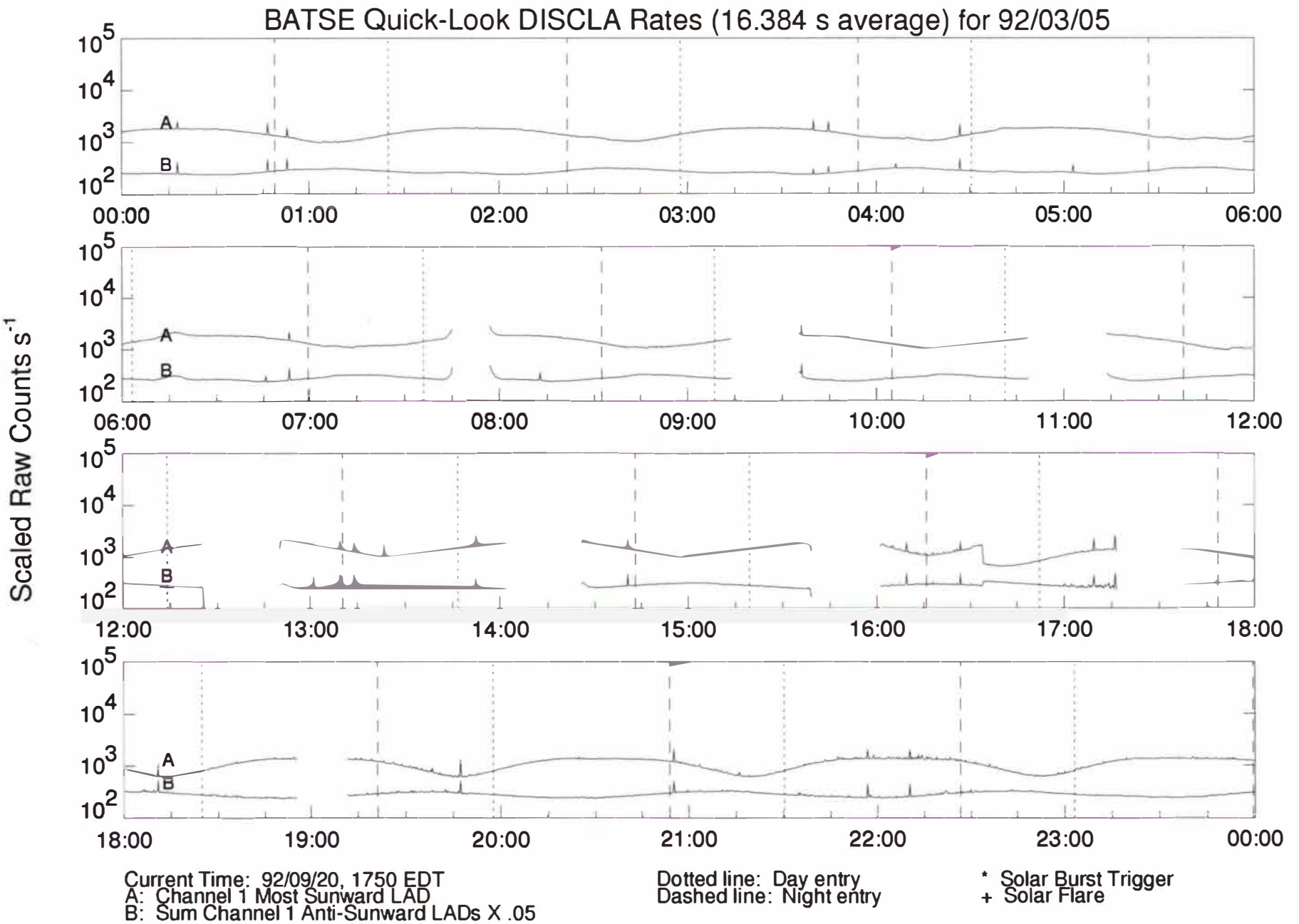
ULYSSES RT

5/ 3/92 35100.215 s

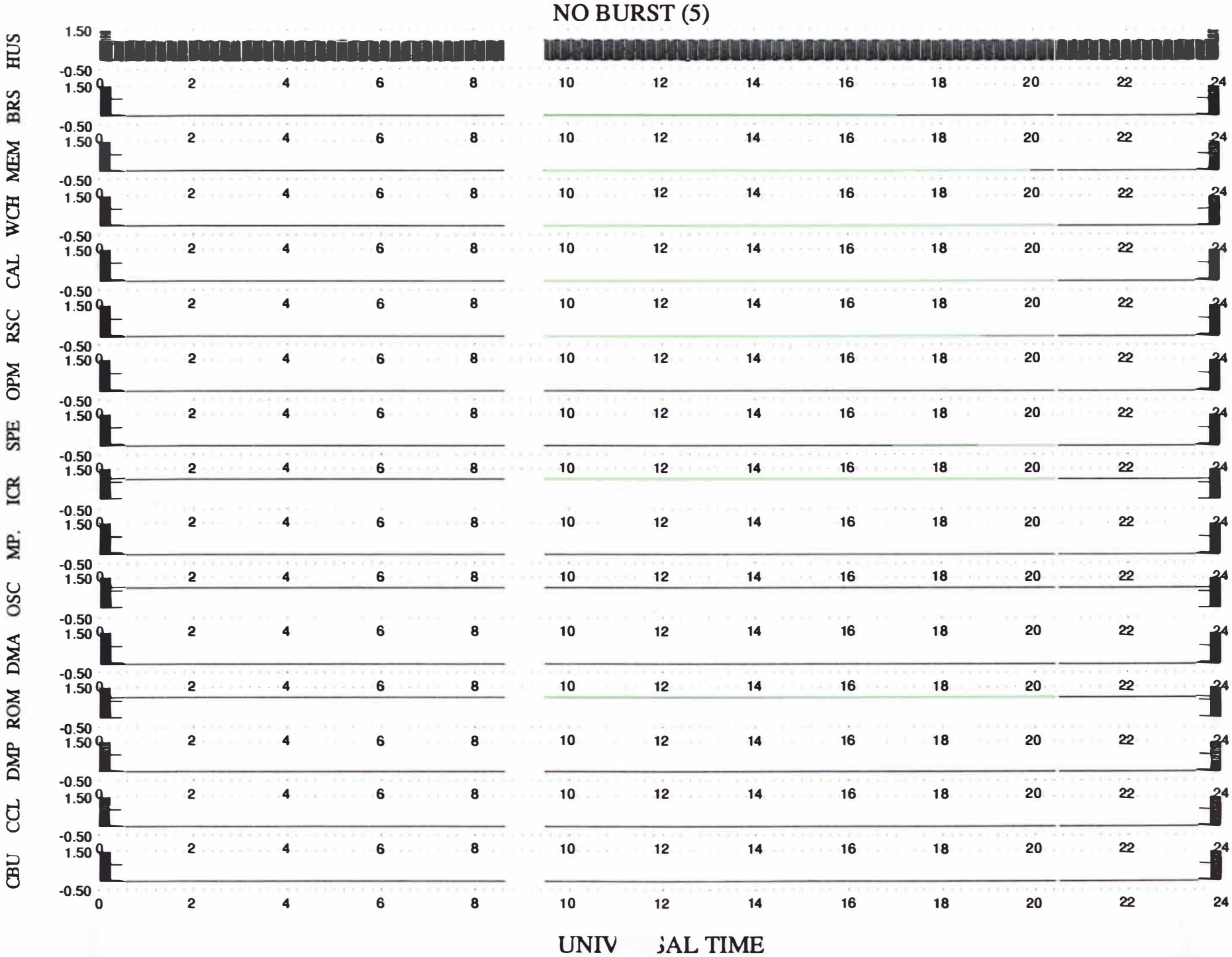
0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



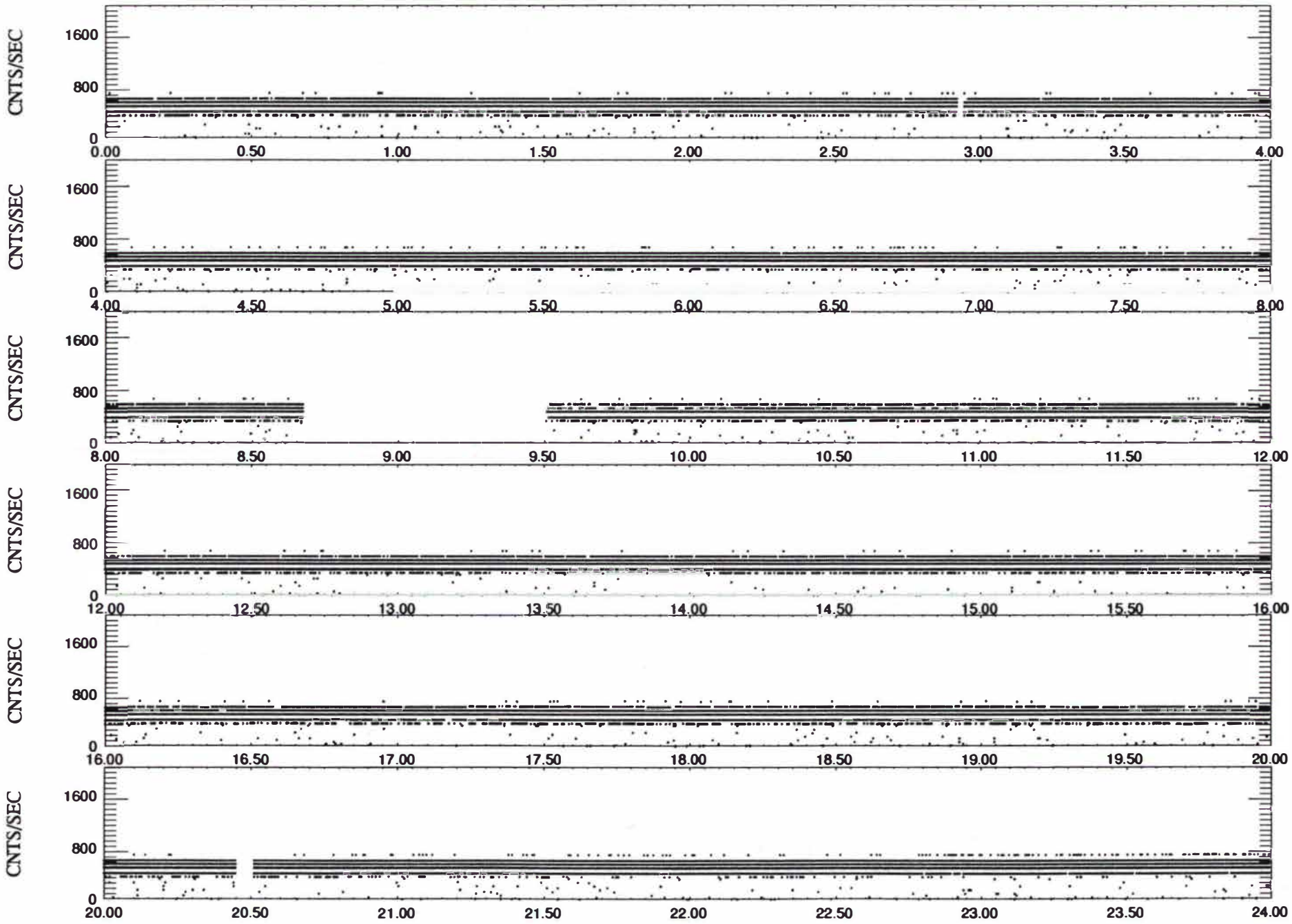

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/05
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1750 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 65, year 1992 to day 65, year 1992 4/15/92

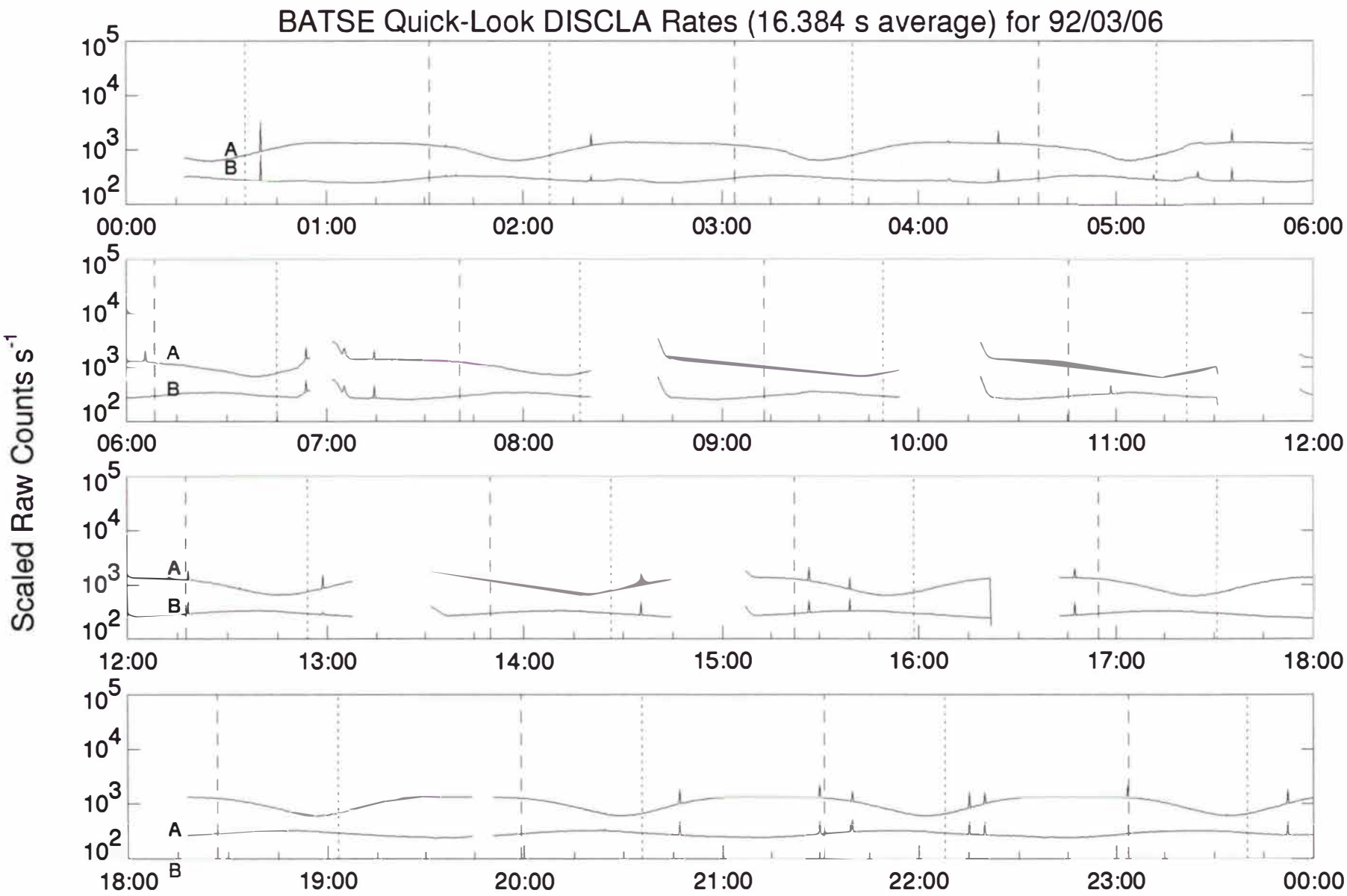


HUS 2A, MODE 1, NOT AVERAGED EDR day 65, year 1992 to day 65, year 1992 4/15/92

CALIBRATION DATA INCLUDED

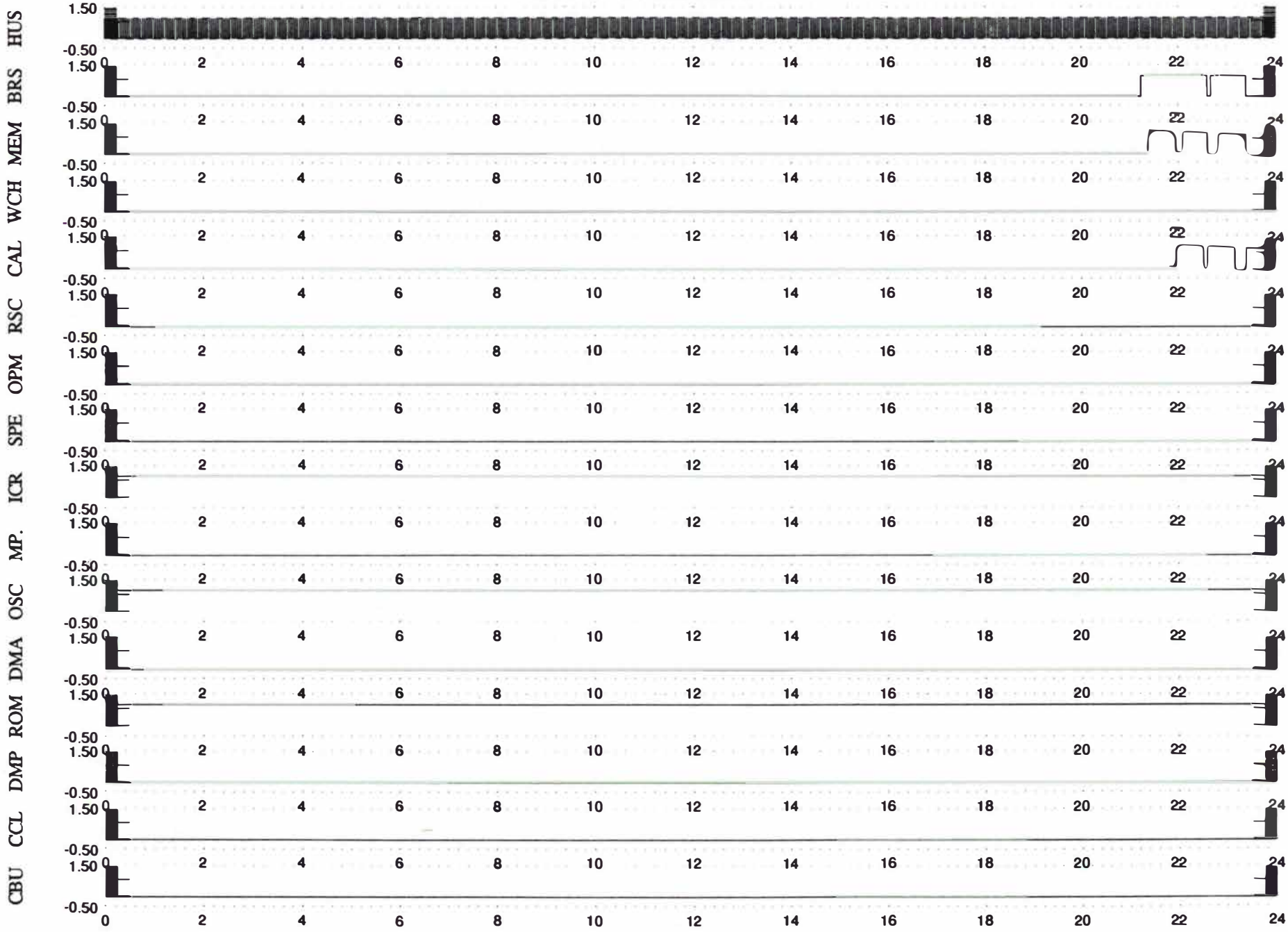


UNIVE AL TIME


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/06
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1752 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 66, year 1992 to day 66, year 1992 4/15/92

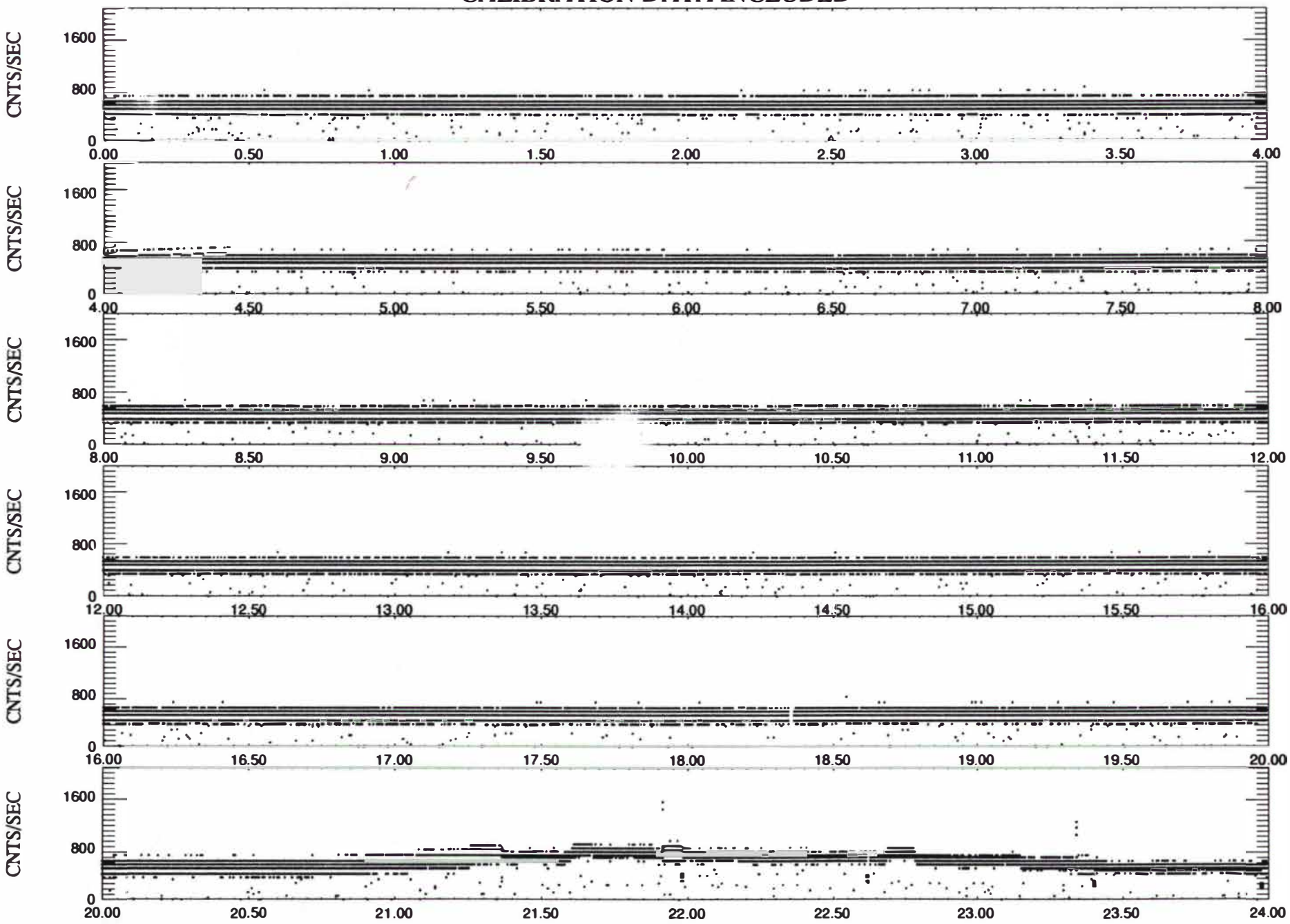
BURST NUMBER 6 - 8



UNIV. AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 66, year 1992 to day 66, year 1992 4/15/92

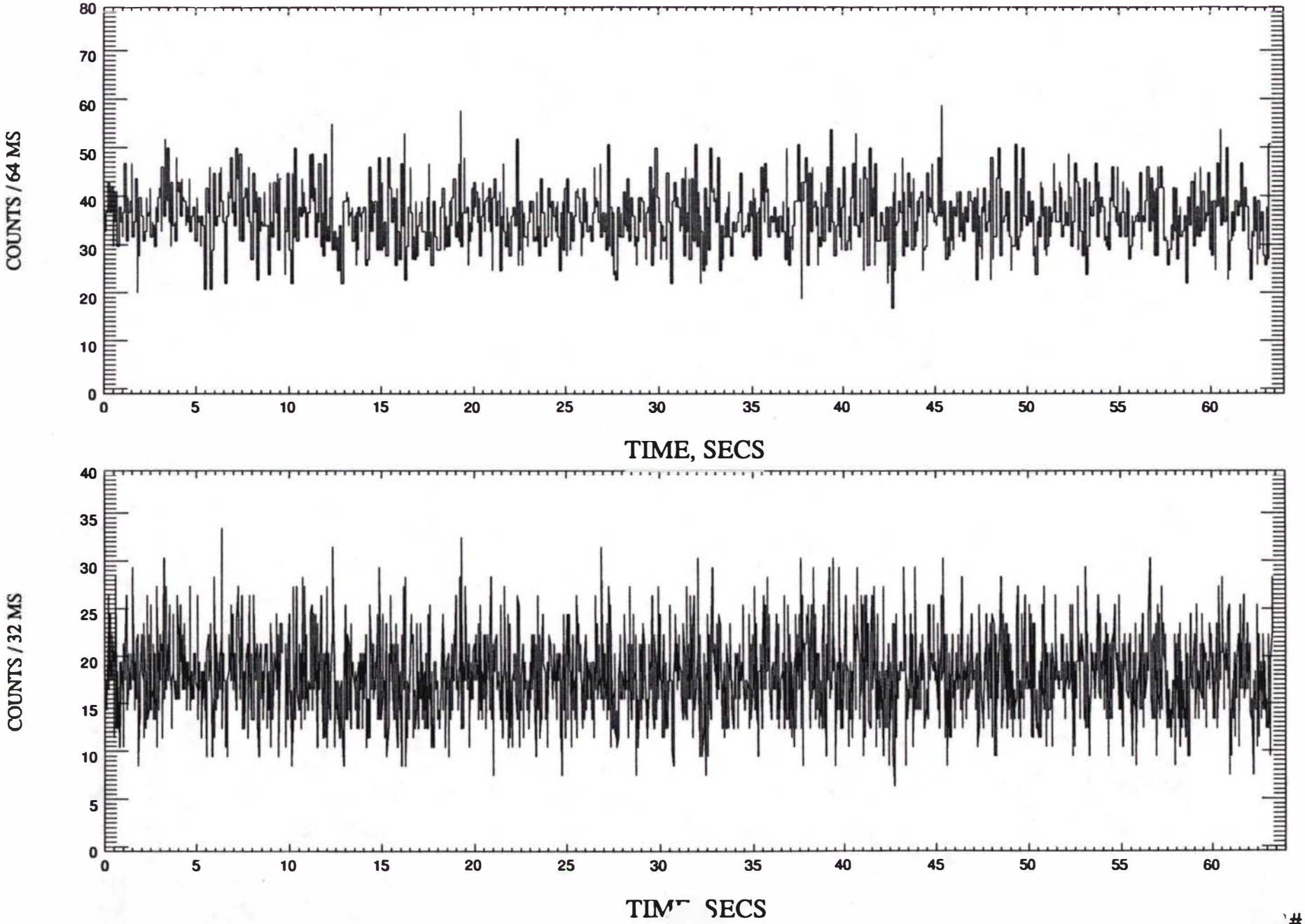
CALIBRATION DATA INCLUDED



UNIVE AL TIME

HUS 2A TRIGGERED DATA EDR day 66, year 1992 5/6/92

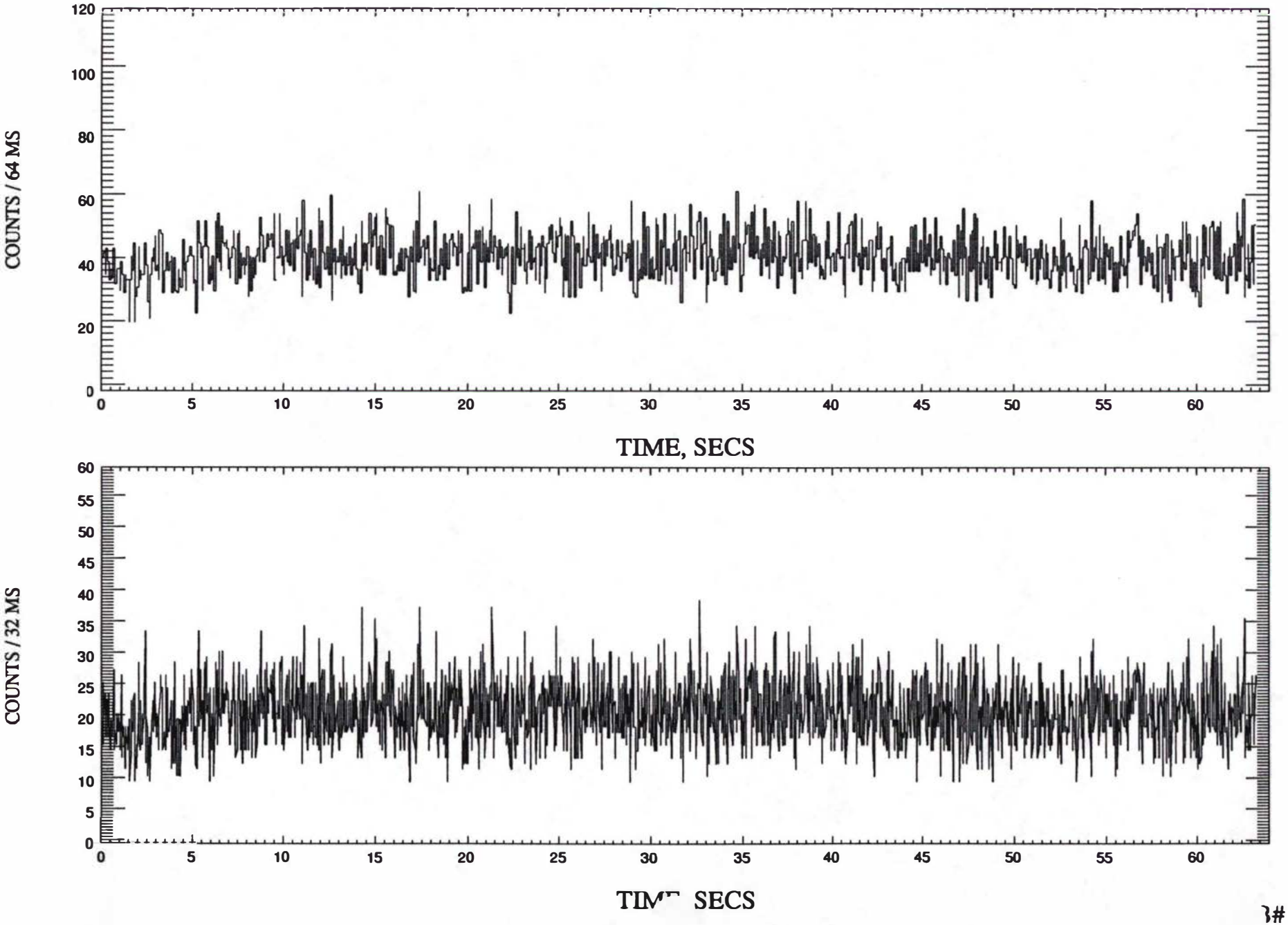
Burst Counter 6 at UT=21.210847227308 h=76359.050 s



1

HUS 2A TRIGGERED DATA EDR day 66, year 1992 5/6/92

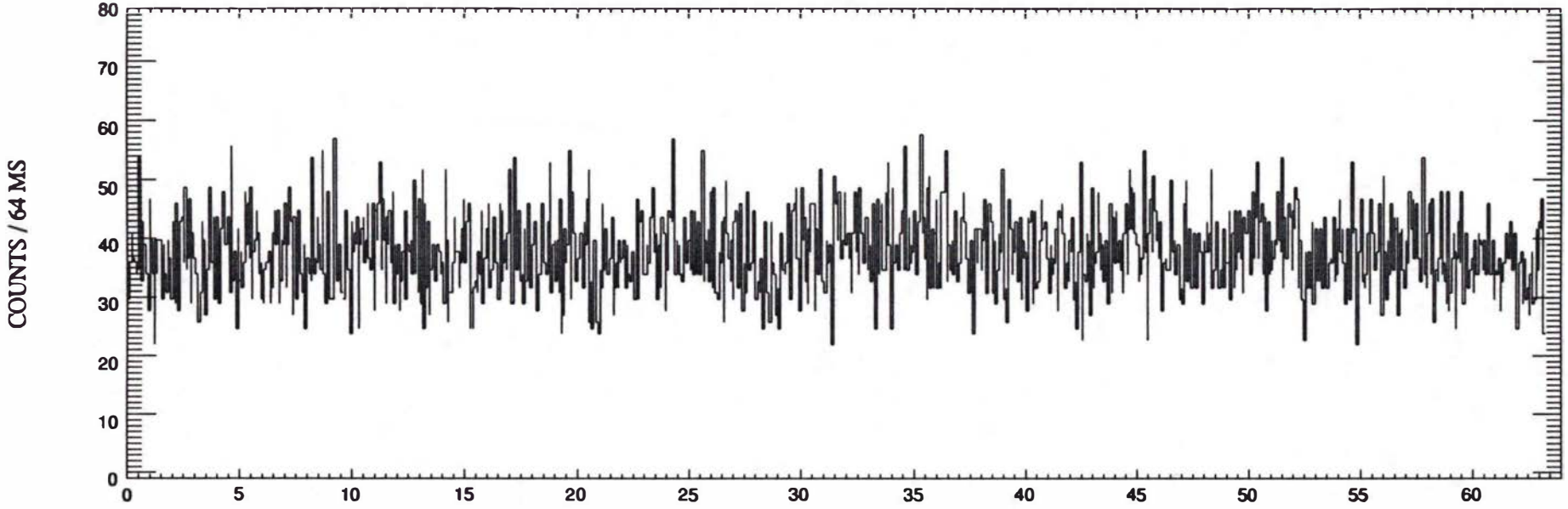
Burst Counter 7 at UT=21.912040138245 h=78883.344 s



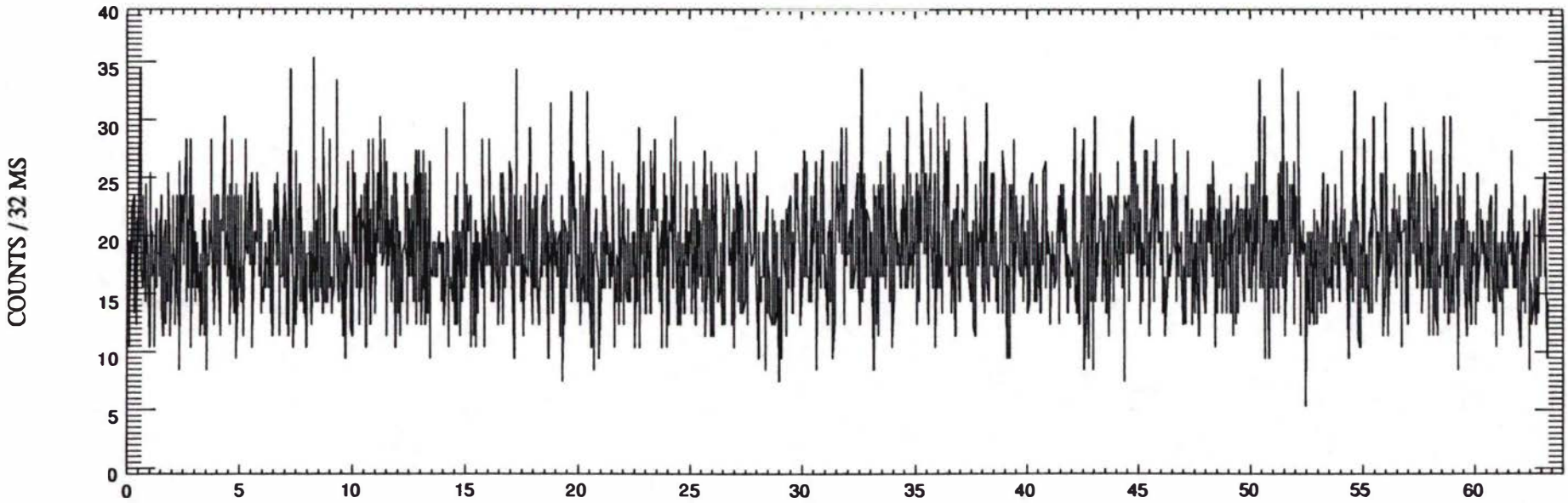
3# 2

HUS 2A TRIGGERED DATA EDR day 66, year 1992 5/6/92

Burst Counter 8 at UT=22.639448331197 h=81502.014 s



TIME, SECS



TIME SECS

B# 3

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1467
EVENT OF 1992 MAR  7 DAY OF YEAR= 67
EVENT CROSSING TIME AT BATSE     :  1084. S. OR 00:18:04.0
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 356.700  -45.700
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  7/ 3/  92 IS:
RA=  157.395 DEC=    9.052 DIST=    4.421 AU
BATSE-ULYSSES DISTANCE =  661433960. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 40.22 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1684.60 SECS.
CROSSING TIME AT ULYSSES    IS  2769. S. OR 00:46:08.6 +/-  322.94 SECONDS
```

RI

Helio. corr removed

Date: Oct 5 '98

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☑ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution?

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)?

☐ BATSE ephemeris for T_0?

☐ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included?

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

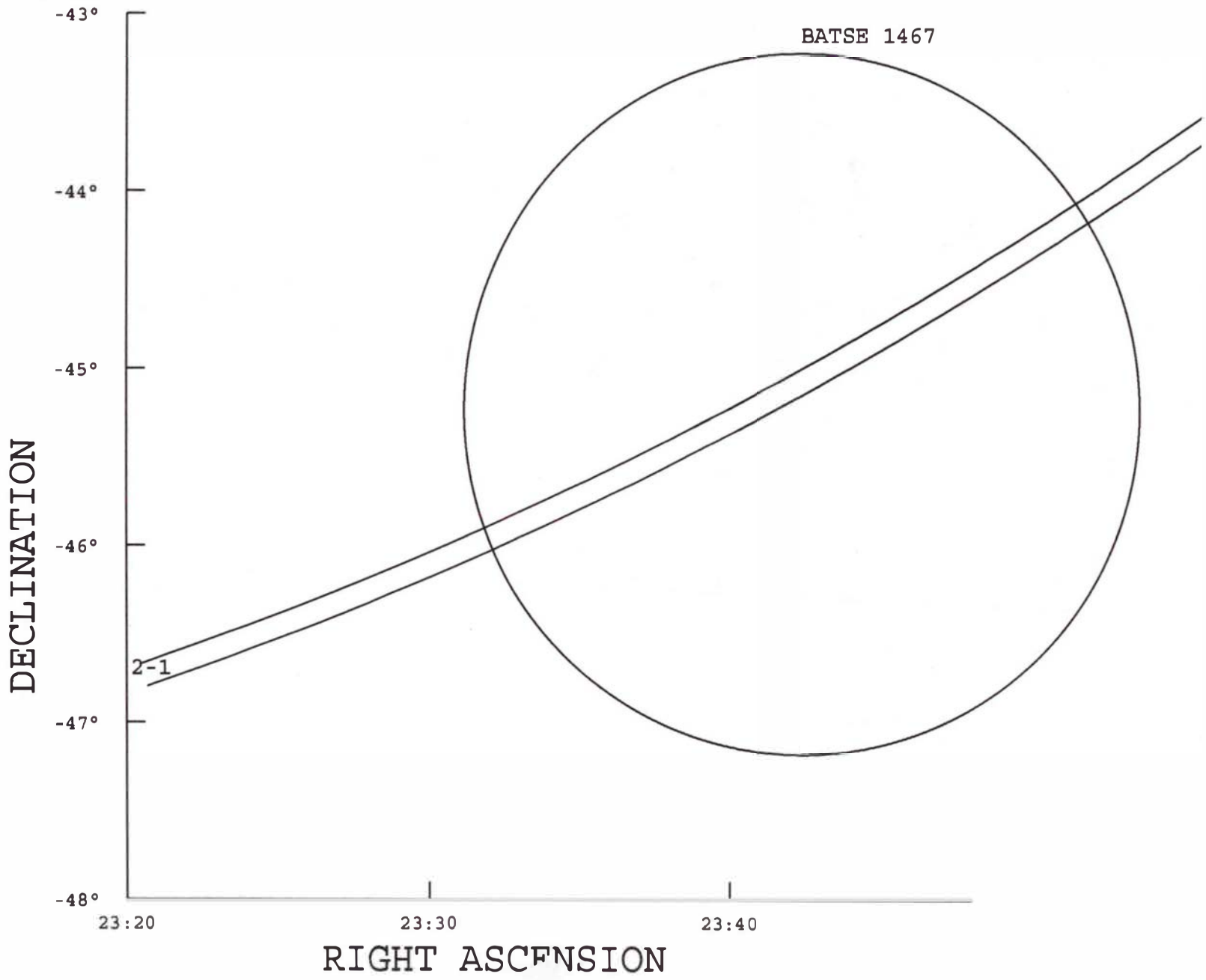
☐ Geocentric time used?

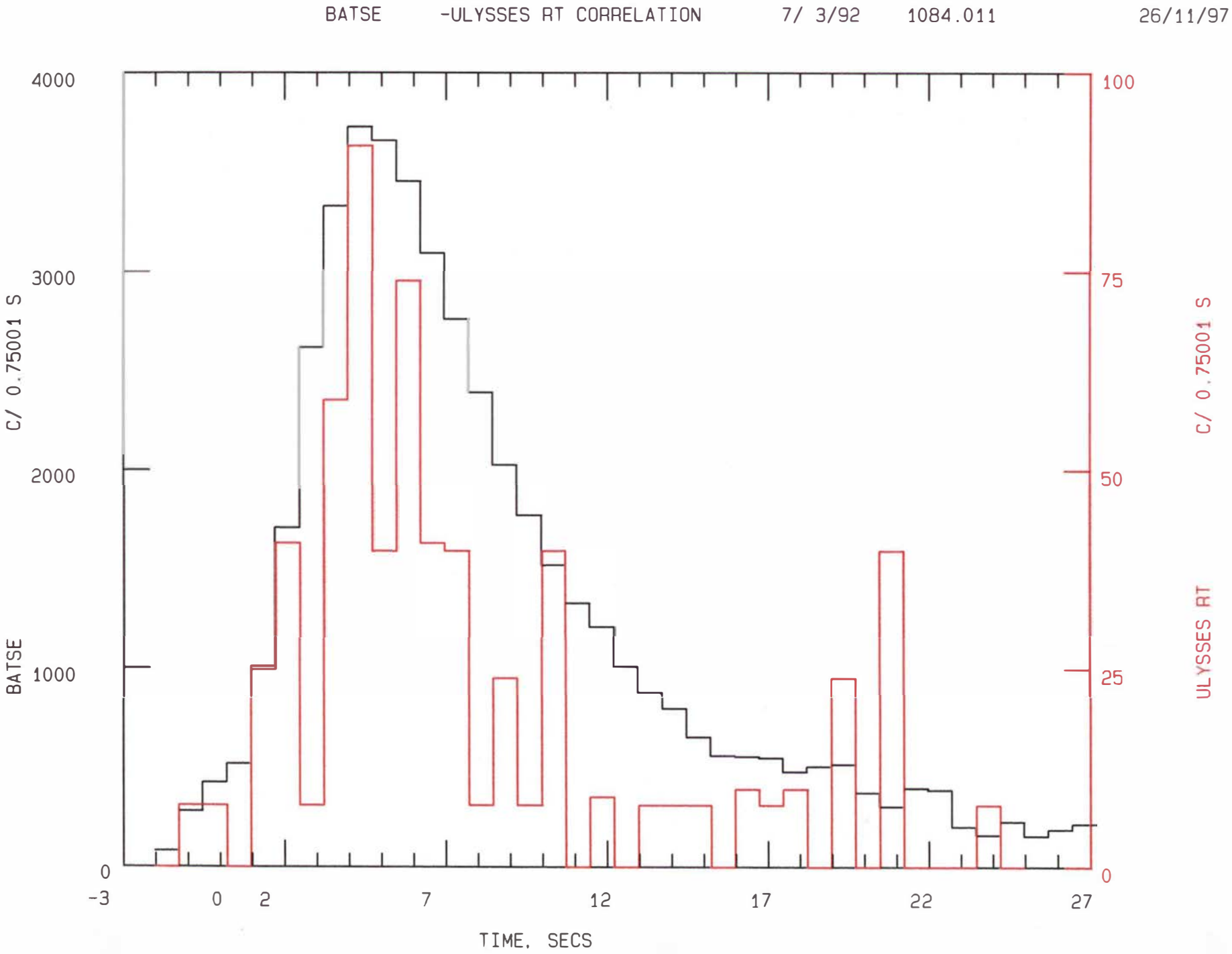
☐ ACCESS database updated?

EVENT OF MAR 7, 1992 0:45

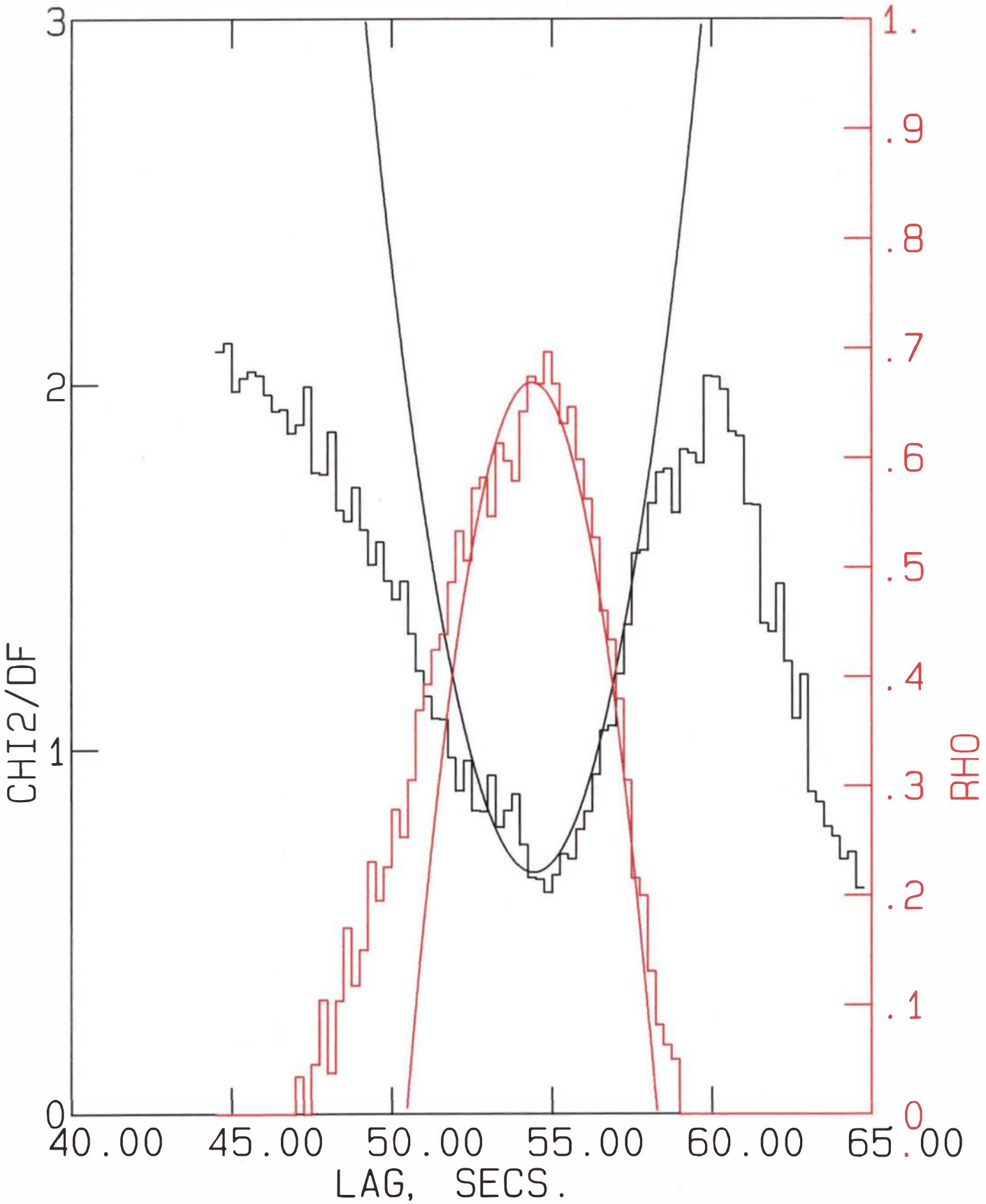
26/11/97

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 7/ 3/92 1084.011 26/11/97
4000
3000
2000
1000
0
C/ 0.75001 S
BATSE
100
75
50
25
0
C/ 0.75001 S
ULYSSES RT
-3
0
2
7
12
17
22
27
TIME, SECS

BATSE -ULYSSES RT CORRELATION 7/ 3/92 1084.011



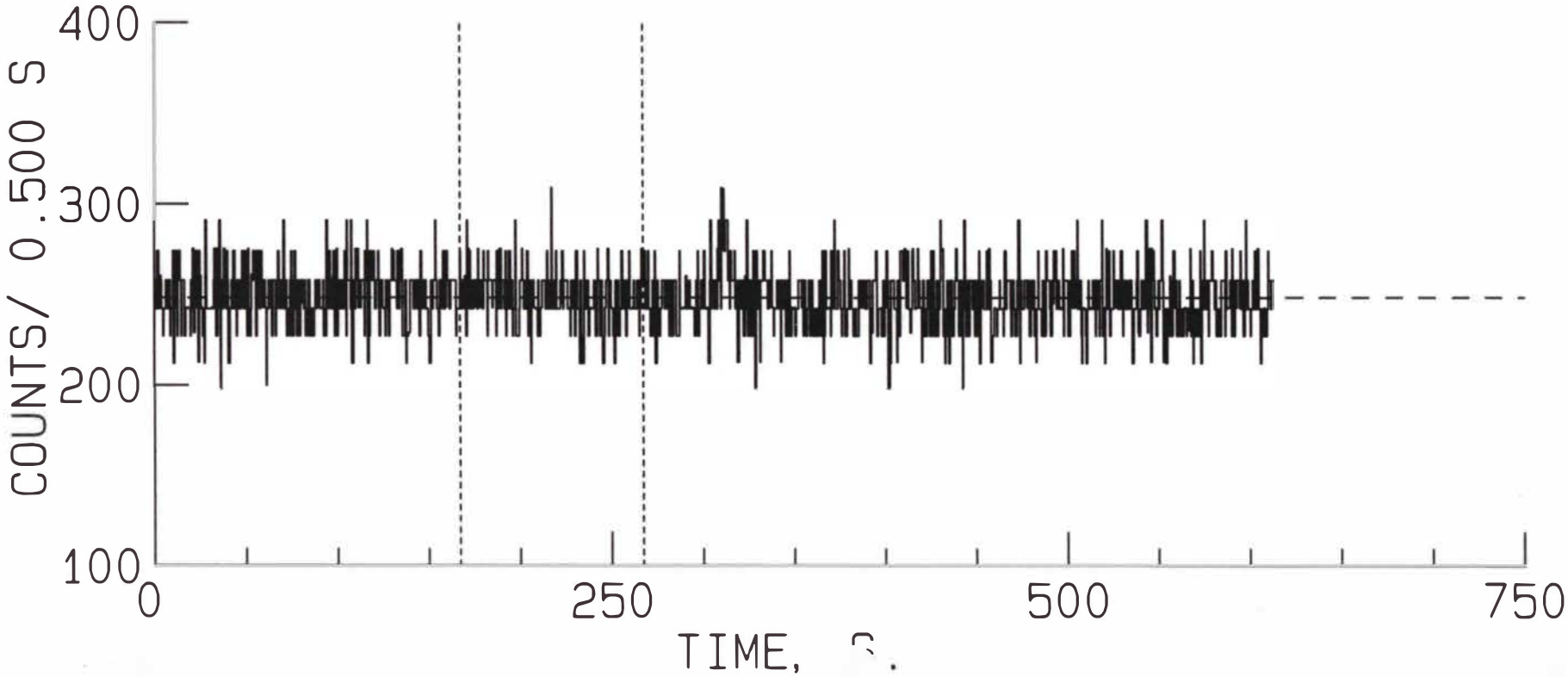
ULYSSES RT

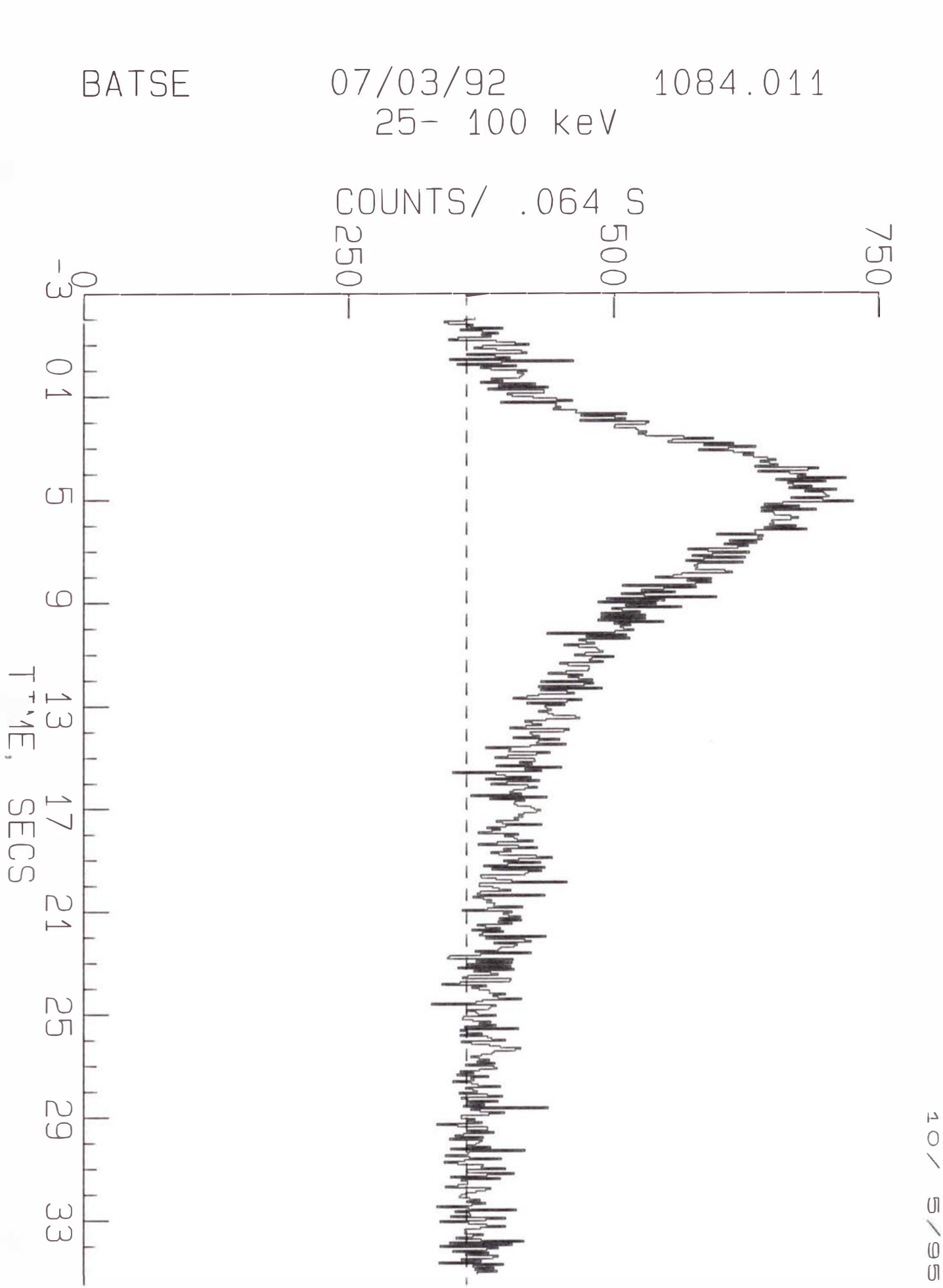
26/11/97

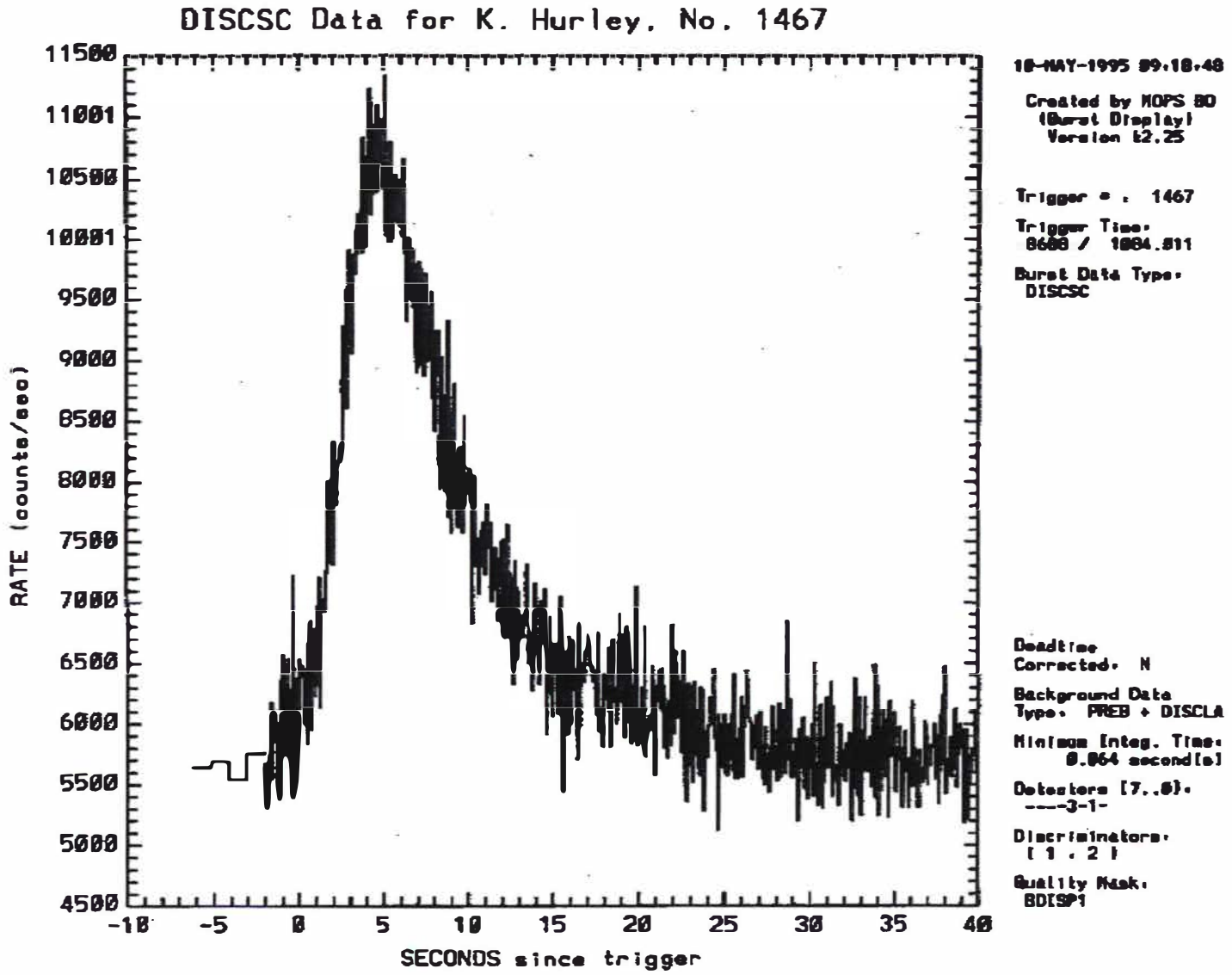
7/ 3/92 2484.151 s

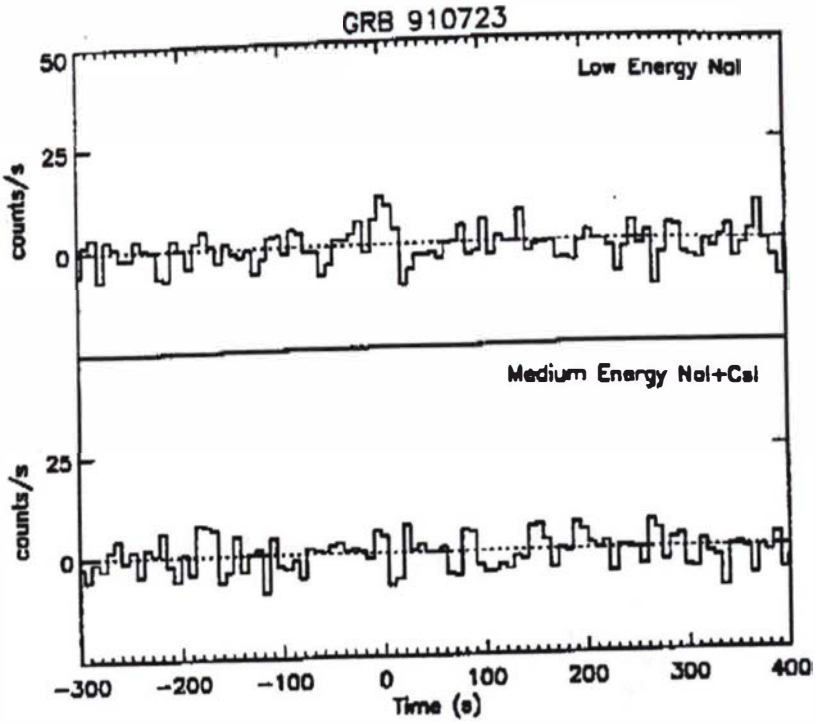
0.250 S INTERVALS REGROUPED BY 2

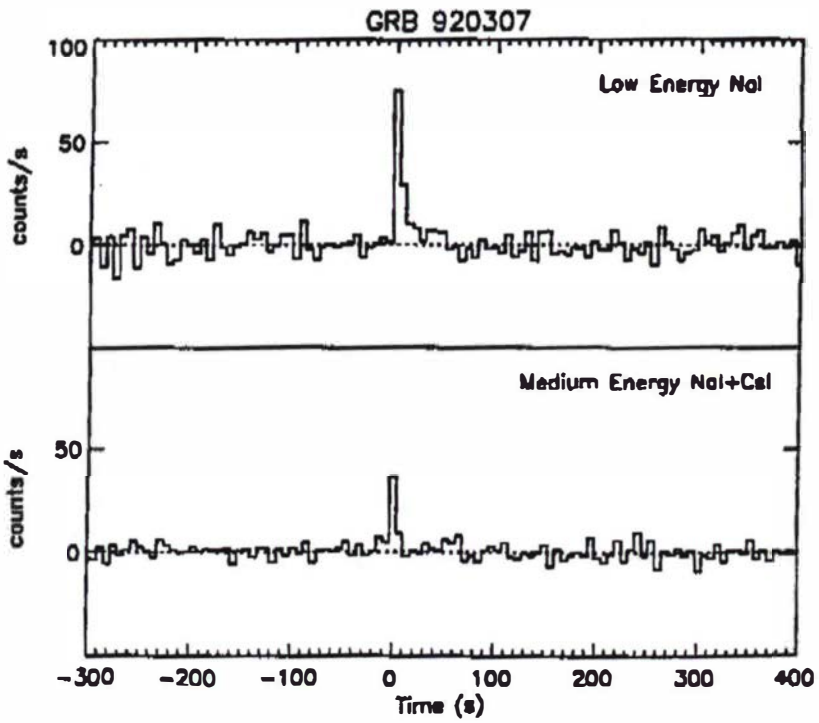
24- 165 keV




BATSE
07/03/92
1084.011
25- 100 keV
COUNTS/ .064 S
0
250
500
750
-3
1
5
9
13
17
21
25
29
33
T+TIME, SECS
10/ 5/95


DISCSC Data for K. Hurley, No. 1467
RATE (counts/sec)
SECONDS since trigger
11500
11001
10500
10001
9500
9000
8500
8000
7500
7000
6500
6000
5500
5000
4500
-10
-5
0
5
10
15
20
25
30
35
40
18-MAY-1995 09:18:48
Created by MOPS BD
(Burst Display)
Version 12.25
Trigger # : 1467
Trigger Time:
8600 / 1804.811
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
----3-1-
Discriminators:
[1 , 2]
Quality Mask:
BDISP1


GRB 910723
Low Energy NaI
Medium Energy NaI+CsI
counts/s
50
25
0
-300
-200
-100
100
200
300
400
Time (s)


GRB 920307
Low Energy NaI
Medium Energy NaI+CsI
counts/s
100
50
0
-300
-200
-100
100
200
300
400
Time (s)

From khurley@space6.ssl.berkeley.edu Wed Dec 15 10:55:46 1993
Date: Wed, 15 Dec 93 11:53:02
From: khurley@space6.ssl.berkeley.edu
Content-Length: 2621

Dear Alberto,

I've looked through the WATCH candidate events, and this is what I have found.

23/7/91: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 s and 3.25 s. Neither shows any strong evidence for an event, but there may be a very weak event in the rebinned data (3.25 s resolution). What is the duration of your event? PVO data is available for this time, but only at 64 s resolution - is it worth looking?

15/8/91: Ulysses had 0.25 s data for the entire crossing window, but it was noisy. There were numerous noise spikes which lasted 0.25, 0.5, and 0.75 s, and a few dropouts. When I eliminate the big noise spikes there are still many smaller ones. I searched the data on two timescales: 0.25 and 2.75 s. There is nothing obvious, but again, I need to know the event duration to have a better look.

16/8/91: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 s and 3.25 s. Neither shows any evidence for an event. PVO had coverage, too, and they detected nothing.

7/3/92: We find a small rate increase in the crossing window. If you send me the WATCH data, I can get an annulus.

15/6/92: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 and 4 s. In the 4 s data, there is perhaps a very weak event, about 16 s long. Is that what you see with WATCH?

25/9/92a and b: "a" event: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 and 4.25 s. I find the "b" event in this window, but nothing else.

"b" event: The time of the b event has changed by 15 minutes in your new list, but it is now inconsistent with the BATSE time, which was consistent with your original time. Given this, and the fact that the "a" event is close to one hour before the "b" time, is it possible that there is a mistake, and that "a" and "b" are the same event, at 20:30?

14/3/93: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 s and 2.75 s. No evidence for any event.

21/7/93 06:17: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 and 3.5 s. No evidence for any event.

21/7/93 13:00: Ulysses had 1 s data for the entire window. I searched it on two timescales: 1 s and 4 s. There was a BATSE event at 45935 s, which we recorded as a weak rate increase. There was also a 2 s increase in the Ulysses data, which could be your event. How long was the WATCH event, and are you sure of the time (i.e., could it be the BATSE event)?

Kevin

Dear Kevin,

Here I send you my comments about the WATCH GRBs-like events you examined:

23/7/91. The duration of this event is around 10 s, but it is very weak. Enclosed I send the time profile for this burst. Note the small increase in the count rate visible in the WATCH data.

15/8/91. The duration of the event is 40 s. It is a clear burst.

16/8/91. If you did not see anything in Ulysses and PVO, I suppose it is a particle event.

7/3/92. I send you the time history in order to get an annulus.

14/3/92. Particle event. The same than 15/8/91.

21/3/92. WATCH sees the event at 13:00:54. The duration is 1 s. The center of the field is at alfa: 15 30; delta = +32. No increase in the count rate is visible at the time of the BATSE burst in all the three units. A particle event ?

21/7/92. Particle event. The same than 15/8/91.

15/6/92. The event is only a peak in one WATCH bin, i.e. the duration is around 7 s.

25/9/92a. There is an error in my list. The trigger time is 20:30:42, not 19:30:42.

25/9/92b. It is a completely different event that lasted for about 15 s. At 20:45:14. The center of the field is at 08 35 + 29. Nothing to do with 920925a or 920925c.

Did you finally confirm 910408?

Regards
Alberto
17 Dec 1993

P.S. Please, note that I will be absent from Dec 20 to Jan 20! But you always could reach me by fax at +34 52 61 04 49.

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

REGARDS,

RAY

From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-maillld v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O

FAXCOVER

DANISH SPACE RESEARCH INSTITUTE
GL. LUNDTOFTEVEJ 7
DK-2800 LYNGBY
DENMARK

PHONE: +45 42 88 22 77 TELEFAX: +45 45 93 02 83 TELEX: 37198 dsrsu dk

DATE: Nov 23, 1993 Page 1 of 2

From: Alberto J. CASTRO-TIRADO

TO : Kevin HURLEY

FAX no
Name : 510 643 8640

Dear Kevin.

Thank you for you answer. Enclosed I send you the list of CONFIRMED 69 GRBs plus 14 CANDIDATES. Now you may fill the WATCH response in the Master GRB list for WATCH-GRANAT in the period 1/1/90 – 25/9/92.

GRB 920321 (at 13:00:44) is a ≤ 1 s burst in WATCH data, so I think it could be the same event seen by Ulysses. We do not have better time resolution.

The other repeater is 900126/920311. The two error boxes are separated by 1°, at $\sim \alpha = 08\ 66$ $\delta = -38$ (1450.0)

Kind regards, Alberto

First GRANAT/WATCH Gamma-Ray Burst Catalogue

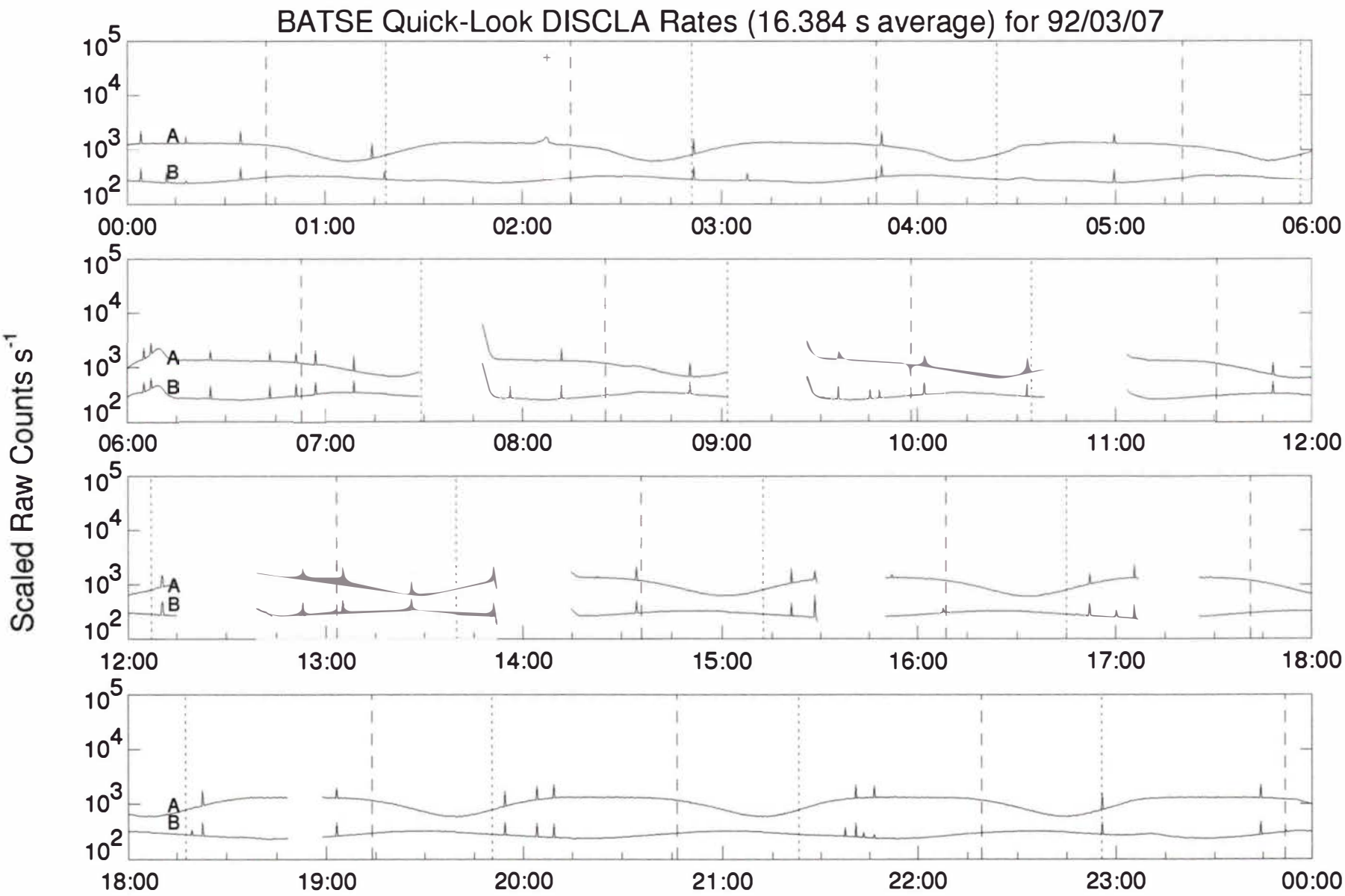
[illegible] (yymmdd)	U.T. (hh:mm:ss)
900118	17:40:48
900120	20:37:33
900123a	01:42:13
900123b	18:44:17
900126	18:04:27
900222	11:56:35
900308	09:32:02
900327	10:24:28
900404	17:54:36
900413	10:11:21
900708a	11:30:21
900708b	18:44:53
900901	01:35:47
900925	20:25:22
900929	01:49:18
901009	00:15:46
901015b	08:44:48
901027	04:21:07
901112	14:57:37
901116	01:42:10
901119	18:08:32
901219	21:52:43
910117	00:57:51
910122	15:13:40
910202	20:57:35
910219	11:45:25
910310	13:02:06
910312	12:43:09
910425	00:37:52
910517	05:02:20
910627	04:29:24
910717a	04:44:07
910717b	13:07:25
910721	19:30:12
910723	14:06:20
910814	19:14:31
910815	14:24:32
910817	17:09:26
910818	13:44:46
910821	10:33:36
910901	05:24:14
910925	03:35:36
910927	23:26:53
911016	11:03:31
911018	05:32:00
911022	04:14:58
911202	20:28:51
911205	23:04:41
911209	18:36:00
920105	17:41:17
920116	18:30:35
920130	00:29:07
920302	06:16:54
920307	00:18:06
920311	02:20:20
920325	17:17:37
920615	14:24:5a
920714	13:04:52
920718a	14:41:16
920718b	21:32:47
920720	05:53:04
920723a	01:00:44
920723b	20:03:11
920814	06:10:25
920902	00:29:04
920903a	01:36:15
920903b	23:28:52
920925a	19:40:44
920925b	20:45:14
920925c	22:46:14

CANDIDATES

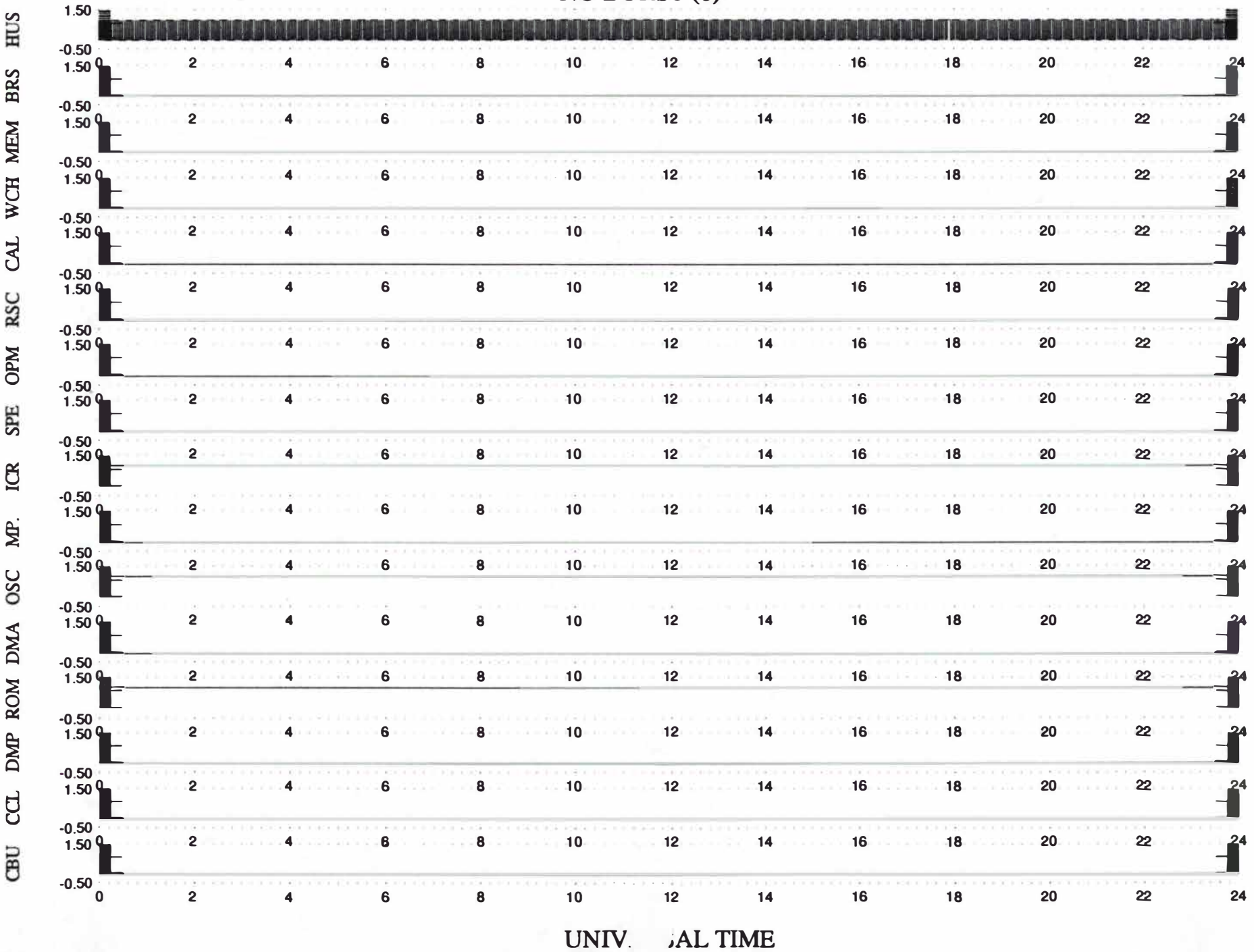
[illegible] (yymmdd)	U.T. (hh:mm:ss)
900415	06:20:58
900603	06:20:50
900616	03:56:50
900618	23:12:22
900625	22:04:16
900628	11:17:53
900815	11:35:12
900914	04:46:40
901015a	02:42:16
910408	22:24:18
910414	07:28:27
910816	01:57:40
920314	05:48:32
920721	13:00:49
920721	06:17:25

Dezalay -> KH 7/93

DATE	U.T.	Nr UGB	Event Nature
1992-01-22	09:19:43.748	395-a	Solar Flare
1992-01-25	08:57:27.156	397-a	GRB
1992-01-26	15:27:47.181	398-a	Solar Flare
1992-01-30	09:36:04.439	400-a	Solar Flare
1992-02-05	13:16:18.413	401-a	Solar Flare
1992-02-06	18:55:30.506	402-a	Solar Flare
1992-02-07	11:54:15.583	402-b	Solar Particles
1992-02-07	13:57:21.179	402-c	Solar Particles
1992-02-08	03:03:12.168	403-a	Unknown
1992-02-08	~03:15	403-b	Solar Flare ?
1992-02-10	09:53:52.511	404-a	GRB
1992-02-11	04:22:31.263	405-a	Solar Flare
1992-02-11	20:56:14.388	406-a	Unknown
1992-02-11	21:11:06.397	406-b	Unknown
1992-02-12	05:28:23.479	406-c	Unknown
1992-02-14	23:07:22.311	408-a	Solar Flare
1992-02-15	21:29:26.098	409-a	Solar Flare
1992-02-16	12:32:56.671	409-b	Solar Flare
1992-02-18	18:44:19.178	411-a	GRB
1992-02-20	04:20:06.490	412-a	Unknown
1992-02-29	19:21:17.526	415-a	~~GRB~~
1992-03-03	10:52:09.629	417-a	Unknown
1992-03-03	11:43:17.434	417-b	Unknown
1992-03-03	~11:56	417-c	Unknown
1992-03-07	16:44:00.135	420-a	Solar Particles
1992-03-11	02:20:27.297	422-a	GRB
1992-03-11	12:23:20.018	422-b	Solar Flare ?
1992-03-25	17:17:36.626	430-a	GRB
1992-04-04	22:37:28.456	434-a	GRB
1992-04-05	07:41:37.612	434-b	GRB
1992-04-13	11:58:56.617	440-a	Unknown
1992-04-14	23:22:42.474	441-a	GRB
1992-04-20	02:12:27.422	444-a	GRB
1992-04-24	19:18:18.006	447-a	Solar Flare
1992-05-19	16:28:38.427	449-a	GRB
1992-06-22	07:05:04.644	468-a	GRB

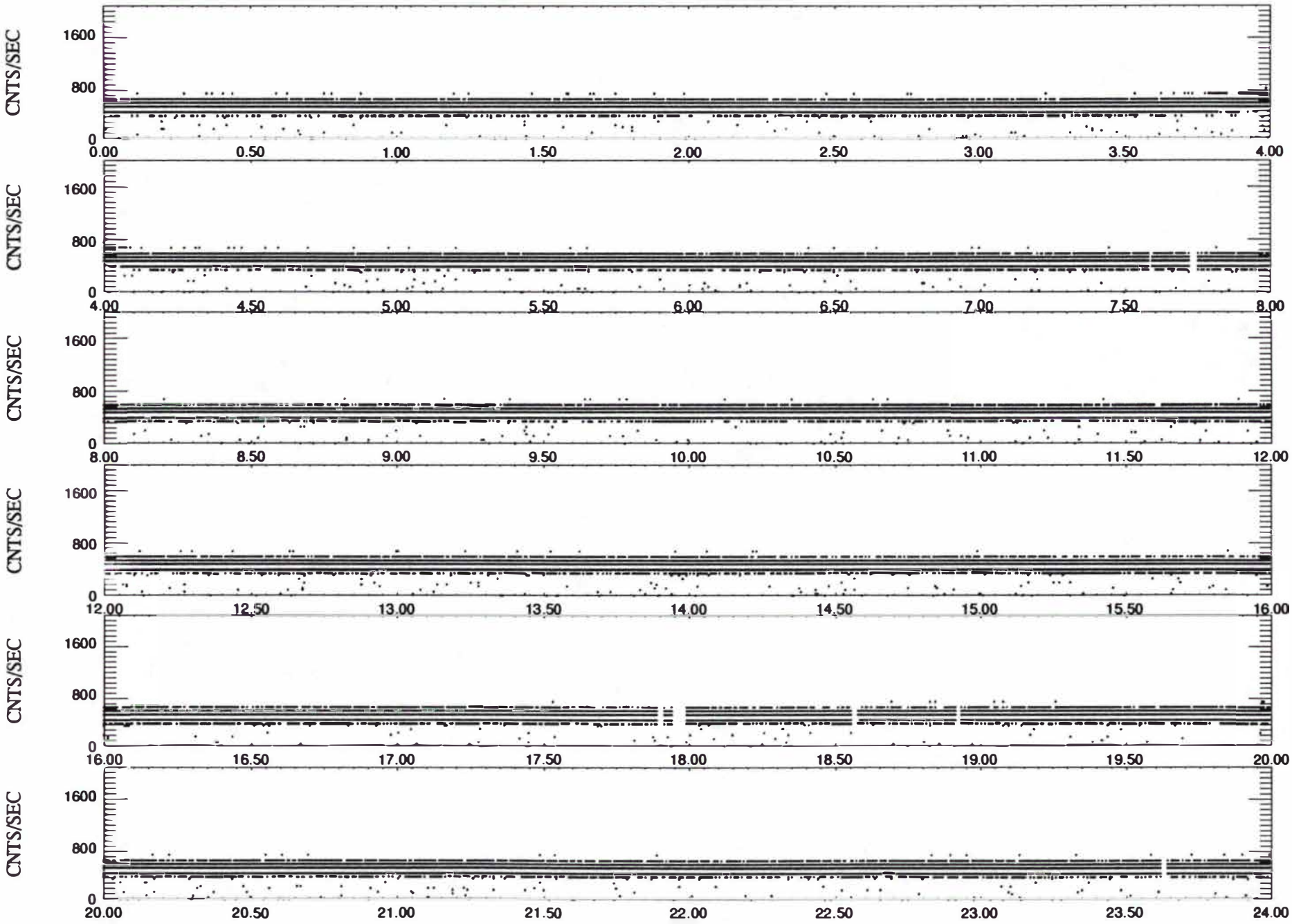

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/07
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1753 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 67, year 1992 to day 67, year 1992 4/15/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 67, year 1992 to day 67, year 1992 4/15/92

CALIBRATION DATA INCLUDED



UNIVE. .L TIME

From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing a paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

Kevin

Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1468
EVENT OF 1992 MAR  8 DAY OF YEAR= 68
EVENT CROSSING TIME AT BATSE      : 17745. S. OR 04:55:45.2
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  71.800   61.000
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON  8/ 3/  92 IS:
RA=  157.173 DEC=     9.074 DIST=     4.424 AU
BATSE-ULYSSES DISTANCE =  661858824. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=100.17 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -389.78 SECS.
CROSSING TIME AT ULYSSES     IS 17355. S. OR 04:49:15.4 +/-  421.35 SECONDS
```

RI BATSE ⊙ has moved

Helio corr removed

Date: April 3 '97

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☐ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? No - bad statistics

2. BATSE Data

☑ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)?

☑ Does T_0 in data file agree with T_0 in plot?

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included?

3. PVO Data

☑ Ephemeris of PVO used (not Venus)?

☑ 2000 coordinates used?

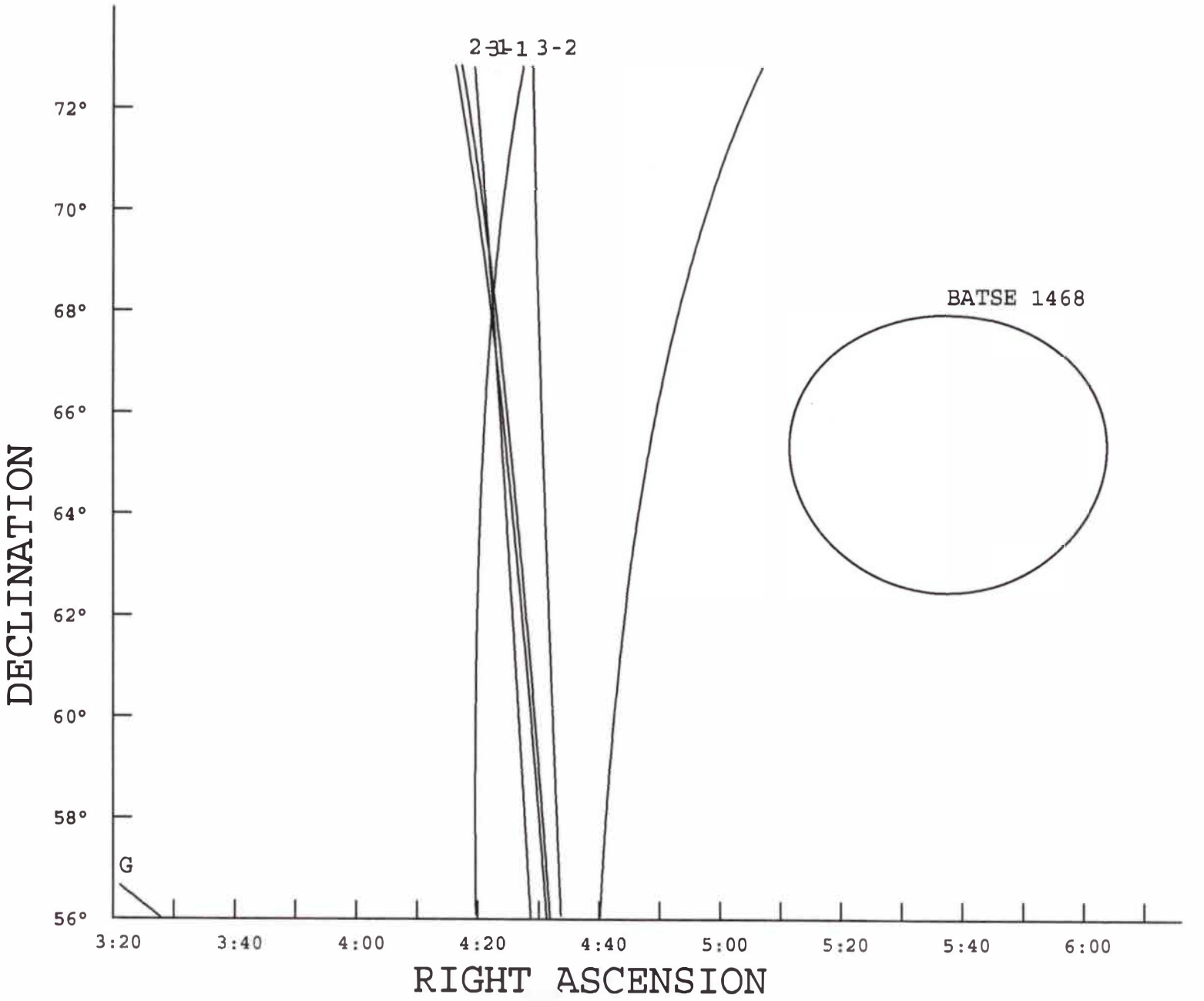
☑ Geocentric time used?

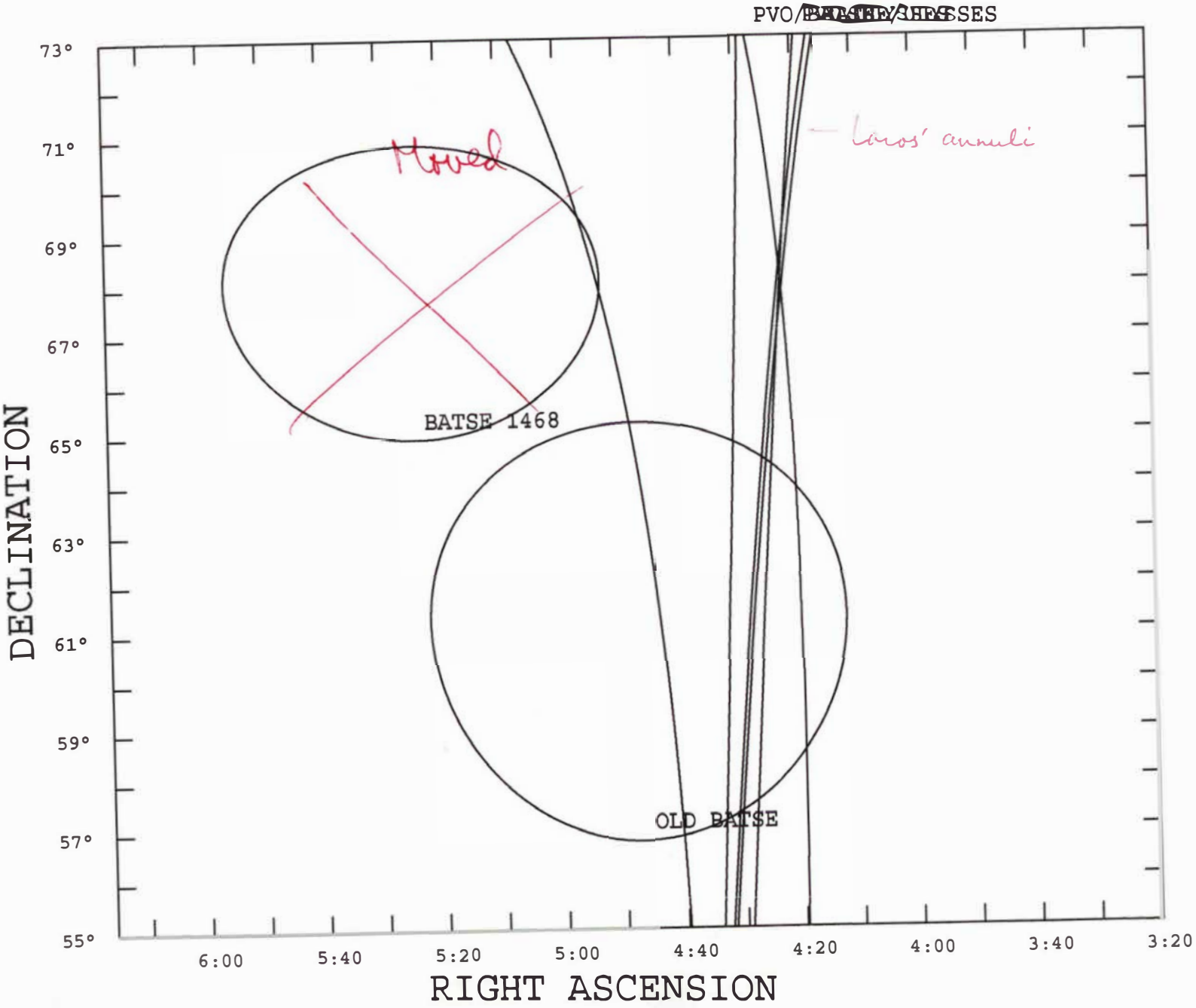
Access database updated with JL's numbers

EVENT OF MAR 8, 1992 4:51

5/ 3/98

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO

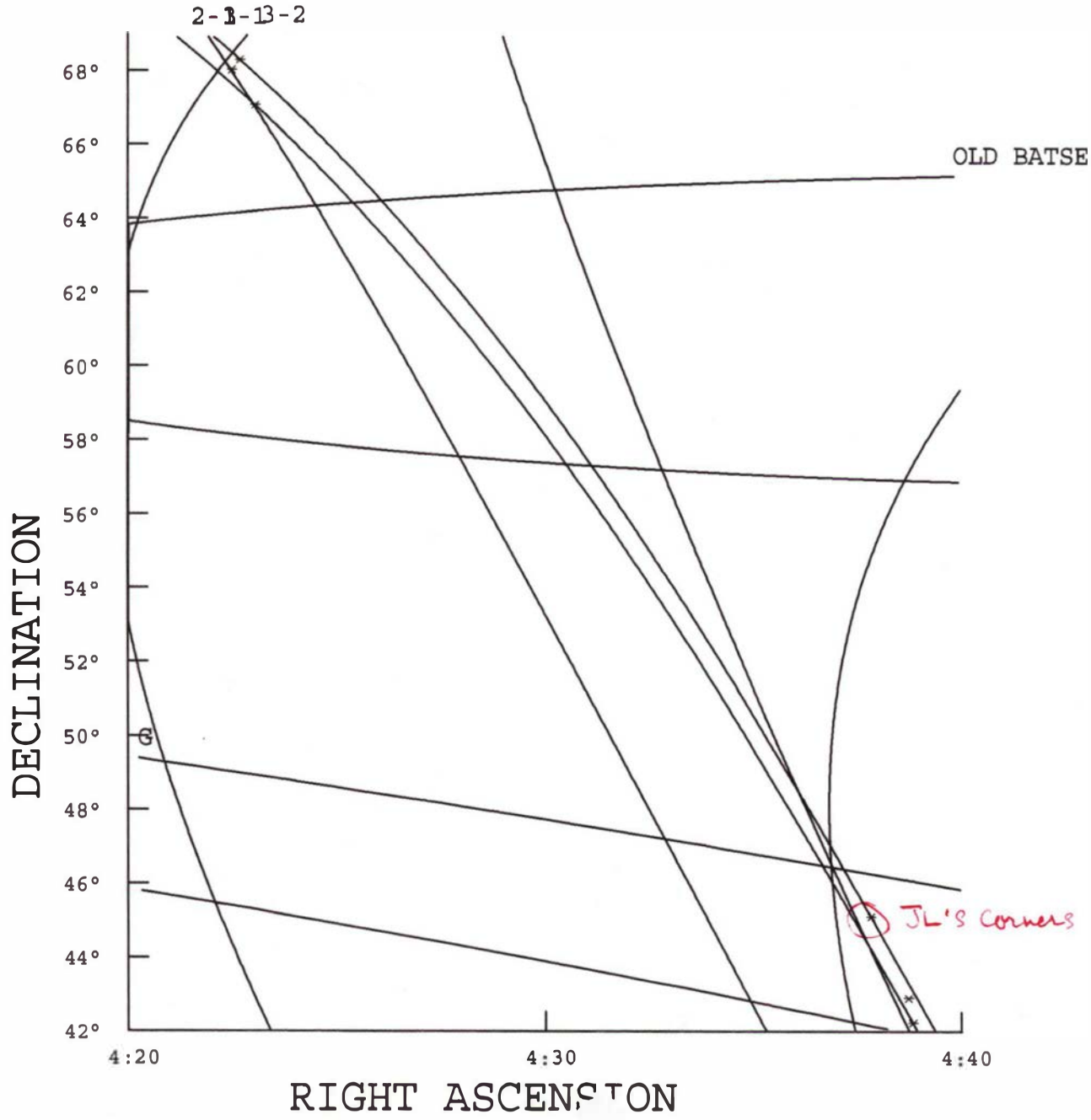



PVO/BATSE/SSES
Moved
Laros' annuli
BATSE 1468
OLD BATSE
DECLINATION
73°
71°
69°
67°
65°
63°
61°
59°
57°
55°
6:00
5:40
5:20
5:00
4:40
4:20
4:00
3:40
3:20
RIGHT ASCENSION

EVENT OF MAR 8, 1992 4:50

9/10/97

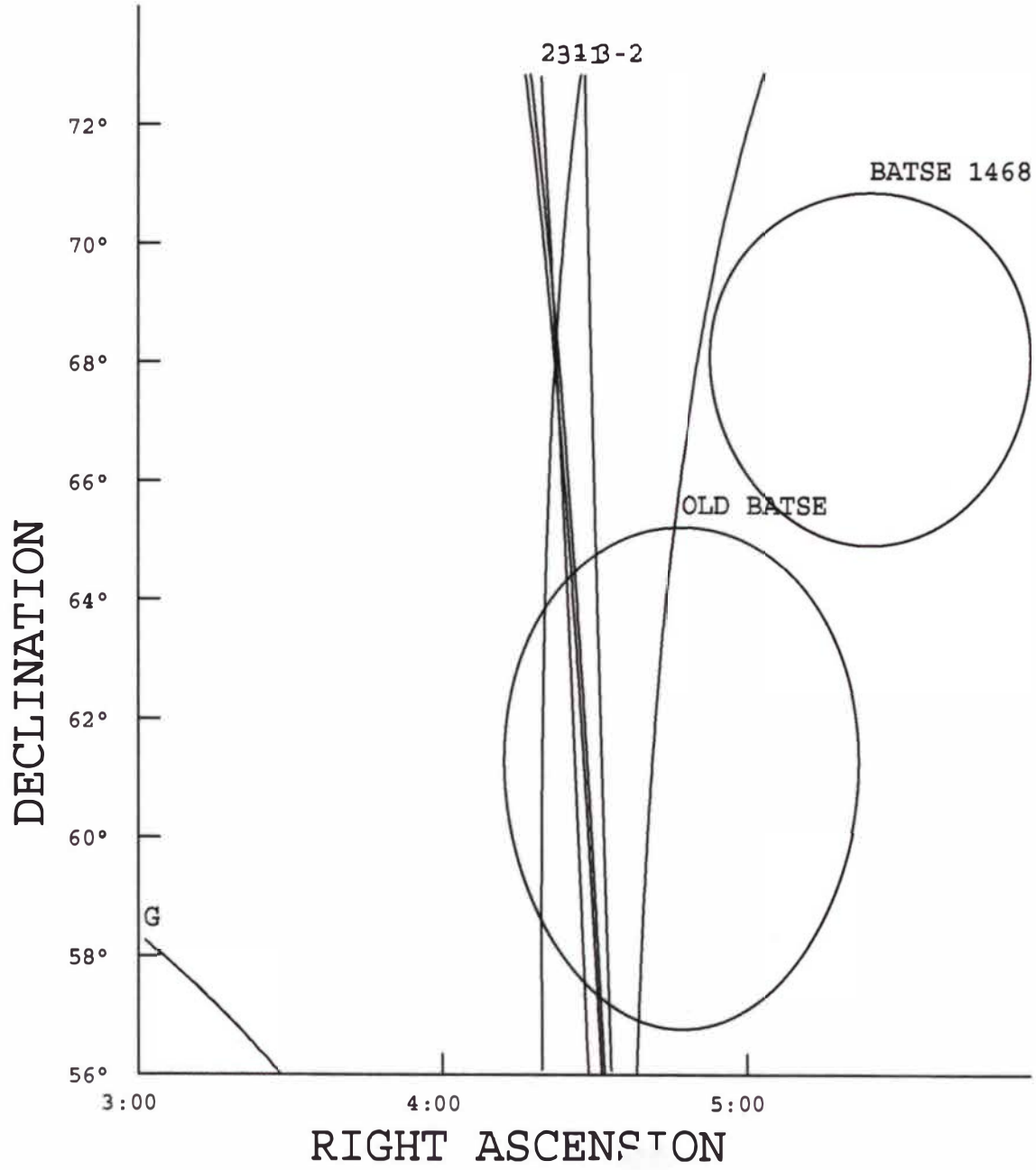
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO

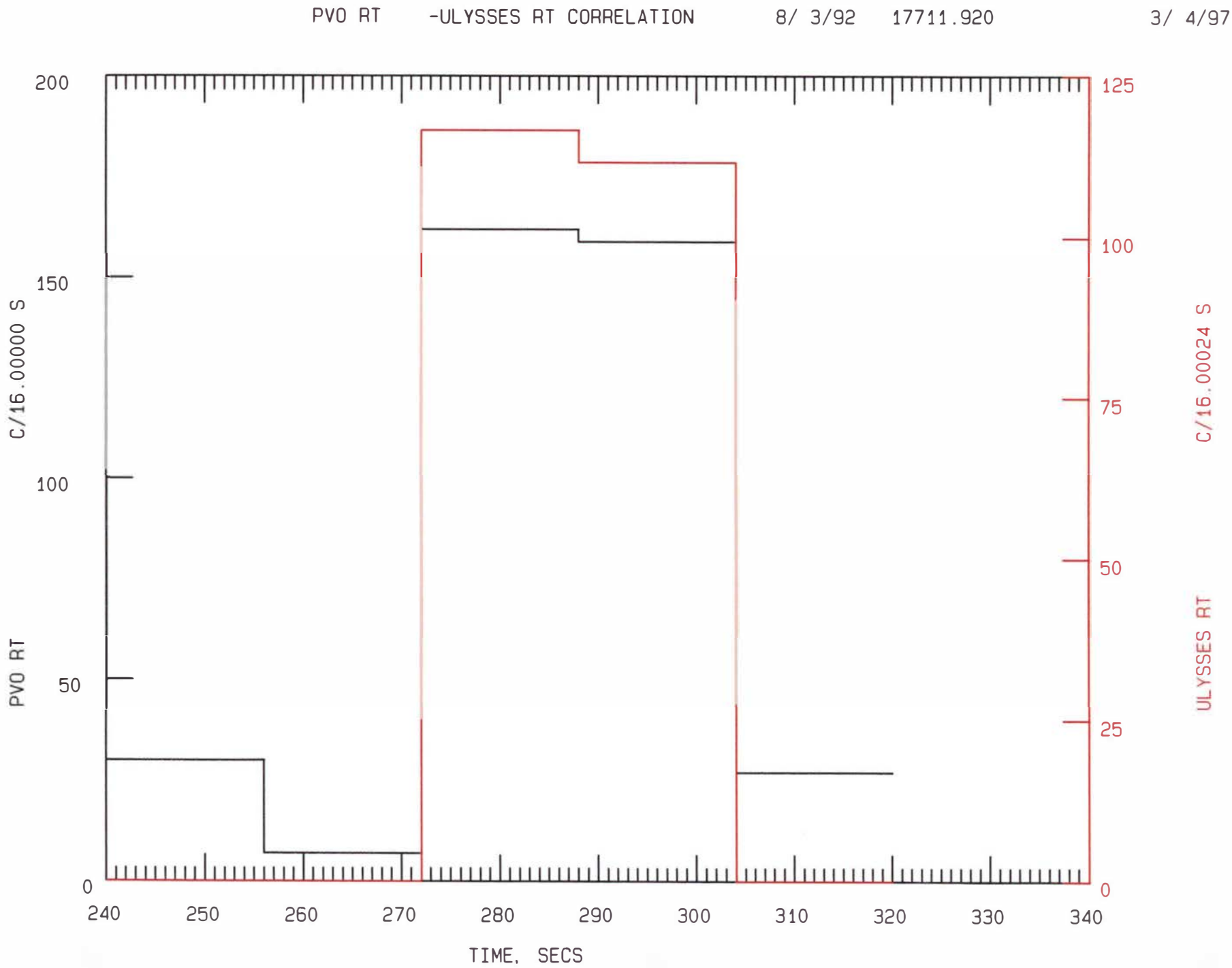


EVENT OF MAR 8, 1992 4:50

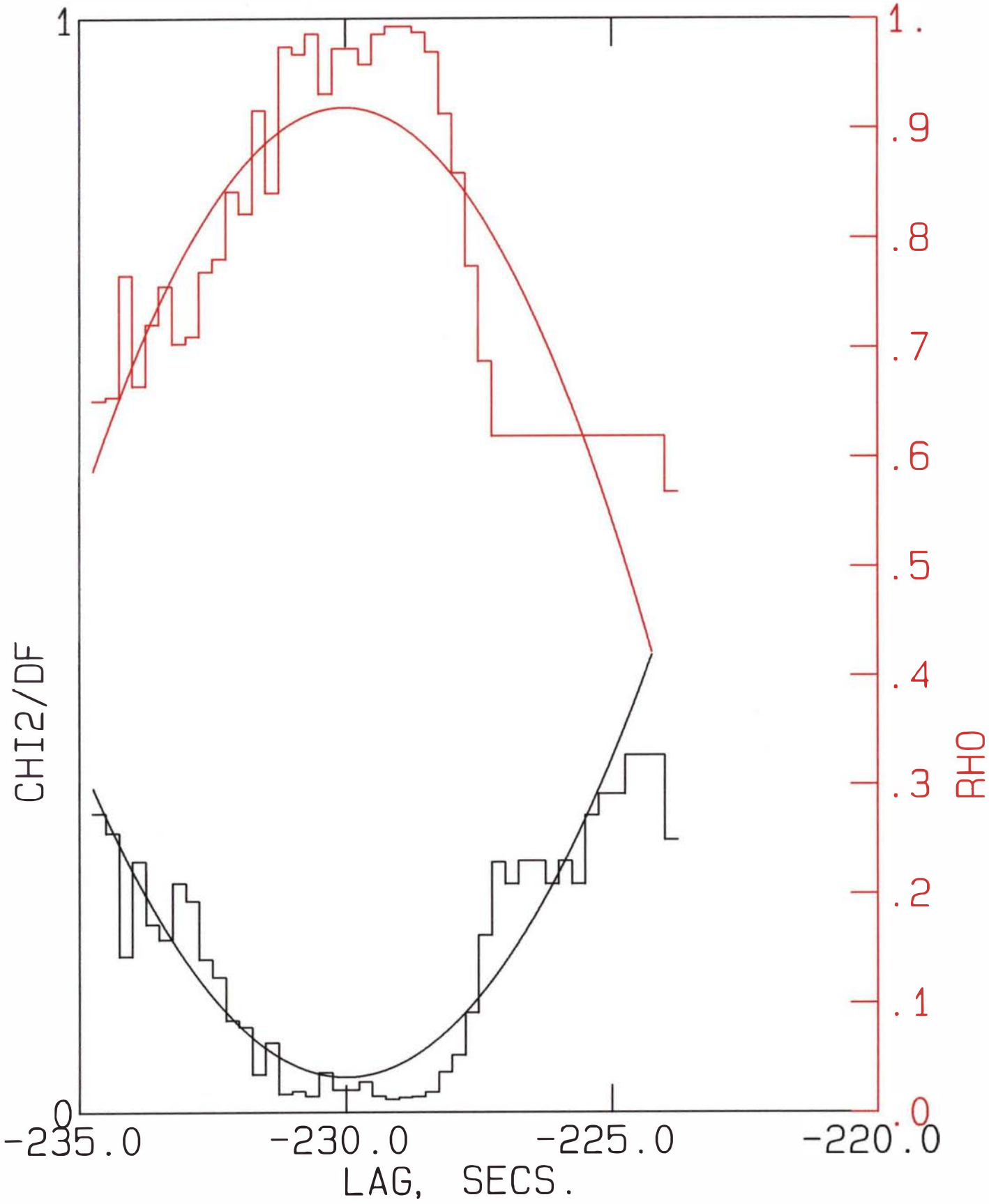
3/ 4/97

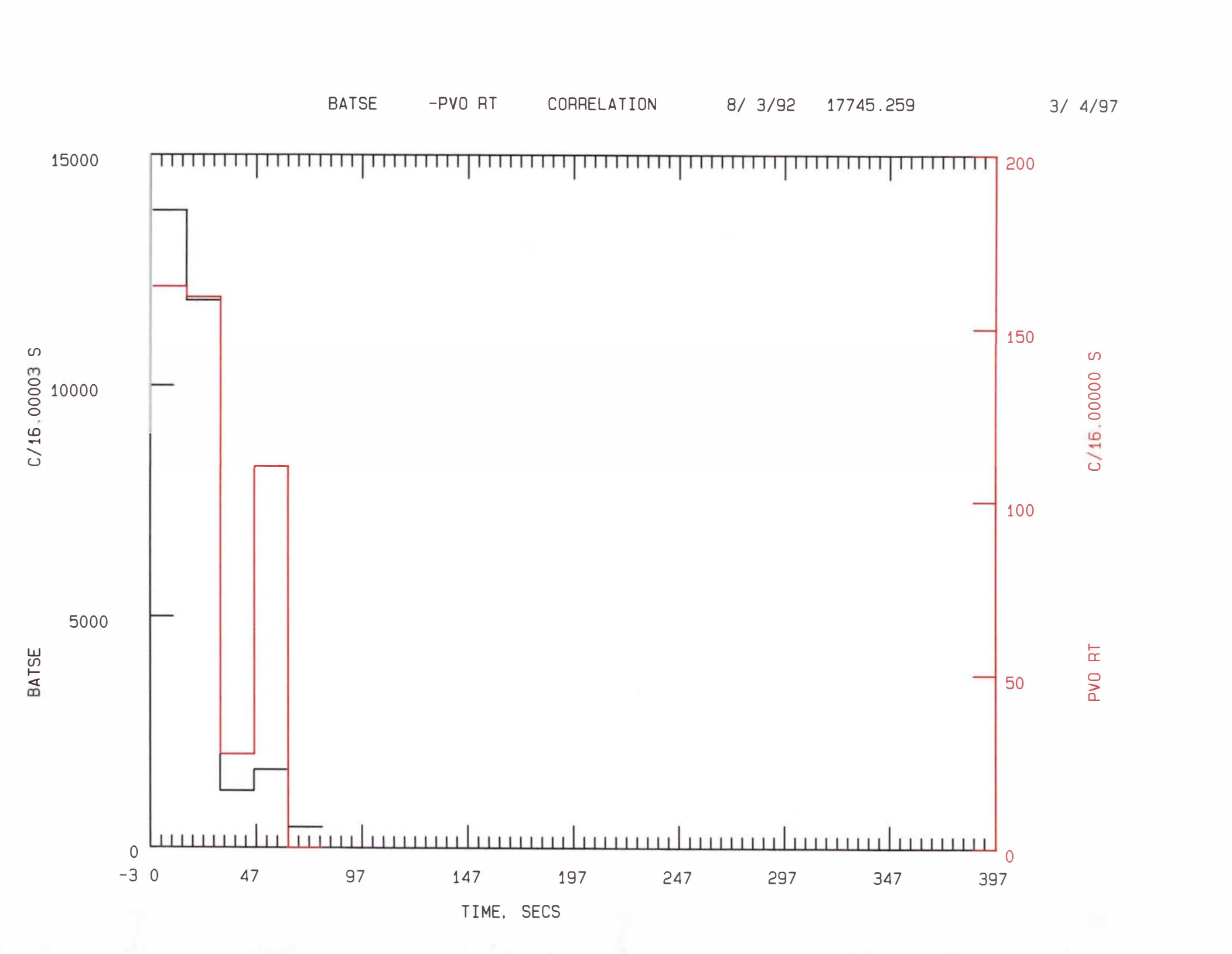
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO



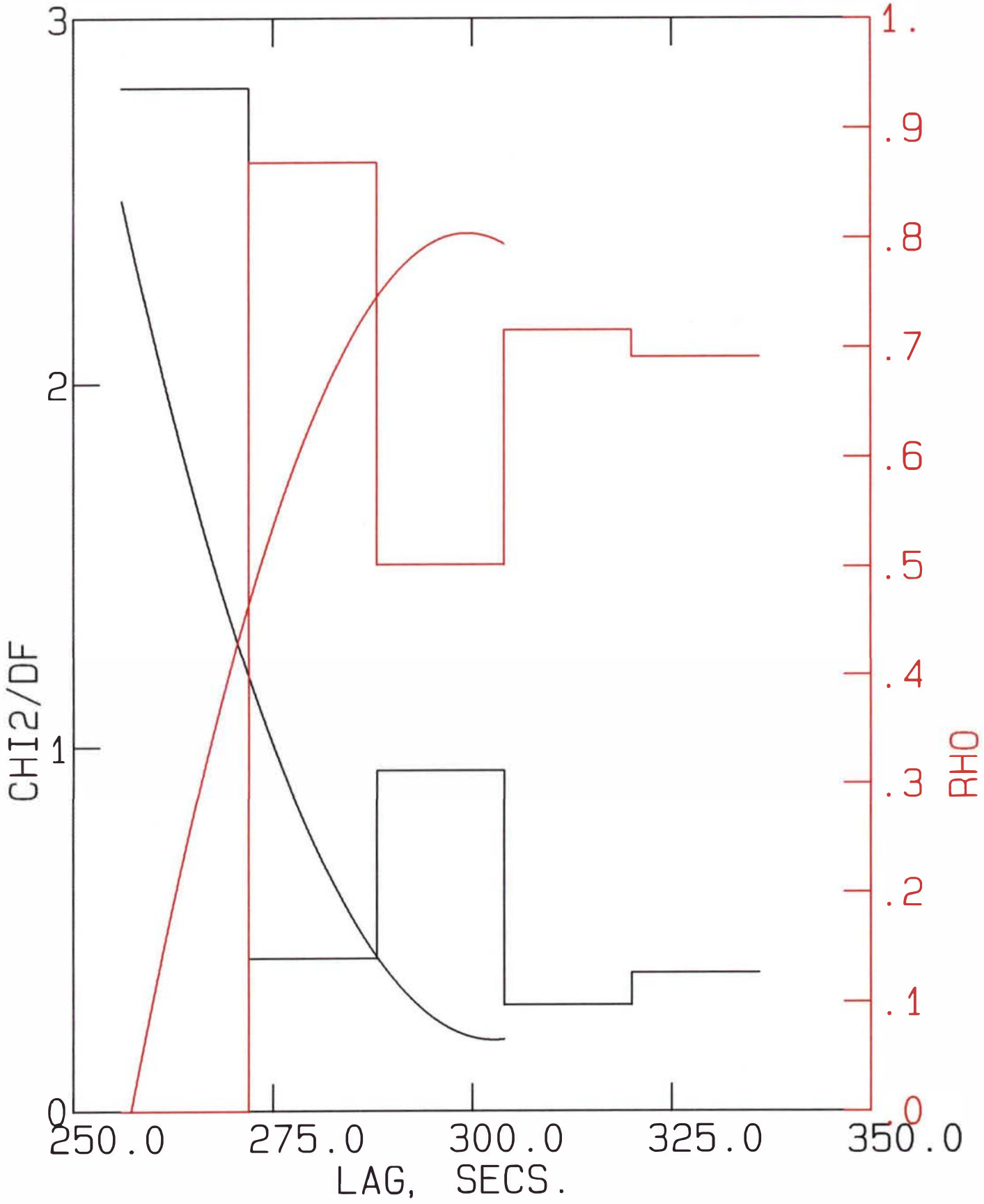

PVO RT -ULYSSES RT CORRELATION 8/ 3/92 17711.920 3/ 4/97
200
150
100
50
0
C/16.00000 S
PVO RT
125
100
75
50
25
0
C/16.00024 S
ULYSSES RT
240
250
260
270
280
290
300
310
320
330
340
TIME, SECS

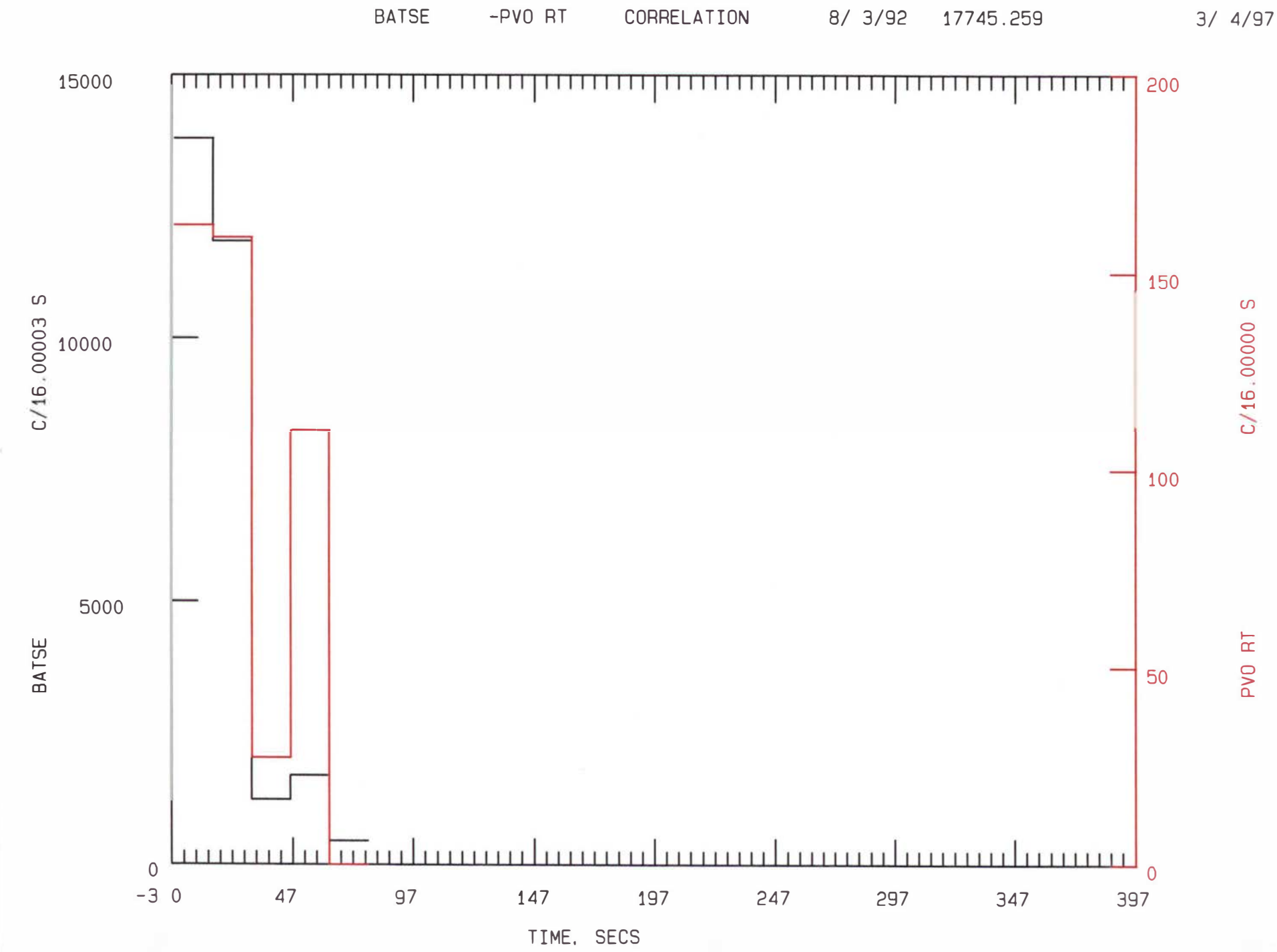
PVO RT -ULYSSES RT CORRELATION 8/ 3/92 17711.920



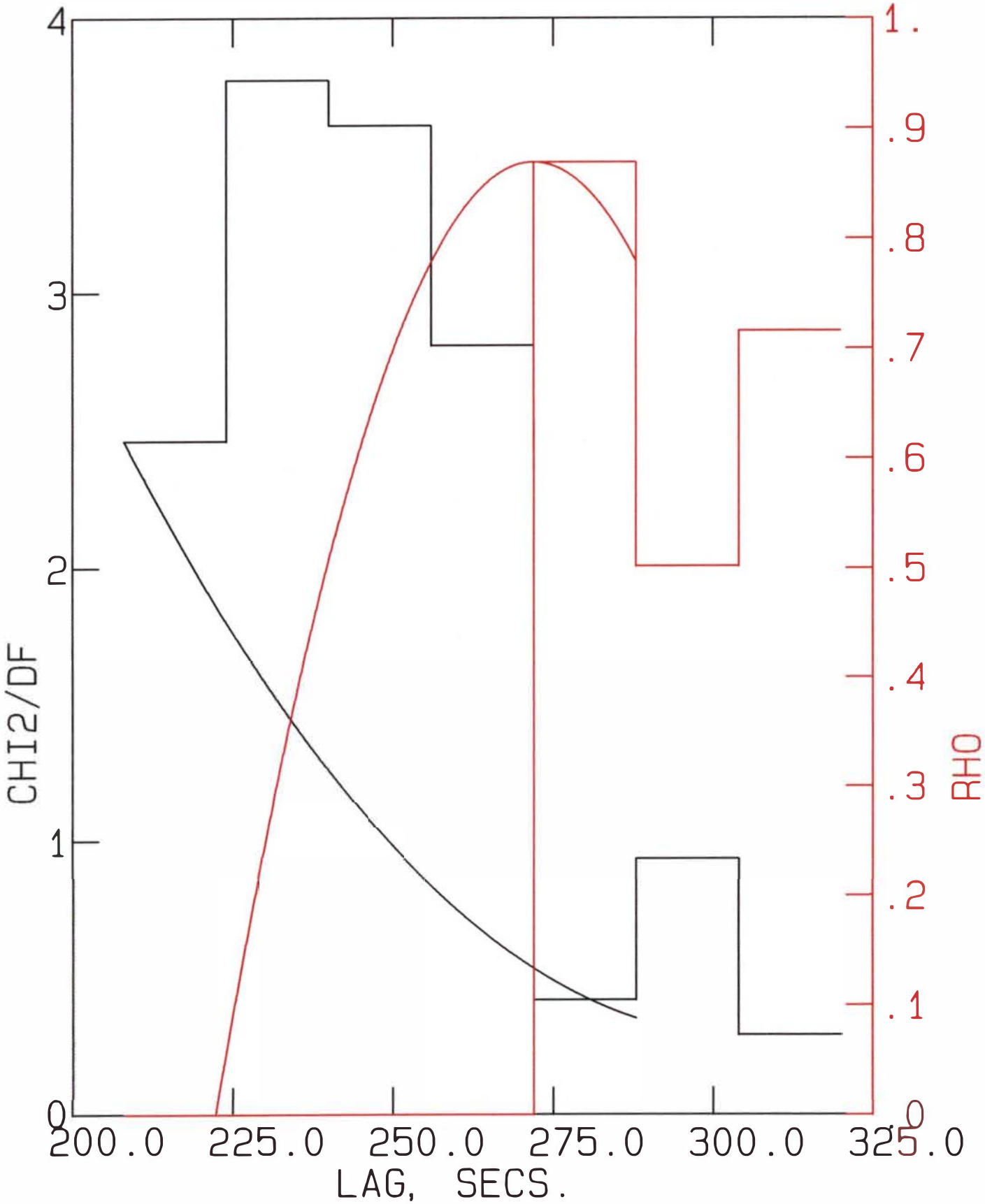

BATSE -PVO RT CORRELATION 8/ 3/92 17745.259 3/ 4/97
15000
10000
5000
0
C/16.00003 S
BATSE
200
150
100
50
0
C/16.00000 S
PVO RT
-3
0
47
97
147
197
247
297
347
397
TIME, SECS

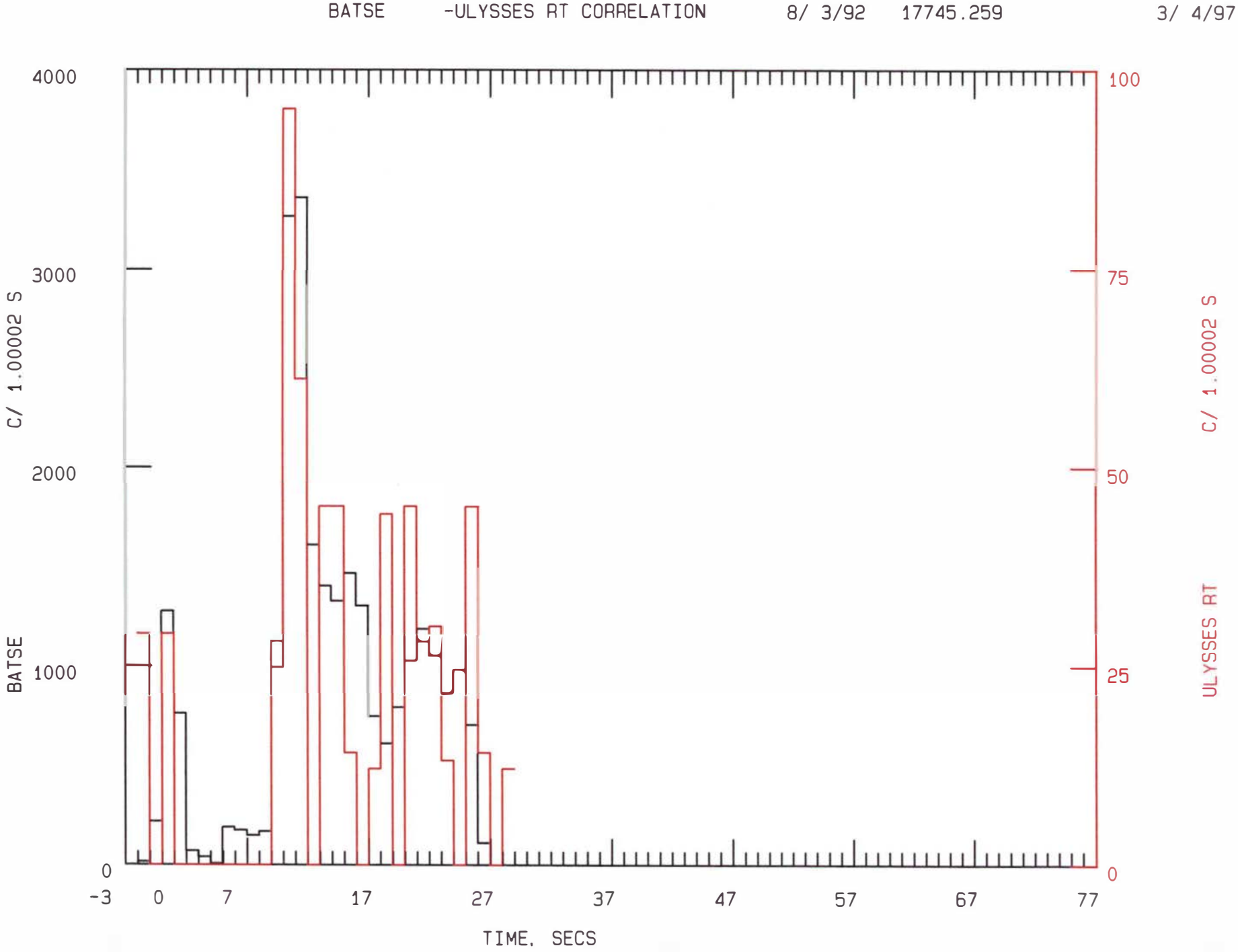
BATSE -PVO RT CORRELATION 8/ 3/92 17745.259



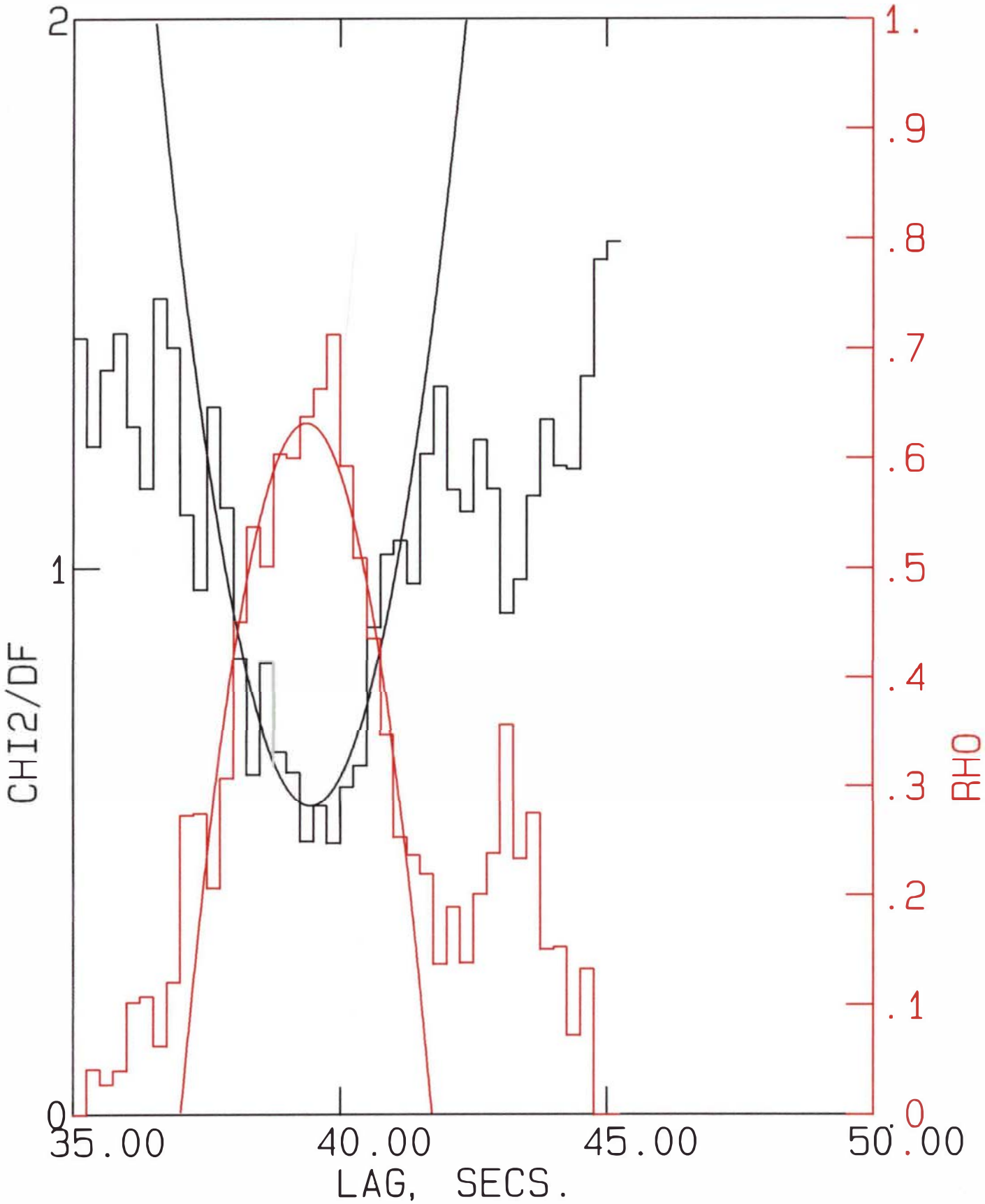

BATSE -PVO RT CORRELATION 8/ 3/92 17745.259 3/ 4/97
15000
10000
5000
0
C/16.00003 S
BATSE
200
150
100
50
0
C/16.00000 S
PVO RT
-3
0
47
97
147
197
247
297
347
397
TIME, SECS

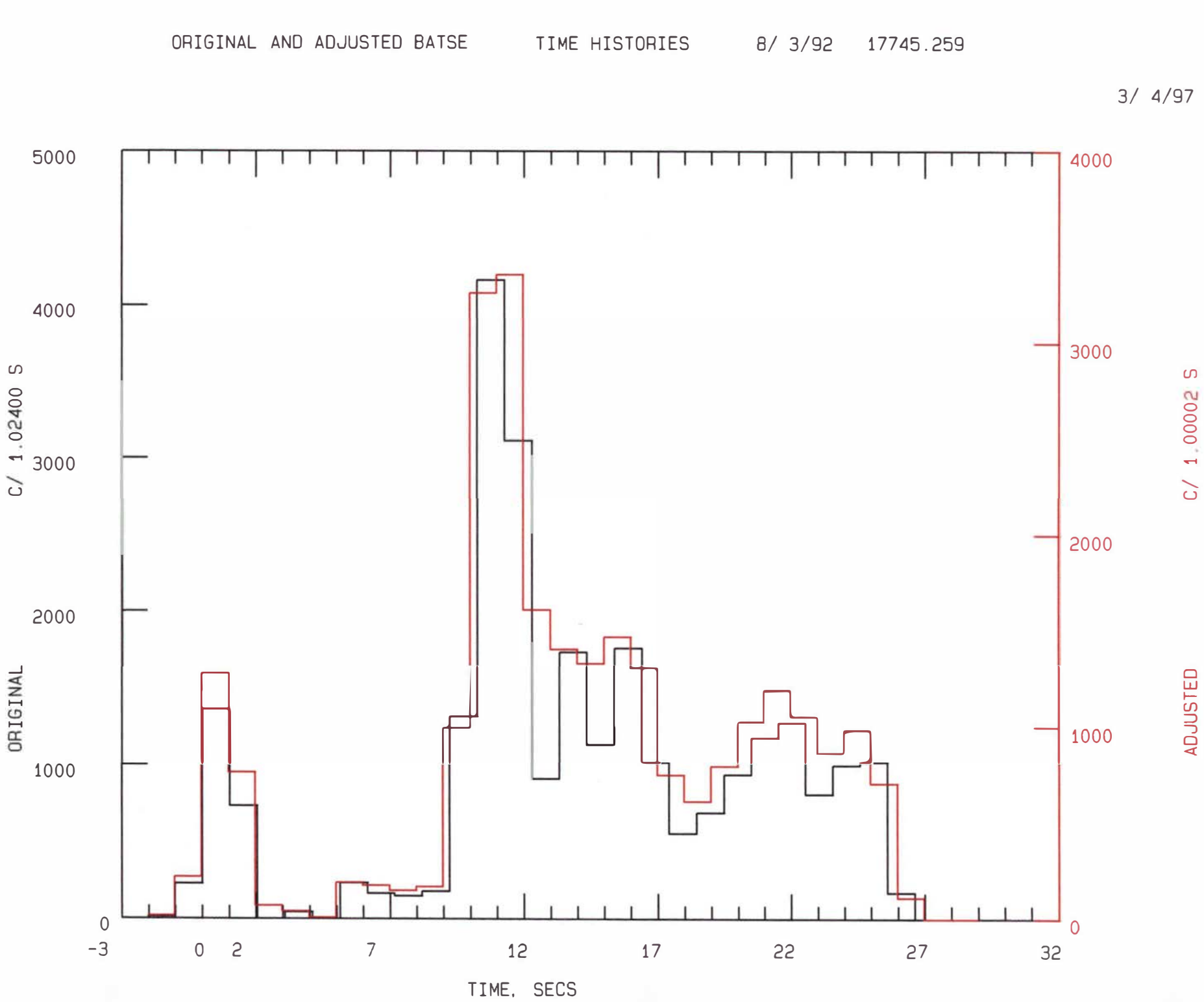
BATSE -PVO RT CORRELATION 8/ 3/92 17745.259

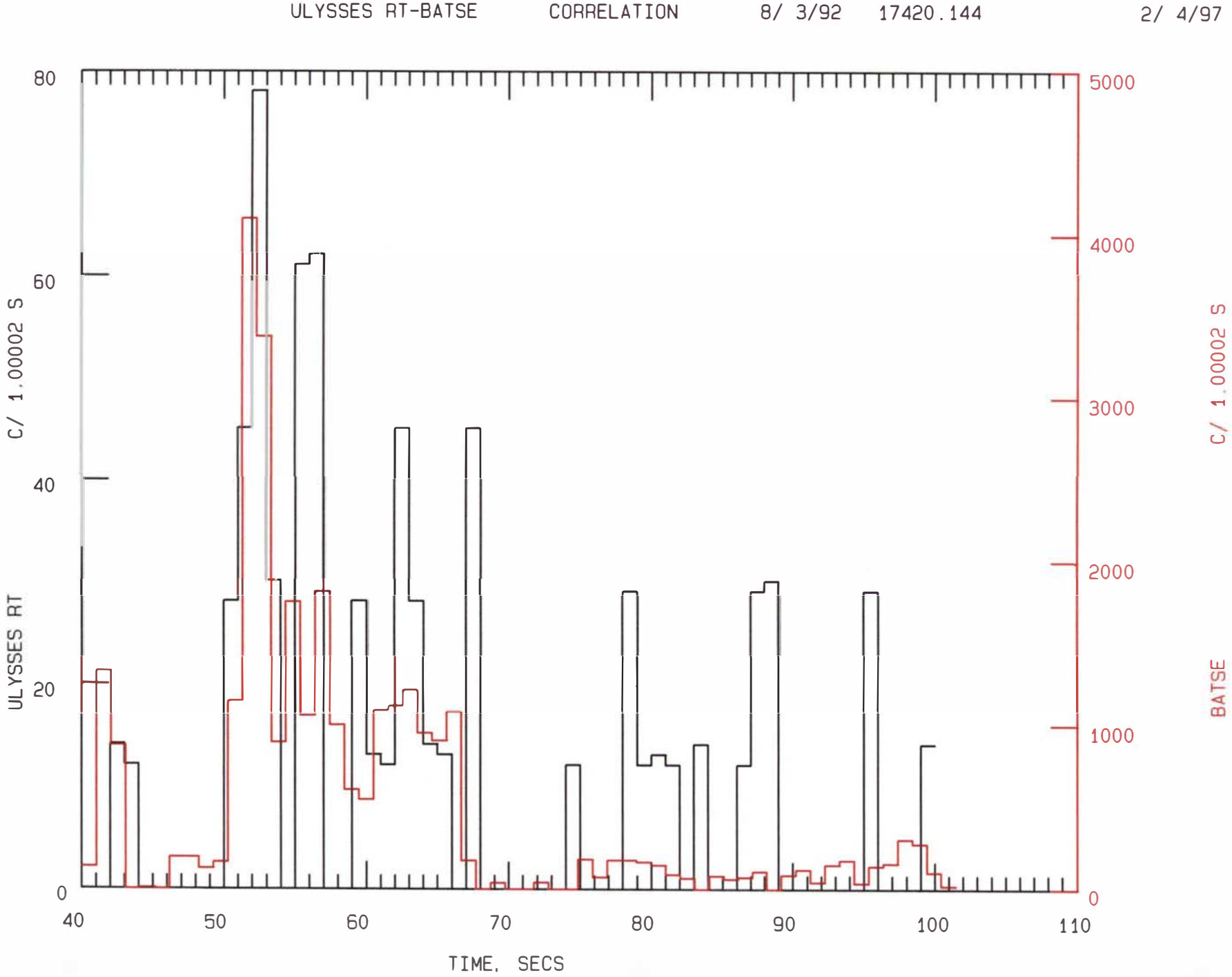



BATSE -ULYSSES RT CORRELATION 8/ 3/92 17745.259 3/ 4/97
4000
3000
2000
1000
0
C/ 1.00002 S
BATSE
100
75
50
25
0
C/ 1.00002 S
ULYSSES RT
-3
0
7
17
27
37
47
57
67
77
TIME, SECS

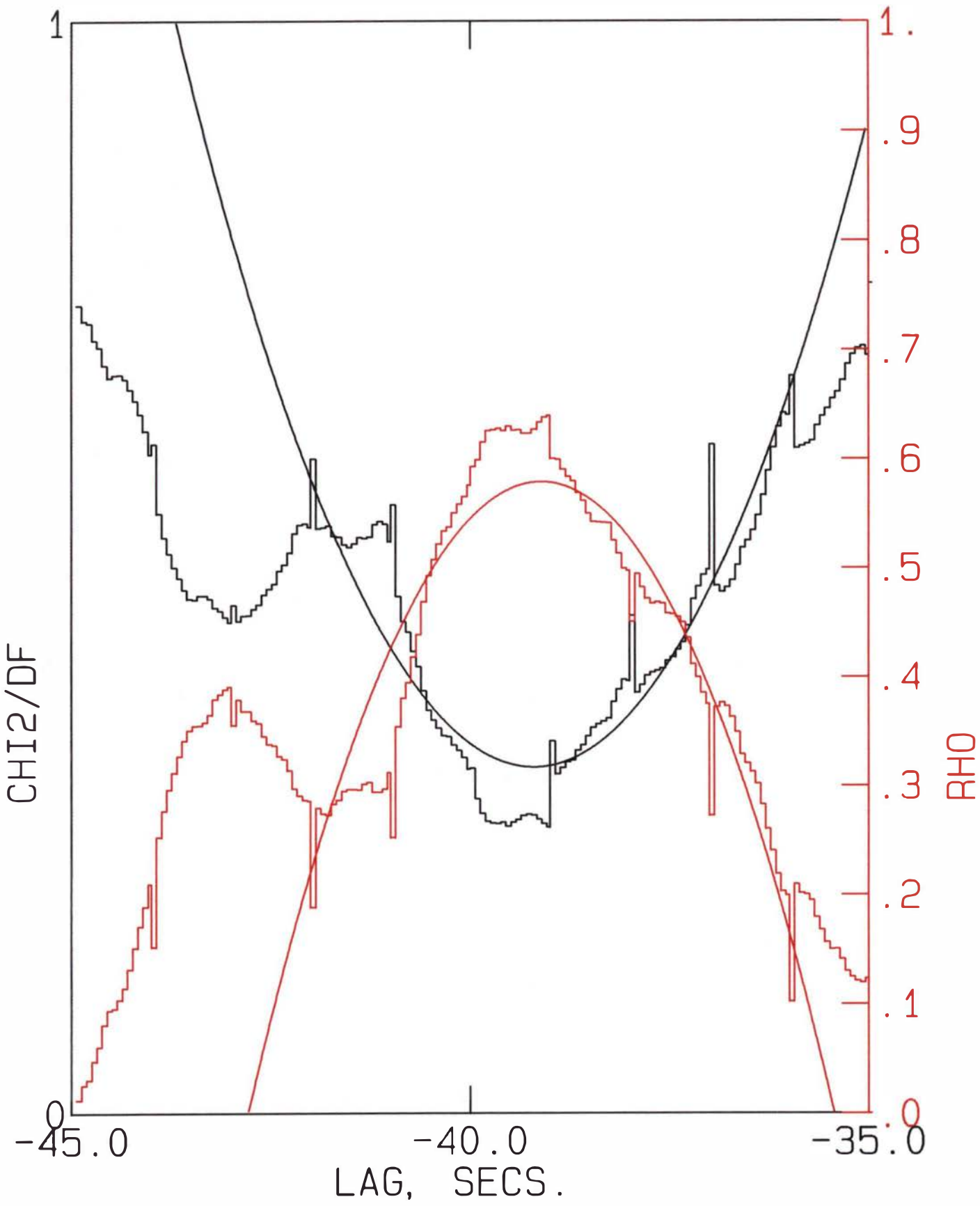
BATSE -ULYSSES RT CORRELATION 8/ 3/92 17745.259

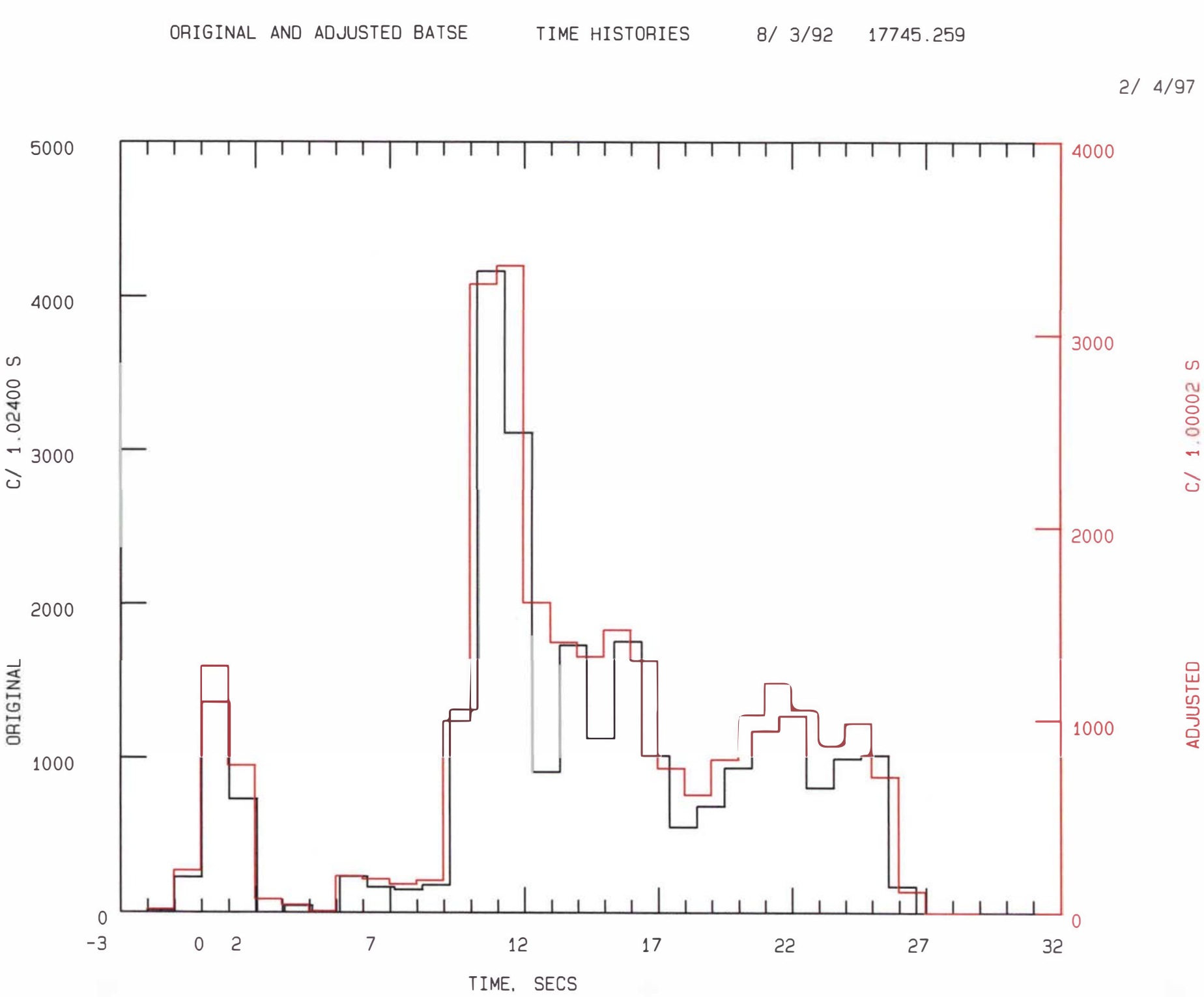



ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 8/ 3/92 17745.259
3/ 4/97
5000
4000
3000
2000
1000
0
C/ 1.02400 S
ORIGINAL
4000
3000
2000
1000
0
C/ 1.00002 S
ADJUSTED
-3
0
2
7
12
17
22
27
32
TIME, SECS


ULYSSES RT-BATSE CORRELATION 8/ 3/92 17420.144 2/ 4/97
ULYSSES RT
C/ 1.00002 S
BATSE
C/ 1.00002 S
TIME, SECS
0
20
40
60
80
0
1000
2000
3000
4000
5000
40
50
60
70
80
90
100
110

ULYSSES RT-BATSE CORRELATION 8/ 3/92 17420.144



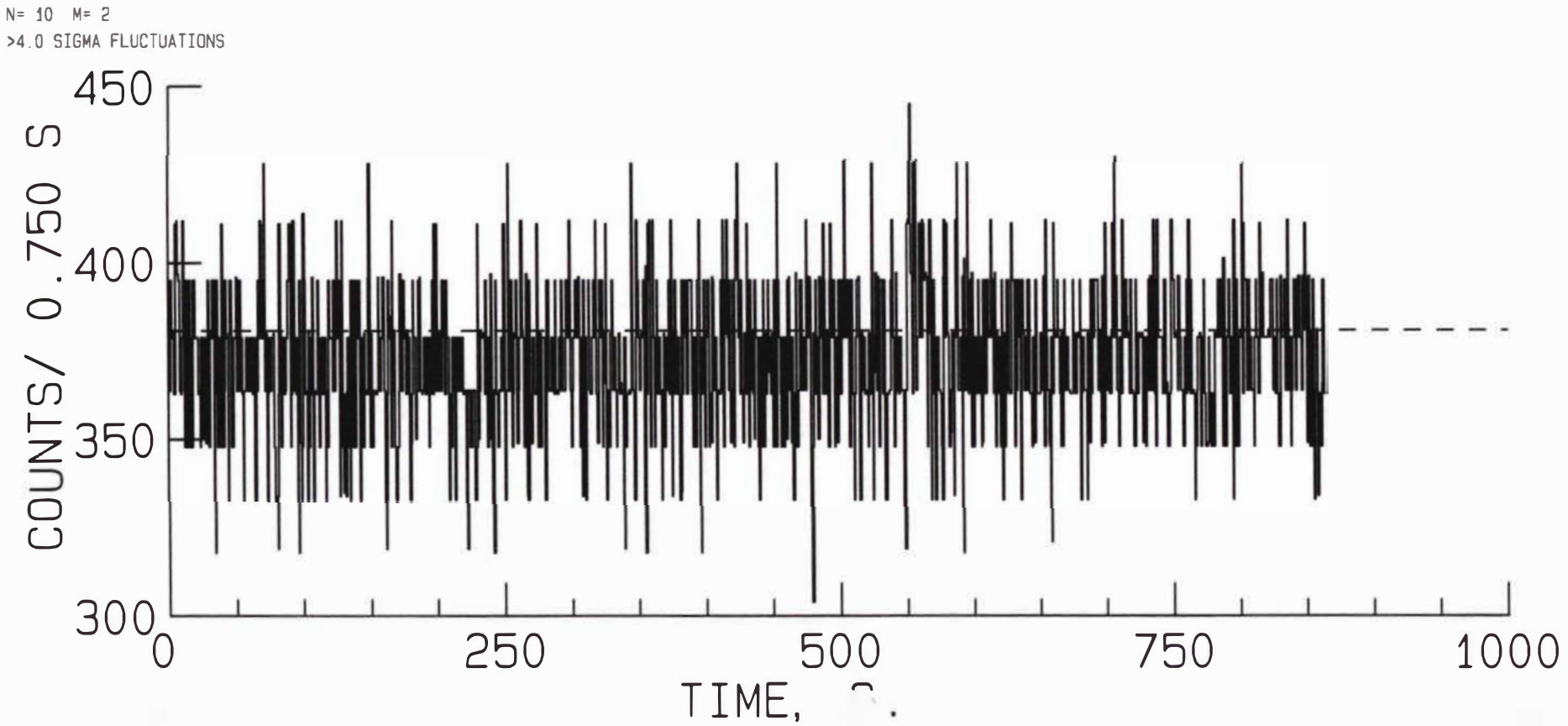

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 8/ 3/92 17745.259
2/ 4/97
5000
4000
3000
2000
1000
0
C/ 1.02400 S
ORIGINAL
4000
3000
2000
1000
0
C/ 1.00002 S
ADJUSTED
-3
0
2
7
12
17
22
27
32
TIME, SECS

ULYSSES RT 2/ 4/97

8/ 3/92 16920.157 s

0.250 S INTERVALS REGROUPED BY 3

24- 164 keV



2/ 4/97

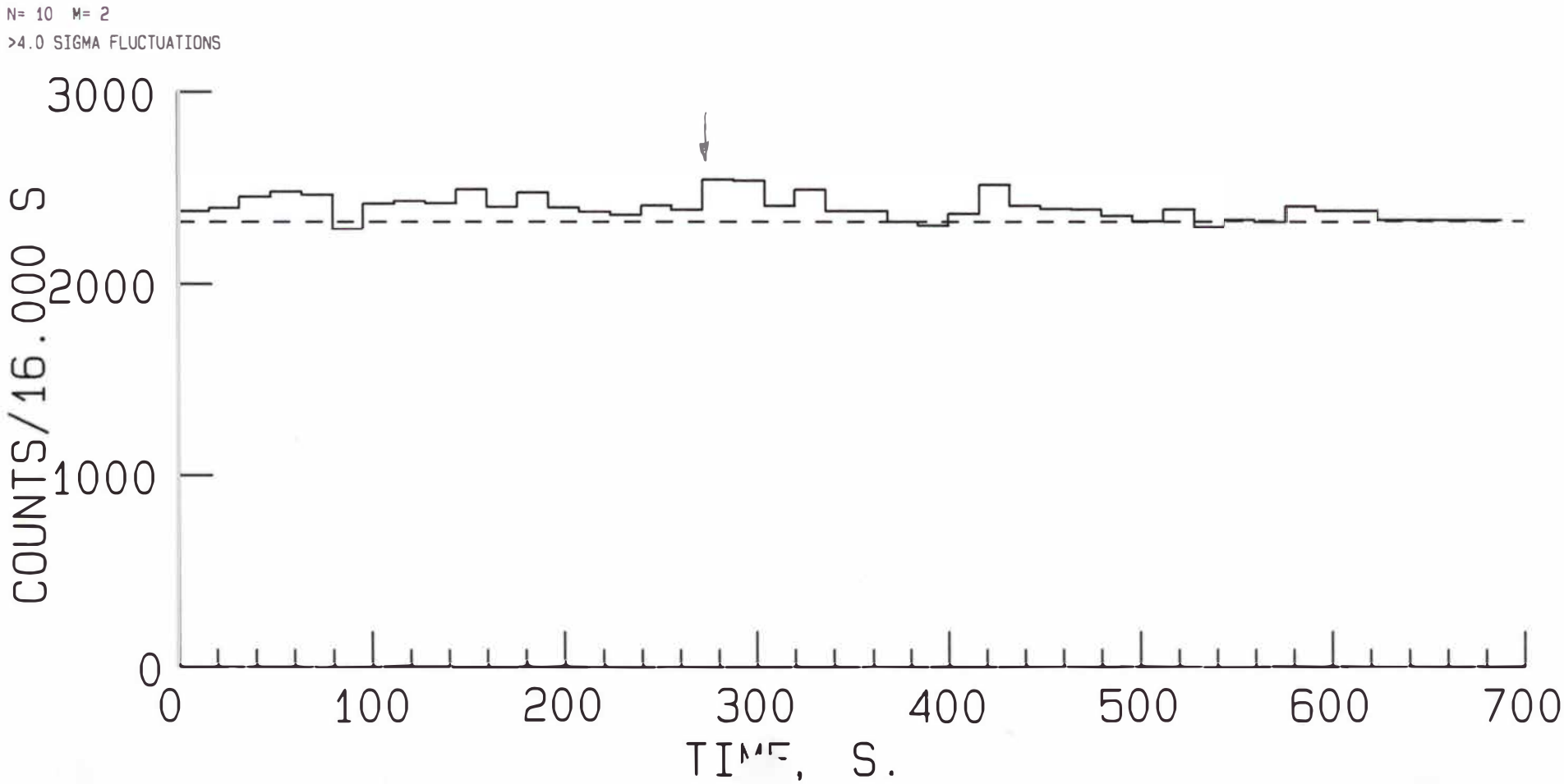
PVO-RT

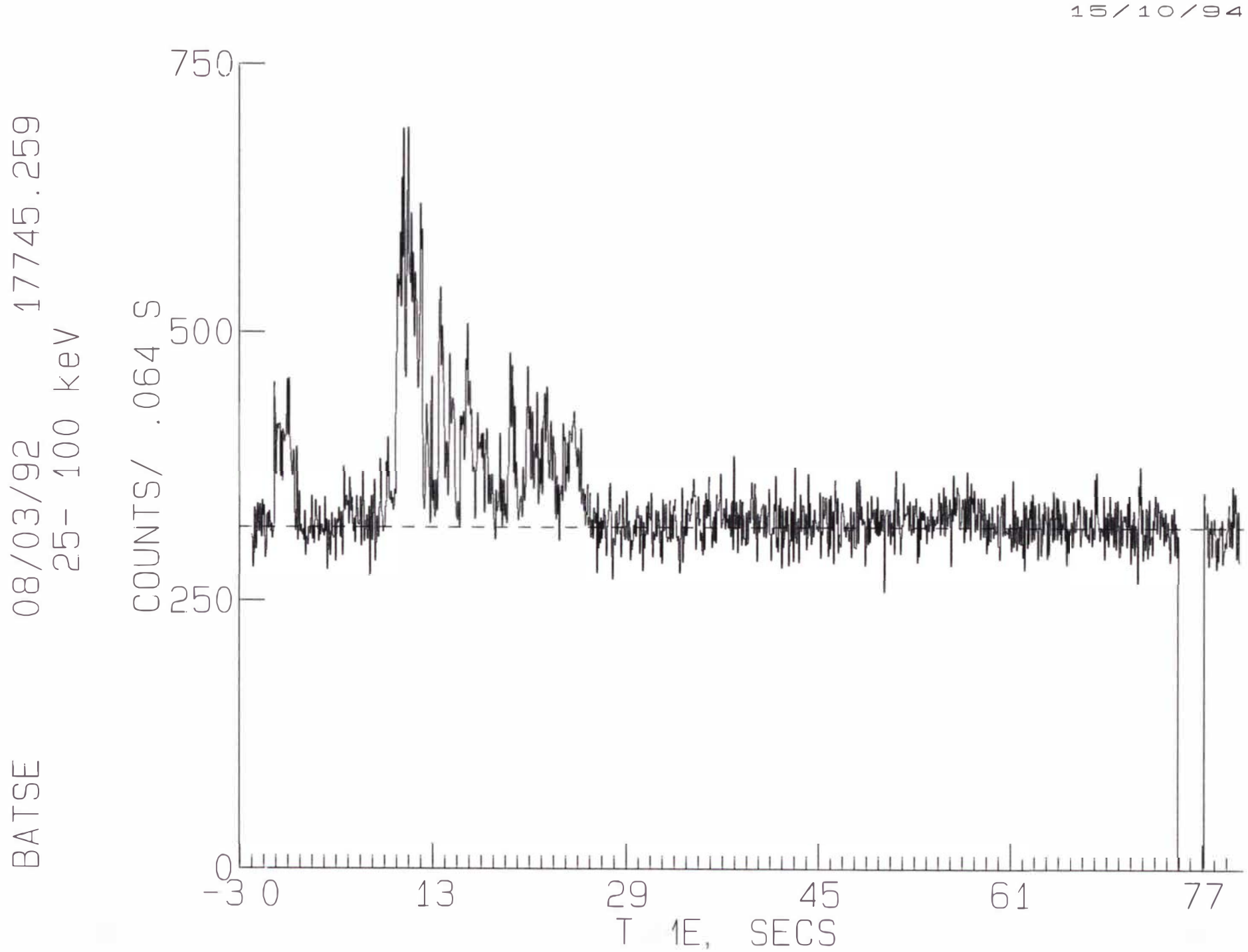
8/ 3/92

17711.920 s.

16.000 S. INTERVALS REGROUPED BY 1

100-2000 keV




15/10/94
BATSE 08/03/92 17745.259
25- 100 keV
COUNTS/ .064 S
750
500
250
0
-3 0
13
29
45
61
77
T 1E, SECS

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1469
EVENT OF 1992 MAR  8 DAY OF YEAR= 68
EVENT CROSSING TIME AT BATSE     : 63224. S. OR 17:33:44.1
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 255.400   37.100
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  8/ 3/  92 IS:
RA=  157.173 DEC=    9.074 DIST=    4.424 AU
BATSE-ULYSSES DISTANCE =  661858824. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 88.99 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=   38.79 SECS.
CROSSING TIME AT ULYSSES    IS 63263. S. OR 17:34:22.9 +/-  433.83 SECONDS
```

NO

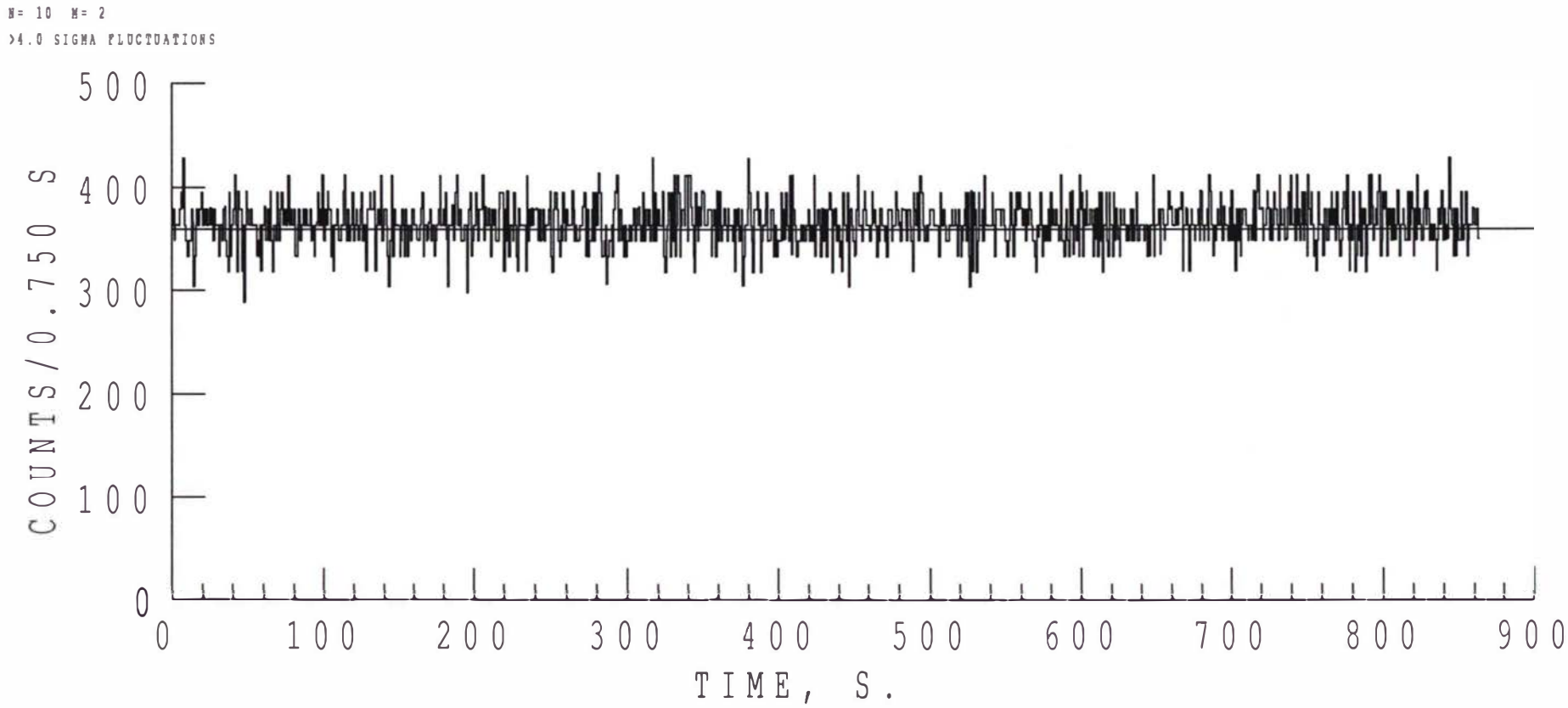
7/ 6/94

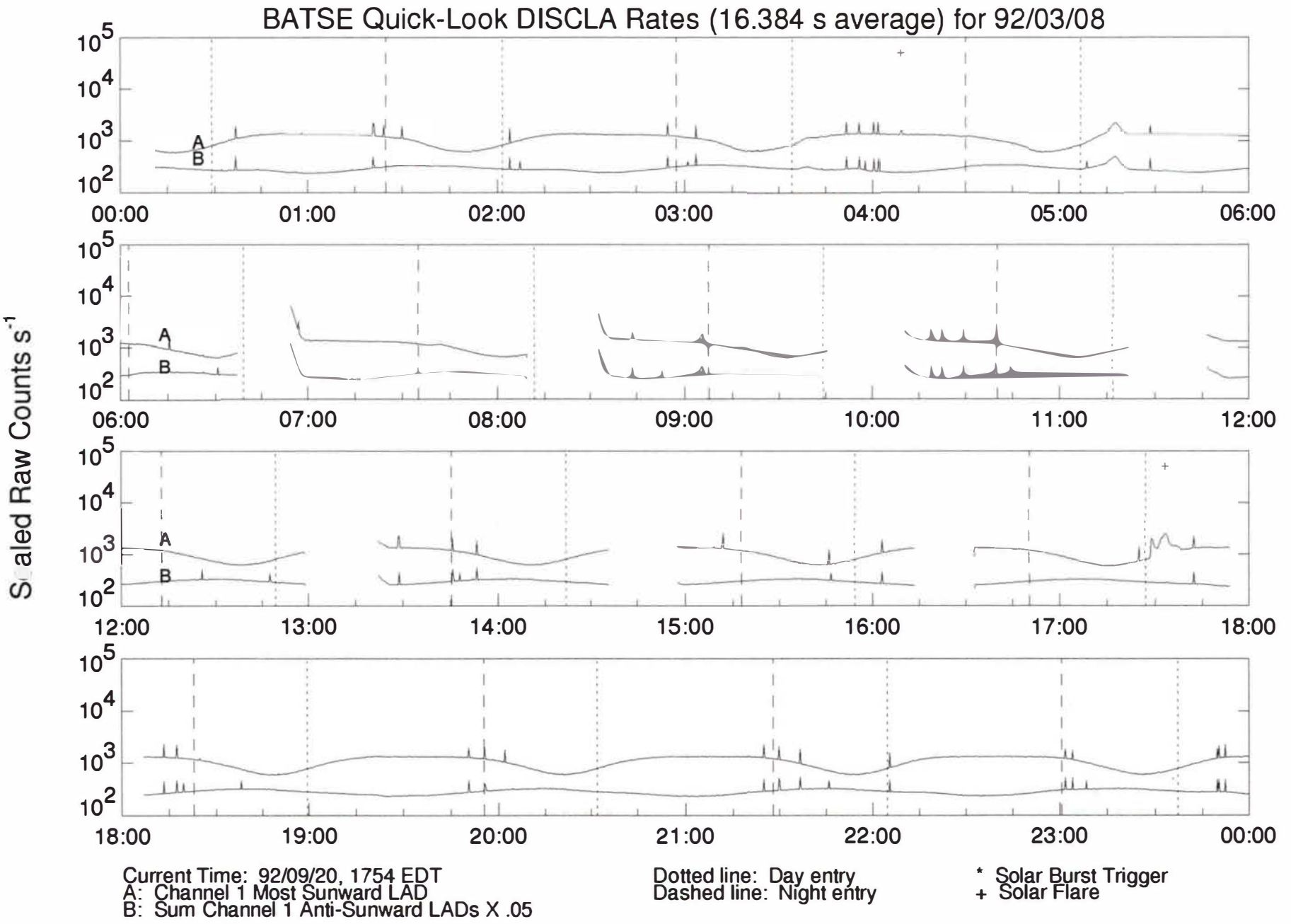
ULYSSES RT

8/ 3/92 62820.203 s

0.250 S INTERVALS REGROUPED BY 3

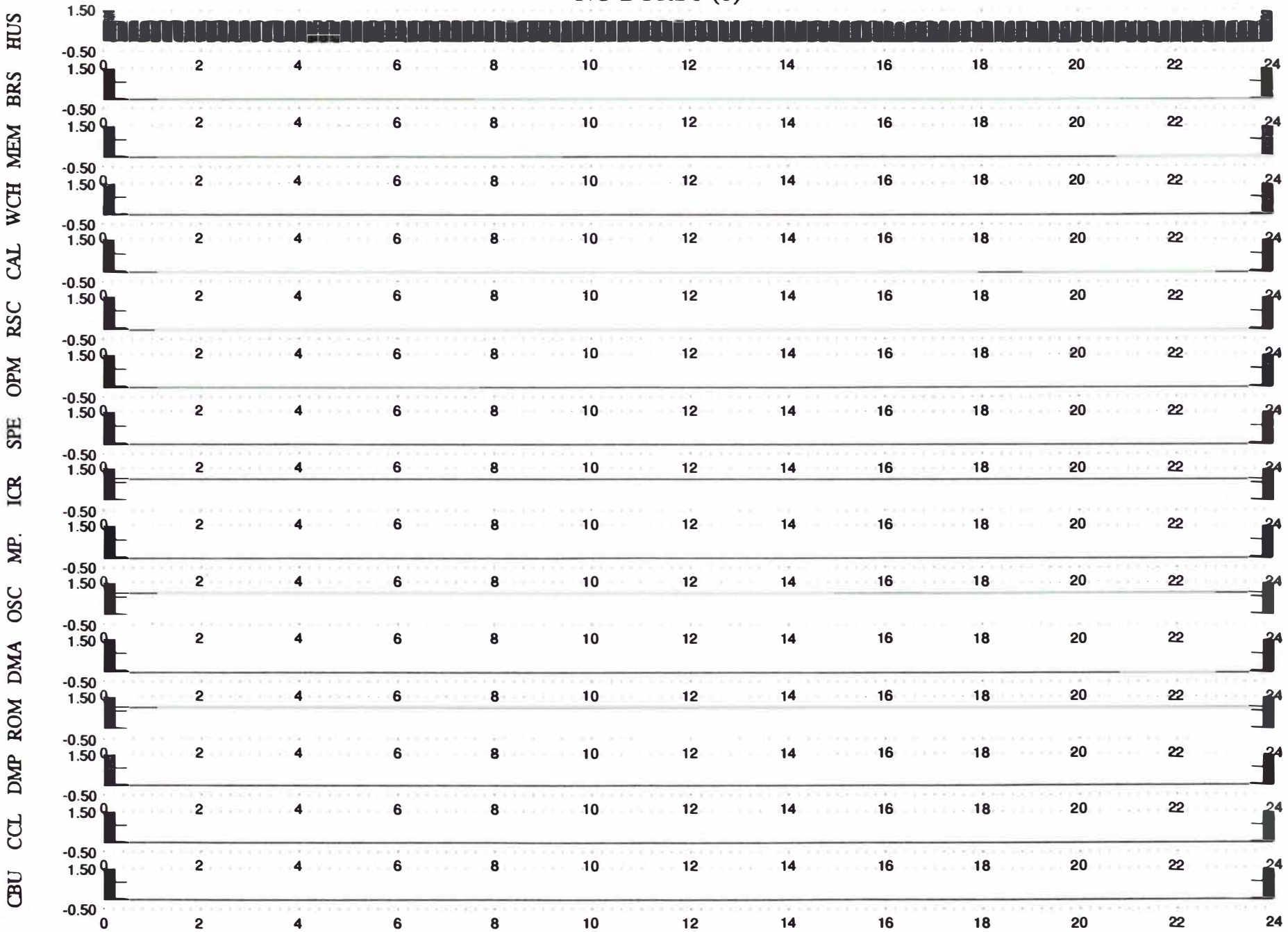
0- 0 keV




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/08
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1754 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 68, year 1992 to day 68, year 1992 4/15/92

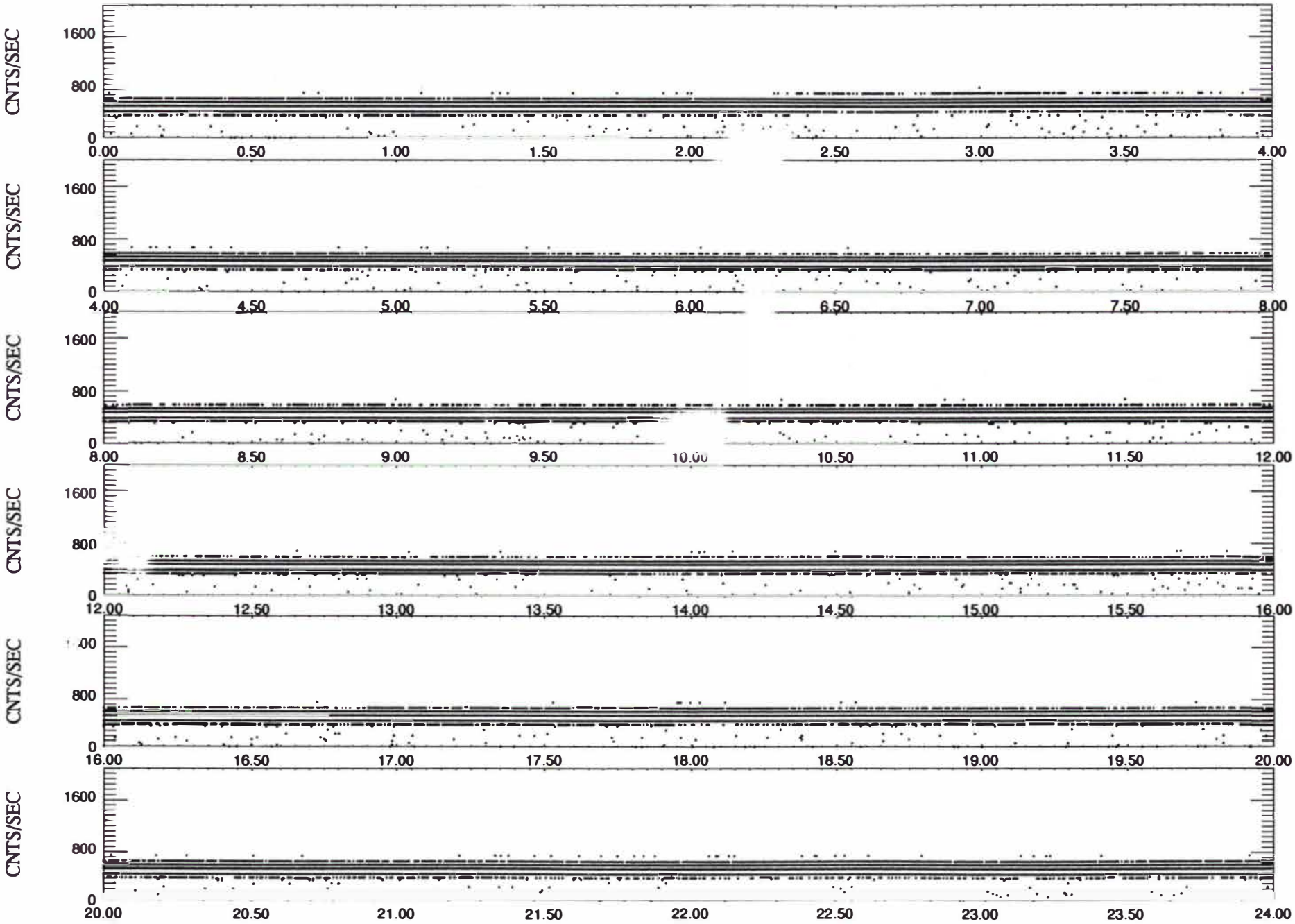
NO BURST (8)



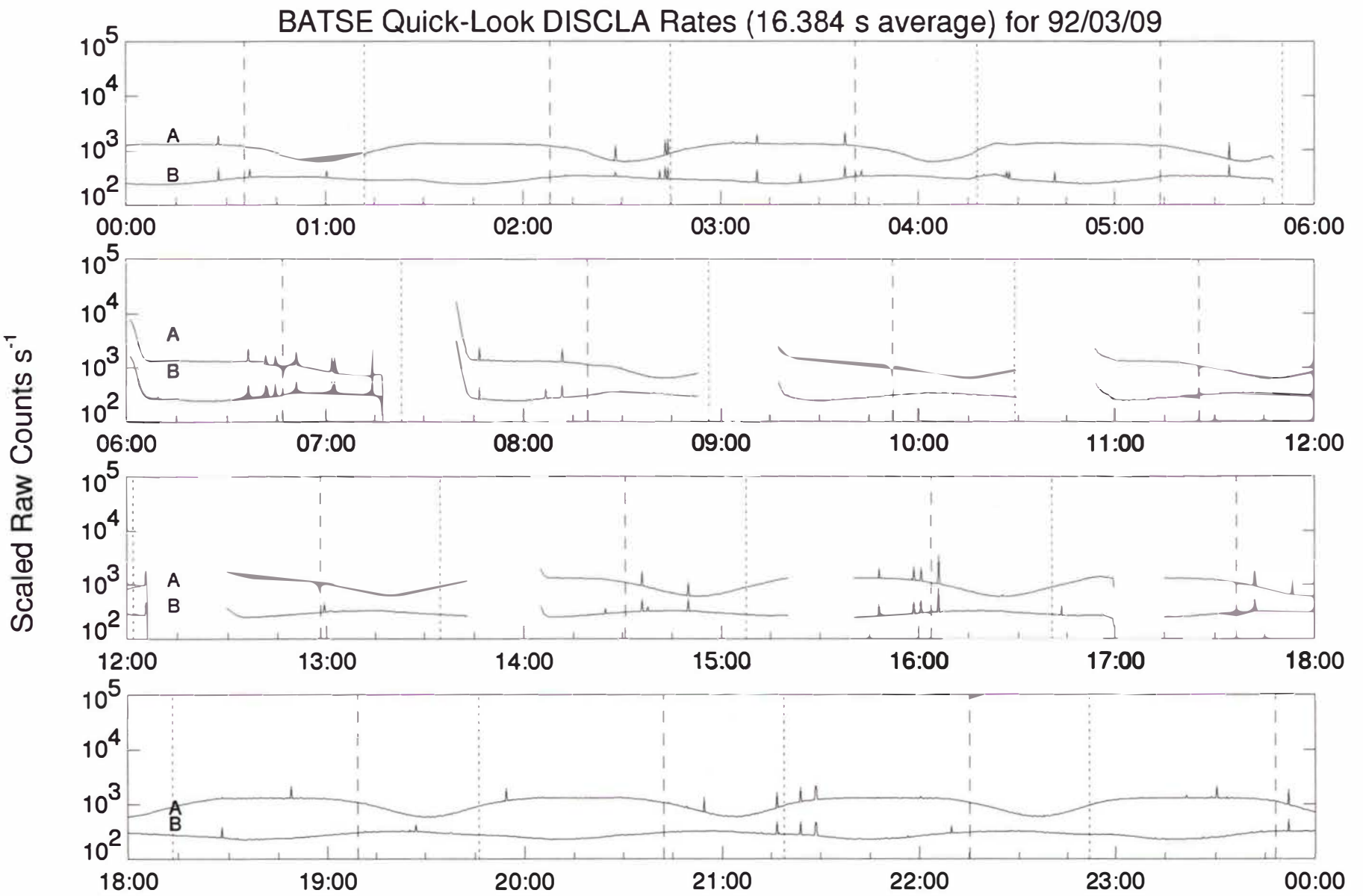
UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 68, year 1992 to day 68, year 1992 4/15/92

CALIBRATION DATA INCLUDED

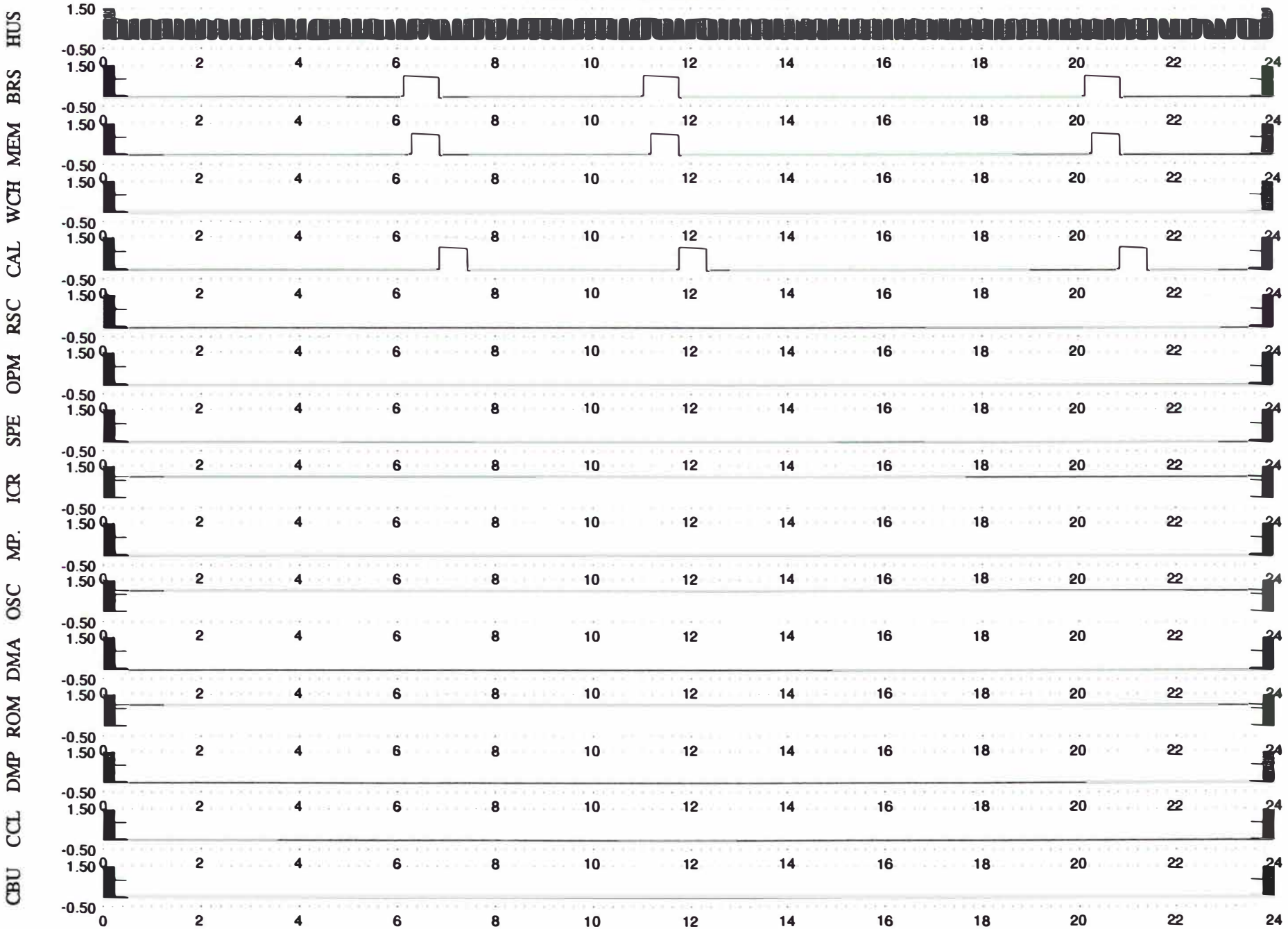


UNIVE. .L TIME


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/09
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1755 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 69, year 1992 to day 69, year 1992 4/15/92

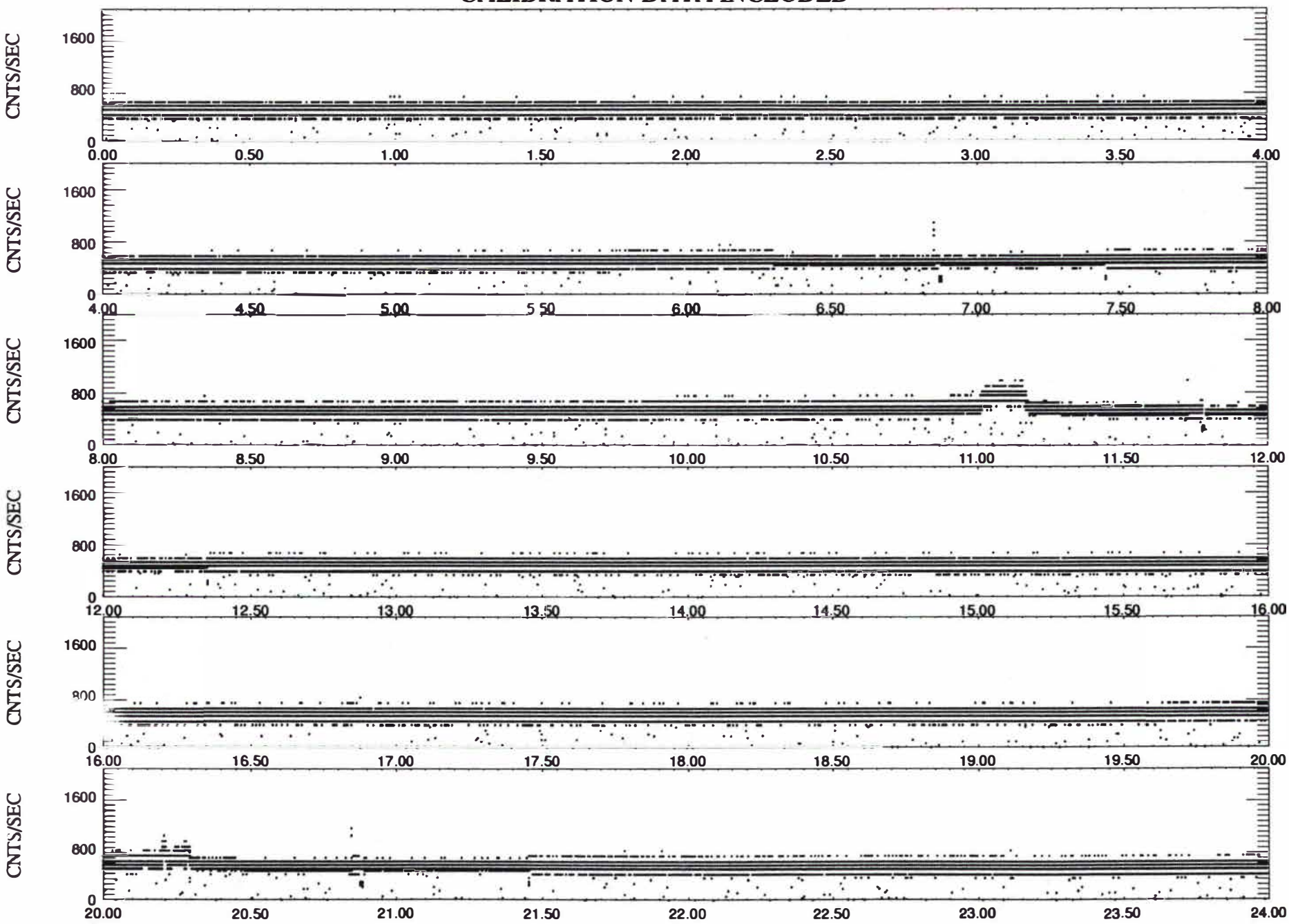
BURST NUMBER 9 - 11



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 69, year 1992 to day 69, year 1992 4/15/92

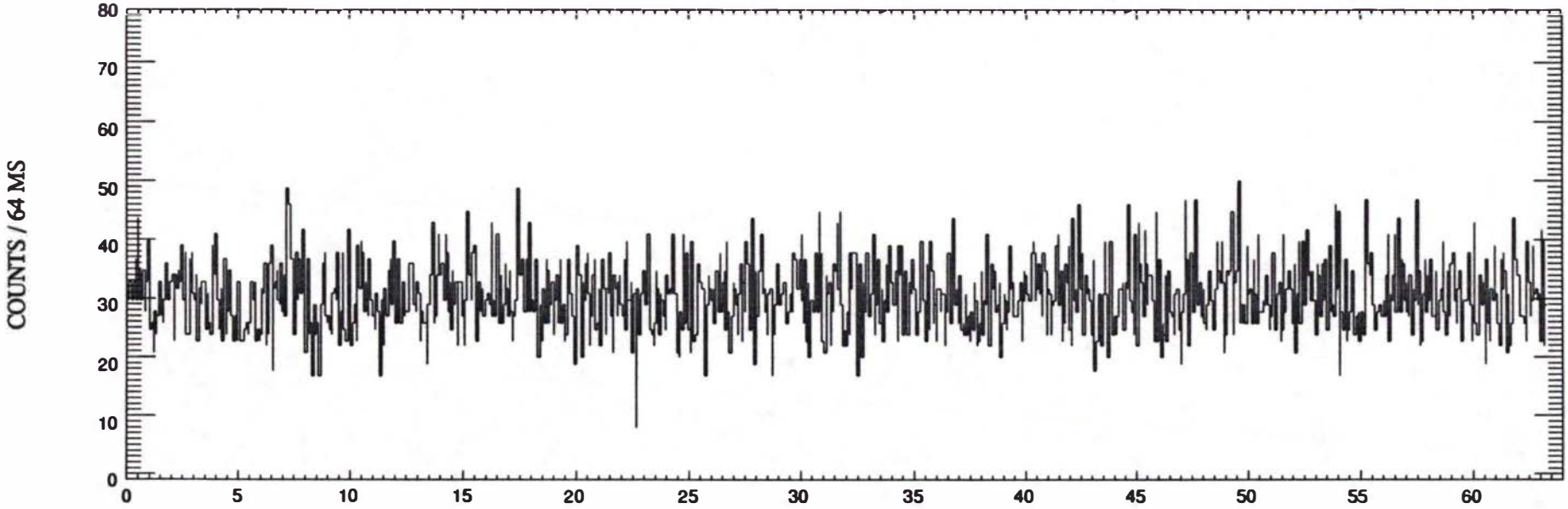
CALIBRATION DATA INCLUDED

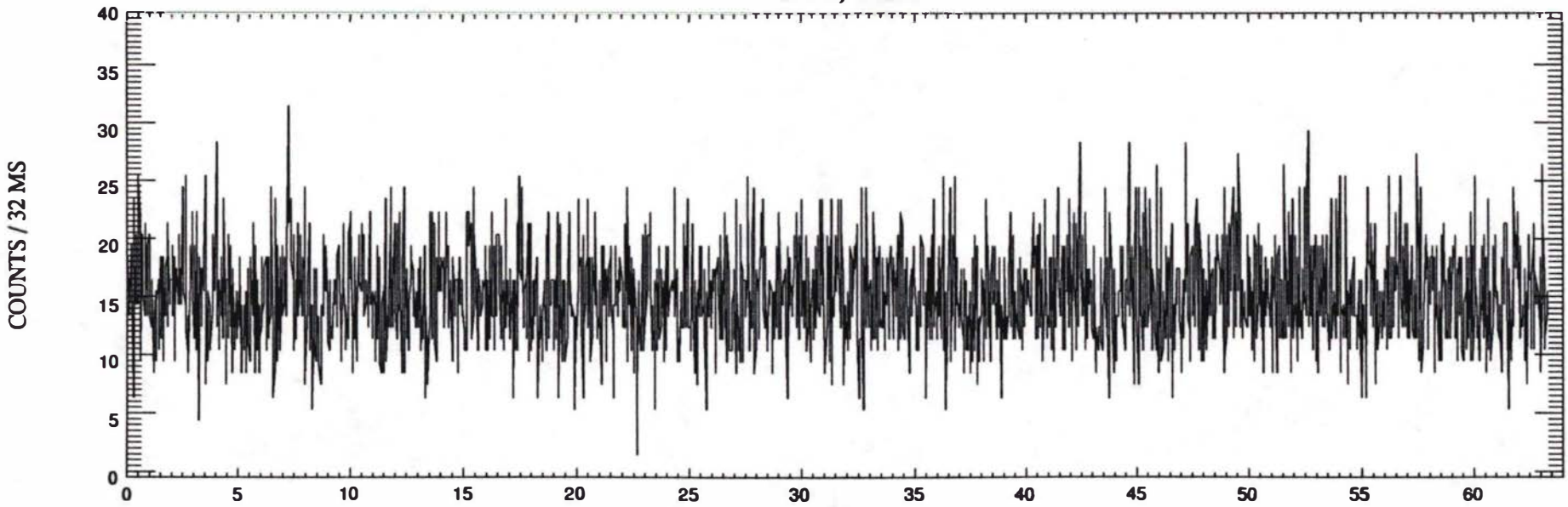


UNIVE. .L TIME

HUS 2A TRIGGERED DATA EDR day 69, year 1992 5/6/92

Burst Counter 9 at UT= 6.143433990479 h=22116.362 s

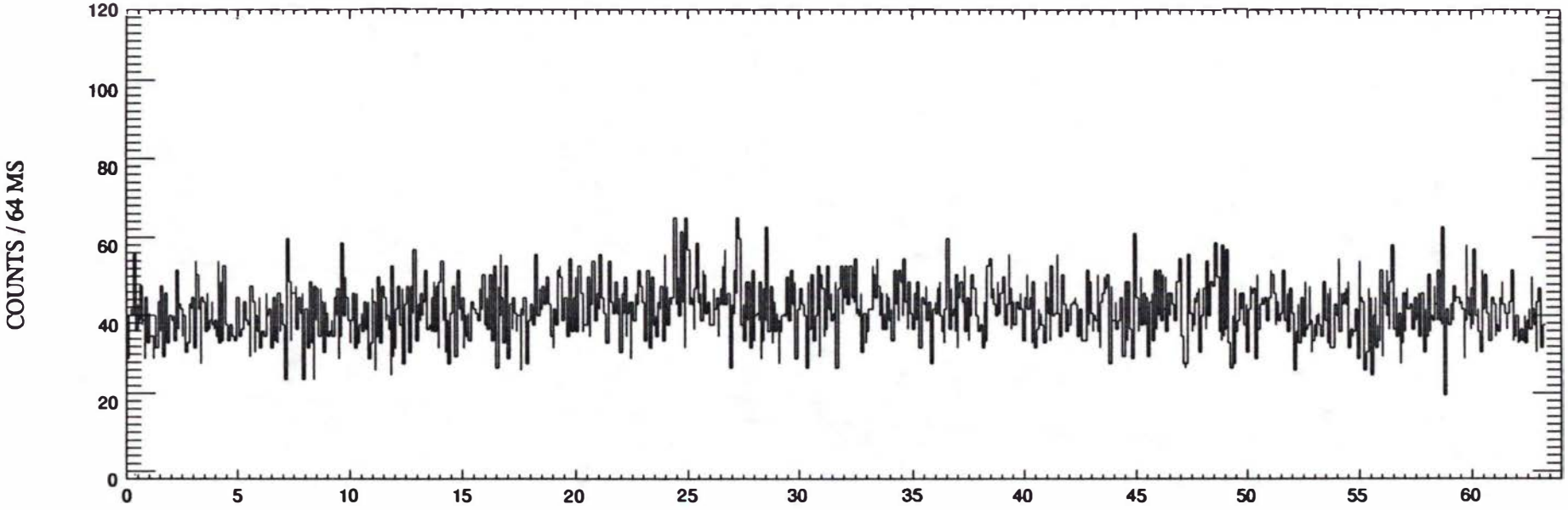


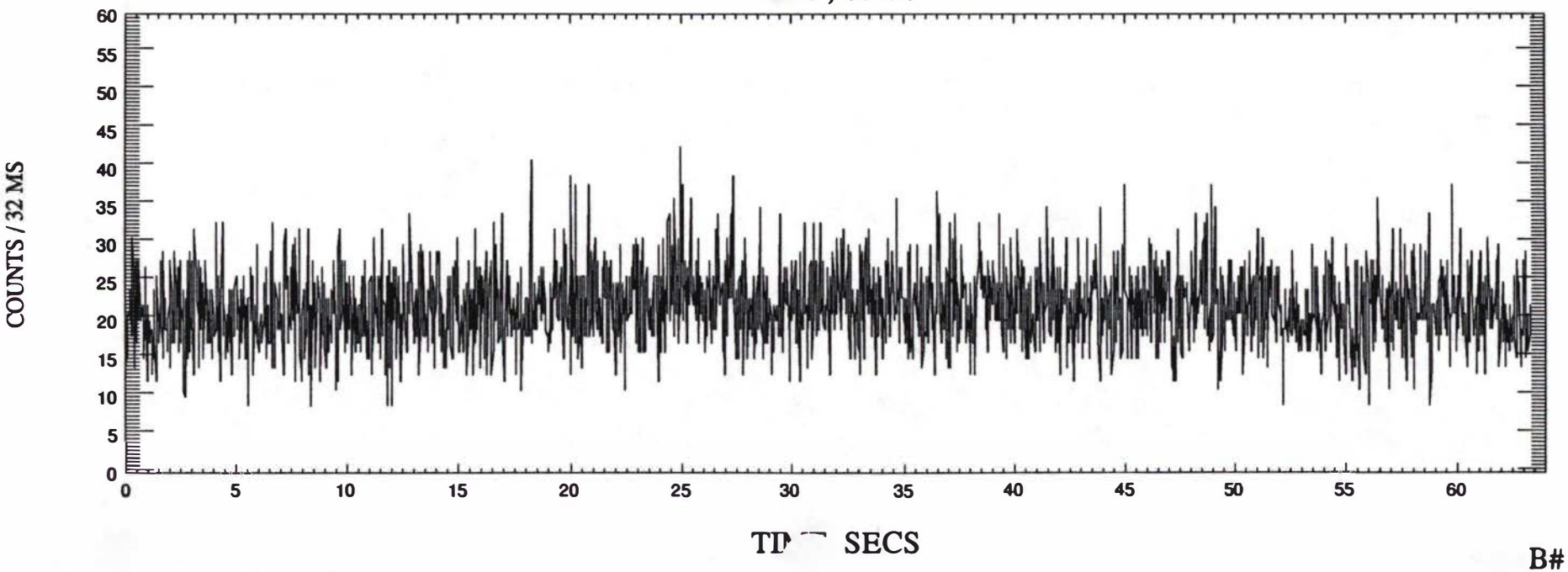


B# 1

HUS 2A TRIGGERED DATA EDR day 69, year 1992 5/6/92

Burst Counter 10 at UT=11.016574812995 h=39659.669 s

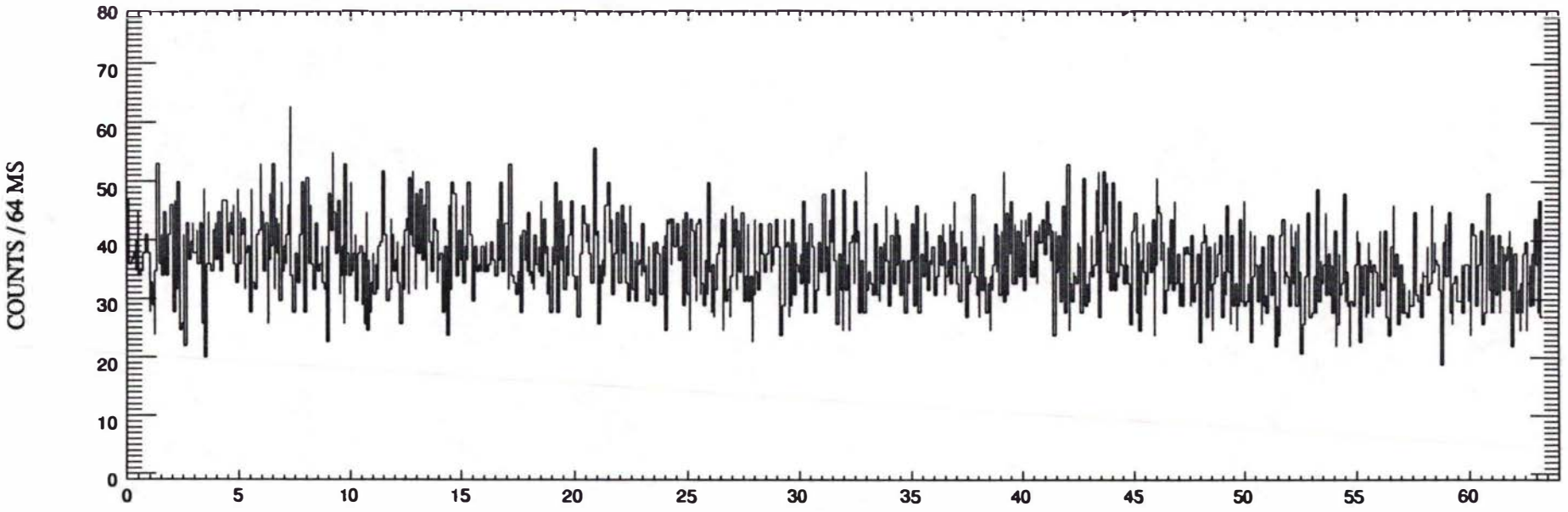


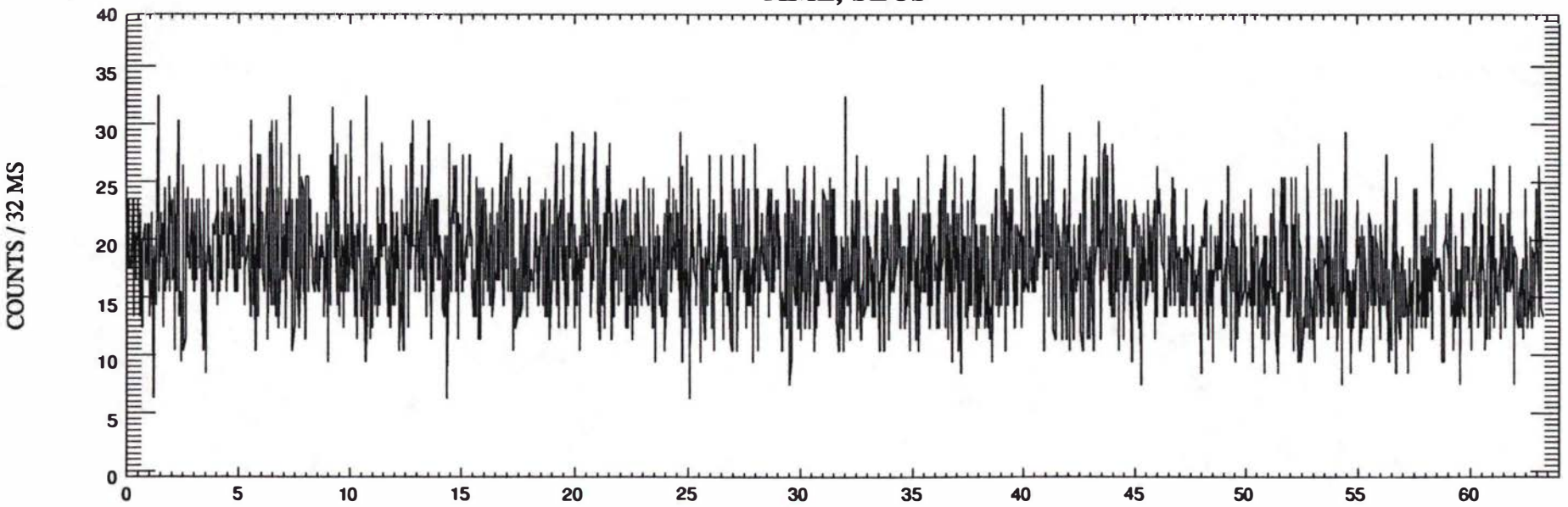


B# 2

HUS 2A TRIGGERED DATA EDR day 69, year 1992 5/6/92

Burst Counter 11 at UT=20.143113594055 h=72515.209 s





B# 3

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1472
EVENT OF 1992 MAR 10 DAY OF YEAR= 70
EVENT CROSSING TIME AT BATSE      : 50594. S. OR 14:03:14.4
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  95.600  -13.000
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 10/ 3/  92 IS:
RA=  156.734 DEC=     9.115 DIST=     4.431 AU
BATSE-ULYSSES DISTANCE =  662864136. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=115.39 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -948.14 SECS.
CROSSING TIME AT ULYSSES    IS 49646. S. OR 13:47:26.3 +/-  382.39 SECONDS
```

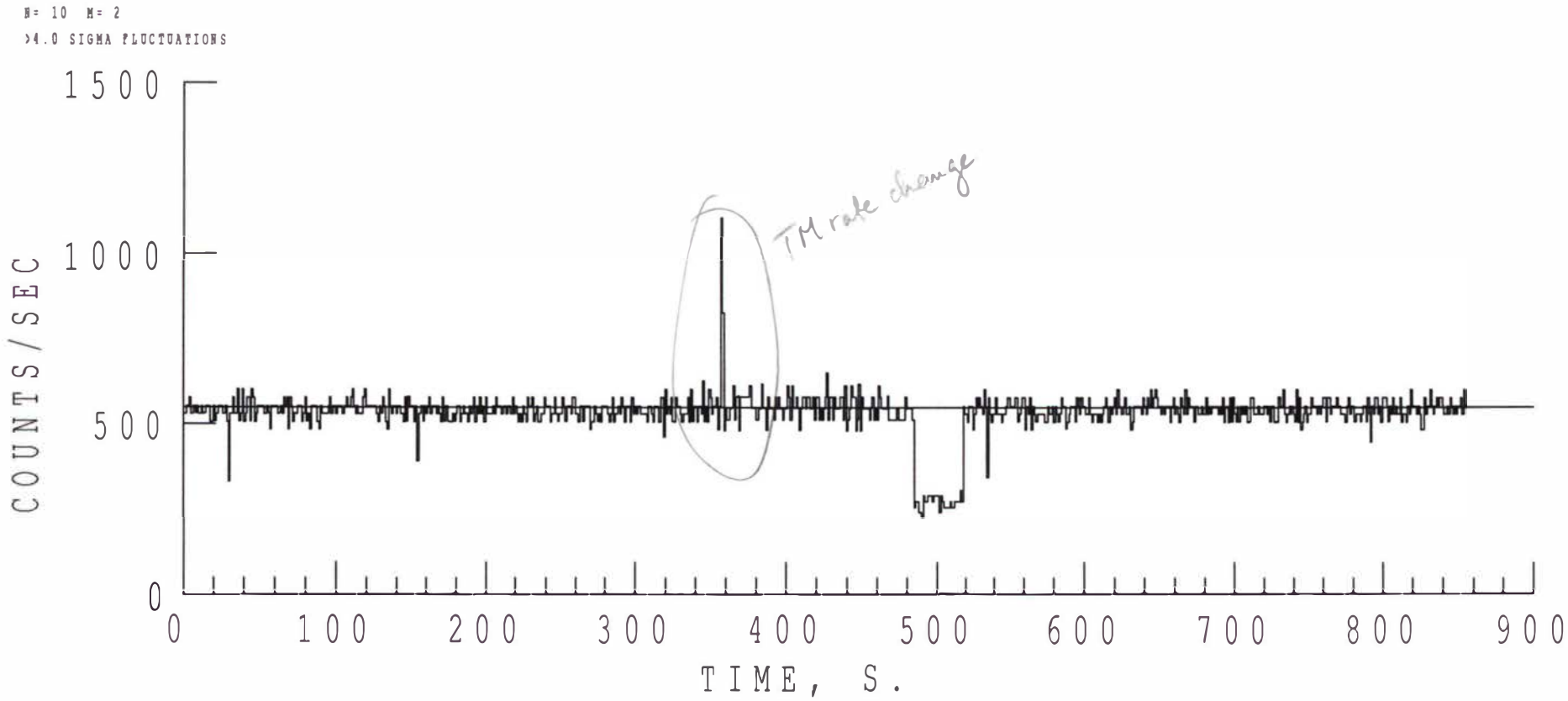
7/ 6/94

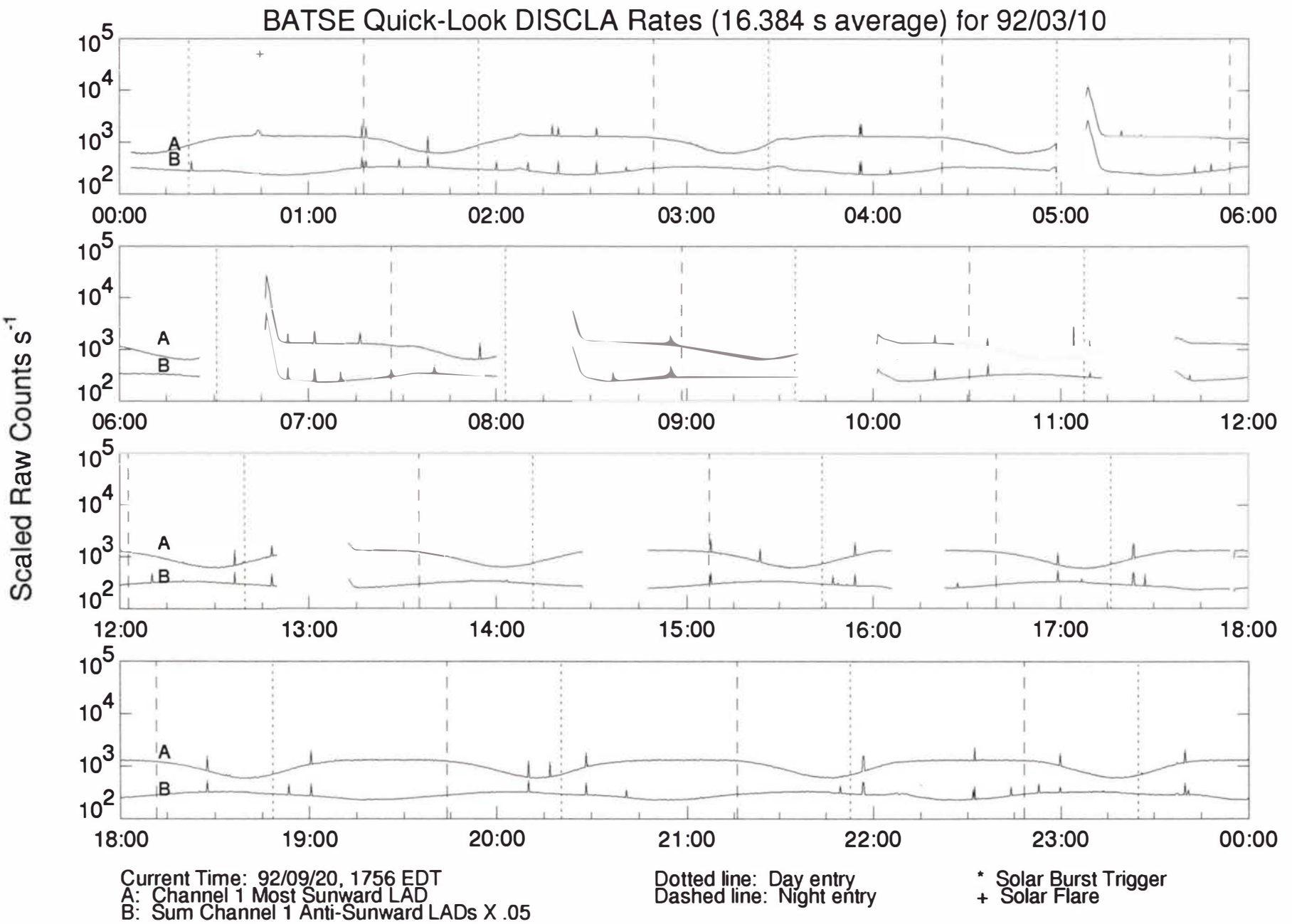
ULYSSES RT

10/ 3/92 49248.438 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/10
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1756 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

From @UCBSP.SSL.BERKELEY.EDU:ULYSSES@DUSTY.SPAN.NASA.GOV Wed Mar 11 08:09:05 1992
Received: from UCBSP.SSL.BERKELEY.EDU by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA03251; Wed, 11 Mar 92 08:09:00 PST
Message-Id: <9203111609.AA03251@sunspot.ssl.berkeley.edu>
Date: Wed 11 Mar 92 08:07:05-PST
From: $C <ULYSSES@DUSTY.SPAN.NASA.GOV>
To: KHURLEY@sunspot.ssl.berkeley.edu
Subject: [Resent-MM Mail]
Status: R

Received: from DUSTY by UCBSP.SSL.BERKELEY.EDU via MAIL-11 with DECnet;
          Wed, 11 Mar 92 08:06:06-PST
Date: Wed 11 Mar 92 08:06:05-PST
From: ULYSSES@DUSTY.SPAN.NASA.GOV (Ulysses DUST-Team, MPI-K,
      Heidelberg, Germany)
Subject:
To: "19773::RJF"@DUSTY.SPAN.NASA.GOV,
    "ESSDP1::BAME"@DUSTY.SPAN.NASA.GOV,
    "UMDSP::GLOECKLER"@DUSTY.SPAN.NASA.GOV,
    "20579::UBEVX1::GEISS"@DUSTY.SPAN.NASA.GOV,
    "ECD1::LINMPI::KEPPLER"@DUSTY.SPAN.NASA.GOV,
    "LASR::SIMPSON"@DUSTY.SPAN.NASA.GOV,
    "LEPVAX::U2RGS"@DUSTY.SPAN.NASA.GOV,
    "UCBSP::KHURLEY"@DUSTY.SPAN.NASA.GOV,
    "MPE::HUS"@DUSTY.SPAN.NASA.GOV,
    "ESTCS1::KWENZEL"@DUSTY.SPAN.NASA.GOV,
    "ESTCS1::RMARSDEN"@DUSTY.SPAN.NASA.GOV,
    "JPLGP::ULSSCI"@DUSTY.SPAN.NASA.GOV,
    "JPLSP::ESMITH"@DUSTY.SPAN.NASA.GOV

SUBJECT: ULYSSES ALARM

Dear collegues,

the ULYSSES dust sensor detected yesterday a highly enhanced countrate of signals that appear to be real dust impacts. In order to examine this further, we would like to ask other the experimentators and the project, if there is any indication of special events during this time. The increased count rate started on 1992-070 approx. 08:00 UTC and still continues to rise (1992-71/ 01:00 UTC) The flux rate is about 0.1-0.2 particles per square cm and hour. The events are confined to a S/C sector of about 250, which means, since DUST is mounted at an angle of 160 degrees with respect to the +x-axis, the events come from a direction of approx 150 degrees from the see-sun direction. The plasma generated upon the impact of the dust onto the spacecraft may be directly detectable by the plasma wave and solar wind experiments and may appear as noise in other detectors. We would appreciate if you could check your data and tell us what you see.

Thanks in advance.
E. Gruen, M. Baguhl

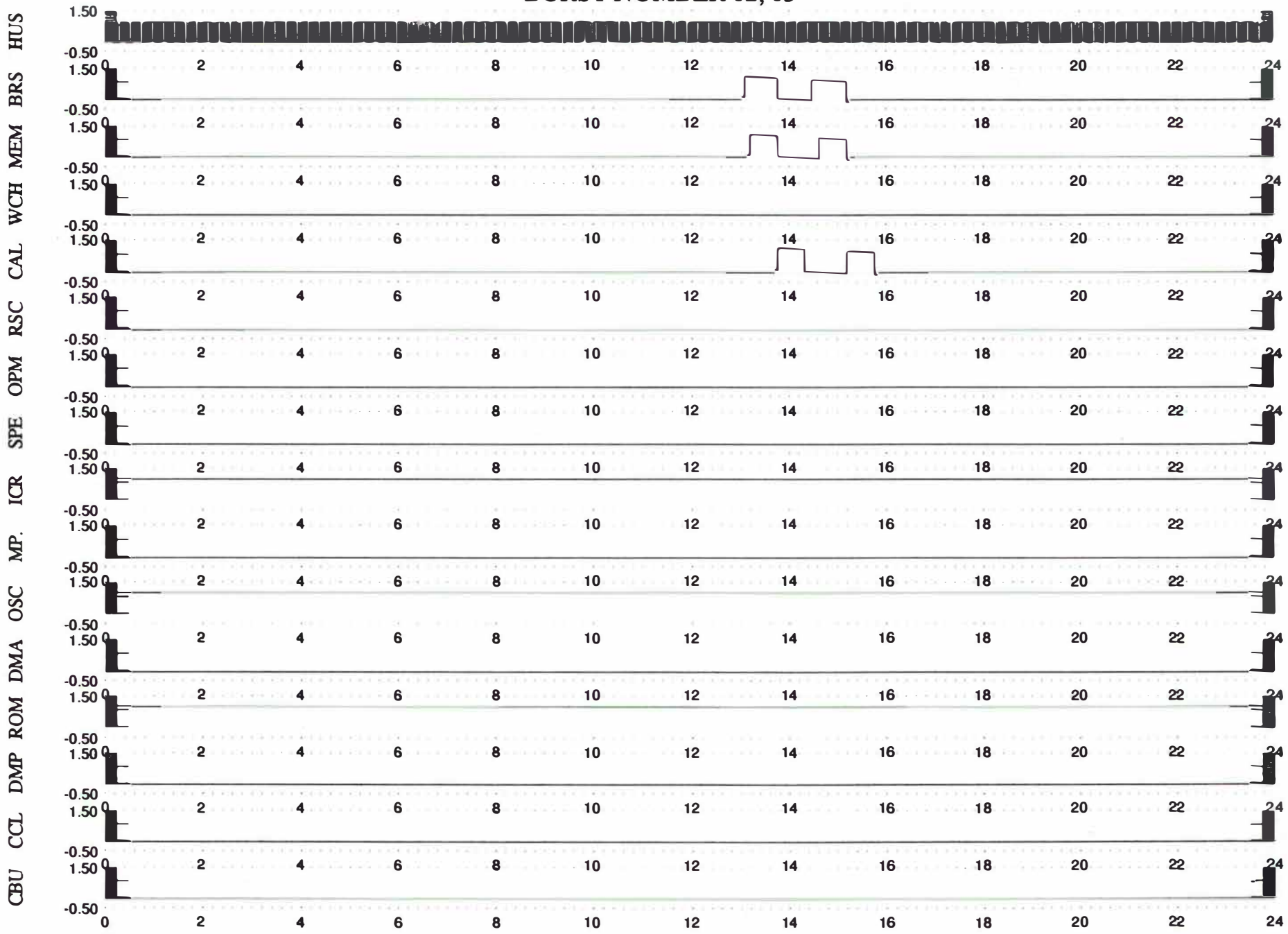
From khurley@space6.ssl.berkeley.edu Thu Mar 12 18:13:41 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21850; Thu, 12 Mar 92 18:13:39 PST
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA08235; Thu, 12 Mar 92 18:10:56
Date: Thu, 12 Mar 92 18:10:56
From: khurley@space6.ssl.berkeley.edu
Message-Id: <9203130610.AA08235@space6.ssl.berkeley.edu>
Apparently-To: ulysses%dusty.span@star.stanford.edu
Apparently-To: khurley@sunspot
Status: R

Our GRB instrument data look pretty normal for the period you mention. We observed what appear to be several weak solar flares at 13:00 - 15:00 on day 070, and a possible cosmic gamma-ray burst on dat 71 around 02:00. Other than that, all rates appear normal.

Kevin

HUS MODES EDR day 70, year 1992 to day 70, year 1992 4/15/92

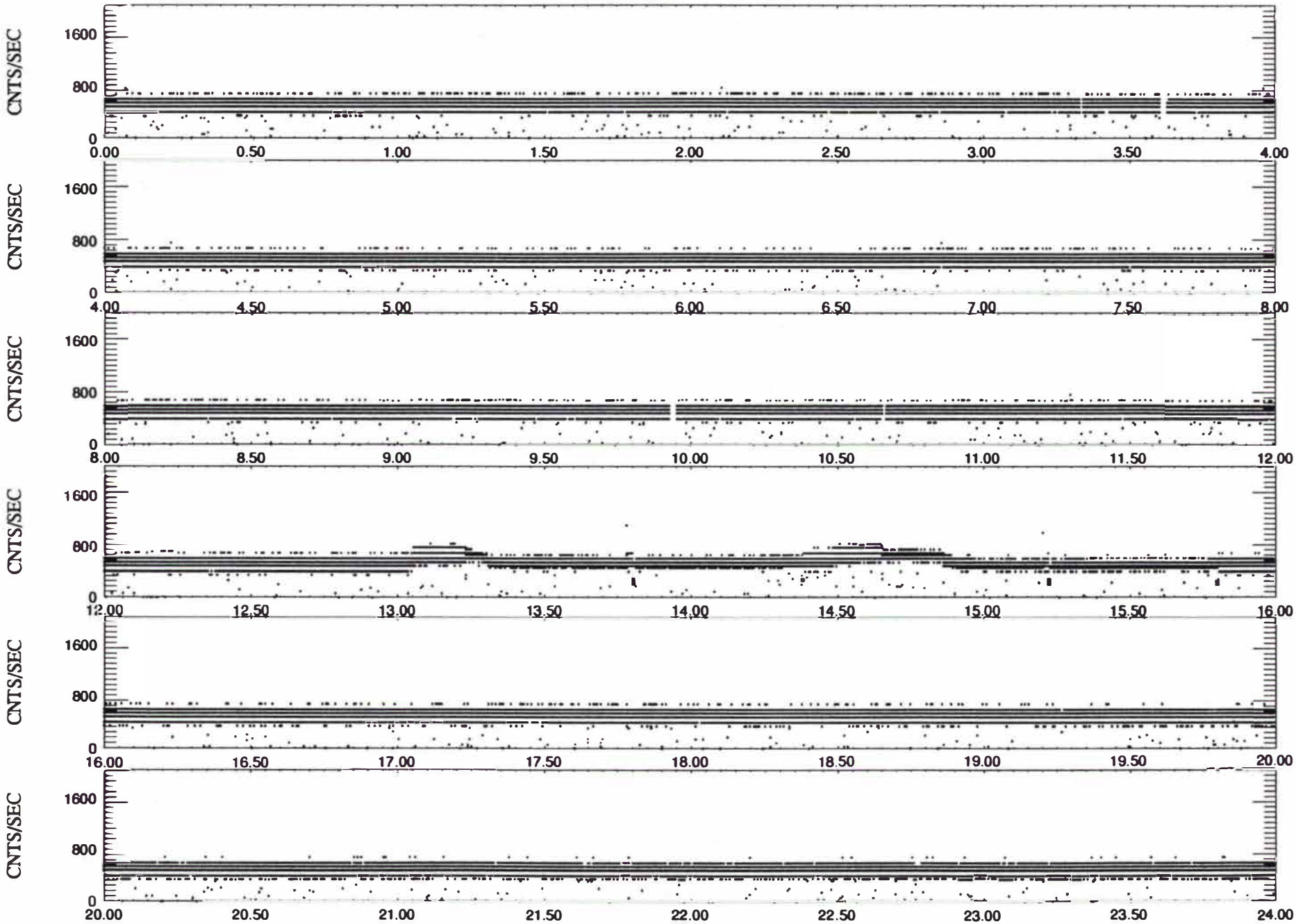
BURST NUMBER 12, 13



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 70, year 1992 to day 70, year 1992 4/15/92

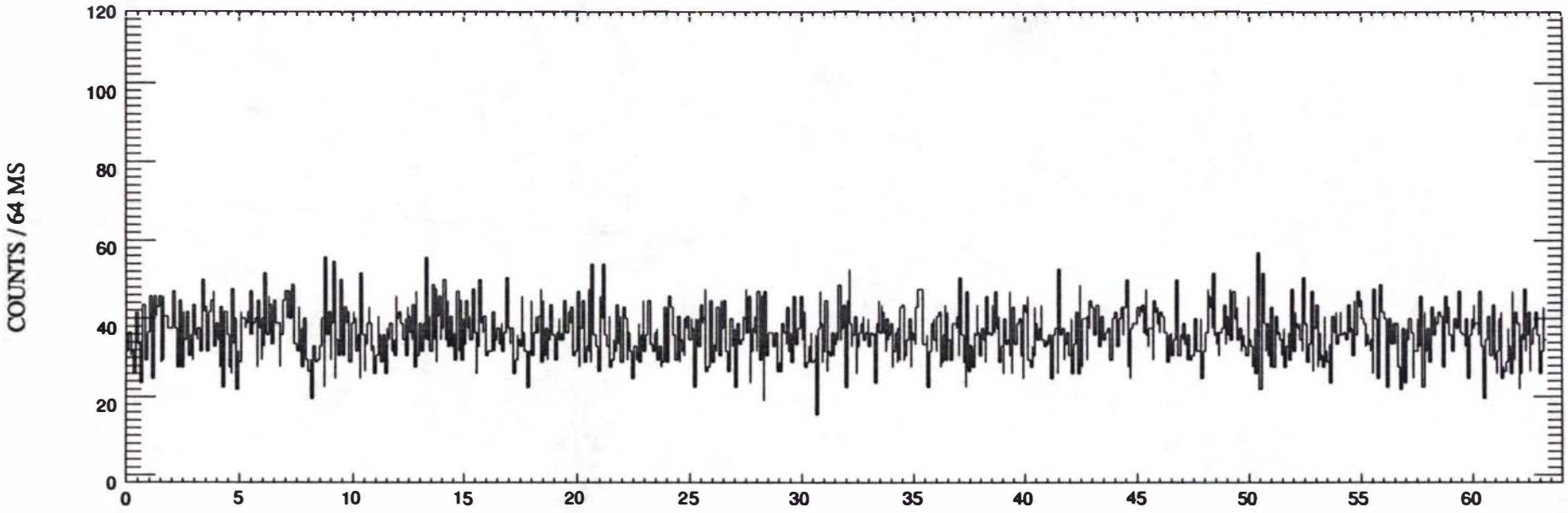
CALIBRATION DATA INCLUDED

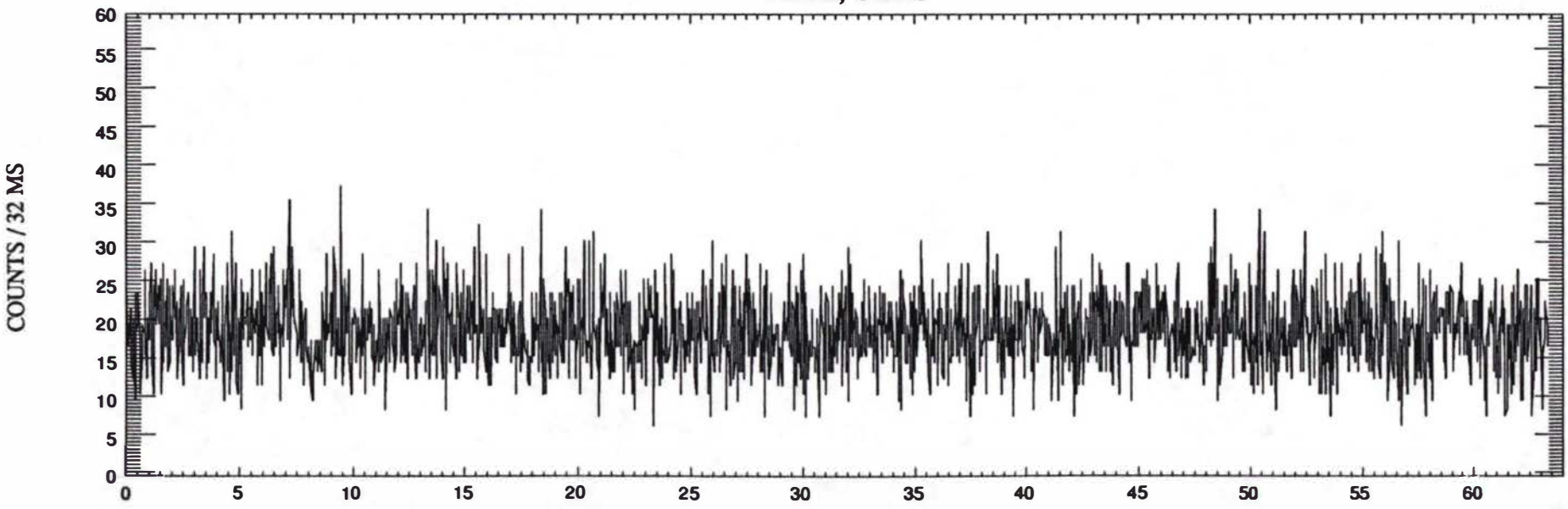


UNIVE AL TIME

HUS 2A TRIGGERED DATA EDR day 70, year 1992 5/6/92

Burst Counter 12 at UT=13.074101189507 h=47066.764 s

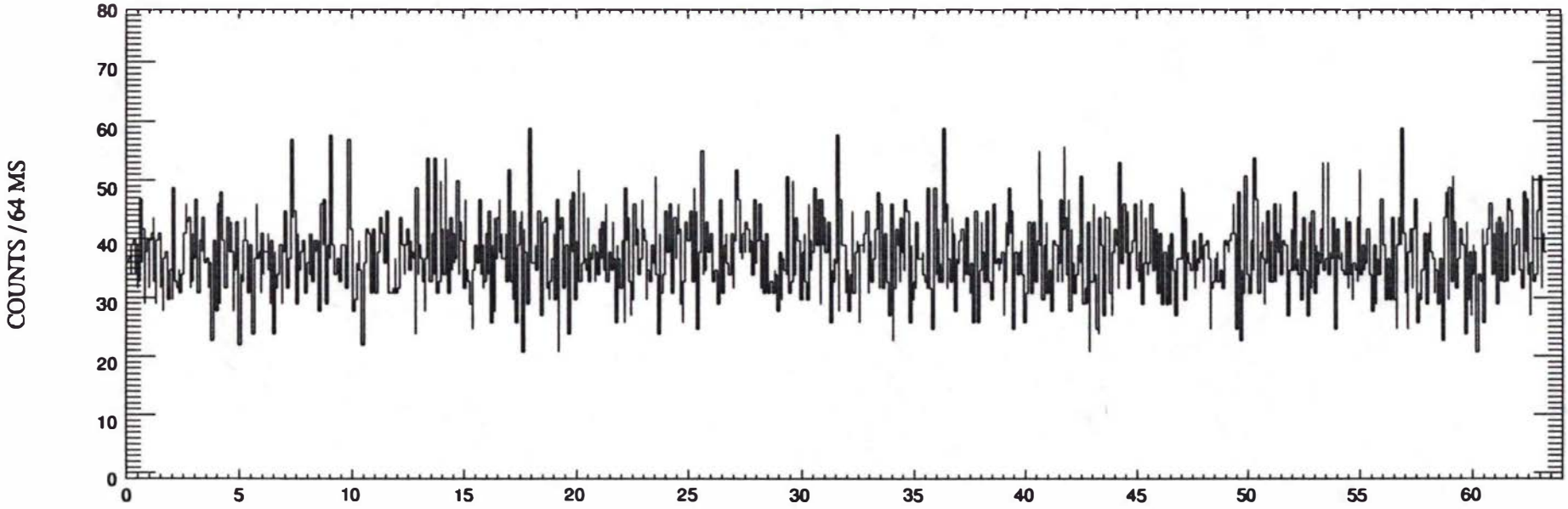


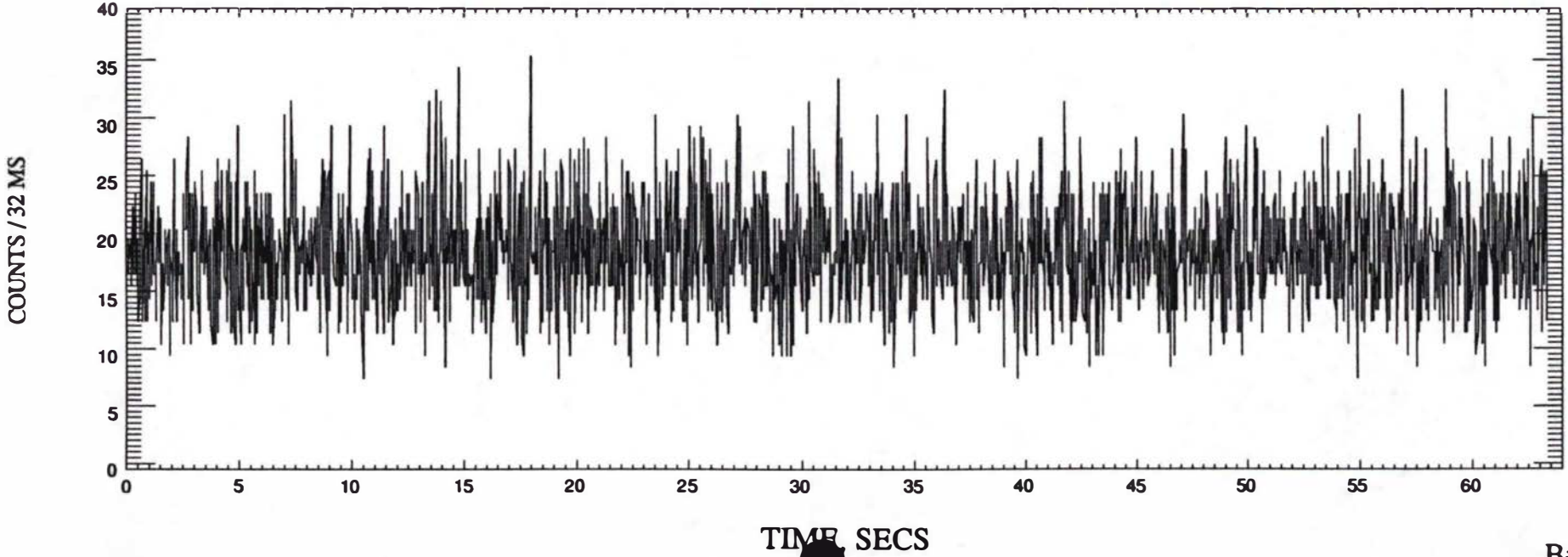


B# 1

HUS 2A TRIGGERED DATA EDR day 70, year 1992 5/6/92

Burst Counter 13 at UT=14.498674435086 h=52195.228 s





B# 2

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1473
EVENT OF 1992 MAR 11 DAY OF YEAR= 71
EVENT CROSSING TIME AT BATSE     :  8424. S. OR 02:20:24.0
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 120.300  -52.000
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 11/ 3/  92 IS:
RA=  156.516 DEC=    9.135 DIST=    4.435 AU
BATSE-ULYSSES DISTANCE =  663444584. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=111.43 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -808.43 SECS.
CROSSING TIME AT ULYSSES    IS  7616. S. OR 02:06:55.6 +/-  395.38 SECONDS
```

RI

Helio corr removed

Date: Feb 6 '97

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☐ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration? N/A

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? No - too noisy

2. BATSE Data

☑ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)?

☑ Does T_0 in data file agree with T_0 in plot?

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included? N/A

3. PVO Data

☑ Ephemeris of PVO used (not Venus)?

☑ 2000 coordinates used?

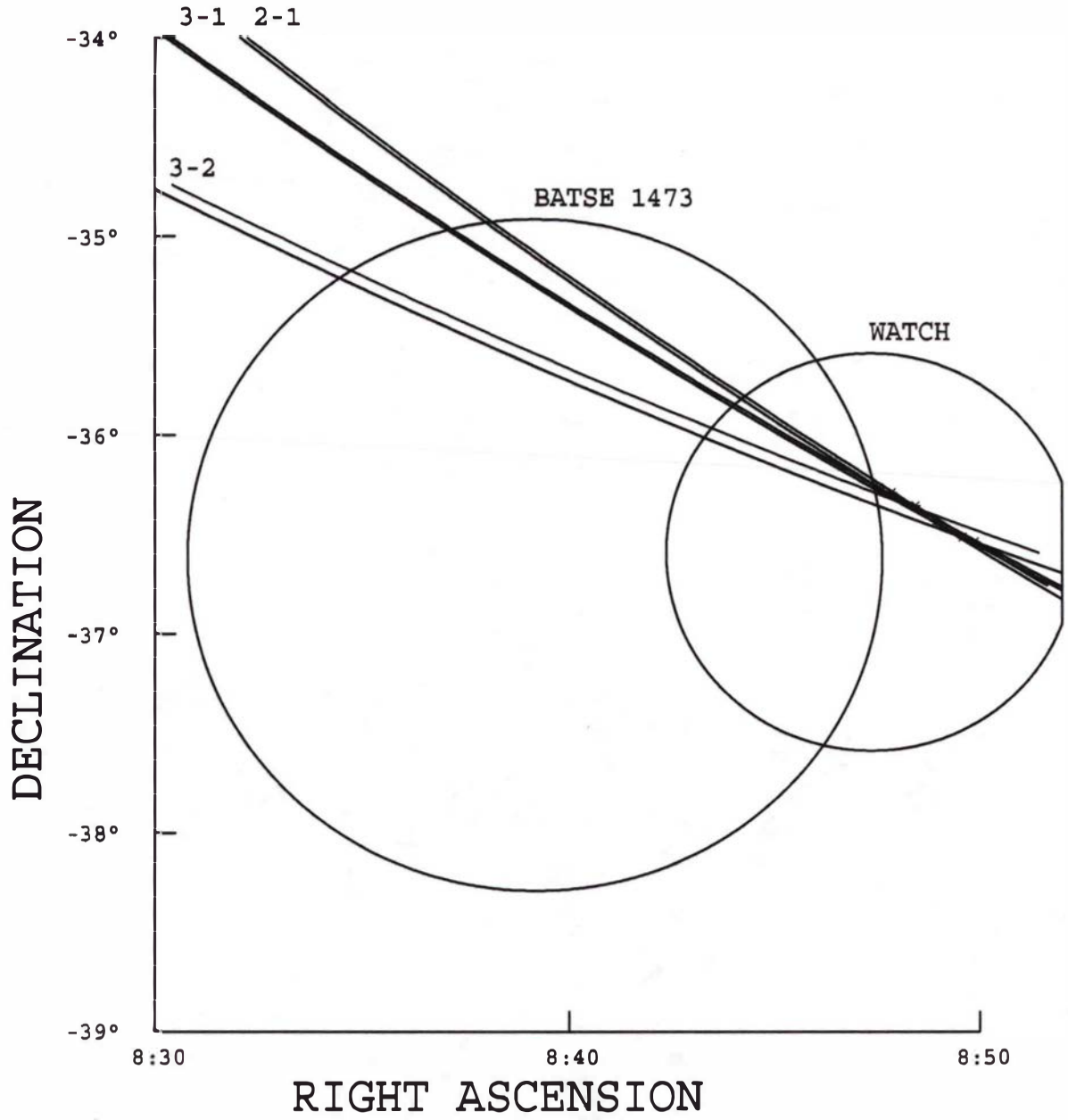
☑ Geocentric time used?

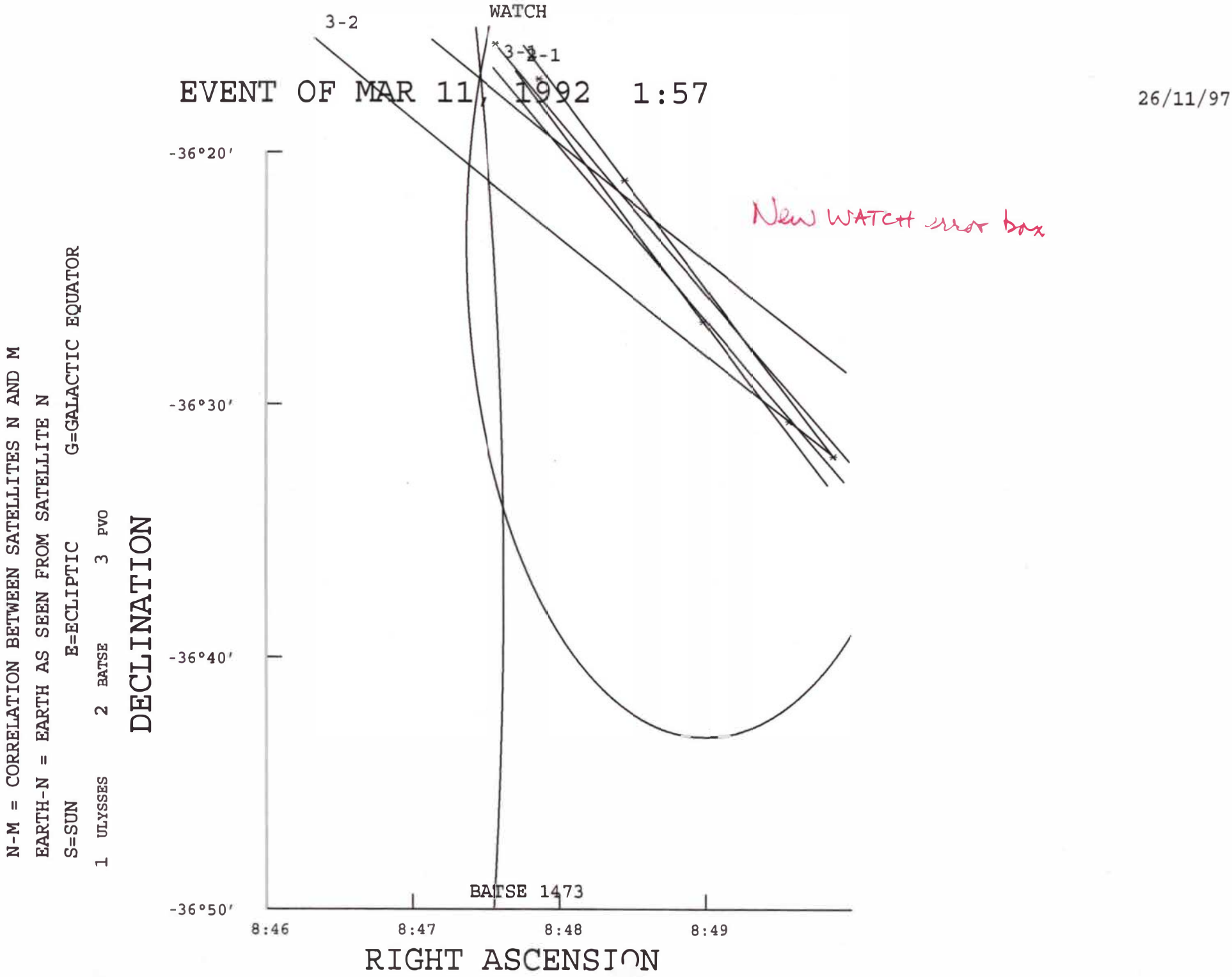
Access database updated

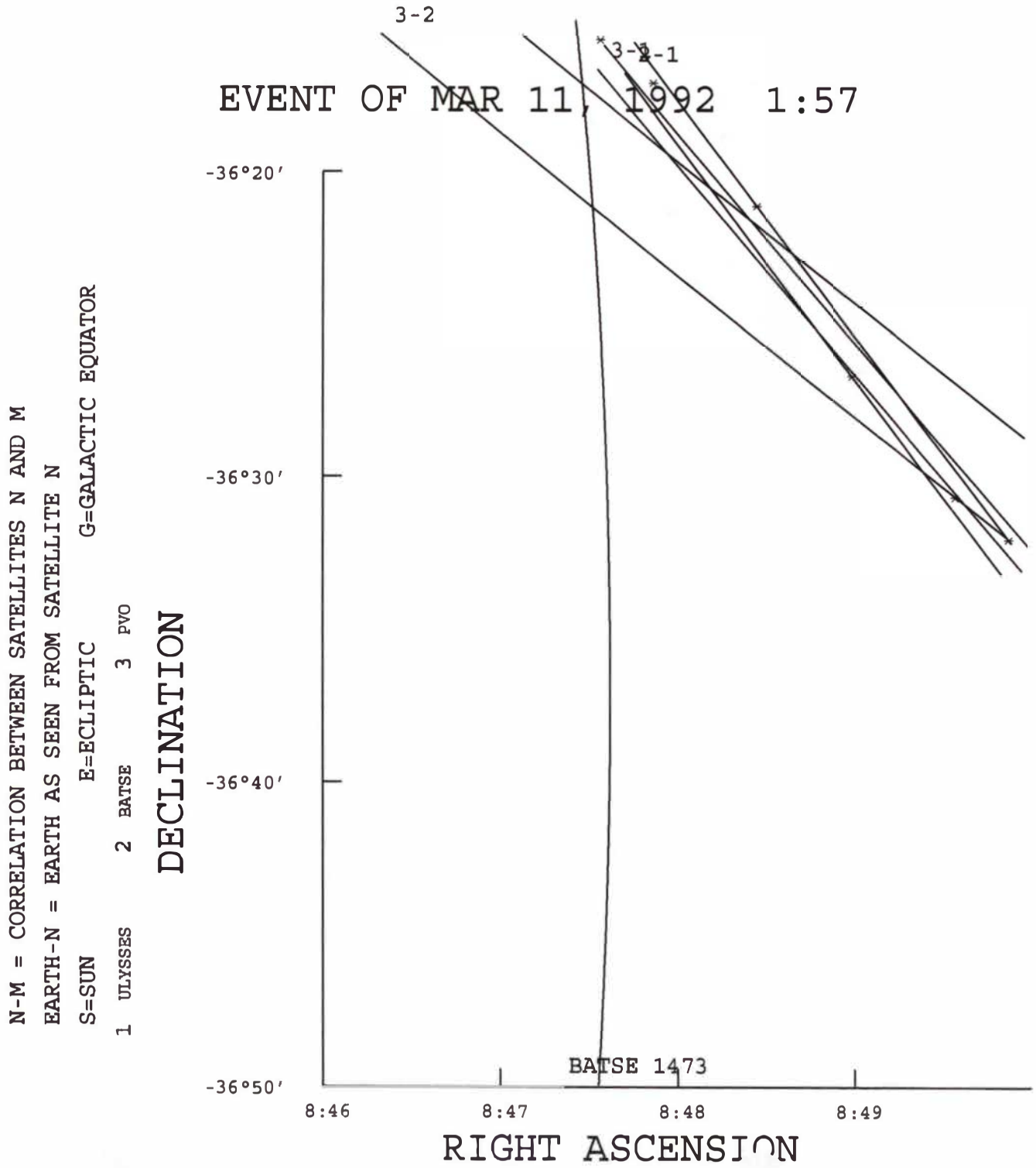
EVENT OF MAR 11, 1992 1:57

25/ 3/99

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO

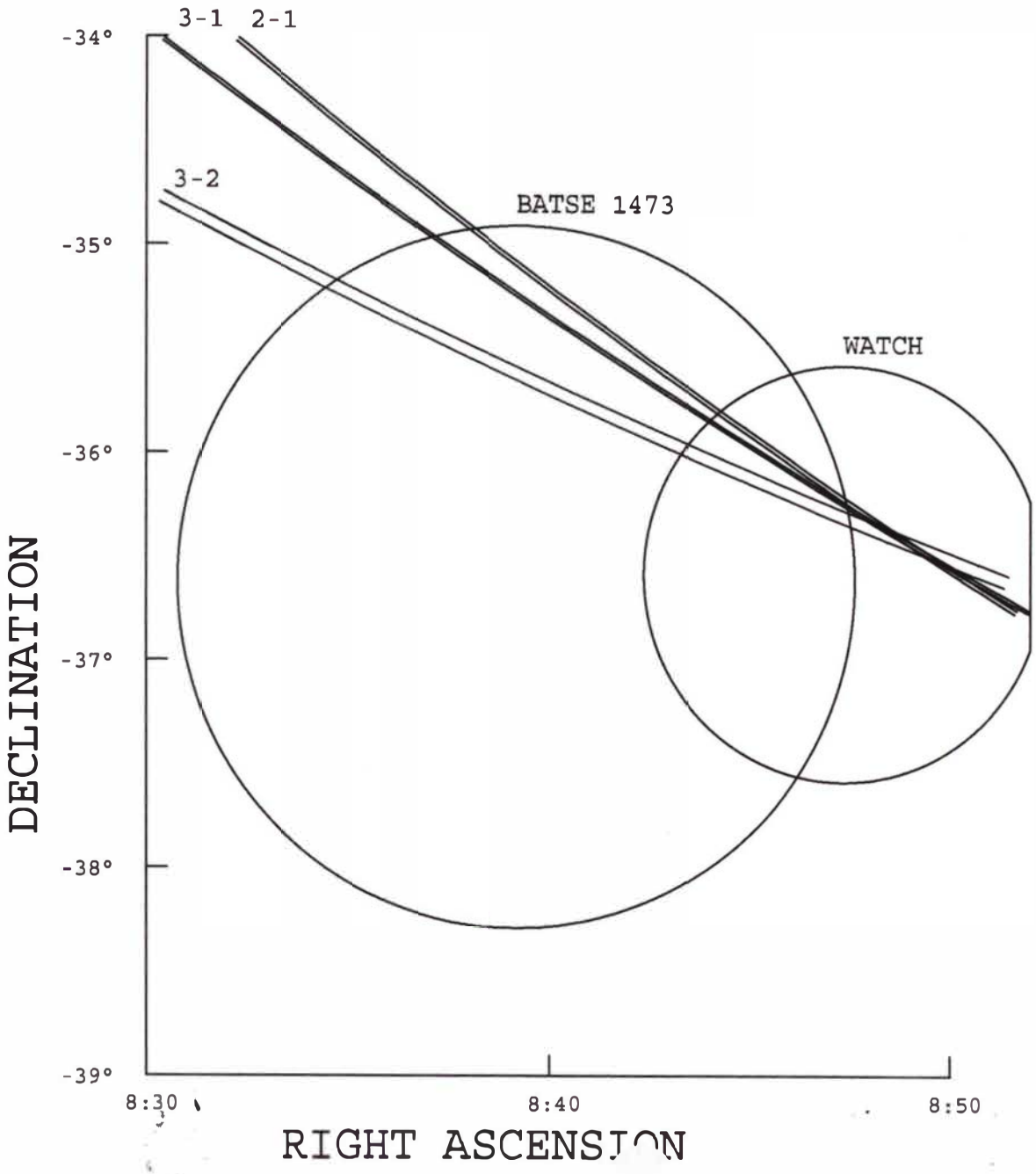



EVENT OF MAR 11, 1992 1:57
26/11/97
WATCH
3-2
3-1
2-1
New WATCH error box
-36°20'
-36°30'
-36°40'
-36°50'
DECLINATION
8:46
8:47
8:48
8:49
RIGHT ASCENSION
BATSE 1473
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO

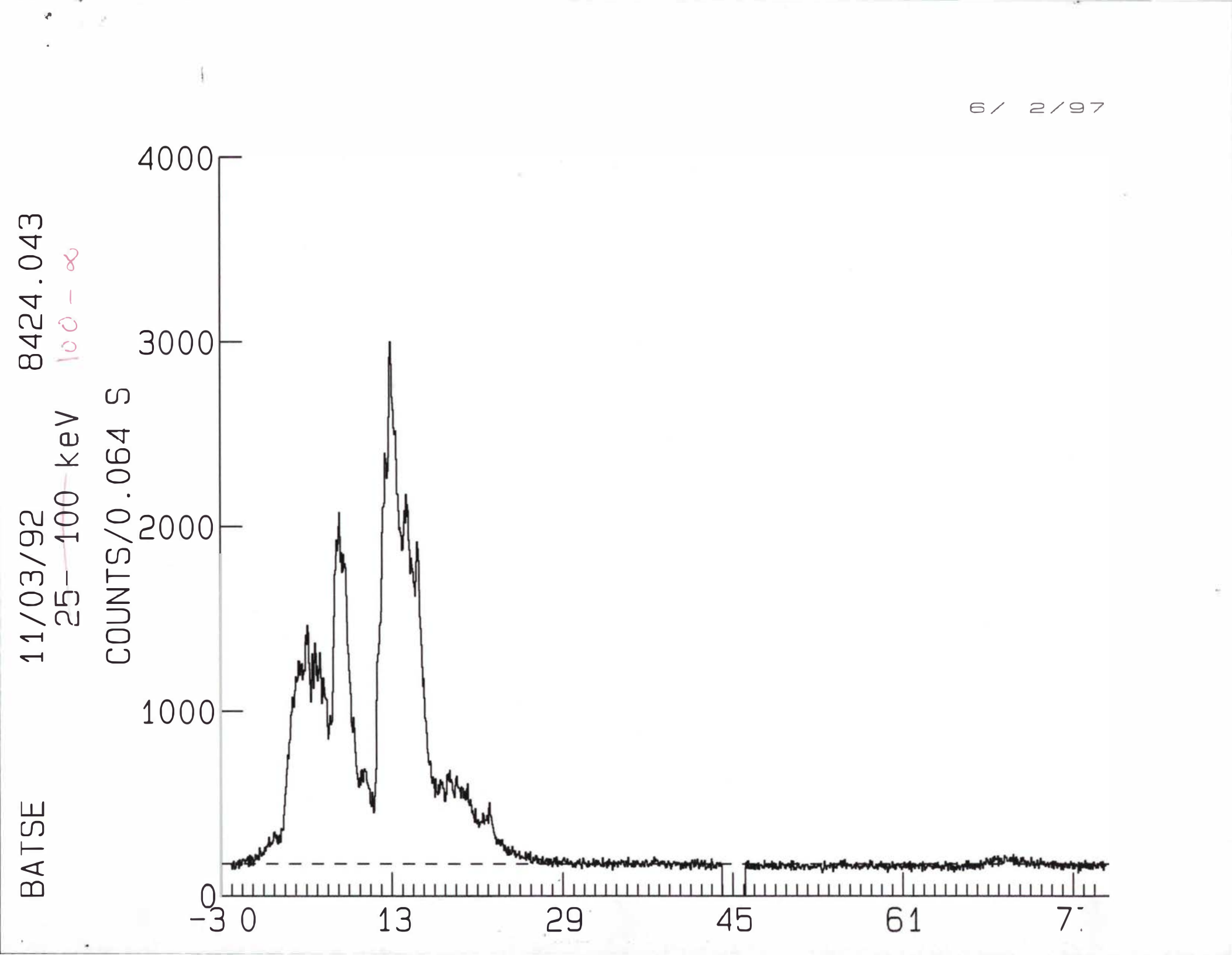

EVENT OF MAR 11, 1992 1:57
9/10/97
3-2
3-1
2-1
-36°20′
-36°30′
-36°40′
-36°50′
DECLINATION
BATSE 1473
8:46
8:47
8:48
8:49
RIGHT ASCENSION
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO

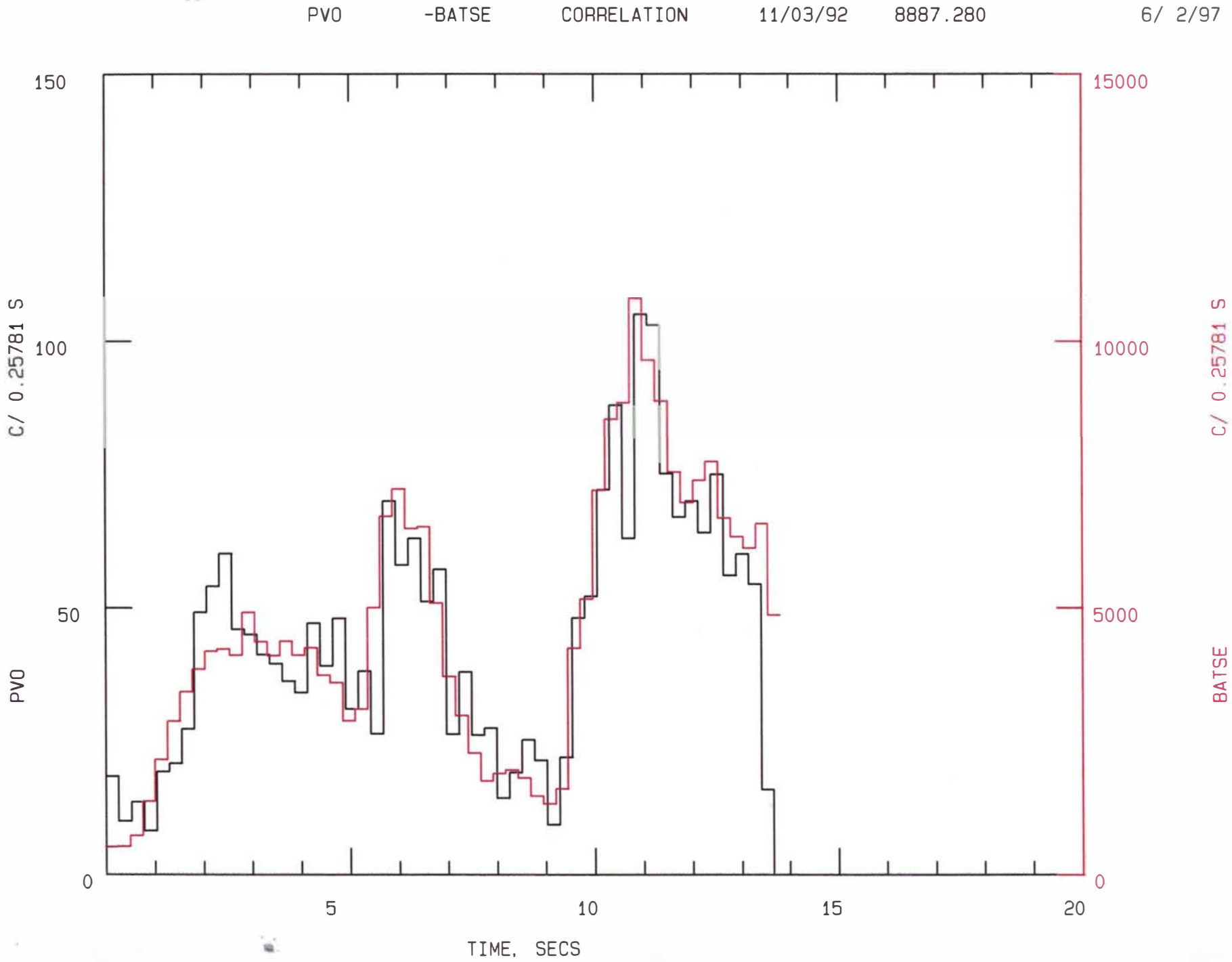
EVENT OF MAR 11, 1992 1:57

6/ 2/97

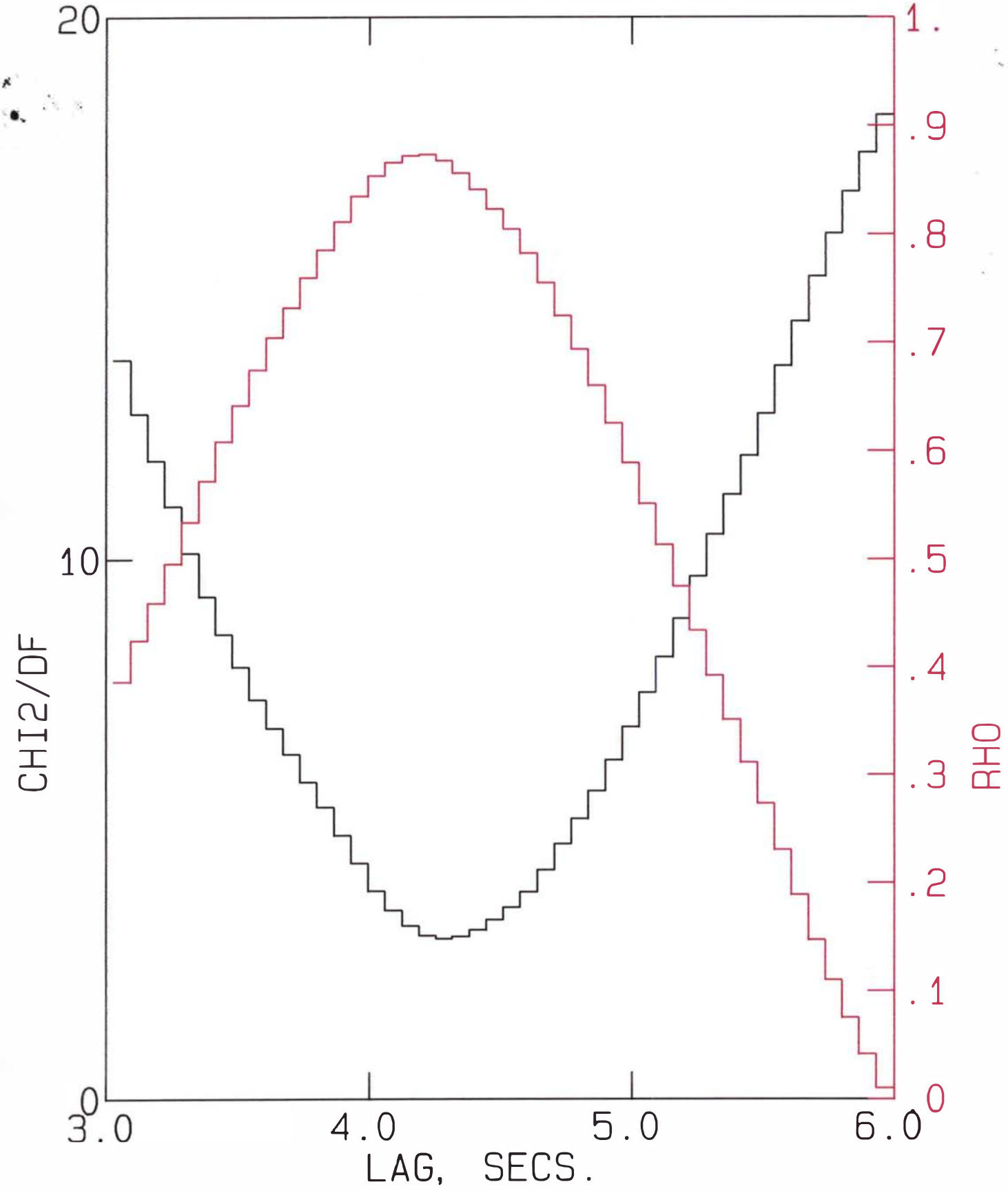


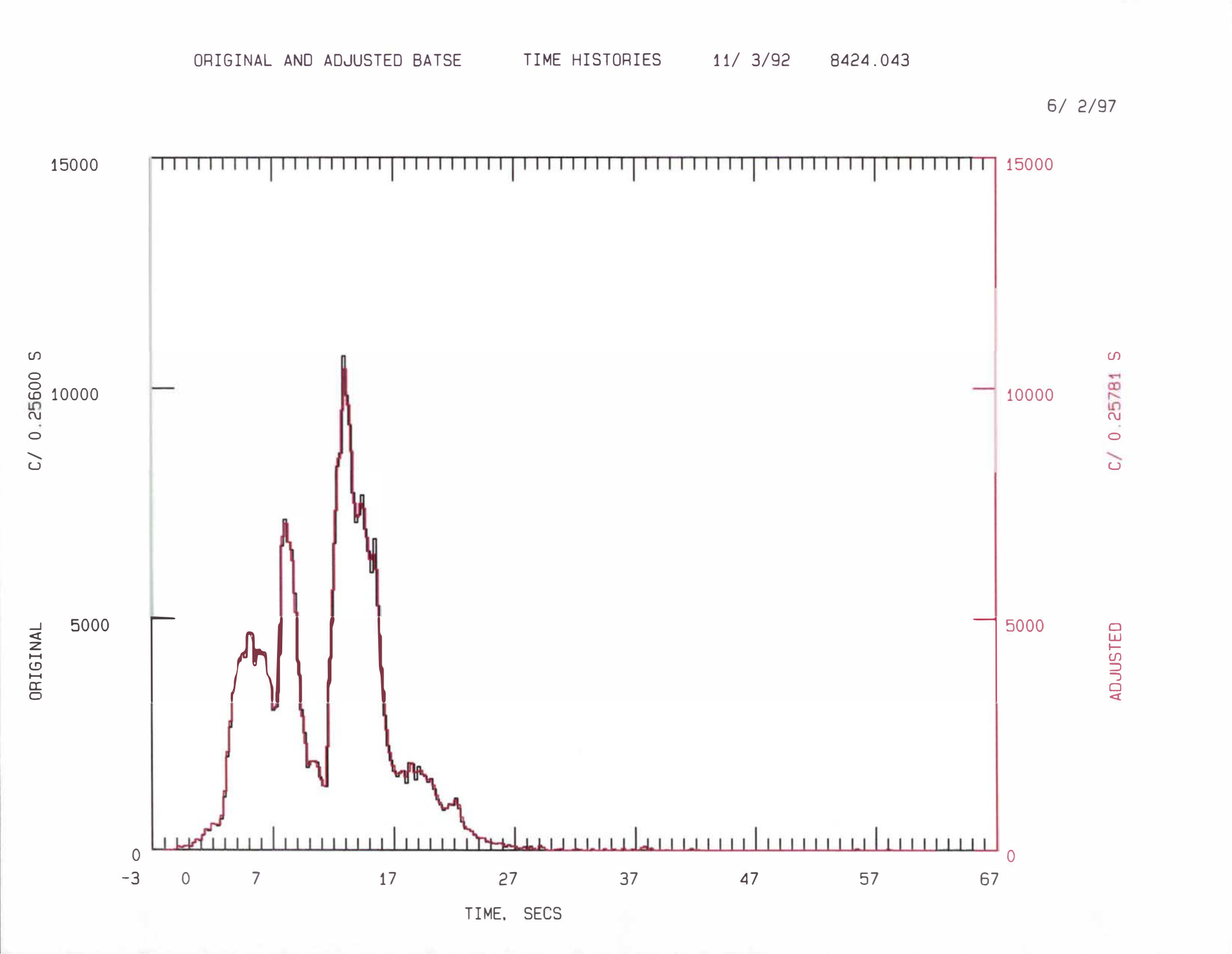
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO

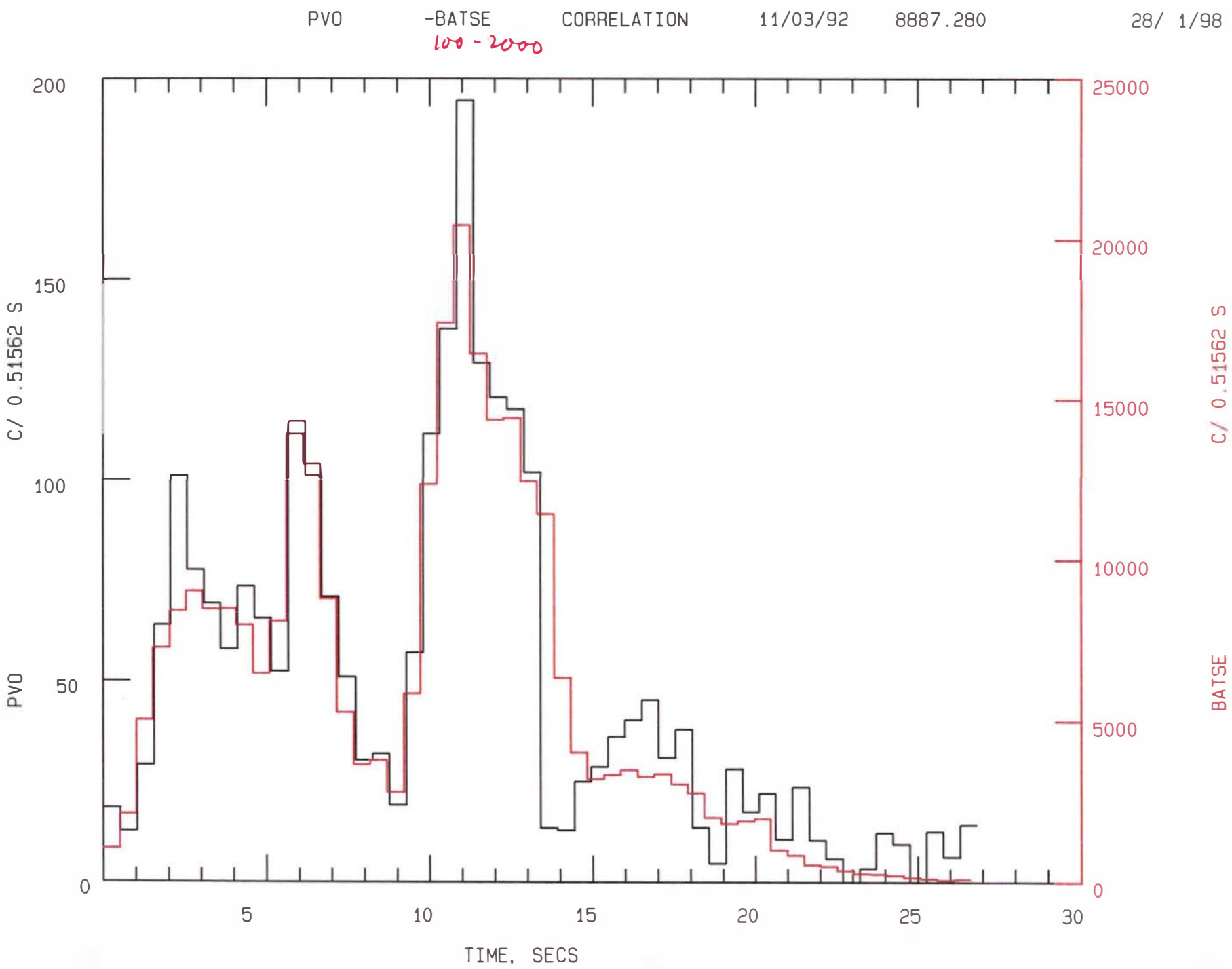

6/ 2/97
BATSE 11/03/92 8424.043
25- 100 keV
COUNTS/0.064 S
4000
3000
2000
1000
0
-3 0
13
29
45
61


PVO -BATSE CORRELATION 11/03/92 8887.280 6/ 2/97
150
100
50
0
15000
10000
5000
0
C/ 0.25781 S
PVO
C/ 0.25781 S
BATSE
5
10
15
20
TIME, SECS

PVO -BATSE CORRELATION 11/03/92 8887.280

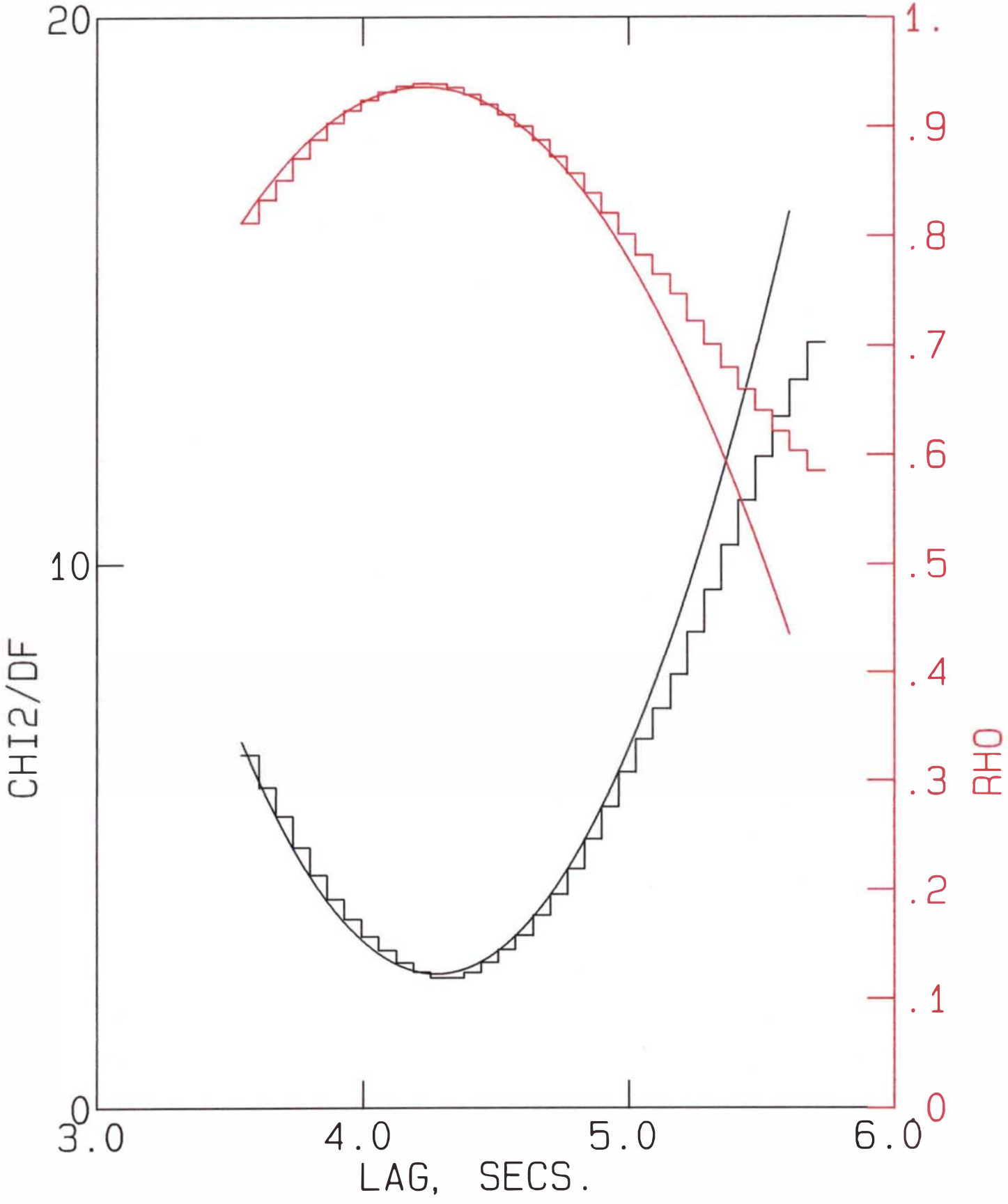


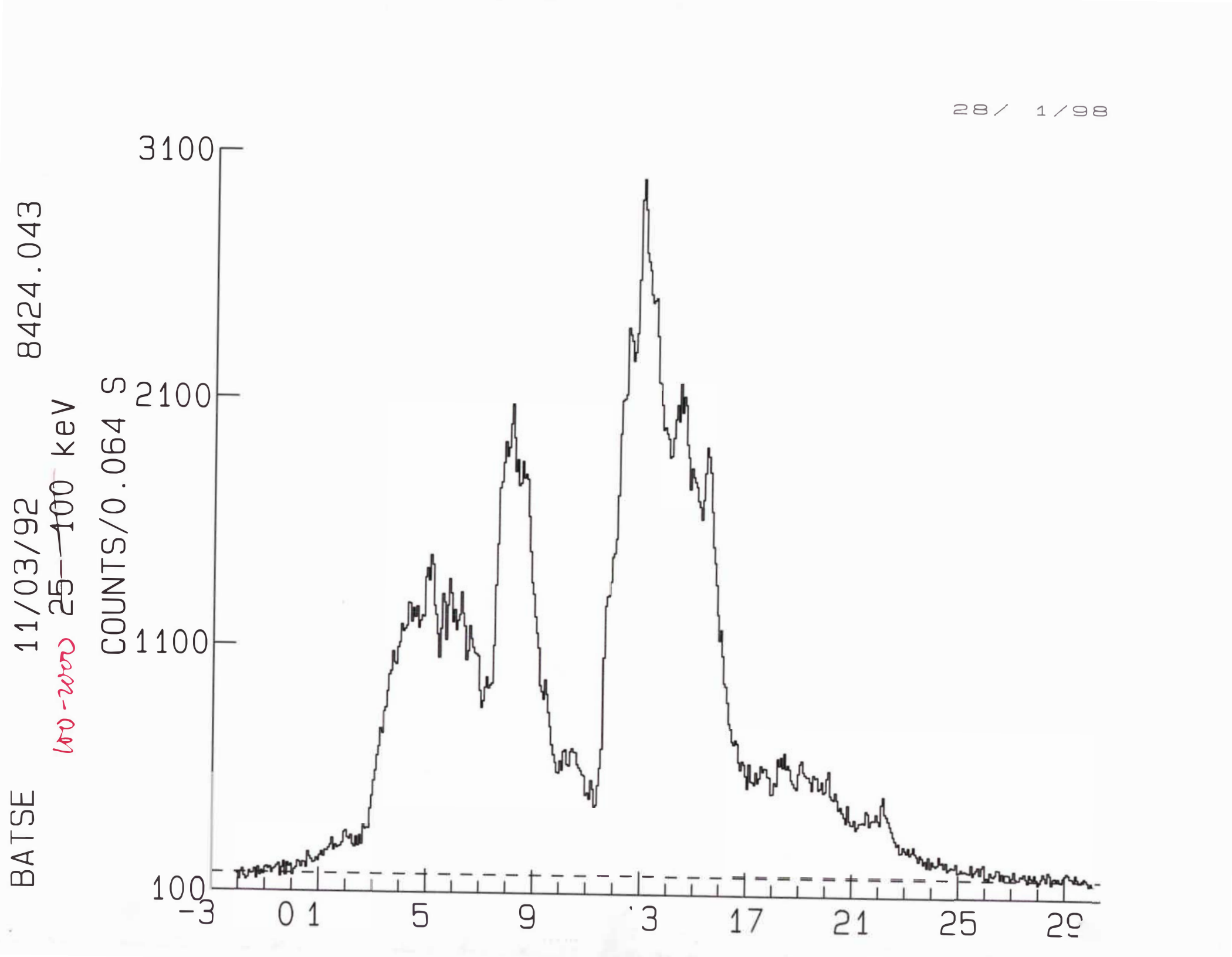

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 11/ 3/92 8424.043
6/ 2/97
15000
10000
5000
0
C/ 0.25600 S
ORIGINAL
15000
10000
5000
0
C/ 0.25781 S
ADJUSTED
-3
0
7
17
27
37
47
57
67
TIME, SECS

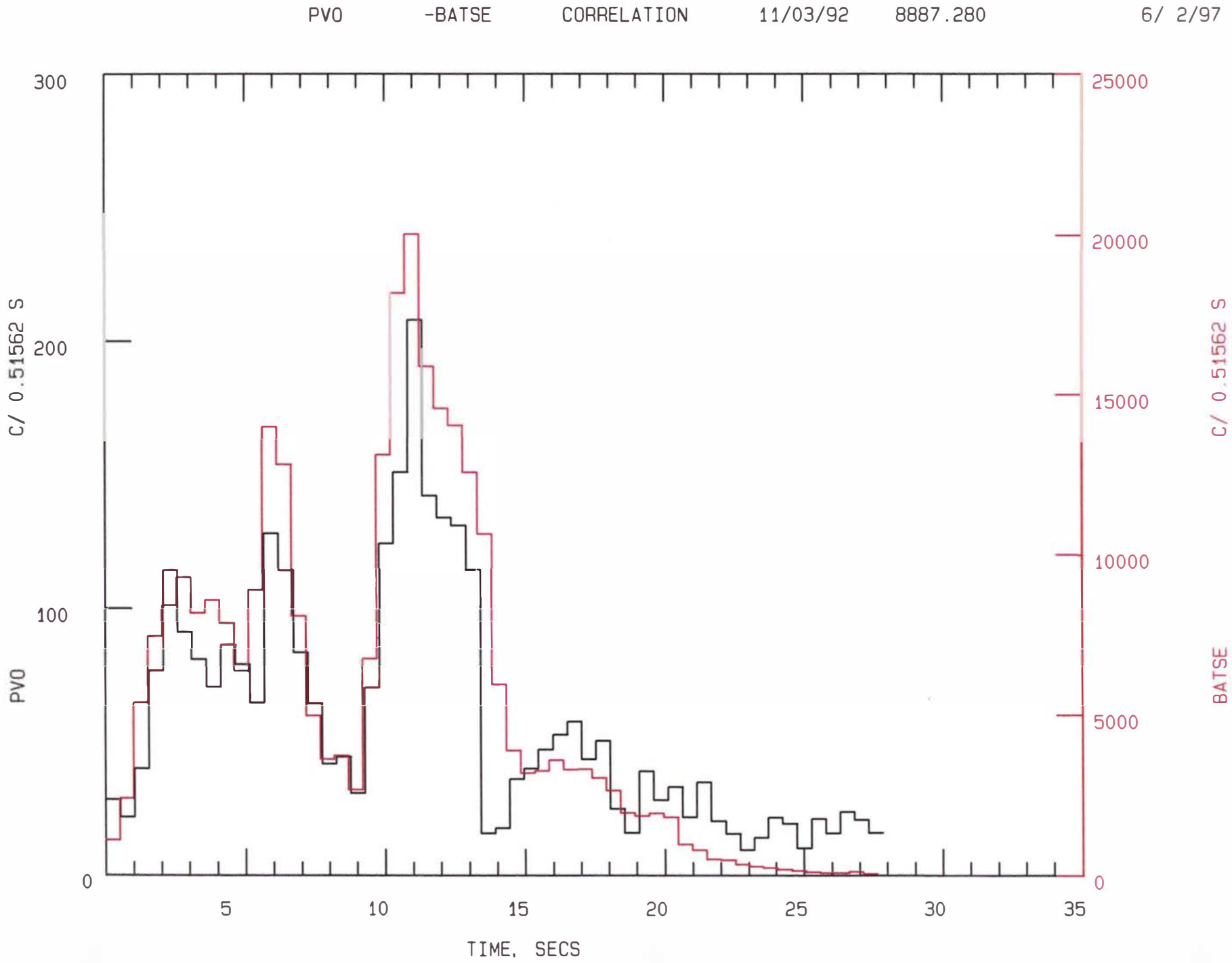

PVO -BATSE CORRELATION 11/03/92 8887.280 28/ 1/98
100 - 2000
200
150
100
50
0
C/ 0.51562 S
PVO
25000
20000
15000
10000
5000
0
C/ 0.51562 S
BATSE
5
10
15
20
25
30
TIME, SECS

PVO -BATSE CORRELATION 11/03/92 8887.280

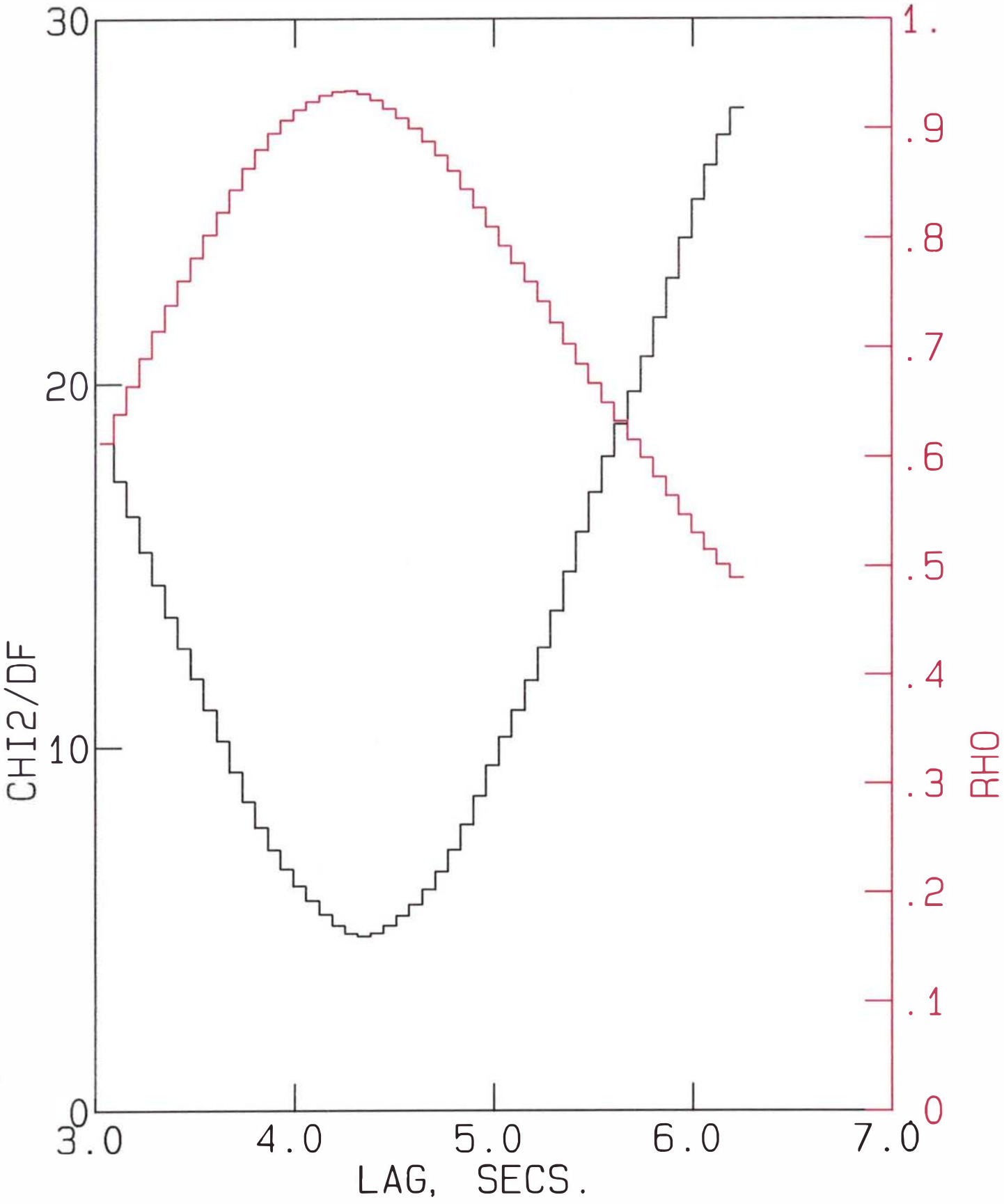
100 - 2000

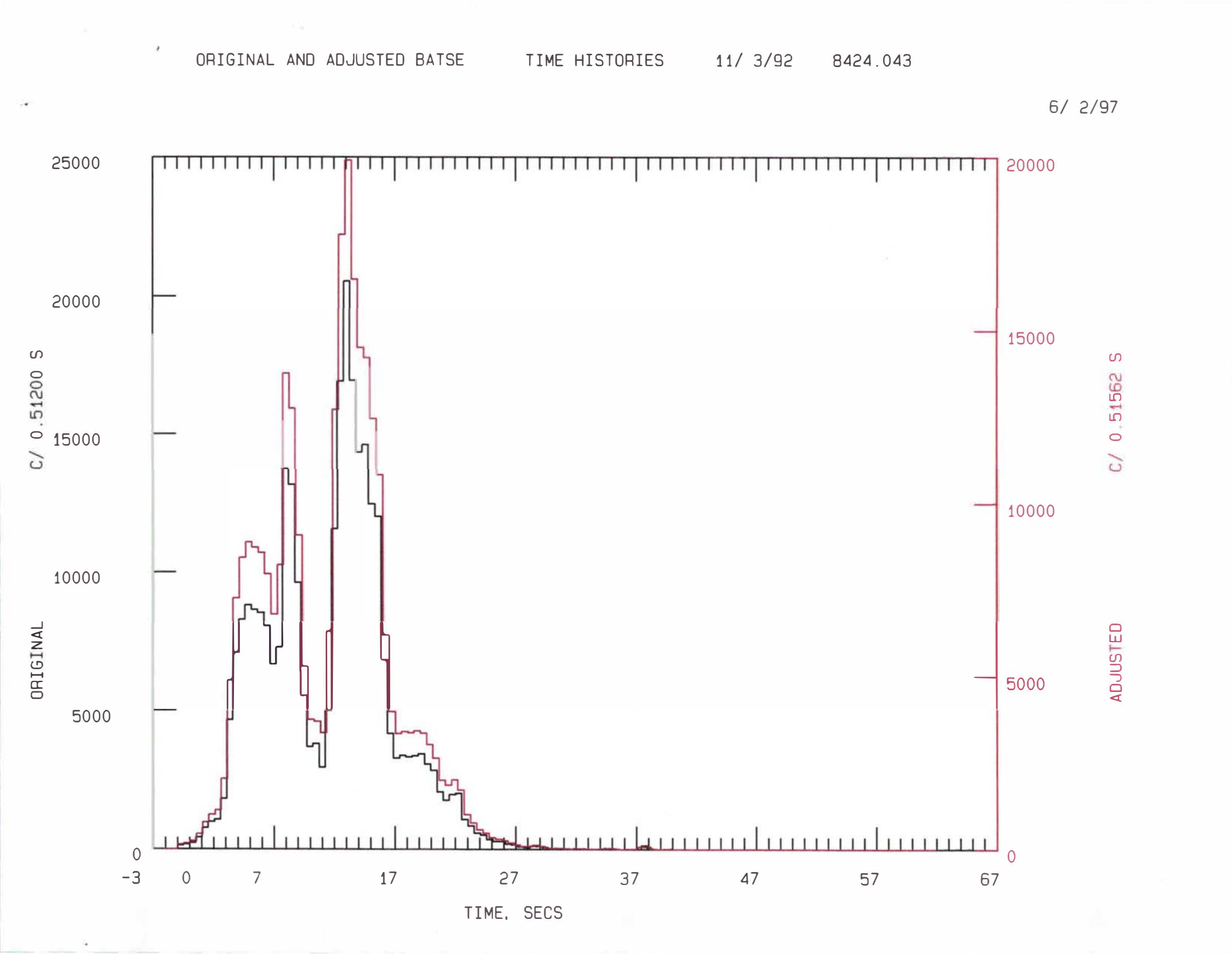


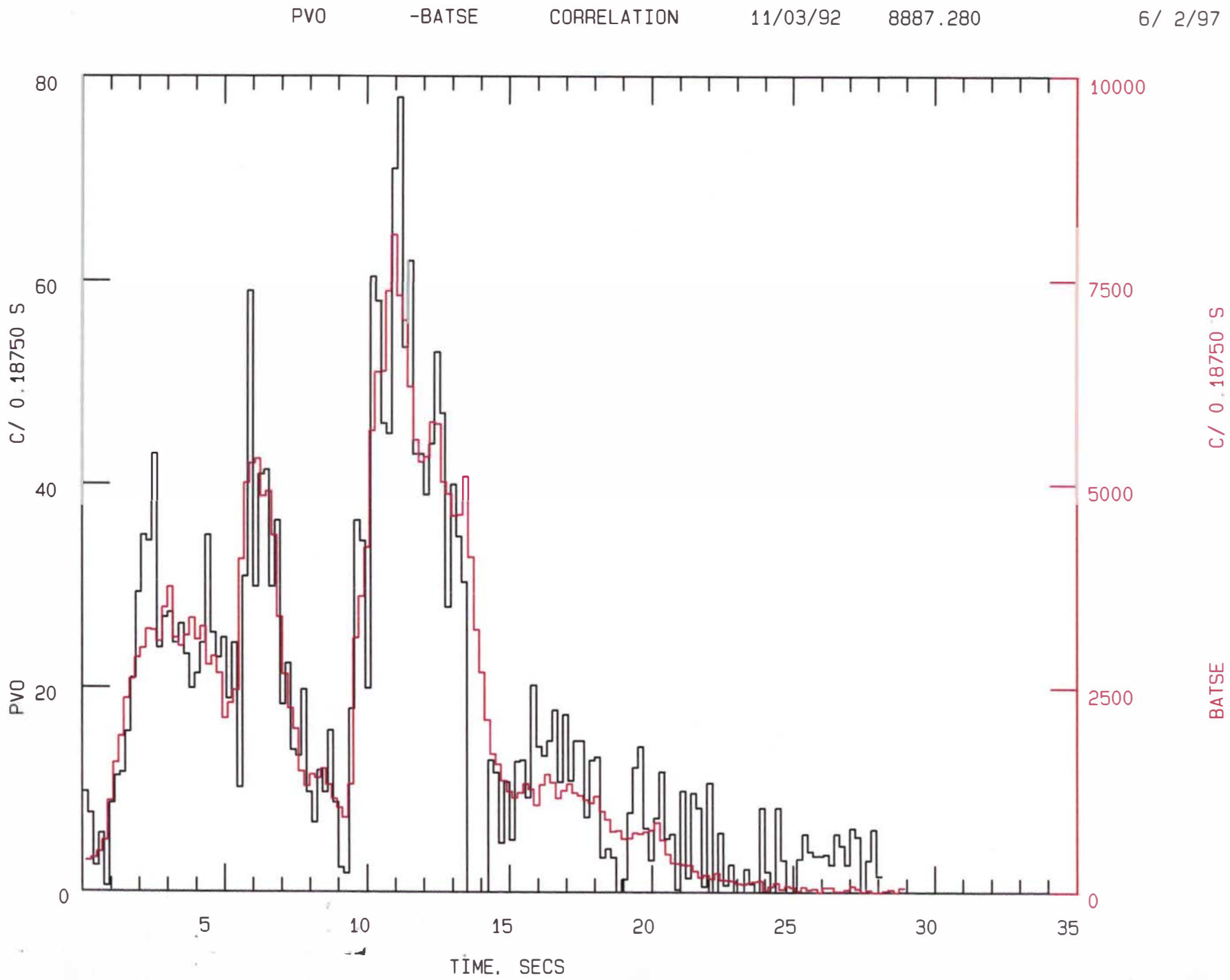

28/ 1/98
BATSE 11/03/92 8424.043
(50-300) 25--100 keV
COUNTS/0.064 S
3100
2100
1100
100
-3
0 1
5
9
13
17
21
25
29


PVO -BATSE CORRELATION 11/03/92 8887.280 6/ 2/97
300
200
100
0
C/ 0.51562 S
PVO
25000
20000
15000
10000
5000
0
C/ 0.51562 S
BATSE
5
10
15
20
25
30
35
TIME, SECS

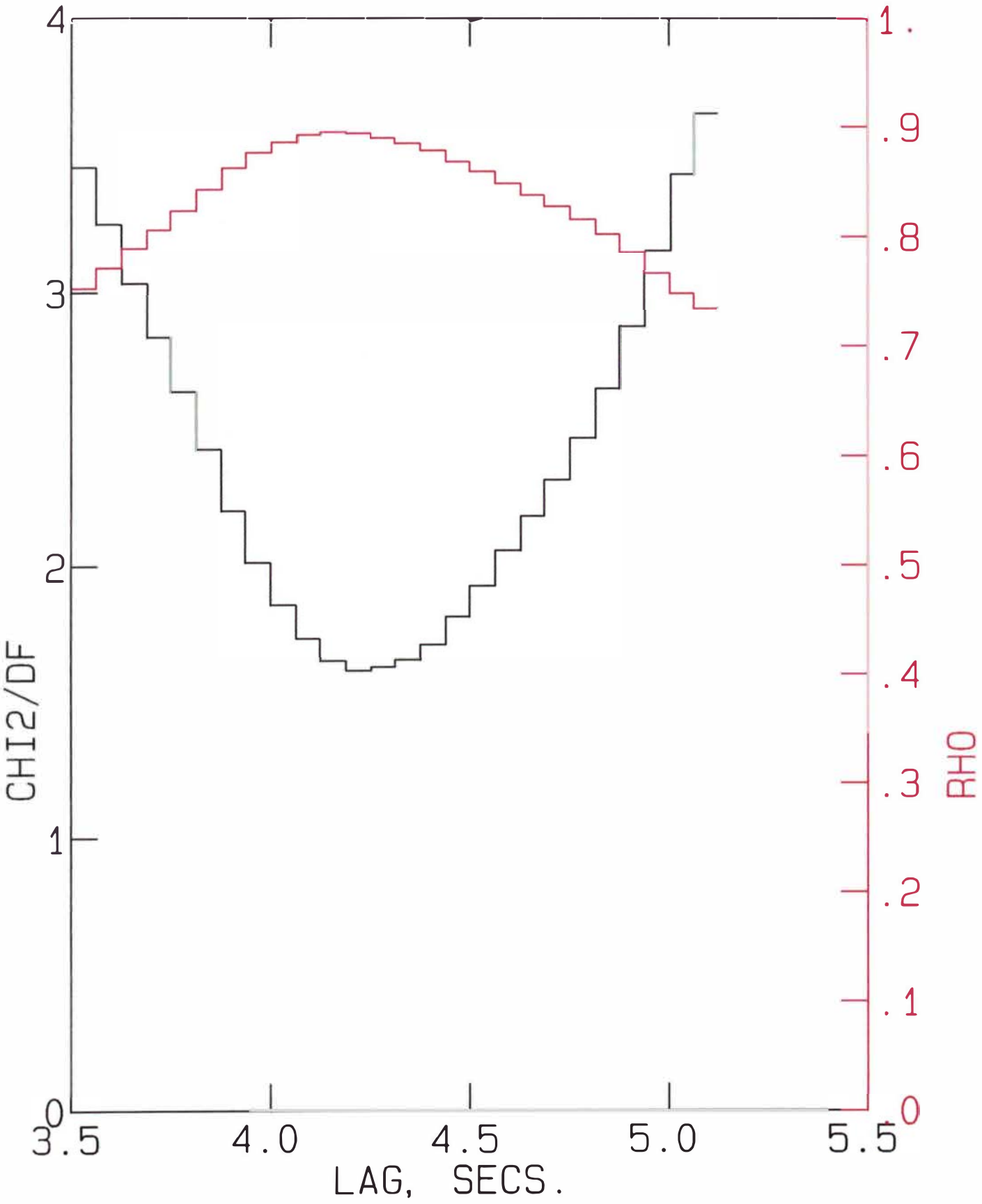
PVO -BATSE CORRELATION 11/03/92 8887.280




ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 11/ 3/92 8424.043
6/ 2/97
25000
20000
15000
10000
5000
0
C/ 0.51200 S
ORIGINAL
20000
15000
10000
5000
0
C/ 0.51562 S
ADJUSTED
-3
0
7
17
27
37
47
57
67
TIME, SECS

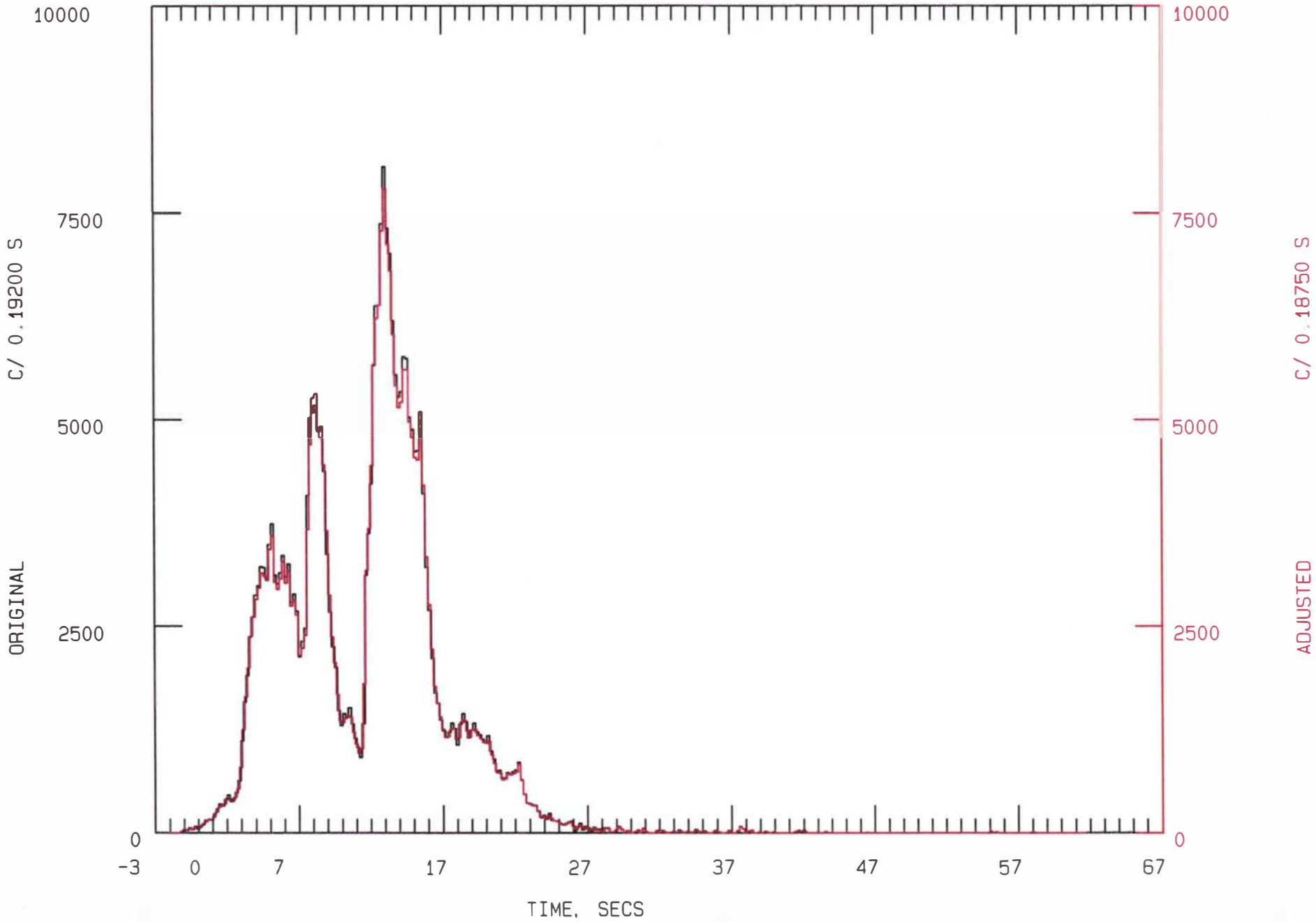

PVO -BATSE CORRELATION 11/03/92 8887.280 6/ 2/97
80
60
40
20
0
C/ 0.18750 S
PVO
10000
7500
5000
2500
0
C/ 0.18750 S
BATSE
5
10
15
20
25
30
35
TIME, SECS

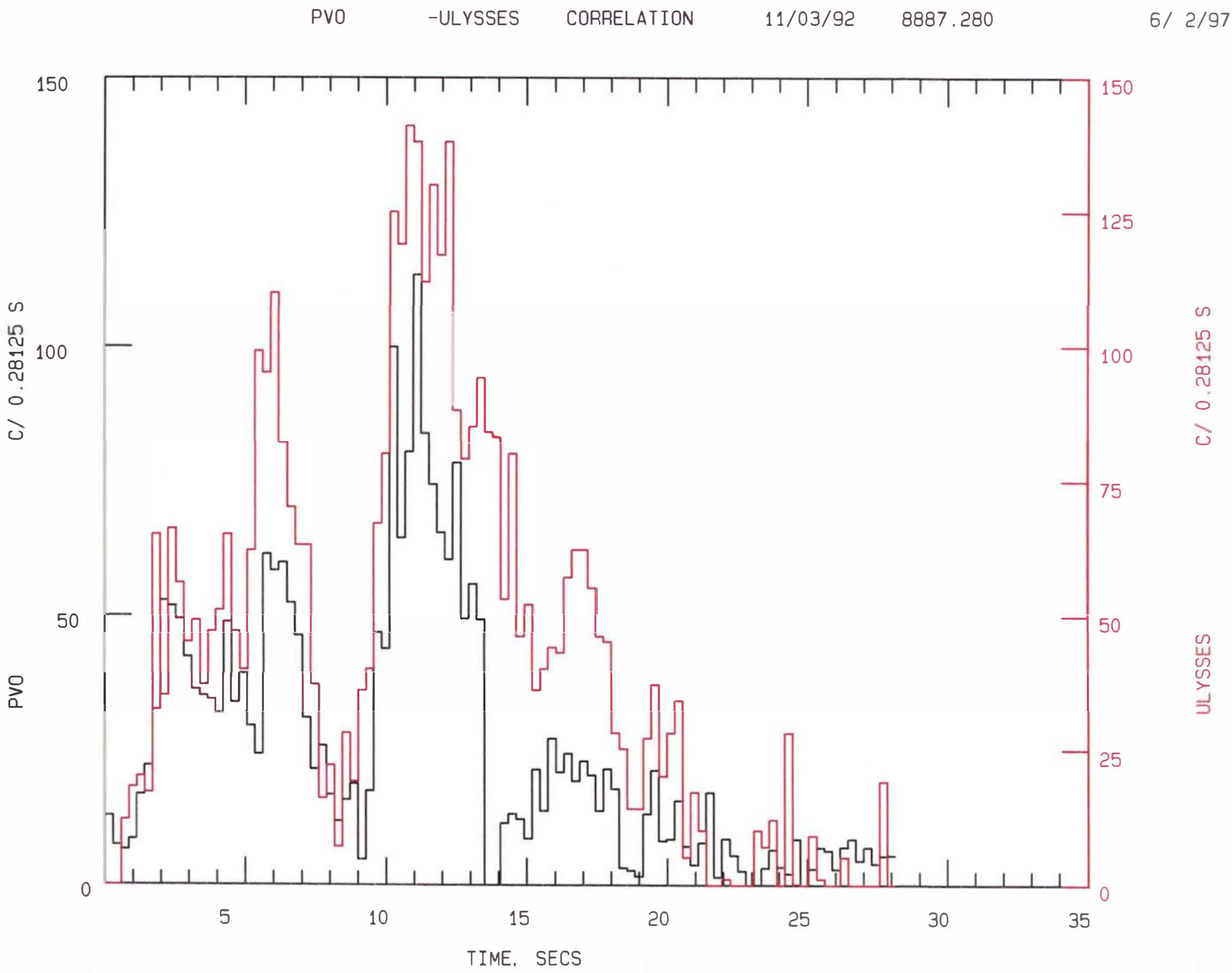
PVO -BATSE CORRELATION 11/03/92 8887.280



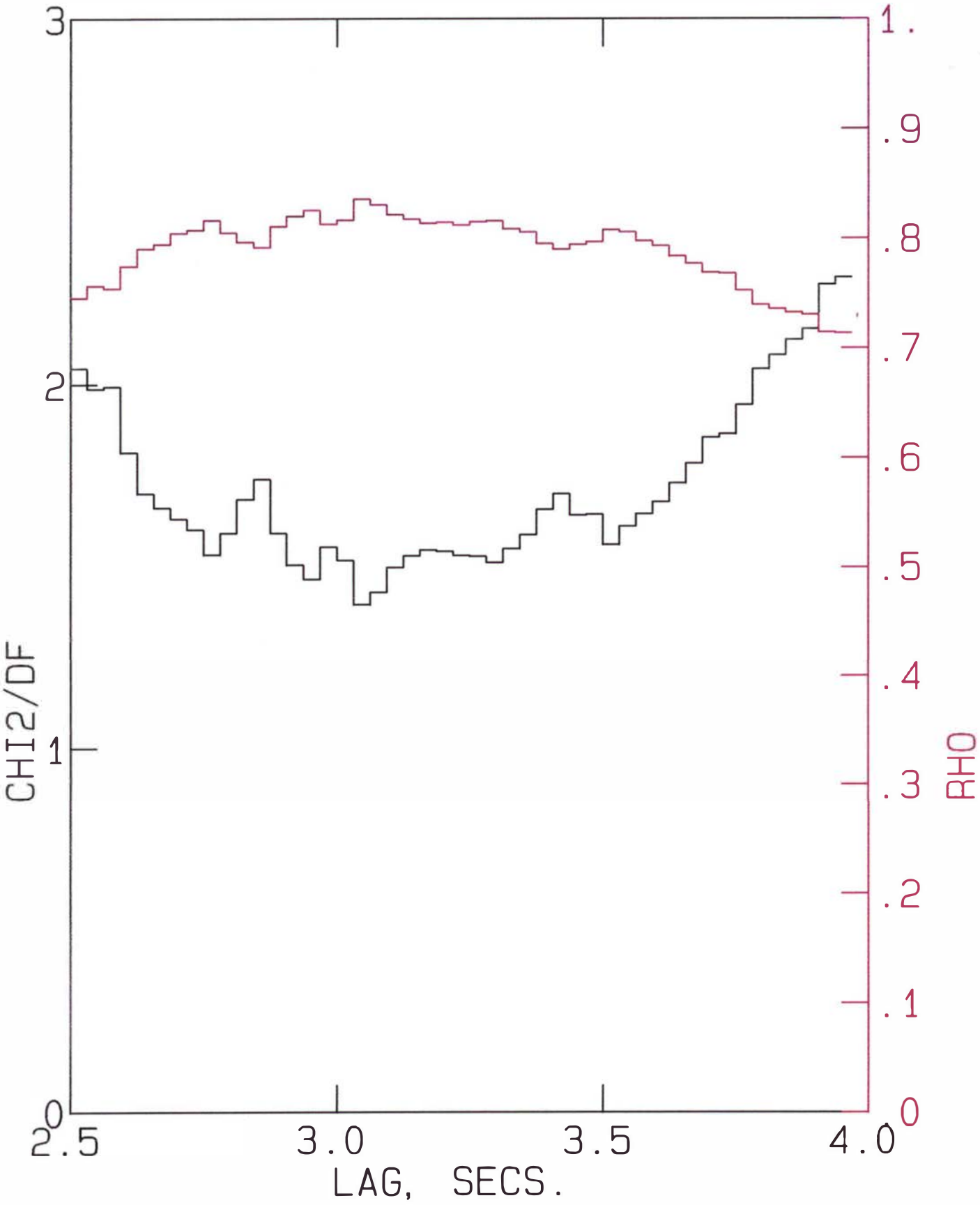
ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 11/ 3/92 8424.043

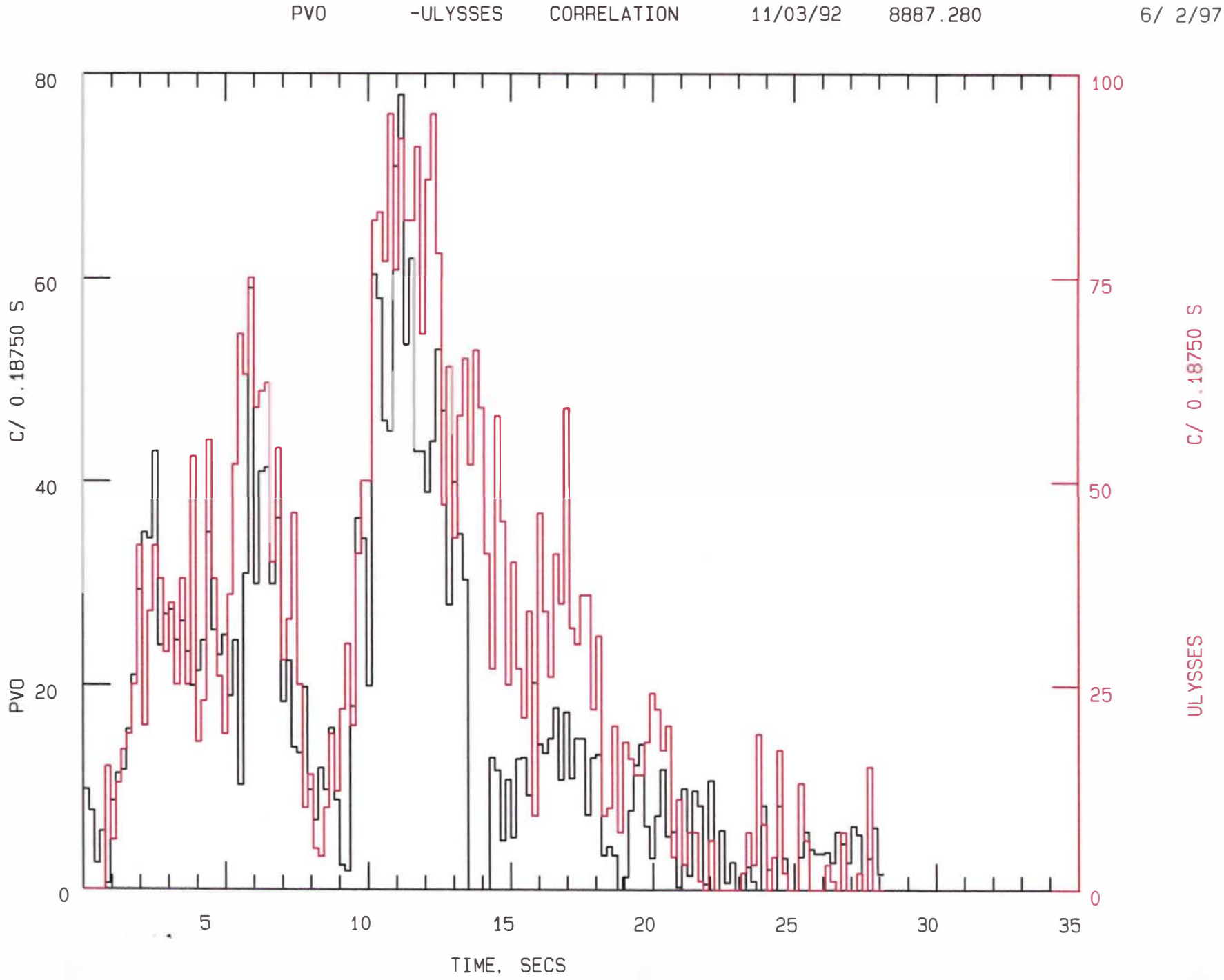
6/ 2/97

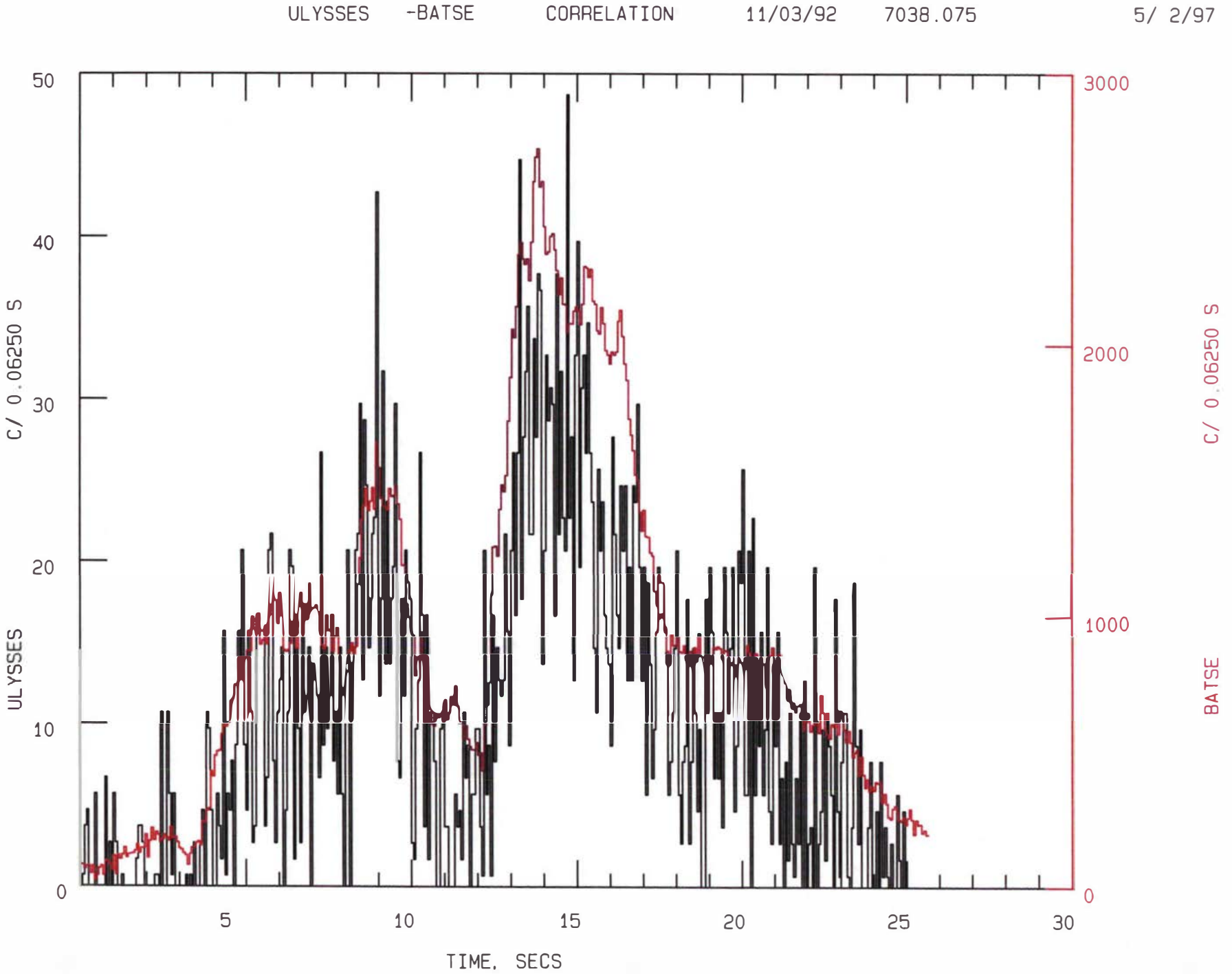



PVO -ULYSSES CORRELATION 11/03/92 8887.280 6/ 2/97
150
100
50
0
C/ 0.28125 S
PVO
150
125
100
75
50
25
0
C/ 0.28125 S
ULYSSES
5
10
15
20
25
30
35
TIME, SECS

PVO -ULYSSES CORRELATION 11/03/92 8887.280

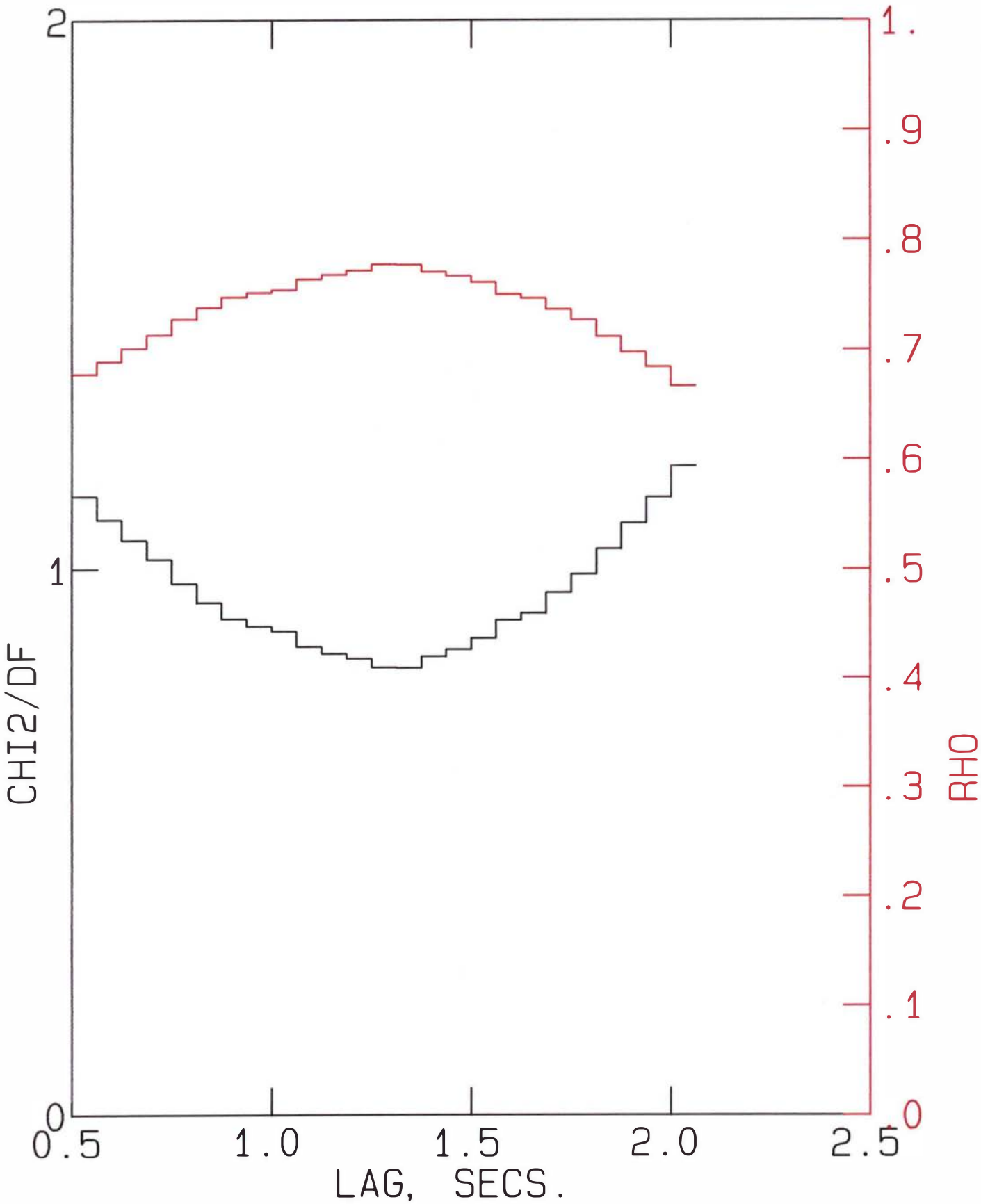



PVO -ULYSSES CORRELATION 11/03/92 8887.280 6/ 2/97
80
60
40
20
0
C/ 0.18750 S
PVO
100
75
50
25
0
C/ 0.18750 S
ULYSSES
5
10
15
20
25
30
35
TIME, SECS


ULYSSES -BATSE CORRELATION 11/03/92 7038.075 5/ 2/97
50
40
30
20
10
0
C/ 0.06250 S
ULYSSES
3000
2000
1000
0
C/ 0.06250 S
BATSE
5
10
15
20
25
30
TIME, SECS

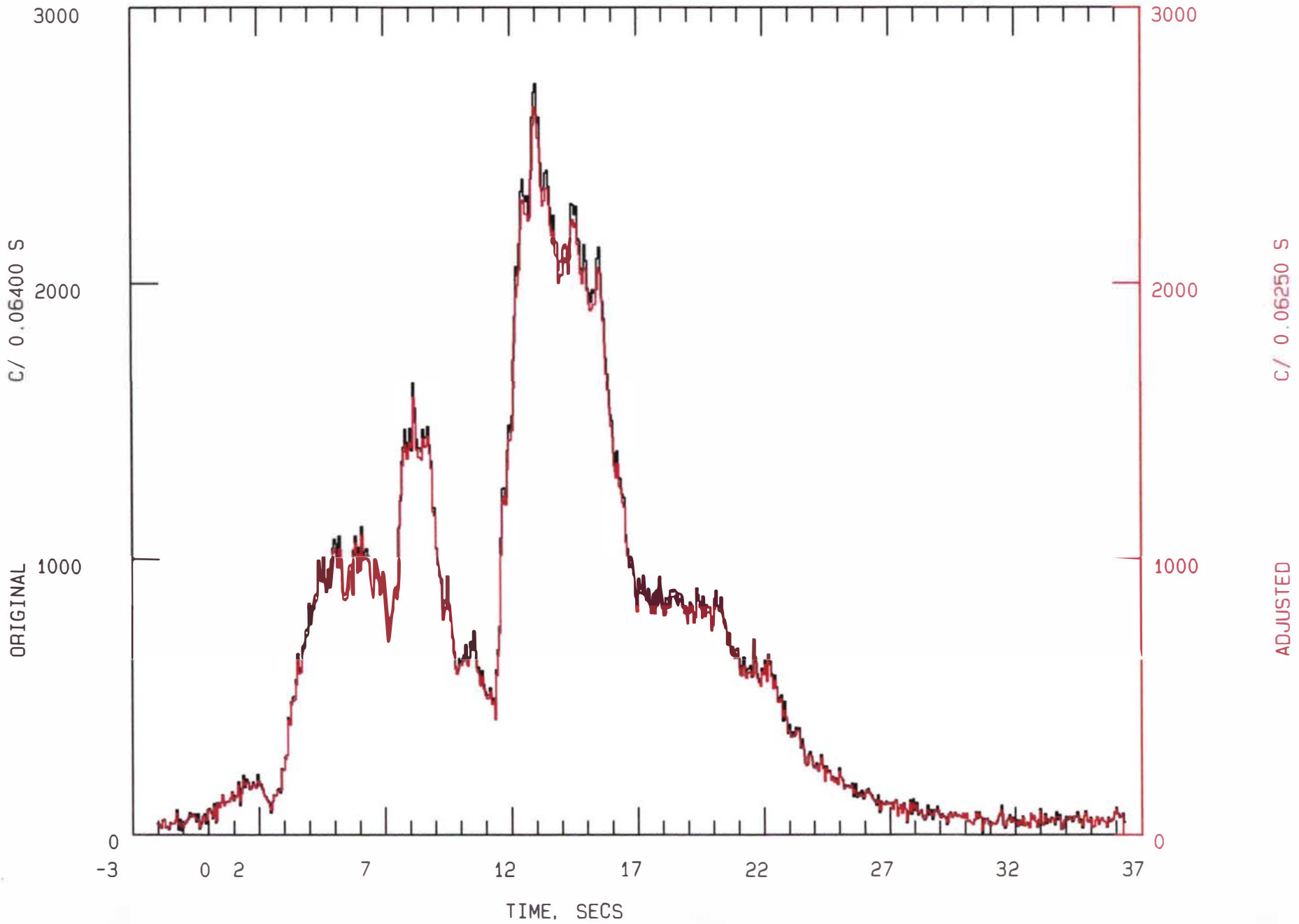
5/ 2/97

ULYSSES -BATSE CORRELATION 11/03/92 7038.075



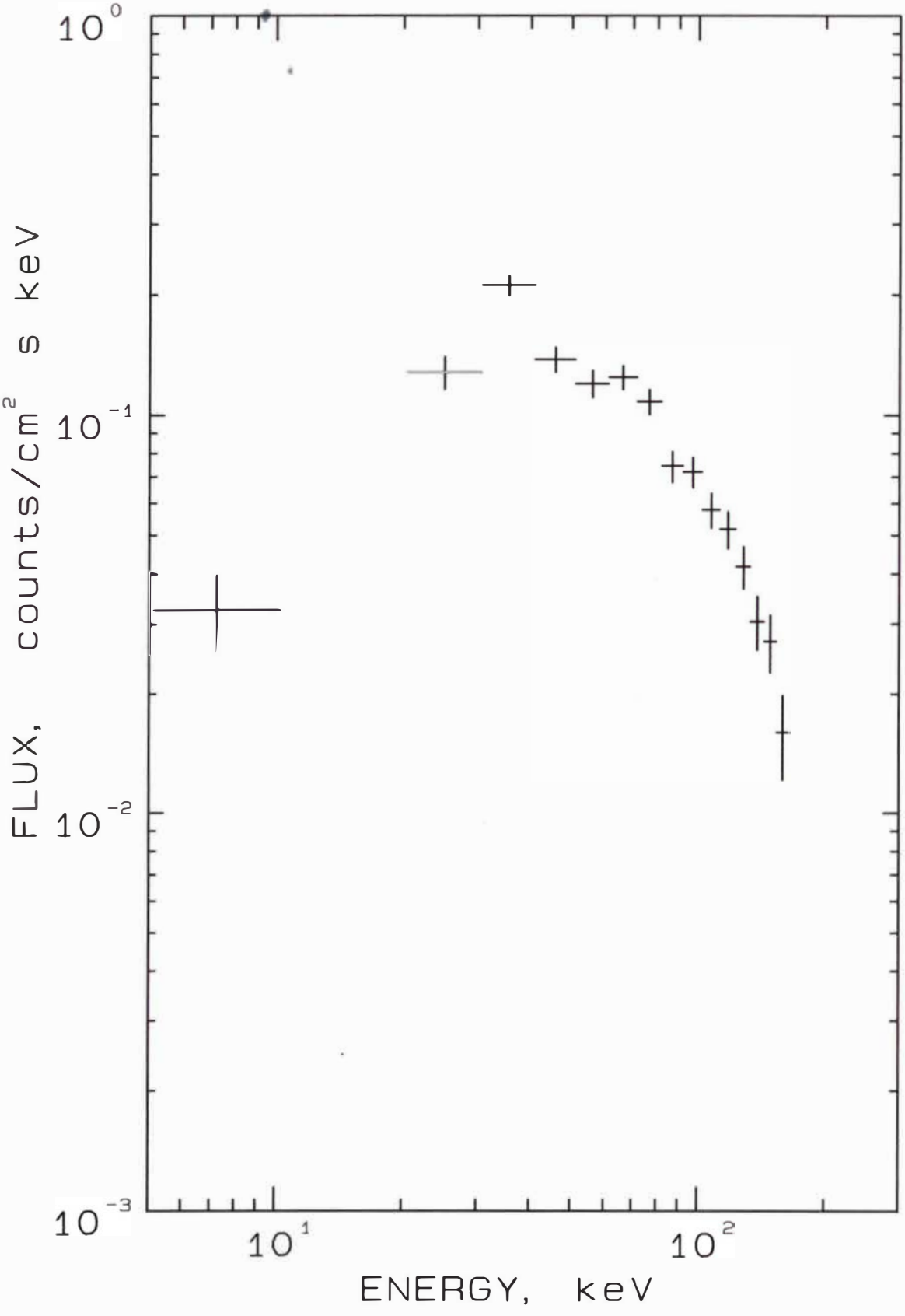
ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 11/ 3/92 8424.043

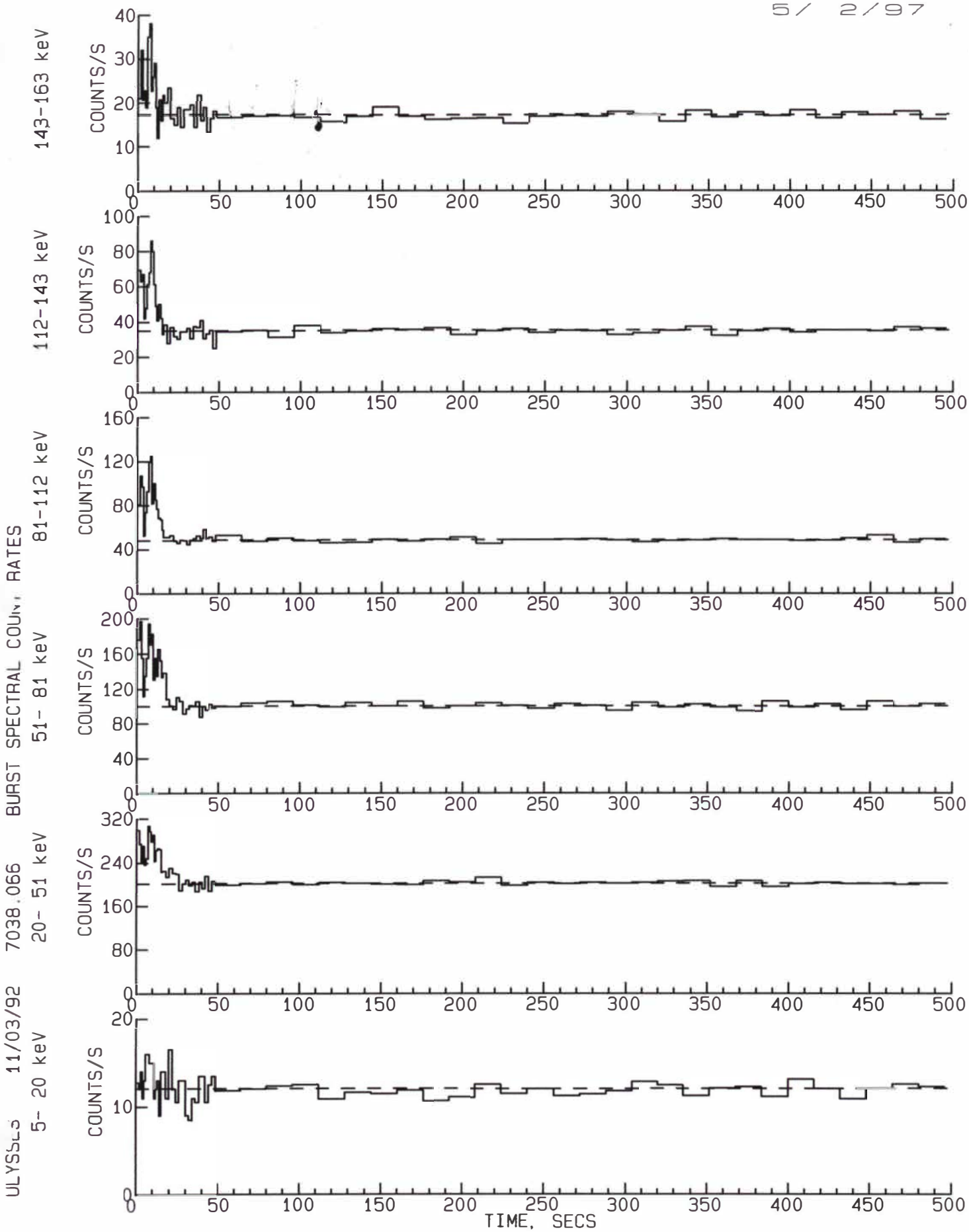
5/ 2/97

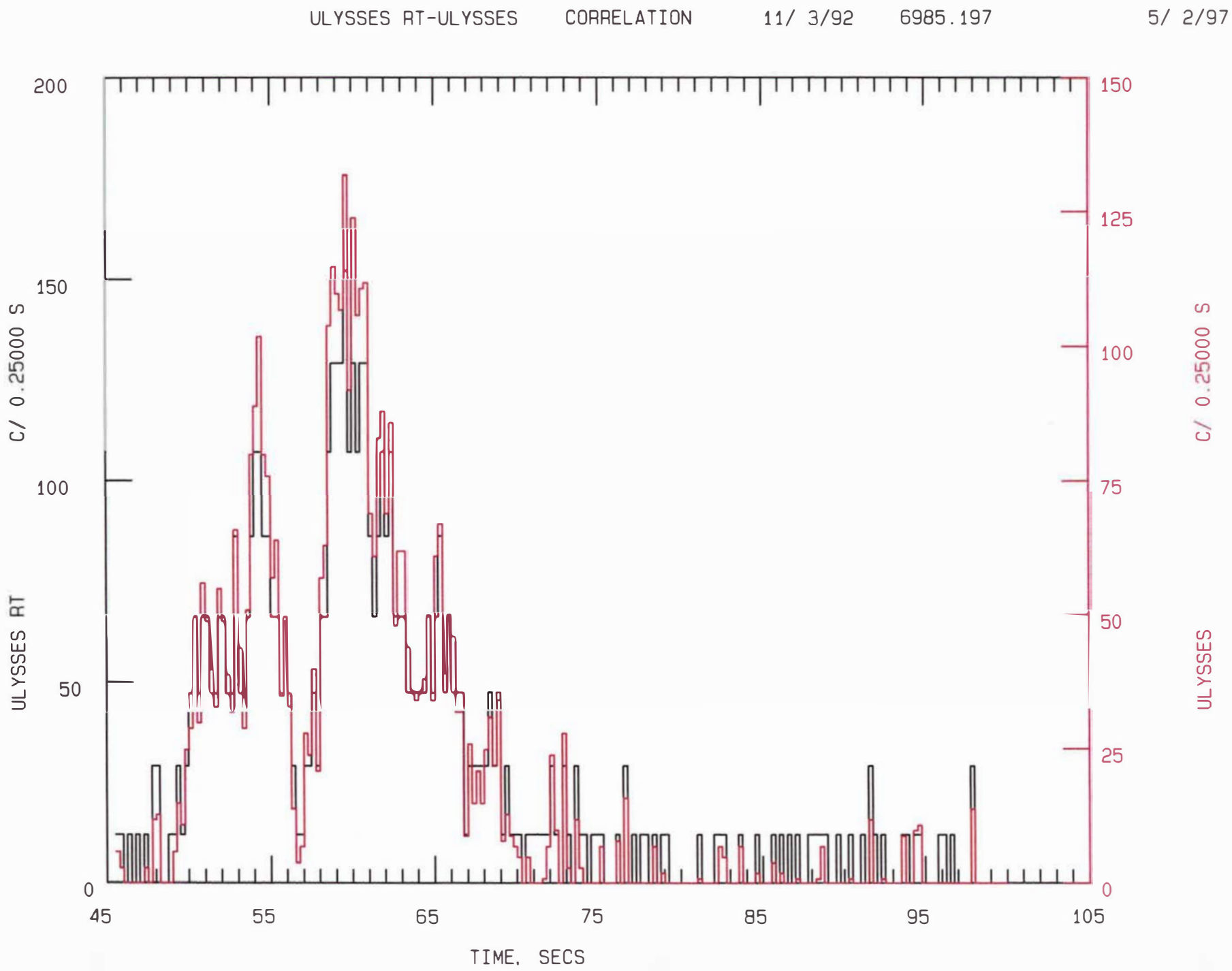


ULYSSES 11/03/92 7038.066

SPECTRUM INTEGRATED OVER 25.9 SECONDS, INTERVALS 2 TO 22

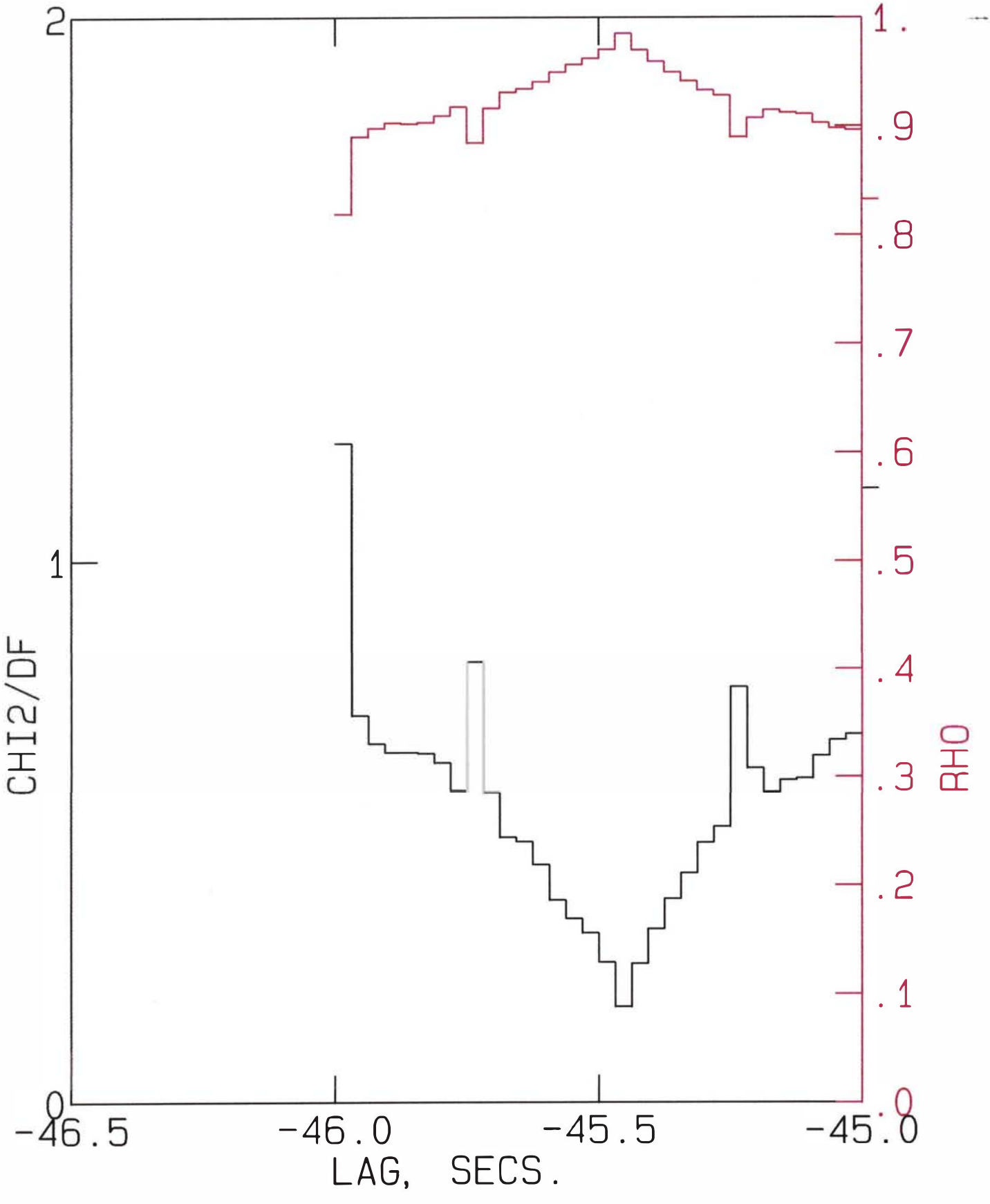


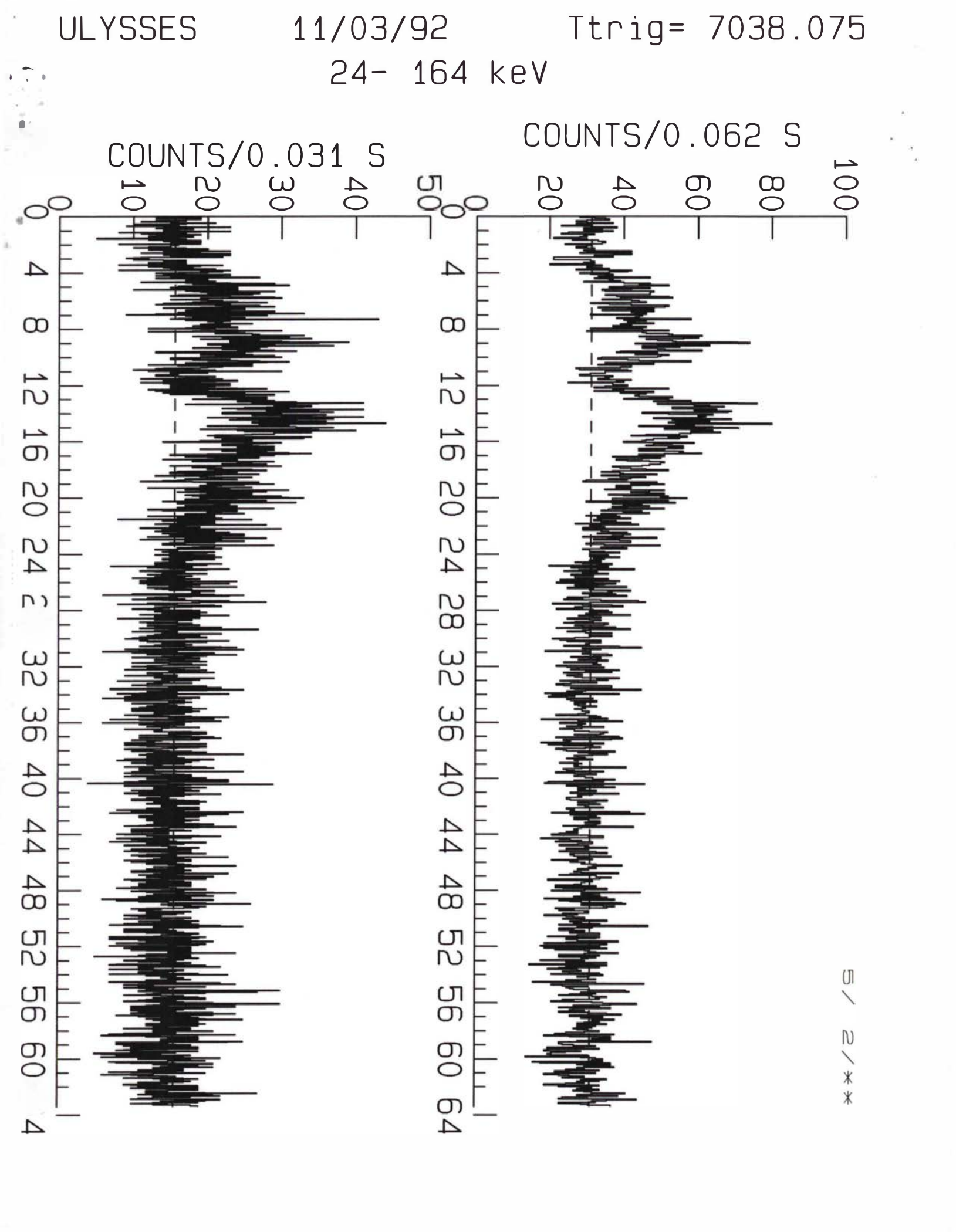

5/ 2/97
ULYSSES 11/03/92 7038.066 BURST SPECTRAL COUNT RATES
143-163 keV
112-143 keV
81-112 keV
51- 81 keV
20- 51 keV
5- 20 keV
COUNTS/S
TIME, SECS


ULYSSES RT-ULYSSES CORRELATION 11/ 3/92 6985.197 5/ 2/97
200
150
100
50
0
C/ 0.25000 S
ULYSSES RT
150
125
100
75
50
25
0
C/ 0.25000 S
ULYSSES
45
55
65
75
85
95
105
TIME, SECS

5/ 2/97

ULYSSES RT-ULYSSES CORRELATION 11/ 3/92 6985.197



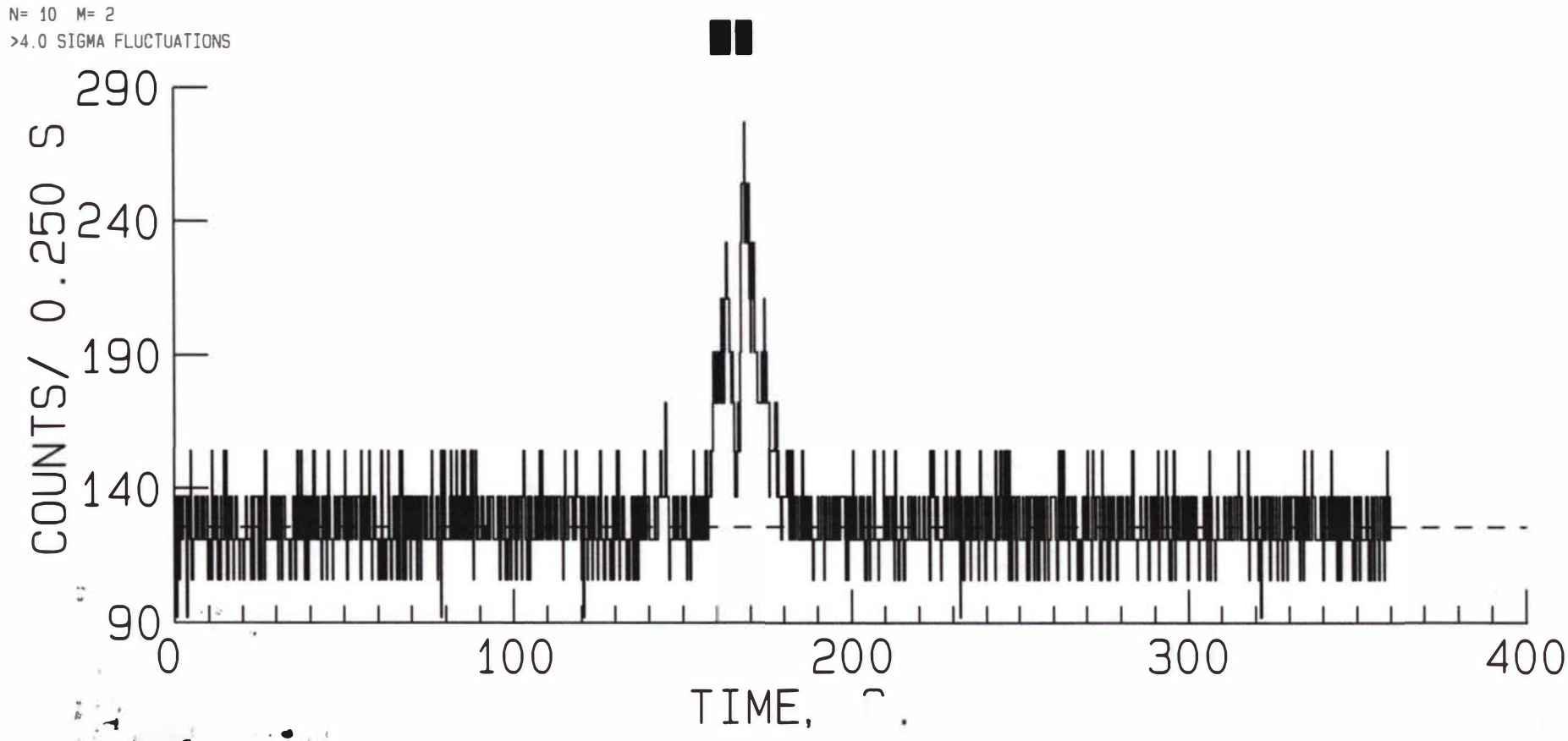

ULYSSES 11/03/92 Ttrig= 7038.075
24- 164 keV
COUNTS/0.031 S
COUNTS/0.062 S
0 10 20 30 40 50
0 20 40 60 80 100
0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64
5/ 2/**

ULYSSES RT

5/ 2/97

11/ 3/92 6876.199 s

24- 164 keV



From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing a paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

Kevin

Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

From ajct@LAEFF.ESA.Es Sat Sep 23 05:18 PDT 1995
Date: Sat, 23 Sep 1995 14:18:00 +0200
From: "Alberto J. Castro-Tirado" <ajct@LAEFF.ESA.Es>
To: khurley@sunspot.ssl.berkeley.edu
Subject: proposal

Dear Kevin,

This is to ask if you would like to join me, Holger Pedersen, Soren Brandt, and Niels Lund in an observing time proposal for the NTT at La Silla, aimed at identifying optical counterparts to 2 IPN locations inside WATCH GRB error boxes.

We have the IPN positions from the fax you sent while I was in Denmark. But the IPN area is quite small an its position cannot be seen very clearly. If you agree in joining us, could you provide with a larger-scale drawing in order to determine the precise position of the IPN area?

The two GRBs in question are:
-GRB 910122, seen by WATCH, ULYSSES and PVO
-GRB 920311, seen by WATCH, ULYSSES and PVO

With kindest regards,

Alberto

P.S. The deadline for submitting the proposals in September 30

```
From root Wed Sep  7 07:48  1994
Received: by space6.ssl.berkeley.edu (AIX  2.1 2/4.03)
          id AA06345; Wed, 7 Sep 94 07:48:09
P  eived: from TGRS.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
        id AA24196; Wed, 7 Sep 1994 07:59:00 +0800
Da e: Wed, 7 Sep 1994 07:59:00 +0800
Message-Id: <9409071459.AA24196@sunspot.ssl.berkeley.edu>
Received: from [128.183.8.198] ([128.183.8.198]) by TGRS.GSFC.NASA.GOV with SMTP;
          Wed, 7 Sep 1994 11:04:04 -0400 (EDT)
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: KHURLEY@space6.ssl.berkeley.edu
From: cline@tgrs.gsfc.nasa.gov (T L Cline)
Subject: Ulysses 3-spacecraft event input data
Content-Length: 2811
Status: R

KEVIN:
Here is the 2000-equinox and Sun-time conversion table for the data you sent,
with accuracy to one second and/or light second.  I am messing around with a
few events, but still don't have Laros data, as you know, for the last few.
No surprises or major errors have been uncovered.  Question:  Anything new
or of breakthough significance from the conferences?  -  TLC
----------------
 1991  4 21 113.2608  23.4971        34040.305
           114.0119  23.3855 -0.135 34040.170  1378.693
 event
 1991  4 30 116.1729  22.9446        60378.427
           116.9185  22.8202 -0.142 60378.285  1488.041
   ent
    1  5  3 116.9858  22.7835        24143.572
           117.7299  22.6556 -0.144 24143.428  1518.173
 event
 1991  5 22 123.0661  21.4768        43556.351
           123.7977  21.3234 -0.149 43556.202  1737.717
 event
 1991  6 27 134.1165  18.6189        15334.664
           134.8236  18.4239 -0.124 15334.540  2103.168
 event
 1991  7 17 140.0115  16.8382        17265.301
           140.7054  16.6238 -0.089 17265.212  2272.113
 event
 1991  8 14 147.8796  14.2022        70976.031
           148.5569  13.9655 -0.016 70976.015  2454.177
 event
 1991 11  4 164.7180   7.7939        52695.431
           165.3682   7.5249  0.217 52695.648  2527.808
 event
 1991 11  9 165.2888   7.5681        11321.862
           165.9383   7.2984  0.224 11322.086  2514.175
 event
 1991 11 18 166.3305   7.1593        66112.979
           166.9789   6.8884  0.236 66113.215  2480.950
 event
 1991 11 26 166.9834   6.9076        43717.172
           167.6312   6.6360  0.241 43717.413  2450.974
   ent
 1992  3 11 156.4982   9.1383         7038.075
           157.1561   8.8824 -0.055  7038.020  2213.119
 event
```

```
 1992  3 25 153.5174   9.3668         64261.613
           154.1779   9.1169 -0.118 64261.495  2260.354
 event
 1992  4  6 151.5806   9.4338         11128.491
           152.2426   9.1882 -0.162 11128.329  2318.519
 event
 1992  5  1 148.8008   9.1566         75040.670
           149.4640   8.9176 -0.234 75040.436  2497.670
 event
 1992  5 17 148.2303   8.7103         10549.835
           148.8928   8.4728 -0.257 10549.578  2619.504
 event
 1992  5 25 148.2227   8.3959         14411.494
           148.8844   8.1584 -0.261 14411.233  2684.313
 event
 1992  7 11 151.3011   5.5653         58453.215
           151.9542   5.3203 -0.197 58453.018  3009.551
 event
 1992  7 18 152.1018   5.0060         79135.445
           152.7533   4.7592 -0.175 79135.270  3043.801
 event
 1992  7 20 152.2398   4.9105          9807.222
           152.8911   4.6634 -0.171  9807.051  3048.967
 event
 1993  7  6 145.7214 -11.6627         20275.572
           146.3295 -11.8936 -0.171 20275.401  2546.013
-------------------------------------------------------

-- T. L. Cline ----- LHEAVX::CLINE
```

GRB	RA°	DEC°	DIMENSIONS	SOURCE
17 FEB 94	29	+4	6'x60'	IAUC 5940
25 APR 91	90	-22		A&A Suppl. 97, 75
09 NOV 91	111	-27	1'x6'	CoI calculation
01 MAY 92	124	-33	1'x2'	CoI calculation
11 MAR 92	132	-36	1'x4'	CoI calculation
22 MAY 91	138	-51	2'x2'	CoI calculation
18 NOV 91	167	-23	2'x10'	CoI calculation
31 JAN 93	184	-10	0.3'x96'	Hurley et al. (preprint)
27 JUN 91	199	-4		A&A Suppl. 97, 75
17 MAY 92	203	-17	2'x6'	CoI calculation
17 JUL 91	247	-58	1'x1'	CoI calculation
SGR 1900+14	285	+14		pos. of G42.8+0.6
06 APR 92	289	-58	2'x2'	CoI calculation
22 JAN 91	297	-71	2'x6'	CoI calculation
25 MAY 92	301	-43	2'x3'	CoI calculation
25 MAR 92	351	13	2'x7'	CoI calculation

From this list, approx. half will be selected for study (depending on season). SGR 1900+14 is one of the three *soft-gamma repeaters*. It has been tentatively associated with a supernova-remnant G42.8+0.6 (Hurley et al., preprint).

21. For SEST proposals, indicate:

a) Your preferred LST interval :

b) The period when the targets can be observed, taking into account the Sun constraint (50°) :

22. Justification of requested number of observing nights. Do not include any correction for expected meteorological conditions:

Eight fields are to be imaged in four colours, twice. The exposure time will be 10 min in B, and 5 in V, R, and Z. Hence, in total, 400 min integration.

CoIs are constantly revising the list of targets. Some reduction in the size of error boxes is possible; this may limit the need to image by mosaic.

23. Reasons why the observations cannot be performed in remote mode.

24. **Important notice:**
If the programme described in this application requires excellent seeing or photometric conditions or low water vapour content, **a back-up programme using the same instrumentation** has to be described on a separate page.

From holger@astro.ku.dk Thu Jul 7 00:49 PDT 1994
Date: Thu, 7 Jul 94 09:51:25 +0200
From: holger@astro.ku.dk (Holger Pedersen)
To: boer@cesr.cnes.fr, hpedersen@nbivax.nbi.dk,
khurley@sunspot.ssl.berkeley.edu
Subject: NTT_observing_time
Content-Type: text
Content-Length: 1062

Kevin, Michel:

I am pleased to report verbal information from ESO that we have been granted one night of observing time on the 3.5-m New Technology Telescope, in March 1995, for the execution of the observing program mailed to you earlier. The observations are to be conducted using remote control, from Garching. I hope that you can join me in Garching.

Similar observations will be done at the 1.54-m Danish telescope, La Silla, August 5 - 12, 1994. If there is any update to Kevin's list of positions, please let me know.

Best regards

Holger

July 7, 1994

Holger Pedersen	e-mail	holger@astro.ku.dk
Copenhagen University Observatory	phone	(45) 3532 3966
Oster Voldgade 3	-	(45) 3532 3999 (secretary)
DK 1350 Copenhagen	-	(45) 3888 6779 (private)
Denmark	fax	(45) 3532 3989

6. We have included the small, 3-spacecraft error boxes in this list. "Small" means different things to different observers. Searches through all-sky survey data from ROSAT, or for archival optical transients, for exmaple, may only require error boxes less than about a square degree in size, while for deep optical searches, this might be considered to be an enormous size. We have not included the two-spacecraft locations in this list (e.g., the Ulysses/BATSE events, which give narrow annuli intersecting the much larger BATSE error circle). If you have any use for such events, please let me know. There are quite a few of them.

Distribution list: M. Boer, T. Cline, J. Cordes, D. Hartmann, R. Hudec, C. Kouveliotou, J. Laros, B. McNamara, D. Palmer, B. Paczynski, B. Pedersen, H. Pedersen, R. Romani, B. Schaefer, R. Schnee, M. Sommer, F. Vrba, A. Wilson

SMALL GRB ERROR BOXES FROM THE 3rd INTERPLANETARY NETWORK

#	GRB DATE	OBSERVED BY	ULYSSES FLUENCE (erg/cm2)	RA(2000)	DEC(2000)	DIMENSIONS	COMMENTS
1	22 JAN 91	ULYSSES/PVO/GRANAT	5 x 10**-5	296.862	-70.648	2'x6'	DIMENSIONS CAN
2	19 FEB 91	ULYSSES/PVO/WATCH	1.4 x 10**-5	213.703	+58.693	2'x3'	"
3	30 APR 91	ULYSSES/PVO/BATSE	10**-5	135.861	+1.747	10'x180'	SLIGHT REDUCTIO
4	22 MAY 91	ULYSSES/PVO/BATSE	10**-5	138.323	-51.262	2'x2'	FURTHER REDUCTI
5	17 JUL 91	ULYSSES/PVO/BATSE	5 x 10**-6	247.327	-58.406	1'x1'	GRAZING INCIDEN
6	04 NOV 91	ULYSSES/PVO/BATSE	10**-6	212.197	+35.346	2'x8'	GRAZING INCIDEN
7	09 NOV 91	ULYSSES/PVO/BATSE	10**-6	111.330	-27.239	1'x6'	GRAZING INCIDEN
8	18 NOV 91	ULYSSES/PVO/BATSE	3 x 10**-5	166.598	-23.222	2'x10'	GRAZING INCIDEN
9	26 NOV 91	ULYSSES/PVO/BATSE	2 x 10**-5	160.352	+6.800	6'x25'	SOME REDUCTION
10	11 MAR 92	ULYSSES/PVO/BATSE	2 x 10**-5	132.310	-36.466	1'x4'	SOME REDUCTION
11	25 MAR 92	ULYSSES/PVO/BATSE	10**-5	350.577	13.053	2'x7'	SOME REDUCTION
12	06 APR 92	ULYSSES/PVO/BATSE		289.034	-57.600	2'x2'	SOME REDUCTION
13	01 MAY 92	ULYSSES/PVO/BATSE	2x10**-5	123.830	-32.749	1'x2'	SOME REDUCTION
14	17 MAY 92	ULYSSES/PVO/BATSE	2x10**-5	203.318	-16.687	2'x6'	SOME REDUCTION
15	25 MAY 92	ULYSSES/PVO/BATSE	2x10**-5	300.869	-42.573	2'x3'	SOME REDUCTION
16	11 JUL 92	ULYSSES/PVO/BATSE	4x10**-5	281.536	+72.884	1'x4'	SOME REDUCTION
17	20 JUL 92	ULYSSES/PVO/BATSE	10**-6	202.358	+37.237	1'x3'	SOME REDUCTION
18	23 JUL 92	ULYSSES/PVO/SIGMA	2x10**-5	287.143	+27.238	1'x4'	SOME REDUCTION

From root Fri Jun 10 12:42 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA19070; Fri, 10 Jun 94 12:42:23
Received: from eggneb.astro.ucla.edu by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
        id AA07585; Fri, 10 Jun 1994 12:51:50 +0800
Received: by eggneb.astro.ucla.edu (5.65/DEC-Ultrix/4.3)
        id AA08801; Fri, 10 Jun 1994 12:52:18 -0700
Message-Id: <9406101952.AA08801@eggneb.astro.ucla.edu>
To: khurley@space6.ssl.berkeley.edu
Subject: GRB error boxes
Date: Fri, 10 Jun 94 12:52:18 -0700
From: sammy@eggneb.astro.ucla.edu
X-Mts: smtp
Content-Length: 645
Status: R

Dear Kevin,

Thank you for the error box coordinates you sent us for the 1992 July 20 burst. I enjoyed the opportunity to talk with you during your visit to UCLA.

I am writing to request the error box coordinates for the other 17 events in your list. I plan to conduct a deep near-infrared survey to follow up our observations of the July 20 position we showed you, so knowing the orientation of these error boxes would be useful. Also, it is my understanding that there are about ten pre-BATSE GRB positions that are known to arcminute accuracy. Could you send me a list of these events + error boxes?

Thanks in advance.

Sammy Larson

From root Thu Feb 3 13:55 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00852; Thu, 3 Feb 94 13:55:12
Received: from SSTDP2.LANL.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
id AA13978; Thu, 3 Feb 1994 12:59:12 +0800
Date: Thu, 3 Feb 1994 14:00:37 -0700 (MST)
From: 046369@SSTDP2.LANL.GOV
To: KHURLEY@space6.ssl.berkeley.edu
Message-Id: <940203140037.23c05074@SSTDP2.LANL.GOV>
Subject: DMSP OBSERVATIONS OF GRO GRB
Content-Length: 2739
Status: R

FROM: SMTP%"TERRELL@ESSDP2.LANL.GOV" (ESSDP2::TERRELL) (JAMES TERRELL 94/02/03)
TO: SSL::KOUVELIOTOU AND GIBSON::COLE (CHRYSSA KOUVELIOTOU AND STAYCE COLE)
CC: SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU" (KEVIN HURLEY)
SUBJ: DMSP OBSERVATIONS OF GRO GRB

Chryssa and Stayce:
Thanks very much for the listing of strong Batse bursts sent to me 11/1/93.
I have now managed to check all of them against DMSP data, and find that
many of them were also detected by DMSP8,9,10, or 11. Probably the higher percent
of detections in recent data is due to more extraction of full data. In many
cases such added effort would not be necessary if source direction
(and consequent obscuration of some DMSP satellites) were known to me.
I would appreciate data on more strong events. Here is the present list:

NOTES:
NA: Not apparent in 20-second averaged data (extracting the 2-sec data is
a more time-consuming task, not undertaken in every case).
NA?: Some slight indication of a peak in 20-second averaged data.
SA: South Atlantic Anomaly, obscuring data with high background rates.
SR: South Radiation Belt background.
NR: North Radiation Belt background.
ND: No data for this time.
YES: Burst definitely detected by one or more DMSP satellites (8,9,10,11).
NO: No evidence of a peak in 2-sec data. (NO/OBSC: Obscured by Earth)

DATE	UT	DMSP
910421	33245	8NO 9SR 10NR
910627	16159	8NA 9NR 10ND
910629	71750	8NA 9SR 10NA
910703	18225	8NA 9NA? 10SR
910717	16386	8NA 9SA 10SR
910718	76051	8NA 9SA 10SA
910802	2718	ND
910814	69275	ND
911024	76208	ND
911104	54283	YES--54286 PEAK
911109	12459	8NO 9NR 10NO
911118	68260	ND
911119	23343	YES--23342
911126	46129	8SR 9SR 10NO
911127	15730	YES--15739
911202	73731	YES--73733
911209	66959	8SR 9SR 10NR 11ND
920226	29730	8SA 9NA? 10SA 11SA
920229	69769	8SR 9ND 10NA 11NA
920311	8246	YES--8431
920315	15569	8NA 9NR 10NA 11NA
920325	62258	YES--62256
920404	47506	8NA 10NA? 11NR
920406	9855	8NO/OBSC 10SR 11SR/OBSC
920414	84163	NA
920517	11877	YES--11883
920525	12423	YES--12427

920622	25504	8SA 10NR 11SA
920627	46956	NA
920711	53140	YES--58157
920718	77563	8NA 10SA 11NA
920720	11524	8NA/OBSC 10NA/OBSC 11SR
920824	39183	YES--39186
920902	1736	YES--1743
921009	24070	YES--24073
921022	55259	8ND 10NA 11NA
921123	22711	YES--22727
921123	46583	YES--46542
921207	57647	YES--57649
921209	41738	8NR 10NA 11NR
930106	56259	YES--56260
930110	6698	8NA 10NR 11NA
930120	84700	YES--84779
930131	68231	YES--68231
930201	60115	YES--60129
930309	11269	NA
930329	11365	8NA 10SR 11NA
930405	32089	YES--32105
930406	26185	8NA 10NR 11NA
930428	04032	8NA 1ONA 11SR
930506	53571	YES--53578
930506	65631	NA

Dear Alberto,

Thanks for the WATCH information. I've started to look for some of the candidate events and I'll let you know what I find. Meanwhile, I have two questions.

1. Can you get the WATCH ephemeris for April 14 1991? It will improve the localization considerably.

2. I've looked over the September 18 1992 event, and I can't find anything wrong with it. The WATCH timing agrees with the PHEBUS timing more or less, so the error is probably not there, unless the GRANAT time is very much off for all experiments. The time which you saw in my triangulation output is just a fiducial marker, and is not the actual event time. The ETC people are very interested in this event, so it would be good if we could get consistency.

Kevin
From root Mon Nov 29 05:07 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA05820; Mon, 29 Nov 93 05:07:18
Received: from danpost.uni-c.dk by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA13547; Mon, 29 Nov 93 04:10:34 PST
Received: from uhuru.dsri.dk (uhuru.dsri.dk [129.142.171.2]) by danpost.uni-c.dk (8.6.4/8.6) v
Received: by uhuru.dsri.dk (4.1/SMI-4.1)
id AA25301; Mon, 29 Nov 93 13:11:08 +0100
Date: Mon, 29 Nov 93 13:11:08 +0100
From: Alberto Castro-Tirado <ajct@dsri.dk>
Message-Id: <9311291211.AA25301@uhuru.dsri.dk>
To: khurley@space6.ssl.berkeley.edu
Subject: GRB 910414
Status: R

Dear Kevin

Thank you for the IPN location for GRB 920311. We are currently planning an ASCA observation of the WATCH error box (including the IPN location) as well as further optical and IR groud-based observations. GRB 900126 is 1 degree from 92 0311. About 910414, it seems to be a real GRB, but you should confirm that. It is a 0.3 s event that came from a region centered at alfa: 18 40, delta: +34, and 65 degrees error radius (1/4 of the sky). I hope this to be useful to you.
Regards,
Alberto
29 Nov 1993

From khurley@space6.ssl.berkeley.edu Thu Nov 25 09:30:36 1993
Date: Thu, 25 Nov 93 10:27:06
From: khurley@space6.ssl.berkeley.edu
Content-Length: 6870

Dear Alberto,

Possible repeater

I have no data for 900126. 920311 was localized some time ago, and I thought that you had the results, but perhaps I sent them to Niels. Anyway, here they are. Please let me know what the WATCH error box is for 900126.

Kevin

SATELLITE POSITIONAL INFORMATION AND BURST ARRIVAL TIME

NO	NAME	DIST. FROM EARTH, KM.	ALPHA, DEG.	DELTA, DEG.
1	ULYSSES	663476255.0000+/- 500.0000000	157.15650+/- .00100	8.88310+/-
2	BATSE	6777.8000+/- 50.0000000	182.35100+/- .01000	10.71500+/-
3	PVO	225397099.0000+/- 500.0000000	329.11211+/- .00100	-13.56901+/-

JULIAN DAY NUMBER IS 33672.58 DAYS SINCE 1900 JAN 0.5

15.00 BY 15.00 CM MAP FOR RA= 115.00 TO 140.00, DEC= -50.00 TO -30.00

INTERSATELLITE CORRELATIONS

SEPARATION BETWEEN SATELLITES 1 AND 2 IS 2213.09775 LIGHT SECONDS. TIME DELAY IS
CORRELATION BETWEEN SATELLITE 1(ULYSSES) AND SATELLITE 2(BATSE
GIVES A CIRCLE OF RADIUS 51.007280 DEGREES CENTERED AT ALPHA=157.156252 DEGREES, DELTA= 8.8
ERROR IN DETERMINATION OF RADIUS IS .011809 DEGREES OR 1.417059 ' TOTAL WIDTH
(.001815 DUE TO POSITION, .009994 DEGREES DUE TO TIMING)
INTERSATELLITE TIMING ERROR IS 300000 MICROSECONDS

SEPARATION BETWEEN SATELLITES 1 AND 3 IS 2957.77379 LIGHT SECONDS. TIME DELAY IS
CORRELATION BETWEEN SATELLITE 1(ULYSSES) AND SATELLITE 3(PVO
GIVES A CIRCLE OF RADIUS 51.274736 DEGREES CENTERED AT ALPHA=155.143744 DEGREES, DELTA= 10.0
ERROR IN DETERMINATION OF RADIUS IS .009255 DEGREES OR 1.110547 ' TOTAL WIDTH
(.001805 DUE TO POSITION, .007449 DEGREES DUE TO TIMING)
INTERSATELLITE TIMING ERROR IS 300000 MICROSECONDS

POSITION AT RA,DEC=132.31,-36.47 WILL BE CORRECTED FOR ABERRATION - REAL MINUS APPARENT RA,DE
POSITION AT RA,DEC=198.88, 45.19 WILL BE CORRECTED FOR ABERRATION - REAL MINUS APPARENT RA,DE

ULYSSES TO PVO CIRCLE AND BATSE TO ULYSSES CIRCLE INTERSECT AT
RA=132.309915 DEGREES, OR 8.H49.M14.38S DEC=-36.466509 DEGREES, OR -36.D-27.M-59.43S
AND AT RA=198.878749 DEGREES, OR 13.H15.M30.90S , DEC= 45.191168 DEGREES, OR 45.D 11.M 28.21

CORNERS OF ERROR BOXES

RA	DEC	RA
132.250466= 8.H49.M .11S	-36.450233=-36.D-27.M -.84S	198.855737=13.H15.M25.
131.876155= 8.H47.M30.28S	-36.257350=-36.D-15.M-26.46S	198.581836=13.H14.M19.
132.747937= 8.H50.M59.50S	-36.672293=-36.D-40.M-20.25S	199.169497=13.H16.M40.
132.369401= 8.H49.M28.66S	-36.482721=-36.D-28.M-57.80S	198.901675=13.H15.M36.

EARTH CROSSING TIMES FOR THESE INTERSECTIONS ARE 8430.613 SECS AND 8430.622 SECS

SEPARATION BETWEEN SATELLITES 2 AND 3 IS 751.86274 LIGHT SECONDS. TIME DELAY IS
CORRELATION BETWEEN SATELLITE 2(BATSE) AND SATELLITE 3(PVO
GIVES A CIRCLE OF RADIUS 52.489436 DEGREES CENTERED AT ALPHA=149.113065 DEGREES, DELTA= 13.5
ERROR IN DETERMINATION OF RADIUS IS .030607 DEGREES OR 3.672885 ' TOTAL WIDTH

FAXCOVER

DANISH SPACE RESEARCH INSTITUTE

GL. LUNDTOFTEVEJ 7
DK-2800 LYNGBY
DENMARK

PHONE: +45 42 88 22 77 TELEFAX: +45 45 93 02 83 TELEX: 37198 dsrinst dk

DATE: Nov 23, 1993 Page 1 of 2

From: Alberto J. CASTRO-TIRADO

TO : Kevin HURLEY

FAX no
Name : 510 643 8640

Dear Kevin.

Thank you for you answer. Enclosed I send you the list of CONFIRMED 64 GRBs plus 14 CANDIDATES. Now you may fill the WATCH response in the Master GRB list for WATCH-GRANAT in the period 1/1/90 – 25/9/92.

GRB 920321 (at 13:00:44) is a ≤ 1 s burst in WATCH data, so I think it could be the same event seen by Ulysses. We do not have better time resolution.

The other repeater is 900126/920311. The two error boxes are separated by 1°, at ~ α = 08 46 δ = −38 (1950.0)

Kind regards, Alberto

First GRANAT/WATCH Gamma-Ray Burst Catalogue

I.W. (yymmdd)	U.T. (hh:mm:ss)
900118	17:40:48
900120	20:37:33
900123a	01:42:13
900123b	18:44:17
900126	18:04:27
900222	11:56:35
900308	09:32:02
900327	10:24:28
900404	17:54:36
900413	10:11:21
900708a	11:30:21
900708b	18:44:53
900901	01:35:47
900925	20:25:22
900929	01:49:18
901009	00:15:46
901015b	08:44:48
901027	04:21:07
901112	14:57:37
901116	01:42:10
901119	18:08:32
901219	21:52:43
910117	00:57:51
910122	15:13:40
910202	20:57:35
910219	11:45:25
910310	13:02:06
910312	12:43:09
910425	00:37:52
910517	05:02:20
910627	04:29:24
910717a	04:44:07
910717b	13:07:25
910721	19:30:12
910723	14:06:20
910814	19:14:31
910815	14:24:32
910817	17:09:26
910818	13:44:46
910821	10:33:36
910901	05:24:14
910925	03:35:36
910927	23:26:53
911016	11:03:31
911018	05:32:00
911022	04:14:58
911202	20:28:51
911205	23:04:41
911209	18:36:00
920105	17:41:17
920116	18:30:35
920130	00:29:47
920302	06:16:54
920307	00:18:06
920311	02:20:20
920325	17:17:37
920615	14:24:56
920714	13:04:52
920718a	14:41:16
920718b	21:32:47
920720	05:53:04
920723a	01:00:34
920723b	20:03:11
920814	06:10:25
920902	00:29:04
920903a	01:36:15
920903b	23:28:52
920925a	19:30:44
920925b	20:45:14
920925c	22:46:14

CANDIDATES

900415	06:20:58
900603	06:20:50
900616	03:56:50
900618	23:12:22
900625	22:04:16
900628	11:17:53
900815	11:35:12
900914	04:46:40
901015a	02:42:16
910408	22:24:18
910414	07:28:27
910816	01:57:40
920314	05:48:32
920721	13:00:49
920721	06:17:25

WATCH-GRANAT Gamma Ray Bursts. Niels Lund, Alberto Castro-Tirado & Soren Brandt,
Danish Space Research Institute.

Version 3.0 sep. 12 1993.

The data given below is pre-publication data. The data should not be quoted without prior consultations with the WATCH-GRANAT collaboration. The list is prepared in support of searches for counterparts or multi-spacecraft identifications. The positions given for the localized sources are in most cases based on the fitted mean attitude of GRANAT. The positional uncertainty is 1 degree error circle radius.

#	date	UT-time	sd	l(s)	m(s)	m/l	position(1950)	Q	t	comments	#Wm	sdp	theta	phi
1	900118	17:40:47	33	280	225	1.1	11h36.3m -44.7	F3	8	4 peaks	0423	28	22.42	26.50
2	900126	18:04:27	146	25	11	0.5	08h44.6m -38.0	F3	r	2 peaks, soft tail	0481	70	21.35	138.49
3	900222	11:56:34	38	33	15	1.5	22h29.9m 35.1	F3	1	1 peak, soft tail	0650	25	20.16	144.39
4	900708	11:30:20	36	160	95	2.0	12h22.3m 31.4	F3	1	3 peaks	1490	29	58.49	90.41
5	900901	01:35:46	36	230	110	4.0	18h19.4m -44.8	F3	4	4 peaks	1811	28	39.58	167.23
6	900925	20:25:22	18	45	42	1.2	8h56.0m -35.3	F3	1	Structured event	1970	13	50.37	264.93
7	900929	01:49:48	40	180	180	1.3	11h12.9m -06.6	F3	r	2 groups of spikes	1990	32	44.31	344.08
8	901009	00:15:50	30	11	9	3.5	23h12.1m +29.6	F3	1	1 peak	2041	17	52.34	319.13
9	901116	01:42:08	19	15	15	2.2	02h36.7m +25.1	F3	8	1 peak	2241	11	53.92	15.72
10	901219	21:52:52	24	50	35	2.2	23h06.9m -53.9	F3	8	1 peak	2490	18	57.94	83.18
11	910122	15:13:35	28	127	-	0.0			1	Soft, structured	2670	25	42.26	142.13
12	910219	11:45:24	43	67	54	0.7	14h12.5m 59.0	F3	r	2 peaks	2813	29	25.97	230.72
13	910310	13:02:05	81	41	40	2.5	12h11.9m 06.4	F3	1	3 peaks	2931	40	51.36	351.15
14	910627	04:29:24	20	11	-	0.4	(13h14m -03.2)	12	1	1 peak. X-burst?	3643	18	20.70	262.04
15	910821	10:33:56	21	66	66	0.5	23h31.8m -72.6	F3	4	Struct. + sharp pk.	3991	14	51.52	116.19
16	911016	11:03:30	22	160	-	0.1	19h47.8m -04.8	F3	8	very soft, 2 peaks	4381	17	32.03	227.19
17	911202	20:28:59	41	20	11	0.7	11h27.1m -23.2	F3	1	Single struct. peak	4623	16	35.87	30.52
18	911209	18:36:11	42	30	12	1.8	17h26.4m -44.4	F3	r	4 peaks	4680	28	34.53	320.77
19	920311	02:20:37	42	40	40	1.3	08h45.4m -36.4	F3	8	1 peak	5201	37	51.39	83.56
20	920714	13:04:51	36	40	36	2.1	14h41.6m -30.0	F3	8	1 peak	5921	28	43.75	202.33
21	920718	14:41:15	30	90	30	0.4	01h22.6m -3.5	F3	8	1 odd peak	5953	20	17.97	302.95
22	920718	21:32:46	40	7	5	1.8	19h43.0m -56.5	F3	1	1 dull peak	5951	29	24.43	93.23
23	920723	20:03:10	186	13	8	3.9	19h04.5m -27.4	F3	1	1 dull peak	5991	79	33.49	208.18
24	920902	00:29:04	49	13	9	4.6	18h36.0m -22.8	F3	1	1 dull peak	6163	30	49.14	320.14
25	920903	01:36:15	23	154	103	2.0	19h43.0m 35.2	F3	4	Main peak + spikes	6173	14	38.94	230.29
26	920903	23:29:05	92	24	15	2.5	20h06.3m 21.7	F3	r	1 peak (low E. str)	6183	49	43.53	249.60
27	920925	20:30:42	25	120	120	2.5	13h27.0m 43.1	F3	1	3 peaks	6313	13	51.98	115.24
28	920925	22:49:14	43	347	340	1.3	22h02.0m 24.0	F3	4	struct, soft tails	6311	32	43.03	65.02

#	date	UT-time	sd	l(s)	m(s)	m/l	position(1950)	Q	t	comments	#Wm

comments:

UT-time: Time for peak count rate in Med CsI band. Note time resolution!
Times marked with an asterisk are not yet well calibrated to UT.

sd: Standard deviations above background (in count rates).

l(s): Duration in 6-15 keV band (Low NaI channel)

m(s): Duration in 15-180 keV band (Med CsI channel)

m/l: Hardness: (sd(Med NaI)+sd(Med CsI)) / sd(Low NaI)

posit.: All events in the above list (except 910627) have been localized consistently at least twice based on independent data sets. We are therefore convinced of their true cosmic nature, even without confirming evidence from other spacecraft. GRB 910627 has been included in the list because it is confirmed to be cosmic by many other instruments, and the WATCH position is quite secure due to the good signal to noise ratio.

Q: Type of attitude data: I2: initial pointing at obs. start. 2 axes (poor, syst. error: +-0.8 deg)
A2: actual pointing at burst time. 2 axes (better, syst. error: +-0.5 deg)
F3: fitted mean pointing for TM session. 3 axes (TBD (+- 0.5 deg?))

t: Best time resolution available: 1, 4, 8, 16 motor rotations (approx. 0.9 s)
m: 1 motor rotation in 4 ms steps
r: raw memory (4 ms steps)

#Wm Telemetry session and WATCH unit identifier

sdp: Standard deviations above background in final modulation pattern used for source localization. As a rough guide, the statistical uncertainty in the source position is 240/sdp arcminutes. In most cases the systematic errors dominates the error budget.

theta and phi: Source position in WATCH instrument coordinates.

Dezalay -> KH 7/93

DATE	U.T.	Nr UGB	Event Nature
1992-01-22	09:19:43.748	395-a	Solar Flare
1992-01-25	08:57:27.156	397-a	GRB
1992-01-26	15:27:47.181	398-a	Solar Flare
1992-01-30	09:36:04.439	400-a	Solar Flare
1992-02-05	13:16:18.413	401-a	Solar Flare
1992-02-06	18:55:30.506	402-a	Solar Flare
1992-02-07	11:54:15.583	402-b	Solar Particles
1992-02-07	13:57:21.179	402-c	Solar Particles
1992-02-08	03:03:12.168	403-a	Unknown
1992-02-08	~03:15	403-b	Solar Flare ?
1992-02-10	09:53:52.511	404-a	GRB
1992-02-11	04:22:31.263	405-a	Solar Flare
1992-02-11	20:56:14.388	406-a	Unknown
1992-02-11	21:11:06.397	406-b	Unknown
1992-02-12	05:28:23.479	406-c	Unknown
1992-02-14	23:07:22.311	408-a	Solar Flare
1992-02-15	21:29:26.098	409-a	Solar Flare
1992-02-16	12:32:56.671	409-b	Solar Flare
1992-02-18	18:44:19.178	411-a	GRB
1992-02-20	04:20:06.490	412-a	Unknown
1992-02-29	19:21:17.526	415-a	GRB
1992-03-03	10:52:09.629	417-a	Unknown
1992-03-03	11:43:17.434	417-b	Unknown
1992-03-03	~11:56	417-c	Unknown
1992-03-07	16:44:00.135	420-a	Solar Particles
1992-03-11	02:20:27.297	422-a	GRB
1992-03-11	12:23:20.018	422-b	Solar Flare ?
1992-03-25	17:17:36.626	430-a	GRB
1992-04-04	22:37:28.456	434-a	GRB
1992-04-05	07:41:37.612	434-b	GRB
1992-04-13	11:58:56.617	440-a	Unknown
1992-04-14	23:22:42.474	441-a	GRB
1992-04-20	02:12:27.422	444-a	GRB
1992-04-24	19:18:18.006	447-a	Solar Flare
1992-05-19	16:28:38.427	449-a	GRB
1992-06-22	07:05:04.644	468-a	GRB

From jcg@mpe.dnet.nasa.gov Tue Jan 19 12:53:47 1993
Date: Tue, 19 Jan 93 15:58:43 -0500
From: jcg@mpe.dnet.nasa.gov
To: "khurley@space6.ssl.berkeley.edu"@east.dnet.nasa.gov
Subject: first error boxes
Content-Length: 1723

Dear Kevin,

I have completed the first 5 error boxes. So far there is no source within an error box. Details are given below. Note, that for GRB 920501 (your TOO target) I find really nothing, i.e. even no 1 sigma fluctuation (which is in contrast to what Michel thinks to see).
For the case of GRB 11_MAR_92 I just sent you a fax containing an image together with the detections in this field. The numbers on the circles are the likelihood values for the existence of a point source (3.1 = 2 sigma, 5.9 = 3 sigma), so all three sources along the error box are strong sources. The distance of the pair and the lonely source is about 1 degree, so in principle they would fit into a PSPC FOV. Note that these sources have quit different spectra: the lonely one is rather soft, the other two hard.

I hope to analyze the remaining 10 fields within the next days. The extraction of the data out of the archive took a little longer, since the processing (including the FITS conversion which is needed for the extraction) was stopped over the two weeks holiday period.

Sincerely yours
Jochen

No.	GB_NAME	size of long axis	comments
1	19_FEB_91	10'	1sigma fluctuation (soft) 1' outside of box
2	21_APR_91		
3	22_MAY_91	35'	3 2.5sigma fluctuations in 4'-10' distance new SNR 20' away
4	17_JUL_91		
5	04_NOV_91		
6	09_NOV_91		
7	18_NOV_91		
8	26_NOV_91		
9	02_DEC_91		
10	11_MAR_92	2 degree	3 sources along the long axis in 5'-10' distance
11	25_MAR_92		
12	06_APR_92	30'	nothing
13	01_MAY_92	8'	nothing
14	17_MAY_92		
15	25_MAY_92		

From jcg@mpe ıasa.gov Mon Jan 25 02:37:22 1993
Date: Mon, 25 93 05:35:57 -0500
From: jcg@mpe.dnet.nasa.gov
To: "khurley@space6.ssl.berkeley.edu"@east.dnet.nasa.gov
Subject: next 5 error boxes
Content-Length: 1639

Dear Kevin,

here are the next 5 error boxes. There is only one interesting case, namely GRB 920325. The position of the source is empty on the Palomar plates; the next star (about 17th mag.) is in 1' distance. Normally, the error in the X-ray positions are of the order of 20-30 arcsec. Though this X-ray source is quite faint, I would think that this 1' distant star is too far away from the X-ray position to be the optical counterpart.
The coordinates of the X-ray source are (please, do not circulate):

alpha (2000.0) = 23h 25m 10.7s
delta (2000.0) = 13d 20' 10"

The PSPC countrate is 0.023 cts/sec, and the survey exposure time was 450 sec.
If you think of proposing this target for AO4 then let me know.

Sincerely yours
Jochen

No.	GB_NAME	size of long axis	comments
1	19_FEB_91	10'	1sigma fluctuation (soft) 1' outside of box
2	21_APR_91		
3	22_MAY_91	35'	3 2.5sigma fluctuations in 4'-10' distance new SNR 20' away
4	17_JUL_91		
5	04_NOV_91	30'	3 2-3sigma fluct. around box in 2'-5' distance
6	09_NOV_91	60'	2sigma and 1sigma fluct. in 8' and 5' distance
7	18_NOV_91		
8	26_NOV_91		
9	02_DEC_91	22'	2sigma fluct. 2' off the box
10	11_MAR_92	2 degree	3 sources along the long axis in 5'-10' distance
11	25_MAR_92	45'	5sigma source 2' off the box
12	06_APR_92	30'	nothing
13	01_MAY_92	8'	nothing
14	17_MAY_92	22'	nothing
15	25_MAY_92		

From jcg@mpe.dnet.nasa.gov Mon Jan 25 10:11:55 1993
Date: Mon, 25 Jan 93 13:10:31 -0500
From: jcg@mpe.dnet.nasa.gov
To: "khurley@space6.ssl.berkeley.edu"@east.dnet.nasa.gov
Subject: remaining 5 error boxes
Content-Length: 1433

Dear Kevin,

here is the final list of all 15 error boxes. There is no other interesting feature in addition to GRB 920325 (see last report). For the large error boxes one expects sources to be inside the error box.

M. Sommer told me that you possibly will visit MPE next week. I would be glad to show you the results and discuss further details.

Best regards
Jochen

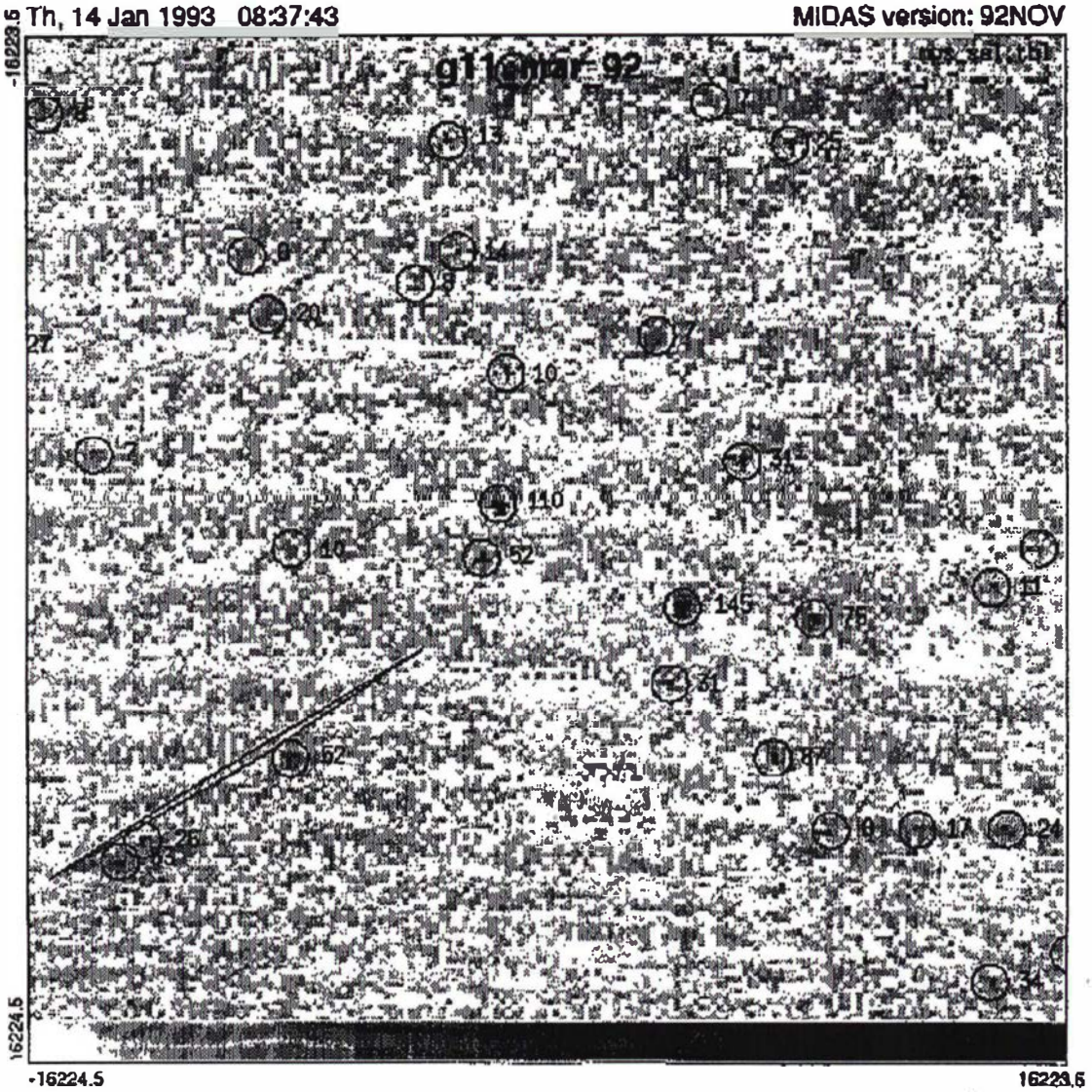
No.	GB_NAME	size of long axis	comments
1	19_FEB_91	10'	1sigma fluctuation (soft) 1' outside of box
2	21_APR_91	2.7 deg.	7sigma source 7' outside of box
3	22_MAY_91	35'	3 2.5sigma fluctuations in 4'-10' distance new SNR 20' away
4	17_JUL_91	2.6 deg.	2.5sigma fluctuation in box
5	04_NOV_91	30'	3 2-3sigma fluct. around box in 2'-5' distance
6	09_NOV_91	60'	2sigma and 1sigma fluct. in 8' and 5' distance
7	18_NOV_91	38'	bright source 13' outside of box
8	26_NOV_91	47'	2.5sigma fluctuation in box
9	02_DEC_91	22'	2sigma fluct. 2' off the box
10	11_MAR_92	2 deg.	3 sources along the long axis in 5'-10' distance
11	25_MAR_92	45'	5sigma source 2' off the box
12	06_APR_92	30'	nothing
13	01_MAY_92	8'	nothing
14	17_MAY_92	22'	nothing
15	25_MAY_92	8'	2sigma fluctuation at box boundary

To: K. Hurley
Univ. of California, Berkeley
FAX (510) 643 8640

from: J. Greiner

1 page

Dear Kevin,
e-mail message follows
Jochen



JLA 10/19/92

Date	Heure Phebus		Sigma	Heure Ulysse	Seance	Cmax Phebus	Cmax Ulysse	Loc. α, δ	Comment.
1991-09-01	19467				327	145			faible
1991-09-07	3910	I		2066	330	177	90		
1991-10-16	39695				355	213			HUS : lim sup
1991-10-18	19936	I		21720	356	553	375		
1991-10-25	77116				362	107			faible
1991-11-19	61954		gca		367	131			faible
1991-12-22	54010	I		53610	381	277	179		
1992-01-10	33540	I	ac	34298	386		151		bdf Phebus faux
1992-01-25	32247		ac/gca		397				HUS : lim sup
1992-02-10	35633		ac		404				HUS : no data
1992-02-18	67459				411				HUS : manque données
1992-02-29	69678				415				HUS : lim sup
1992-03-11	8427	I	ac/gca	7045	422		505	131.6 -36.1	loc Network
1992-03-25	62257	I	ac/gca	64262	430		154		
1992-04-04	81448	I		79239	434		212		
1992-04-05	27698	I	ac	28498	434		91		
1992-04-14	84162	I	gca	84257	441		171		
1992-04-20	7947	I		7573	444		112		
1992-05-19	59421	I		61011	449		268		
1992-06-22	25505	I	ac/gca	23347	468		408		
1992-06-28	76453				473				HUS : no data
1992-07-14	47072	I	ac/gca	46282	482		221	219.9 +5.4	loc Sigma gca
1992-07-20	11529	I	ac/gca	9808	486		227		
1992-07-23	72189	I	ac/gca	73964	489		1084	285.8 +26.7	loc Sigma gca

From SCHAEFER@TGRS.GSFC.NASA.GOV Sun Feb 7 12:41:02 1993
Date: Sun, 7 Feb 1993 15:42:58 -0500 (EST)
From: SCHAEFER@TGRS.GSFC.NASA.GOV
Subject: How things are going in Chile
To: khurley@sunspot.ssl.berkeley.edu
X-Vmsmail-To: LHEAVX::BARTHELMY,PALMER,TEEGARDEN,LHEAVX::CLINE,LTP::SCHAEFER,SMTP%"khurley@sur
Content-Length: 3248

Hi;

I am nearing the end of my observing here at CTIO, and I thought that the various interested parties and helpers would be interested in getting a summary of what I have observed and found. I have had six straight nights of clear weather, and so have accomplished all my goals, with one night of IR array time to spare. And tonight promises to be clear too! I have been averaging 4-5 hours of sleep each night, since there is so much to do in the day (flats, preparing, reducing) and there have been no cloudy nights for rest.

I did obtain a Schmidt plate of the GB930131 field with a delay of 35 hours from the burst. The plate was 5.25x5.25 degrees, with the blue sensitive IIaO emulsion (unfiltered), for 30.0 minutes of integration. The plate reaches to almost the limit of the Palomars, hence from 20-21 magnitude deep! The two most relevant corners of the plate are at (J2000) 12h 8m 34s -6d 23' and 12h 9m 3s -11d 29'. Thus, my plate covers the arc from the IPN from COMPTEL's 3 sigma boundary in the north to about 2.3 sigma in the south. It also covers the EGRET position (along the IPN arc) from many sigma in the north to 1.5 sigma in the south. I have examined the plate by a (tedious) visual comparison with the Palomars. This is a good comparison since the color sensitivities are nearly identical as are the limits. I have examined the entire plate to a limit of roughly 17th magnitude with no 'new stars'. I have also examined a swath 1/3 degree wide around the IPN arc to virtually the plate limit (i.e. to 20th magnitude), and find no 'new stars'. We must now examine this limit for how well it constrains the various echo models.

For my CCD time, I managed to get to use the 2048x2048 chip. This offers a wide (13.3'x13.3') FOV so that mosaics of the smallest new IPN boxes were not needed. The trade off is that there is a huge amount of data generated, which is laborious and slow to handle. So I looked deeply at the MAYDAY box and the GB920311 box. In addition, I continued the staring at the weird red dwarf in the 1944 OT field that has a rabid and variable B/U excess. I'll have this data reduced soon in La Serena.

For my IR array time, the small FOV (roughly 54" square) means that even the MAYDAY box had to be mosaiced with two 3x2 grids. Given this, I cannot go significantly deeper without improvements in the position. This also means that I did not look at any of the other new IPN positions. As for old IPN positions, two (5 March 1979 and 18 April 1979) were small enough to look deeply in with minimal mosaicing. In both of these cases, the previous IR limits were pretty poor (none and K=13), so that current measures can greatly improve the limits. It is getting very embarrassing for the many theorists with extragalactic model, since there are no host galaxies in the boxes. In fact, I believe that these limits rule out the various AGN burst models. I have also looked deeply into the 1928 OT and 1944OT boxes. I have one more night with the IR array, which I will spend on the 1928OT, the N49, the 18 April 1979, and the 1928 OT (depending on what is high through the night).

I leave for La Serena tomorrow, and return to Washington on 16 February.

Cheers,
Brad

From SCHAEFER@tgrs.gsfc.nasa.gov Thu Jan 14 07:37:15 1993
Date: Thu, 14 Jan 1993 10:35:58 -0500 (EST)
From: SCHAEFER@tgrs.gsfc.nasa.gov
Subject: Preferred positions
To: khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: SMTP%"khurley@space6.ssl.berkeley.edu"
Content-Length: 1975

Hi;

I guess that as I write this you are downtown presenting a talk! Sorry I'm not there, but the short notice on observing time is rushing many things.

My earlier note gave the error boxes that could be observed from CTIO and the second list was for the VLA. For CTIO, the preferred boxes are those south of the equator and roughly near RA=10hr. So I would suggest selecting from 22 May 1991, 9 Nov 1991, 18 Nov 1991, 11 March 1992, and 1 May 1992. I would feel comfortable with 4 boxes, and 2 boxes will lead to wasted telescope time. For VLA, the preferred boxes are north of -20 degrees and between RA=3hr and 16hr. Our long observing time implies that we need many boxes well spread out in RA over that range. We wouuld strongly prefer the smallest boxes. Our strong preferences are for bursts 911104, 920720, and 911109. These three boxes are the only ones with long periods of extended visibility, so that others may only be looked at for short periods.

We are in the A-n-B array which has a FOV with reasonable sensitivity of roughly 1' in diameter. David has recently discovered that we could use a different mode (spectroscopy mode, with smaller bandwidths but worse sensitivities) that can get to diameters of 5'. The trouble here is the reduced sensitivity. This means that any large (around 5') boxes that we look at should be for brief 'snapshots'. That is, increasing the observing time from 20 to 40 minutes has little impact on our time allocation, so that the deeply-searched boxes lose little, while the large boxes do not loose sensitivity. But the boxes we can stare at for a long time must be small (<1') or else we loose big (we loose big either by mosaicing or going to spectroscopy mode). Also, please be sure to send along your best position (of course including center and edge positions) for all the bursts. But concentrate on the three deep look boxes 911104, 920720, and 911109.

Cheers,
Brad & David

Schwiding's corrections and assessment of other timing probs, as of 1/93

CTIO

22 May 91 ( ) 4350 ≤ 12:05 No RT data +.007 No other probs

9) Nov 91 (313) 11200 ≤ 8:01 (grazing inc.) } No probs

Nov 91 (322) 65100 18:01 (in common w BATSE)

Mar 92 (071) 0700 00:11:40 (grazing inc) -.002 No other probs

VLA

Nov 4 91 No prob -.015

Nov 8 91 +.024

Nov 18 91 +.005

May 25 92 (085) 17:51 No other prob

May 1 92 (122) No prob

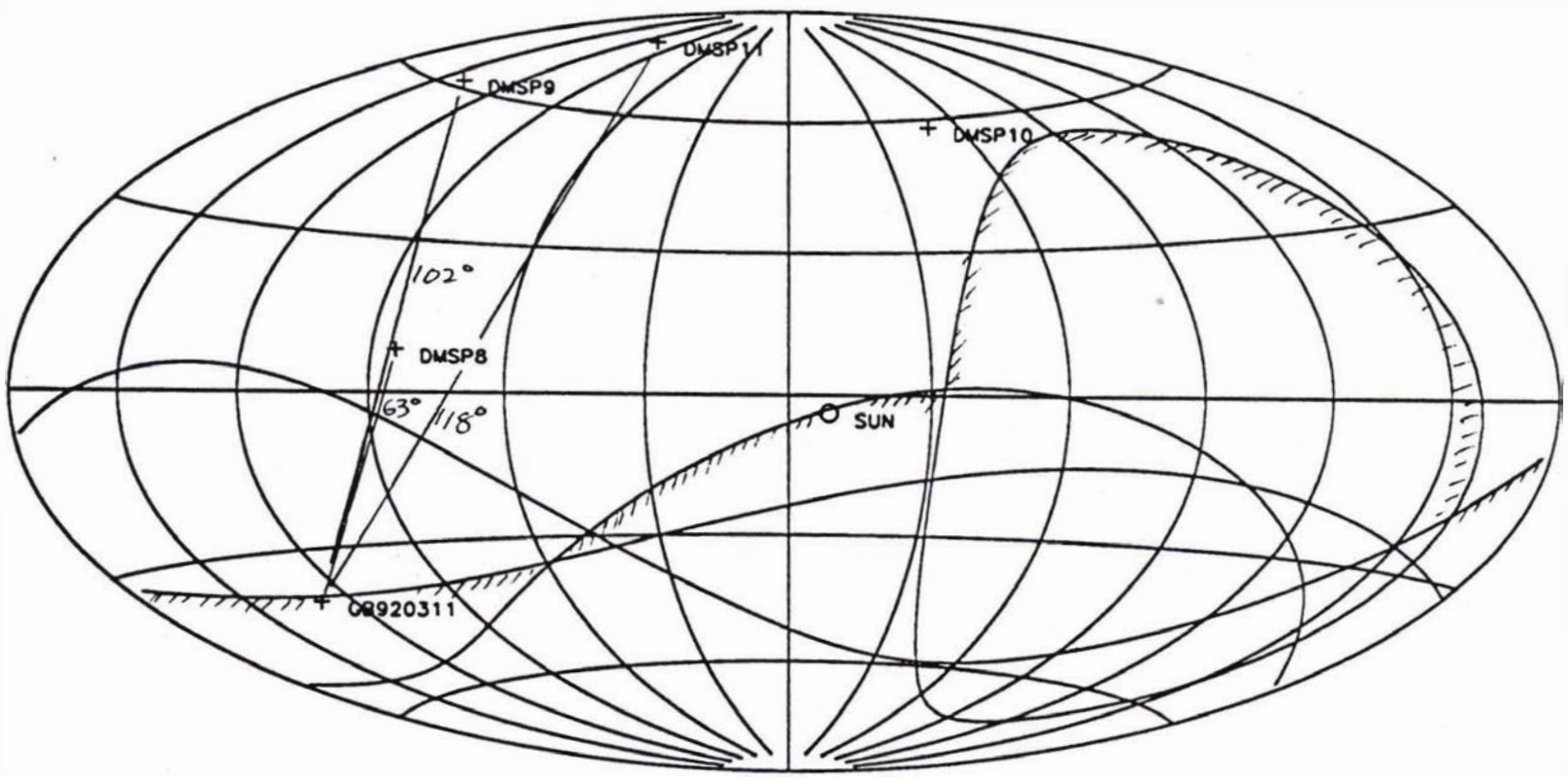
May 12 92 (128) No probs

Jul 11 92 (193) Dominant -.004

July 20 92 (202) No probs -.021

DMSP POSITIONS+VIEW, 92/03/11 08431 UT (92071) GHAA=204.14 921007:TAPE1.920311

DMSP8	84.59	8.42		461NM 300C/S SRC@63.4DEG
DMSP9	140.21	61.35		449NM 600C/S SRC@101.8DEG
DMSP10	311.1	58.		NRAD BELT, SRC@162.0DEG
DMSP11	109.34	77.38		470NM <100C/S SRC@118.0DEG
GB920311	129.	-40.		VERY INTENSE (BNEWS 16)
SUN	351.51	-3.66	600.	



DMSP POSITIONS+VIEW, 92/03/11, 08431UT

920929 EQUATORIAL COORDINATES

From asmette@eso.org Fri May 29 12:24:42 1992
Date: Fri, 29 May 92 15:33:00 CST
From: asmette@eso.org (Alain Smette)
To: holger@astro.ku.dk, :KOUVELIOTOU@BATSE, meb@mpe.DNET.NASA.GOV,
khurley@sunspot.ssl.berkeley.edu, asmette@eso.org
Subject: GRB920525
Content-Length: 1207

ESO-OGB-message No. 4 May 29, 1992

Distribution:

Michel Boer (CESR)
Kevin Hurley (UCal)
Chryssa Kouveliotou (MSFC)
Alain Smette (ESO)

I have received up to: CUO-OGB-message No.2, Marshall-message No.2, CESR-OGB-1
I am missing: none.

MB: Here is the list of the plates that should arrive you. Now, I do not know when they have left Garching or if they still have to: Richard West is not yet back from Georgia, and nobody replied to the fax I sent him...
Plates no: 9956, 9964, 9968, 9973 for GRB920311
9986,9992,9994 for GRB920406
9997 for GRB920501

All: Following the thunderstorm described in ESO-OGB-2, the Schmidt telescope was not working last night: it seems that some electronics did not resist. I cannot tell you now if it will be up tonight. (The 2.2m is in the worst situation as lightning fell on it, destroying many electronics cards! Also the meteo tower has been greatly affected). I was observing last night at the NTT (distant comets!), which had also some problems, but could do a mapping of a 14 min field centered on the position given, on non-photometric conditions.

From kouveliotou%batse.span@Sdsc.Edu Fri May 22 07:00:41 1992
Date: Fri, 22 May 92 14:02:15 GMT
From: kouveliotou%batse.span@Sdsc.Edu (Chryssa Kouveliotou NASA/MSFC (205) 544-7711)
Subject: eso news
To: khurley@sunspot.ssl.berkeley.edu
X-St-Vmsmail-To: HURLEY,SSL::FISHMAN
Content-Length: 2826

From: ESOMC1::SMTP%"asmette@lw1" 22-MAY-1992 05:13:48.78
To: Holger Pedersen <astro.ku.dk::holger>
CC:
Subj:

Date: Fri, 22 May 92 06:20:08 CST
From: asmette@ls.eso.org (Alain Smette)
Message-Id: <9205221020.AA23551@lw1>
To: Holger Pedersen <astro.ku.dk::holger>
Cc: east.gsfc.nasa.gov::BOER, BATSE::KOUVELIOTOU, asmette

ESO-OGB-message No.1 May 22, 1992

Distribution:

Michel Boer (CESR)
Chryssa Kouveliotou (MSFC)
Holger Pedersen (CUO)

All: Unfortunately, I was not able to answer your mails immediately. As Michel said and as Chryssa experienced, there are many problems of communications with La Silla. This time, the link between Garching and La Silla was down for two days . I could not read or send any mails.

CK, MB: I am thinking of another procedure to contact the night assistant at the Schmidt telescope. But this is not easy, outside of the working hours and during the week ends.

All: About GRB010592, I could compare the 15 min plate with the POSS. I had some surprises about the quality of the POSS paper copy here... And I thought I had something (a new star of 16-17 mag), but I realised it is a high proper motion star that moved about 15arcsecs between the epochs of the two plates. There is another high proper motion star in the field. And an asteroid. I could obtain another 15 min red plate and another 15 min blue plate taken this time in photometric conditions during the night May 20-21. But still, I have nothing substantial.

HP: The CCD images have now been transformed in fits format in the directory gamma of the account xbig2 (pwd: lasilla$) on lw0.ls.eso.org (134.171.81.1). Do not forget to put use the flag binary!

HP, MB: (nevertheless), I send you a tape with all the CCD images.

MB: I could not see anything peculiar on the plates for the bursts of March 11th or April 16th. OK, I send you the plates. Let me know when you get them. I would be pleased (but you'll make most of the hard work!) to present results at the GRO meeting, but I have many doubts that ESO will pay me the travel. I'll ask!

ALL: About meetings, I will be at the 1st European Astronomical Society meeting in Liege, on June 22-24th...who'll be there also??? I will be 3 weeks (mainly holidays) in Belgium between June 16th and July 9th.

MB, HP: Christian Vanderriest had to get a light curve for a gravitational lensed quasar, using Schmidt plates taken at the OHP and CCD images, and other devices (cf: 'Optical Determinations of the Time Delay in 0957+561', in 'Gravitational Lenses', Proc. Cambridge, Mass. USA, 1988; Lecture Notes in Physiscs, eds J.M. Moran, J.N. Hewitt, K.Y. Lo). I may contact him, if it is necessary, to obtain more informations.

Kind regards to ALL of you!
Alain

From @cmsa.Berkeley.EDU:MEB@DGAIPP1S.BITNET Wed Apr 29 06:36:19 1992
Date: Wed, 29 Apr 92 15:26:50 EST
From: Michel BOER <MEB%DGAIPP1S.BITNET@cmsa.Berkeley.EDU>
Subject: GRB 920406
To: Kevin HURLEY <khurley@sunspot.ssl.berkeley.edu>
Content-Length: 904

Comme tu le sais sans doute, l'observation ROSAT n'a pas
pu etre effectuee. Il n'y avait pas d'observation a basse priorite
prevue dans le coin la semaine prochaine.

J'ai par ailleurs traite completement les donnees du survey
pour cette source. Il n'y a que 140 sec. d'observation
et pas de source, meme a 2 ou 1 sigma. A noter toutefois que dans
la boite d'erreur il y a une galaxie spirale (ESO 141-56) et
pas tres loin une etoile HD 180607. Je n'ai pas
encore de resultats du Schmidt.

Concernant GRB 920311, la aussi la plaque est en cours d'exploitation,
ce qui est vraiment un processus lourd, donc il vaut mieux eviter
les erreurs de localisation. La source est dans le plan de la galaxie,
et donc il y a 2 ou 3 source ROSAT pres de la boite, 1 pratiquement deda
Je crois qu'il faudrait faire un effort pour essayer de raffiner cette
boite, de facon a les exclure ou les garder.

Amities
Michel



Received: from sophia.inria.fr by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA12701; Wed, 15 Apr 92 05:09:50 PDT
Received: from kwai.inria.fr by sophia.inria.fr with SMTP
        (5.65c/IDA-1.2.8) id AA08332; Wed, 15 Apr 1992 14:13:01 +0200
X400-Received: by /PRMD=inria/ADMD=atlas/C=FR/;
        Relayed; 15 Apr 92 14:12:59+0200
X400-Received: by /PRMD=cnes/ADMD=atlas/C=fr/;
        Relayed; 15 Apr 92 14:09:38+0200
Date: 15 Apr 92 14:09:38+0200
From: " " <pelaez@cnesta.span.cnes.fr>
Message-Id: <9204151209.AA03009@eliot.cnes.fr>
Subject: Localisation de GB920311
To: jlatteia <jlatteia@sunspot.ssl.berkeley.edu>
Status: R

Jean-Luc,
je t'ai envoye ce matin un fax concernant le sursaut du 11 Mars 92 dont Kevin ou toi-meme avez calcule la boite d'erreur avec les donnees de PVO, ULYSSES et BATSE. Au cas ou les chiffres n'auraient pas bien "supporte" le voyage par fax, je te les rappelle ci-dessous :

X = -100805.010 km
Y = 104155.493 km
Z =   85717.829 km en coordonnees geocentriques equatoriales 1950

c'est a dire :

r = 168397.04 km
alpha = 134.0634712 degres dec.
delte = 30.5987199 degres dec. toujours dans le meme repere.
    a

(desole pour la faute d'orthographe)

En ce qui concerne les profils temporels, JP D. m'a dit etre pret a vous envoyer les valeurs par e-mail, si necessaire.

Je te rapelle nos datations de declenchement :

SIGMA : 02:20:17.651 UT , PHEBUS : 02:20:17.298 UT .

A toutes fins utiles je pourrais aussi vous donner la position de GRANAT dans le repere barycentrique solaire (1950) :

X = -146193893.533 km
Y =   23734151.883 km
Z =   10319358.207 km

toutes ces valeurs m'ont gracieusement ete fournies par le sieur Miroslaw (toujours tres propre car s'il s'lave il s'nettoie, et si ce n'est toi c'est donc ton frere... a propos, comme va ta petite famille ?)

Bye-bye,
                Francois.

CENTRE D'ETUDE SPATIALE DES RAYONNEMENTS
9, avenue du Colonel Roche
BP 4346 - 31029 TOULOUSE CEDEX

FROM : François PELAEZ SIGMA team Tél. : 61 55 Télex : 531729 Fax : 61 55 67 01	TO : Jean-Luc ATTEIA Kevin HURLEY
DATE : 15 / 04 / 92	MESSAGE : LOCALISATION de GB920311
PAGES : 1/3	

Je vous envoie ci-joint les datations et profils de SIGMA (A.C.) et PHEBUS pour GB920311, ainsi que la position de GRANAT à t_0 = 02 : 20 : 27.651 UT (± 1 ms).

dans un repère géocentrique tel que $\overrightarrow{OX} = \vec{\gamma}_{50}$ et (XOY) = plan équatorial,

la position de GRANAT est donnée par :

$$\begin{cases} X = -100\,805.010 \text{ km} \\ Y = 104\,155.493 \text{ km} \\ Z = 85\,717.829 \text{ km} \end{cases} \quad \text{ou} \quad \begin{cases} r = 168\,397.04 \text{ km} \\ \alpha_{50} = 134.0634712^\circ \\ \delta_{50} = 30.5987199^\circ \end{cases}$$

(données fournies par Miroslaw DENIS) X, Y et Z sont en fait connus à ± 10 m.

Ces données vous aideront peut-être à affiner la localisation déjà obtenue à partir de ULYSSES, BATSE et PVO.

A bientôt

F. P.

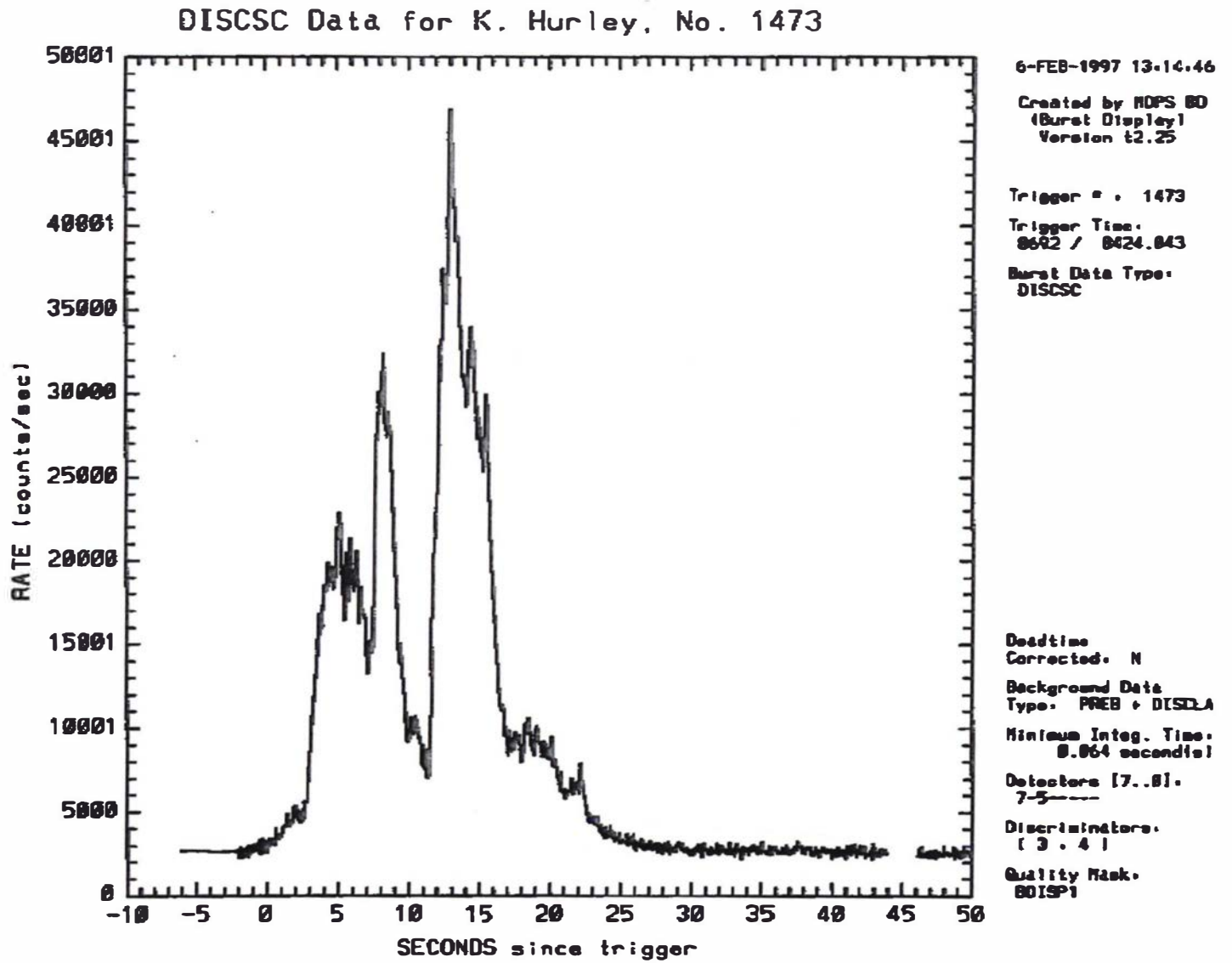
SIGMA - Anticoincidence shield SRB detector
0.2 - 1.5 MeV
0 0.125 counts/bin
0
0.0002
0.0004
0.0006
0.0008
0.0010
0.0012
0.0014
0
10
20
30
40
Seconds after t0

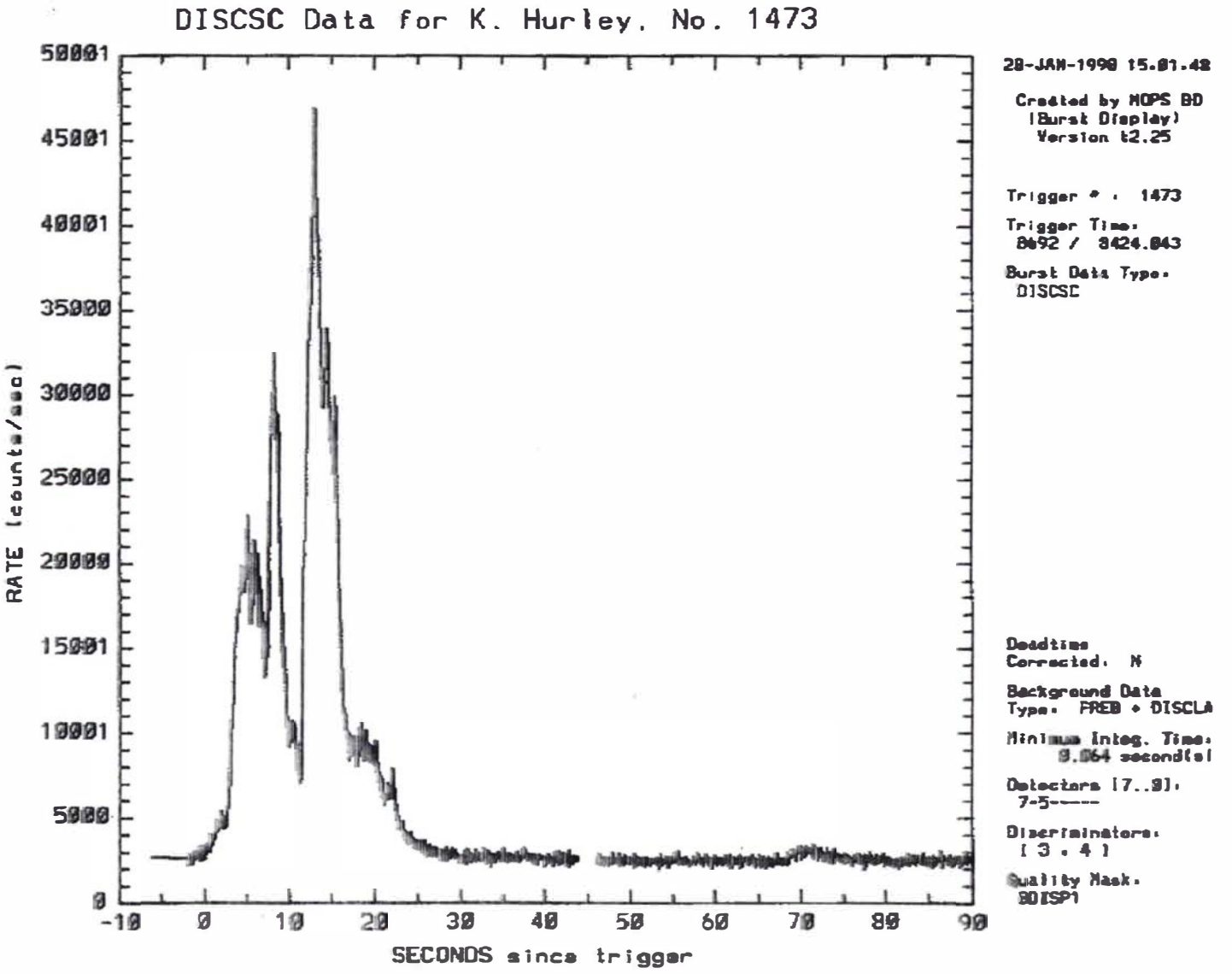
From @space6.ssl.berkeley.edu,@star.stanford.edu:BOER@CESRVD.SPAN Mon Apr 13 05:50:09 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA05808; Mon, 13 Apr 92 05:50:08 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA01600; Mon, 13 Apr 92 04:46:21
Received: from STAR.STANFORD.EDU by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA05805; Mon, 13 Apr 92 05:50:01 PDT
Message-Id: <9204131250.AA05805@sunspot.ssl.berkeley.edu>
Received: from CESRVD by STAR.STANFORD.EDU via MAIL-11 with DECnet;
Mon, 13 Apr 92 05:51:02-PST
Date: Mon 13 Apr 92 05:51:01-PST
From: BOER%CESRVD.SPAN@star.stanford.edu (MICHEL BOER CESR TOULOUSE
(33) 61 55 66 40 FAX (33) 61 55 67 01)
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

Dear Kevin,
A plate of the position you gave me was taken last night by
A. Smette at ESO. Because of the moon, it is a short B exposure.
However, in 1 week we shall be able to take

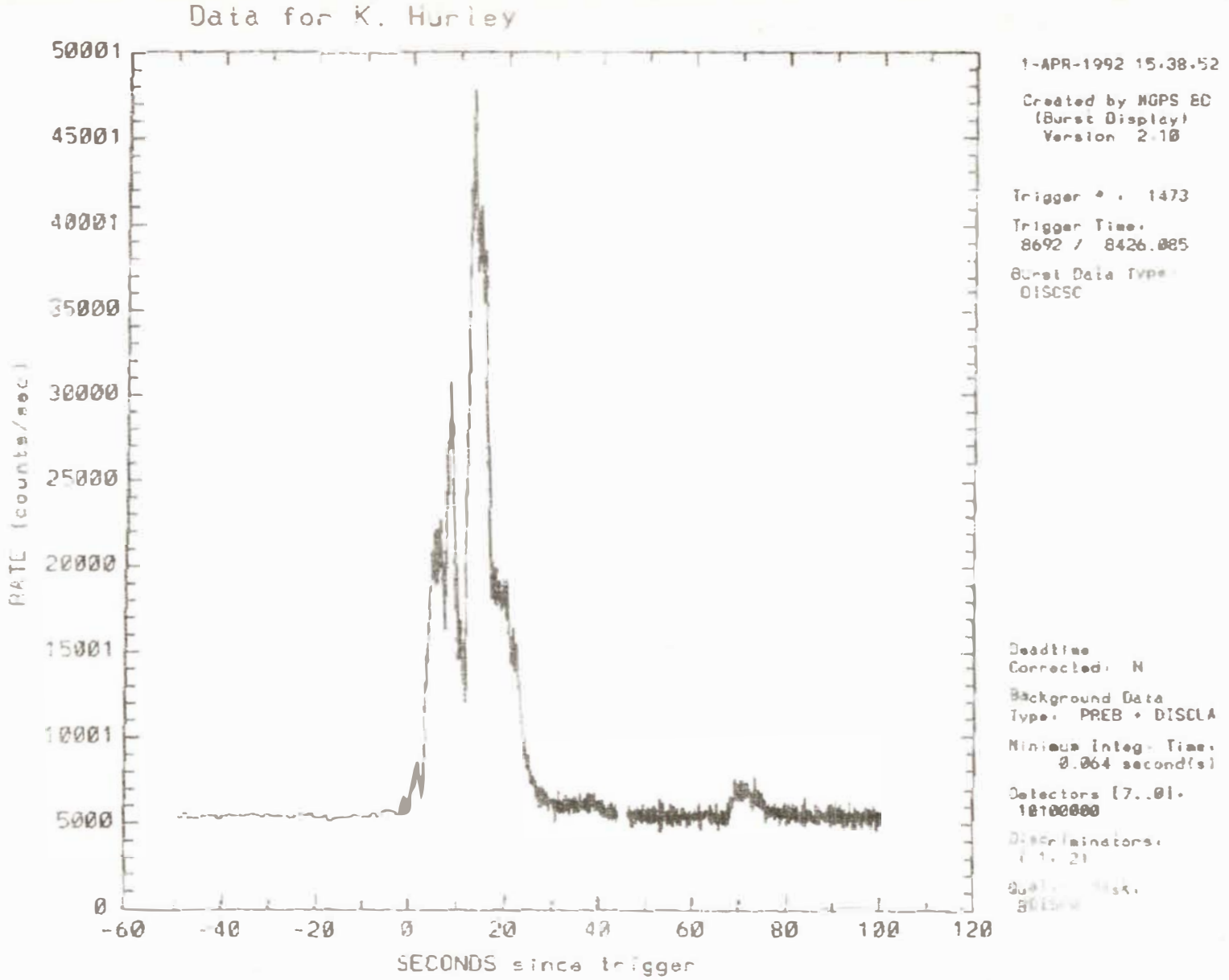
However, in 1 week we shall be able to expose new plates in U, B and V.
May be in the meantime will it be possible to refine the burst
position.

Greetings
Michel


DISCSC Data for K. Hurley, No. 1473
RATE (counts/sec)
50001
45001
40001
35000
30000
25000
20000
15001
10001
5000
0
-10
-5
0
5
10
15
20
25
30
35
40
45
50
SECONDS since trigger
6-FEB-1997 13:14:46
Created by MOPS BD
(Burst Display)
Version t2.25
Trigger # : 1473
Trigger Time:
8602 / 8424.843
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISDLA
Minimum Integ. Time:
0.064 seconds)
Detectors [7..0]:
7-5-----
Discriminators:
[3 . 4]
Quality Mask:
BDISP1

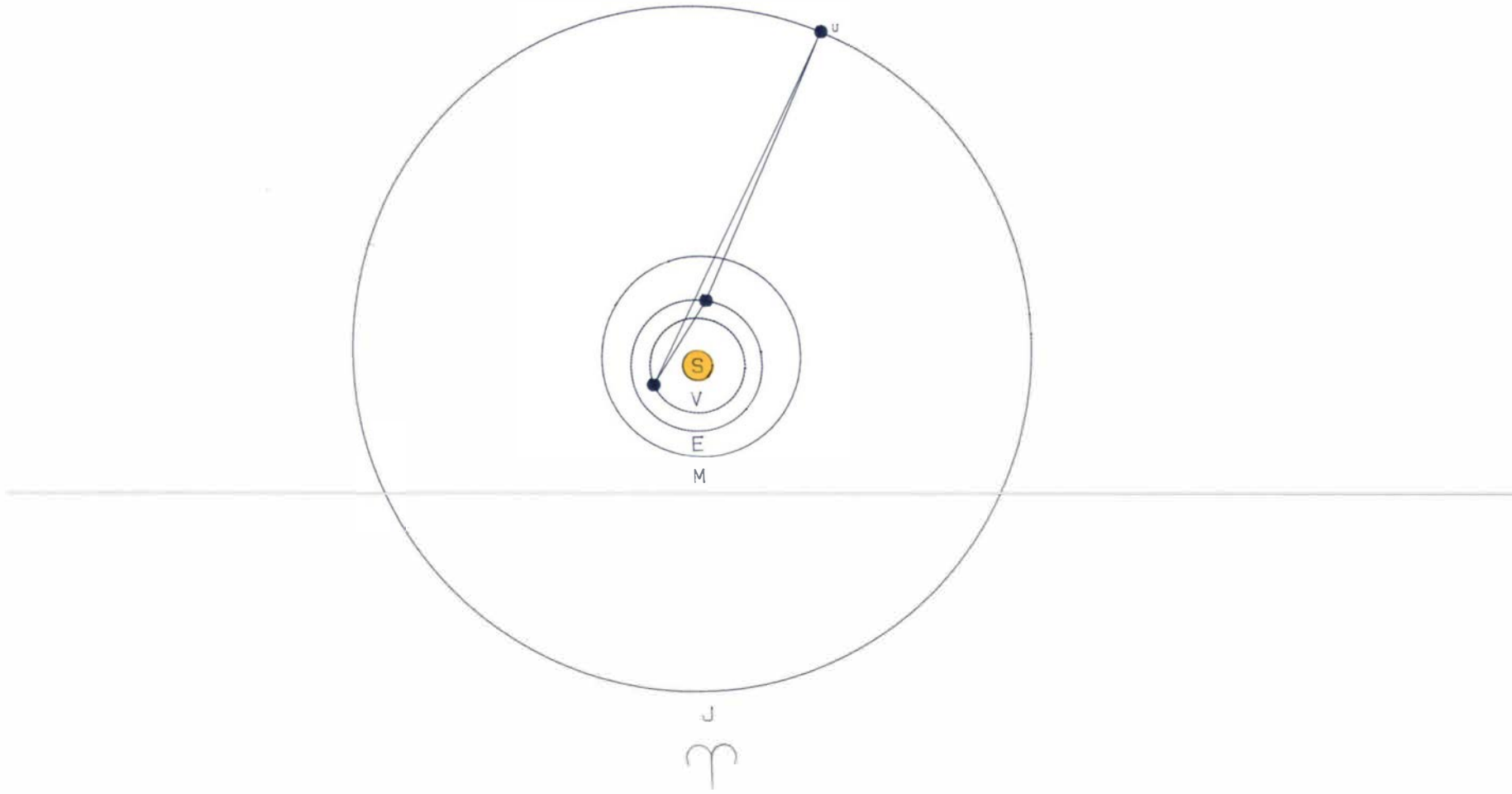

DISCSC Data for K. Hurley, No. 1473
RATE (counts/sec)
50001
45001
40001
35000
30000
25000
20000
15001
10001
5000
0
-10
0
10
20
30
40
50
60
70
80
90
SECONDS since trigger
28-JAN-1998 15:01:42
Created by MOPS BD
(Burst Display)
Version 2.25
Trigger # : 1473
Trigger Time:
8092 / 3424.843
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
7-5-----
Discriminators:
[3 , 4]
Quality Mask:
BDISP1

APR 1 '92 16:04 BATSE 0 - G



ULYSSES ORBIT - ECLIPTIC PLANE PROJECTION

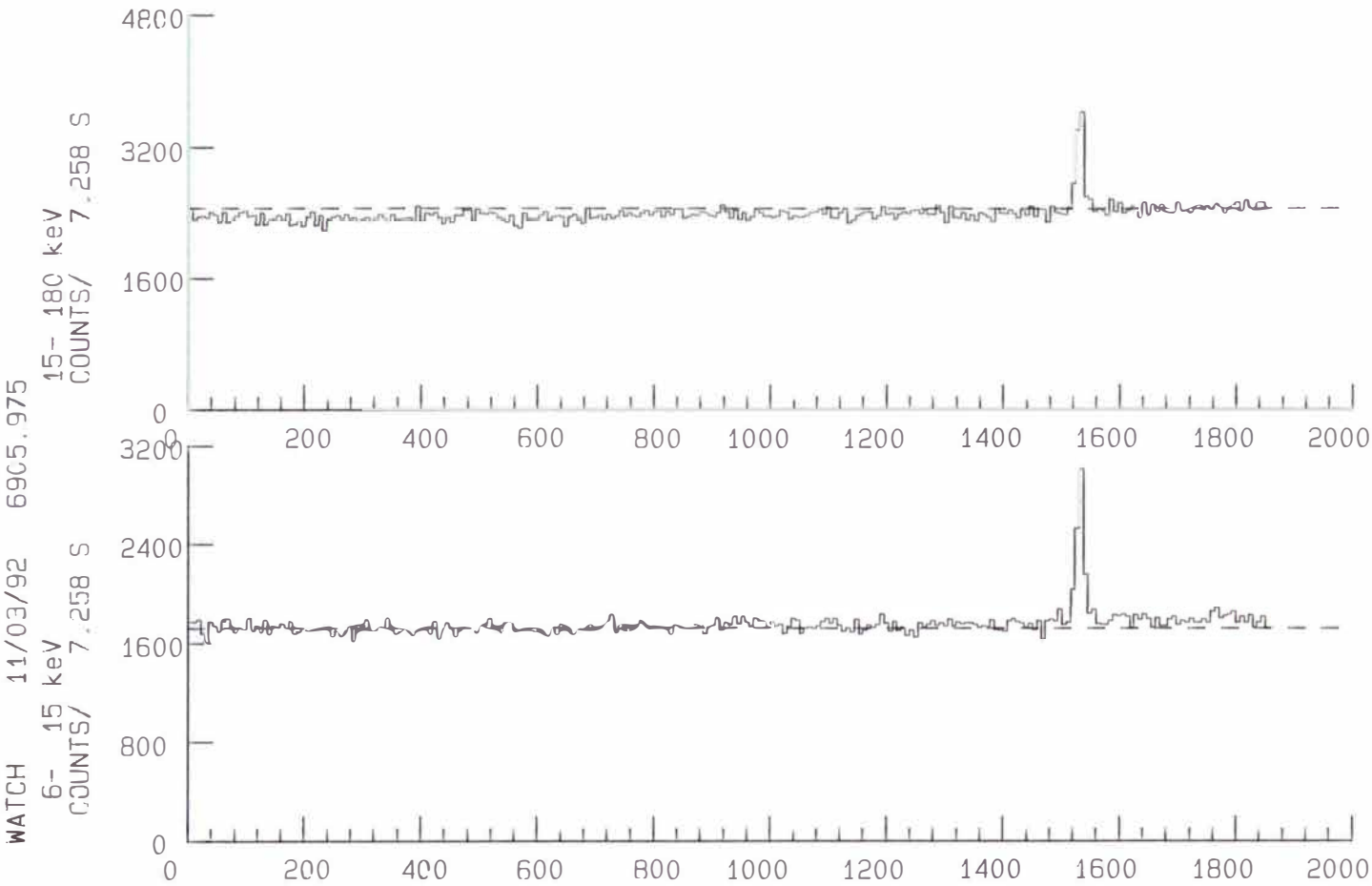
MAR 11, 1992



WATCH
11/03/92
6905.975
15- 180 keV
COUNTS/7.258 S
1600
3200
4800
0
0
200
400
600
800
1000
1200
1400
1600
1800
TIME, SECS

4/10/93

4/10/93


WATCH 11/03/92 6905.975
6- 15 keV
COUNTS/ 7.258 S
15- 180 keV
COUNTS/ 7.258 S
0
800
1600
2400
3200
1600
3200
4800
0
200
400
600
800
1000
1200
1400
1600
1800
2000

16/ 4/92

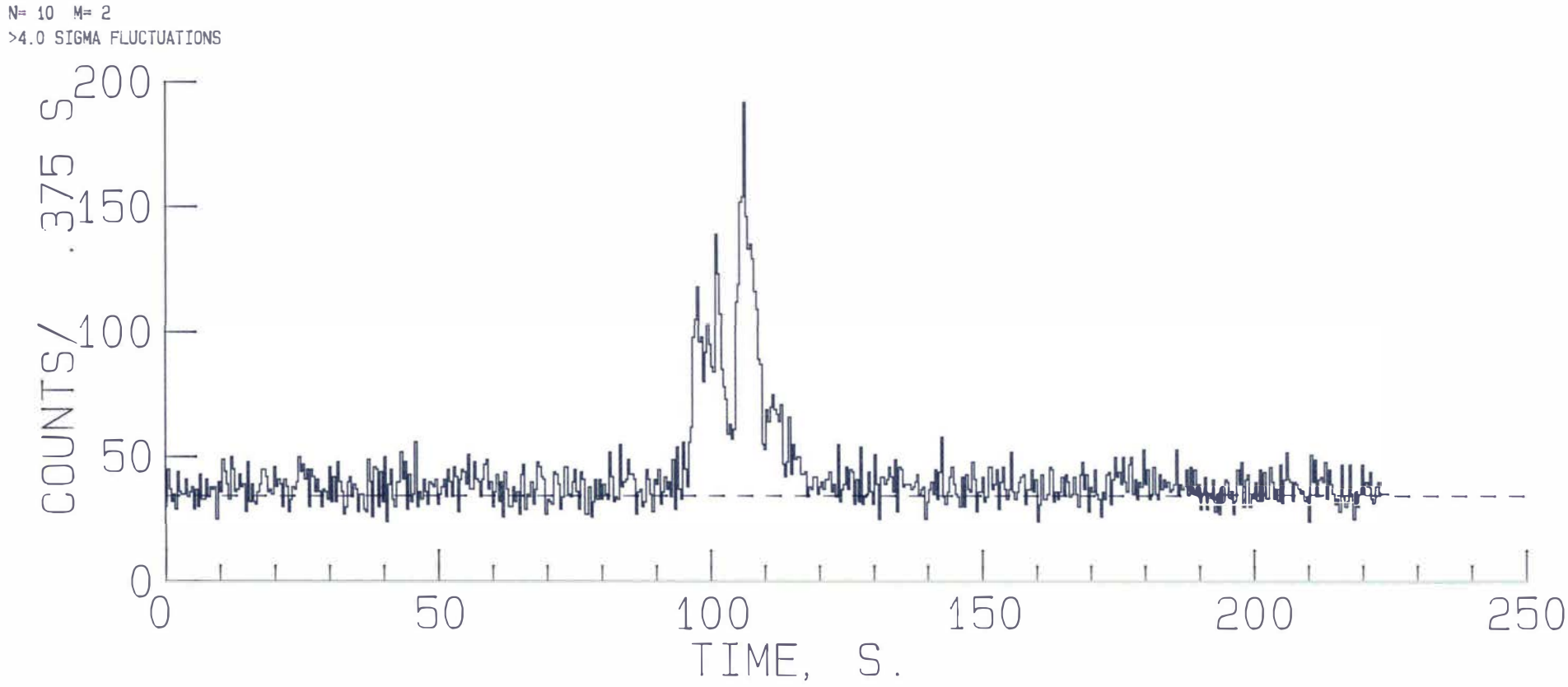
PVO-RT

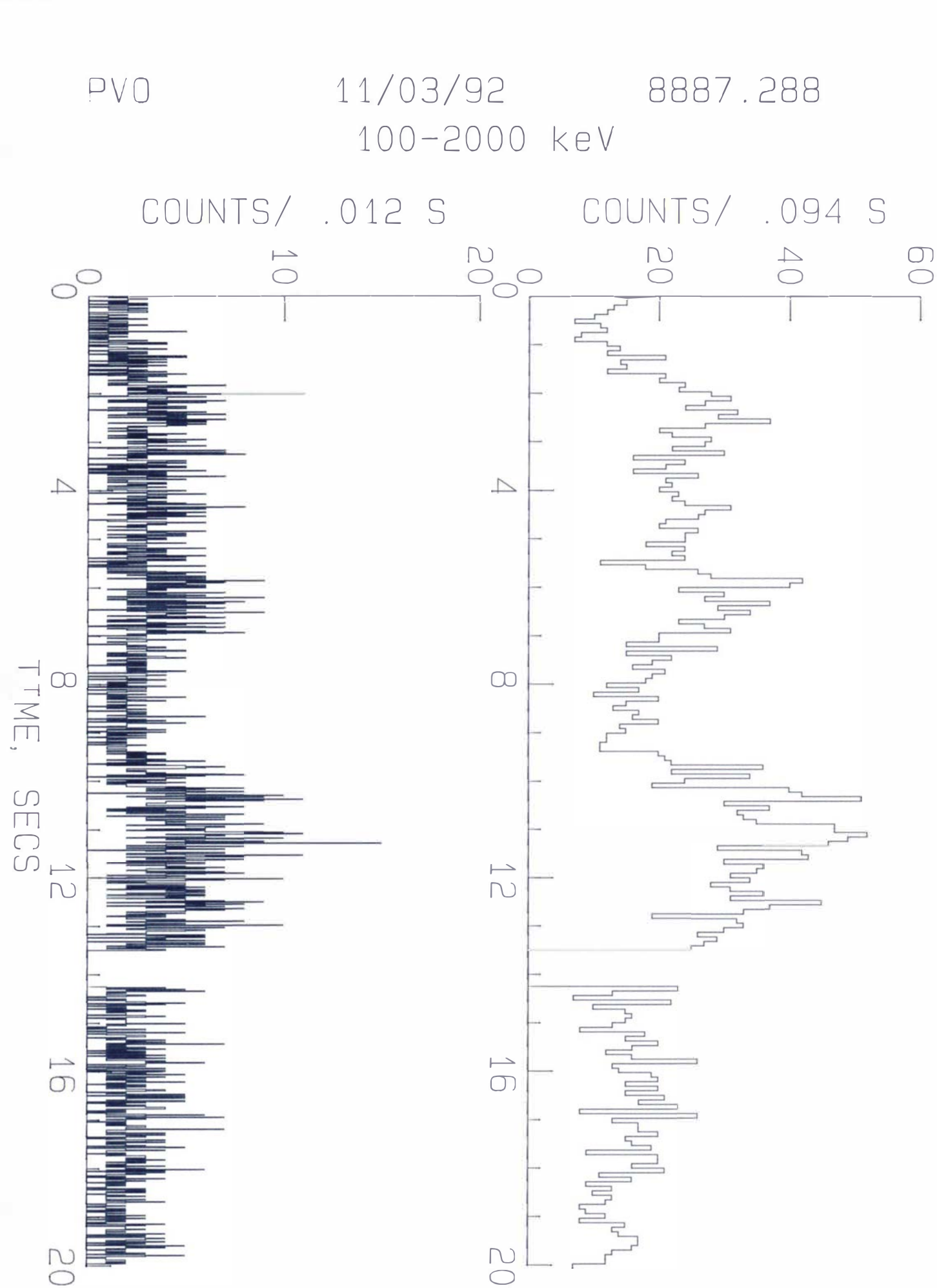
11/ 3/92

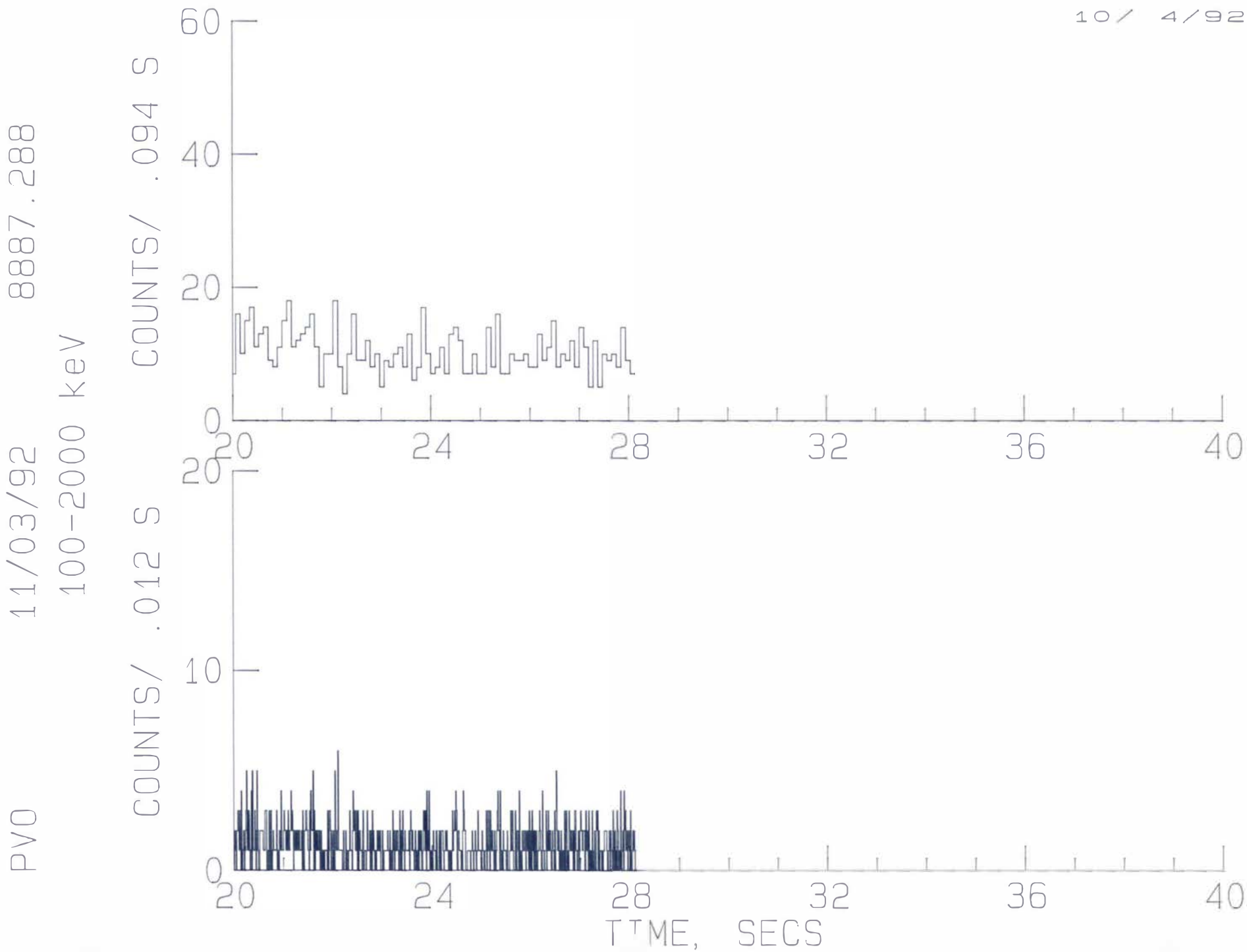
8789.180 s.

.375 S. INTERVALS REGROUPED BY 1

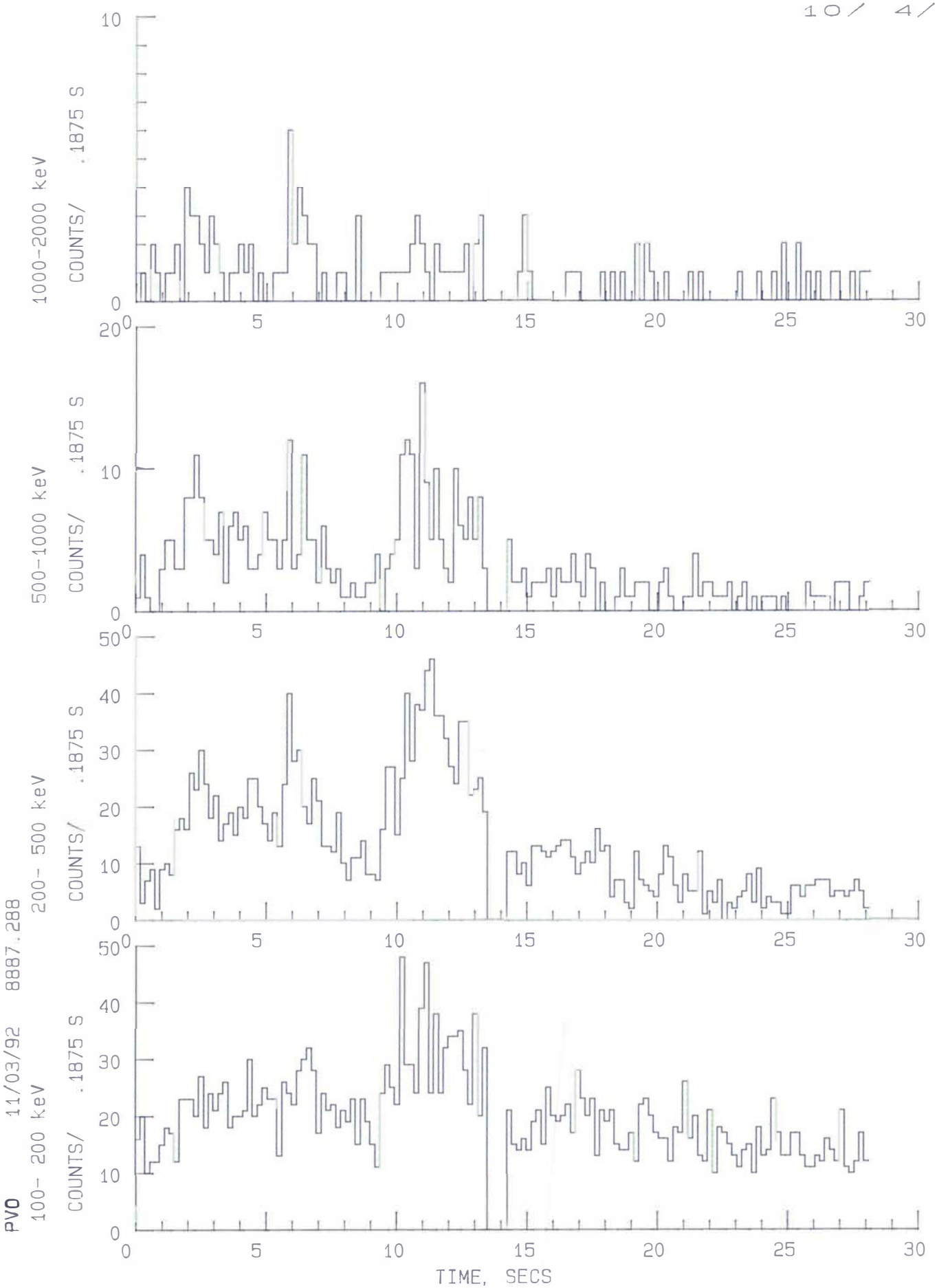
100-2000 keV

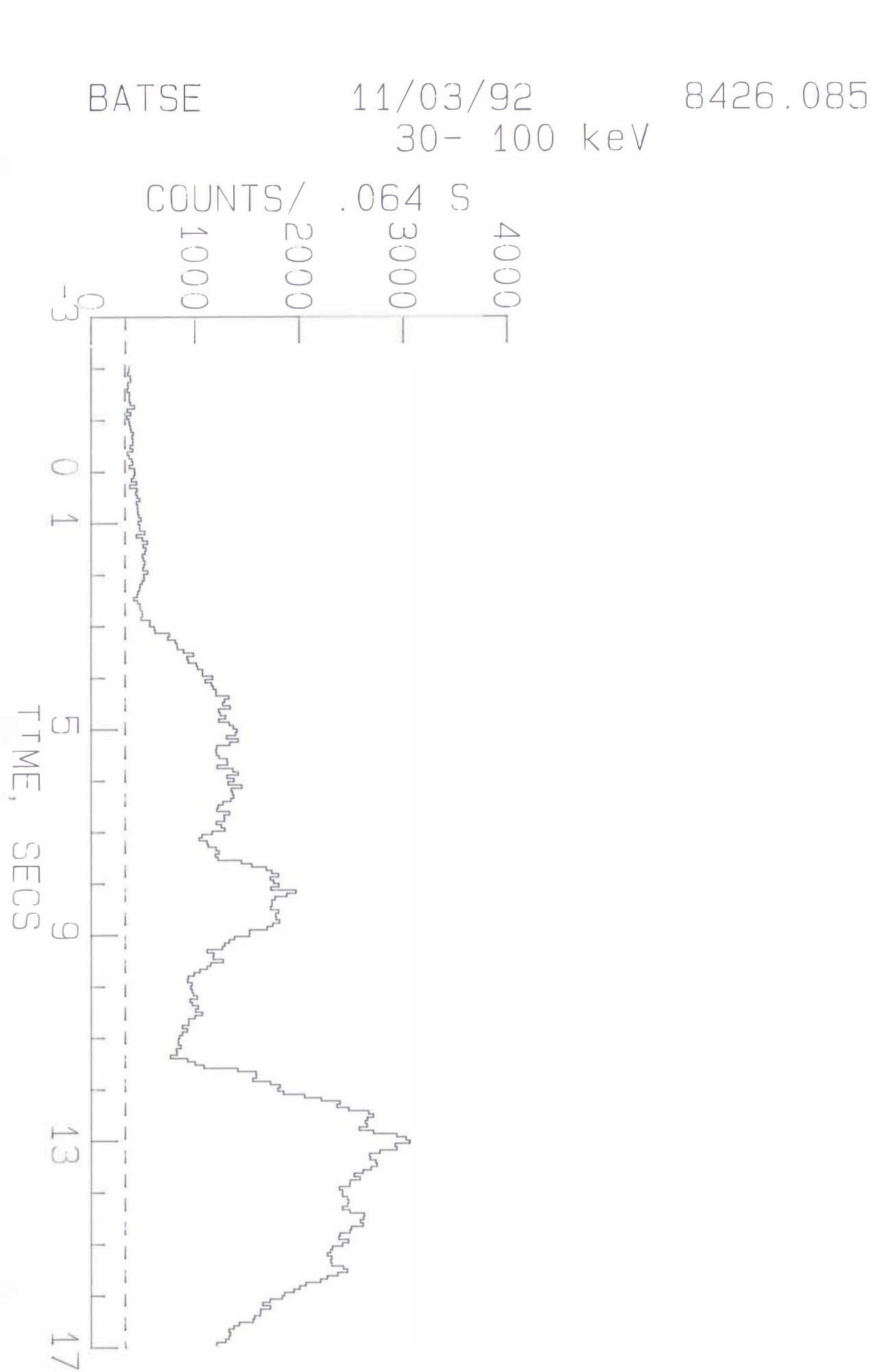



PVO
11/03/92
8887.288
100-2000 keV
COUNTS/ .012 S
COUNTS/ .094 S
0
10
20
0
20
40
60
0
4
8
12
16
20
TIME, SECS


10/ 4/92
PVO 11/03/92 8887.288
100-2000 keV
COUNTS/ .094 S
60
40
20
0
20
24
28
32
36
40
COUNTS/ .012 S
20
10
0
20
24
28
32
36
40
TIME, SECS

10/ 4/92


PVO 11/03/92 8887.288
100- 200 keV
200- 500 keV
500-1000 keV
1000-2000 keV
COUNTS/ .1875 S
TIME, SECS


BATSE 11/03/92 8426.085
30- 100 keV
COUNTS/ .064 S
1000
2000
3000
4000
-3
0
1
5
9
13
17
TIME, SECS

BATSE 11/03/92 8426.085
30- 100 keV
COUNTS/ .064 S
0
1000
2000
3000
4000
17
21
25
29
33
37
TIME, SECS

From @UCBSP.SSL.BERKELEY.EDU:ULYSSES@[28938.DECnet] Wed Mar 25 07:55:51 1992
Received: from UCBSP.SSL.BERKELEY.EDU by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA03419; Wed, 25 Mar 92 07:55:47 PST
Message-Id: <9203251555.AA03419@sunspot.ssl.berkeley.edu>
Date: Wed 25 Mar 92 07:54:13-PST
From: $C <ULYSSES@[28938.DECnet]>
To: KHURLEY@sunspot.ssl.berkeley.edu
Subject: [Resent-MM Mail] dust cloud on 10-11 march 1992
Status: R

Received: from [28938.DECnet] by UCBSP.SSL.BERKELEY.EDU via MAIL-11
with DECnet; Wed, 25 Mar 92 07:53:27-PST
Date: Wed 25 Mar 92 07:53:26-PST
From: ULYSSES@[28938.DECnet] (Ulysses DUST-Team, MPI-K, Heidelberg,
Germany)
Subject: dust cloud on 10-11 march 1992
To: "@PROJECT.DIS"@[28938.DECnet]

Subject: Dust cloud on 10-11 March 1992

Dear collegues,
as we informed you a week ago, Ulysses passed through a stream of dust particles on 10. and 11. March 1992. In order to compare our results to that of other experiments we present a short summary of the information derived from the DUST experiment: The rate of the clearly identified particles onto the sensor (0.02 m^2 spin averaged cross section) varies with time as follows: (please keep in mind that the impact rate before and after the event is about 0.014/h)

DOY70 Time	impact rate [1/h]
04-06	0.0
06-08	0.0
08-10	0.5
10-12	3.0
12-14	2.0
14-16	3.0
16-18	2.0
18-20	7.5
20-22	12.0
22-24	9.5
DOY 71	
00-02	9.0
02-04	9.0
04-06	3.0
06-08	2.0
08-10	0.0
10-12	2.0
12-14	0.0
14-16	0.0

The direction of impacts is determined from the S/C sector angle at the impact time. The boresight of DUST is rotated 161 degrees from the S/C +x-axis, where the see-sun pulse (sector 0) is generated. The exact boresight vector of DUST in S/C fixed coordinates is :
x = - 0.942, y = 0.324, z = 0.087

The corresponding sector angles of the impacts range from 280 degree to 45 degree with a mean value of 345 degree. This range of 125 degree is due to the sensor's sensitivity cone of 140 degree width. Since there is a pronounced peak in the sector distribution, the impact direction should not vary too much from the direction given by the mean value. Transformed into ecliptic coordinates (1950) the direction of the impacting dust particles results into: 253 degree longitude, 38 degree latitude.

From @UCBSP.SSL.BERKELEY.EDU:ULYSSES@[28938.DECnet] Wed Mar 25 07:55:51 1992
Received: from UCBSP.SSL.BERKELEY.EDU by sunspot.ssl.berkeley.edu (4.1/1.30.1)
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Message-Id: <9203251555.AA03419@sunspot.ssl.berkeley.edu>
Date: Wed 25 Mar 92 07:54:13-PST
From: $C <ULYSSES@[28938.DECnet]>
To: KHURLEY@sunspot.ssl.berkeley.edu
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Received: from [28938.DECnet] by UCBSP.SSL.BERKELEY.EDU via MAIL-11
with DECnet; Wed, 25 Mar 92 07:53:27-PST
Date: Wed 25 Mar 92 07:53:26-PST
From: ULYSSES@[28938.DECnet] (Ulysses DUST-Team, MPI-K, Heidelberg,
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Subject: dust cloud on 10-11 march 1992
To: "@PROJECT.DIS"@[28938.DECnet]

Subject: Dust cloud on 10-11 March 1992

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10-12	3.0
12-14	2.0
14-16	3.0
16-18	2.0
18-20	7.5
20-22	12.0
22-24	9.5

DOY 71	
00-02	9.0
02-04	9.0
04-06	3.0
06-08	2.0
08-10	0.0
10-12	2.0
12-14	0.0
14-16	0.0

The direction of impacts is determined from the S/C sector angle at the impact time. The boresight of DUST is rotated 161 degrees from the S/C +x-axis, where the see-sun pulse (sector 0) is generated. The exact boresight vector of DUST in S/C fixed coordinates is :
x = - 0.942, y = 0.324, z = 0.087

The corresponding sector angles of the impacts range from 280 degree to 45 degree with a mean value of 345 degree. This range of 125 degree is due to the sensor's sensitivity cone of 140 degree width. Since there is a pronounced peak in the sector distribution, the impact direction should not vary too much from the direction given by the mean value. Transformed into ecliptic coordinates (1950) the direction of the impacting dust particles results into: 253 degree longitude, 38 degree latitude.

The masses of the particles show a trend to increase with time (about a factor 2). The speed is constant with time within the uncertainty of the measurement.

Three different kinds of correlation with other experiments are posible:

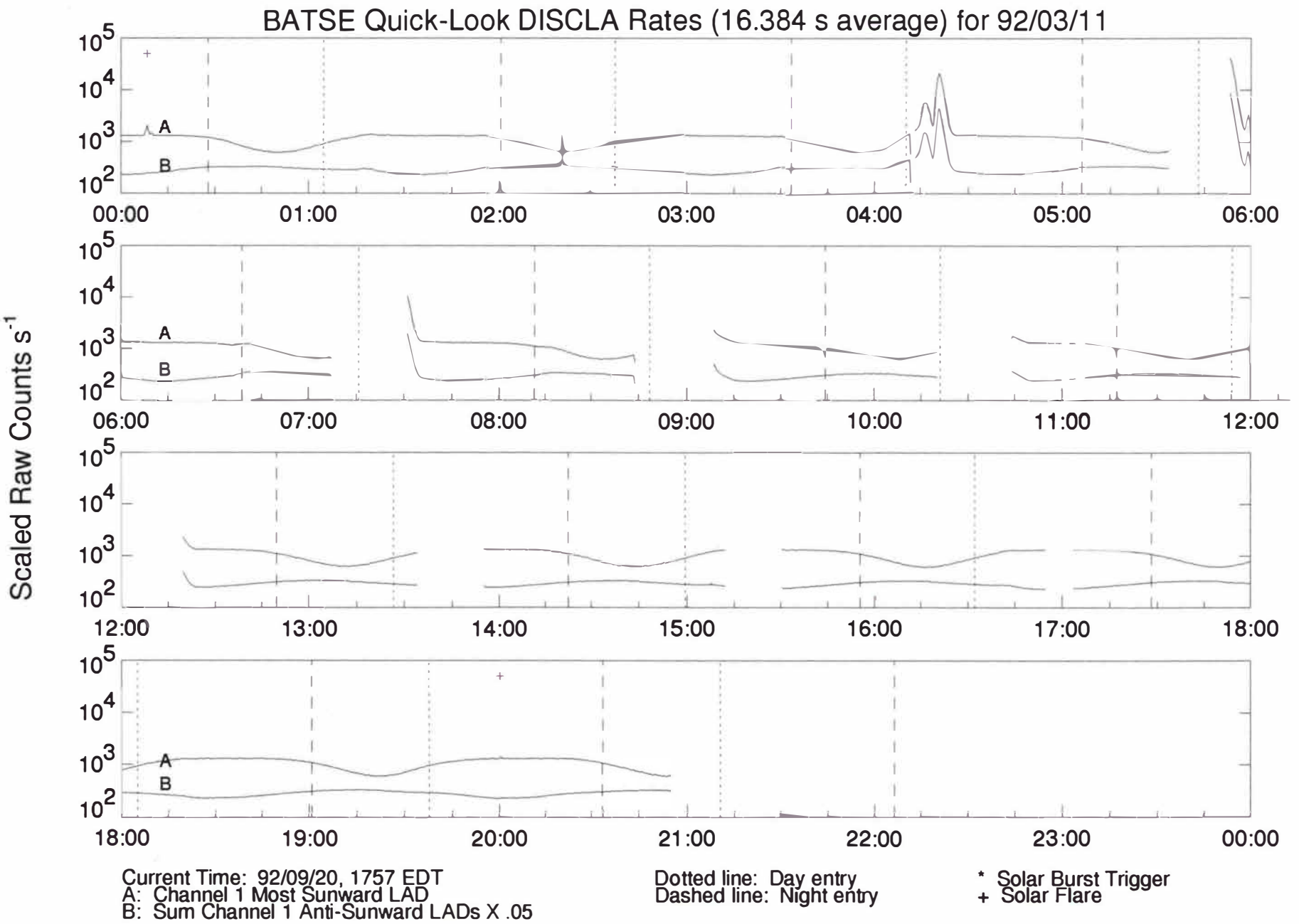
1) The dust particles generate plasma upon the impact on the experiments or S/C mainframe. This plasma may be detected by the corresponding experiments. This should occur in correlation to the rates given above although one has to keep in mind that the geometrical factor of the S/C is much larger than that of the DUST sensor.
   The other experiments may be subject to a higher noise level due to the plasma or to direct impacts on their sensors. These events should occur also during the time period given above.

2) The mass dispersion supports the assumption of a comet tail. This would mean that the plasma tail of the comet should have been crossed on the small dust particle side, which means in the time range from March 8. to 10. This may be seen in the magnetometer, plasma wave or solar wind experiments data. (or even by other experiments?)

3) The particles seem to be very small (submicron) and very fast (hyperbolic speed cannot be excluded). If the speed is that high (50km/s for instance) the particles are coming from a direction close to Jupiter (+/- 20 degree) and may be generated by Jupiter itself. (Speeds that high may be explained by coupling of the charged dust particles to Jupiter's magnetosphere.) If so, one would have to look for particluar magnetic events on Jupiter about 9 days before Ulysses encountered the dust cloud (9 days is the flight time with 50 km/s from Jupiter to the S/C position on 10 Mar 1992.)

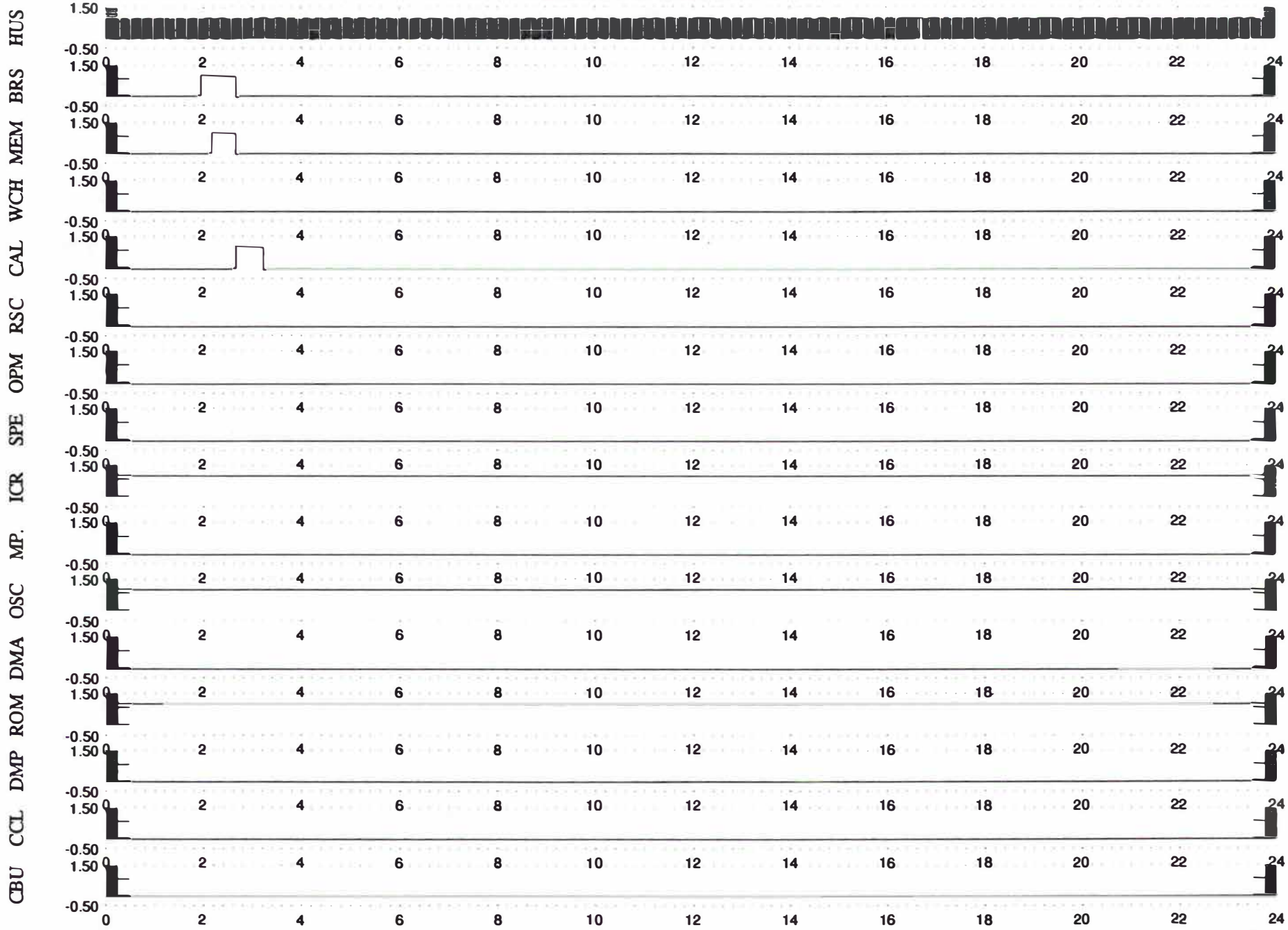
We are anxious to your results and comments
E. Gruen
M. Baguhl

Distribution:
++++++++++++
Balogh
Bame
Gloeckler
Geiss
Lanzarotti
Keppler
Simpson
Stone
Hurley
Sommer
Wenzel
Marsden
Angold
Smith


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/11
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1757 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 71, year 1992 to day 71, year 1992 4/15/92

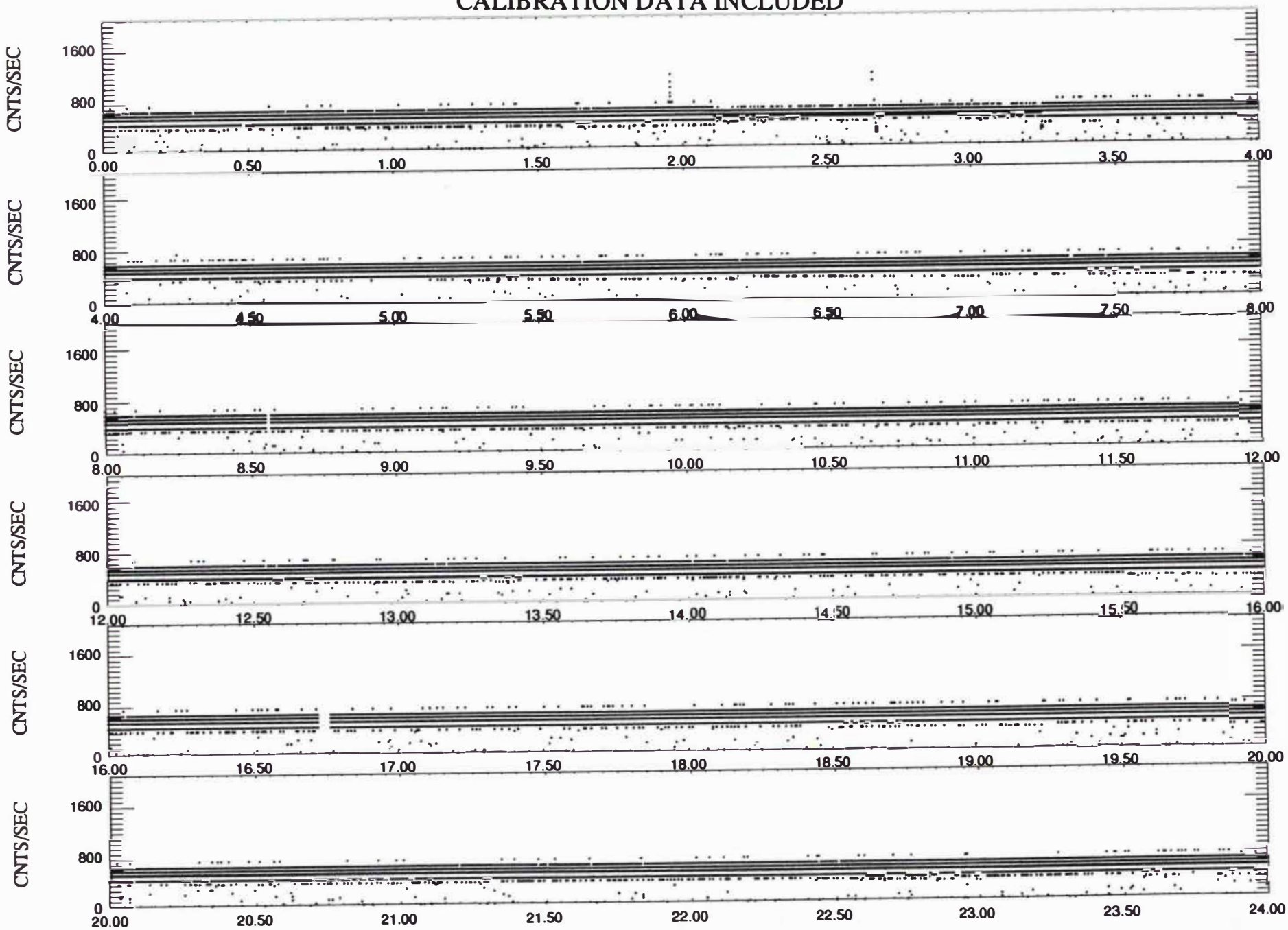
BURST NUMBER 14



UNIVE AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 71, year 1992 to day 71, year 1992 4/15/92

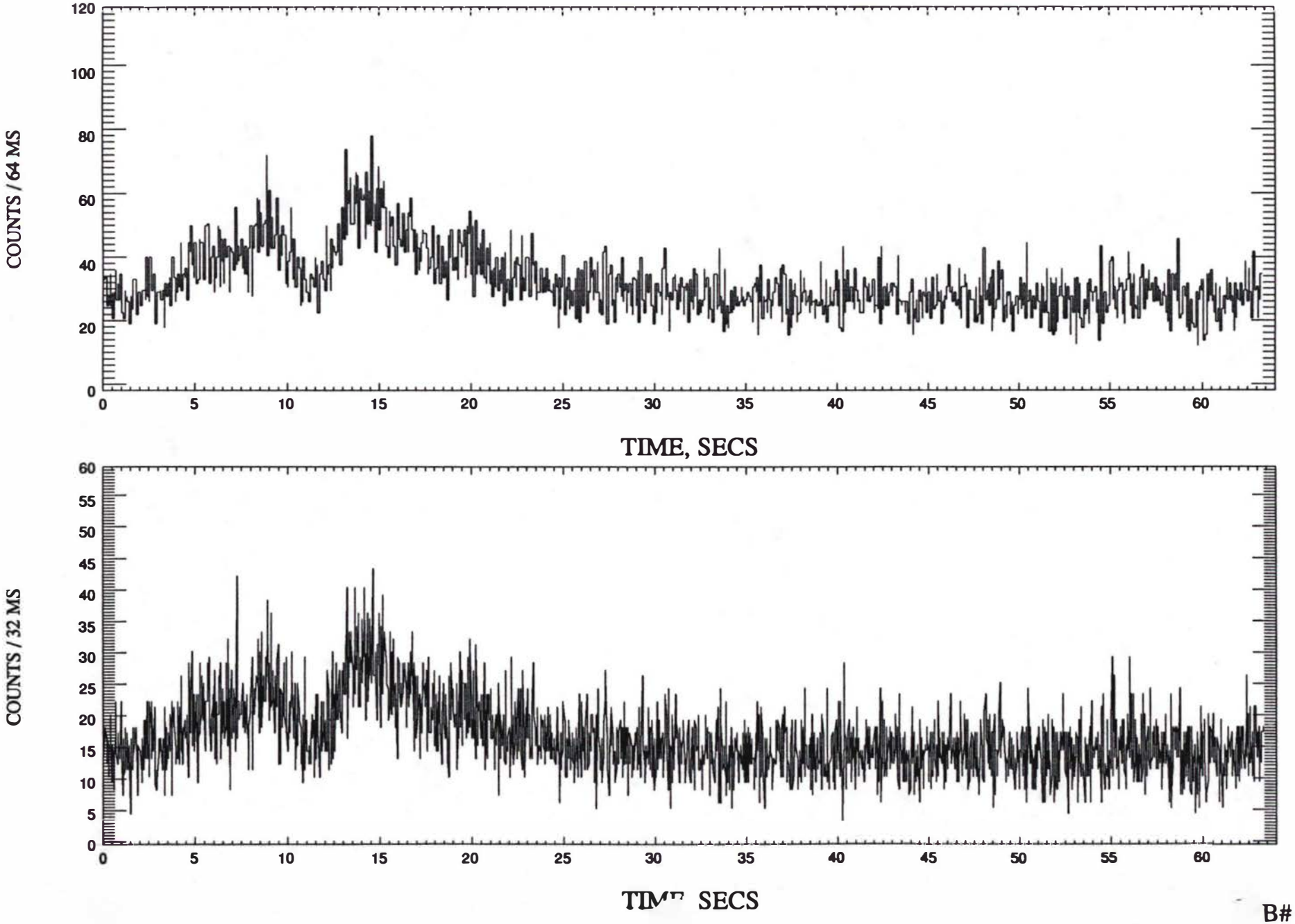
CALIBRATION DATA INCLUDED



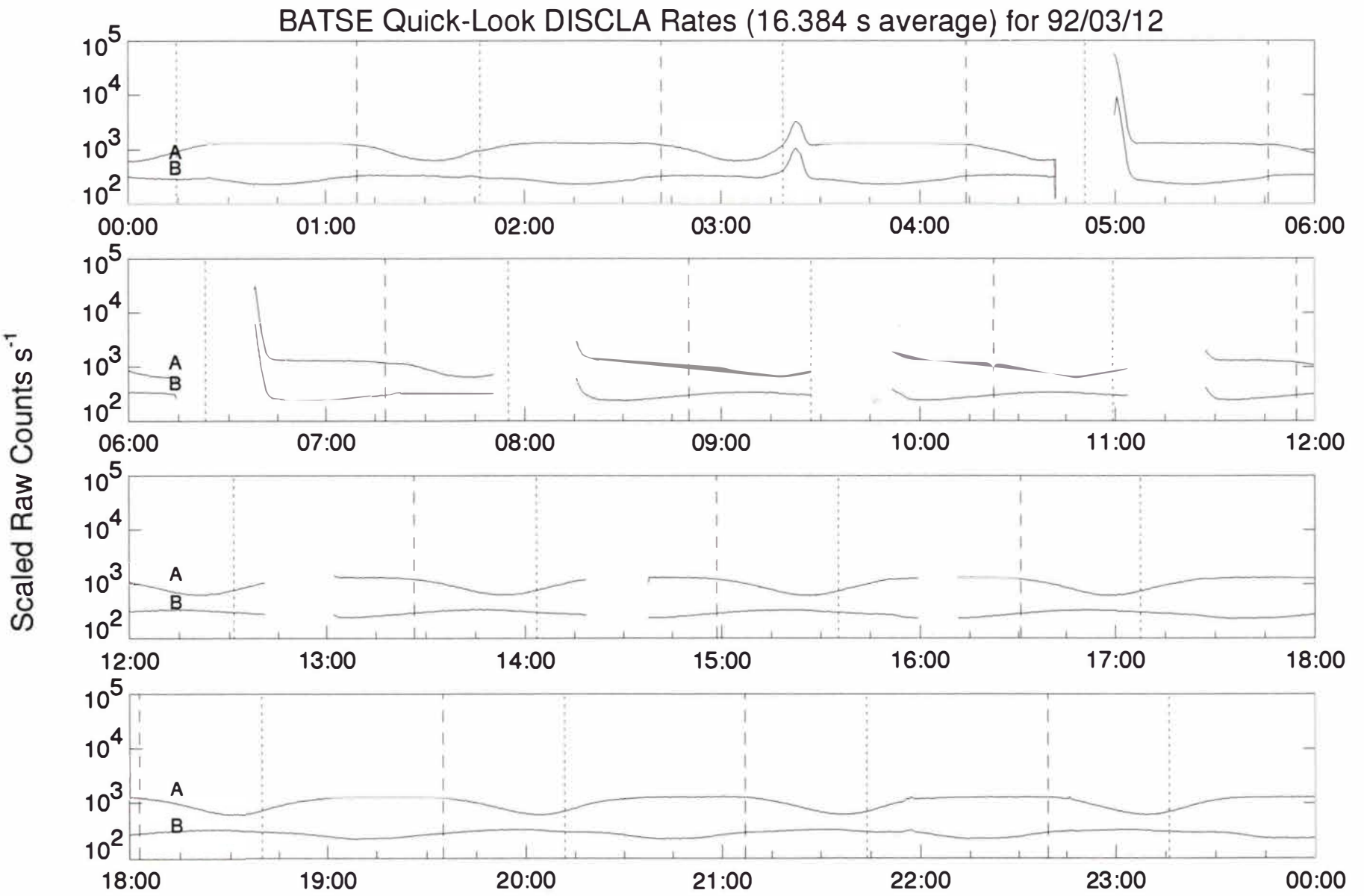
UNIVERSAL TIME

HUS 2A TRIGGERED DATA EDR day 71, year 1992 5/6/92

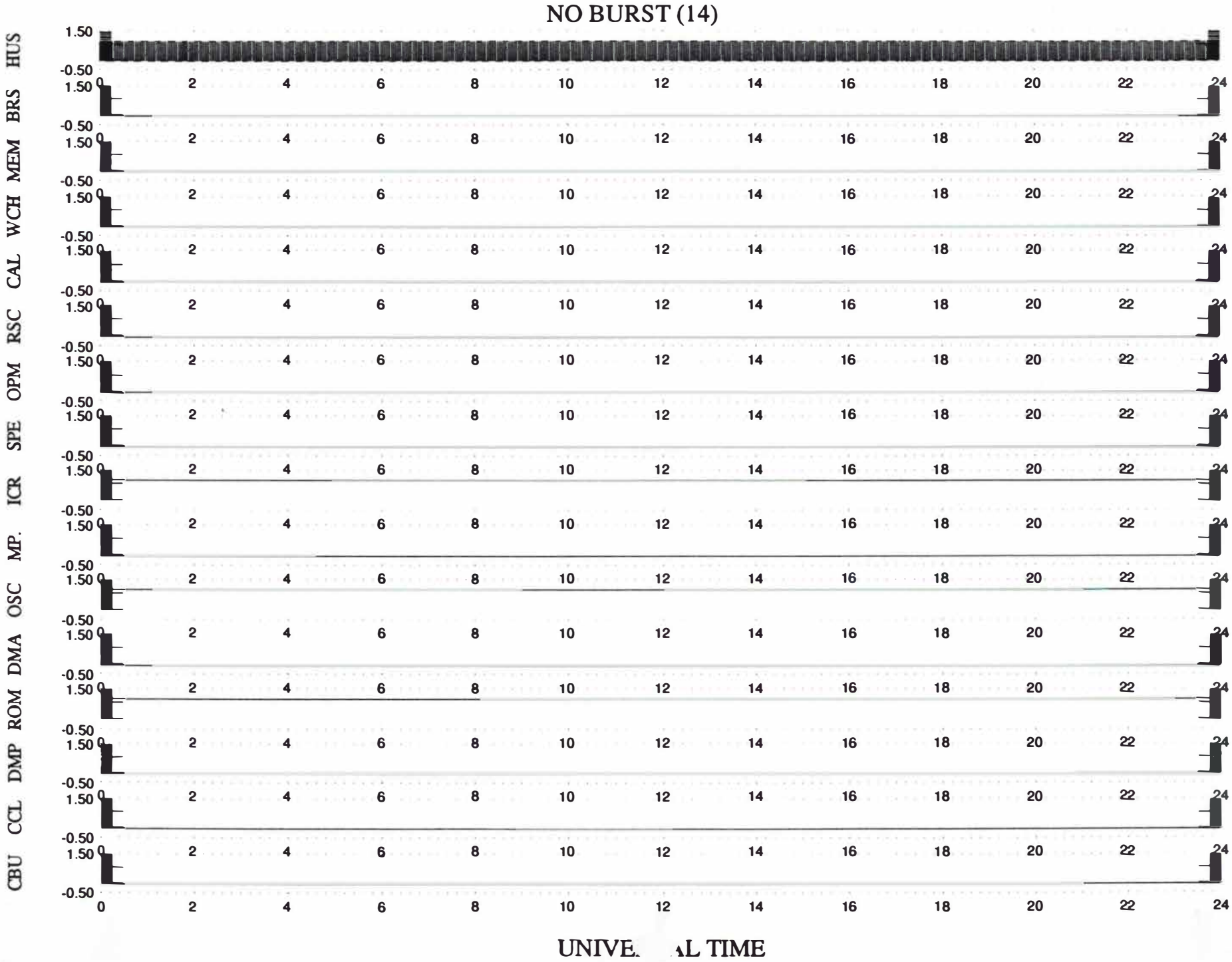
Burst Counter 14 at UT= 1.955018573337 h= 7038.067 s



B# 1

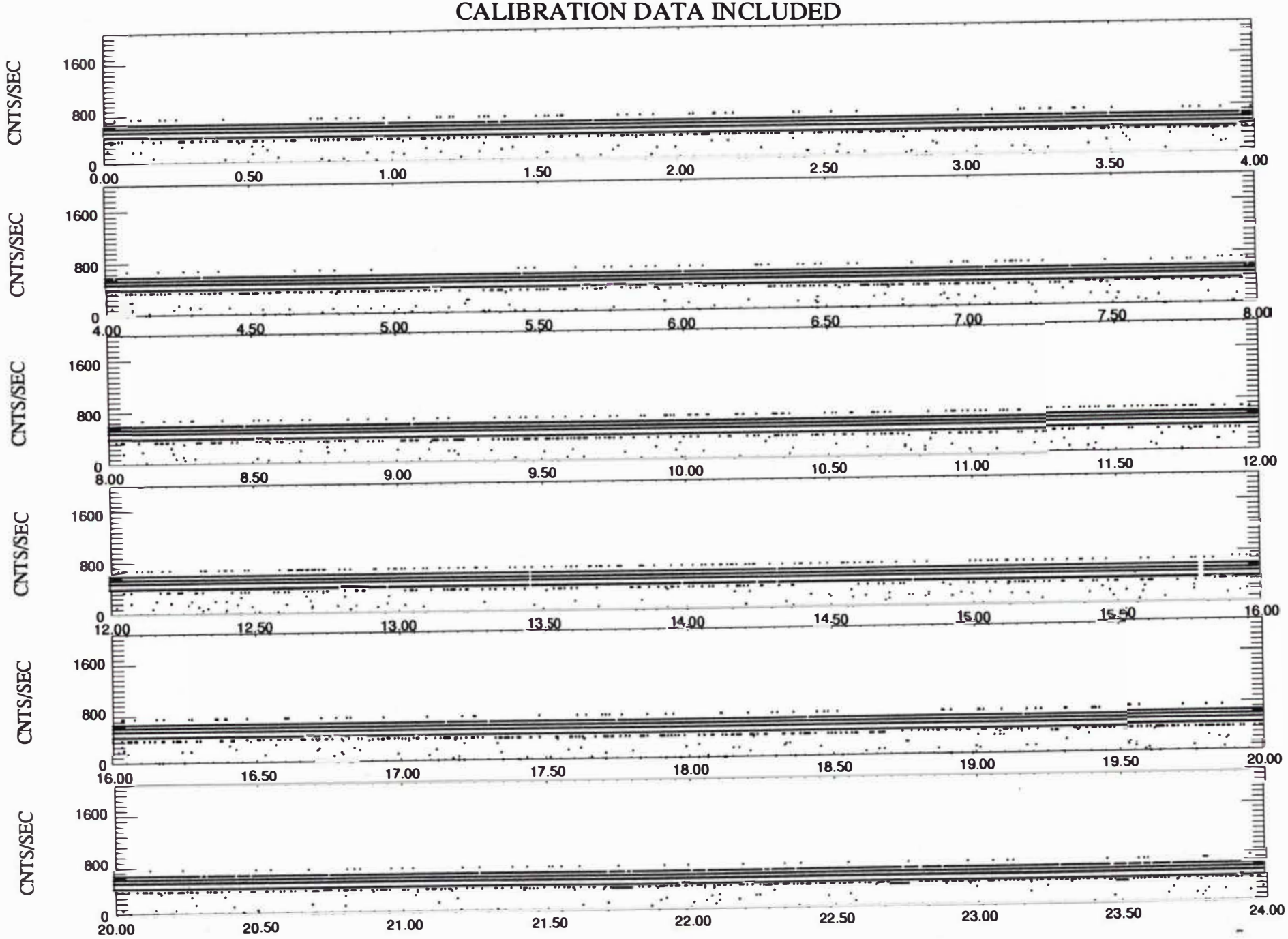

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/12
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1759 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 72, year 1992 to day 72, year 1992 4/15/92

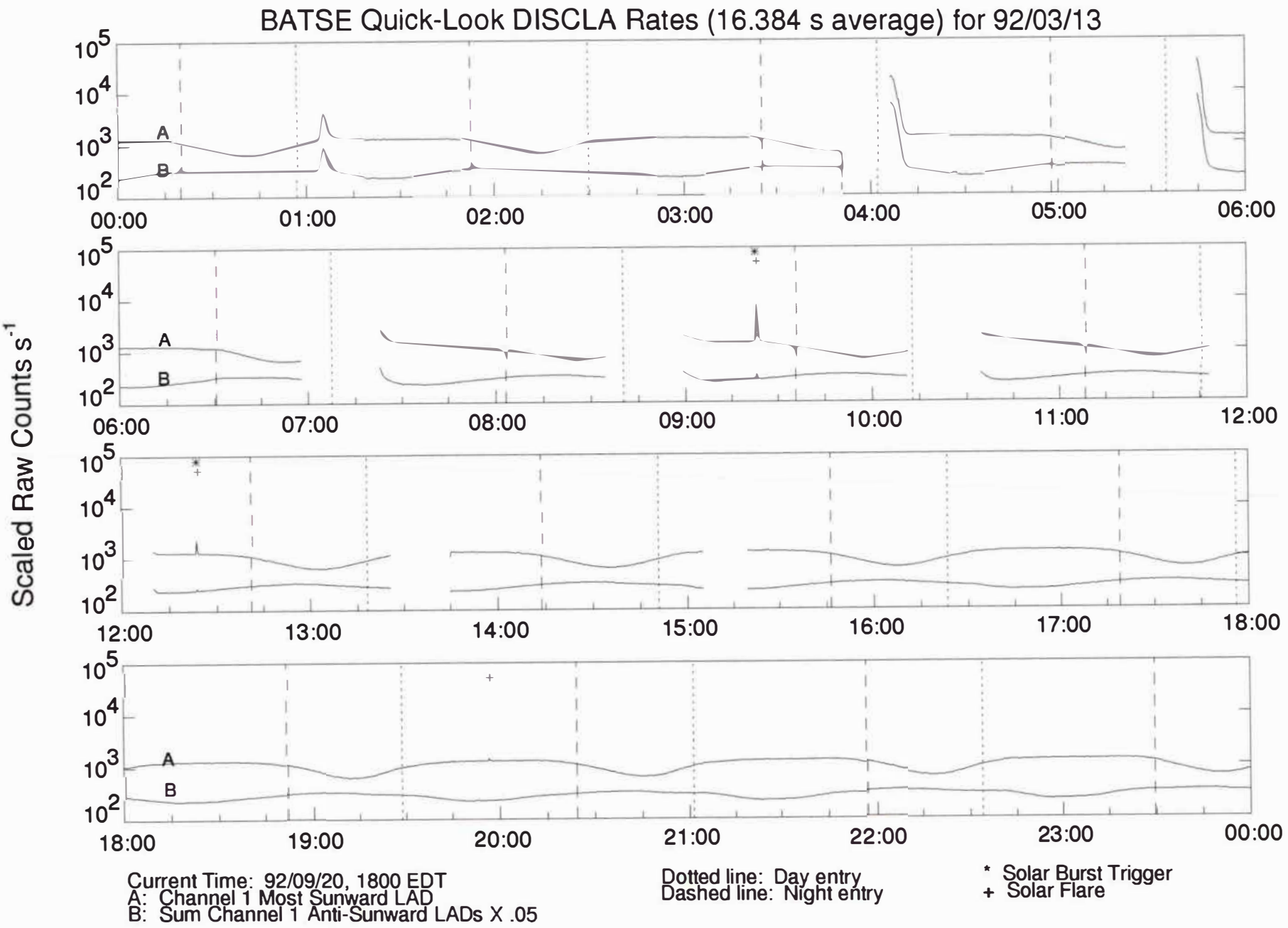


HUS 2A, MODE 1, NOT AVERAGED EDR day 72, year 1992 to day 72, year 1992 4/15/92

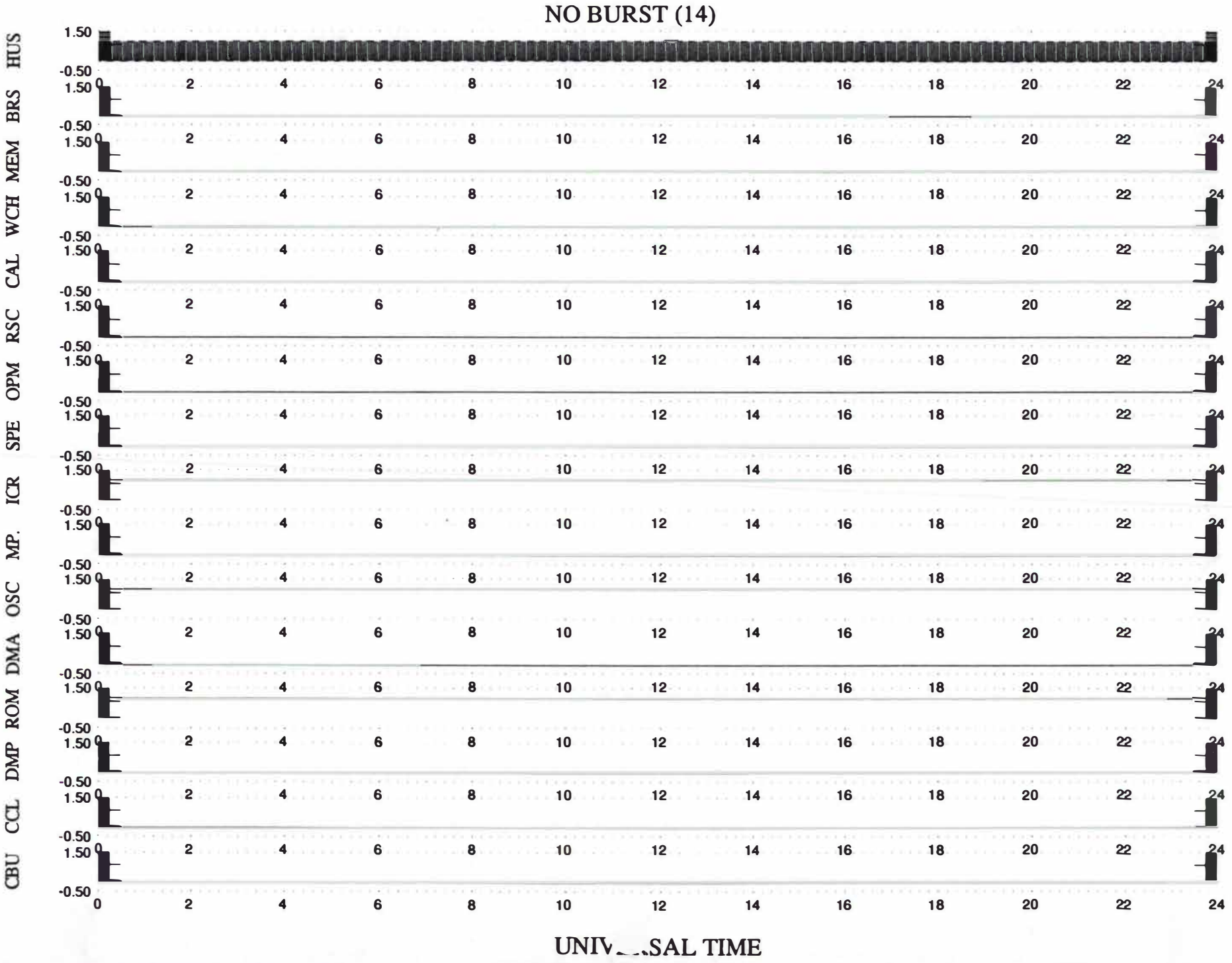
CALIBRATION DATA INCLUDED



UNIVE AL TIME

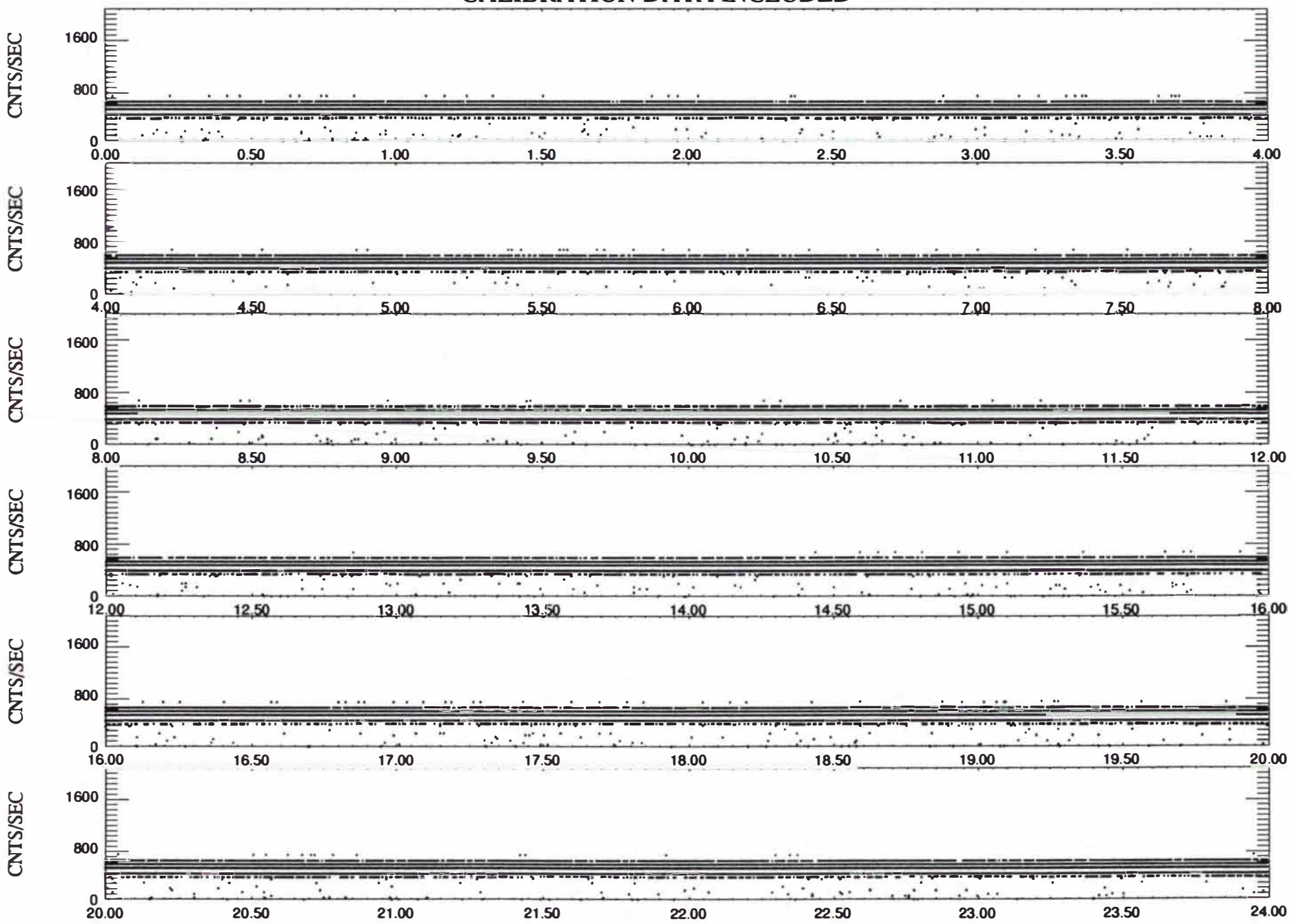

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/13
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1800 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 73, year 1992 to day 73, year 1992 4/15/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 73, year 1992 to day 73, year 1992 4/15/92

CALIBRATION DATA INCLUDED



UNIVERSAL TIME

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1479
EVENT OF 1992 MAR 14 DAY OF YEAR= 74
EVENT CROSSING TIME AT BATSE      : 19238. S. OR 05:20:37.7
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  83.300  -65.100
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 14/ 3/  92 IS:
RA=  155.872 DEC=     9.193 DIST=     4.448 AU
BATSE-ULYSSES DISTANCE =  665489616. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 88.83 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=    45.35 SECS.
CROSSING TIME AT ULYSSES     IS 19283. S. OR 05:21:23.1 +/-  436.01 SECONDS
```

NO

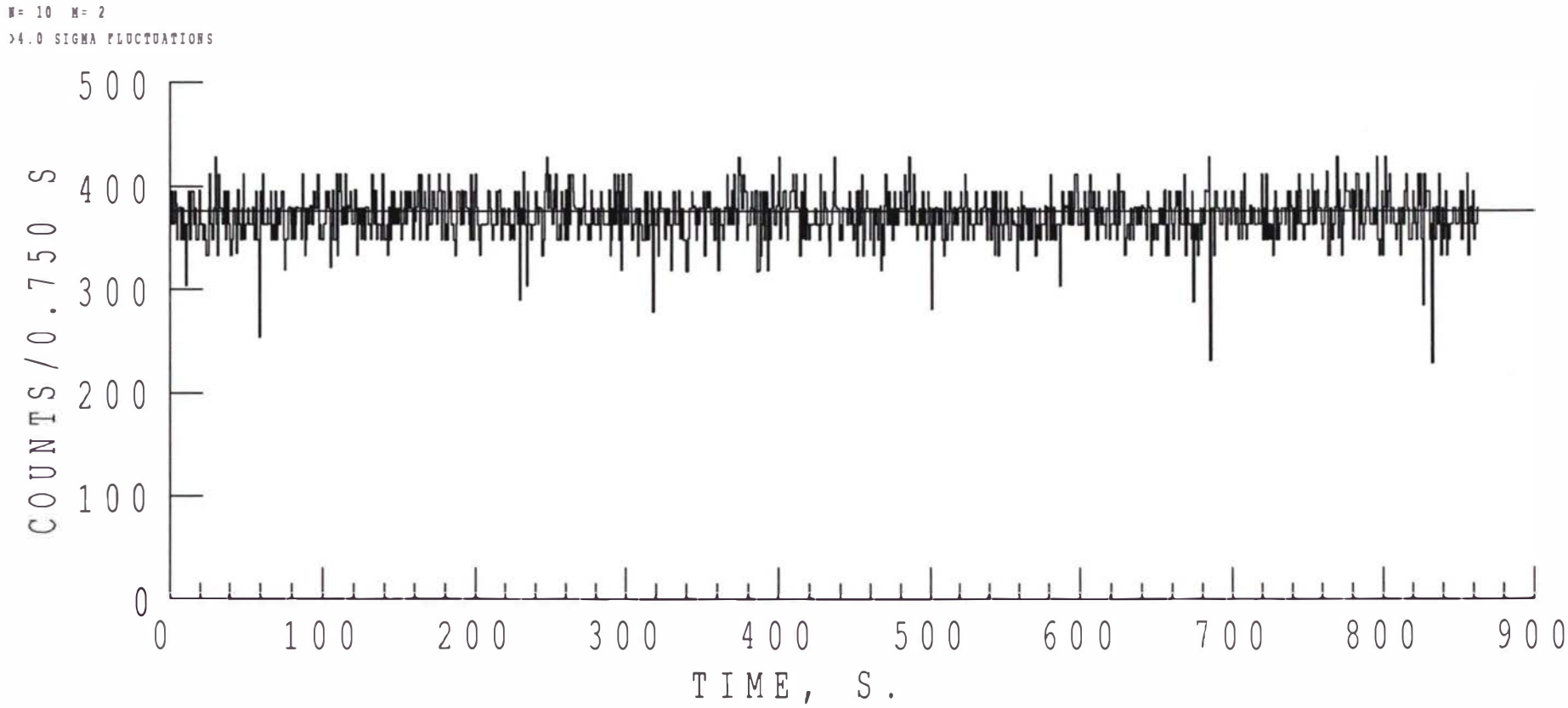
7/ 6/94

ULYSSES RT

14/ 3/92 18864.146 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1480
EVENT OF 1992 MAR 14 DAY OF YEAR= 74
EVENT CROSSING TIME AT BATSE      : 21748. S. OR 06:02:27.7
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 242.100    -2.500
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 14/ 3/  92 IS:
RA=  155.872 DEC=     9.193 DIST=     4.448 AU
BATSE-ULYSSES DISTANCE =  665489616. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 93.32 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -128.55 SECS.
CROSSING TIME AT ULYSSES     IS 21619. S. OR 06:00:19.1 +/-  432.80 SECONDS
```

No

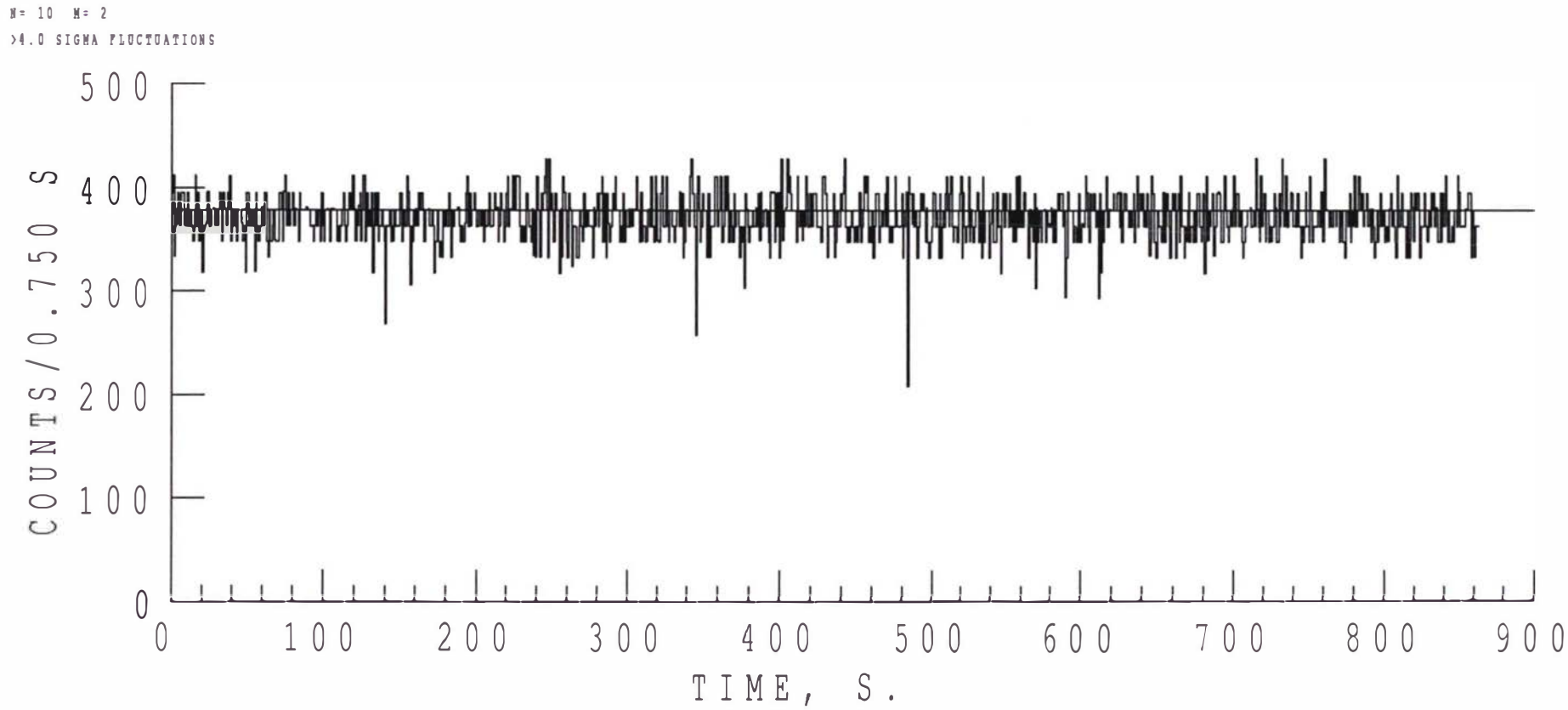
7/ 6/94

ULYSSES RT

14/ 3/92 21204.186 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1481
EVENT OF 1992 MAR 14 DAY OF YEAR= 74
EVENT CROSSING TIME AT BATSE      : 34912. S. OR 09:41:51.8
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 358.100  -61.600
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 14/ 3/  92 IS:
RA=  155.872 DEC=     9.193 DIST=     4.448 AU
BATSE-ULYSSES DISTANCE =  665489616. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 54.89 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1276.76 SECS.
CROSSING TIME AT ULYSSES    IS 36189. S. OR 10:03:08.6 +/-  384.66 SECONDS
```

NO

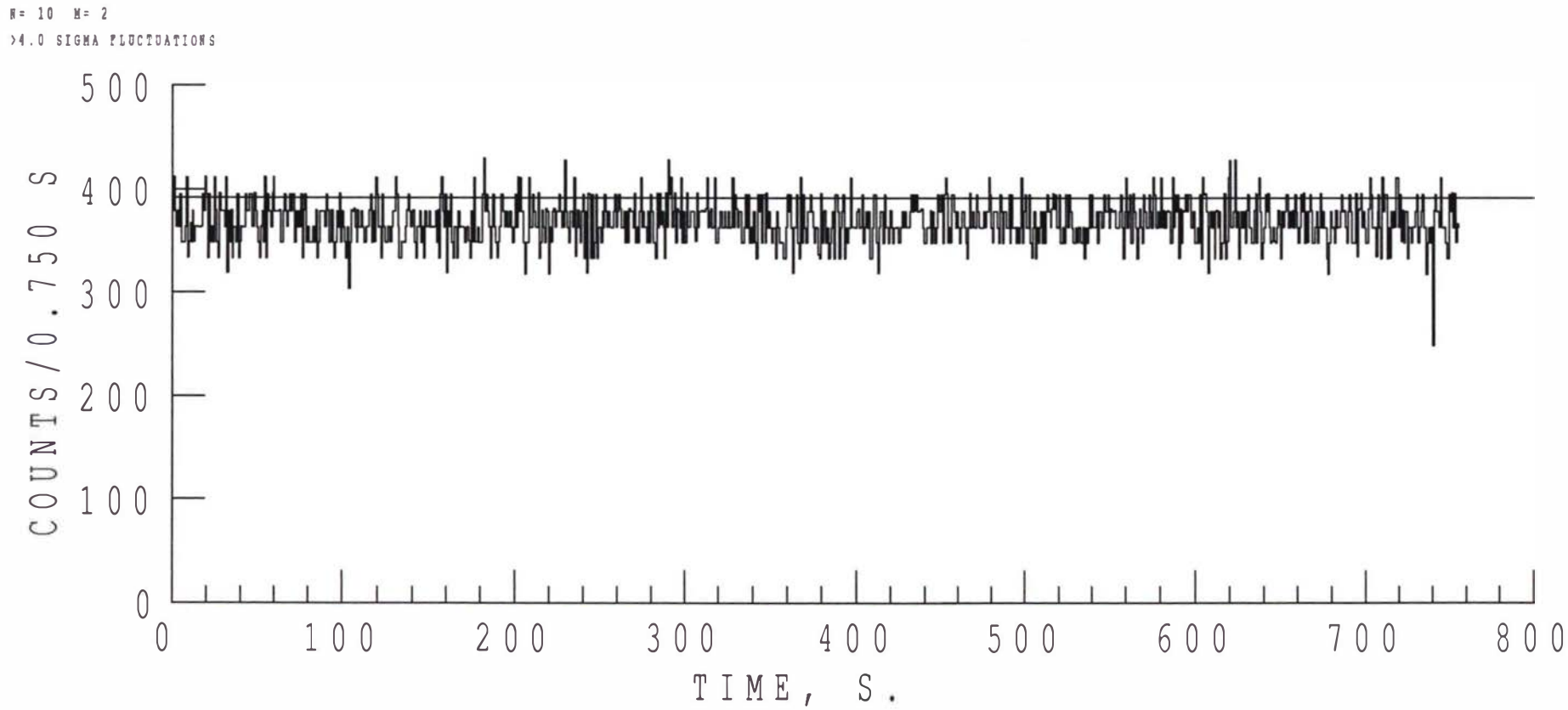
7/ 6/94

ULYSSES RT

14/ 3/92 35820.188 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1482
EVENT OF 1992 MAR 14 DAY OF YEAR= 74
EVENT CROSSING TIME AT BATSE      : 62489. S. OR 17:21:29.1
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 263.600   32.200
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 14/ 3/  92 IS:
RA=  155.872 DEC=     9.193 DIST=     4.448 AU
BATSE-ULYSSES DISTANCE =  665489616. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 80.26 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  375.65 SECS.
CROSSING TIME AT ULYSSES    IS 62865. S. OR 17:27:44.8 +/-  435.54 SECONDS
```

ND

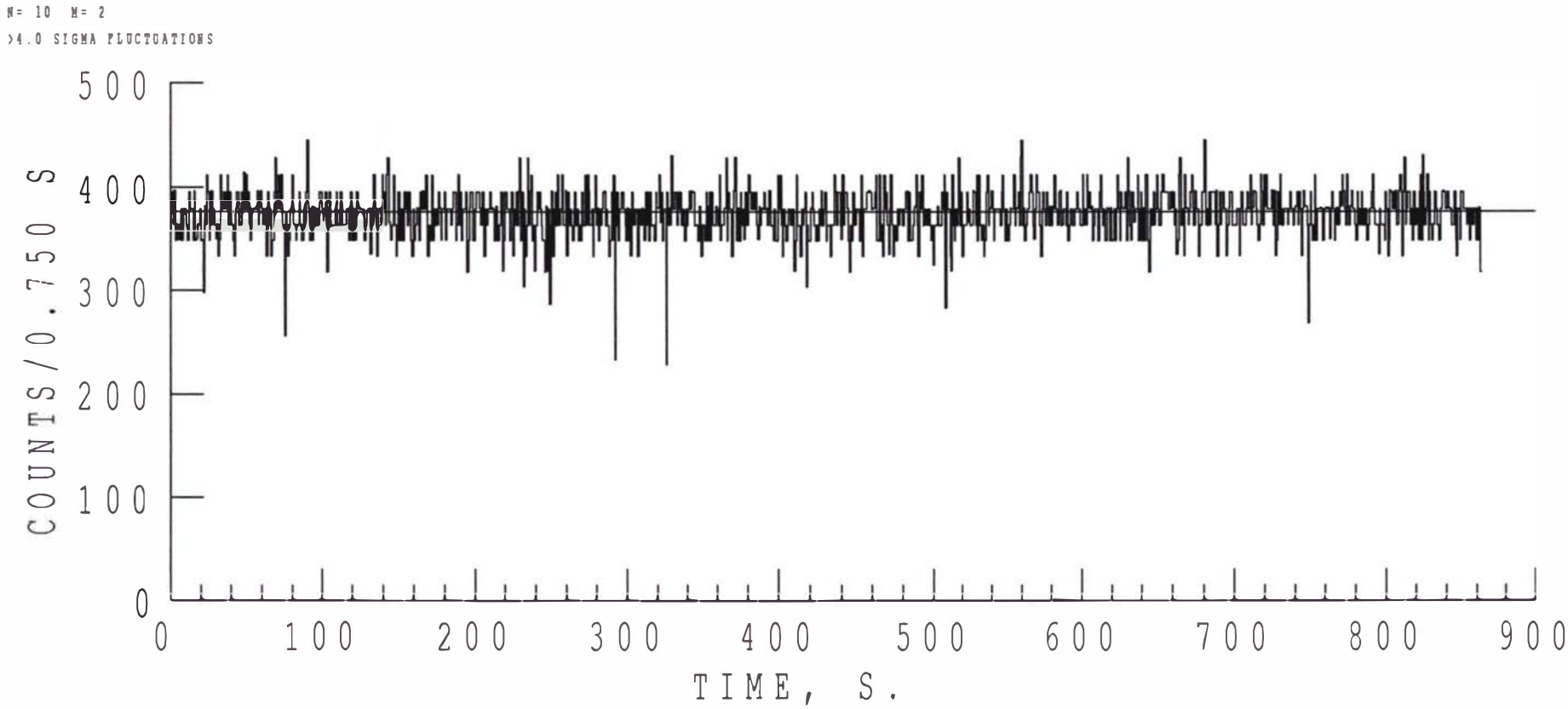
7/ 6/94

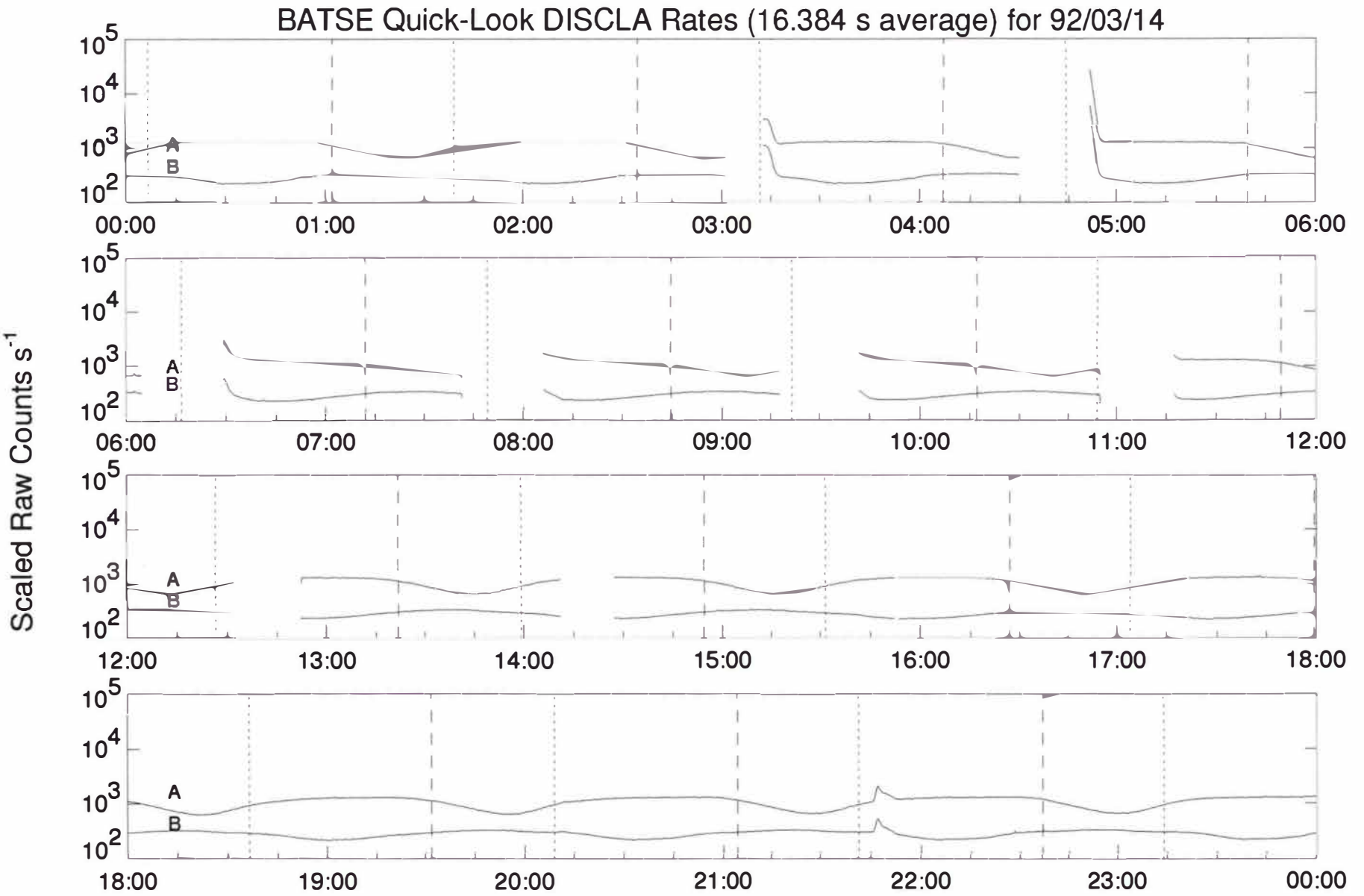
ULYSSES RT

14/ 3/92 62424.152 s

0.250 S INTERVALS REGROUPED BY 3

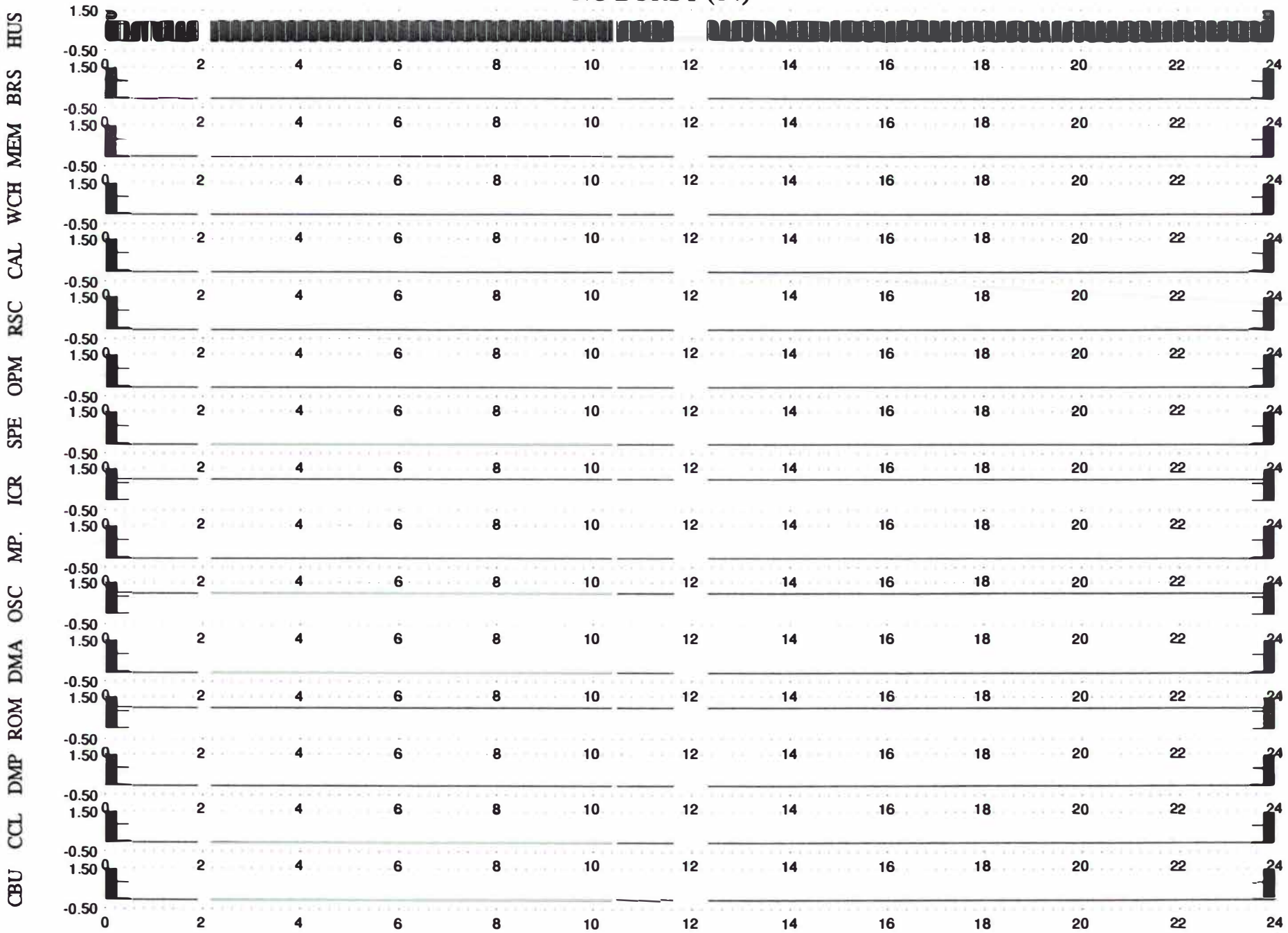
0- 0 keV




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/14
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1801 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 74, year 1992 to day 74, year 1992 4/15/92

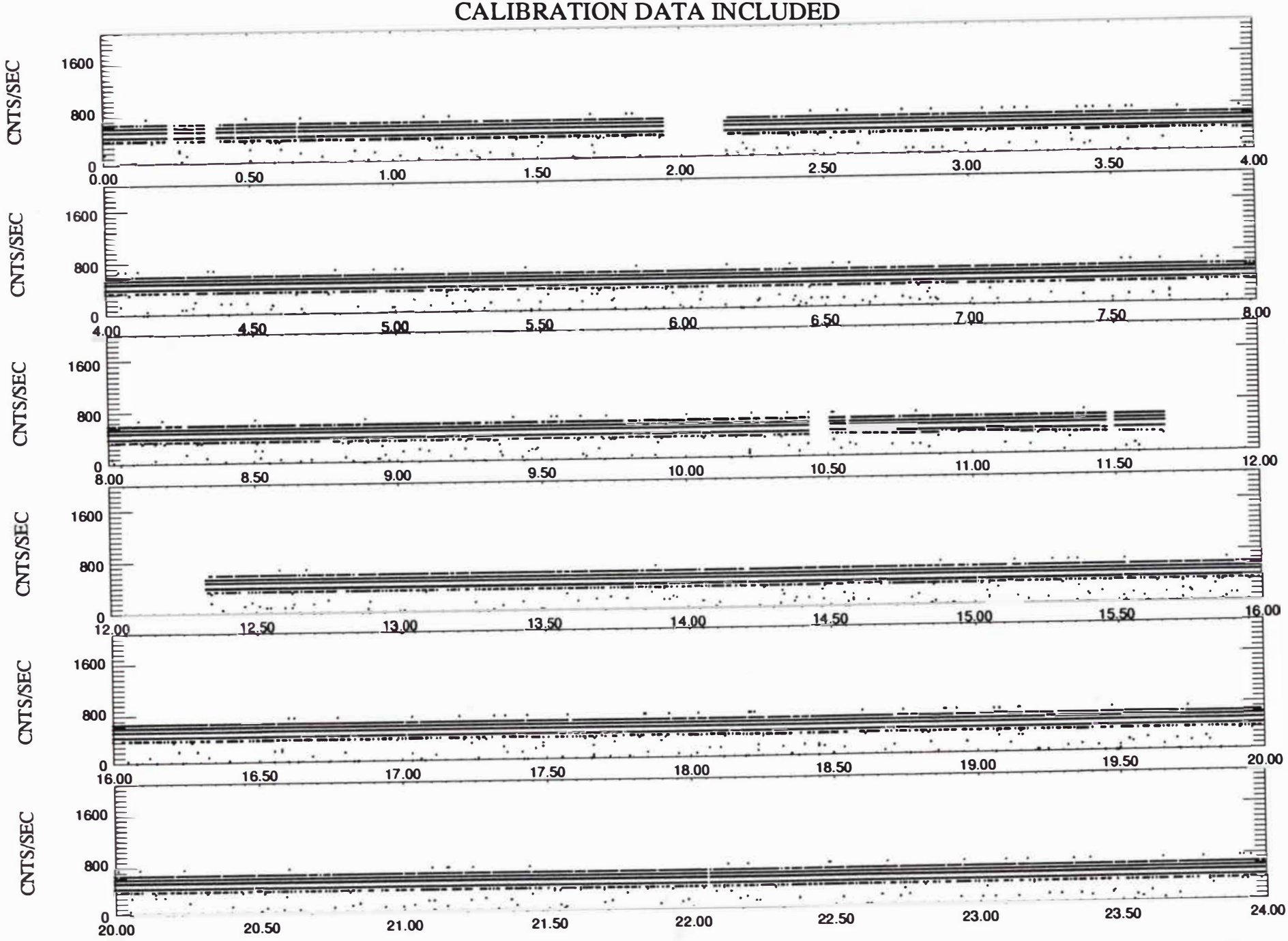
NO BURST (14)



UNIV. AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 74, year 1992 to day 74, year 1992 4/15/92

CALIBRATION DATA INCLUDED



UNIV. .AL TIME

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          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1484
EVENT OF 1992 MAR 15 DAY OF YEAR= 75
EVENT CROSSING TIME AT BATSE     : 15567. S. OR 04:19:27.2
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 319.400  -22.300
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 15/ 3/  92 IS:
RA=  155.660 DEC=    9.211 DIST=    4.454 AU
BATSE-ULYSSES DISTANCE =  666272024. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 20.37 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2083.52 SECS.
CROSSING TIME AT ULYSSES    IS 17651. S. OR 04:54:10.7 +/-  215.92 SECONDS
```

TRIGGER

From root Fri Feb 11 11:04 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA04796; Fri, 11 Feb 94 11:04:56
Received: from SSTDP2.LANL.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
        id AA08305; Fri, 11 Feb 1994 10:08:42 +0800
Date: Fri, 11 Feb 1994 11:10:15 -0700 (MST)
From: 046369@SSTDP2.LANL.GOV
To: KHURLEY@space6.ssl.berkeley.edu
Message-Id: <940211111015.23c0a354@SSTDP2.LANL.GOV>
Subject: DMSP OBSERVATIONS OF GRB
Content-Length: 2047
Status: R

FROM: SMTP%"TERRELL@ESSDP2.LANL.GOV" (ESSDP2::TERRELL) (JAMES TERRELL 94/02/11)
TO: SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU" (KEVIN HURLEY)
CC:
SUBJ: DMSP OBSERVATIONS OF GRB

Kevin:
Here are some corrections, additions, or questions re your list of GRB as
sent to me on 940106:

DATE	UT	COMMENTS---
920110	33478	DMSP SHOULD BE NA (NOT APPARENT), NOT NO (I.E., OMIT "NO")
920125	33247	DMSP ND (NO DATA, N/O IN YOUR NOTATION)
920315	17694	ULYSSES TIME, BUT GRO DETECTED A GRB AT 15569!?
920414	84166	(PVO TIME) GRO DETECTED A GRB AT 84163!?
920714	47069	DMSP SHOULD BE NA, NOT NO (I.E., OMIT "NO")
920726	2066	ULYSSES TIME, BUT ULYSSES IS "NO"!? DMSP10,11 @0165 (SOFT)
920727	43347	ULYSSES TIME, BUT BATSE SAW IT!? (WHEN?)
921004	49107	ULYSSES TIME, BUT EURECA SAW IT!? (WHEN?)
930106	56259	DMSP YES (NOT AT 55260)
930201	60115	DMSP8 YES (PEAKS AT 60129.0,60211.0,60281.0 UT)
930318	44993	ULYSSES TIME, BUT BATSE AND EURECA SAW IT! (WHEN?)
930405	32089	DMSP YES (8,10,11 AT 32105 AND 32110)
930410	51547	DMSP NO
930506	53571	DMSP8 YES AT 53577,10ND,11YES AT 53580
930506	57060	(ULYSSES TIME) DMSP8 YES AT 57669,10NO,11YES AT 57670,57688,57704
930510	41935	(ULYSSES TIME) NOT APPARENT IN FULL DMSP DATA
930511	892	(ULYSSES TIME) NOT APPARENT IN FULL DMSP DATA
930612	2657	DMSP10 YES AT 2662 (8SAA, 11NA)
930825	31643	(ULYSSES TIME) 8NA,10NA,11? (SOFT PEAK ~33500)
930922	12830	(ULYSSES TIME) NOT APPARENT IN DMSP DATA (DMSP11 GLITCH?)
930922	23086	ULYSSES TIME, BUT BATSE SAW IT! (WHEN?) (DMSP8NA,11NA,10~23000?)
930925	73995	(ULYSSES TIME) DMSP NA (NOT APPARENT)
931006	18653	(ULYSSES TIME, 18062?CORR) DMSP NA
931006	69587	(ULYSSES TIME, 68961?CORR) DMSP NA
931006	77510	ULYSSES TIME, BUT BATSE YES! (WHEN?) (DMSP NA)
931007	72864	(ULYSSES TIME, 72239?CORR) DMSP NA
921011	45034	(ULYSSES TIME, 45200?CORR) DMSP NA

I would appreciate any clarifications or comments, and especially more
event times to check against DMSP data. We now have data processed
thru 931118. --Jim

From root Thu Feb 3 13:55 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00852; Thu, 3 Feb 94 13:55:12
Received: from SSTDP2.LANL.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
id AA13978; Thu, 3 Feb 1994 12:59:12 +0800
Date: Thu, 3 Feb 1994 14:00:37 -0700 (MST)
From: 046369@SSTDP2.LANL.GOV
To: KHURLEY@space6.ssl.berkeley.edu
Message-Id: <940203140037.23c05074@SSTDP2.LANL.GOV>
Subject: DMSP OBSERVATIONS OF GRO GRB
Content-Length: 2739
Status: R

FROM: SMTP%"TERRELL@ESSDP2.LANL.GOV" (ESSDP2::TERRELL) (JAMES TERRELL 94/02/03)
TO: SSL::KOUVELIOTOU AND GIBSON::COLE (CHRYSSA KOUVELIOTOU AND STAYCE COLE)
CC: SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU" (KEVIN HURLEY)
SUBJ: DMSP OBSERVATIONS OF GRO GRB

Chryssa and Stayce:
Thanks very much for the listing of strong Batse bursts sent to me 11/1/93.
I have now managed to check all of them against DMSP data, and find that
many of them were also detected by DMSP8,9,10, or 11. Probably the higher percent
of detections in recent data is due to more extraction of full data. In many
cases such added effort would not be necessary if source direction
(and consequent obscuration of some DMSP satellites) were known to me.
I would appreciate data on more strong events. Here is the present list:

NOTES:
NA: Not apparent in 20-second averaged data (extracting the 2-sec data is
a more time-consuming task, not undertaken in every case).
NA?: Some slight indication of a peak in 20-second averaged data.
SA: South Atlantic Anomaly, obscuring data with high background rates.
SR: South Radiation Belt background.
NR: North Radiation Belt background.
ND: No data for this time.
YES: Burst definitely detected by one or more DMSP satellites (8,9,10,11).
NO: No evidence of a peak in 2-sec data. (NO/OBSC: Obscured by Earth)

DATE	UT	DMSP
910421	33245	8NO 9SR 10NR
910627	16159	8NA 9NR 10ND
910629	71750	8NA 9SR 10NA
910703	18225	8NA 9NA? 10SR
910717	16386	8NA 9SA 10SR
910718	76051	8NA 9SA 10SA
910802	2718	ND
910814	69275	ND
911024	76208	ND
911104	54283	YES--54286 PEAK
911109	12459	8NO 9NR 10NO
911118	68260	ND
911119	23343	YES--23342
911126	46129	8SR 9SR 10NO
911127	15730	YES--15739
911202	73731	YES--73733
911209	66959	8SR 9SR 10NR 11ND
920226	29730	8SA 9NA? 10SA 11SA
920229	69769	8SR 9ND 10NA 11NA
920311	8246	YES--8431
920315	15569	8NA 9NR 10NA 11NA
920325	62258	YES--62256
920404	47506	8NA 10NA? 11NR
920406	9855	8NO/OBSC 10SR 11SR/OBSC
920414	84163	NA
920517	11877	YES--11883
920525	12423	YES--12427

920622	25504	8SA 10NR 11SA
920627	46956	NA
920711	53140	YES--58157
920718	77563	8NA 10SA 11NA
920720	11524	8NA/OBSC 10NA/OBSC 11SR
920824	39183	YES--39186
920902	1736	YES--1743
921009	24070	YES--24073
921022	55259	8ND 10NA 11NA
921123	22711	YES--22727
921123	46583	YES--46542
921207	57647	YES--57649
921209	41738	8NR 10NA 11NR
930106	56259	YES--56260
930110	6698	8NA 10NR 11NA
930120	84700	YES--84779
930131	68231	YES--68231
930201	60115	YES--60129
930309	11269	NA
930329	11365	8NA 10SR 11NA
930405	32089	YES--32105
930406	26185	8NA 10NR 11NA
930428	04032	8NA 1ONA 11SR
930506	53571	YES--53578
930506	65631	NA

Helio. corr. removed

Date: Nov 7 '97

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☑ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☑ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution?

2. BATSE Data

☑ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)?

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included? N/A

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

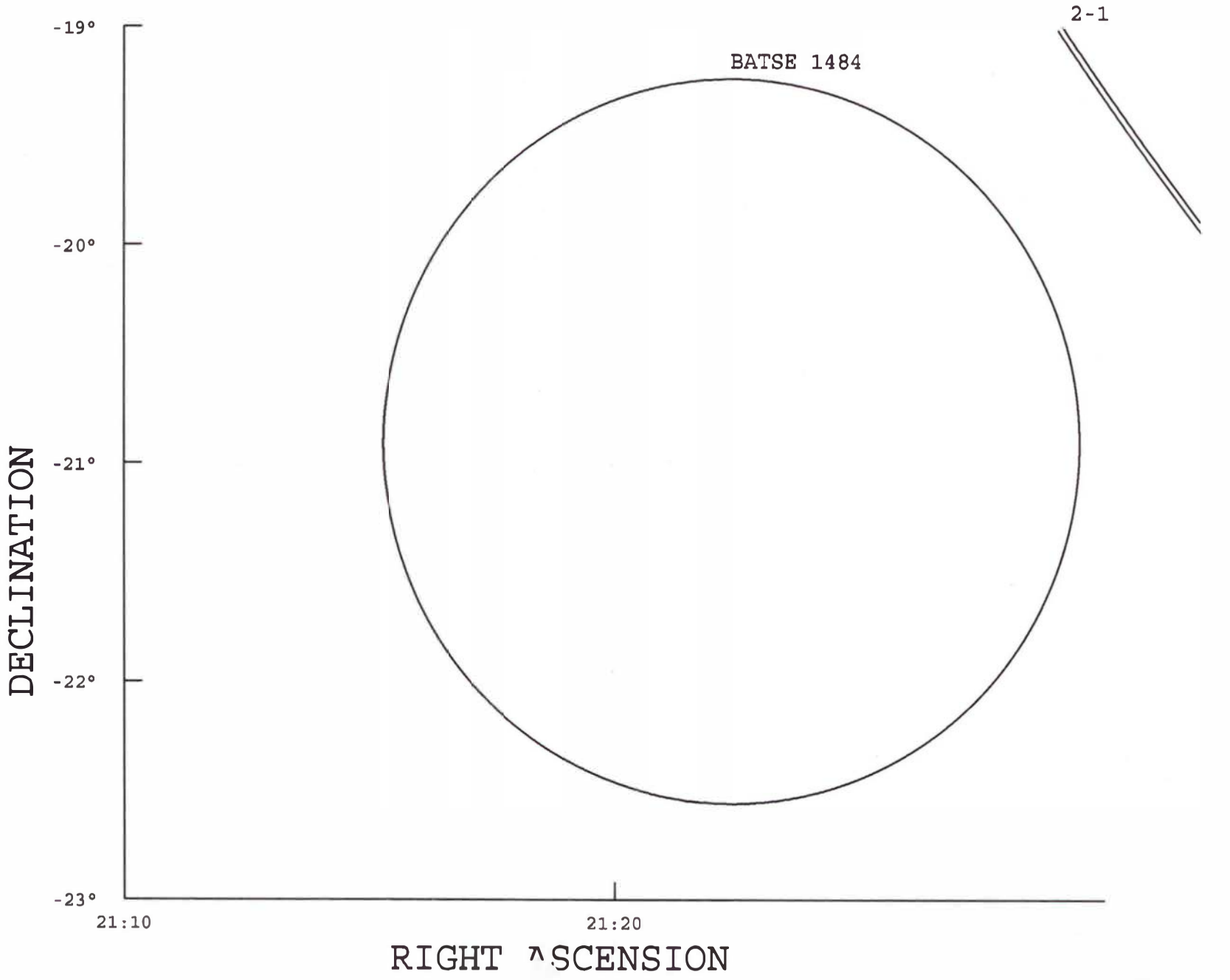
☐ 2000 coordinates used?

☐ Geocentric time used?

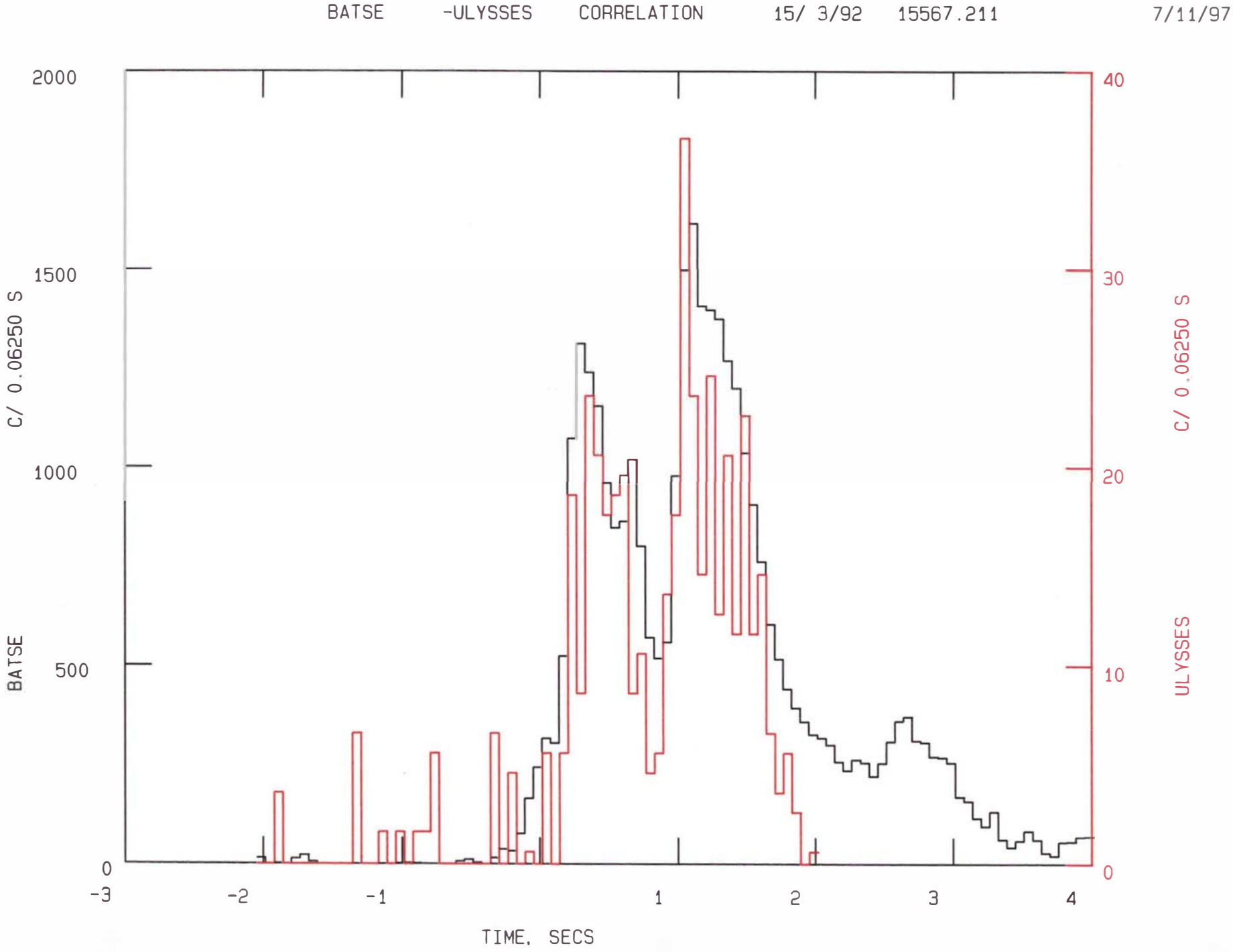
☑ ACCESS database updated?

EVENT OF MAR 15, 1992 4:54

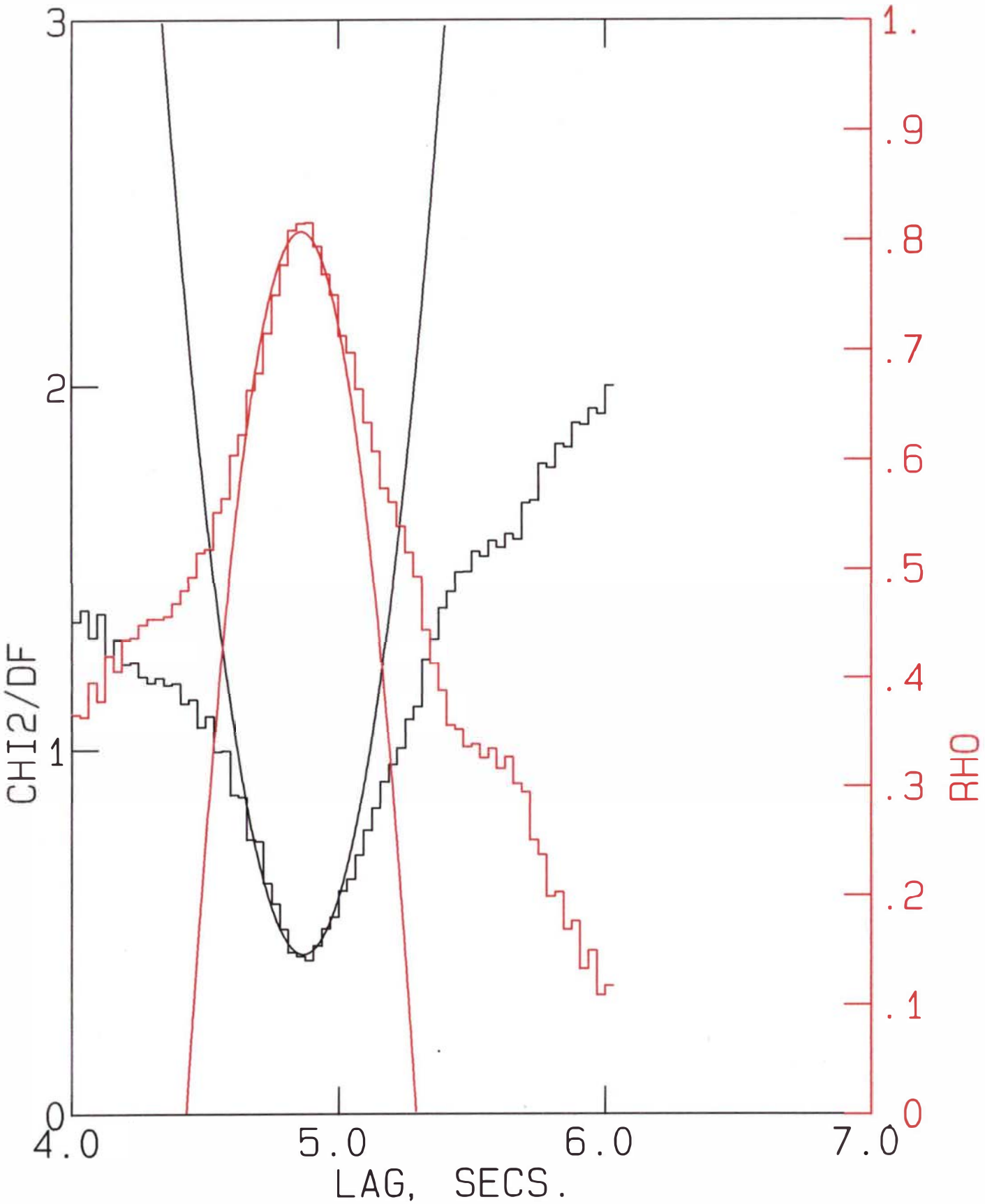
7/11/97

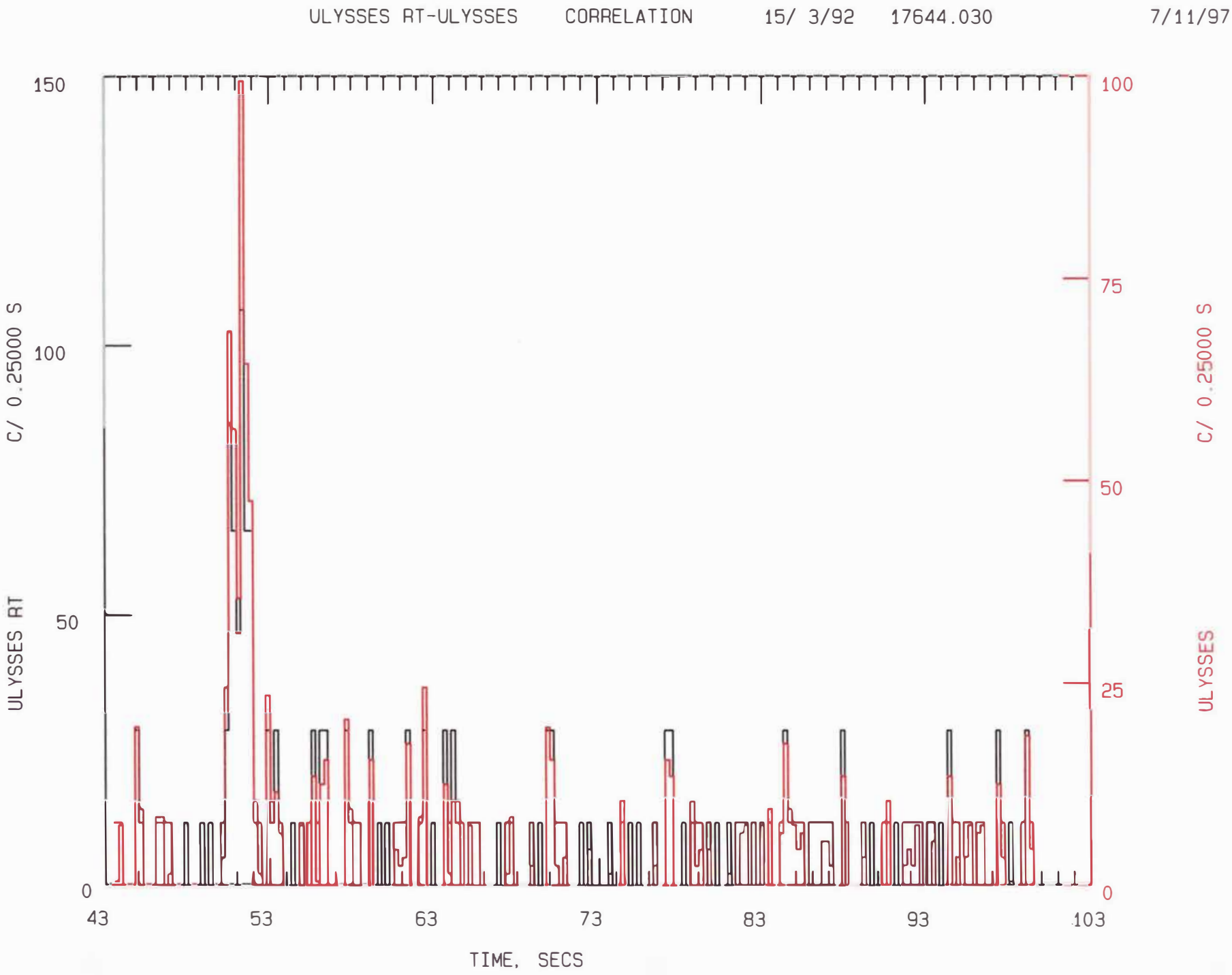


N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE


BATSE -ULYSSES CORRELATION 15/ 3/92 15567.211 7/11/97
2000
1500
1000
500
0
C/ 0.06250 S
BATSE
40
30
20
10
0
C/ 0.06250 S
ULYSSES
-3
-2
-1
1
2
3
4
TIME, SECS

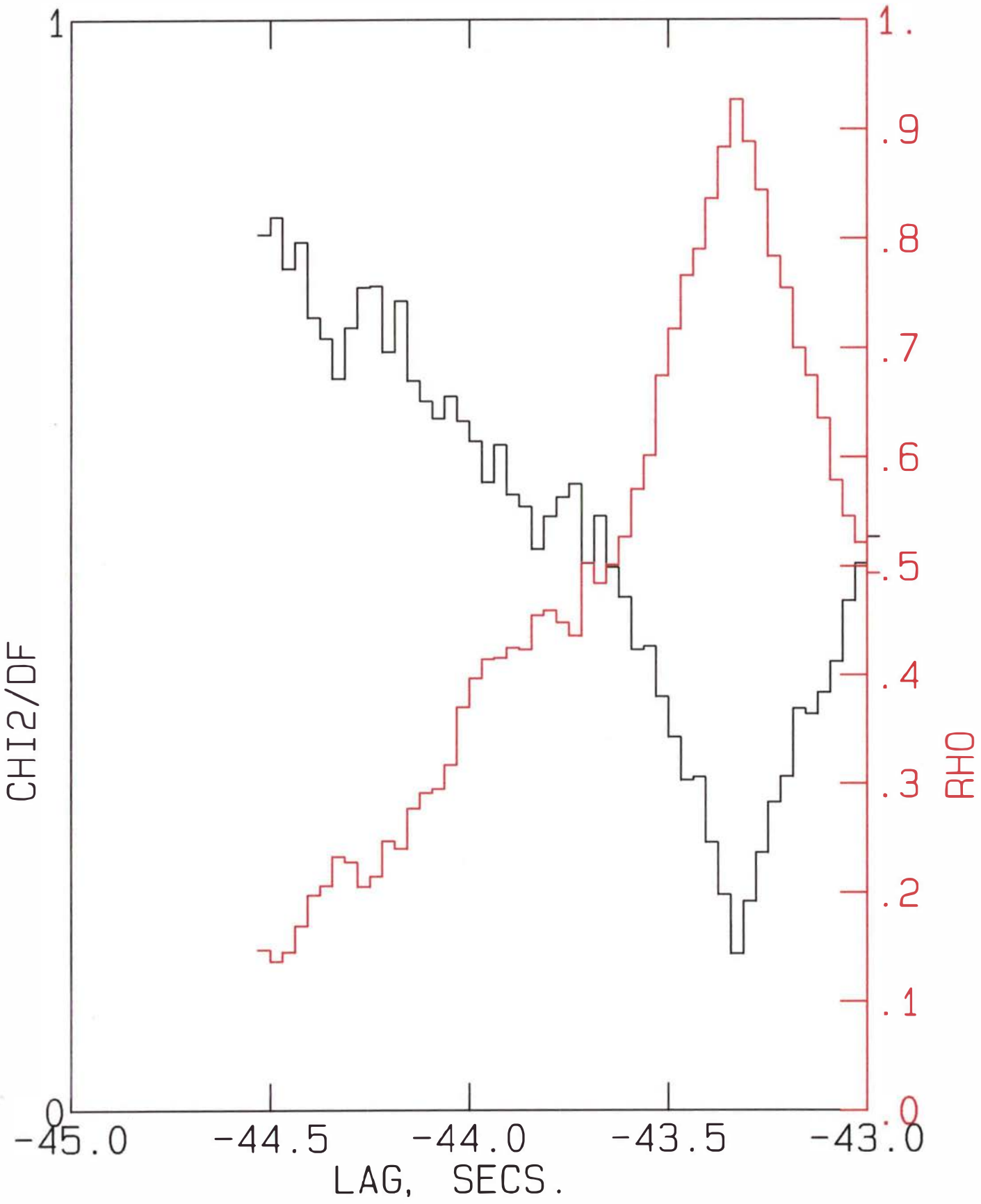
BATSE -ULYSSES CORRELATION 15/ 3/92 15567.211




ULYSSES RT-ULYSSES CORRELATION 15/ 3/92 17644.030 7/11/97
150
100
50
0
C/ 0.25000 S
ULYSSES RT
100
75
50
25
0
C/ 0.25000 S
ULYSSES
43
53
63
73
83
93
103
TIME, SECS

7/11/97

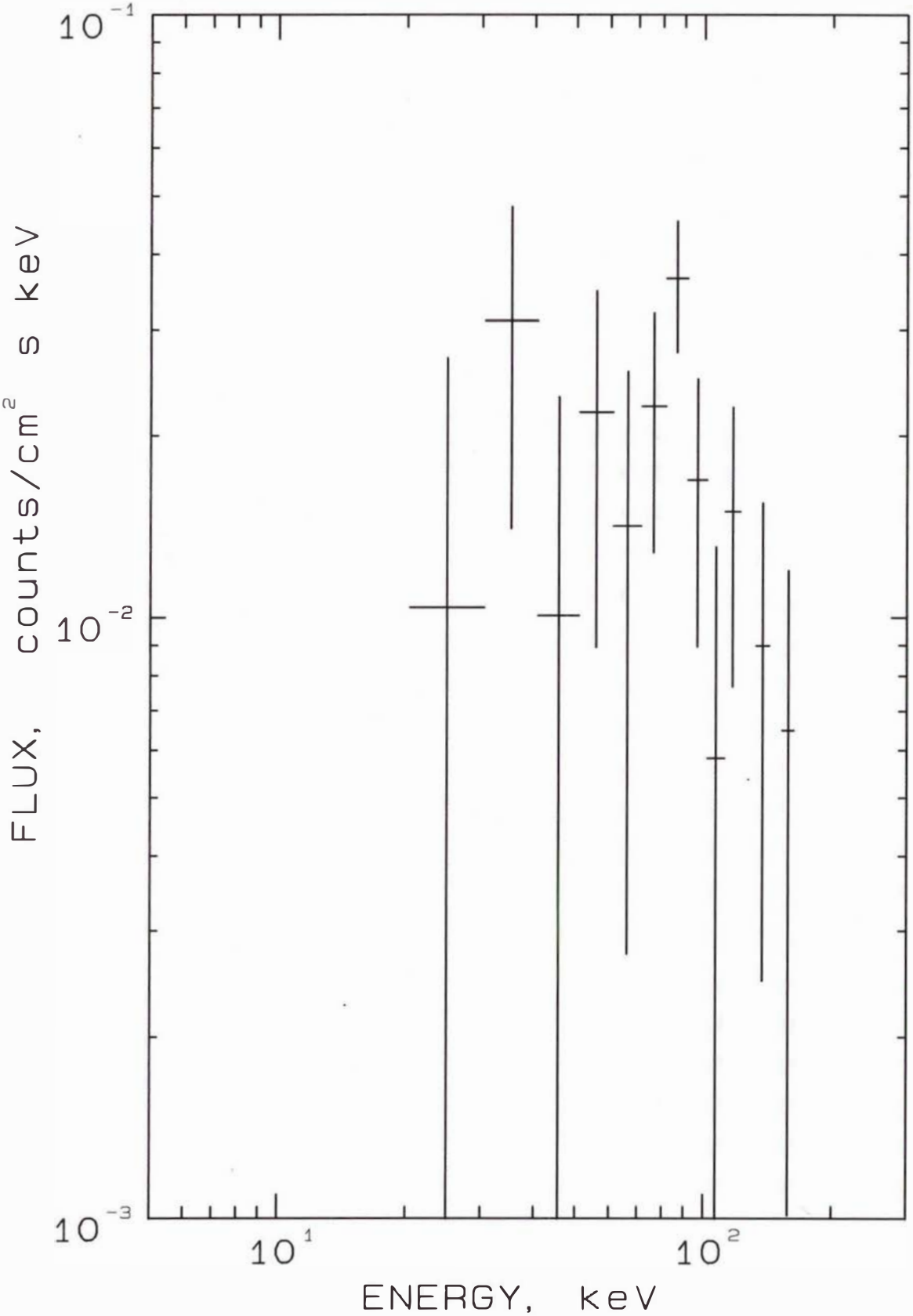
ULYSSES RT-ULYSSES CORRELATION 15/ 3/92 17644.030

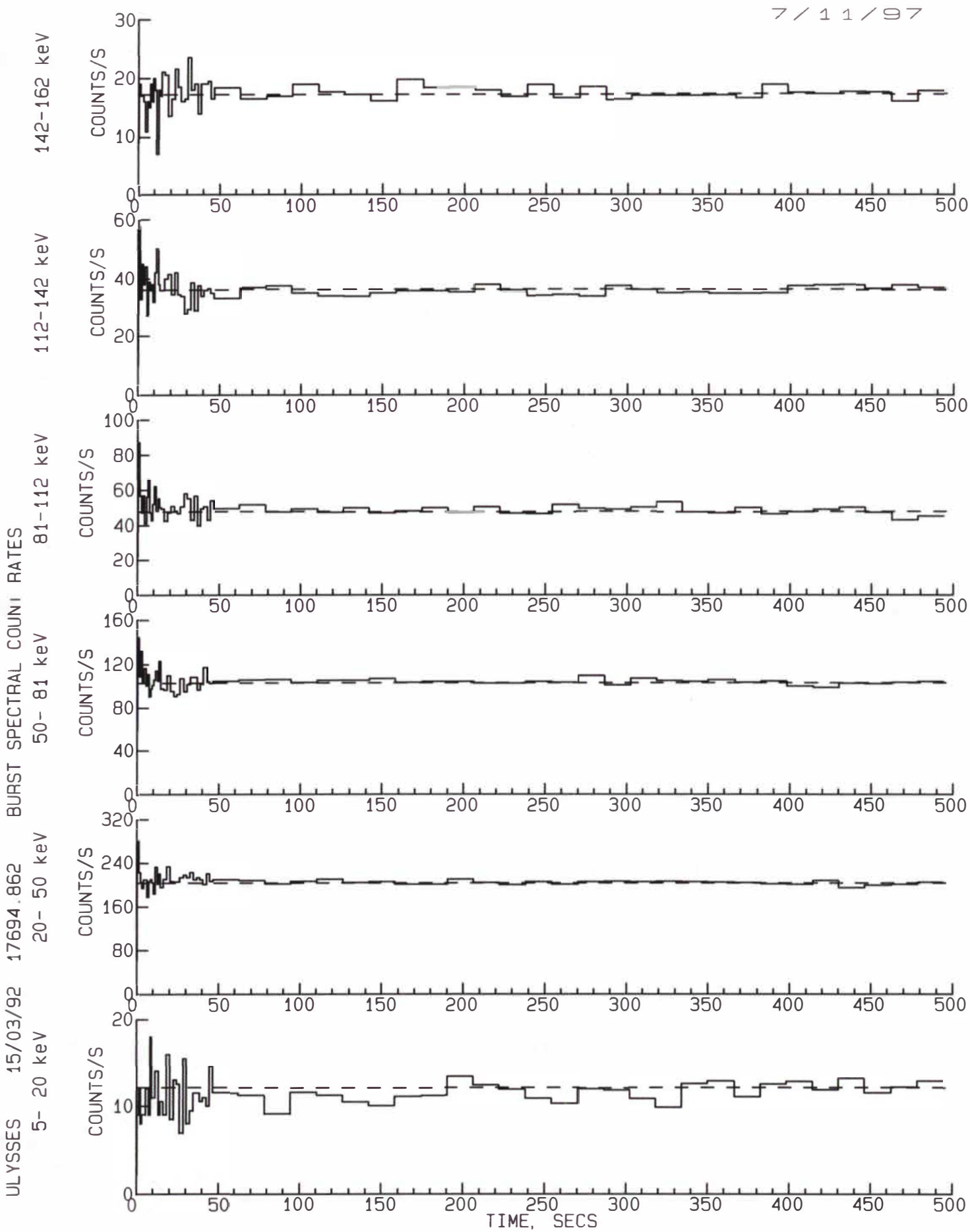


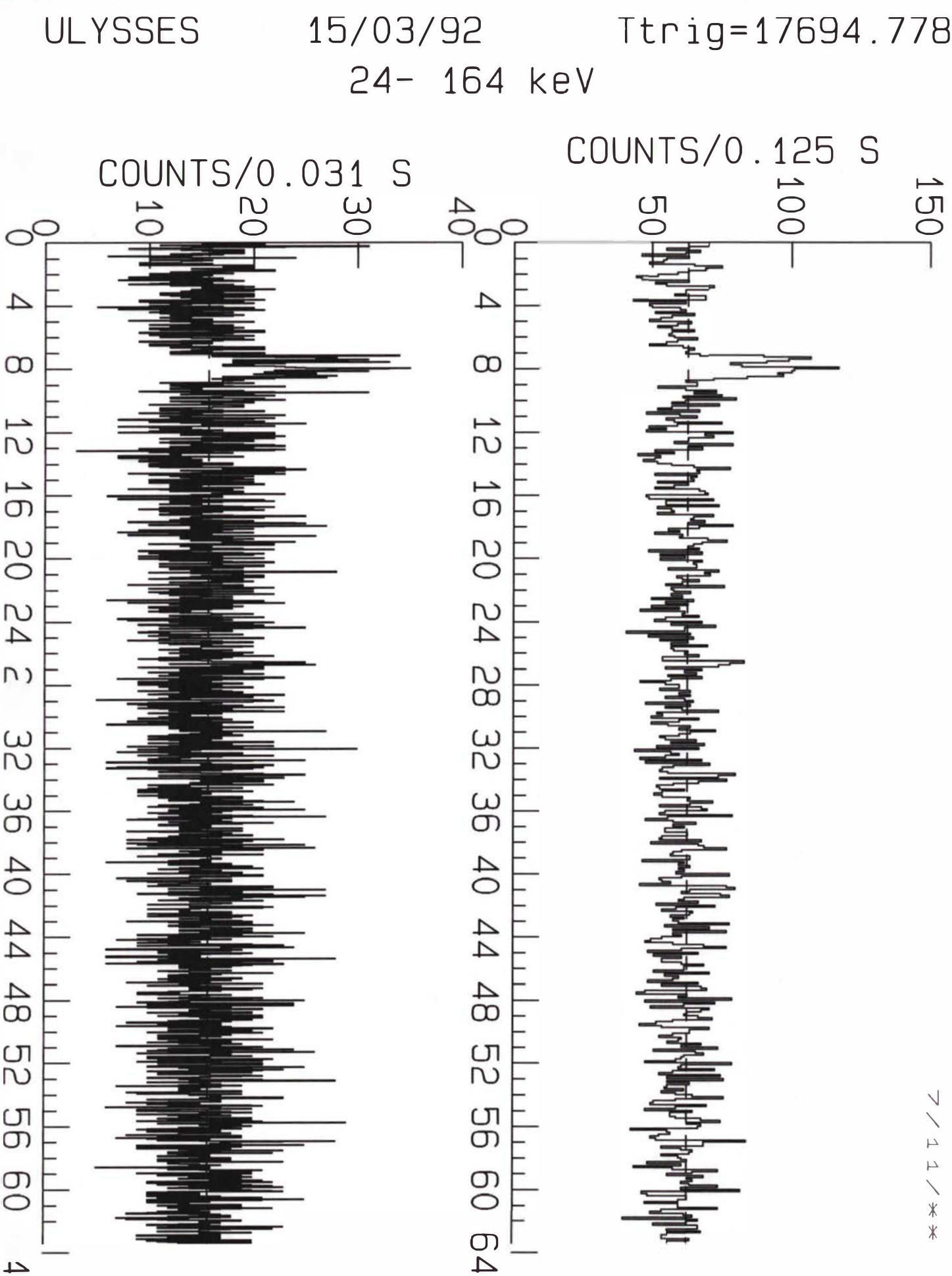
7/11/97

ULYSSES 15/03/92 17694.862

SPECTRUM INTEGRATED OVER 10.3 SECONDS, INTERVALS 2 TO 13




7/11/97
ULYSSES 15/03/92 17694.862 BURST SPECTRAL COUNT RATES
142-162 keV
112-142 keV
81-112 keV
50- 81 keV
20- 50 keV
5- 20 keV
COUNTS/S
TIME, SECS

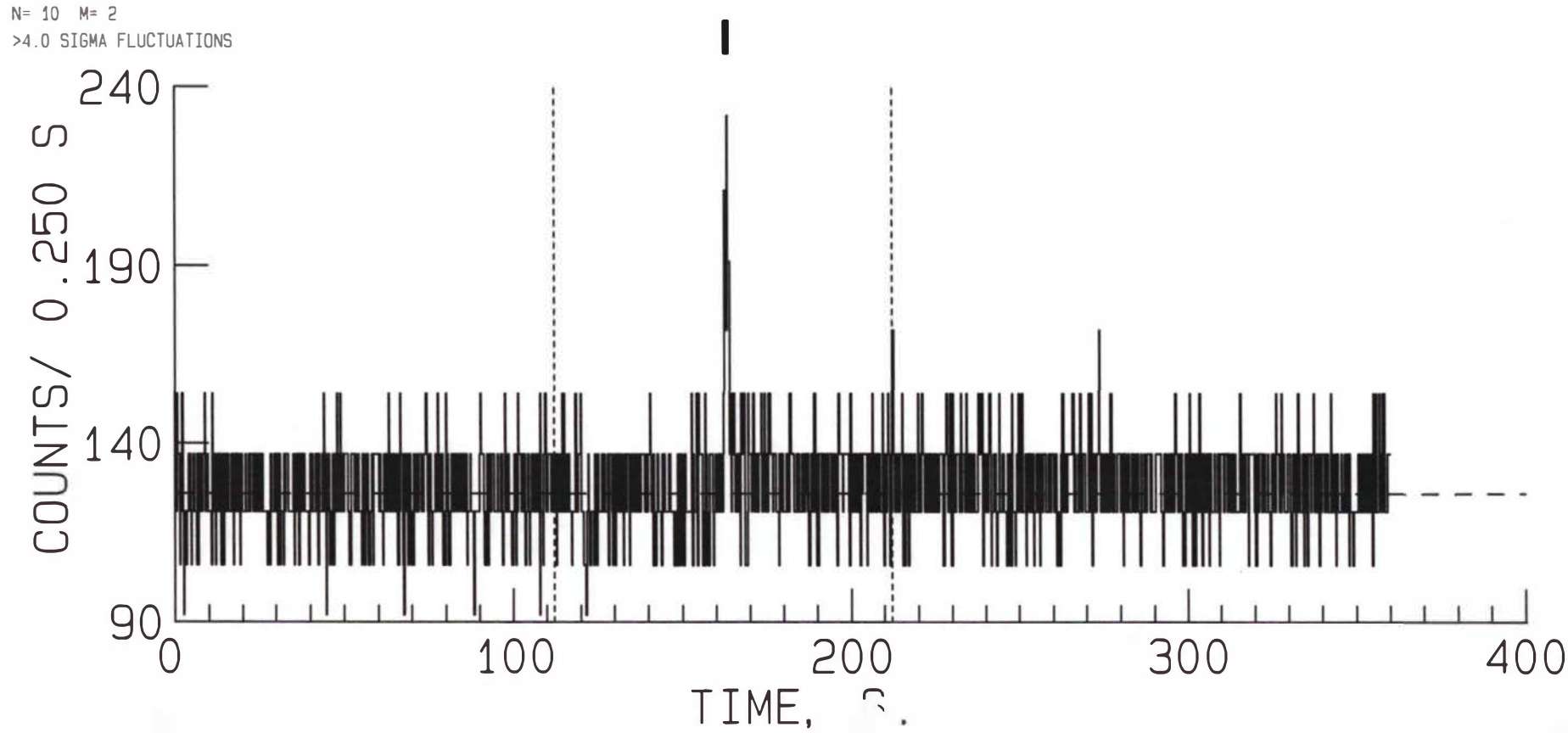

ULYSSES 15/03/92 Ttrig=17694.778
24- 164 keV
COUNTS/0.031 S
COUNTS/0.125 S
0 10 20 30 40
0 50 100 150
0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64
0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64
7/11/**

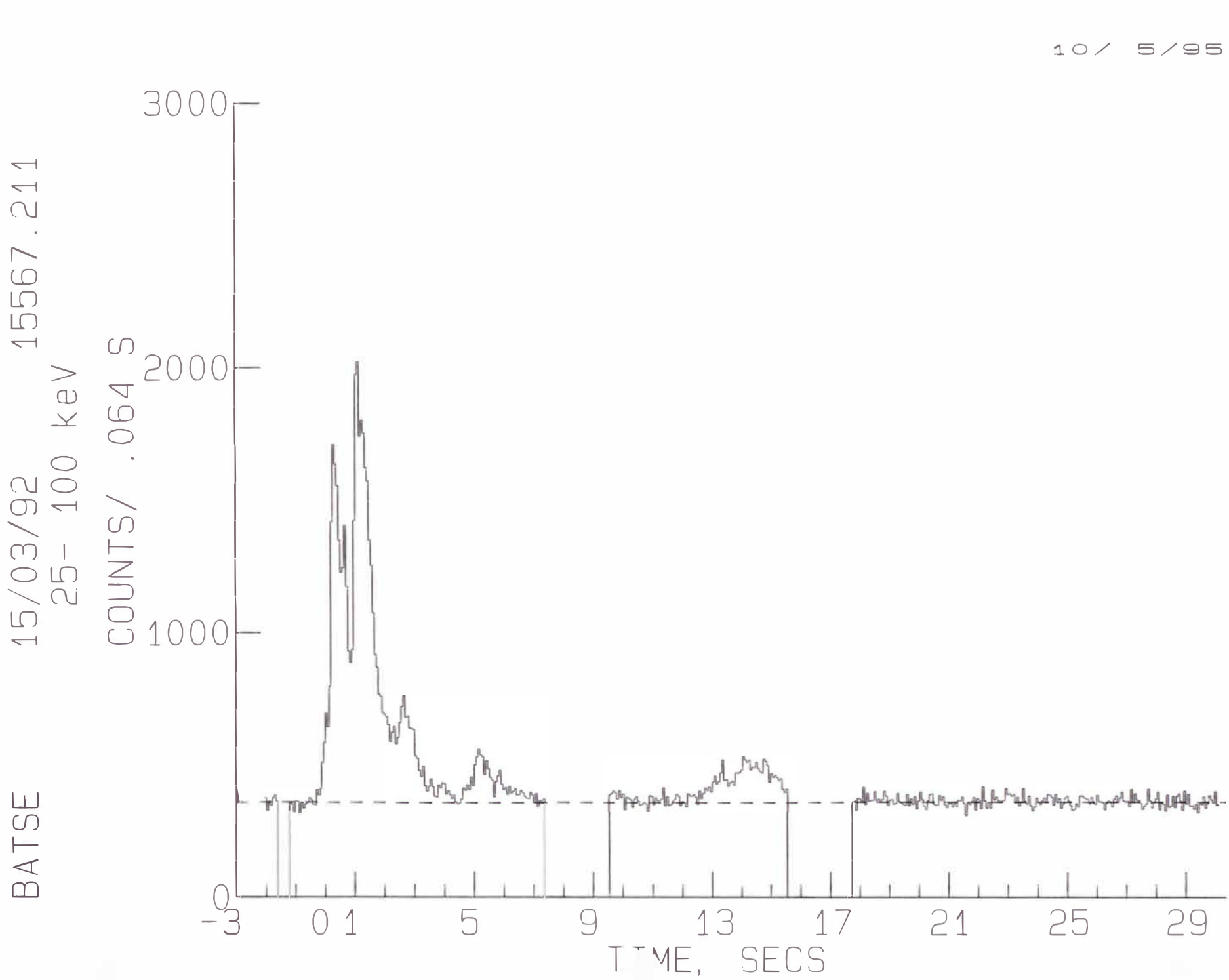
ULYSSES RT

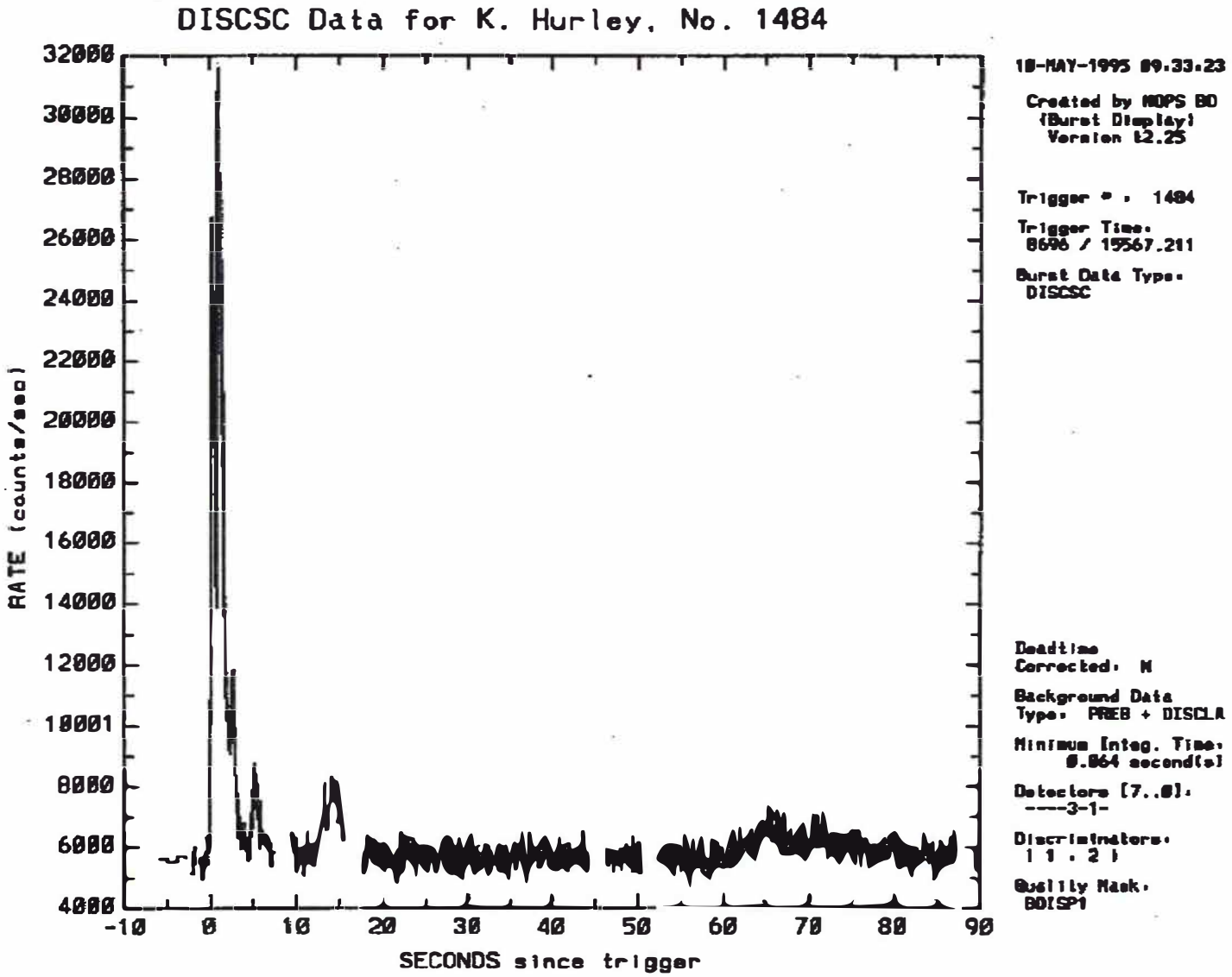
7/11/97

15/ 3/92 17532.119 s

24- 164 keV




10/ 5/95
BATSE 15/03/92 15567.211
25- 100 keV
COUNTS/ .064 S
3000
2000
1000
0
-3
0 1
5
9
13
17
21
25
29
TIME, SECS


DISCSC Data for K. Hurley, No. 1484
RATE (counts/sec)
32000
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10001
8000
6000
4000
-10
0
10
20
30
40
50
60
70
80
90
SECONDS since trigger
10-MAY-1995 09:33:23
Created by MDPS BD
(Burst Display)
Version 02.25
Trigger # : 1484
Trigger Time:
8696 / 19567.211
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
----3-1-
Discriminators:
1 1 . 2 1
Quality Mask:
BDISP1

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1485
EVENT OF 1992 MAR 15 DAY OF YEAR= 75
EVENT CROSSING TIME AT BATSE      : 40714. S. OR 11:18:33.8
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 199.100  -31.900
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 15/ 3/  92 IS:
RA=  155.660 DEC=     9.211 DIST=     4.454 AU
BATSE-ULYSSES DISTANCE =  666272024. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=121.59 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1164.33 SECS.
CROSSING TIME AT ULYSSES     IS 39550. S. OR 10:59:09.5 +/-  360.98 SECONDS
```

ND

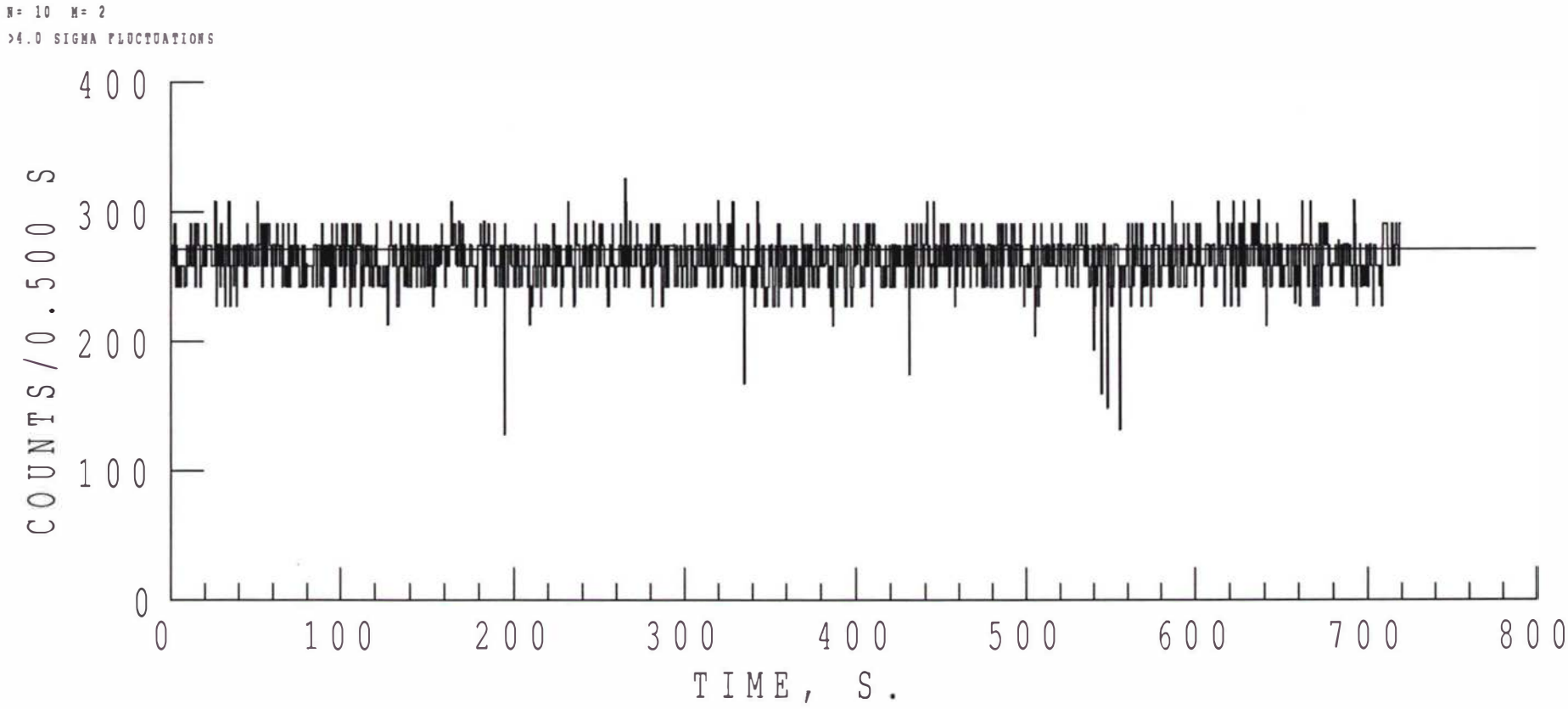
7/ 6/94

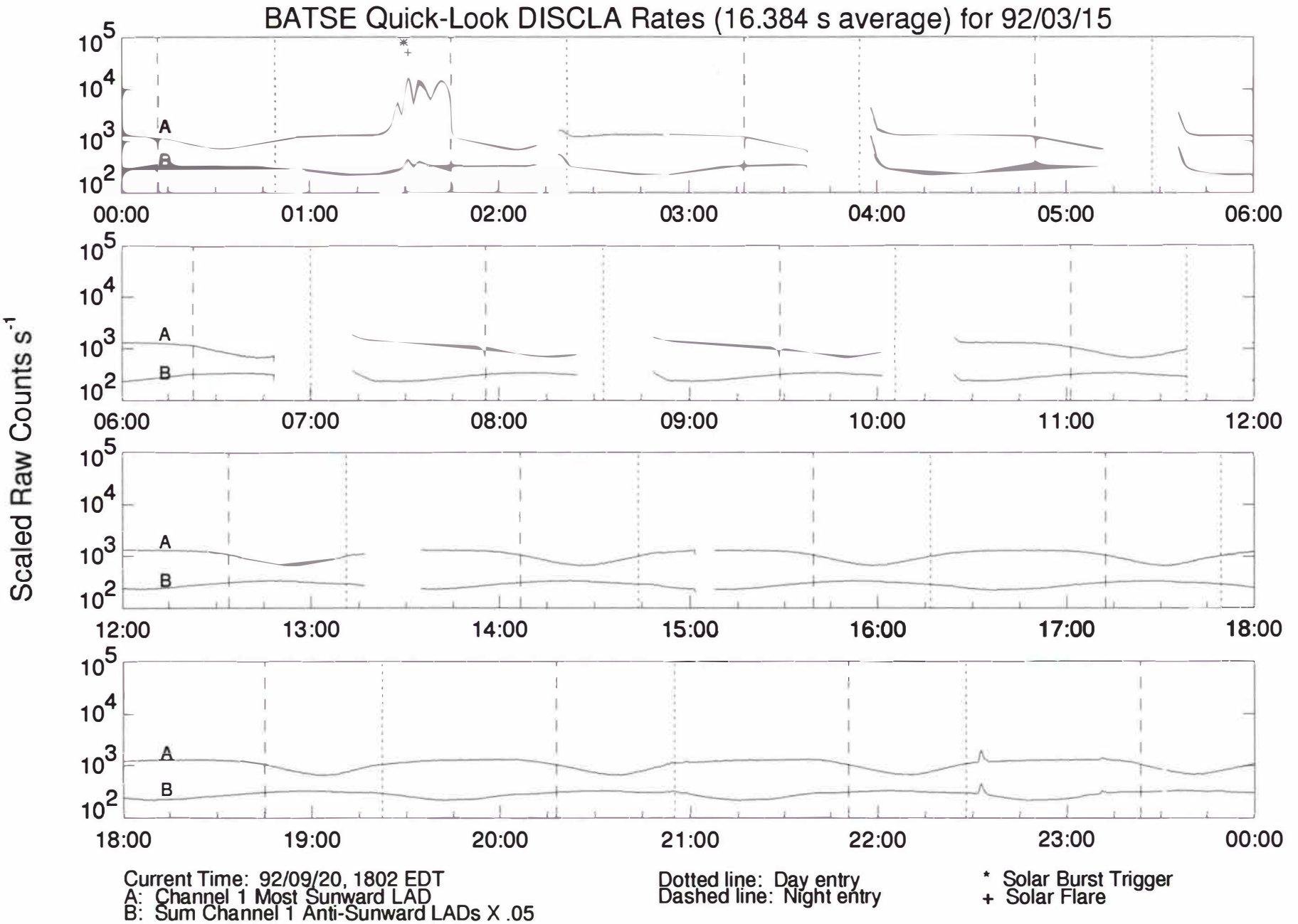
ULYSSES RT

15/ 3/92 39204.246 s

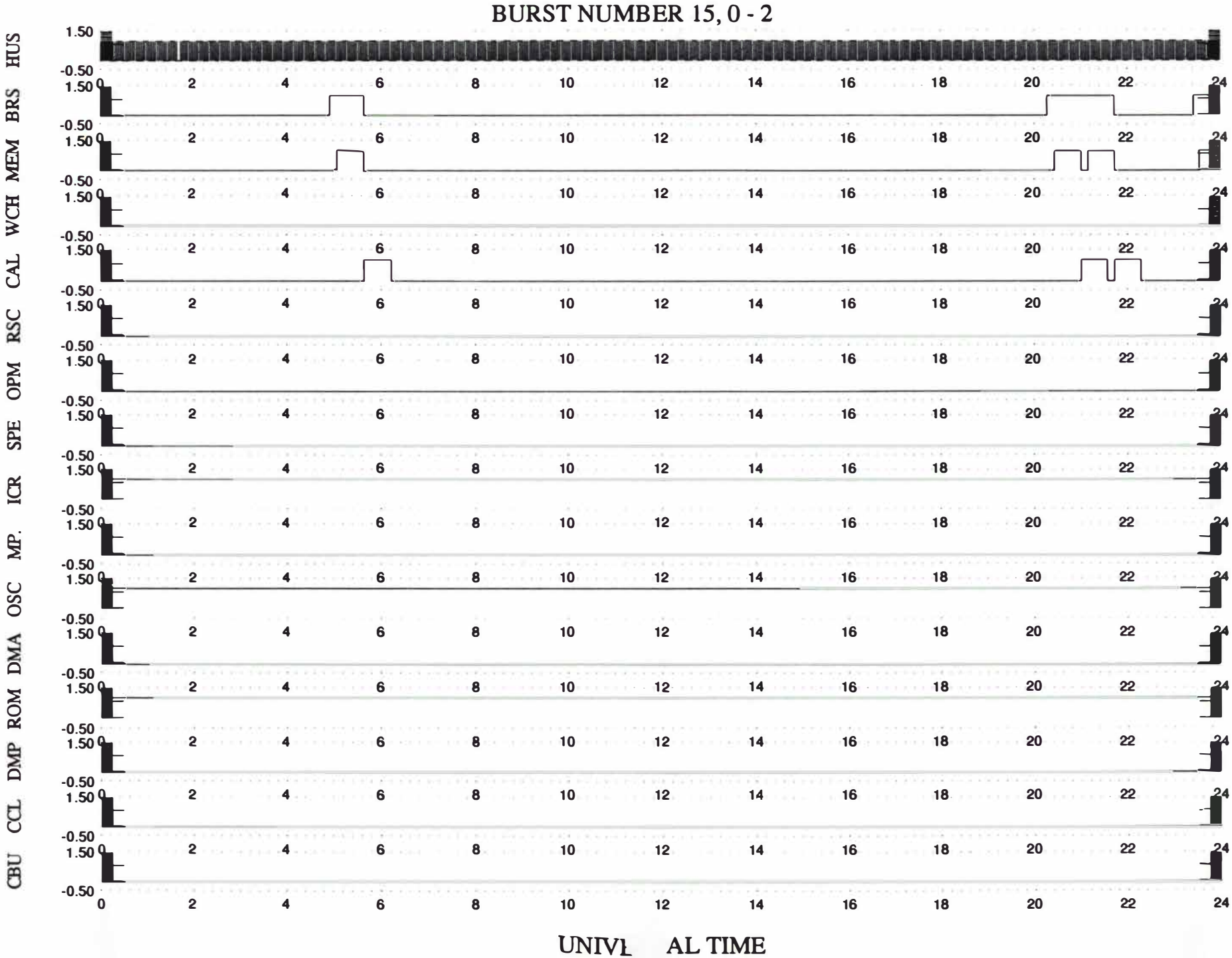
0.250 S INTERVALS REGROUPED BY 2

0- 0 keV



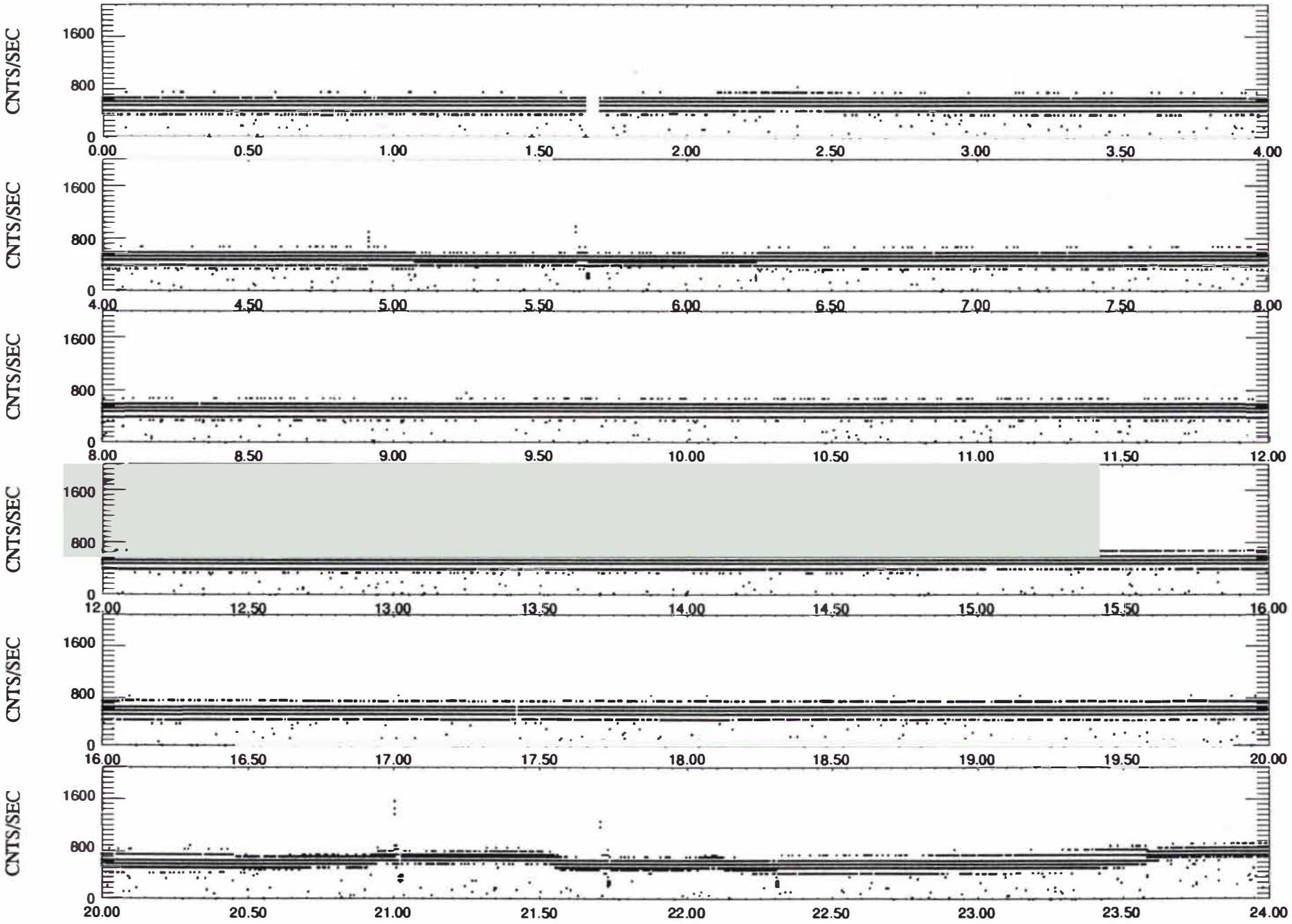

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/15
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1802 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 75, year 1992 to day 75, year 1992 4/15/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 75, year 1992 to day 75, year 1992 4/15/92

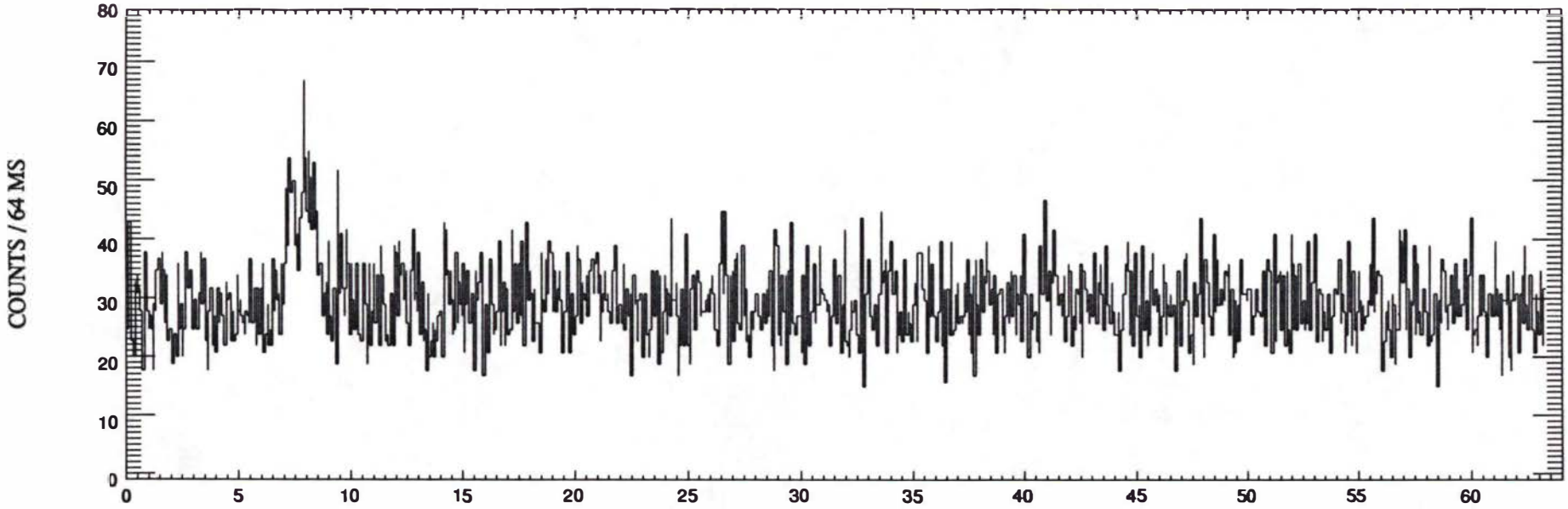
CALIBRATION DATA INCLUDED



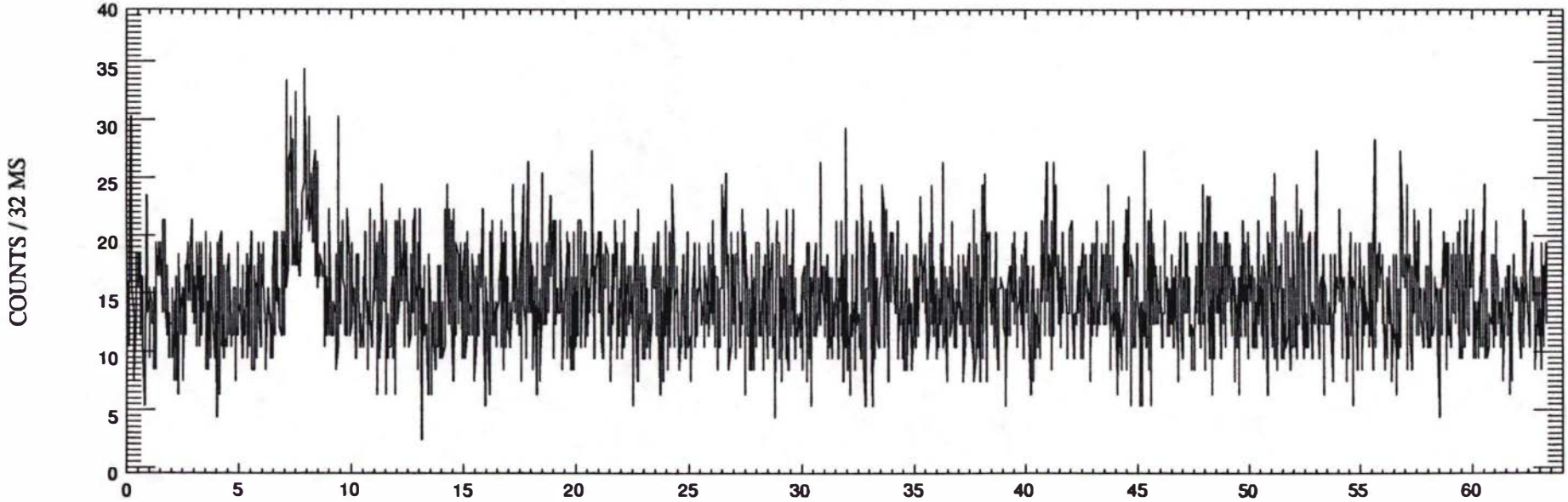
UNIVE AL TIME

HUS 2A TRIGGERED DATA EDR day 75, year 1992 5/6/92

Burst Counter 15 at UT= 4.915239448547 h=17694.862 s



TIME, SECS

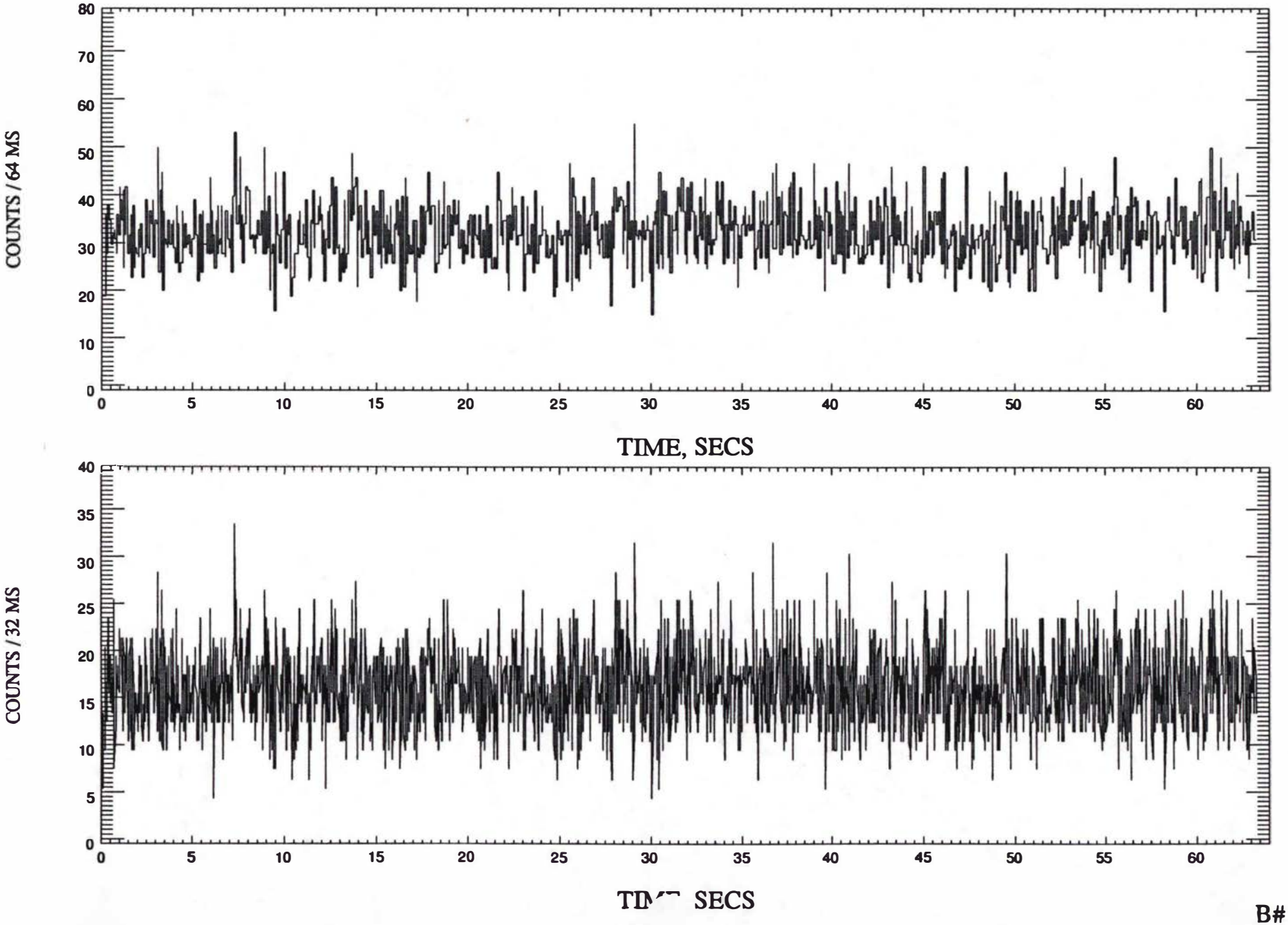


TIME SECS

B# 1

HUS 2A TRIGGERED DATA EDR day 75, year 1992 5/6/92

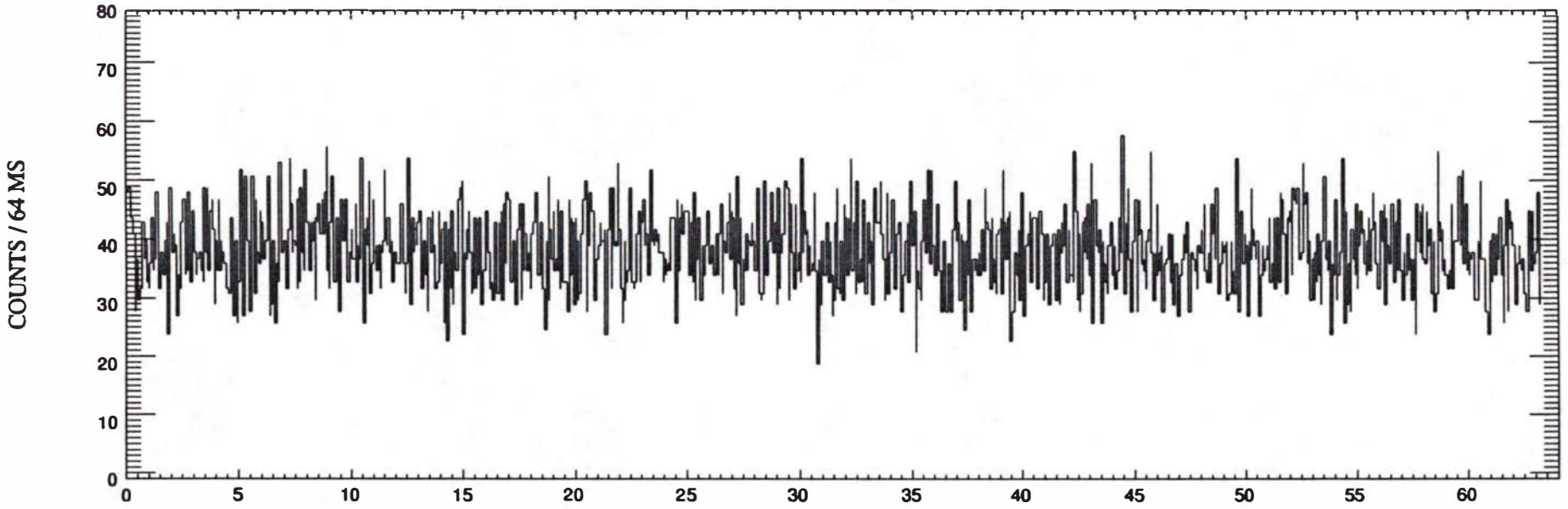
Burst Counter 0 at UT=20.299359669156 h=73077.695 s

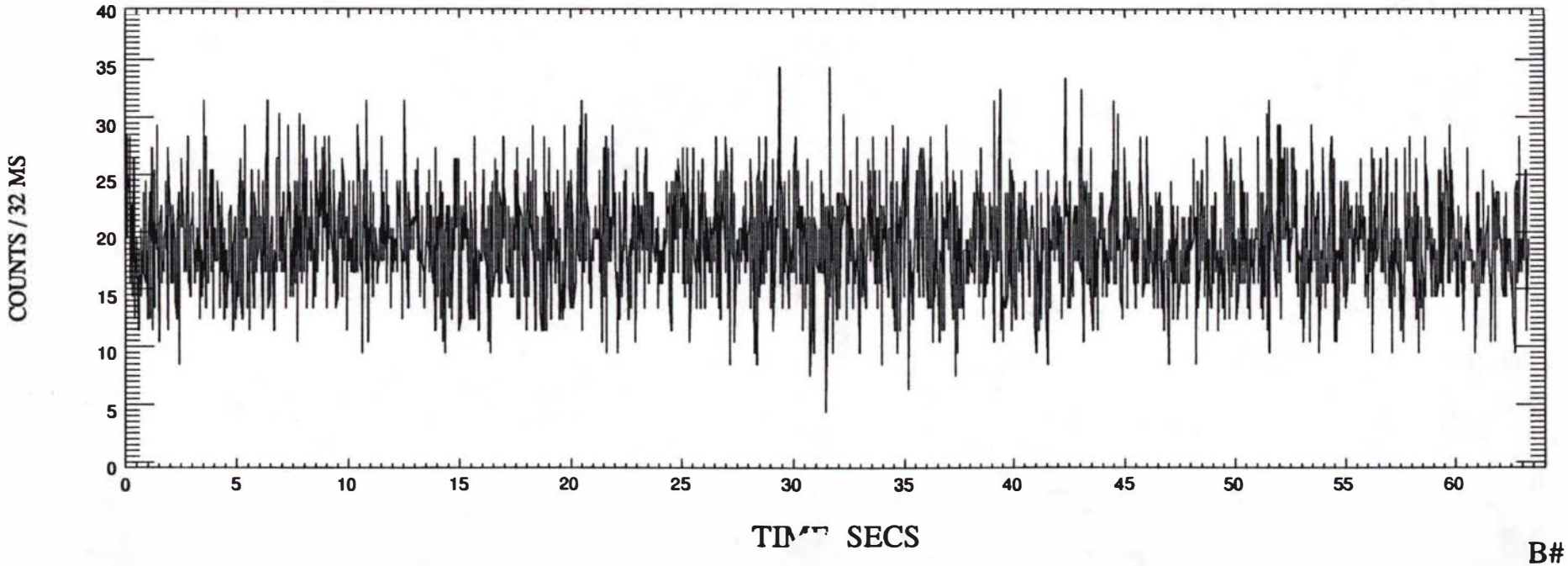


B# 2

HUS 2A TRIGGERED DATA EDR day 75, year 1992 5/6/92

Burst Counter 1 at UT=21.002427541945 h=75608.739 s

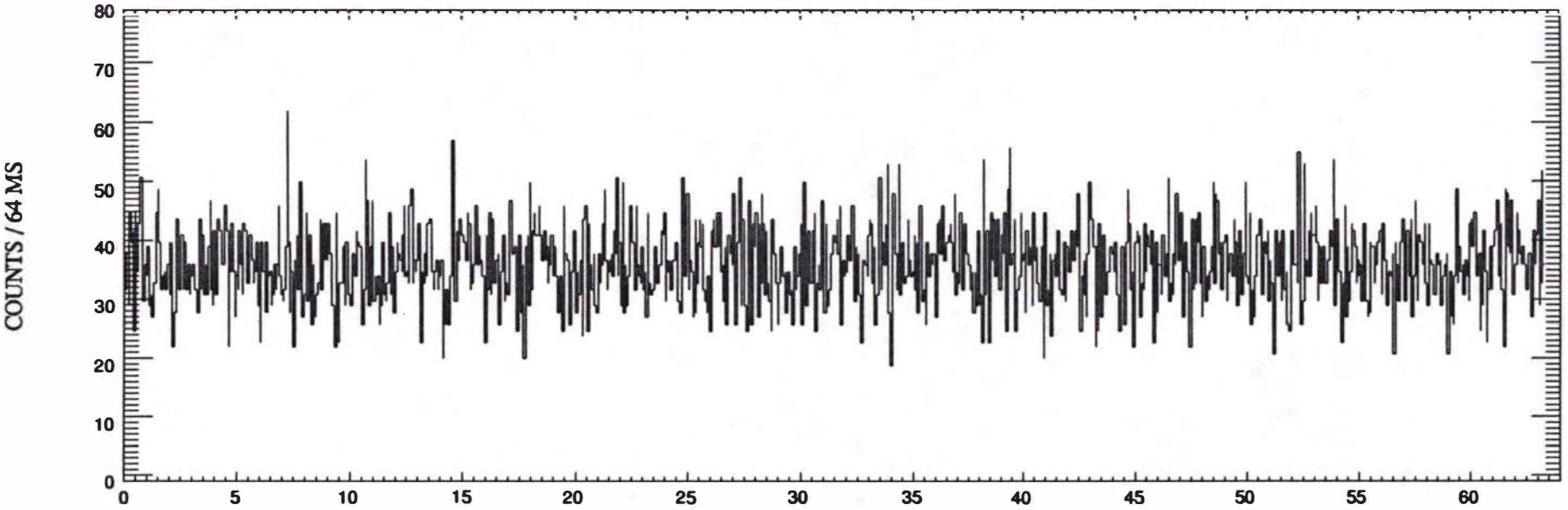


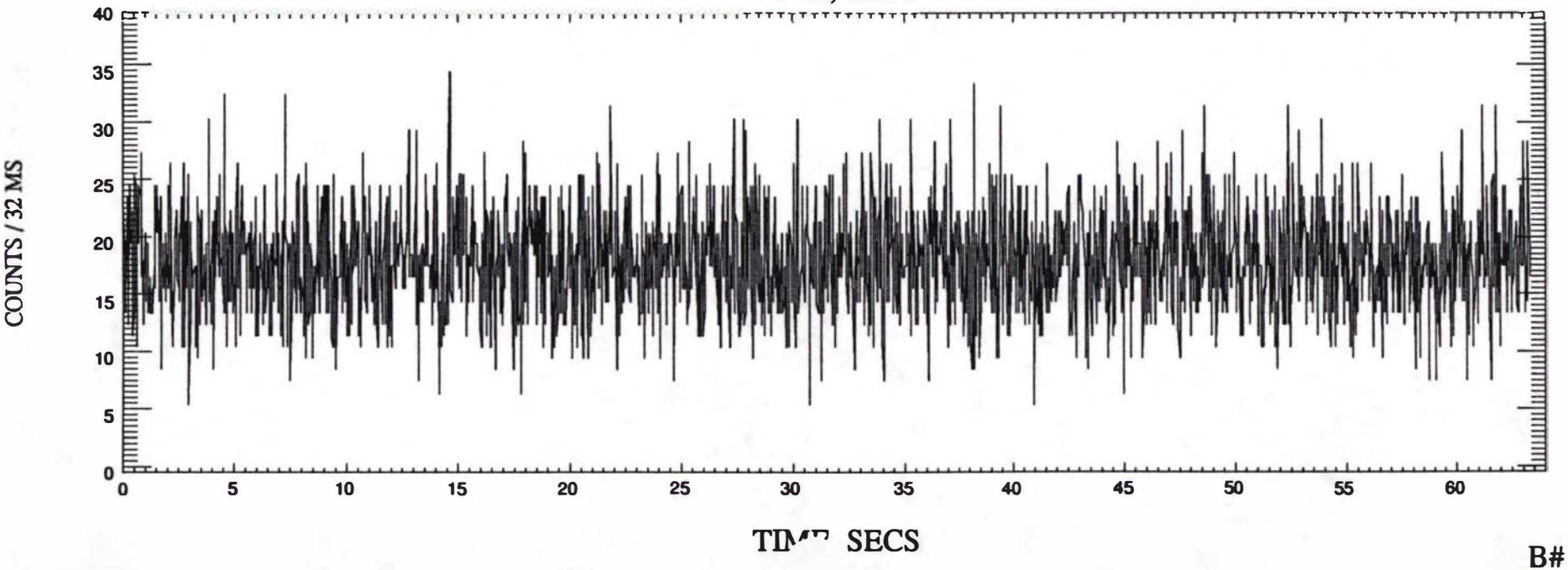


B# 3

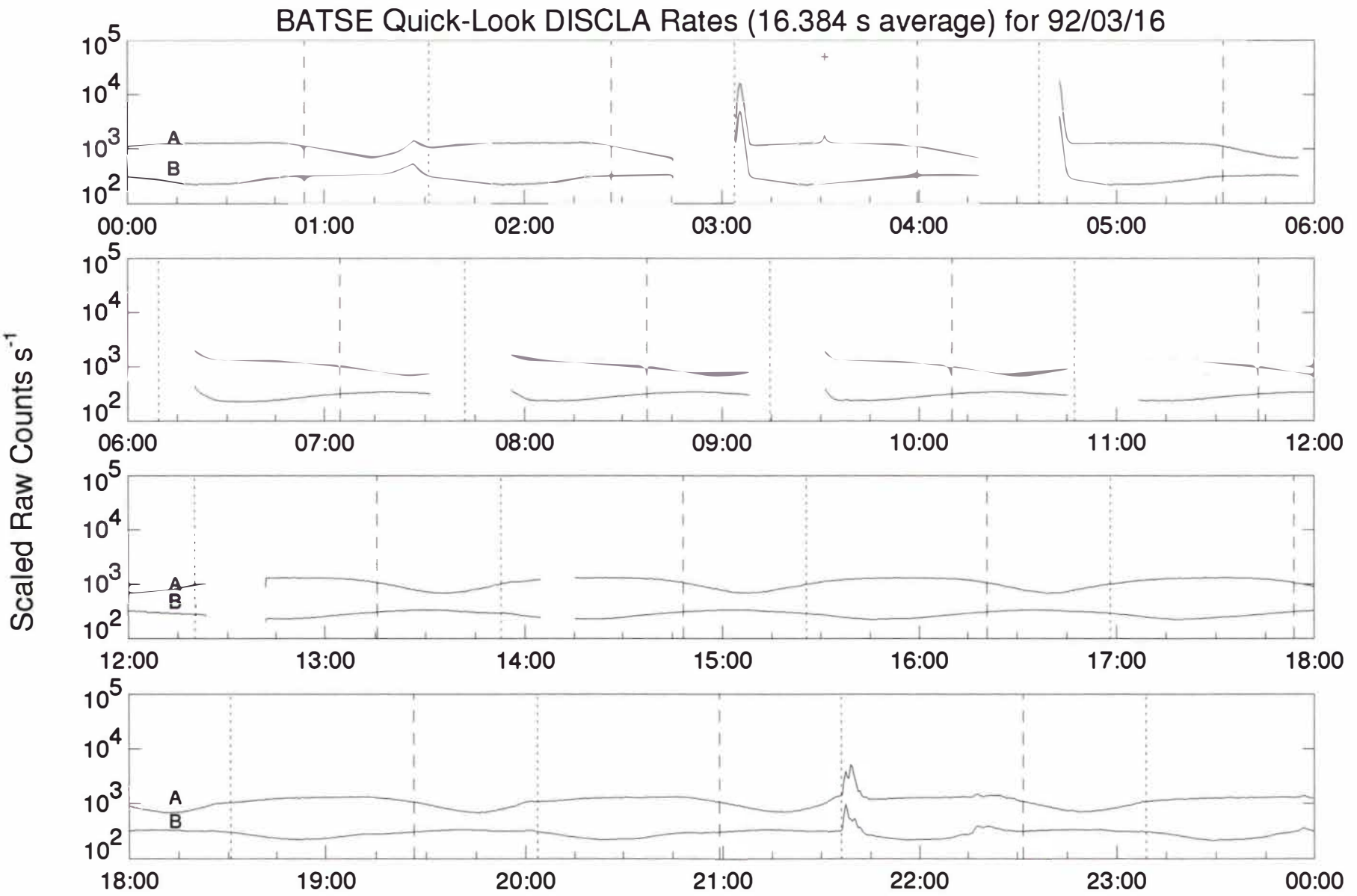
HUS 2A TRIGGERED DATA EDR day 75, year 1992 5/6/92

Burst Counter 2 at UT=23.427018029955 h=84337.265 s



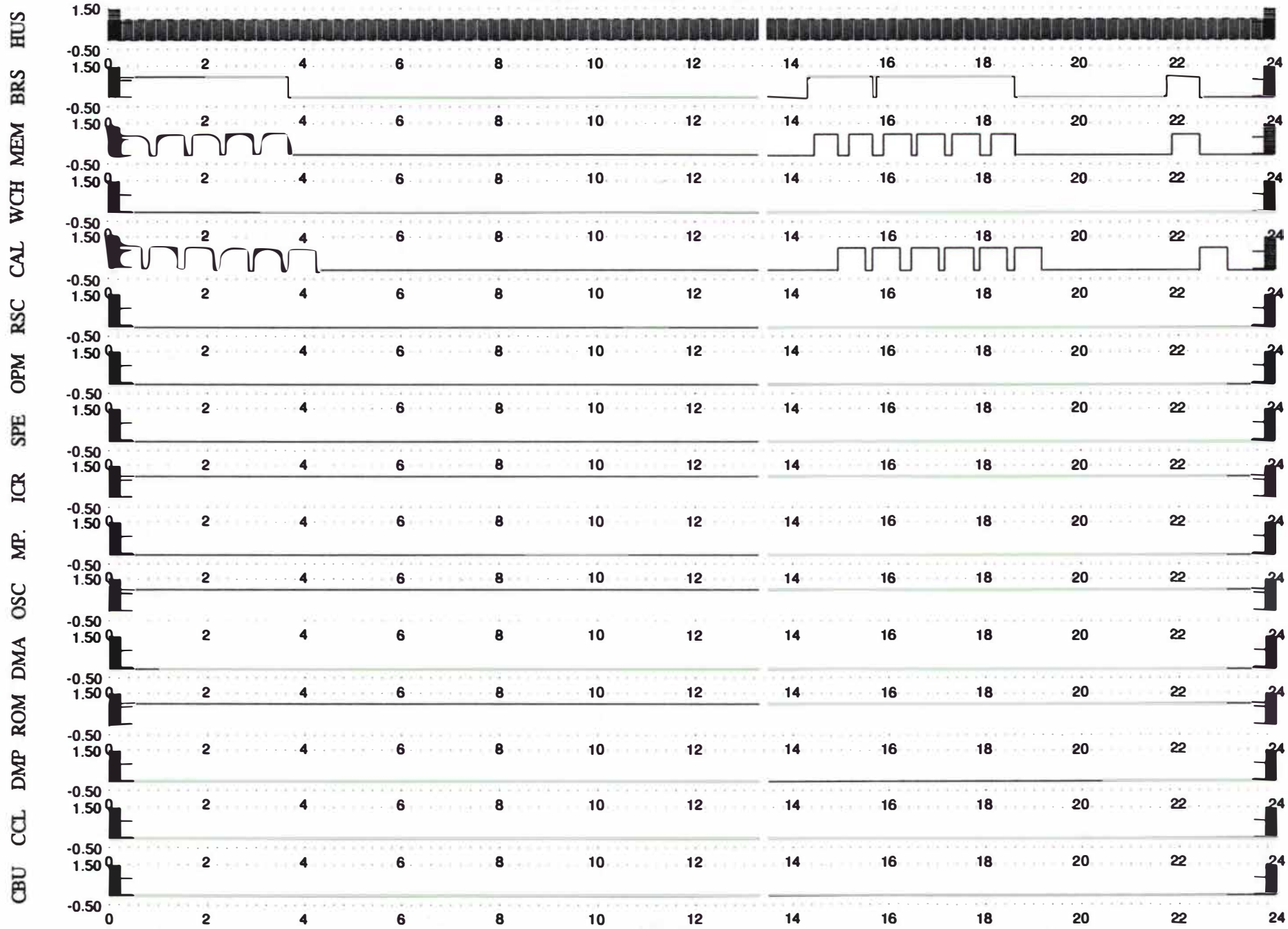


B# 4


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/16
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1803 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 76, year 1992 to day 76, year 1992 4/28/92

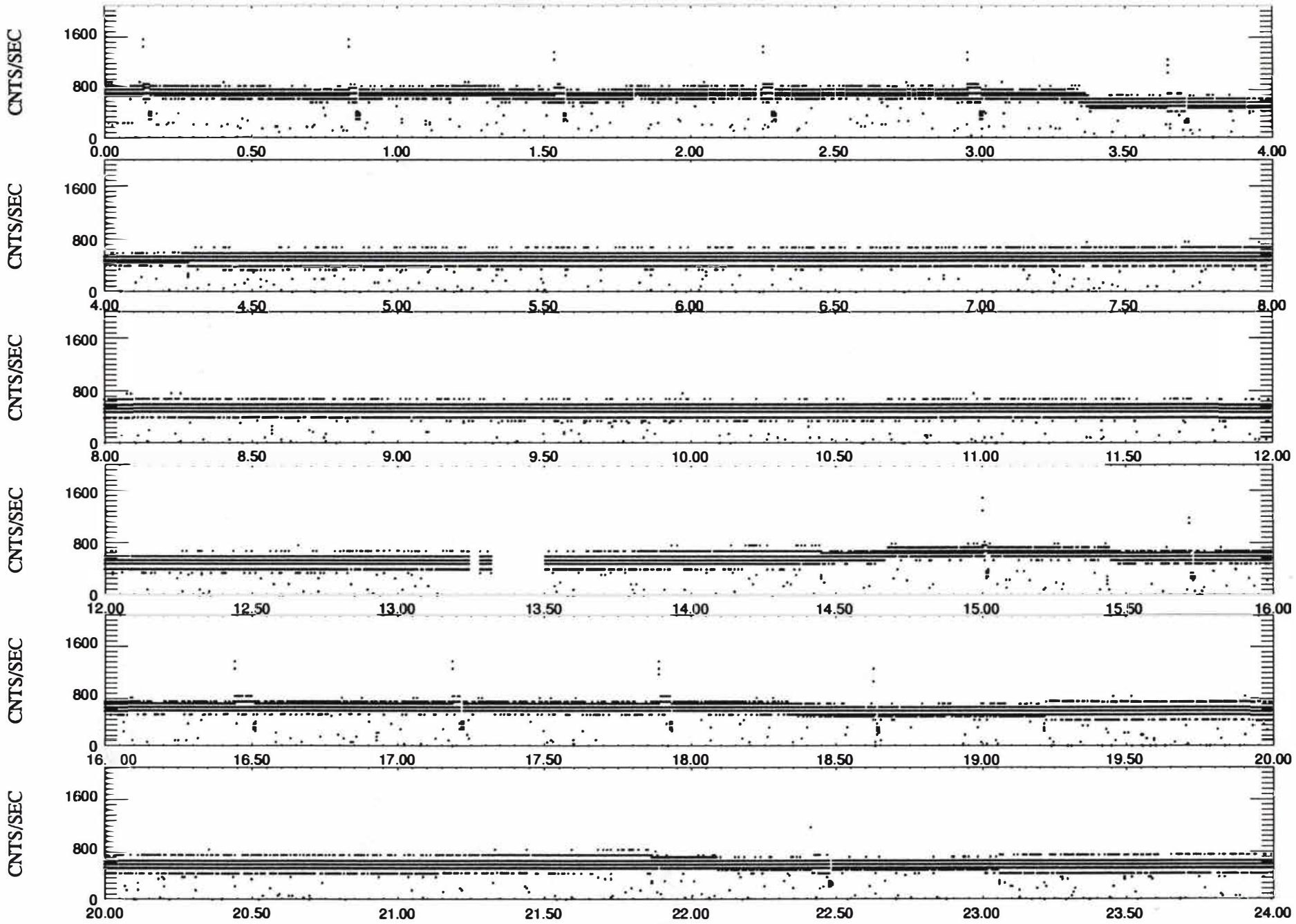
BURST NUMBER 3 - 14



UNIV[illegible]AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 76, year 1992 to day 76, year 1992 4/27/92

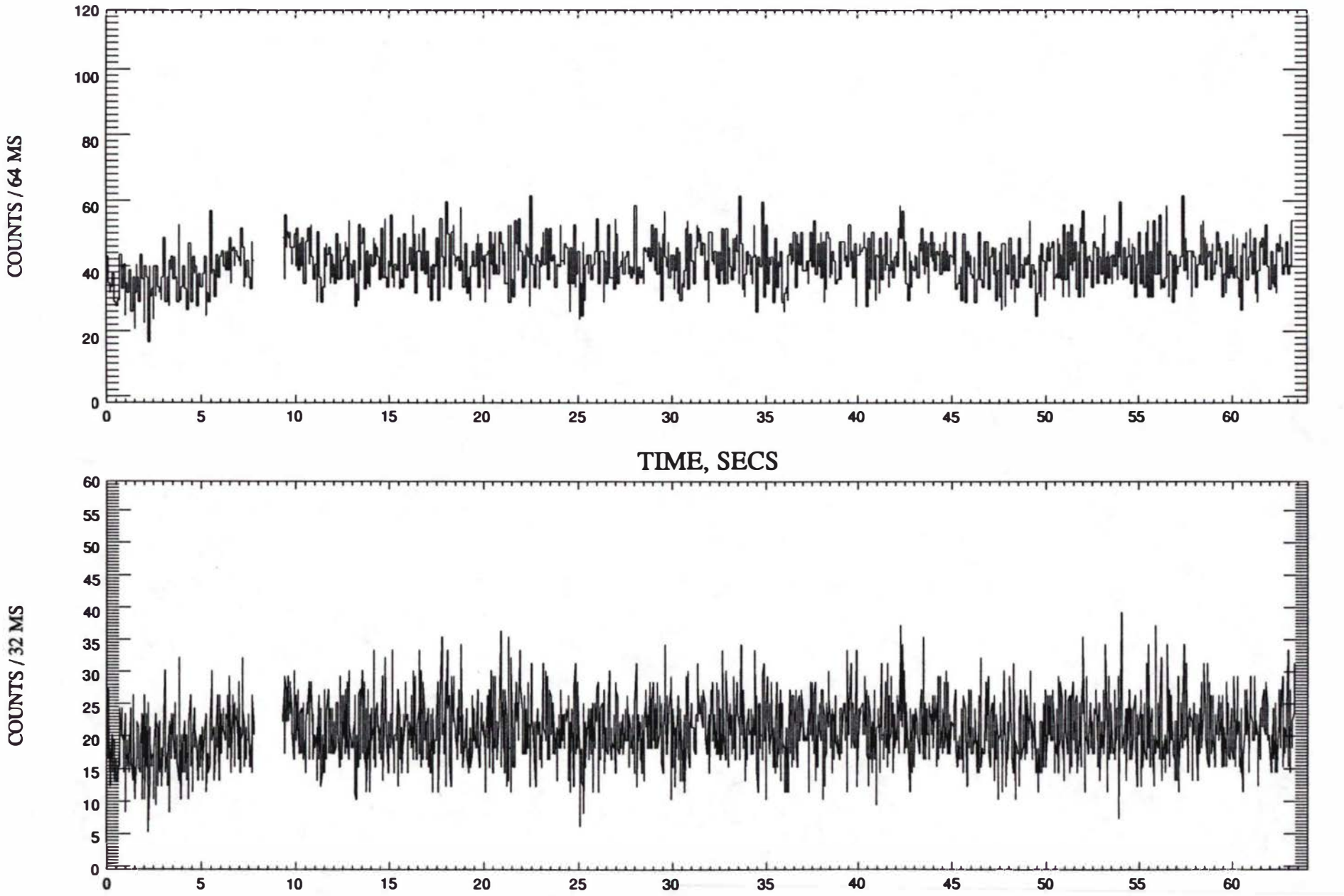
CALIBRATION DATA INCLUDED



UNIVl AL TIME

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

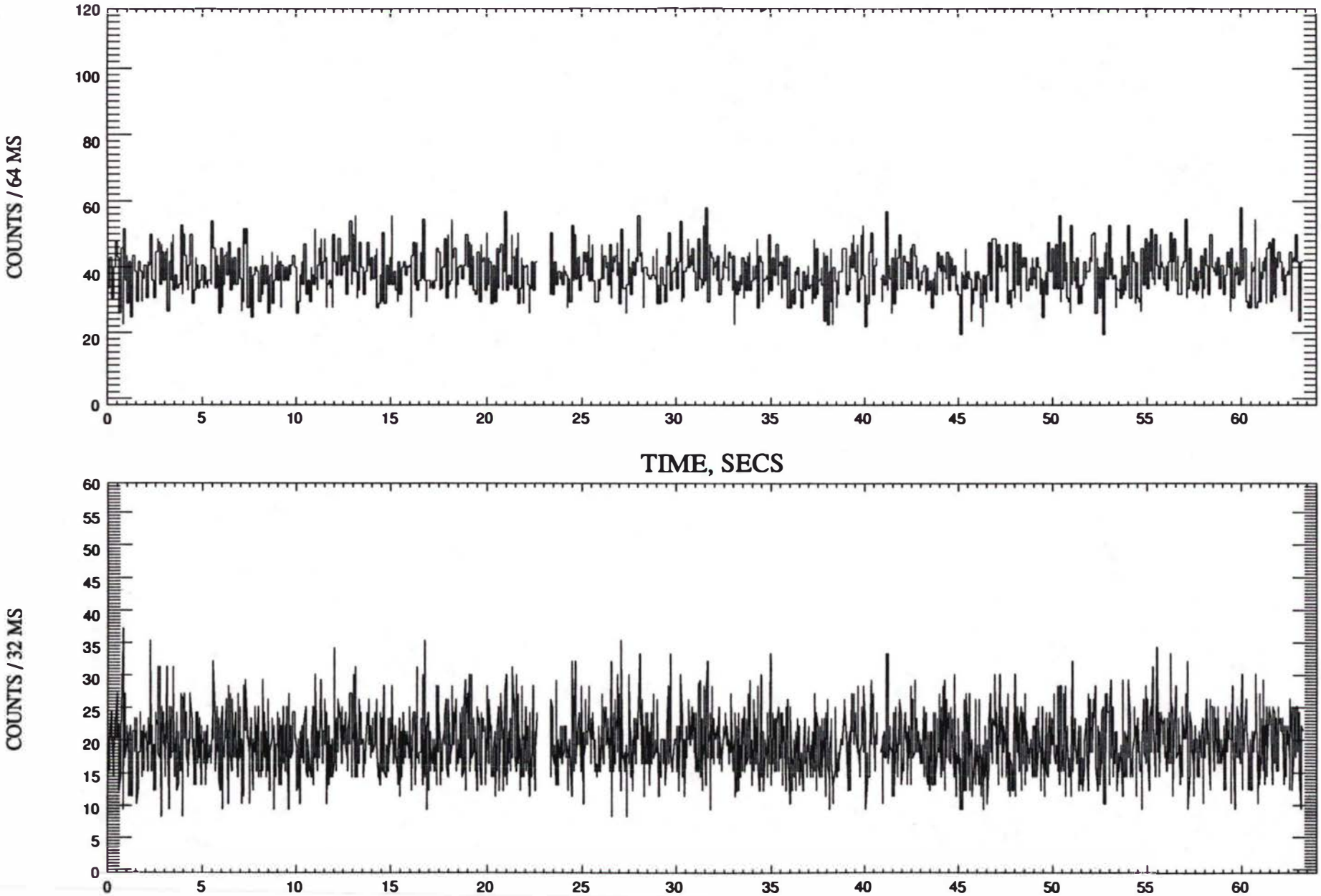
Burst Counter 3 at UT= 0.128132777744 h= 461.278 s



3# 1

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

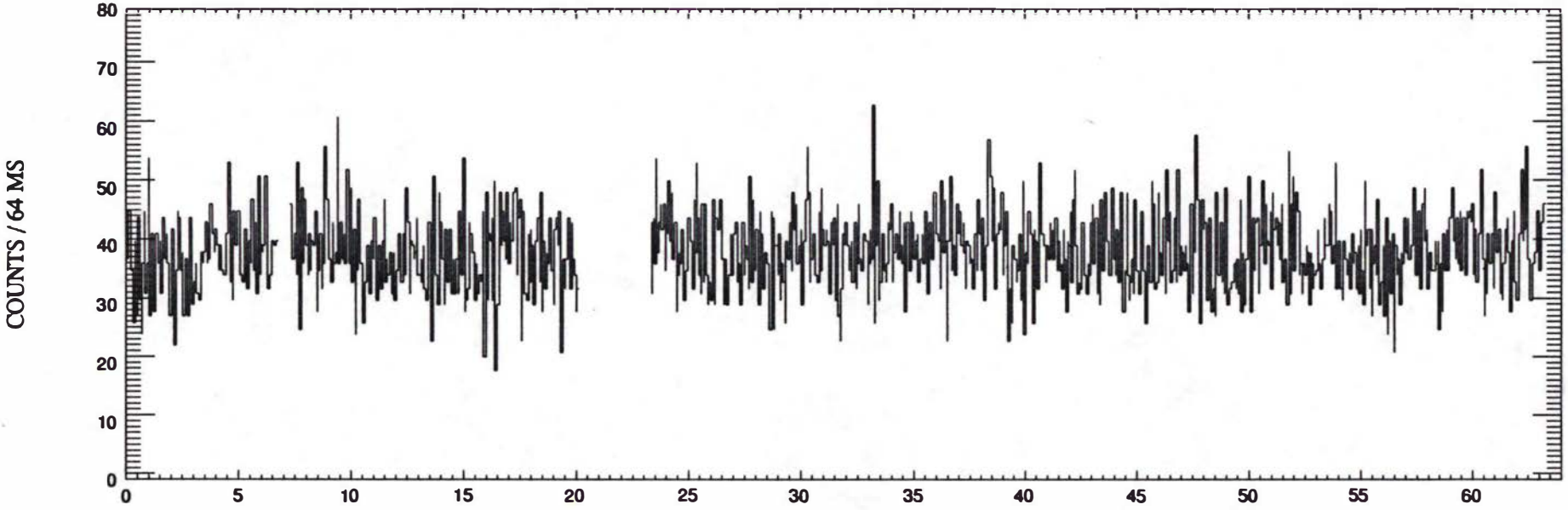
Burst Counter 4 at UT= 0.834820442200 h= 3005.354 s



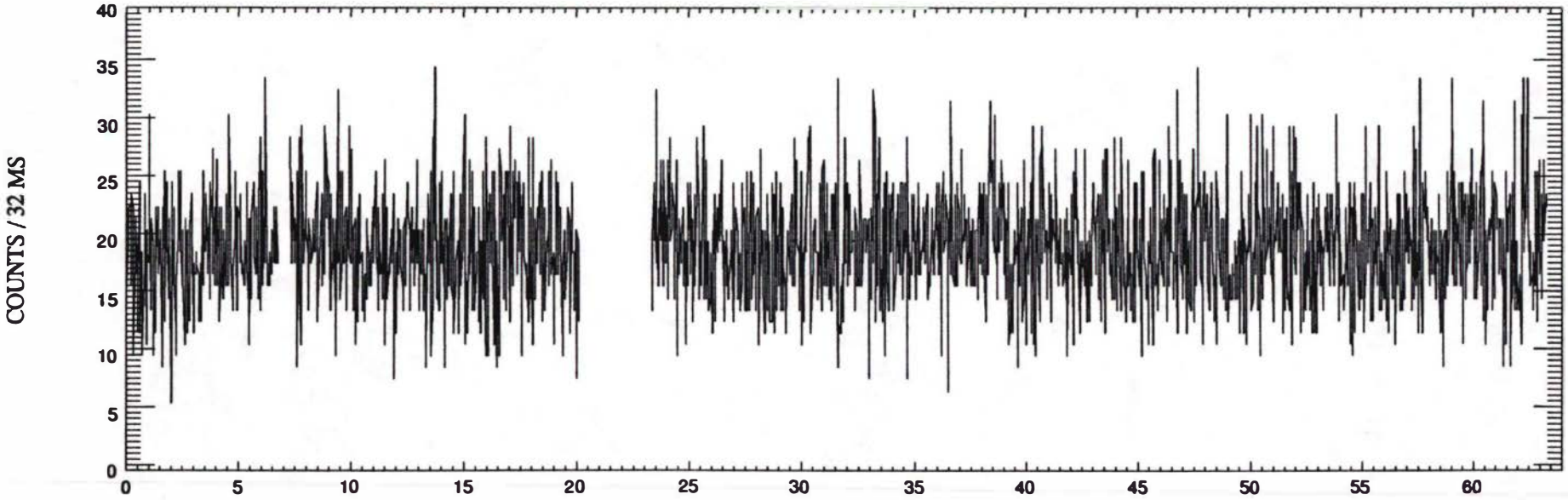
B# 2

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

Burst Counter 5 at UT= 1.542541092767 h= 5553.148 s



TIME, SECS

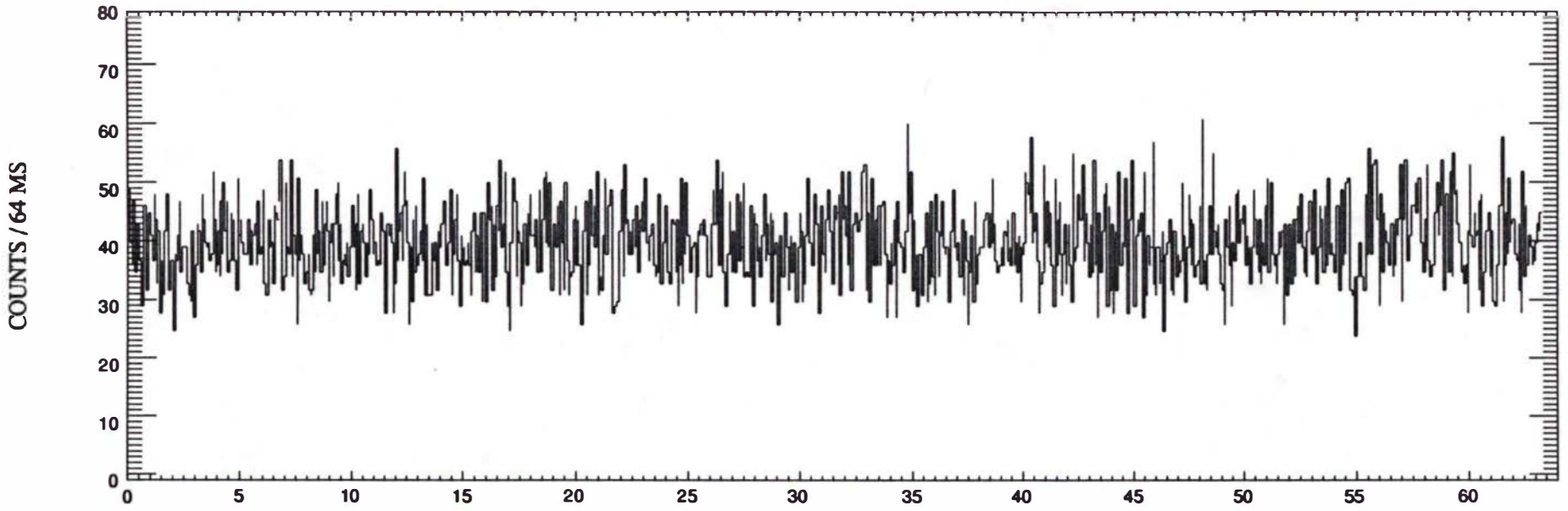


TIME SECS

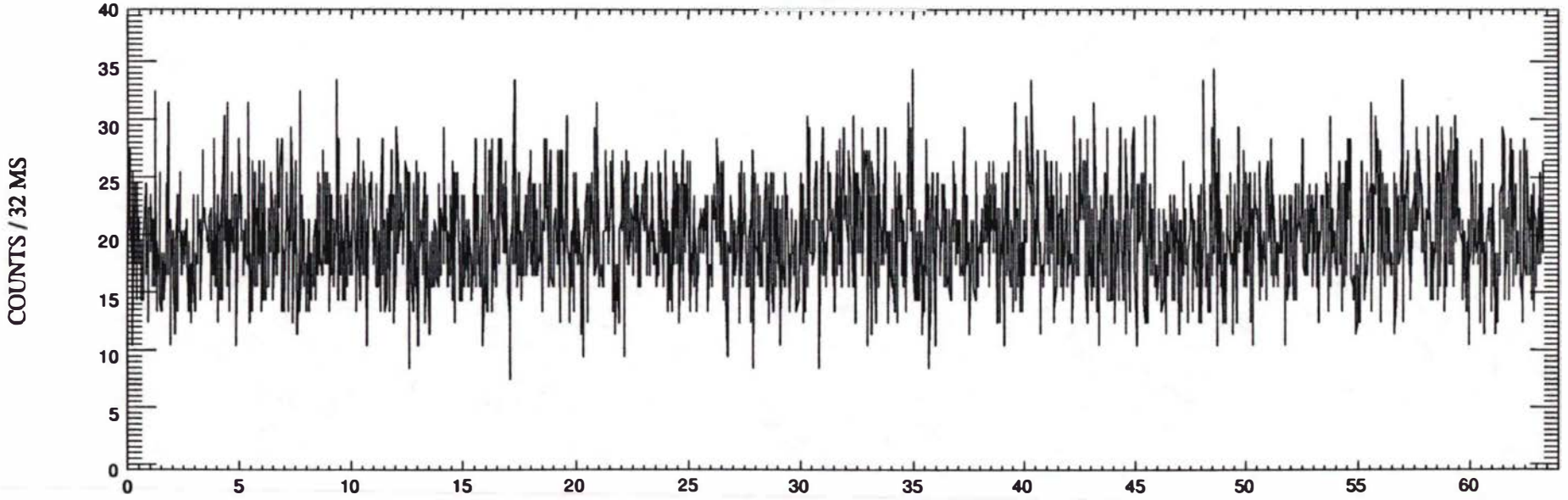
3# 3

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

Burst Counter 6 at UT= 2.232414521111 h= 8036.692 s



TIME, SECS

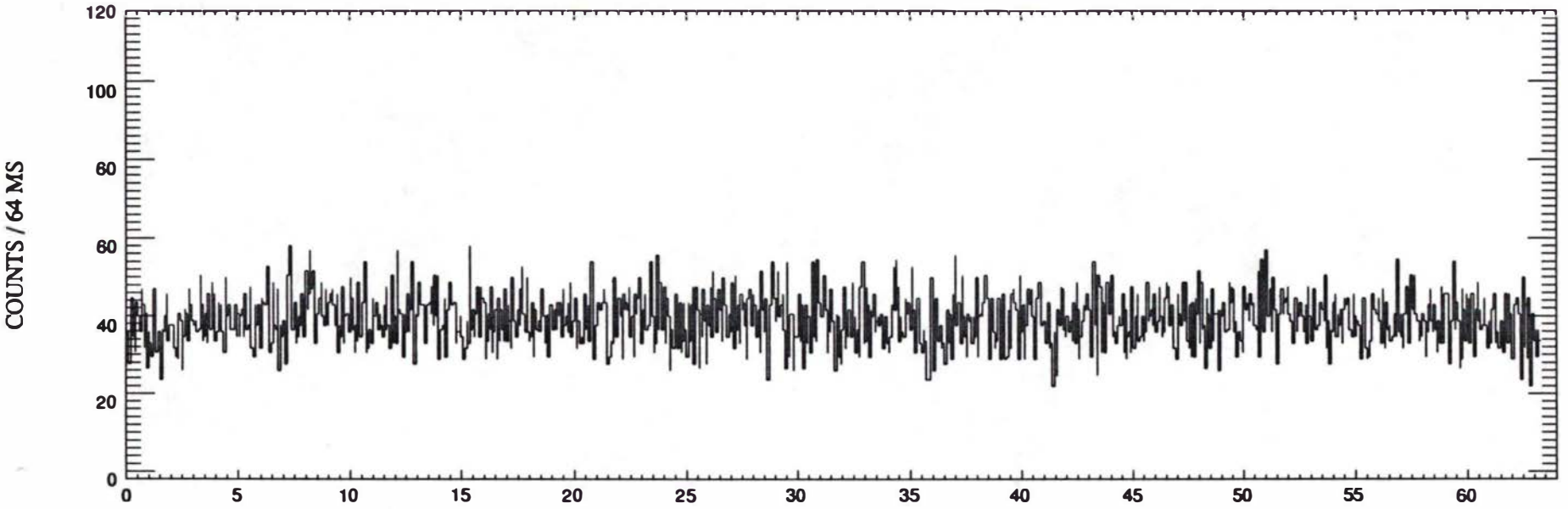


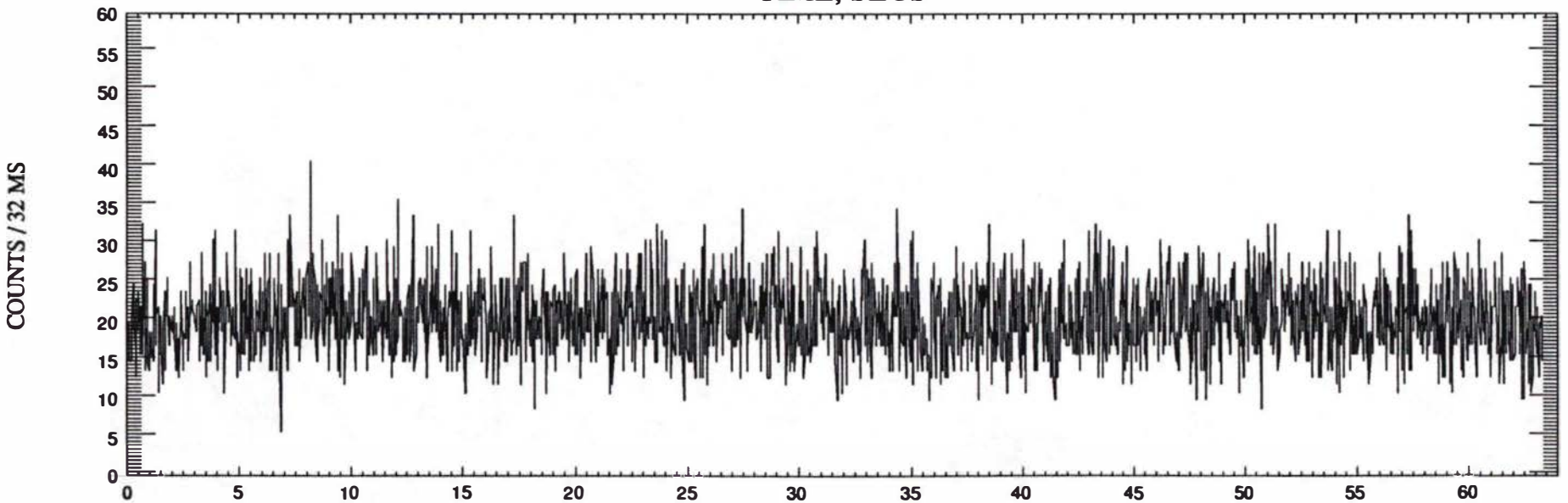
TIME SECS

)# 4

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

Burst Counter 7 at UT= 2.946350449456 h=10606.862 s

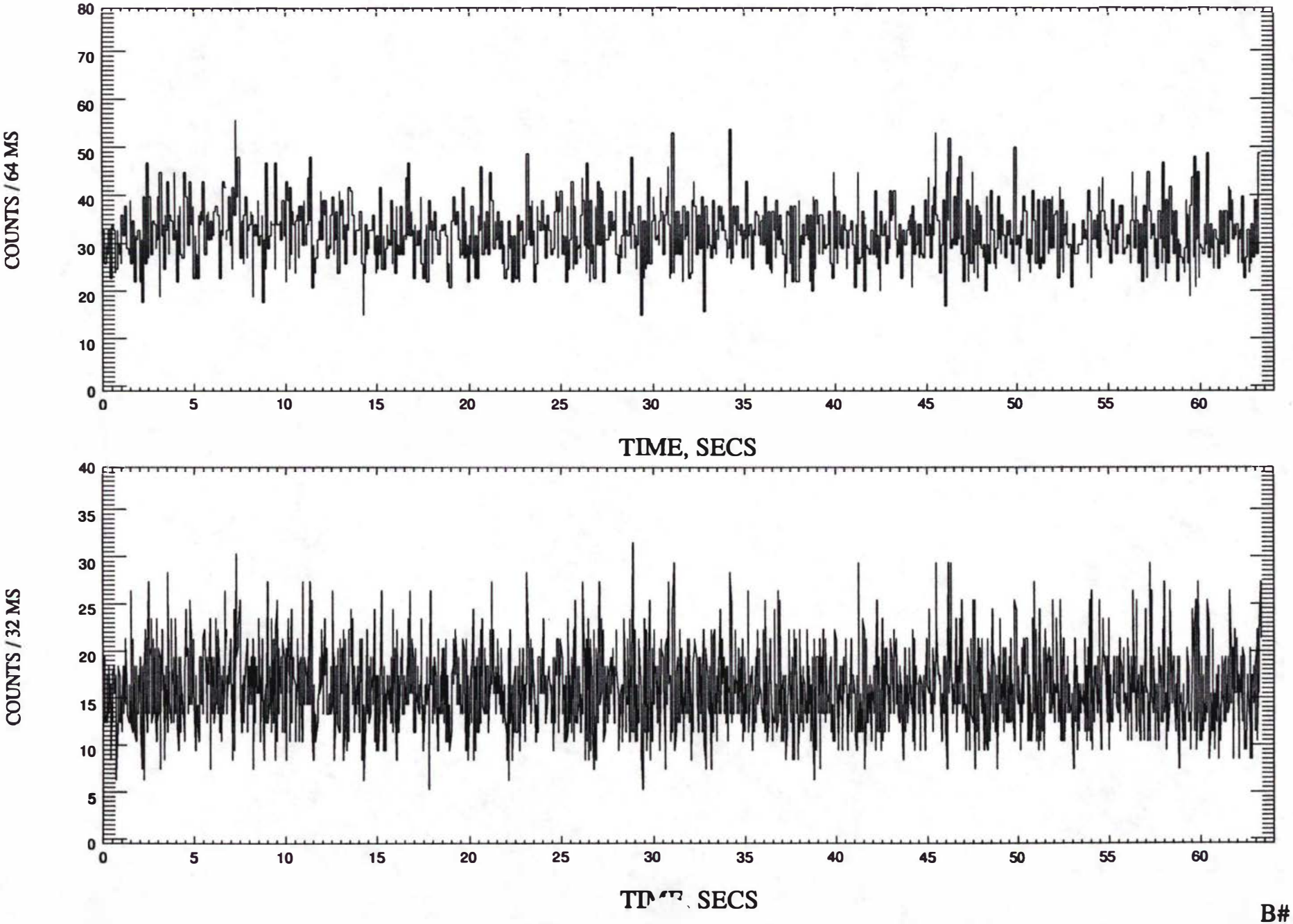




B# 5

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

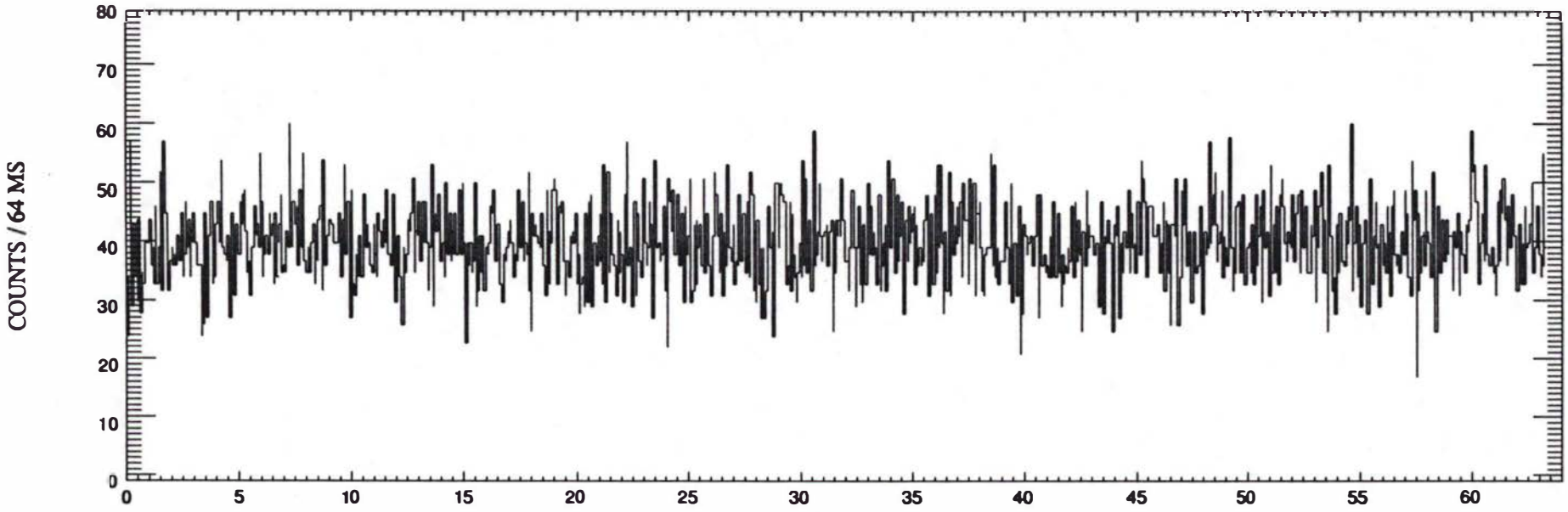
Burst Counter 8 at UT=14.301165885925 h=51484.197 s

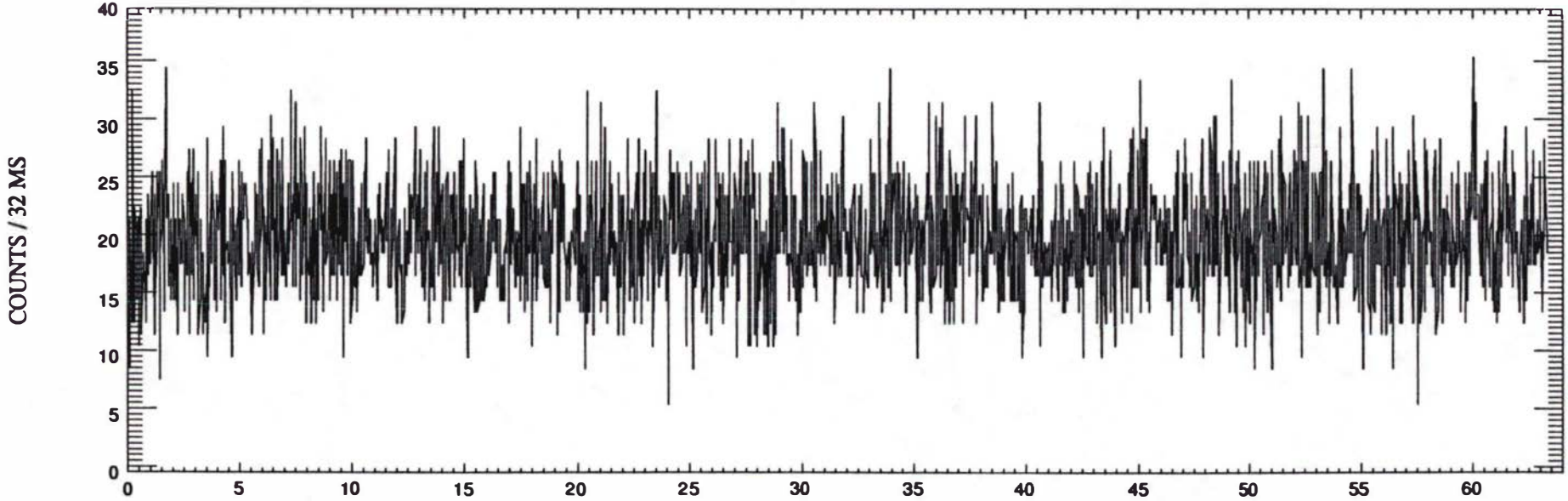


B# 6

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

Burst Counter 9 at UT=15.008260307312 h=54029.737 s

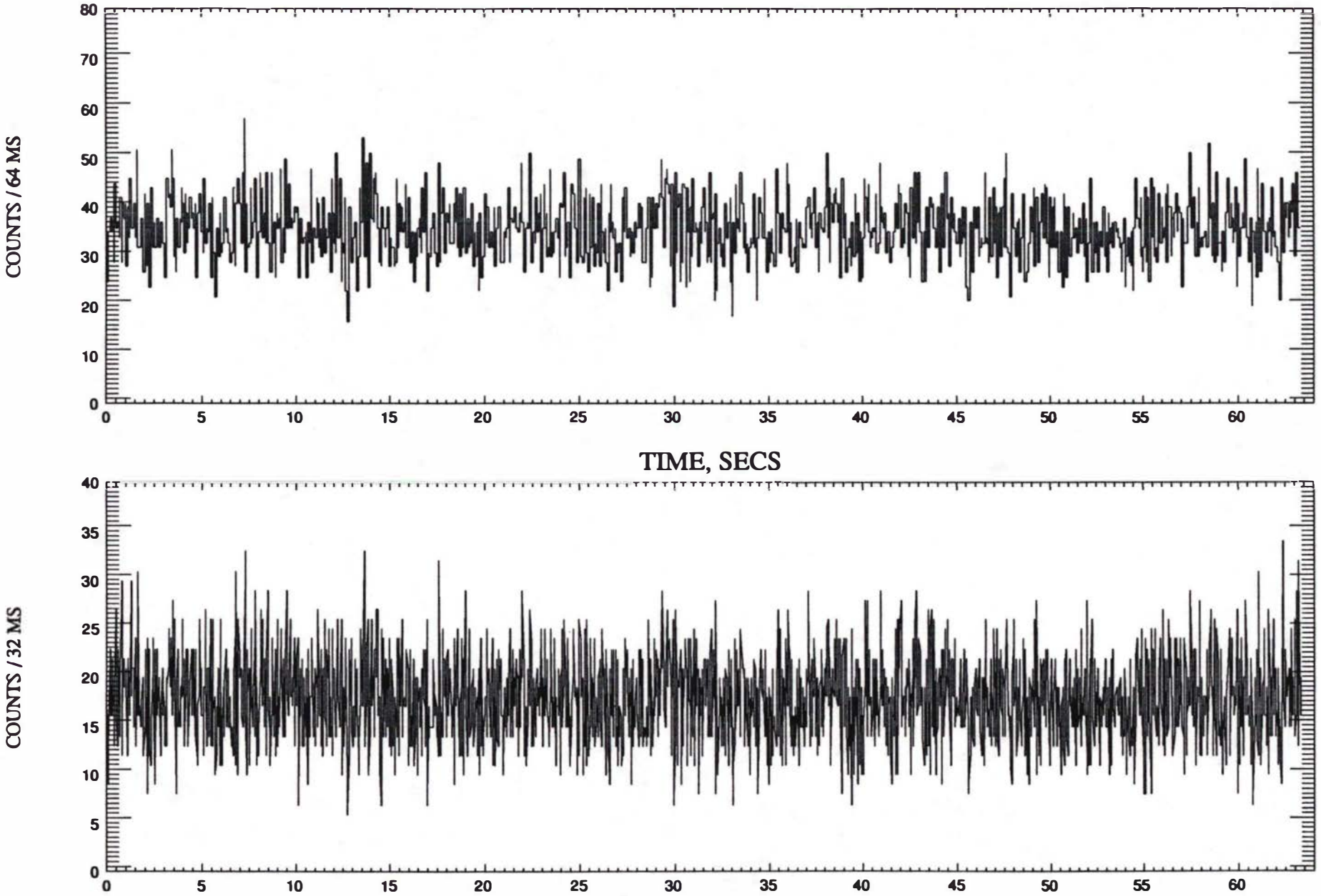




B# 7

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

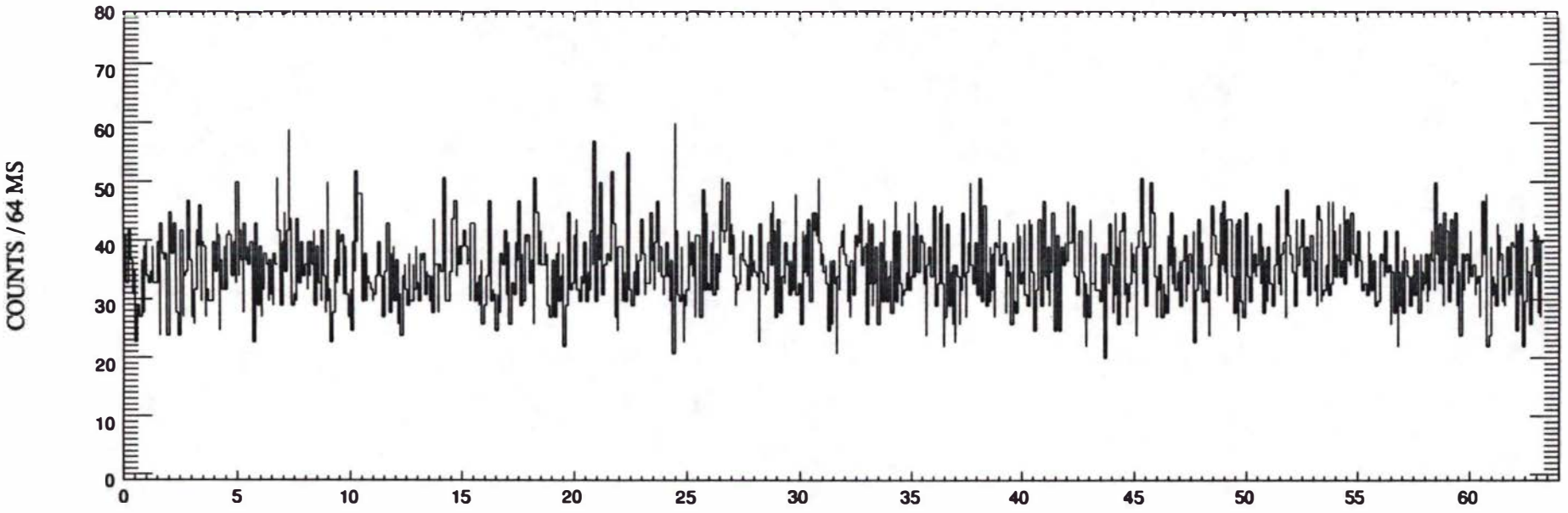
Burst Counter 10 at UT=15.741088523865 h=56667.919 s



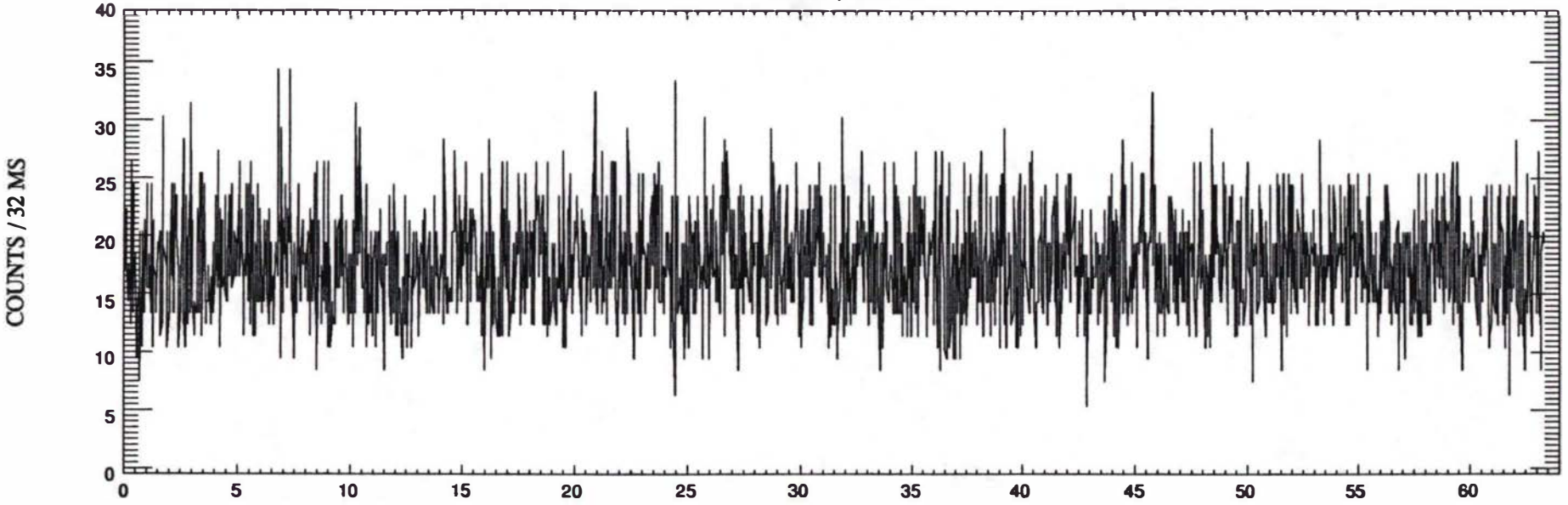
B# 8

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

Burst Counter 11 at UT=16.480855615404 h=59331.080 s



TIME, SECS

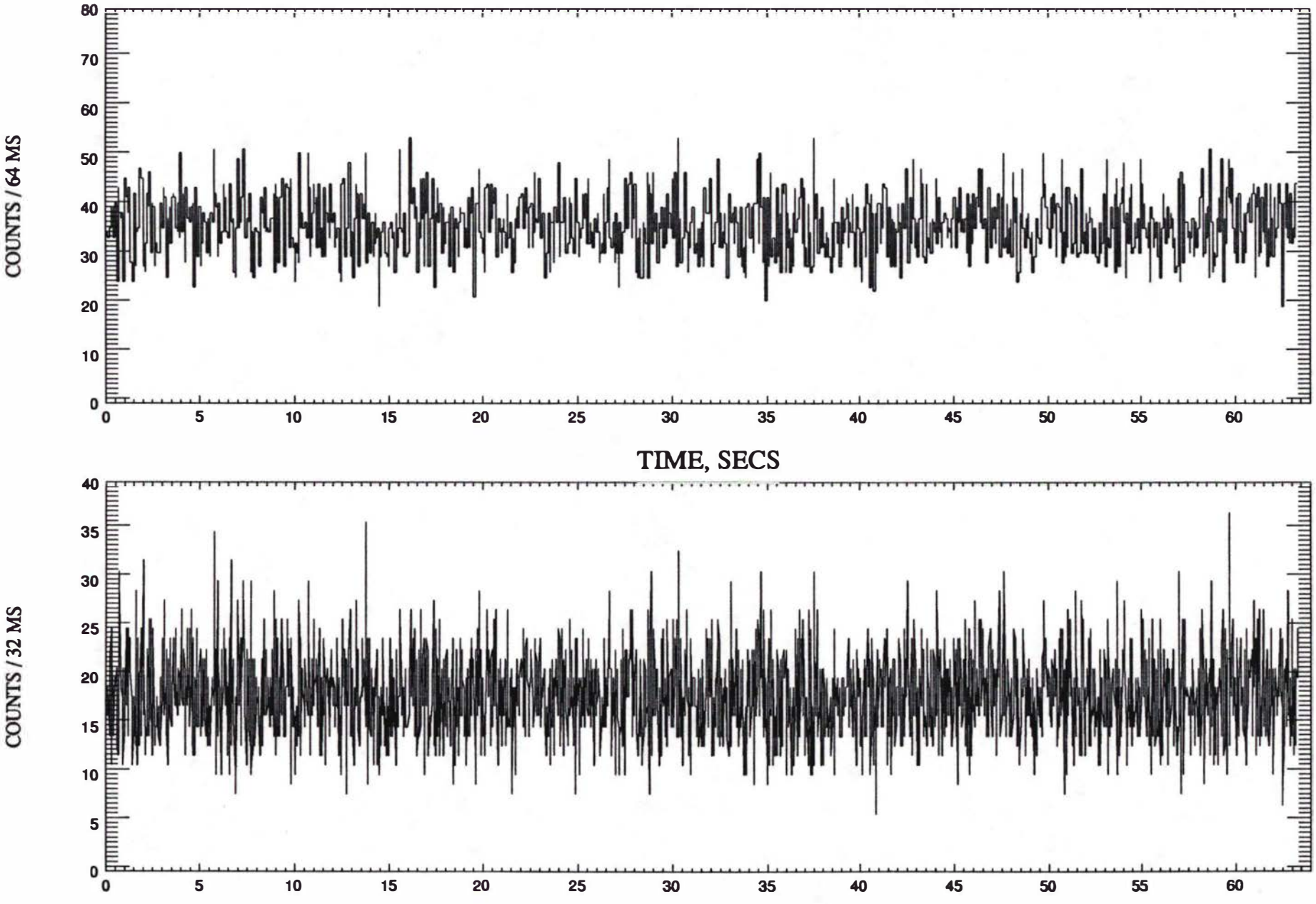


TI[illegible] SECS

B# 9

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

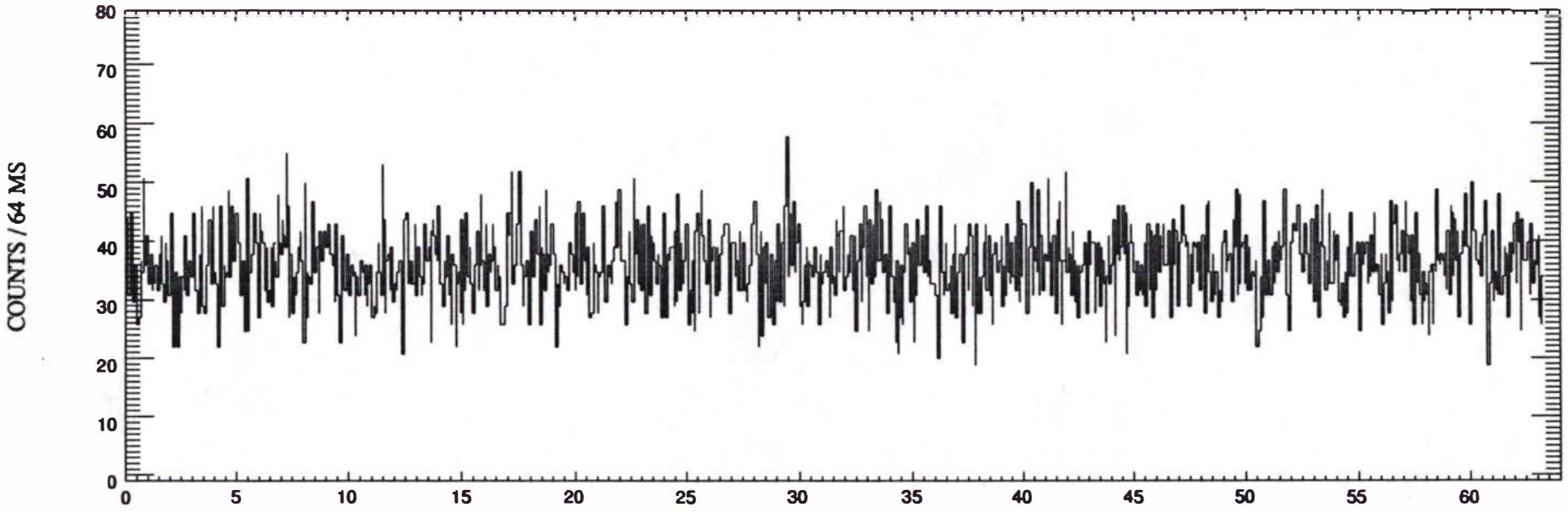
Burst Counter 12 at UT=17.186842324999 h=61872.632 s



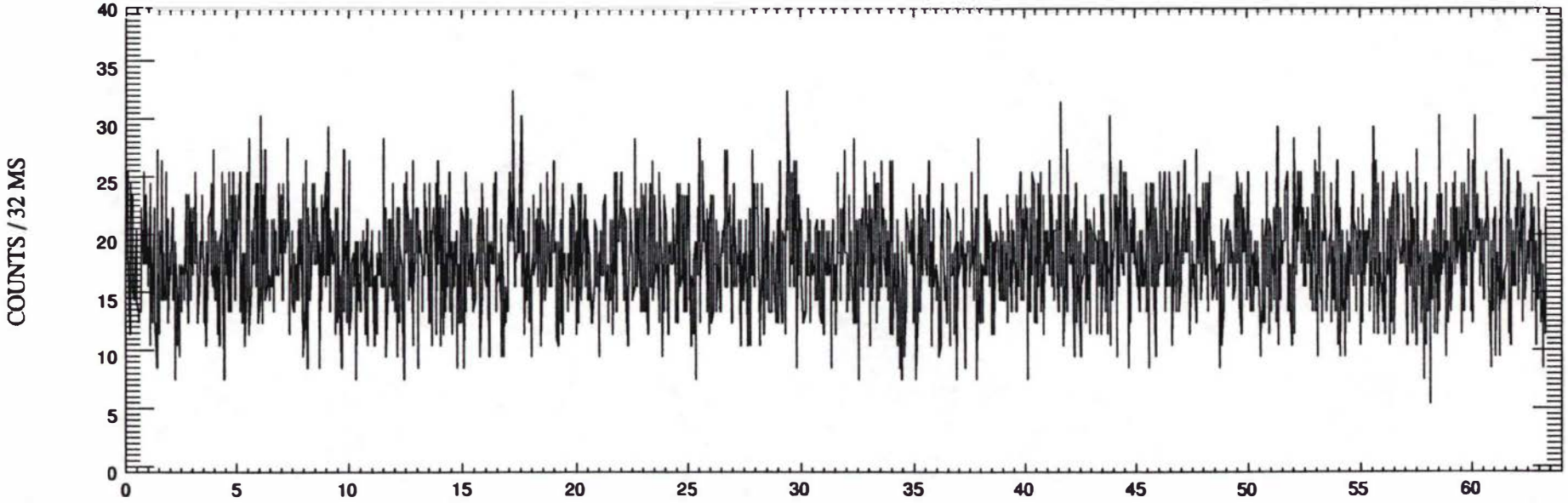
10

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

Burst Counter 13 at UT=17.922963583204 h=64522.669 s



TIME, SECS

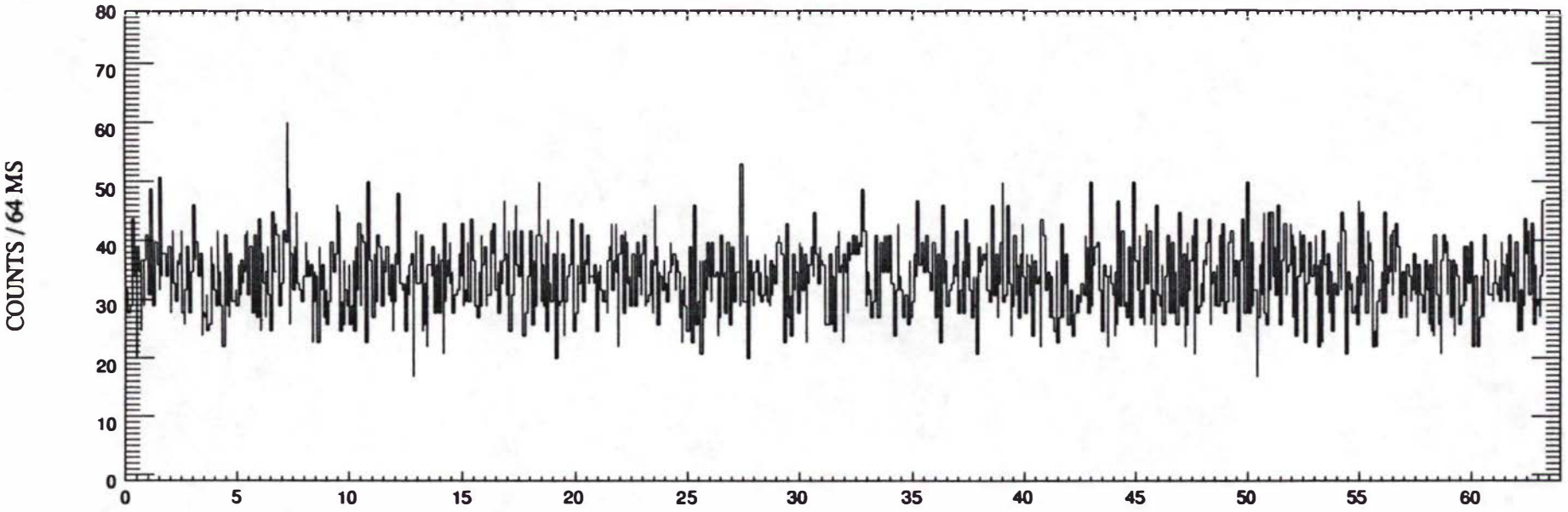


TI[illegible] SECS

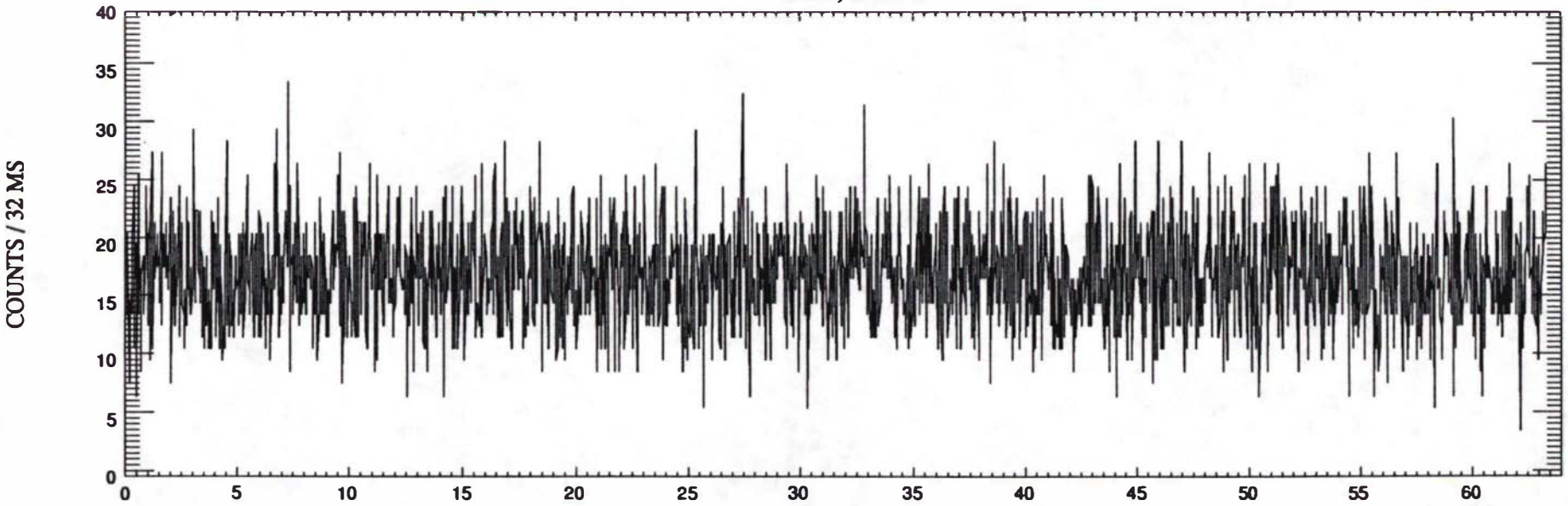
[illegible]# 11

HUS 2A TRIGGERED DATA EDR day 76, year 1992 5/6/92

Burst Counter 14 at UT=21.706953705682 h=78145.033 s



TIME, SECS



TIME SECS

12

From KOUVELIOTOU@ssl.msfc.nasa.gov Thu Apr 2 09:45:43 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA03653; Thu, 2 Apr 92 09:45:41 PST
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA00157; Thu, 2 Apr 92 09:43:54
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA03650; Thu, 2 Apr 92 09:45:35 PST
Date: Thu, 2 Apr 1992 11:48:20 -0600 (CST)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Message-Id: <920402114820.334050fc@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01488

TIME: TJD=8698 SECONDS=07802

TYPE: SAA SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SAA EXIT.

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1489
EVENT OF 1992 MAR 17 DAY OF YEAR= 77
EVENT CROSSING TIME AT BATSE      : 60925. S. OR 16:55:24.5
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 131.600    32.600
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 17/ 3/  92 IS:
RA=  155.243 DEC=     9.246 DIST=     4.465 AU
BATSE-ULYSSES DISTANCE =  667981952. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=148.02 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1890.09 SECS.
CROSSING TIME AT ULYSSES     IS 59034. S. OR 16:23:54.4 +/-  226.15 SECONDS
```

NO

From KOUVELIOTOU@ssl.msfc.nasa.gov Thu Apr 2 09:48:41 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA03710; Thu, 2 Apr 92 09:48:39 PST
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AB00159; Thu, 2 Apr 92 09:46:50
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA03707; Thu, 2 Apr 92 09:48:32 PST
Date: Thu, 2 Apr 1992 11:51:17 -0600 (CST)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Message-Id: <920402115117.33404f01@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01489 Mar 17

TIME: TJD=8698 SECONDS=60926

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=057.7 AZIMUTH=148.6 ERROR= DEGREES

COMMENTS:
WEAK EVENT LASTING ~ 50 S. VERY BAD DATA QUALITY (SEVERAL GAPS).
IT SEEMS TO BE ONE SINGLE PULSE NOT SEEN ABOVE 320 KEV.

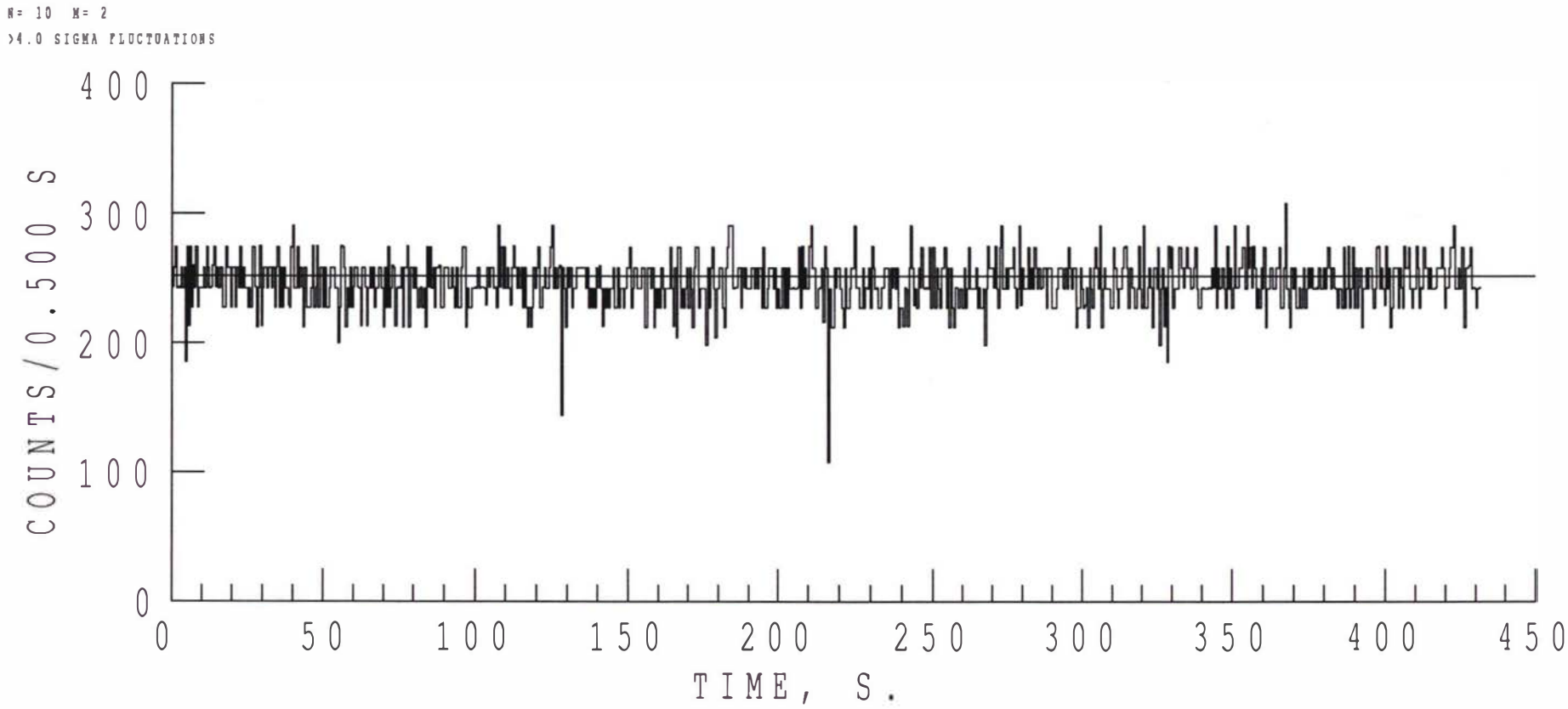
7/ 6/94

ULYSSES RT

17/ 3/92 58824.074 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV



From ULSSCI@jplgp.span.nasa.gov Mon Mar 16 12:37:36 1992
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA17192; Mon, 16 Mar 92 12:37:34 PST
Received: Mon, 16 Mar 92 12:38:23 PST from JPLGP.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9203162038.AA23239@mx.nsi.nasa.gov>
Received: from JPLGP.dnet by AMES.dnet with MAIL-11
          (utk-mail11d v1.7); Mon, 16 Mar 92 12:39:40 PST
Date: Mon, 16 Mar 92 12:39:40 PST
From: ULSSCI@jplgp.span.nasa.gov
X-To: SBAME, BGOLDSTE, AGALVIN, GGLOECKL, EGRUEN, DLINKERT, ABALOGH, RFORSYTH, KHURLEY, EKEF
X-Cc: ULSSCI
Subject: Platform Testing.
To: KHURLEY@sunspot.ssl.berkeley.edu
Status: R

Following my note of 25th February, please find below further information on the platform testing that will be taking place in March.

Data Handling Subsystem (DHS) checkout will take place on 17th March. At approximately 92.077.19:00 SCET the redundant CTU will be switched on; this will cause temporary loss of telemetry, and temporary loss of all timing pulses to the payload and platform. Longer term effects will include the possibility of a very small change in the spacecraft clock tick value, and a change in the spacecraft clock drift rate. At 077.20:40 the redundant RTU will be switched on, there may be a single format on corrupted telemetry. At 077.22:30, the redundant RCIU will be switched on, there will be some corruption of spacecraft datations for a short period. The spacecraft will use the redundant DHS chain for an indefinite period.

S-band switch off will take place at 92.078.15:45. Large thermal transients will be observed on the spacecraft. ⇒ clock drifts !

Attitude and Orbit Control Subsystem (AOCS) testing will be taking place from 19th March to 31 March 92. All switchings will cause temporary interruption to and corruption of on-board Sun Reference Pulse (SRP), spin rate, and Solar Aspect Angle (SAA). Times are approximate SCET

92.079.03:05	Processing Electronics 2 (PE-2) switch on
92.082.08:20	Cross Beam Sensor 2 (XBS2) switch on
	PE-1 switch on
92.084.01:05	XBS1 switch on
	PE-2 switch on
92.088.02:05	XBS2 switch on
	PE-1 switch on
92.090.18:35	XBS1 switch on

Reaction Control Subsystem (RCS) testing and recalibration will take place in April, May, and June this year. This should be completely transparent to experimenters.

Conscan testing is planned for the period 27th April until 8th May. This has been described in a separate note.

If you have questions or comments on these periods of testing, please do not hesitate to contact me.

Best regards,

Shaun Standley

From ULSSCI@jplgp.span.nasa.gov Tue Mar 17 17:27:51 1992
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA28230; Tue, 17 Mar 92 17:27:43 PST
Received: Tue, 17 Mar 92 17:27:30 PST from JPLGP.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9203180127.AA02550@mx.nsi.nasa.gov>
Received: from JPLGP.dnet by AMES.dnet with MAIL-11
          (utk-mail11d v1.7); Tue, 17 Mar 92 17:29:50 PST
Date: Tue, 17 Mar 92 17:29:50 PST
From: ULSSCI@jplgp.span.nasa.gov
X-To: SBAME, BGOLDSTE, AGALVIN, GGLOECKL, EGRUEN, DLINKERT, ABALOGH, RFORSYTH, KHURLEY, EKEP
X-Cc: ULSSCI
Subject: Possible CTU2 Malfunction.
To: KHURLEY@sunspot.ssl.berkeley.edu
Status: R

During Data Handling Subsystem checkout today (day 077) the redundant Central Terminal Unit (CTU2) was switched on at approximately 92.077.18:56:48 SCET. When telemetry was regained it could not be decoded. The prime CTU was reconfigured at approximately 077.21:16:49 SCET and this restored valid telemetry; the rest of the DHS checkout was cancelled.

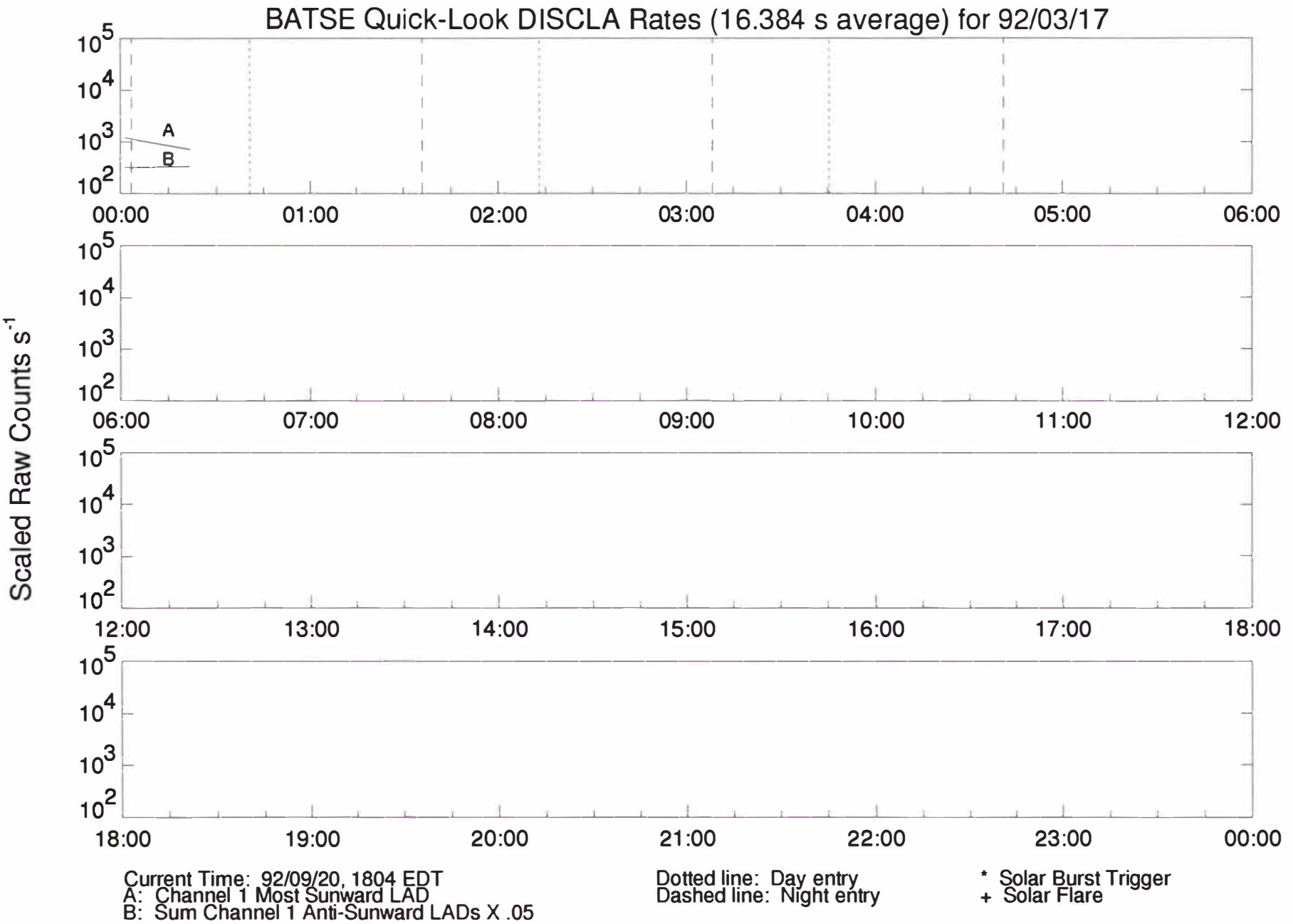
Because we have no valid telemetry from the period when CTU2 was configured, we have little idea of the extent of the malfunction from engineering data. Although ground system anomalies have not been ruled out, these seem unlikely.

1. Please examine your instrument data asap and inform us (via SPAN) of any anomalies you see after the period when CTU2 was configured.

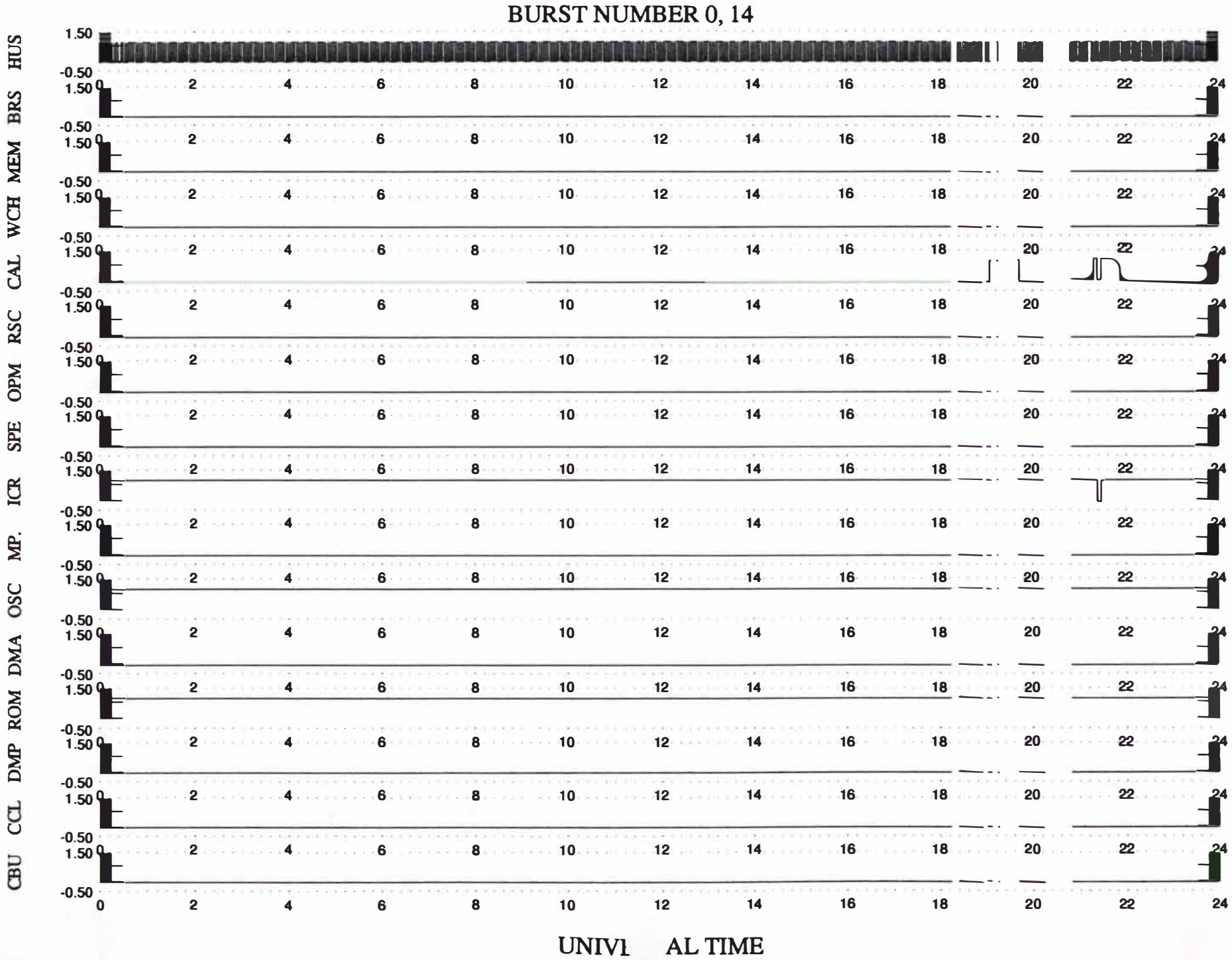
2. If you require any corrective action to be taken, call ULYSSES ACE console on +(818) 393 0559, which is manned 24 hours.

Best regards,

Shaun Standley
Systems Engineer

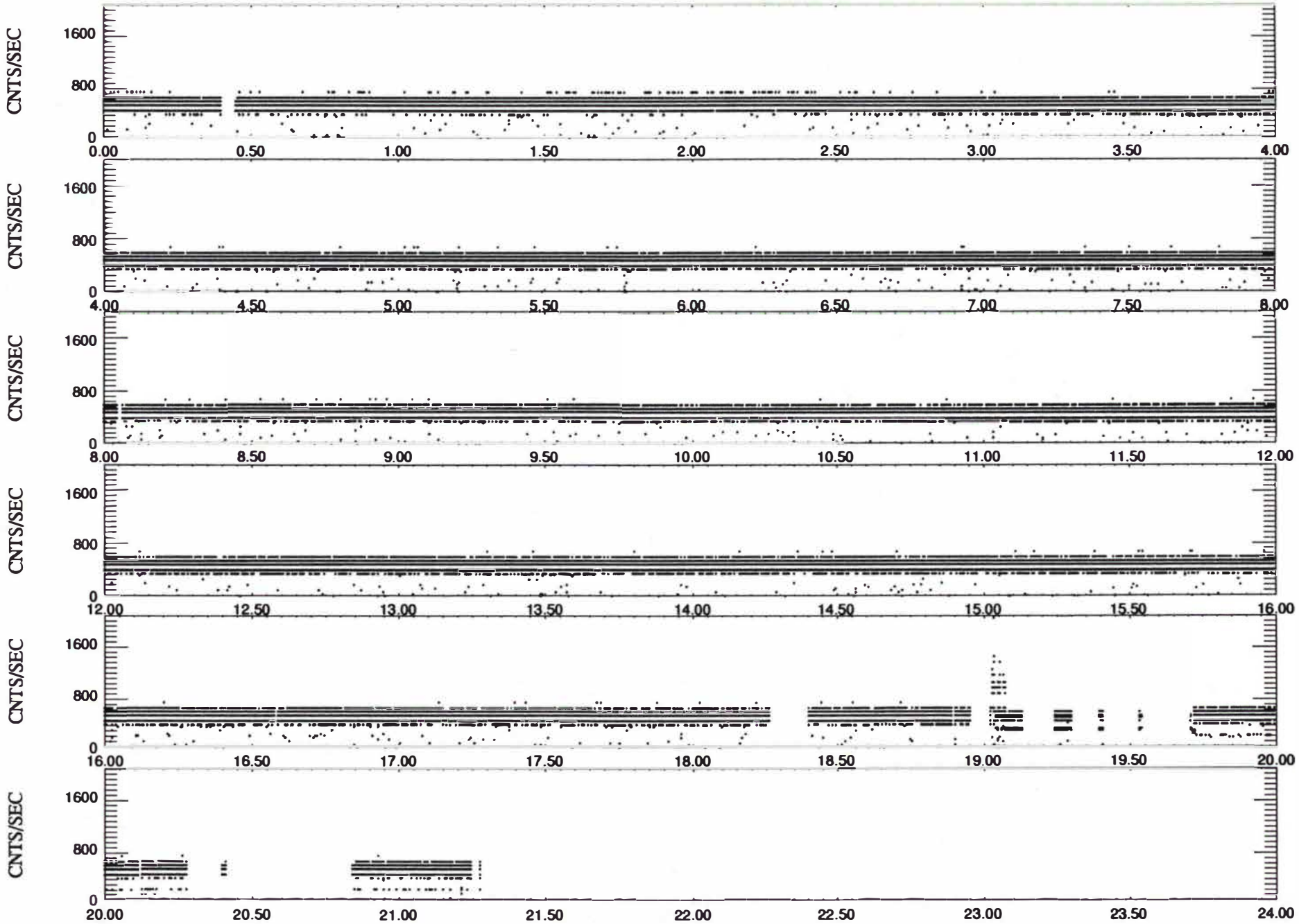

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/17
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1804 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 77, year 1992 to day 77, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 77, year 1992 to day 77, year 1992 4/27/92

CALIBRATION DATA INCLUDED



UNIVI AL TIME

From MEEGAN@ssl.msfc.nasa.gov Mon Apr 6 06:53:43 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA14428; Mon, 6 Apr 92 06:53:40 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA01372; Mon, 6 Apr 92 05:49:34
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA14425; Mon, 6 Apr 92 06:53:33 PDT
Date: Mon, 6 Apr 1992 8:51:49 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Message-Id: <920406085149.344008c5@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01490 Mar 18

TIME: TJD=8699 SECONDS=04623

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
TRIGGERED ON EXIT FROM SAA.

From MEEGAN@ssl.msfc.nasa.gov Mon Apr 6 06:55:12 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14438; Mon, 6 Apr 92 06:55:10 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA01374; Mon, 6 Apr 92 05:51:05
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14435; Mon, 6 Apr 92 06:55:04 PDT
Date: Mon, 6 Apr 1992 8:55:42 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Message-Id: <920406085542.344008ca@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01491

TIME: TJD=8699 SECONDS=10536

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
TRIGGERED ON EXIT FROM SAA.

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1492
EVENT OF 1992 MAR 18 DAY OF YEAR= 78
EVENT CROSSING TIME AT BATSE      : 39434. S. OR 10:57:13.8
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 249.100  -26.600
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 18/ 3/  92 IS:
RA=  155.036 DEC=     9.262 DIST=     4.471 AU
BATSE-ULYSSES DISTANCE =  668930416. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 82.26 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  300.36 SECS.
CROSSING TIME AT ULYSSES     IS 39734. S. OR 11:02:14.2 +/-  438.43 SECONDS
```

N/O

From MEEGAN@ssl.msfc.nasa.gov Mon Apr 6 06:58:45 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA14447; Mon, 6 Apr 92 06:58:44 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA01376; Mon, 6 Apr 92 05:54:39
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA14444; Mon, 6 Apr 92 06:58:37 PDT
Date: Mon, 6 Apr 1992 8:59:19 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Message-Id: <920406085919.344008d0@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01492 Mar 18

TIME: TJD=8699 SECONDS=39435

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=102. AZIMUTH=276. ERROR= DEGREES

COMMENTS:
WEAK, ABOUT 7 SECONDS LONG.

No data - Ulysses CTU test

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1493
EVENT OF 1992 MAR 18 DAY OF YEAR= 78
EVENT CROSSING TIME AT BATSE      : 54418. S. OR 15:06:57.9
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 194.100    29.900
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 18/ 3/  92 IS:
RA=  155.036 DEC=     9.262 DIST=     4.471 AU
BATSE-ULYSSES DISTANCE =  668930416. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=138.12 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1661.32 SECS.
CROSSING TIME AT ULYSSES     IS 52757. S. OR 14:39:16.6 +/-  283.38 SECONDS
```

N/O

From MEEGAN@ssl.msfc.nasa.gov Tue Apr 7 11:38:19 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA25456; Tue, 7 Apr 92 11:38:17 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00513; Tue, 7 Apr 92 10:34:15
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA25453; Tue, 7 Apr 92 11:38:06 PDT
Date: Tue, 7 Apr 1992 13:38:42 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Message-Id: <920407133842.344014e0@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

Mar 18 BATSE BURST TRIGGER

NO.: 01493

TIME: TJD=8699 SECONDS=54420 No data

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=035. AZIMUTH=210. ERROR= 20. DEGREES

COMMENTS:
SPIKE LASTING ABOUT 40 MS. DUE TO POOR DATA, LOCATION IS PRELIMINARY,
AND VERY UNCERTAIN, BUT MAY BE IN COMPTEL AND EGRET FOV. SEEN ABOVE
300 KEV.

From MEEGAN@ssl.msfc.nasa.gov Mon Apr 6 07:06:32 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14471; Mon, 6 Apr 92 07:06:30 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA01378; Mon, 6 Apr 92 06:02:26
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14467; Mon, 6 Apr 92 07:06:24 PDT
Date: Mon, 6 Apr 1992 9:07:07 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Message-Id: <920406090707.344008d9@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01494

TIME: TJD=8699 SECONDS=65610

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT.

From MEEGAN@ssl.msfc.nasa.gov Mon Apr 6 07:17:22 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14505; Mon, 6 Apr 92 07:17:20 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA01380; Mon, 6 Apr 92 06:13:14
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14494; Mon, 6 Apr 92 07:17:11 PDT
Date: Mon, 6 Apr 1992 9:17:54 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Message-Id: <920406091754.344008e4@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01495

TIME: TJD=8699 SECONDS=71647

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT.

From MEEGAN@ssl.msfc.nasa.gov Mon Apr 6 07:20:35 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14527; Mon, 6 Apr 92 07:20:33 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA01384; Mon, 6 Apr 92 06:16:28
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14523; Mon, 6 Apr 92 07:20:24 PDT
Date: Mon, 6 Apr 1992 9:21:03 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Message-Id: <920406092103.344008e9@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01496

TIME: TJD=8699 SECONDS=77341

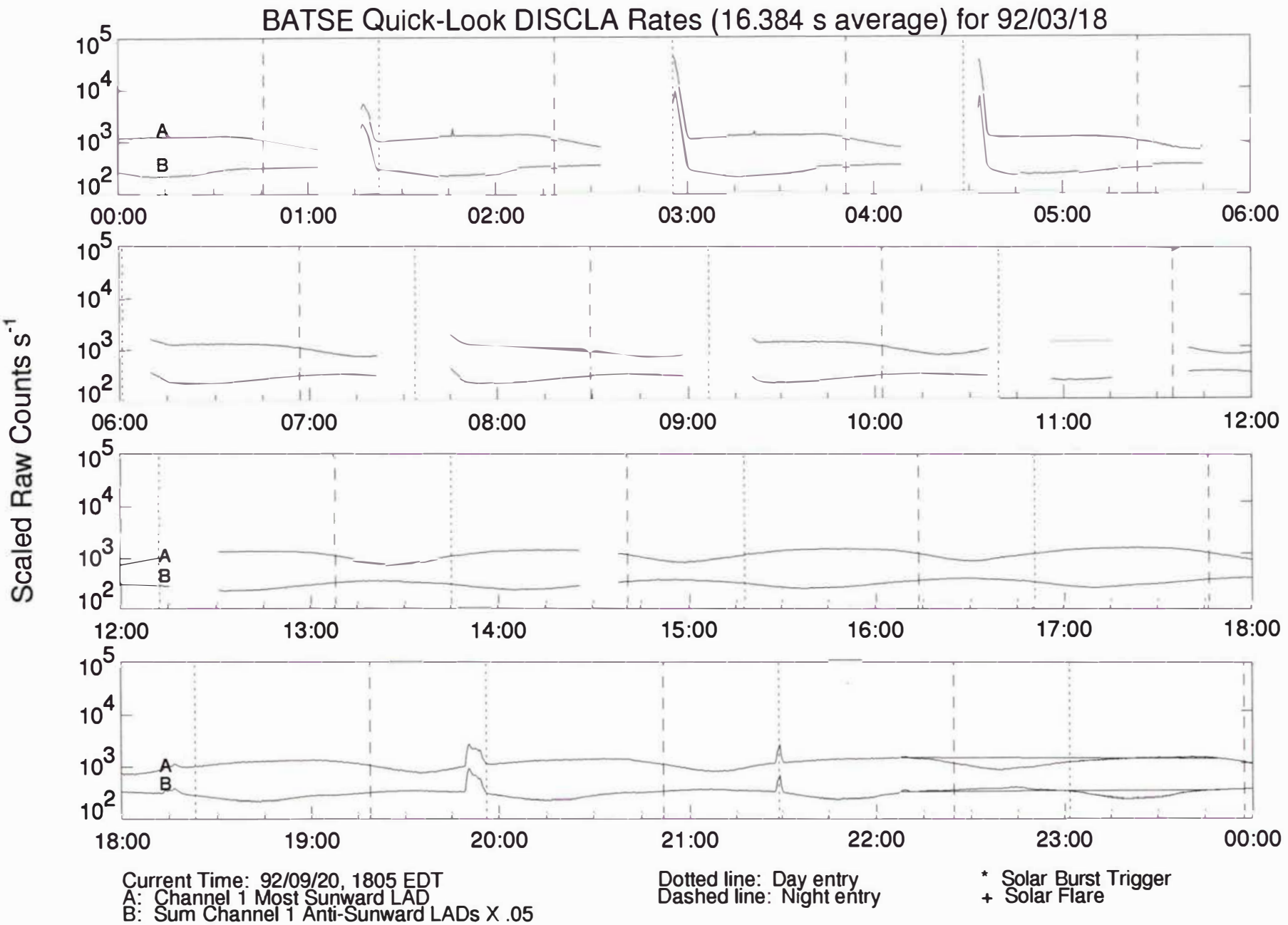
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

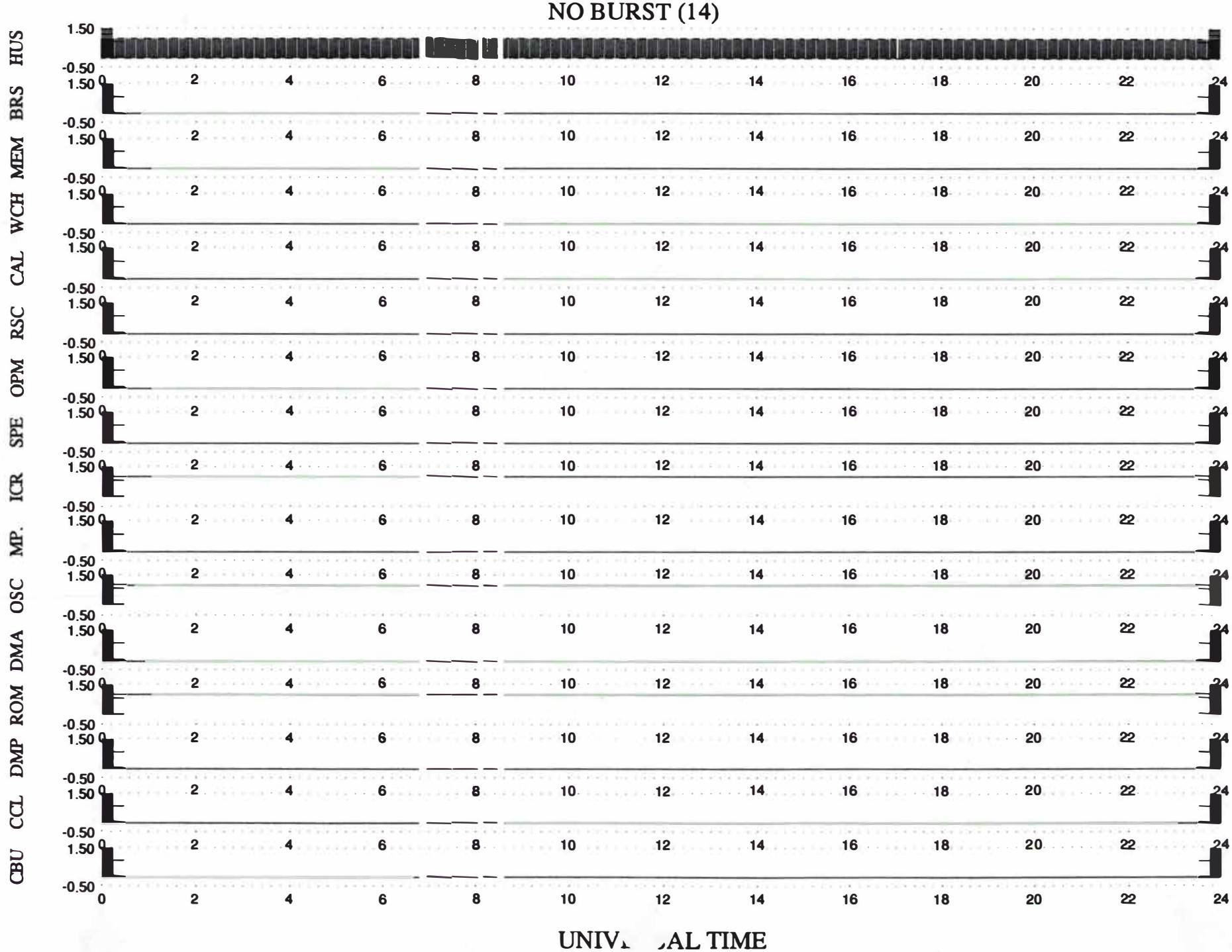
INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT.

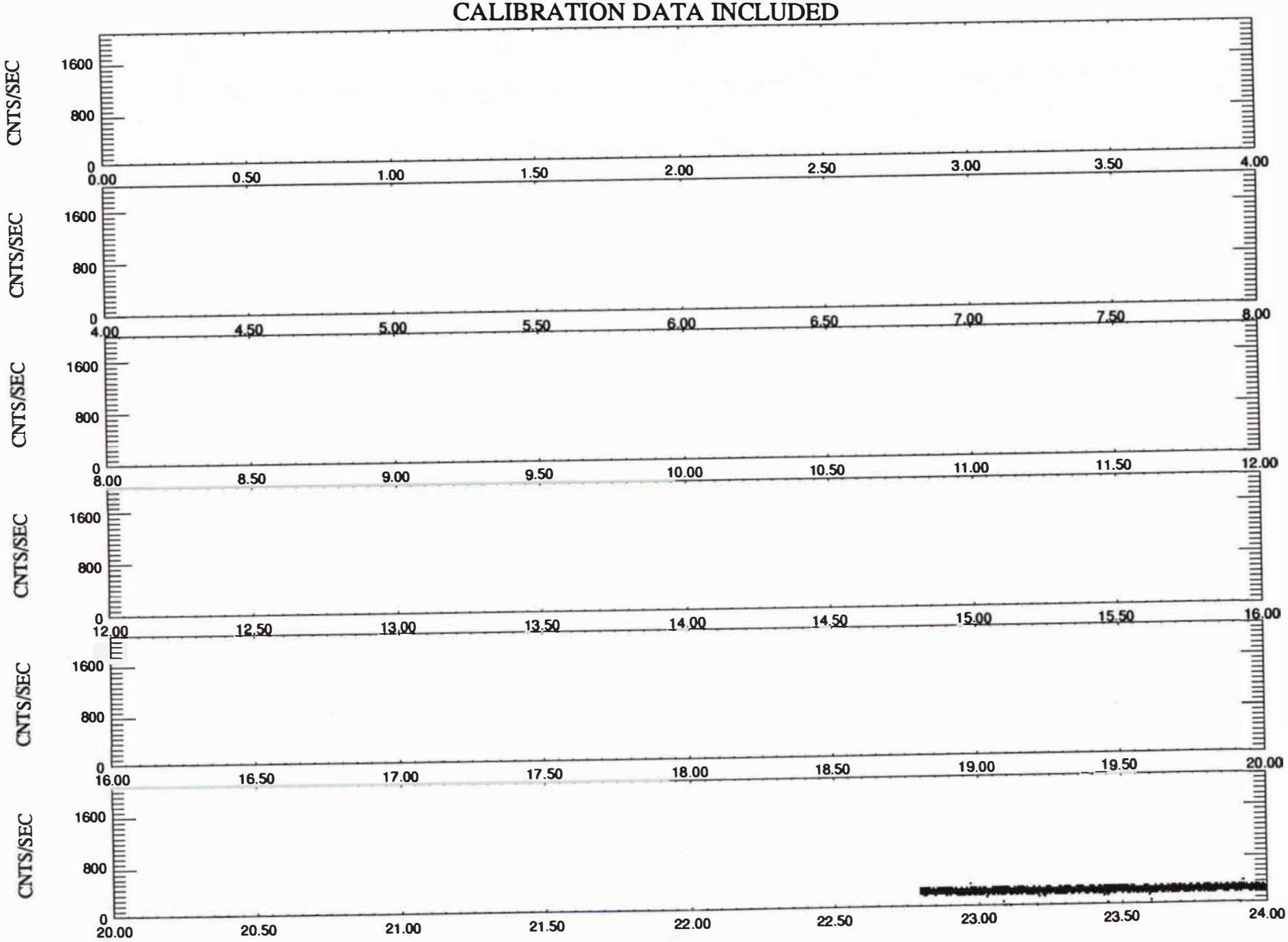

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/18
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1805 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 78, year 1992 to day 78, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 78, year 1992 to day 78, year 1992 4/27/92

CALIBRATION DATA INCLUDED



UNIV. AL TIME

From PREECE@ssl.msfc.nasa.gov Wed Apr 1 08:16:23 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA26798; Wed, 1 Apr 92 08:16:21 PST
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00526; Wed, 1 Apr 92 08:14:30
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA26795; Wed, 1 Apr 92 08:16:14 PST
Date: Wed, 1 Apr 1992 10:19:01 -0600 (CST)
From: PREECE@ssl.msfc.nasa.gov
Message-Id: <920401101901.33404a6c@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01497 Mar 19

TIME: TJD=8700 SECONDS=01388

TYPE: ELECTRO SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT. NO DISCSC DATA AVAILABLE.

From PREECE@ssl.msfc.nasa.gov Wed Apr 1 08:22:13 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA26824; Wed, 1 Apr 92 08:22:12 PST
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA00528; Wed, 1 Apr 92 08:20:21
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA26821; Wed, 1 Apr 92 08:22:05 PST
Date: Wed, 1 Apr 1992 10:24:47 -0600 (CST)
From: PREECE@ssl.msfc.nasa.gov
Message-Id: <920401102447.33404a84@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01498

TIME: TJD=8700 SECONDS=68196

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT. NO DISCSC DATA AVAILABLE.

From PREECE@ssl.msfc.nasa.gov Wed Apr 1 08:25:53 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA26844; Wed, 1 Apr 92 08:25:51 PST
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AB00530; Wed, 1 Apr 92 08:24:01
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA26841; Wed, 1 Apr 92 08:25:43 PST
Date: Wed, 1 Apr 1992 10:28:35 -0600 (CST)
From: PREECE@ssl.msfc.nasa.gov
Message-Id: <920401102835.33404a8f@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01499

TIME: TJD=8700 SECONDS=74103

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT IN SAME BOX AS #1498.

From PREECE@ssl.msfc.nasa.gov Wed Apr 1 08:31:34 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA26884; Wed, 1 Apr 92 08:31:32 PST
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00532; Wed, 1 Apr 92 08:29:40
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA26881; Wed, 1 Apr 92 08:31:24 PST
Date: Wed, 1 Apr 1992 10:34:17 -0600 (CST)
From: PREECE@ssl.msfc.nasa.gov
Message-Id: <920401103417.3340489b@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01500

TIME: TJD=8700 SECONDS=84512

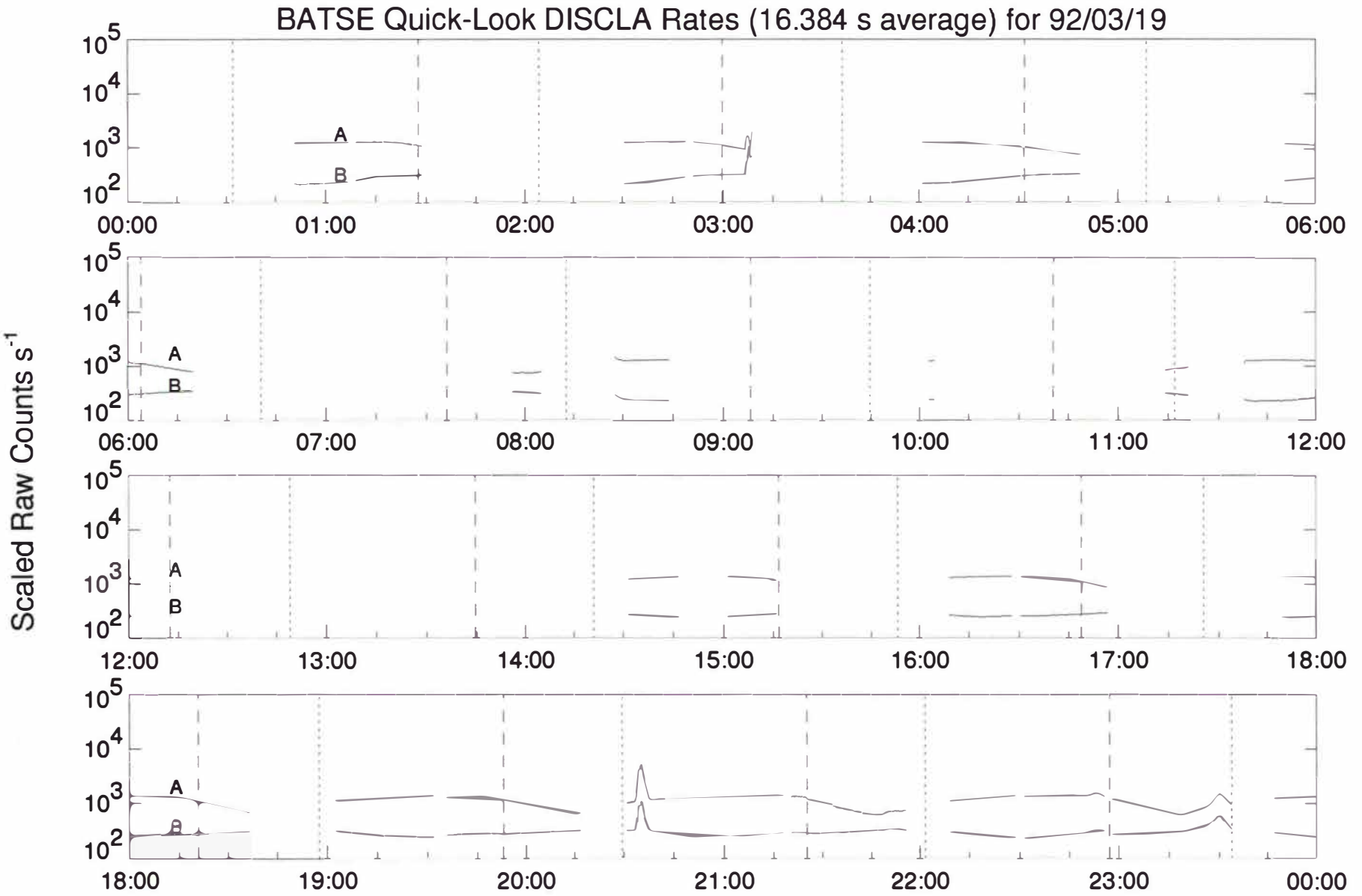
TYPE: REACTOR SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

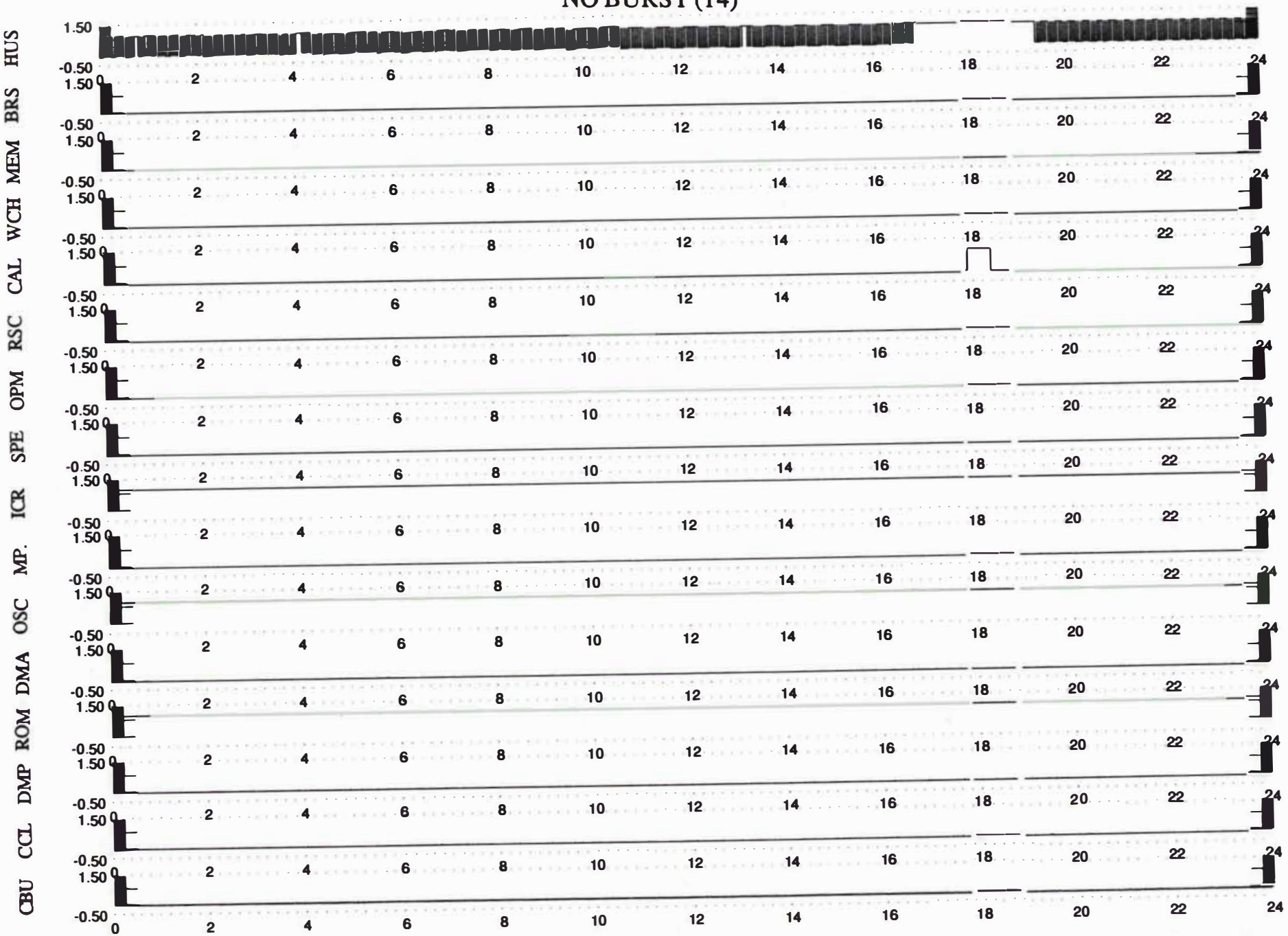
COMMENTS:
OLD SOVIET NUKE... DISCOVERED APRIL 1, 1992.
.
.
...OR MAYBE JUST AN ELECTRON EVENT.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/19
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1806 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 79, year 1992 to day 79, year 1992

4/28/92

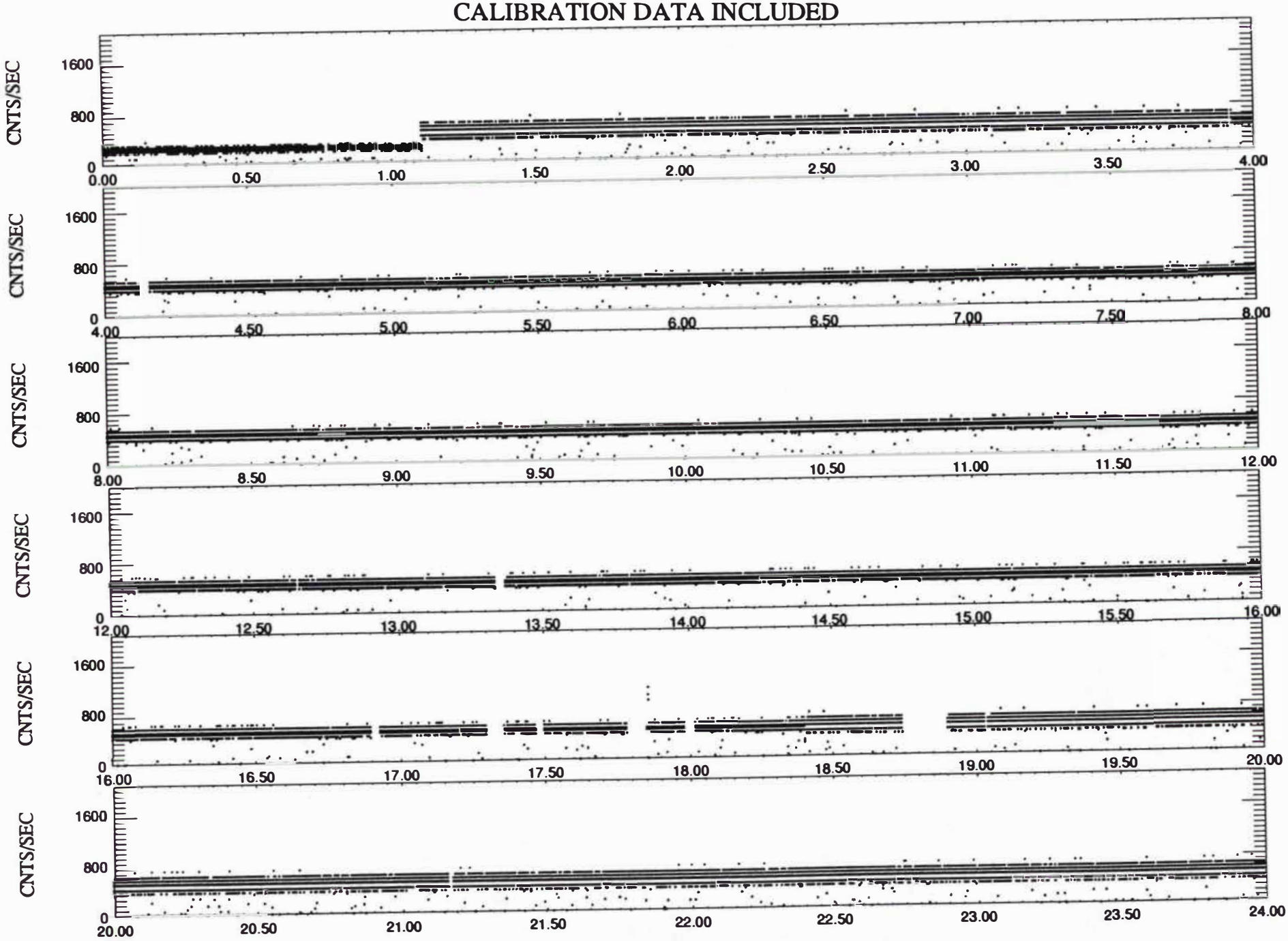
NO BURST (14)



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 79, year 1992 to day 79, year 1992 4/27/92

CALIBRATION DATA INCLUDED



UNIV. AL TIME

From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing a paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

Kevin

Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1501
EVENT OF 1992 MAR 20 DAY OF YEAR= 80
EVENT CROSSING TIME AT BATSE      : 36556. S. OR 10:09:16.4
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  46.100  -46.300
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 20/ 3/  92 IS:
RA=  154.631 DEC=     9.293 DIST=     4.485 AU
BATSE-ULYSSES DISTANCE =  670927576. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 70.52 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  746.23 SECS.
CROSSING TIME AT ULYSSES    IS 37303. S. OR 10:21:42.6 +/-  427.64 SECONDS
```

NO

From KOUVELIOTOU@ssl.msfc.nasa.gov Sat Apr 11 15:47:16 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA28798; Sat, 11 Apr 92 15:47:15 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AB01596; Sat, 11 Apr 92 14:43:23
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA28795; Sat, 11 Apr 92 15:47:08 PDT
Date: Sat, 11 Apr 1992 17:48:00 -0500 (CDT)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Message-Id: <920411174800.35200e67@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01501 Mar 20 ~~No data - CPU test~~

TIME: TJD=8701 SECONDS=37255

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=082.3 AZIMUTH=338.9 ERROR= DEGREES

COMMENTS:
NO PRE-TRIGGER DATA AVAILABLE. DOUBLE PULSE STRUCTURE, LASTING
~ 120 S. EVENT SEEN BARELY ABOVE 320 KEV.

7/ 6/94

ULYSSES RT

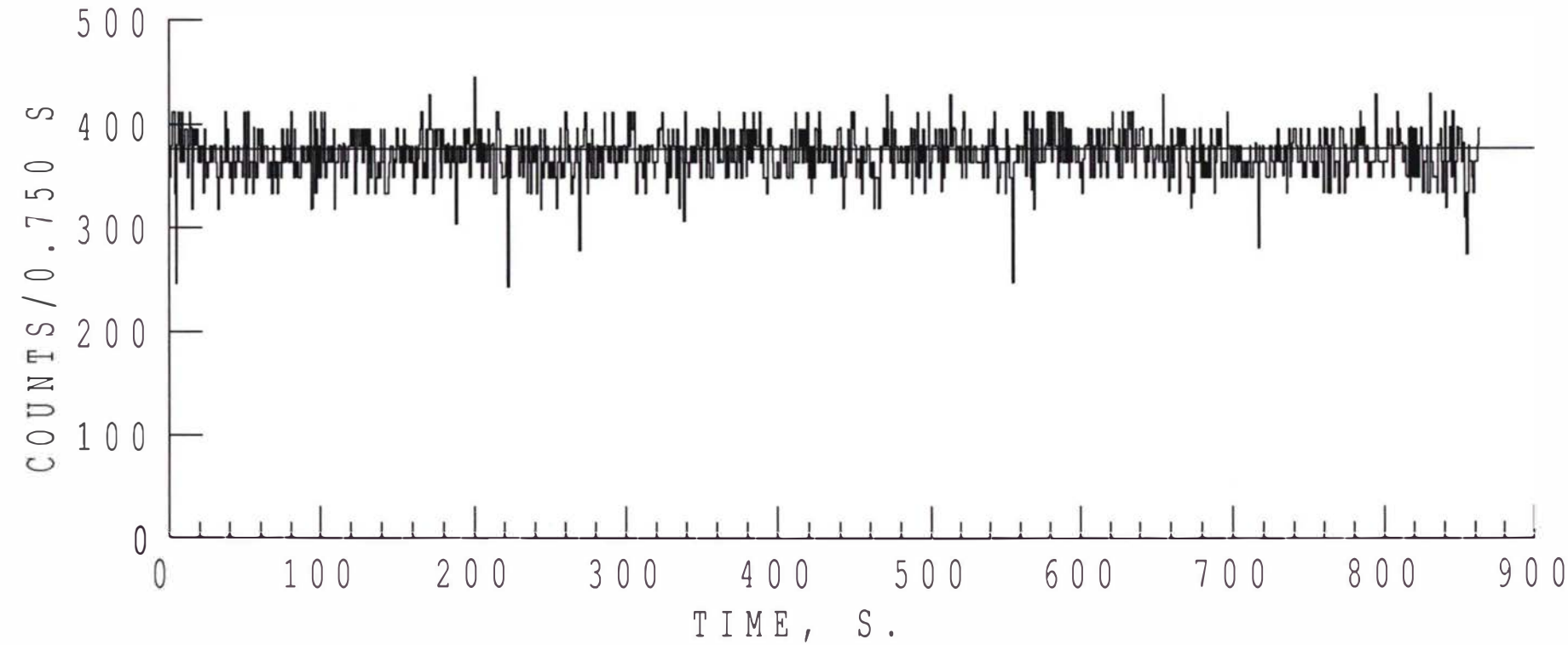
20/ 3/92 36864.184 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV

N= 10 M= 2

>4.0 SIGMA FLUCTUATIONS



From BRIGGS@ssl.msfc.nasa.gov Mon Apr 6 16:00:15 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA20284; Mon, 6 Apr 92 16:00:13 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AB00246; Mon, 6 Apr 92 14:56:09
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA20281; Mon, 6 Apr 92 16:00:03 PDT
Date: Mon, 6 Apr 1992 18:00:37 -0500 (CDT)
From: BRIGGS@ssl.msfc.nasa.gov (Michael S. Briggs, 205-544-7716, Code ES-62, MSFC)
Message-Id: <920406180037.34400f17@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

Mar 20 BATSE BURST TRIGGER

NO.: 01502

TIME: TJD=8701 SECONDS=43613

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=115.2 AZIMUTH=23.0 ERROR= DEGREES

COMMENTS:
SOFT EVENT OF DURATION ABOUT 100 SECONDS. LOCATION IS CONSISTENT WITH SOLAR ORIGIN. TIME IS COINCIDENT WITH GOES C7.2 SOLAR FLARE.
EVENT IS A SOLAR FLARE.

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1503
EVENT OF 1992 MAR 20 DAY OF YEAR= 80
EVENT CROSSING TIME AT BATSE      : 44339. S. OR 12:18:58.8
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 327.600    55.400
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 20/ 3/  92 IS:
RA=  154.631 DEC=     9.293 DIST=     4.485 AU
BATSE-ULYSSES DISTANCE =  670927576. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 64.96 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  947.24 SECS.
CROSSING TIME AT ULYSSES     IS 45286. S. OR 12:34:46.1 +/-  416.41 SECONDS
```

RI

From BRIGGS@ssl.msfc.nasa.gov Tue Apr 7 14:17:43 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA27137; Tue, 7 Apr 92 14:17:41 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00672; Tue, 7 Apr 92 13:13:39
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA27134; Tue, 7 Apr 92 14:17:33 PDT
Date: Tue, 7 Apr 1992 16:17:42 -0500 (CDT)
From: BRIGGS@ssl.msfc.nasa.gov (Michael S. Briggs, 205-544-7716, Code ES-62, MSFC)
Message-Id: <920407161742.344016f7@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01503

Mar 20

TIME: TJD=8701 SECONDS=44399

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=136.8 AZIMUTH=94.8 ERROR= DEGREES

COMMENTS:
"MAIN" PORTION OF BURST HAS 30 SEC DURATION AND A MULTI-SPIKE STRUCTURE.
A SMOOTH, 20 SEC DURATION PRECUSOR STARTS 40 SEC BEFORE THE TRIGGER.
SEVERAL SPIKES FOLLOW THE MAIN BURST. TOTAL DURATION IS AT LEAST 90 SEC.

Helio corr removed

Date: April 3 '97

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

- [x] Jim Schmidling's stat file correction applied?
- [x] Final ephemeris used?
- [x] Final, CDROM data used?
- [x] Were data checked by Joe Springer for 0.5 s errors?
- [ ] If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?
- [ ] Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? No - bad statistics

2. BATSE Data

- [x] 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)?
- [x] Does T_0 in data file agree with T_0 in plot?
- [x] BATSE ephemeris for T_0?
- [x] Error circle position and radius from public catalog used?
- [ ] If MER data were used, is a 30 ms systematic error included?

3. PVO Data

- [x] Ephemeris of PVO used (not Venus)?
- [x] 2000 coordinates used?
- [x] Geocentric time used?

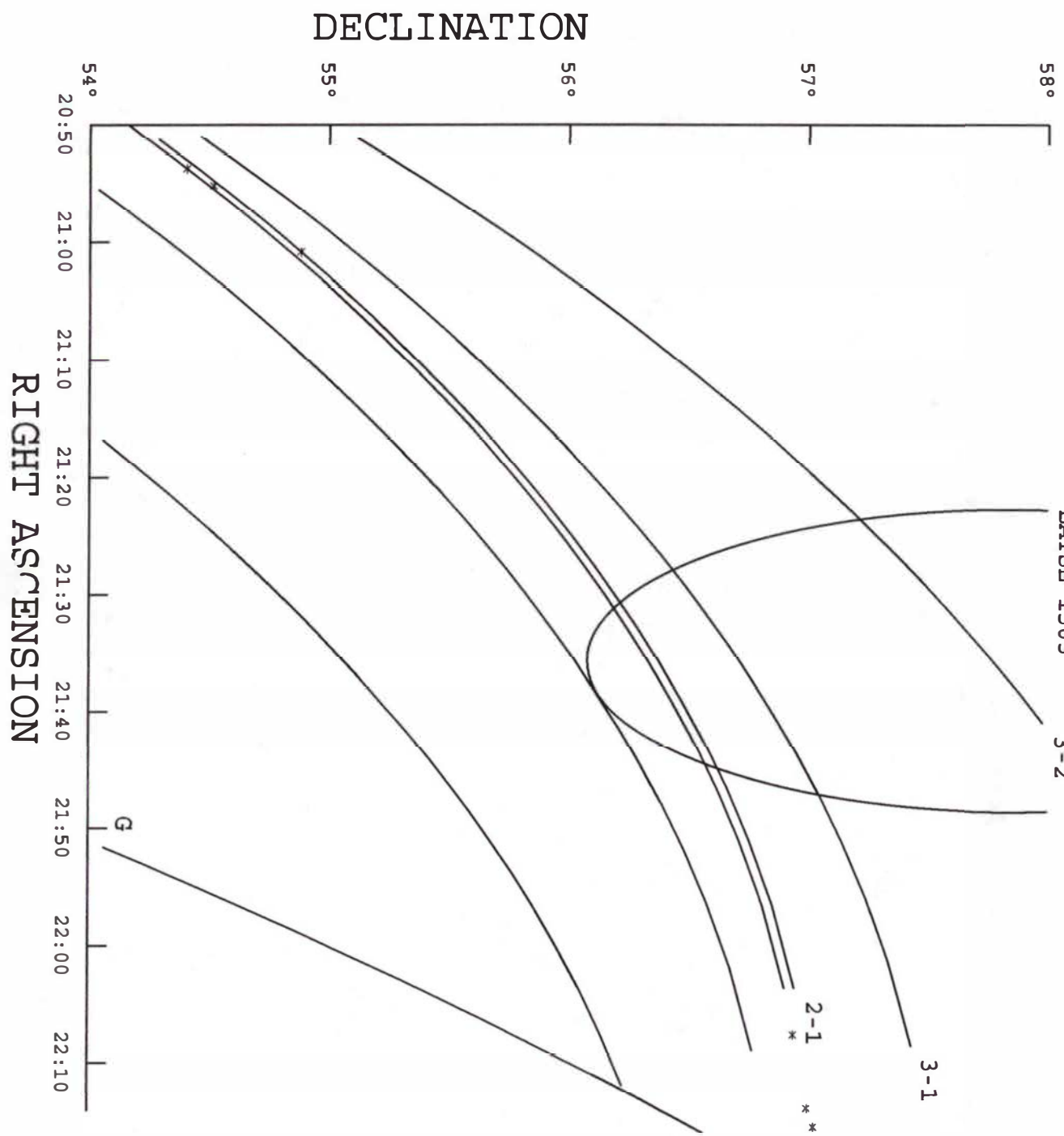
Access database updated

N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

1 ULYSSES 2 BATSE 3 PVO



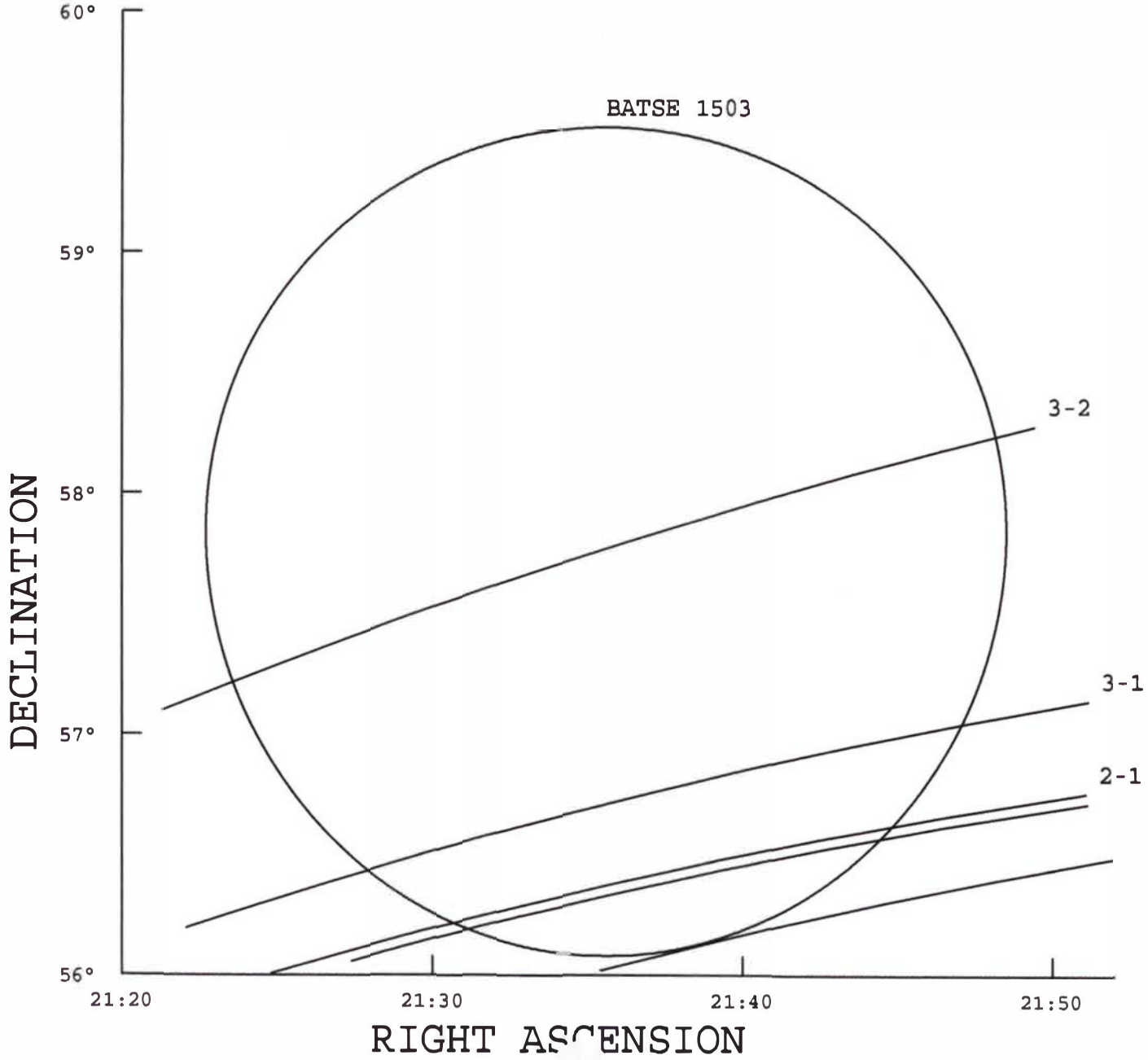
EVENT OF MAR 20, 1992 12:33

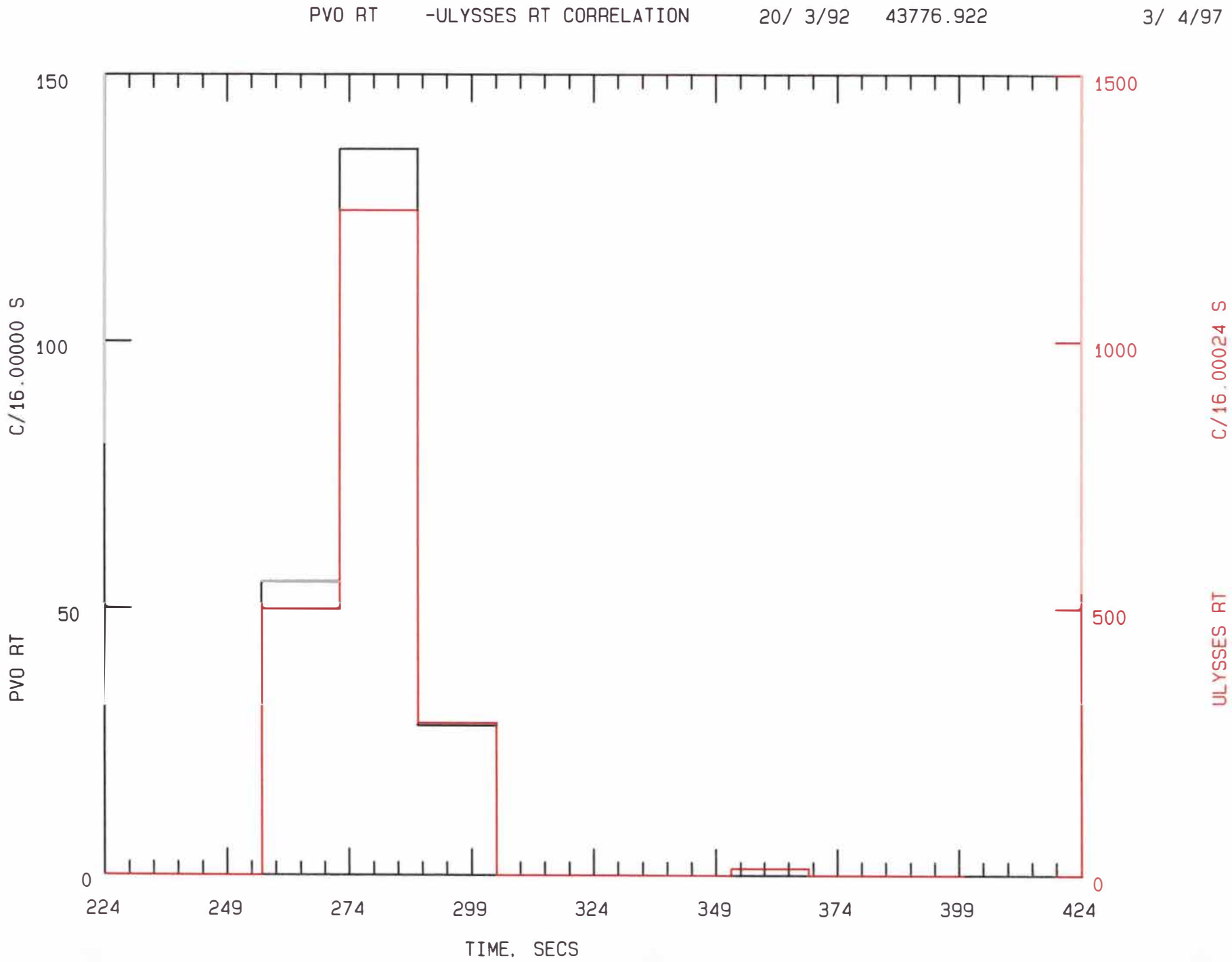
9/10/97

EVENT OF MAR 20, 1992 12:33

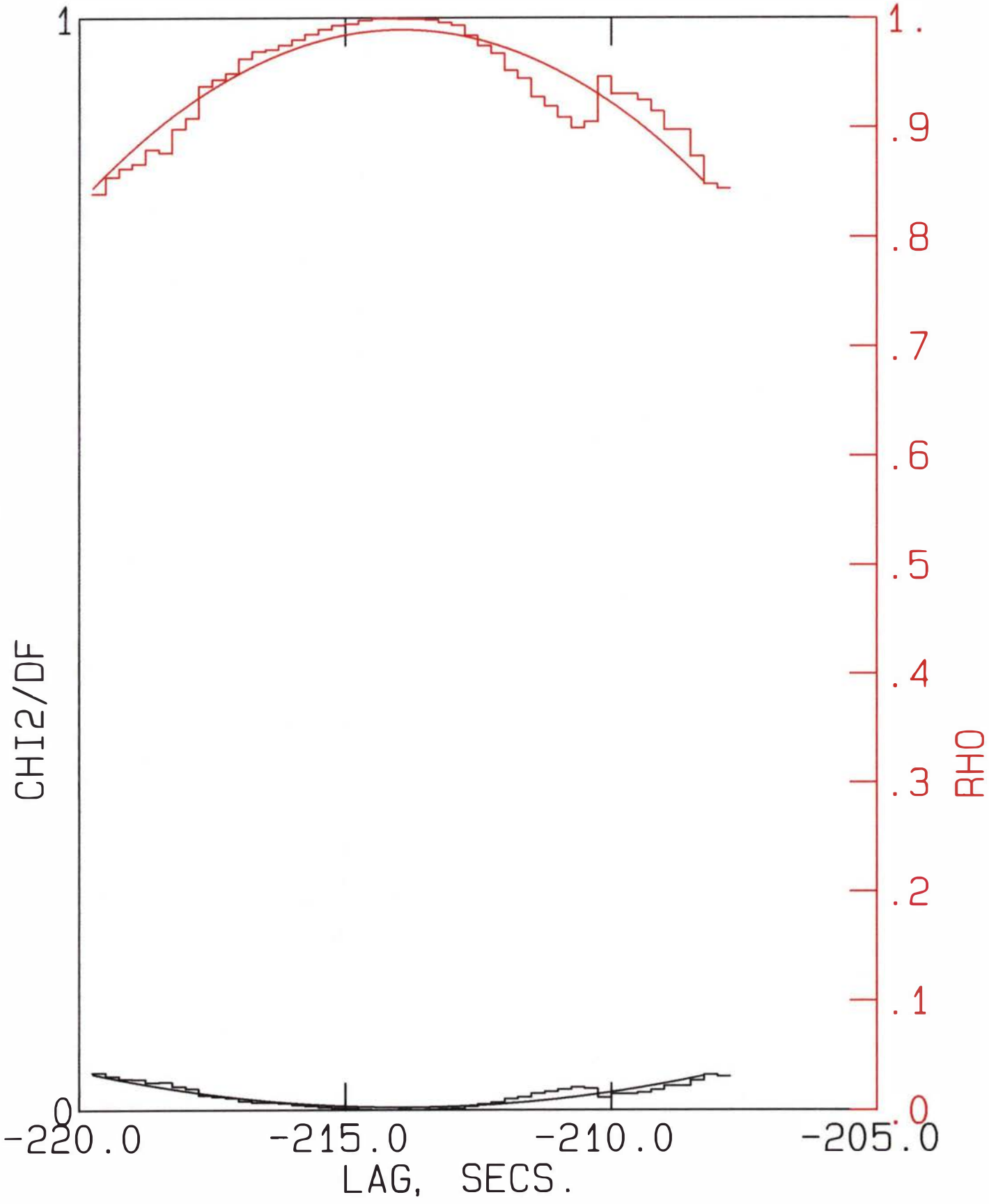
3/ 4/97

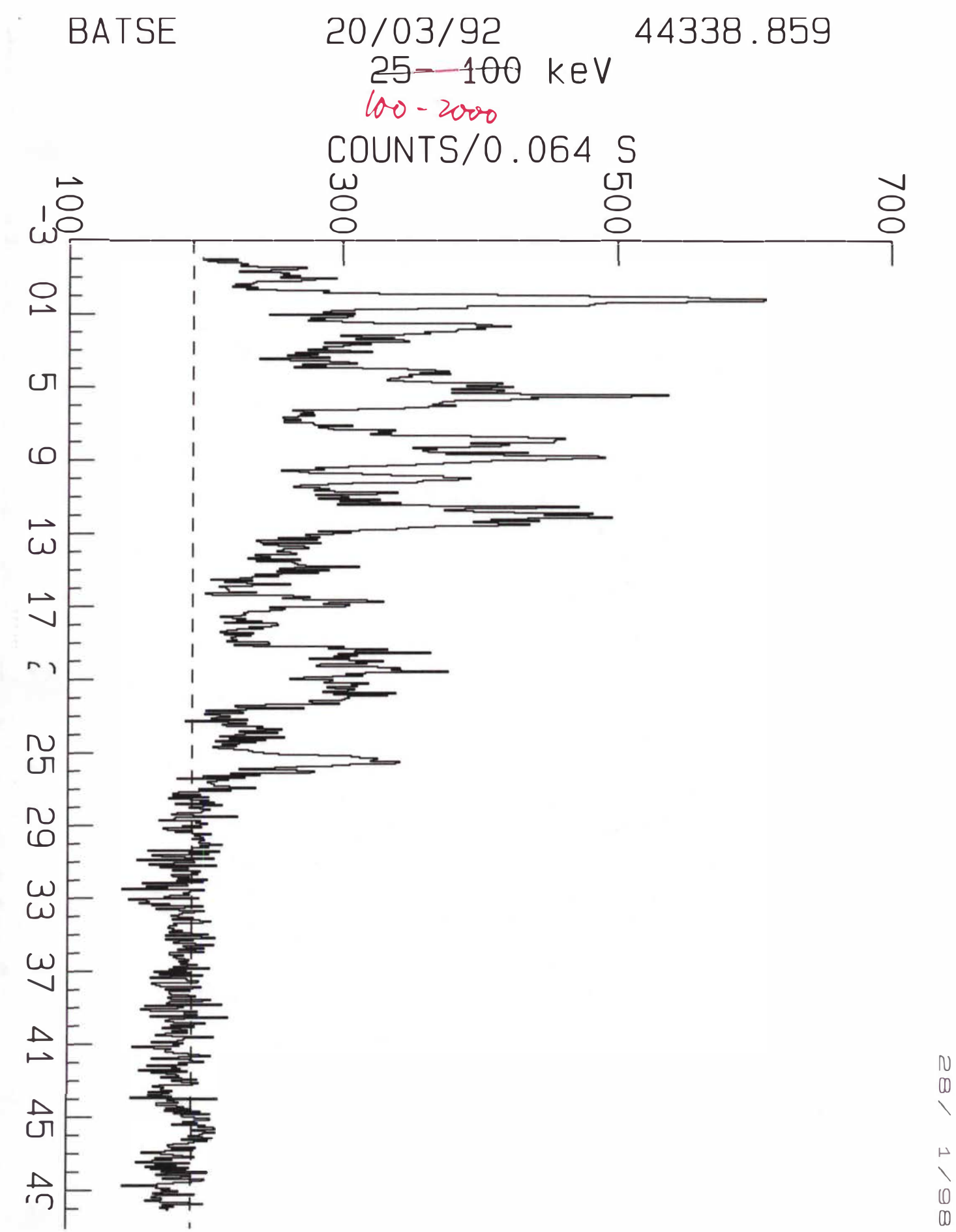
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO



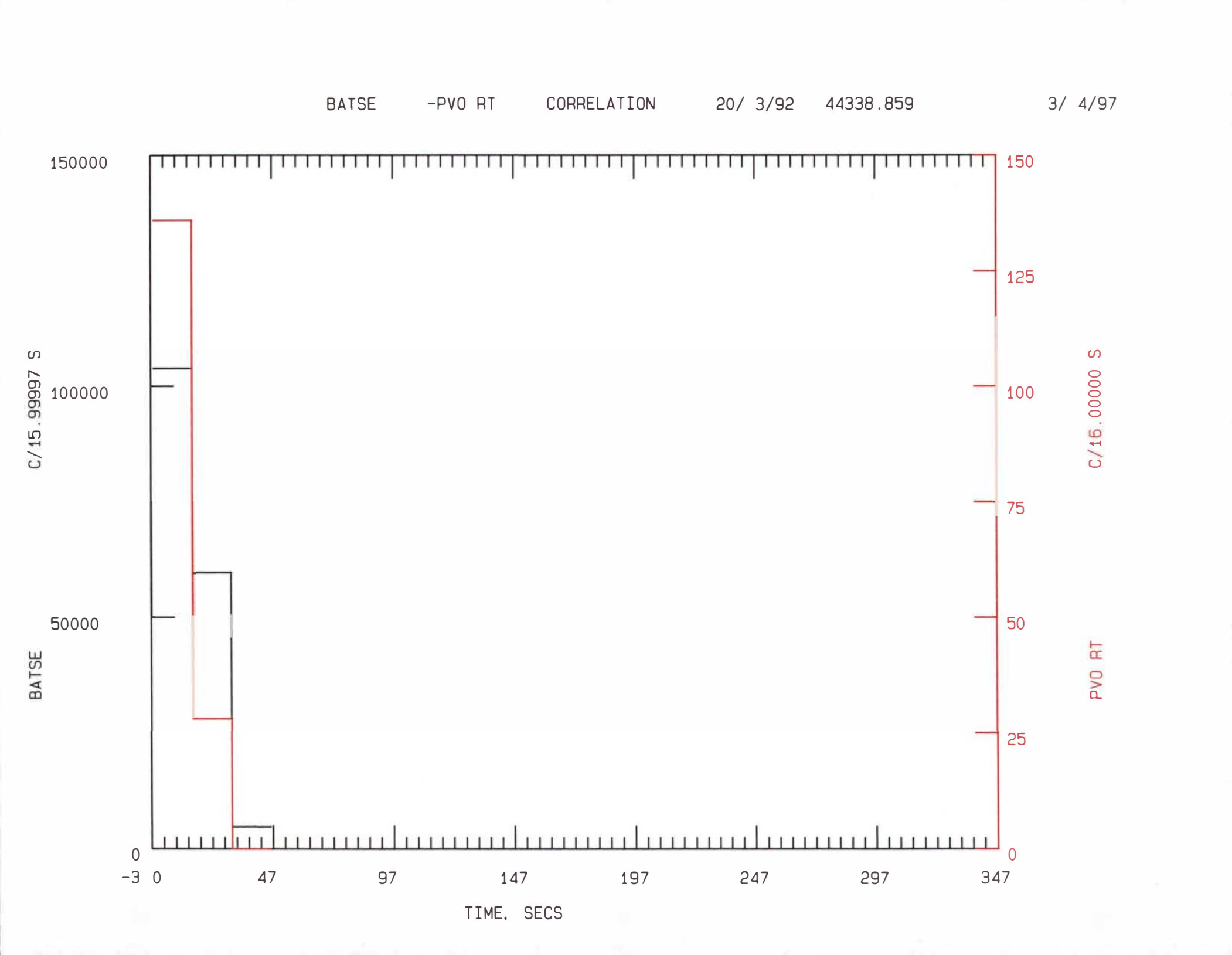

PVO RT -ULYSSES RT CORRELATION 20/ 3/92 43776.922 3/ 4/97
150
100
50
0
C/16.00000 S
PVO RT
1500
1000
500
0
C/16.00024 S
ULYSSES RT
224
249
274
299
324
349
374
399
424
TIME, SECS

PVO RT -ULYSSES RT CORRELATION 20/ 3/92 43776.922

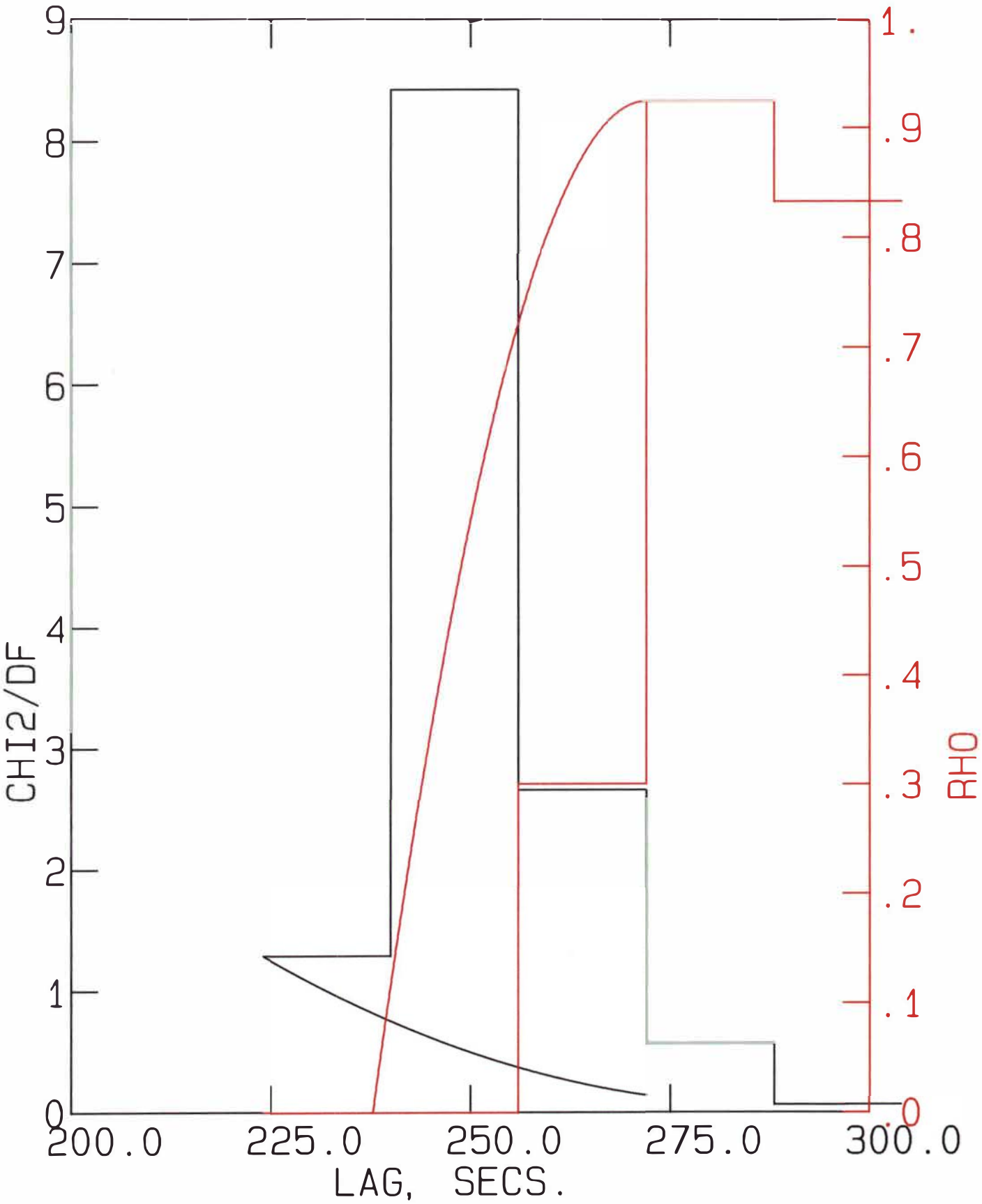


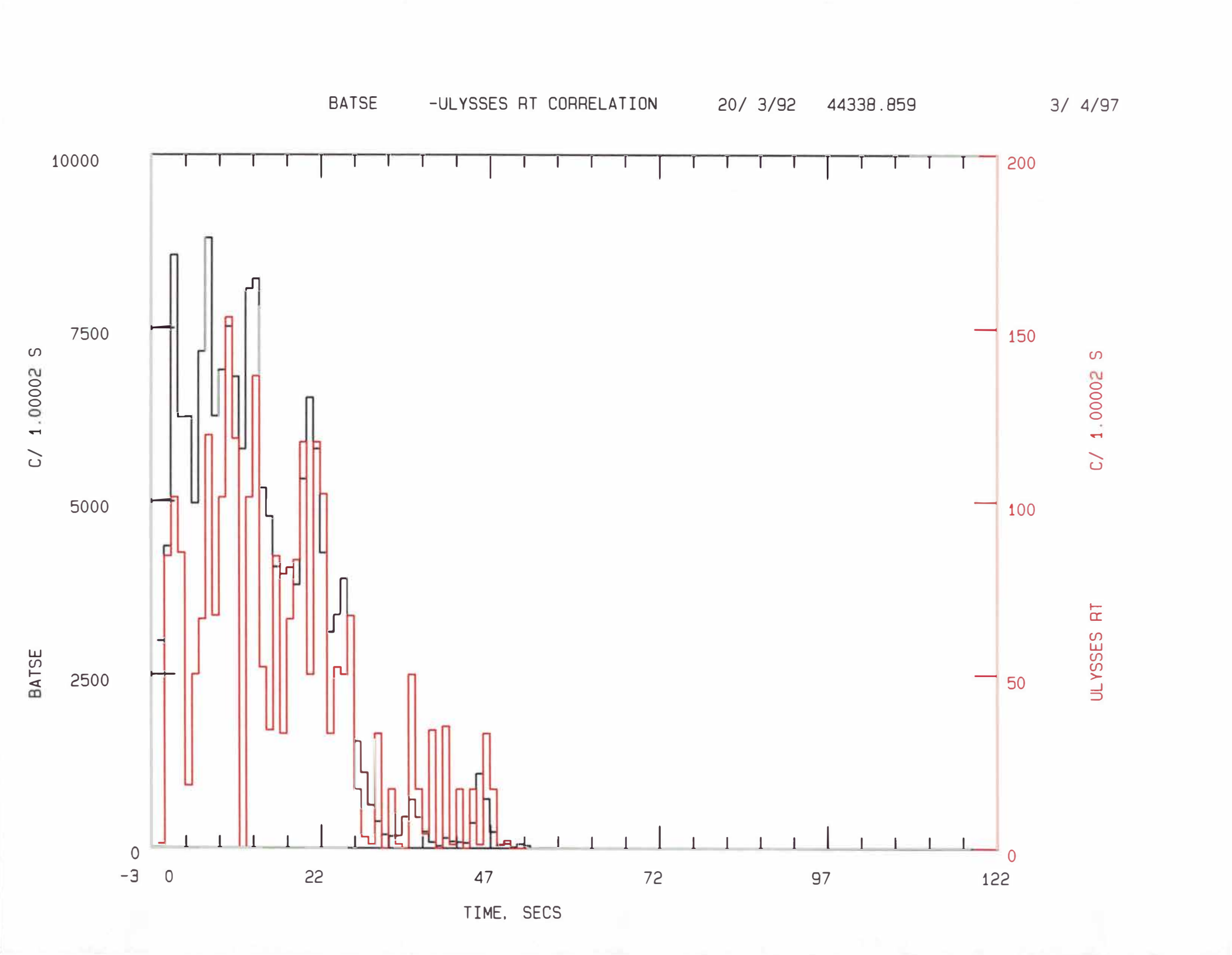

BATSE
20/03/92
44338.859
25 - 100 keV
100 - 2000
COUNTS/0.064 S
100
300
500
700
-3
01
5
9
13
17
25
29
33
37
41
45

28/ 1/98

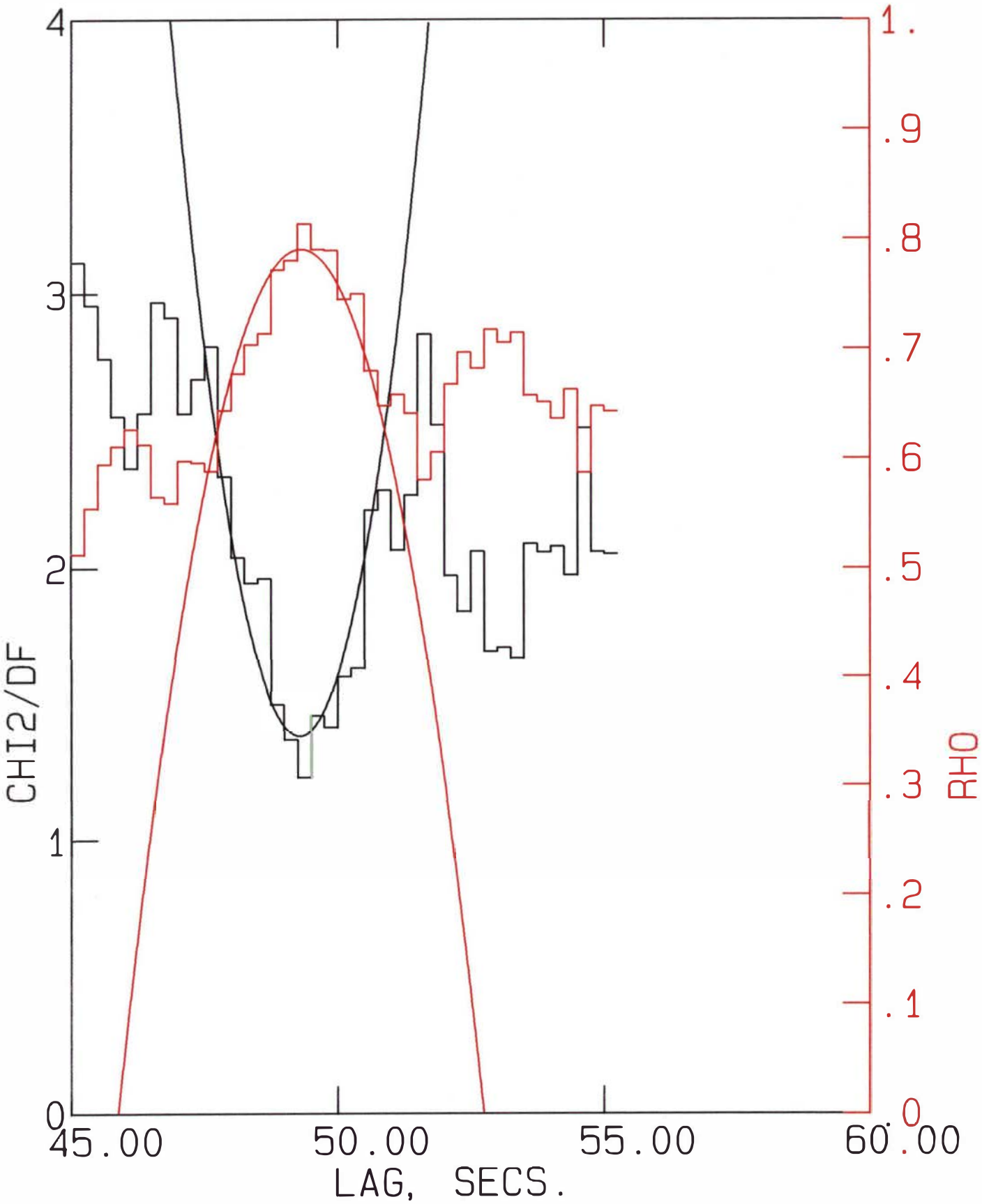

BATSE -PVO RT CORRELATION 20/ 3/92 44338.859 3/ 4/97
150000
100000
50000
0
C/15.99997 S
BATSE
150
125
100
75
50
25
0
C/16.00000 S
PVO RT
-3
0
47
97
147
197
247
297
347
TIME. SECS

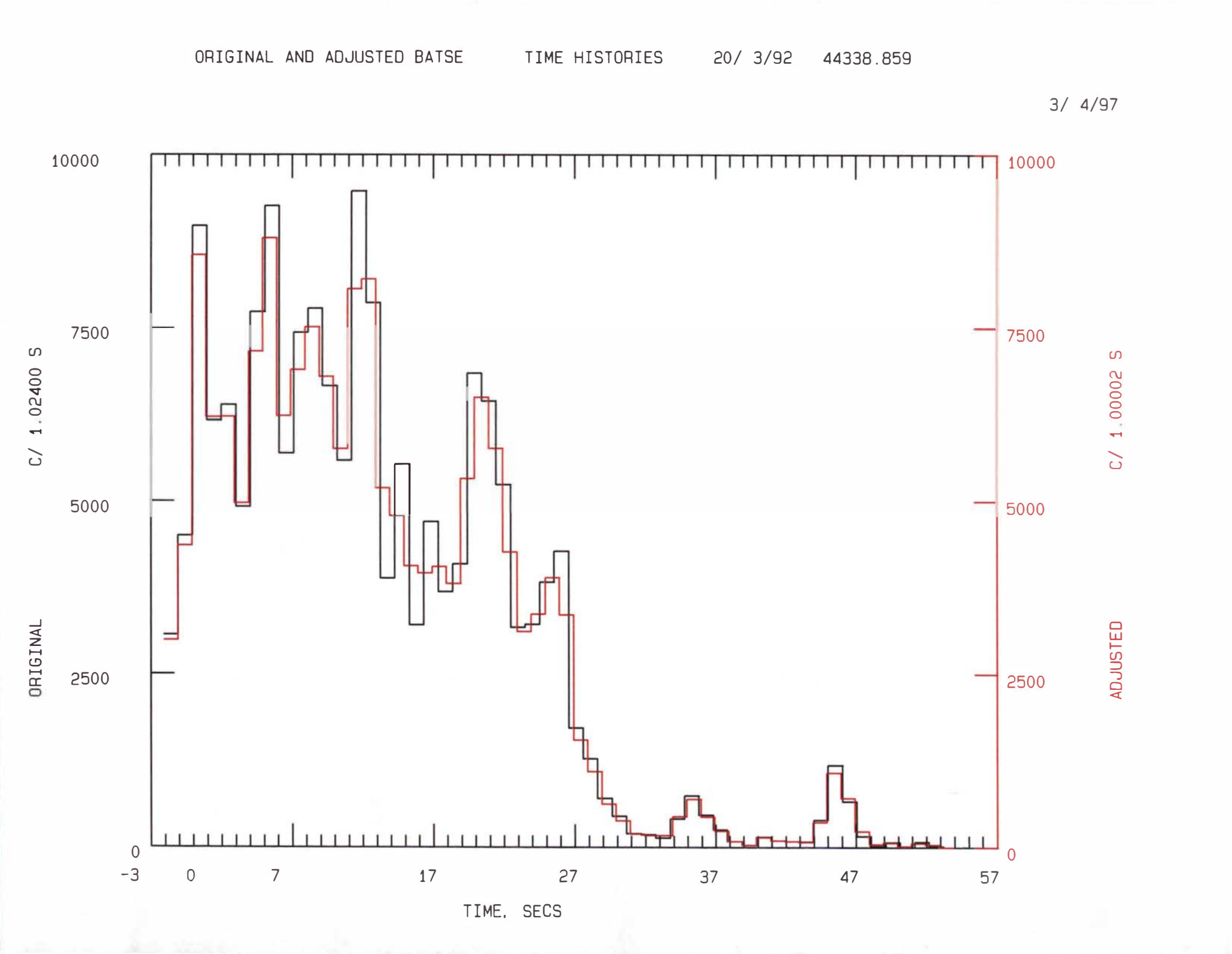
BATSE -PVO RT CORRELATION 20/ 3/92 44338.859

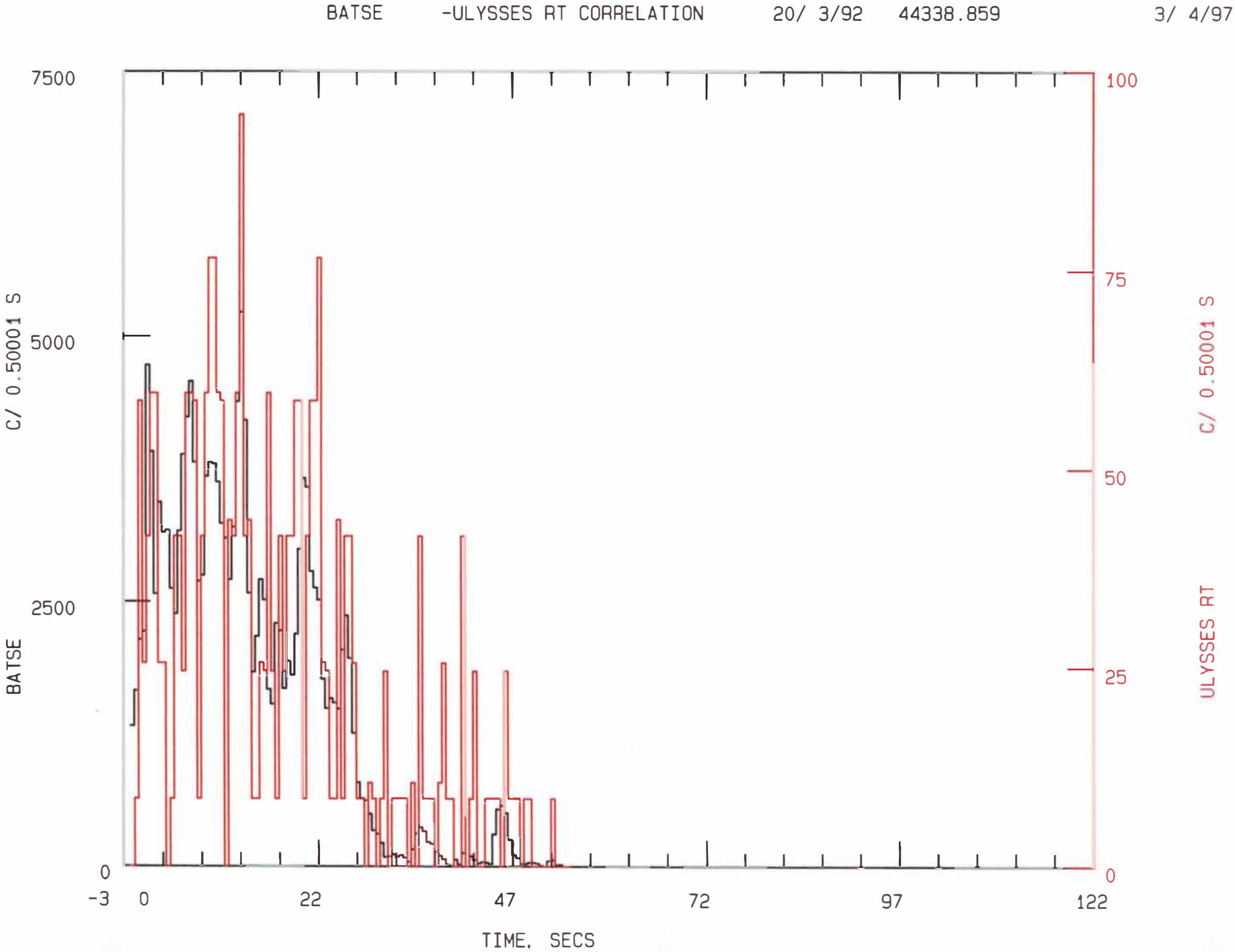



BATSE -ULYSSES RT CORRELATION 20/ 3/92 44338.859 3/ 4/97
10000
7500
5000
2500
0
BATSE
C/ 1.00002 S
200
150
100
50
0
ULYSSES RT
C/ 1.00002 S
-3
0
22
47
72
97
122
TIME, SECS

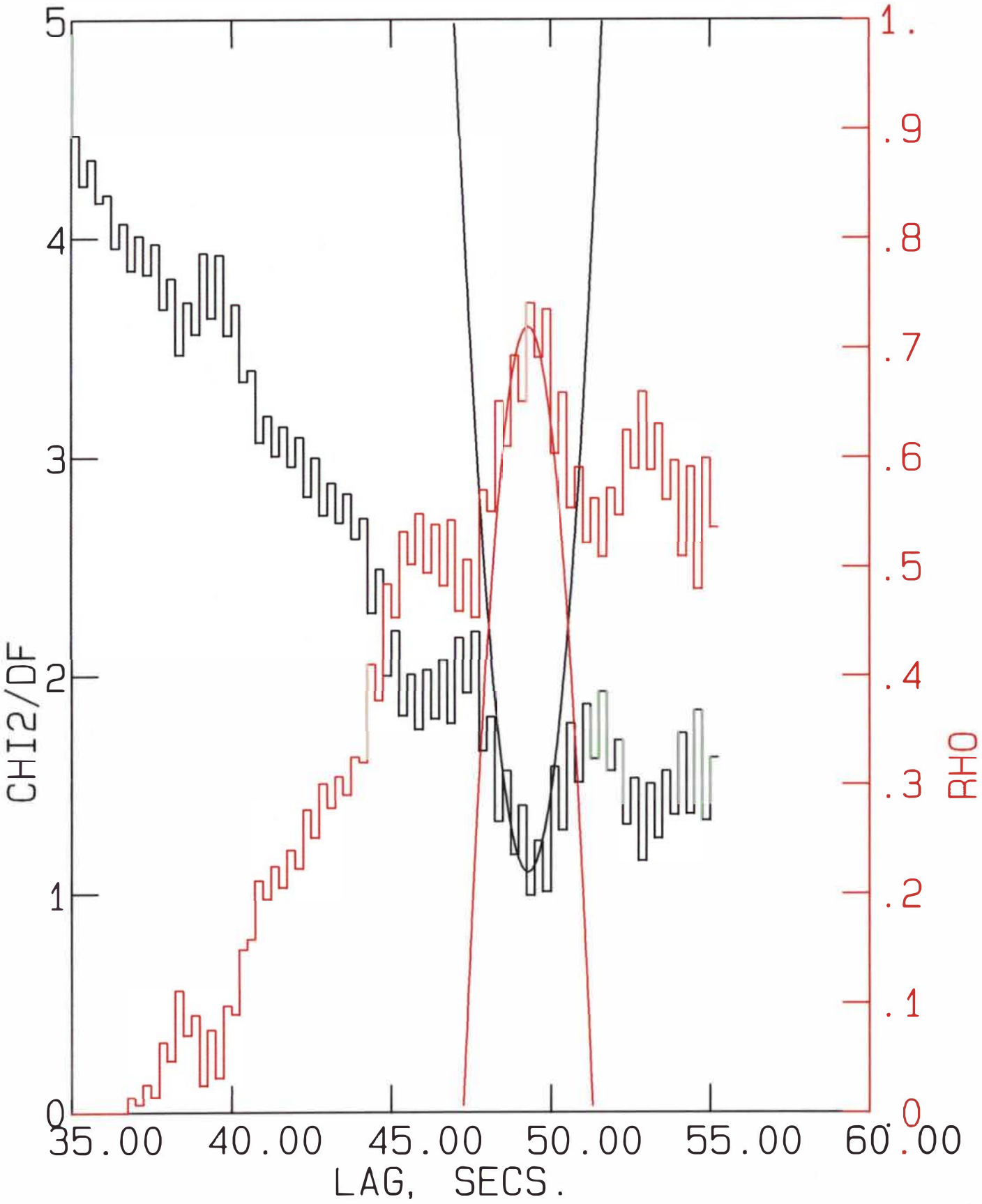
BATSE -ULYSSES RT CORRELATION 20/ 3/92 44338.859

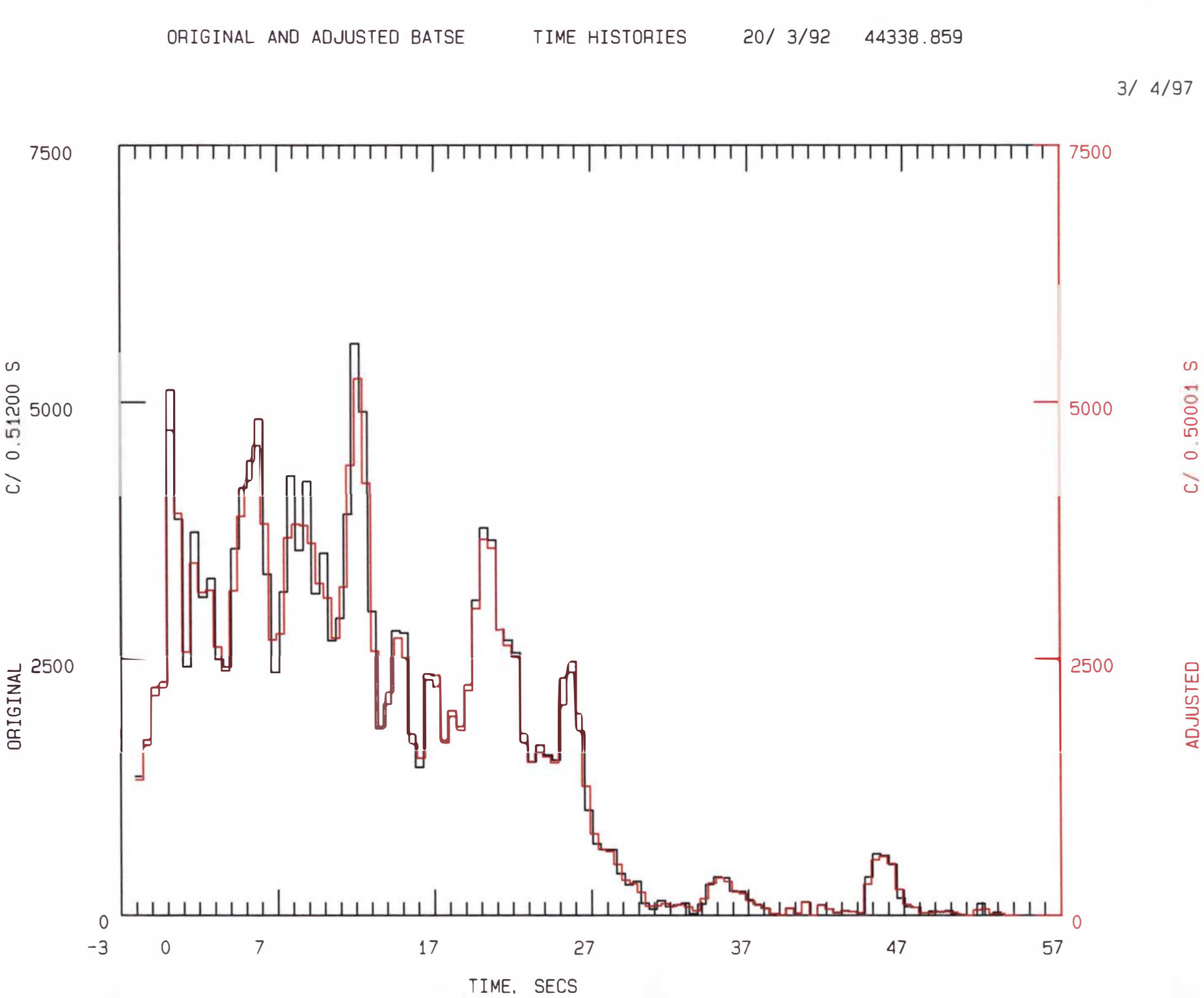



ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 20/ 3/92 44338.859
3/ 4/97
10000
7500
5000
2500
0
C/ 1.02400 S
ORIGINAL
10000
7500
5000
2500
0
C/ 1.00002 S
ADJUSTED
-3
0
7
17
27
37
47
57
TIME, SECS


BATSE -ULYSSES RT CORRELATION 20/ 3/92 44338.859 3/ 4/97
7500
5000
2500
0
-3
0
22
47
72
97
122
100
75
50
25
0
C/ 0.50001 S
BATSE
C/ 0.50001 S
ULYSSES RT
TIME, SECS

BATSE -ULYSSES RT CORRELATION 20/ 3/92 44338.859




ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 20/ 3/92 44338.859
3/ 4/97
7500
5000
2500
0
C/ 0.51200 S
ORIGINAL
7500
5000
2500
0
C/ 0.50001 S
ADJUSTED
-3
0
7
17
27
37
47
57
TIME, SECS

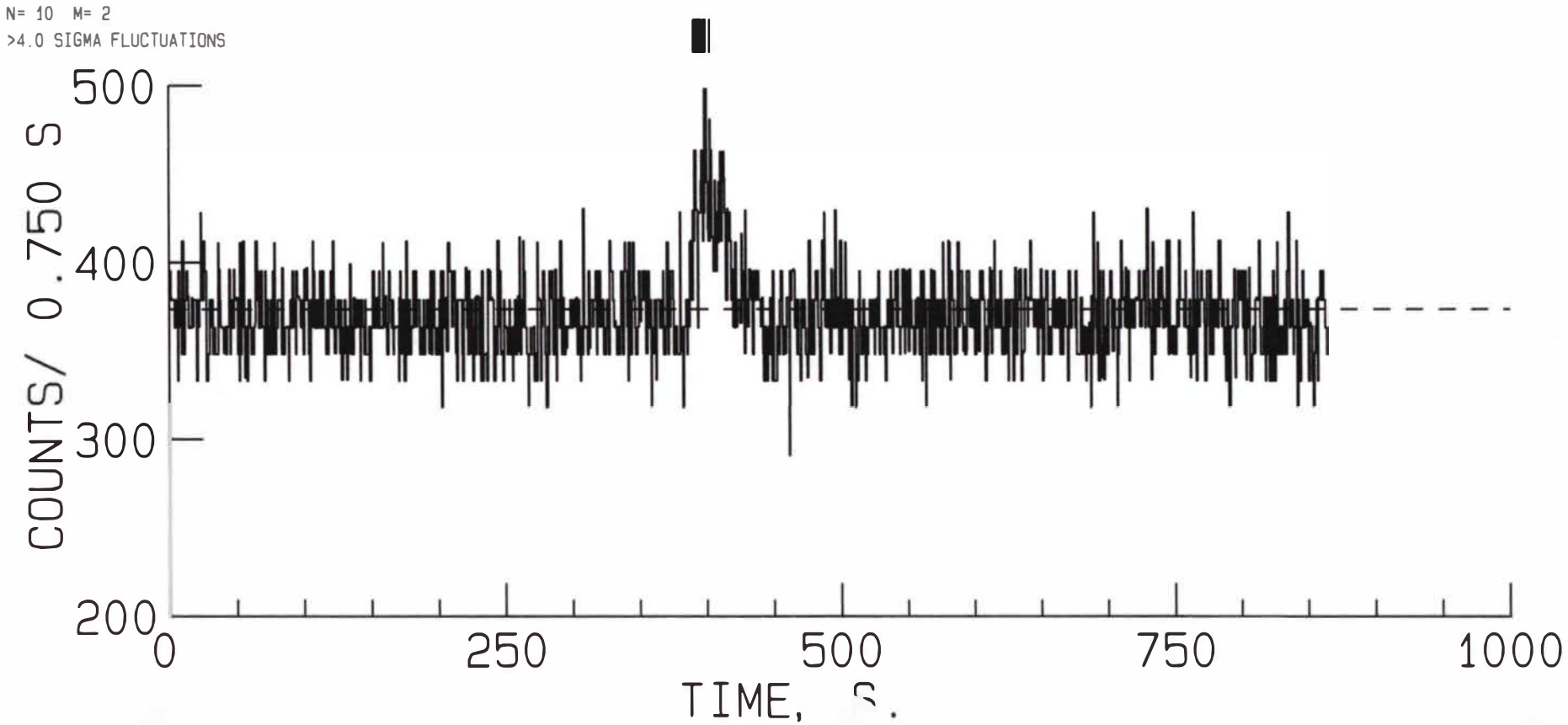
ULYSSES RT

3/ 4/97

20/ 3/92 44856.064 s

0.250 S INTERVALS REGROUPED BY 3

24- 162 keV



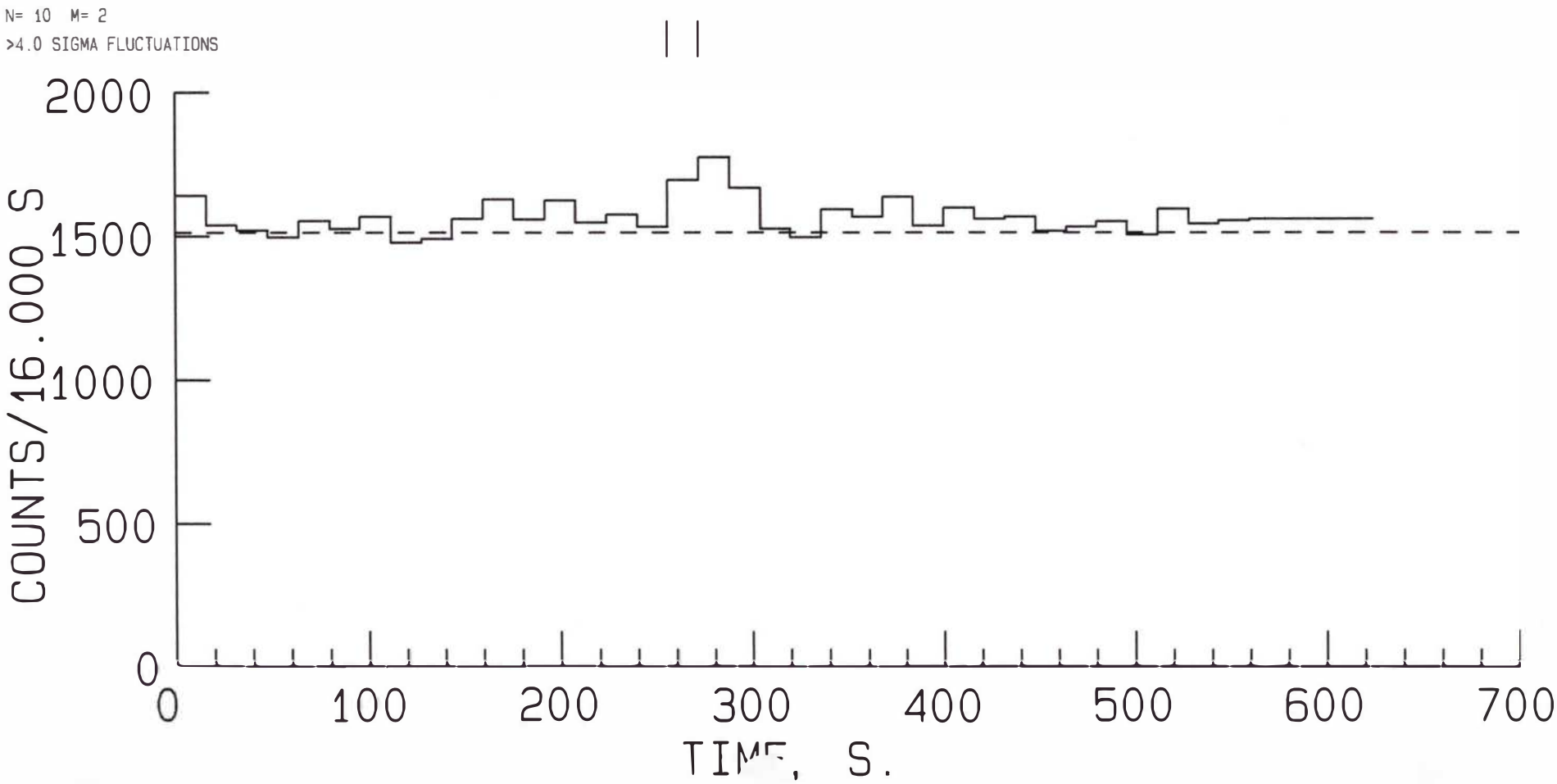
PVO-RT

20/ 3/92

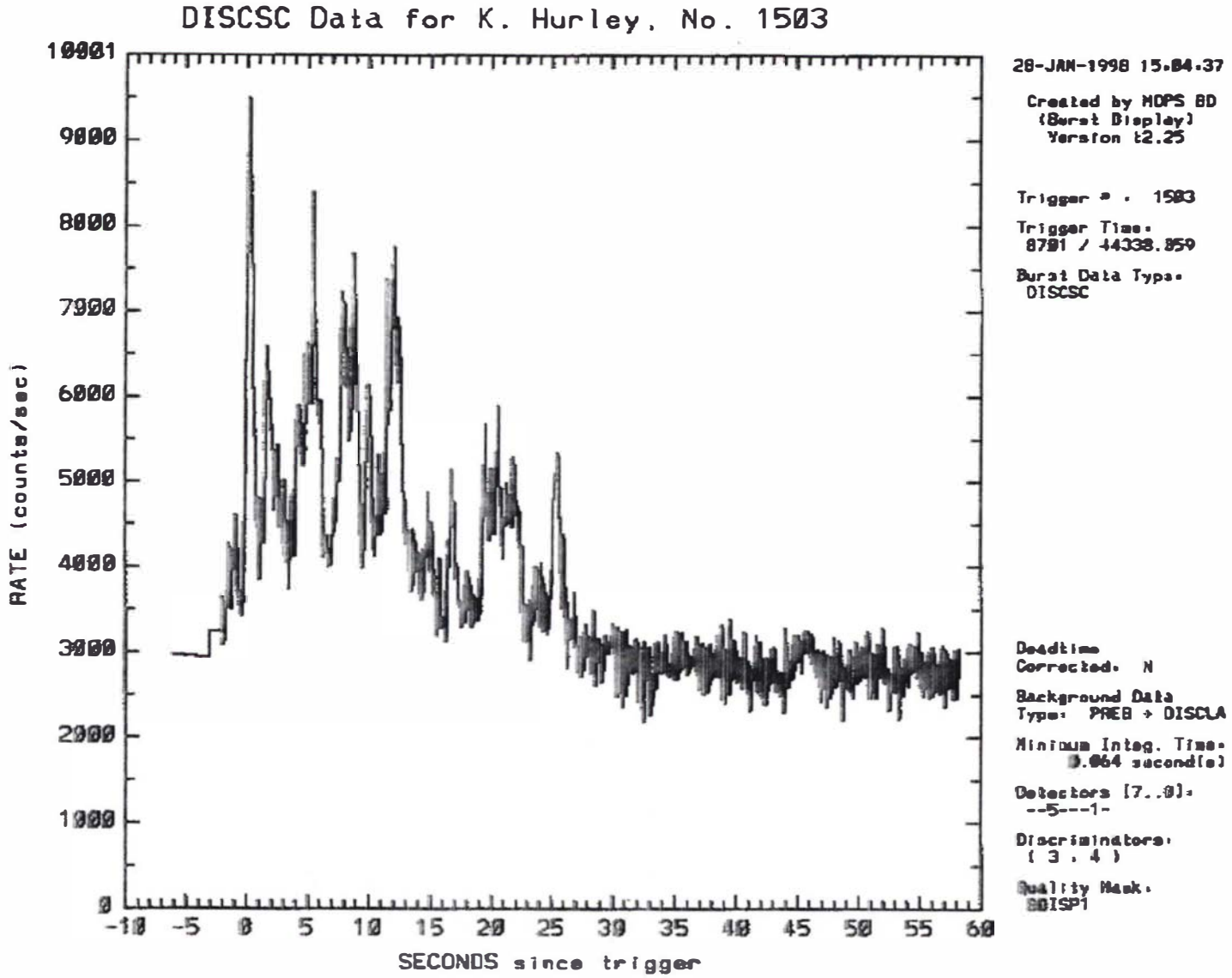
43776.922 s.

16.000 S. INTERVALS REGROUPED BY 1

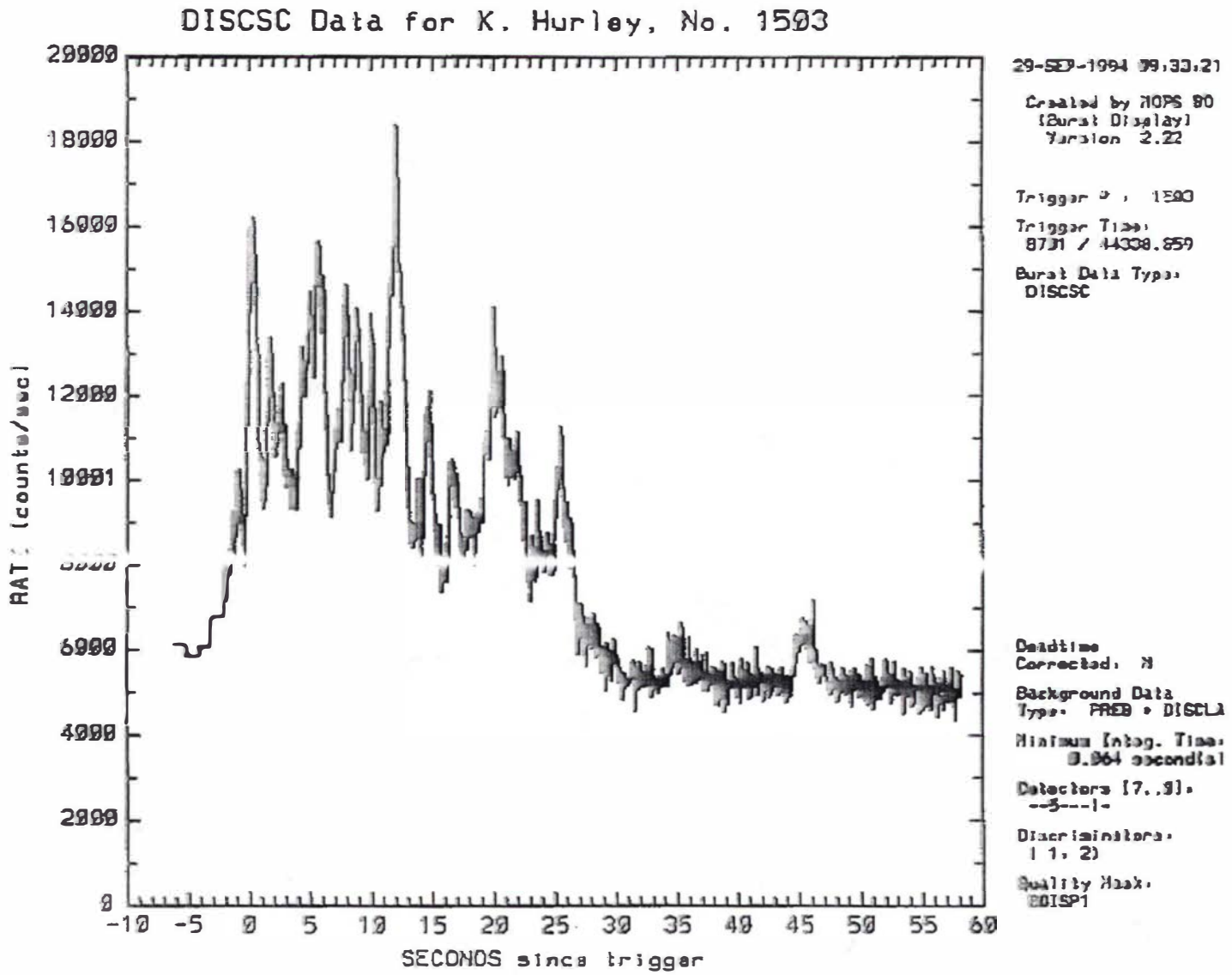
100-2000 keV



P.04
BATSE
205 544 5800
01-28-1998 15:49
01-28-98 02:57PM P004 #34
205 544 5800
R=95%




15/10/94
BATSE 20/03/92 44338.859
25- 100 keV
COUNTS/ .064 S
1500
1000
500
330
0
-3 01 5 9 13 17 21 25 29 33 37 41 45 49 53
T 1E, SECS


DISCSC Data for K. Hurley, No. 1503
RATE (counts/sec)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
-10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60
SECONDS since trigger
29-SEP-1994 09:33:21
Created by MOPS 80
(Burst Display)
Version 2.22
Trigger # : 1503
Trigger Time:
8731 / 44338.859
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 seconds
Detectors [7..0]:
--5---1-
Discriminators:
(1, 2)
Quality Mask:
EDISP1

From BRIGGS@ssl.msfc.nasa.gov Mon Apr 6 14:37:58 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA19345; Mon, 6 Apr 92 14:37:57 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA00173; Mon, 6 Apr 92 13:33:53
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA19342; Mon, 6 Apr 92 14:37:50 PDT
Date: Mon, 6 Apr 1992 16:38:32 -0500 (CDT)
From: BRIGGS@ssl.msfc.nasa.gov (Michael S. Briggs, 205-544-7716, Code ES-62, MSFC)
Message-Id: <920406163832.34400eb2@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01504

TIME: TJD=8701 SECONDS=71531

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
VERY LIMITED DATA ON THIS EVENT WAS RECEIVED. APPROXIMATELY EQUAL
COUNT RATES IN ALL DETECTORS INDICATE THAT IT IS A PARTICLE EVENT.

From KOUVELIOTOU@ssl.msfc.nasa.gov Thu Apr 9 10:45:37 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA08206; Thu, 9 Apr 92 10:45:35 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00935; Thu, 9 Apr 92 09:41:36
Received: from SSL.MSFC.NASA.GOV ([128.158.1.50]) by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA08203; Thu, 9 Apr 92 10:45:26 PDT
Date: Thu, 9 Apr 1992 12:46:13 -0500 (CDT)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Message-Id: <920409124613.344024f9@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01505

TIME: TJD=8701 SECONDS=85634

TYPE: ???? SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=173.8 AZIMUTH=249.0 ERROR= DEGREES

COMMENTS:
ONLY MAX RATES AVAILABLE FOR THIS EVENT. LOCATION INDICATES THAT IT IS
NOT SOLAR OR MAGNETOSPHERIC. COULD BE A GRB BUT THE DATA CANNOT BE
RETRIEVED.

Reclassified as a GRB by Briggs 2001

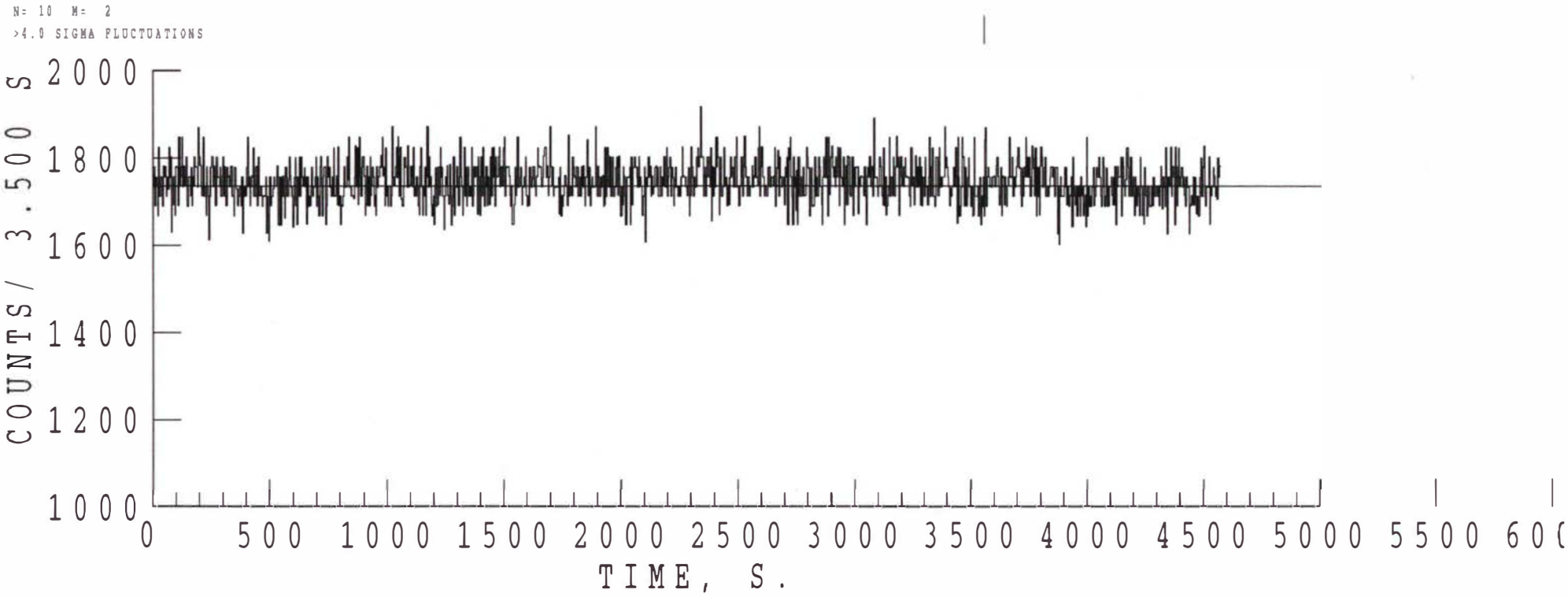
BATSE # 1505 19920320 8563

ULYSSES RT 13/11/01

20/03/92 83340.203 s

0.500 S INTERVALS REGROUPED BY 7

0- 0 keV



JPL
Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109

TELECOMMUNICATIONS MESSAGE

☐ FAX ☐ TELETYPE

NASA RAPIFAX 30376
COMM. CTR.
PHONE: (818) 354-3770
OR FTS 792-3770

ATTN: Dr Roger Williams GRB Instrument Team	PHONE OF ADDRESSEE (510) 643 9173	SENDER - DO NOT WRITE HERE MESSAGE NUMBER / NO. OF PAGES
ORGANIZATION Space Sciences Laboratory		
STREET University of California		~~PHONE SENT~~ cc N Angold A McGarry
CITY Berkeley	STATE & COUNTRY California	ZIP CODE 94720
TRANSMIT NUMBER (TWX, TELEX, FAX) 510 643 7629	DATE & TIME REQ. AT DEST.	
FROM S Standley, ESOC c/o JPL	PHONE EXT. (818) 393-0936	MAIL STOP 264-114
ACCOUNT CODE/JOB NUMBER 961-0HA01-0-2800		

19 March 92

~~EUS/GRB RECONFIGURATION~~

I just got a call from Kevin and he requested switch off and then switch on and reconfiguration of the instrument in accordance with the last procedure he sent. Could you confirm via SPAN or fax (818 393 4501) that we should use nominal switch off procedure, followed by the attached switch on (our Ref no. 159)?

Regards,

S.P. Standley.

Shaun Standley
Systems Engineer

Kevin –

I consolidated the switch-off with the switch-on to create the next page (essentially a confirmation of his references above, which I also confirmed directly with him on the telephone)

The switch-off I got from 21 Nov 91 with a 2 minute time delay. The switch-on I got from 26 Feb 92.

INSTRUCTIONS:

1. CLASSIFIED MATERIAL CANNOT BE TRANSMITTED VIA THE TELECOMMUNICATIONS NETWORKS.
2. MATERIAL SHOULD BE TYPED OR IN BLACK INK ON THIS FORM. ADDITIONAL MATERIAL MAY BE SUBMITTED ON 8½" x 11" WHITE BOND PAPER. IF MORE THAN ADDRESSEE, ATTACH LIST.
3. REFER ANY QUESTIONS TO EXTENSION 3770.
4. MAIL OR DELIVER TO ADMINISTRATIVE TELECOMMUNICATIONS CENTER (ATC), BLDG. 202, ROOM 212.

FAX MESSAGE

DATE: ~~February 26, 1992~~ 19 March 1992

TO: NIGEL ANGOLD, JPL; M. SOMMER, MPE; F. COTIN, CESR

FAXED 2/26 CSR

FROM: Kevin Hurley
University of California
Space Sciences Laboratory
Berkeley, CA 94720
Phone: (510) 643-9173
Fax: (510) 643-7629
E-mail: khurley@sunspot.ssl.berkeley.edu

TOTAL NUMBER OF PAGES:1

THE FOLLOWING COMMAND SEQUENCE IS THE ONE WHICH SHOULD BE USED TO TURN ON AND RECONFIGURE THE GRB EXPERIMENT AFTER DNEL, ENGINEERING FORMAT, ETC.

NO.	COMMAND	DESCRIPTION	TIME	VERIFICATION
0.	Z128	HUS OFF	0 MIN	
1.	Z127	HUS ON	20 MIN.	
2.	Z019 04F0	ULD,MLD	7 ~~5~~ MIN.	E007=.431 V, E008=0.6 V, E009=3 V
	Z019 0113	LLD		
3.	Z019 4044	HV1	10 ~~5~~ MIN.	E010=1471 V
4.	Z019 1046	HV2	15 ~~25~~ MIN.	E011=1474 V
5.	Z018 06B7	BRV, LLD 0.125 S	20 ~~30~~ MIN.	E031=24, E032=2, E033=3
	Z018 1156	BRV, MLD 2.0 S		E034=64, E035=5, E036=1
	Z018 0014	OP. MODE 1 1/32 S BURST SAMPLE		E021=0 E023=1

Kevin Hurley

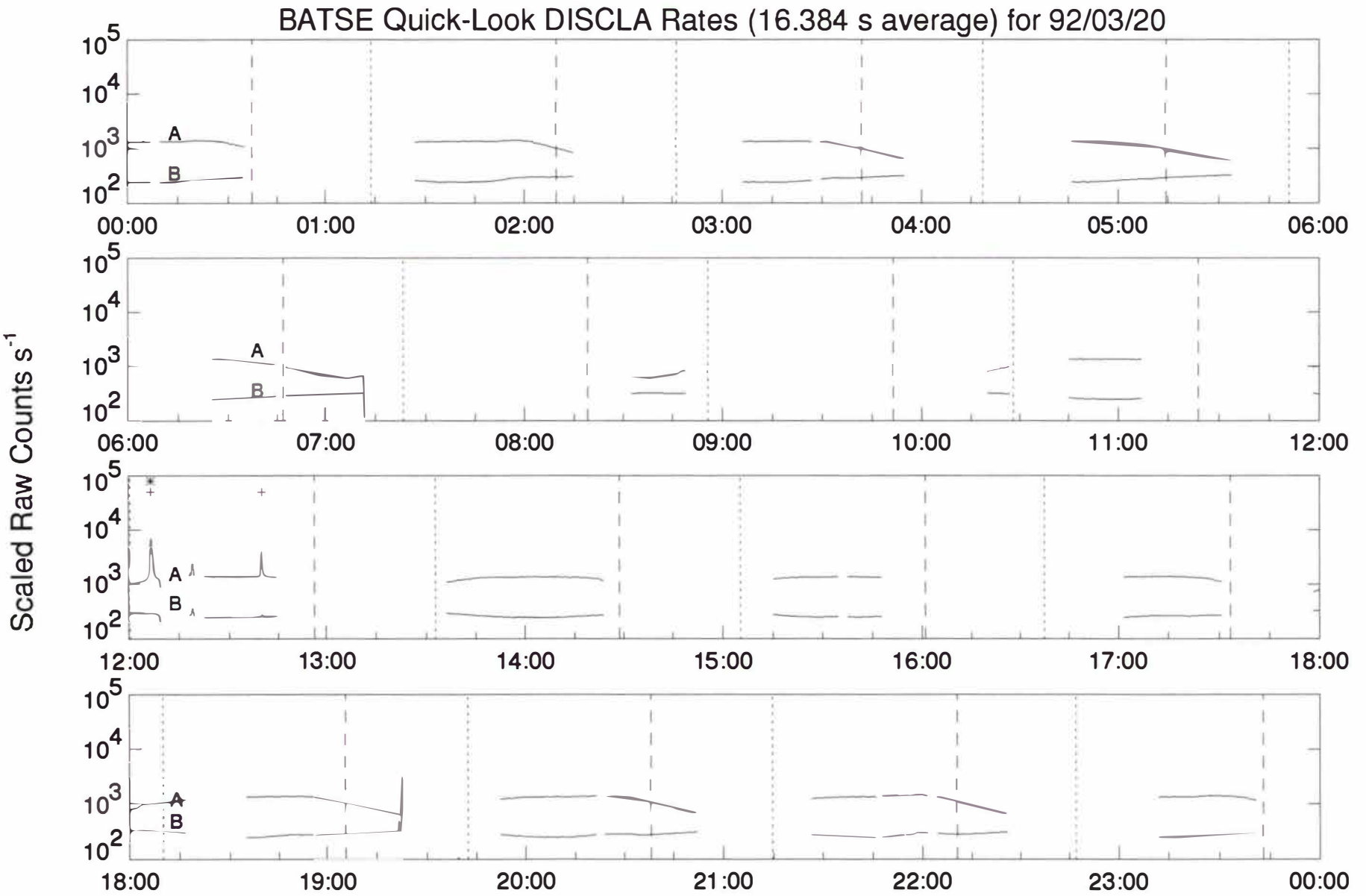
Shaun – The "nominal switch-off then switch-on" should become the above (re: your fax today)

Roger Williams (for Kevin Hurley)

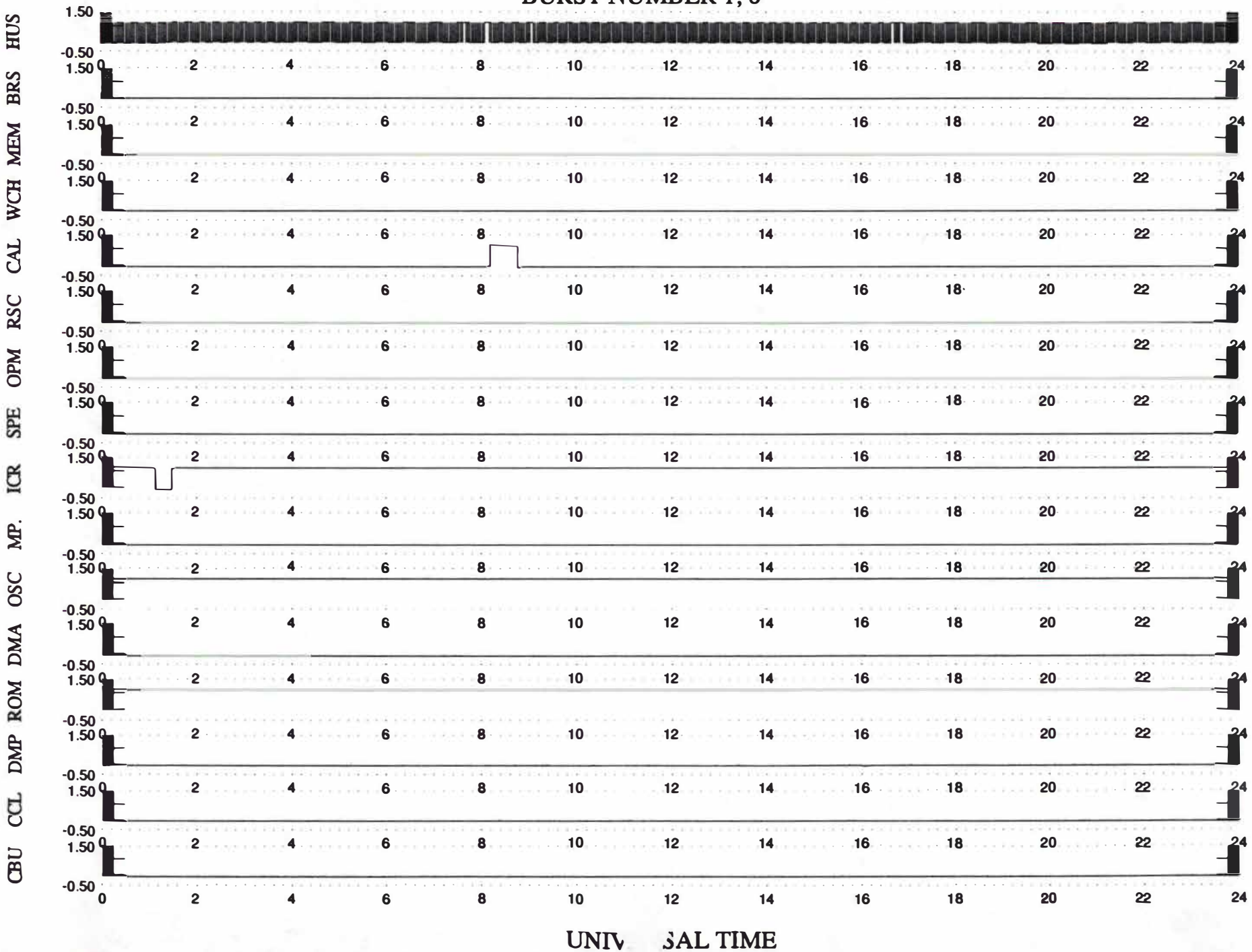
From ULSSCI@jplgp.span.nasa.gov Wed Mar 25 08:03:20 1992
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA03497; Wed, 25 Mar 92 08:03:19 PST
Received: Wed, 25 Mar 92 08:04:31 PST from JPLGP.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9203251604.AA14145@mx.nsi.nasa.gov>
Received: from JPLGP.dnet by AMES.dnet with MAIL-11
          (utk-mail11d v1.7); Wed, 25 Mar 92 08:05:56 PST
Date: Wed, 25 Mar 92 08:05:56 PST
From: ULSSCI@jplgp.span.nasa.gov
X-To: KHURLEY
X-Cc: ULSSCI
Subject: COMMANDS SENT
To: KHURLEY@sunspot.ssl.berkeley.edu
Status: R

Please be informed that the Command Sequence requested by you on 19 MAR 1992
and annotated as our Ref.No: 169 has been executed on board the S/C (as
Scheduled) on DAY 080/00:30:00 (SCET).

Regards,
F.Castro

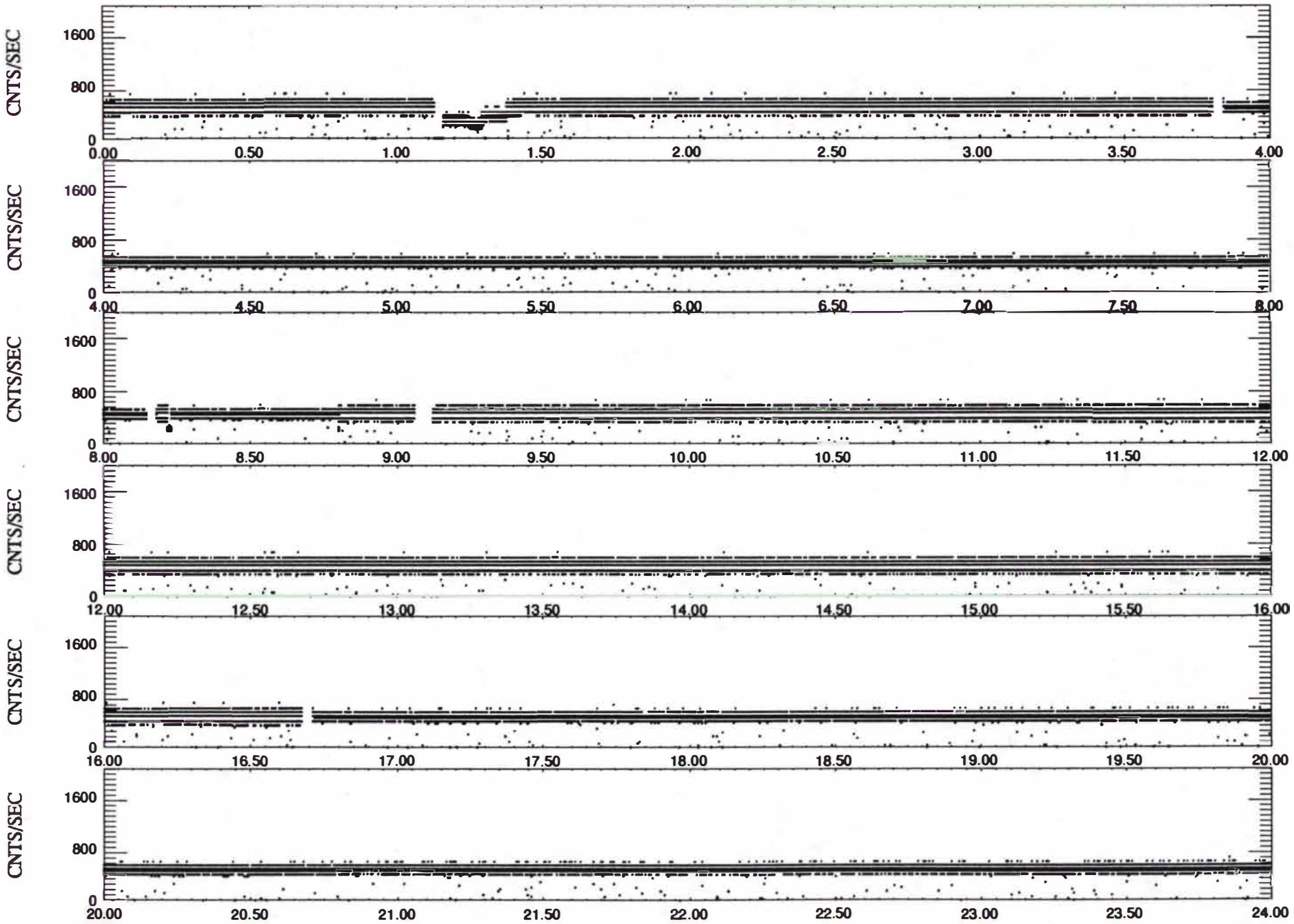

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/20
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1807 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 80, year 1992 to day 80, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 80, year 1992 to day 80, year 1992 4/27/92

CALIBRATION DATA INCLUDED



UNIVl AL TIME

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1506
EVENT OF 1992 MAR 21 DAY OF YEAR= 81
EVENT CROSSING TIME AT BATSE      : 44900. S. OR 12:28:19.7
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 184.500     5.700
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 21/ 3/  92 IS:
RA=  154.431 DEC=     9.307 DIST=     4.492 AU
BATSE-ULYSSES DISTANCE =  671997216. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=149.98 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1940.88 SECS.
CROSSING TIME AT ULYSSES     IS 42959. S. OR 11:55:58.8 +/-  215.21 SECONDS
```

From KOUVELIOTOU@ssl.msfc.nasa.gov Thu Apr 9 10:51:00 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AB08238; Thu, 9 Apr 92 10:50:59 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00937; Thu, 9 Apr 92 09:47:02
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA08232; Thu, 9 Apr 92 10:50:50 PDT
Date: Thu, 9 Apr 1992 12:51:40 -0500 (CDT)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Message-Id: <920409125140.34402501@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01506 Mar 21 ~~No data — redundant CTU test~~

TIME: TJD=8702 SECONDS=44965

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=067.4 AZIMUTH=199.8 ERROR= DEGREES

COMMENTS:
ONLY GOOD DATA TYPE IS TTS AND SINCE THAT STARTS AFTER THE TRIGGER
WE CAN DETERMINE THAT THE EVENT LASTS FROM T0 TO T6 S, AND DURING THIS
TIME IT HAS A DOUBLE PULSE STRUCTURE. FROM THE GAPRIDDEN DISCSC DATA
WE COULD SUGGEST THAT THE TOTAL DURATION COULD BE OF THE ORDER OF 20 S.
IT IS NOT SEEN ABOVE 320 KEV.

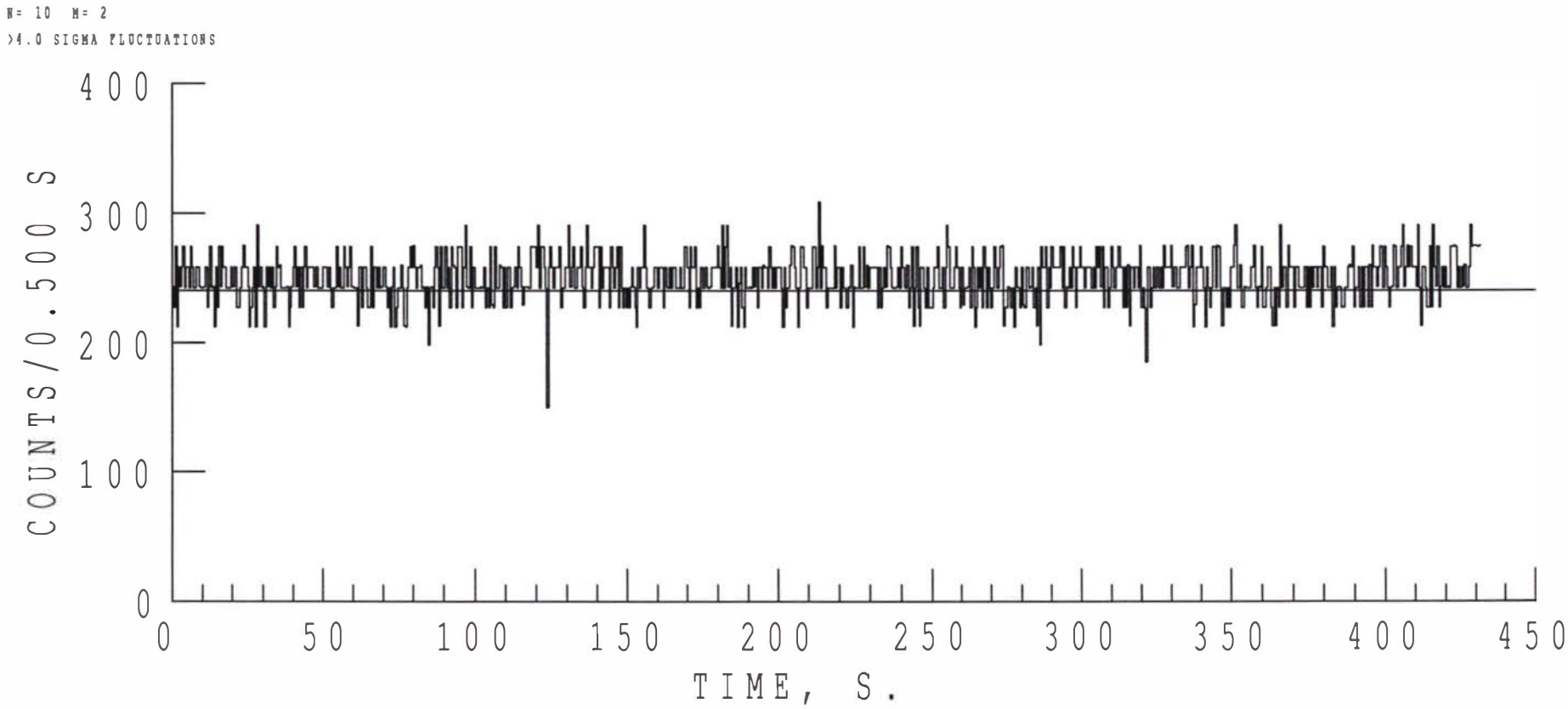
7/ 6/94

ULYSSES RT

21/ 3/92 42732.203 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV



Dear Kevin,

Here I send you my comments about the WATCH GRBs-like events you examined:

23/7/91. The duration of this event is around 10 s, but it is very weak. Enclosed I send the time profile for this burst. Note the small increase in the count rate visible in the WATCH data.

15/8/91. The duration of the event is 40 s. It is a clear burst.

16/8/91. If you did not see anything in Ulysses and PVO, I suppose it is a particle event.

7/3/92. I send you the time history in order to get an annulus.

14/3/92. Particle event. The same than 15/8/91.

21/3/92. WATCH sees the event at 13:00:54. The duration is 1 s. The center of the field is at alfa: 15 30; delta = +32. No increase in the count rate is visible at the time of the BATSE burst in all the three units. A particle event ?

21/7/92. Particle event. The same than 15/8/91.

15/6/92. The event is only a peak in one WATCH bin, i.e. the duration is around 7 s.

25/9/92a. There is an error in my list. The trigger time is 20:30:42, not 19:30:42.

25/9/92b. It is a completely different event that lasted for about 15 s. At 20:45:14. The center of the field is at 08 35 + 29. Nothing to do with 920925a or 920925c.

Did you finally confirm 910408?

Regards
Alberto
17 Dec 1993

P.S. Please, note that I will be absent from Dec 20 to Jan 20! But you always could reach me by Fax at +34 52 61 04 49.

From khurley@space6.ssl.berkeley.edu Wed Dec 15 10:55:46 1993
Date: Wed, 15 Dec 93 11:53:02
From: khurley@space6.ssl.berkeley.edu
Content-Length: 2621

Dear Alberto,

I've looked through the WATCH candidate events, and this is what I have found.

23/7/91: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 s and 3.25 s. Neither shows any strong evidence for an event, but there may be a very weak event in the rebinned data (3.25 s resolution). What is the duration of your event? PVO data is available for this time, but only at 64 s resolution - is it worth looking?

15/8/91: Ulysses had 0.25 s data for the entire crossing window, but it was noisy. There were numerous noise spikes which lasted 0.25, 0.5, and 0.75 s, and a few dropouts. When I eliminate the big noise spikes there are still many smaller ones. I searched the data on two timescales: 0.25 and 2.75 s. There is nothing obvious, but again, I need to know the event duration to have a better look.

16/8/91: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 s and 3.25 s. Neither shows any evidence for an event. PVO had coverage, too, and they detected nothing.

7/3/92: We find a small rate increase in the crossing window. If you send me the WATCH data, I can get an annulus.

15/6/92: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 and 4 s. In the 4 s data, there is perhaps a very weak event, about 16 s long. Is that what you see with WATCH?

25/9/92a and b: "a" event: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 and 4.25 s. I find the "b" event in this window, but nothing else.

"b" event: The time of the b event has changed by 15 minutes in your new list, but it is now inconsistent with the BATSE time, which was consistent with your original time. Given this, and the fact that the "a" event is close to one hour before the "b" time, is it possible that there is a mistake, and that "a" and "b" are the same event, at 20:30?

14/3/93: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 s and 2.75 s. No evidence for any event.

21/7/93 06:17: Ulysses had 0.25 s data for the entire crossing window. I searched it on two timescales: 0.25 and 3.5 s. No evidence for any event.

21/7/93 13:00: Ulysses had 1 s data for the entire window. I searched it on two timescales: 1 s and 4 s. There was a BATSE event at 45935 s, which we recorded as a weak rate increase. There was also a 2 s increase in the Ulysses data, which could be your event. How long was the WATCH event, and are you sure of the time (i.e., could it be the BATSE event)?

Kevin

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

REGARDS,

RAY

From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-maillld v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O

From ajct@dsri.dk Wed Nov 17 05:36:33 1993
Date: Wed, 17 Nov 93 14:37:25 +0100
From: Alberto Castro-Tirado <ajct@dsri.dk>
To: khurley@sunspot.ssl.berkeley.edu
Content-Length: 1222

Added to MBL

Dear Kevin

I have checked (until 25 Sep 1992) all the events in the GRB Master List (ML) you compiled. According to WATCH, the origin of the next events as real GRB is doubtful.

Date	U.T.	in WATCH	comment	
17 Apr 91	20:07:32	particle event	confirmed(?) in the ML	
24 Oct 91	02:38:20	" "	unconfirmed in ML	DHSP
26 Oct 91	15:28:49	" "	"	Σ
11 Feb 92	04:22:53	solar flare	"	
21 Mar 92	12:50:53	event at 13:00:49	"	
11 Jul 92	16:09:00	particle event	confirmed(?) in the ML	

The two confirmed events are seen as particle events in WATCH. It could be a coincidence, but the probability is low. They were seen by Ulysses, so maybe we can compare the light curves.

We also will send you a list of the 70 events of the 1W Catalogue (Lund et al. 1994). 32 of them are localized and the rest (38) were detected by other experiments (not only WATCH).

By the way, did you get my two E-mails concerning GRB 911018 and GRB 920714 (a possible second peak 30 minutes after the first event)?

Kind regards,

Alberto Castro-Tirado
17 Nov 1993

From KOUVELIOTOU@ssl.msfc.nasa.gov Thu Apr 9 10:55:56 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA08302; Thu, 9 Apr 92 10:55:54 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA00943; Thu, 9 Apr 92 09:51:54
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA08292; Thu, 9 Apr 92 10:55:44 PDT
Date: Thu, 9 Apr 1992 12:56:37 -0500 (CDT)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Message-Id: <920409125637.3440250a@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01507

TIME: TJD=8702 SECONDS=61808

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT.

From KOUVELIOTOU@ssl.msfc.nasa.gov Thu Apr 9 10:53:38 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA08264; Thu, 9 Apr 92 10:53:36 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA00939; Thu, 9 Apr 92 09:49:40
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA08257; Thu, 9 Apr 92 10:53:26 PDT
Date: Thu, 9 Apr 1992 12:54:21 -0500 (CDT)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Message-Id: <920409125421.34402505@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01508

TIME: TJD=8702 SECONDS=67640

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT.

From KOUVELIOTOU@ssl.msfc.nasa.gov Thu Apr 9 10:57:42 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA08319; Thu, 9 Apr 92 10:57:41 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA00945; Thu, 9 Apr 92 09:53:43
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA08315; Thu, 9 Apr 92 10:57:34 PDT
Date: Thu, 9 Apr 1992 12:58:26 -0500 (CDT)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Message-Id: <920409125826.3440230f@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01509

TIME: TJD=8702 SECONDS=78192

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT.

From BHAT@ssl.msfc.nasa.gov Fri Apr 10 15:11:42 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA21618; Fri, 10 Apr 92 15:11:40 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA01396; Fri, 10 Apr 92 14:07:45
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA21608; Fri, 10 Apr 92 15:11:28 PDT
Date: Fri, 10 Apr 1992 17:12:22 -0500 (CDT)
From: BHAT@ssl.msfc.nasa.gov
Message-Id: <920410171222.35200a41@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 1510 March 21 No data - CTU test

TIME: TJD=8702 SECONDS=84902 23:35:02

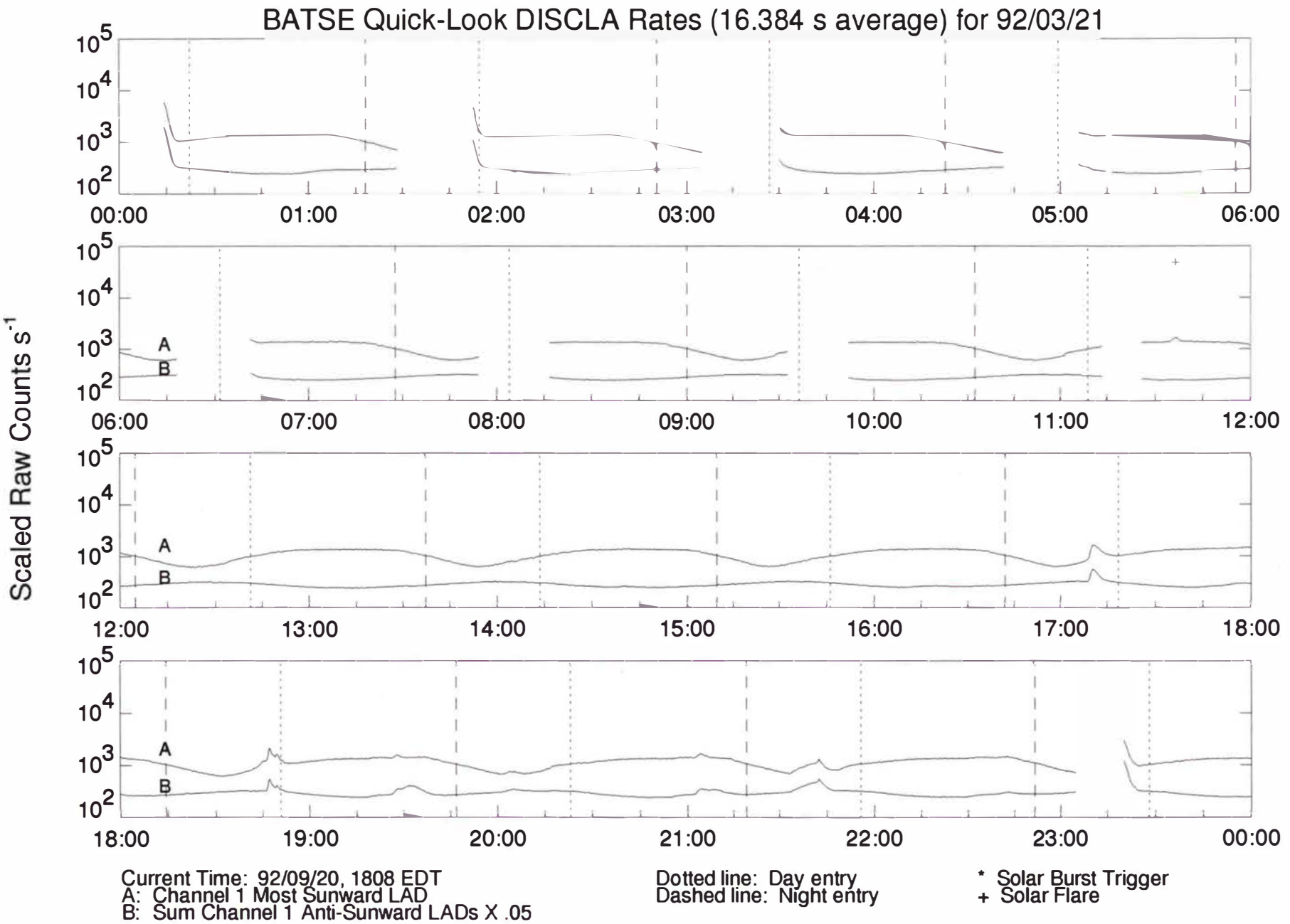
TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

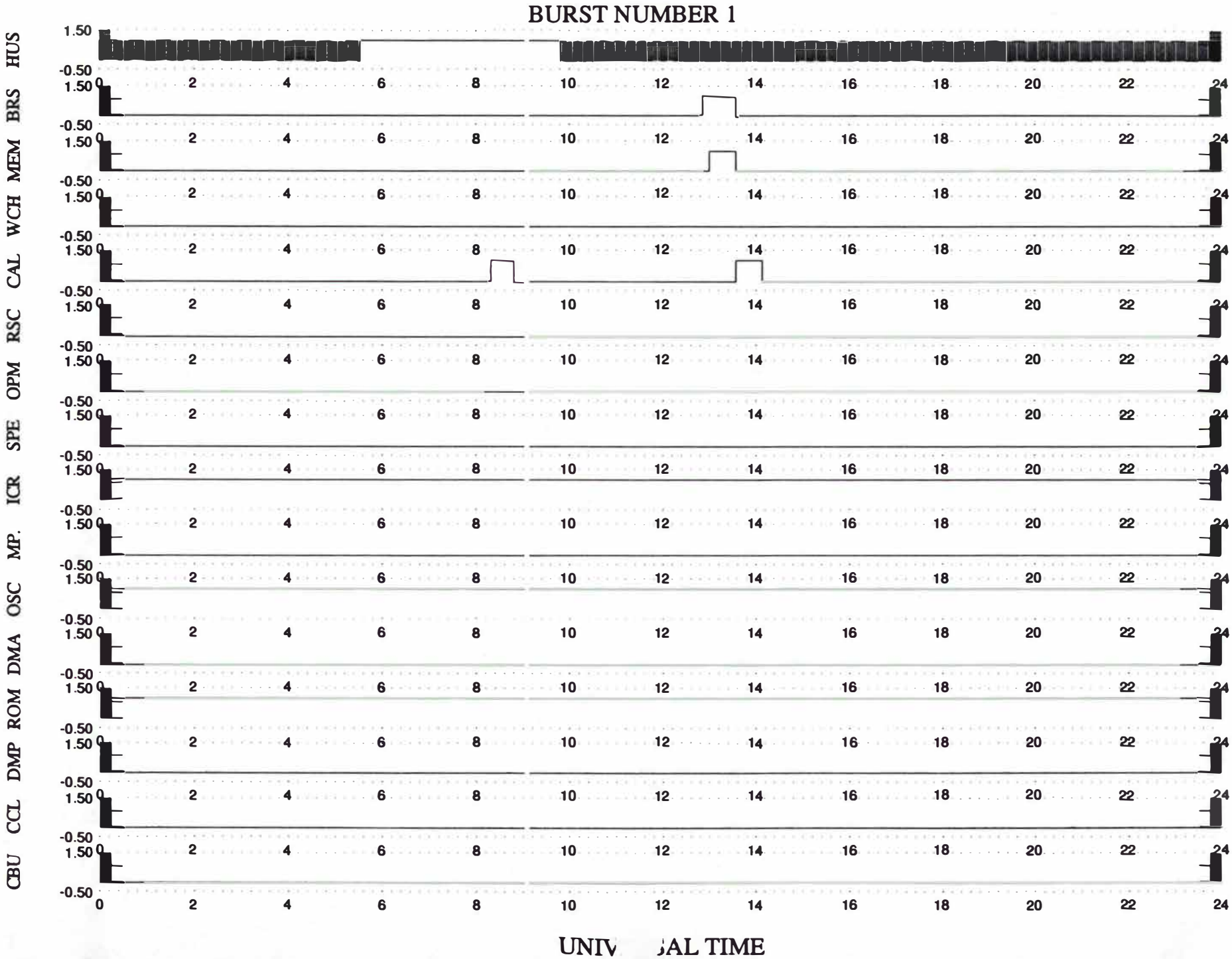
INTENSITY: COUNTS/CM2

LOCATION: ZENITH=34.3 AZIMUTH=215.2 ERROR= DEGREES

COMMENTS:
FROM THE LIMITED DATA AVAILABLE, THIS IS CLASSIFIED AS A BURST. IT LASTS FOR ABOUT 600 MSEC AND SHOWS 2 SPIKES IN THE TIME HISTORY. SIGNIFICANT SIGNAL IS SEEN ABOVE 300 KEV.

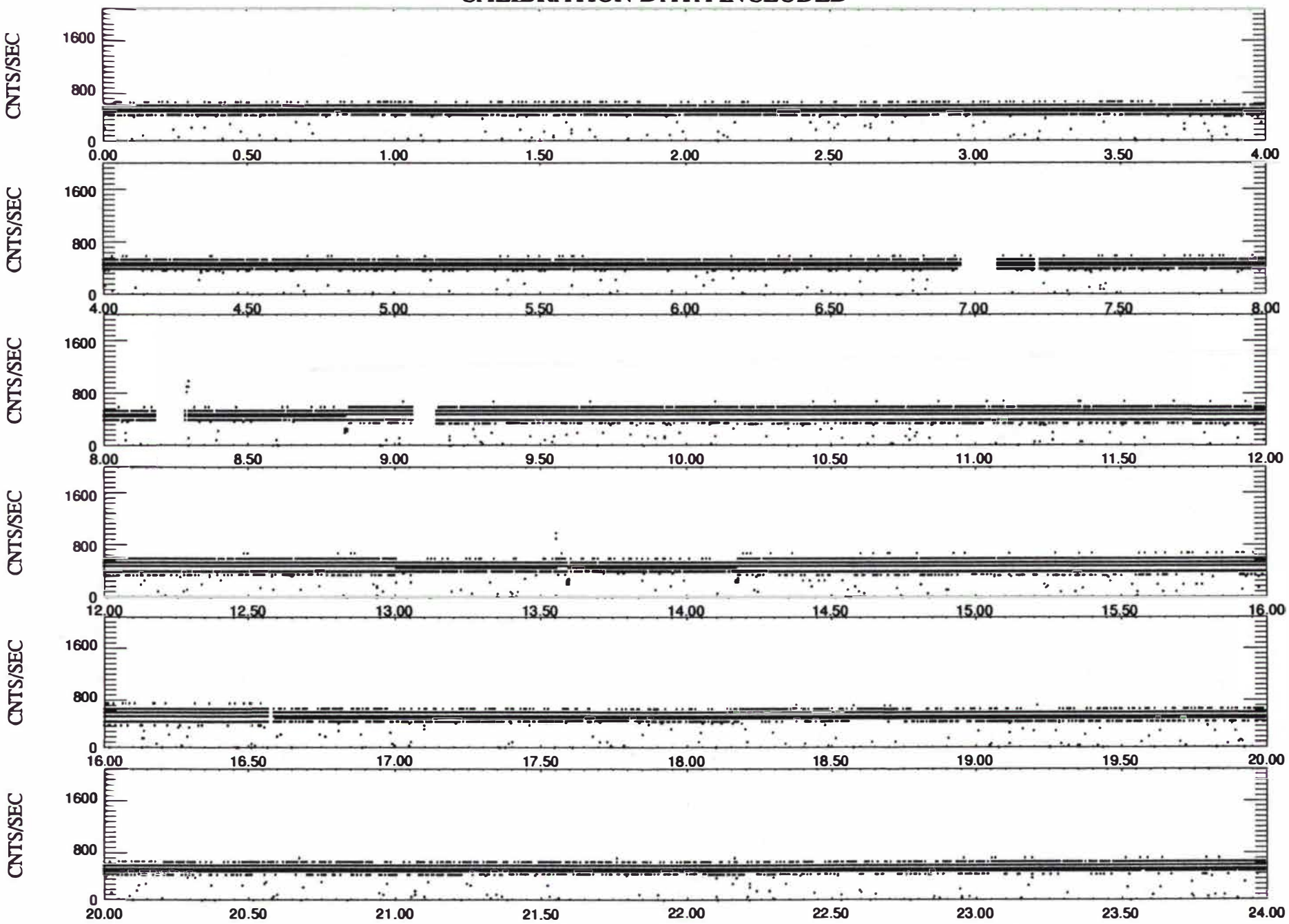

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/21
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1808 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 81, year 1992 to day 81, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 81, year 1992 to day 81, year 1992 4/27/92

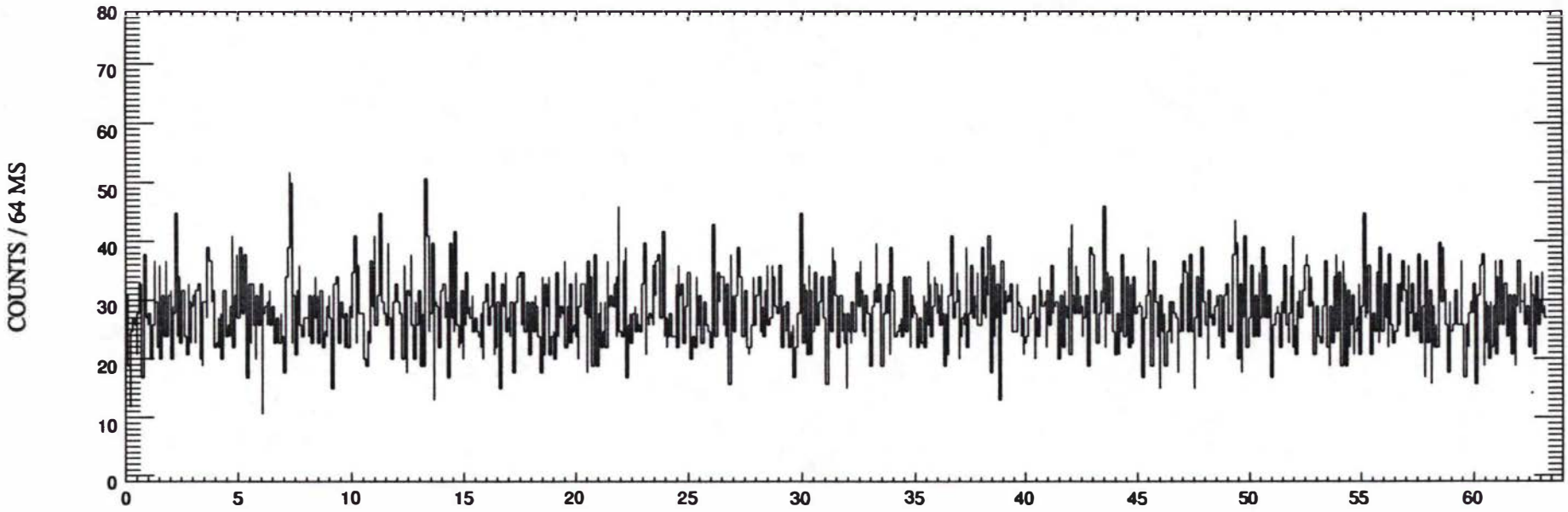
CALIBRATION DATA INCLUDED

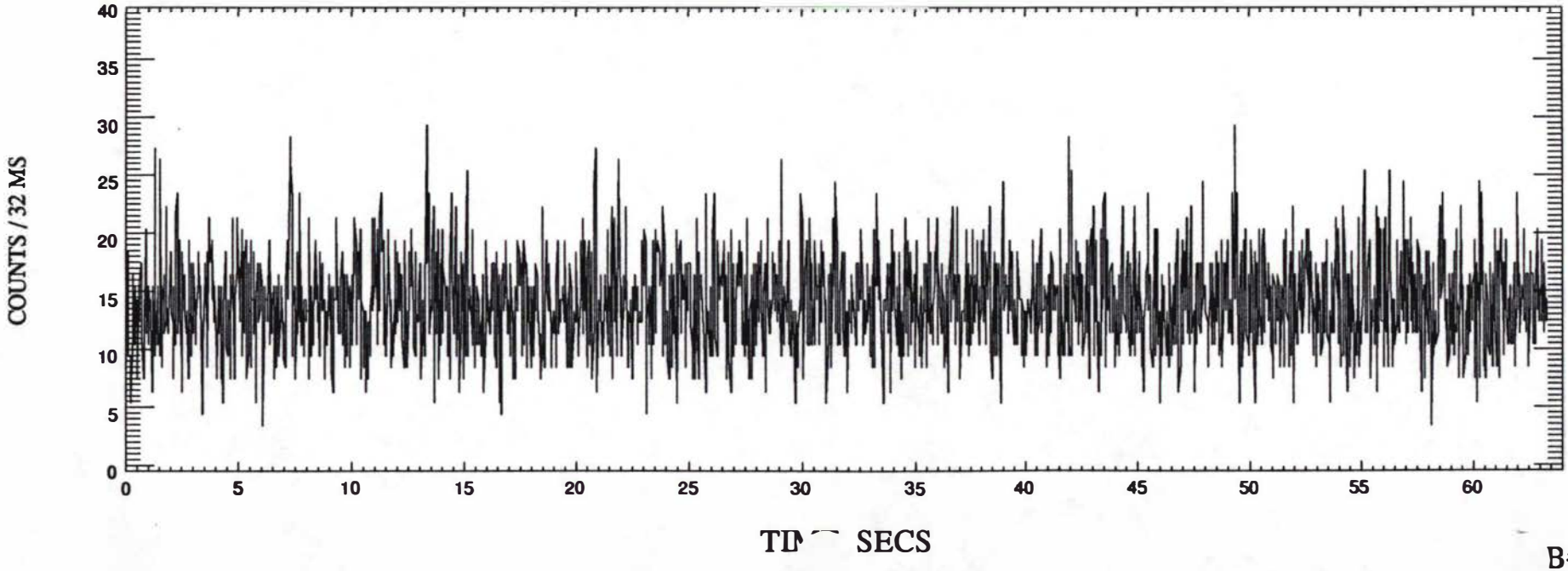


UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 81, year 1992 5/6/92

Burst Counter 1 at UT=12.848090981377 h=46253.128 s





B# 1

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1510
EVENT OF 1992 MAR 22 DAY OF YEAR= 82
EVENT CROSSING TIME AT BATSE     : 84900. S. OR 23:35:00.3
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 198.300  -30.500
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 22/ 3/  92 IS:
RA=  154.234 DEC=    9.321 DIST=    4.499 AU
BATSE-ULYSSES DISTANCE =  673111736. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=121.92 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1187.15 SECS.
CROSSING TIME AT ULYSSES    IS 83713. S. OR 23:15:13.2 +/-  362.84 SECONDS
```

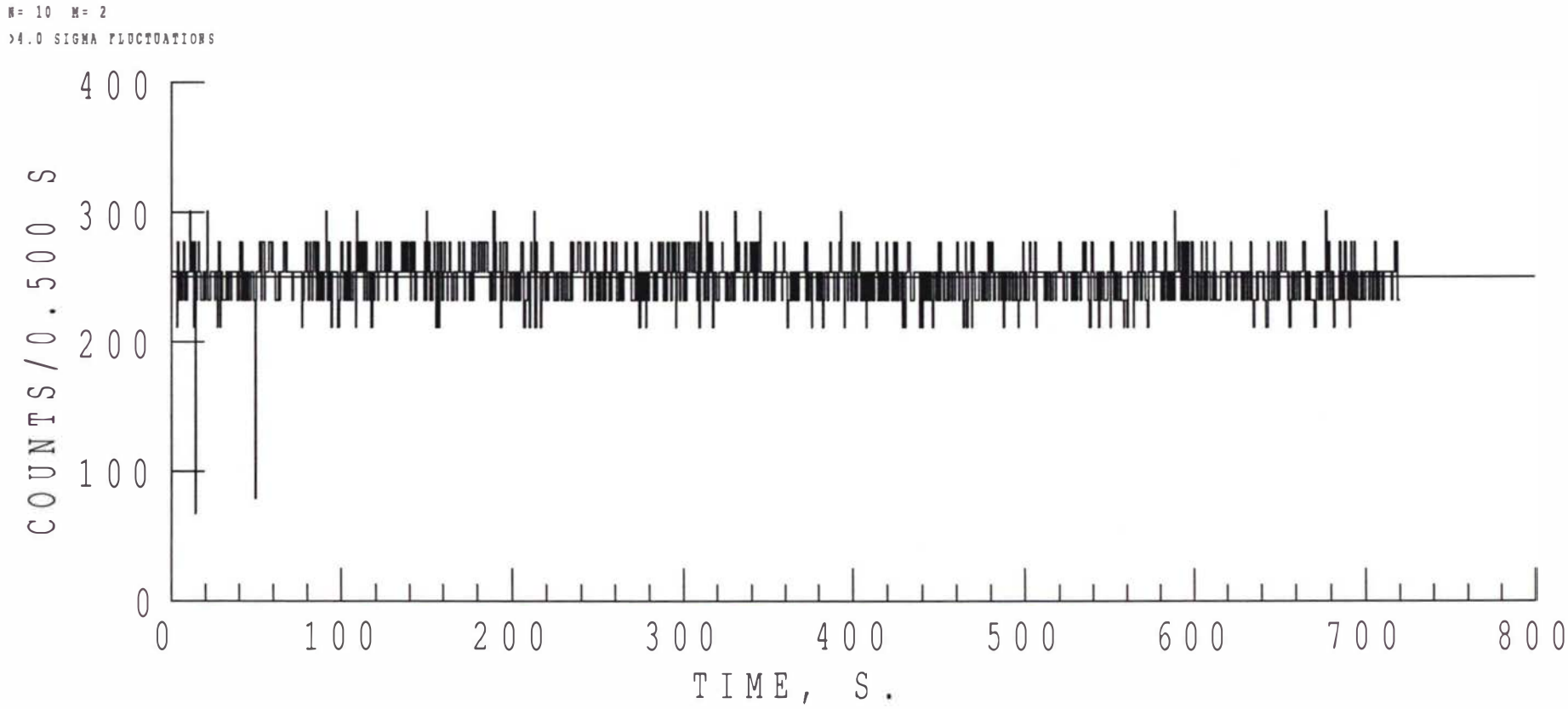
BATSE BURST# 1510

7/ 6/94

ULYSSES RT

22/ 3/92 83340.047 s

0- 0 keV



From BHAT@ssl.msfc.nasa.gov Fri Apr 10 15:14:46 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21698; Fri, 10 Apr 92 15:14:43 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA01412; Fri, 10 Apr 92 14:10:48
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21692; Fri, 10 Apr 92 15:14:35 PDT
Date: Fri, 10 Apr 1992 17:15:33 -0500 (CDT)
From: BHAT@ssl.msfc.nasa.gov
Message-Id: <920410171533.35200a52@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 1511

TIME: TJD=8703 SECONDS=64393

TYPE: ELE PRE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
AN ELECTRON PRECIPITATION EVENT.

From BHAT@ssl.msfc.nasa.gov Fri Apr 10 15:17:38 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA21776; Fri, 10 Apr 92 15:17:36 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA01433; Fri, 10 Apr 92 14:13:39
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA21768; Fri, 10 Apr 92 15:17:23 PDT
Date: Fri, 10 Apr 1992 17:18:08 -0500 (CDT)
From: BHAT@ssl.msfc.nasa.gov
Message-Id: <920410171808.35200865@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 1512 Mar 92

TIME: TJD=8703 SECONDS=70226

TYPE: ELEC.PR SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
AN ELECTRON PRECIPITATION EVENT.

From BHAT@ssl.msfc.nasa.gov Fri Apr 10 15:19:44 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21823; Fri, 10 Apr 92 15:19:42 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA01436; Fri, 10 Apr 92 14:15:46
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21818; Fri, 10 Apr 92 15:19:32 PDT
Date: Fri, 10 Apr 1992 17:20:30 -0500 (CDT)
From: BHAT@ssl.msfc.nasa.gov
Message-Id: <920410172030.35200a77@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 1513

TIME: TJD=8703 SECONDS=80772

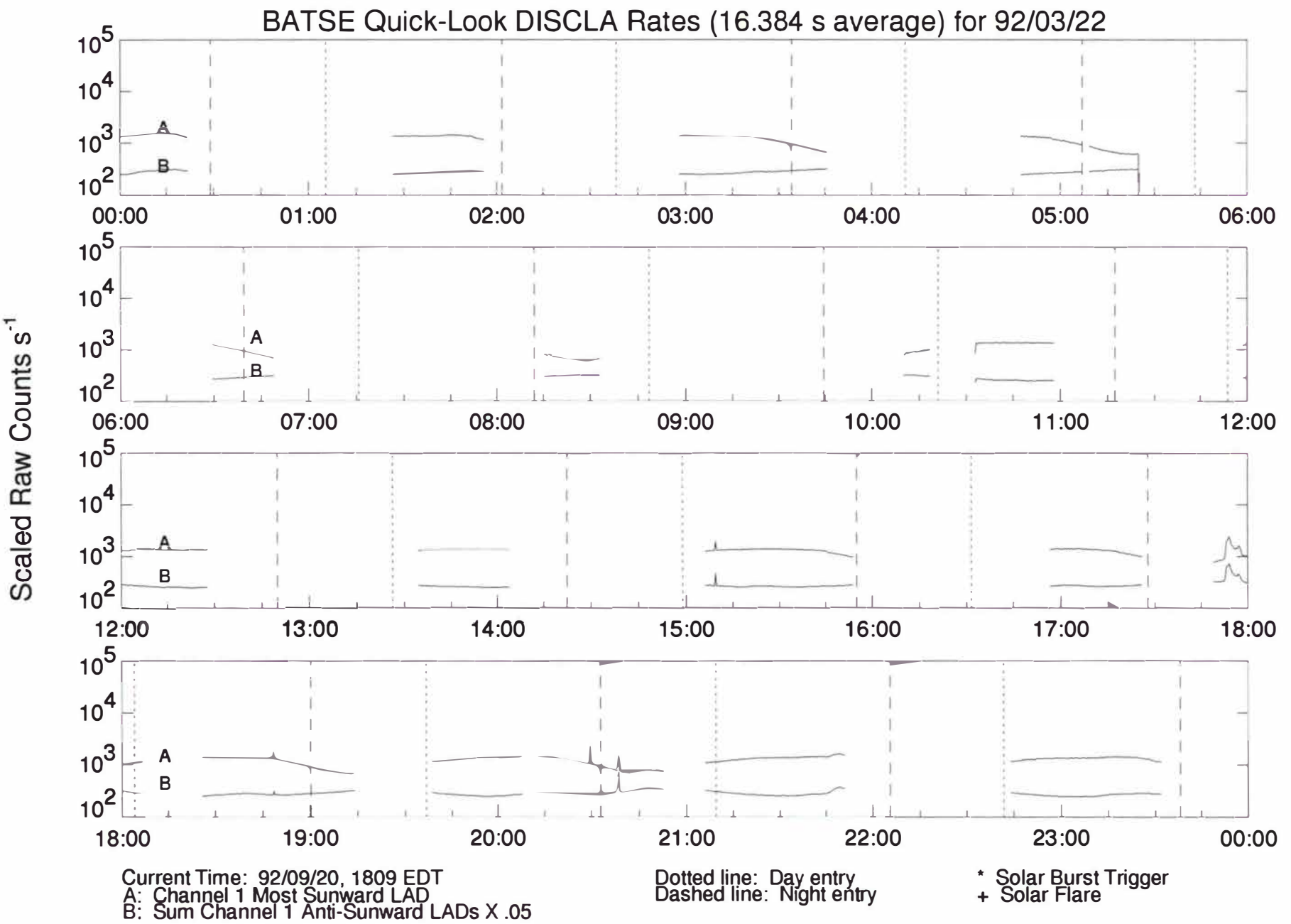
TYPE: ELEC.PR SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

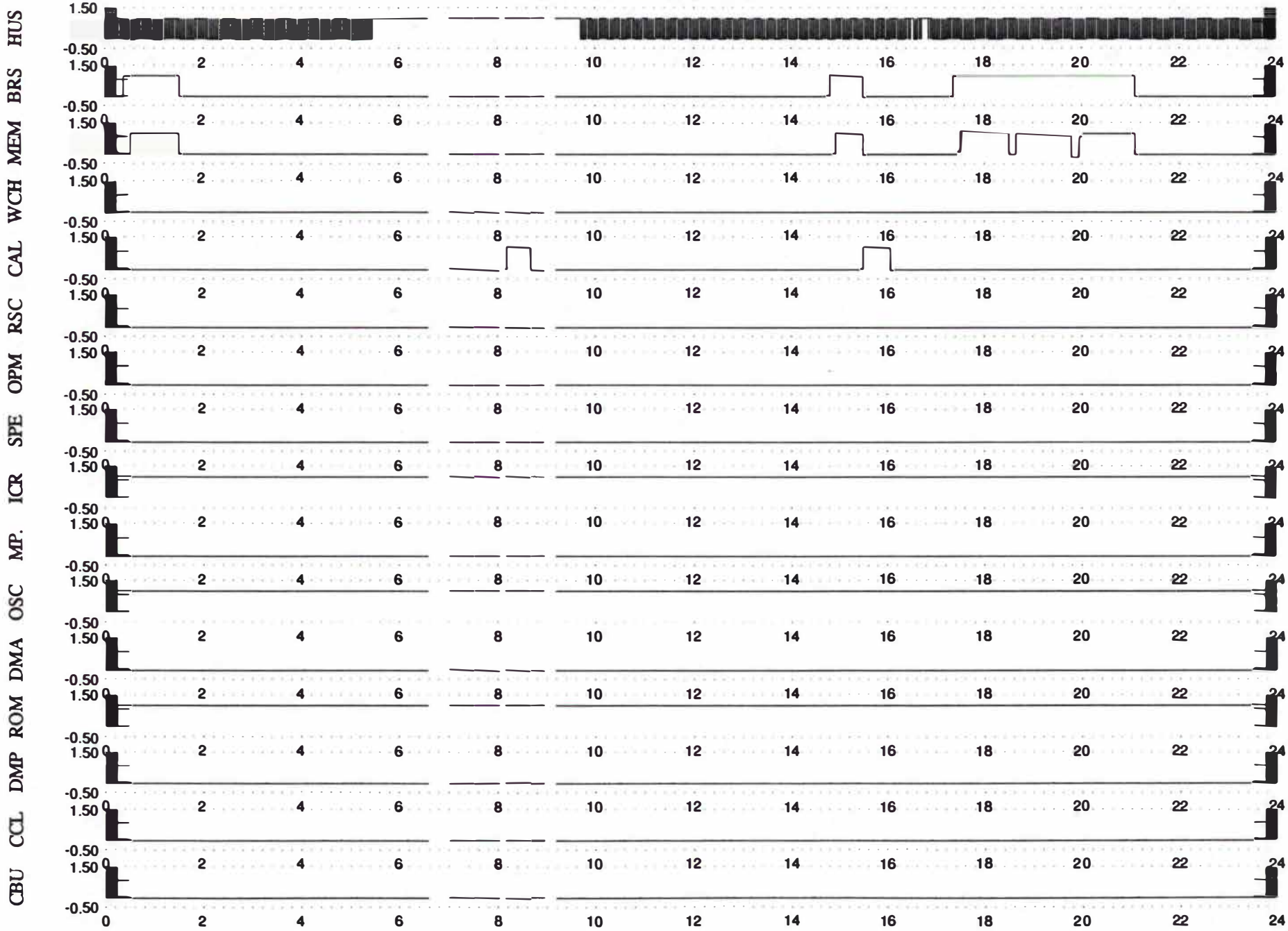
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
AN ELECTRON PRECIPITATION EVENT.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/22
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1809 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 82, year 1992 to day 82, year 1992 4/28/92

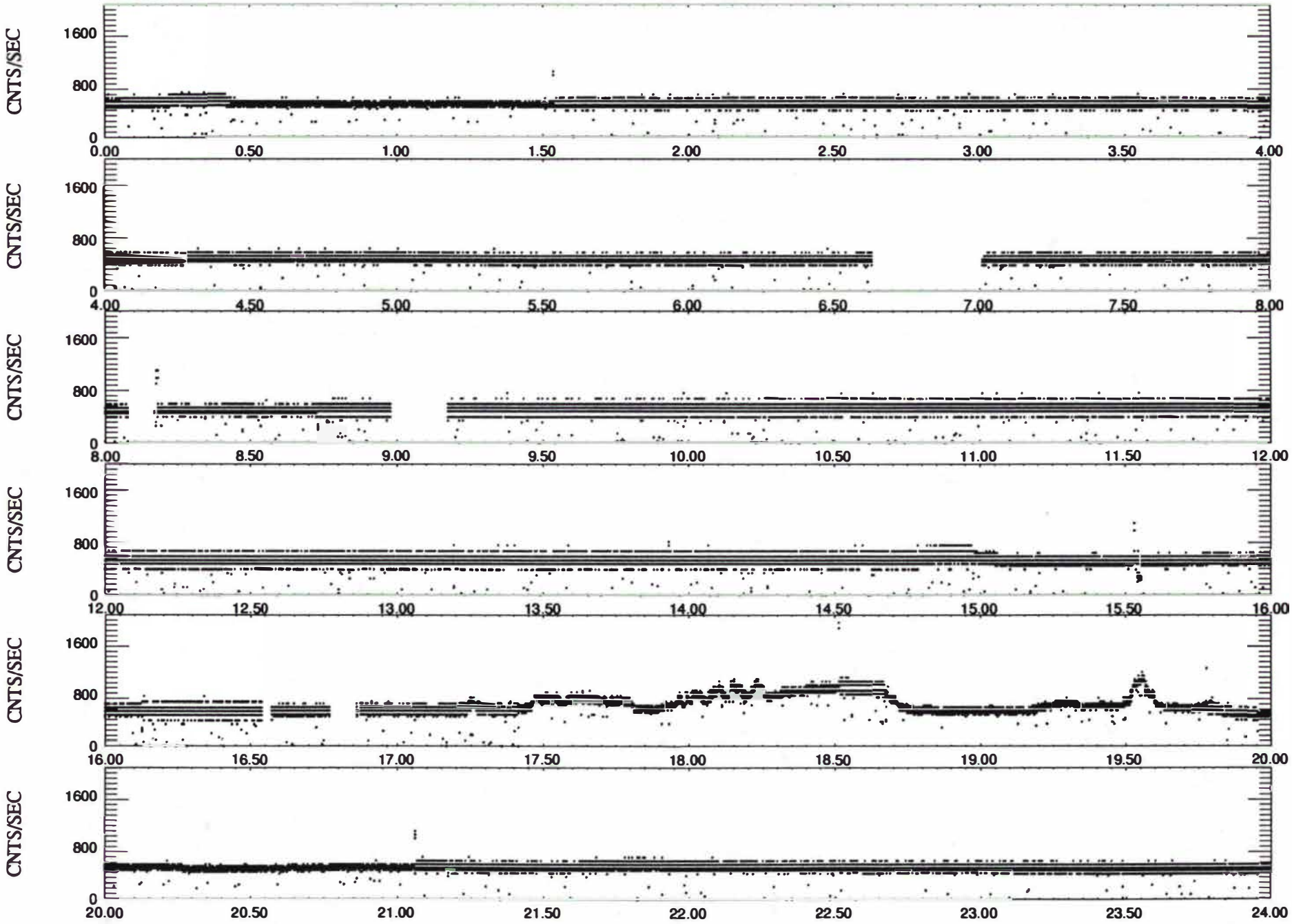
BURST NUMBER 2 - 6



UNIV. AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 82, year 1992 to day 82, year 1992 4/27/92

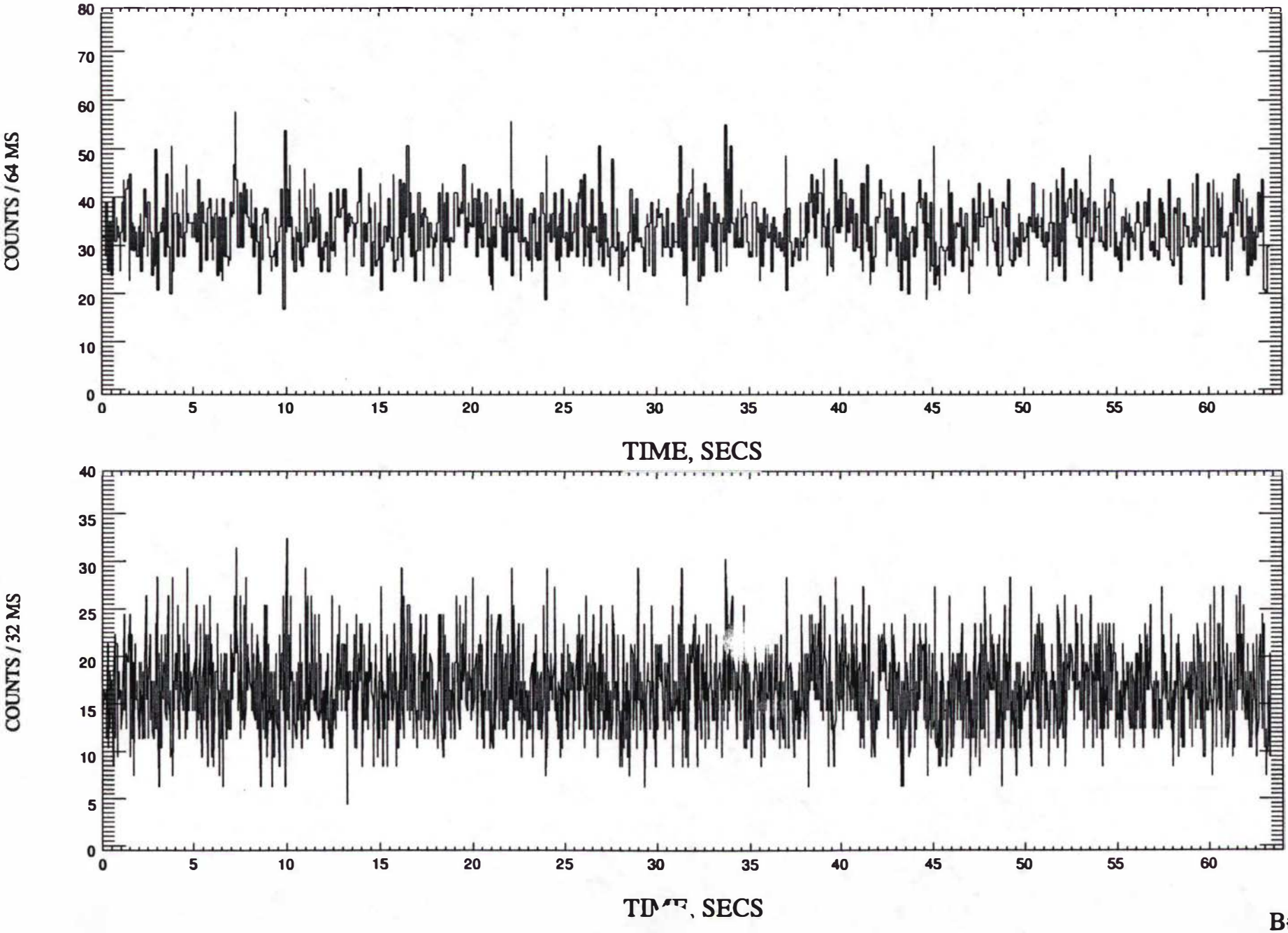
CALIBRATION DATA INCLUDED



UNIVE AL TIME

HUS 2A TRIGGERED DATA EDR day 82, year 1992 5/6/92

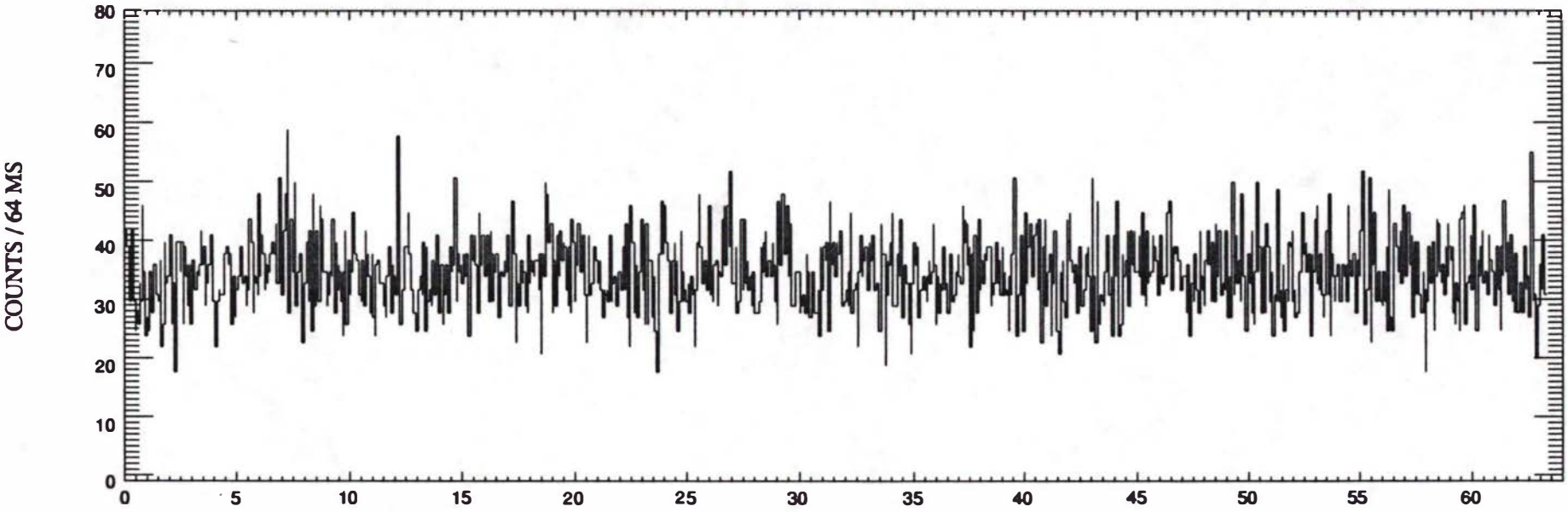
Burst Counter 2 at UT= 0.285952661302 h= 1029.430 s

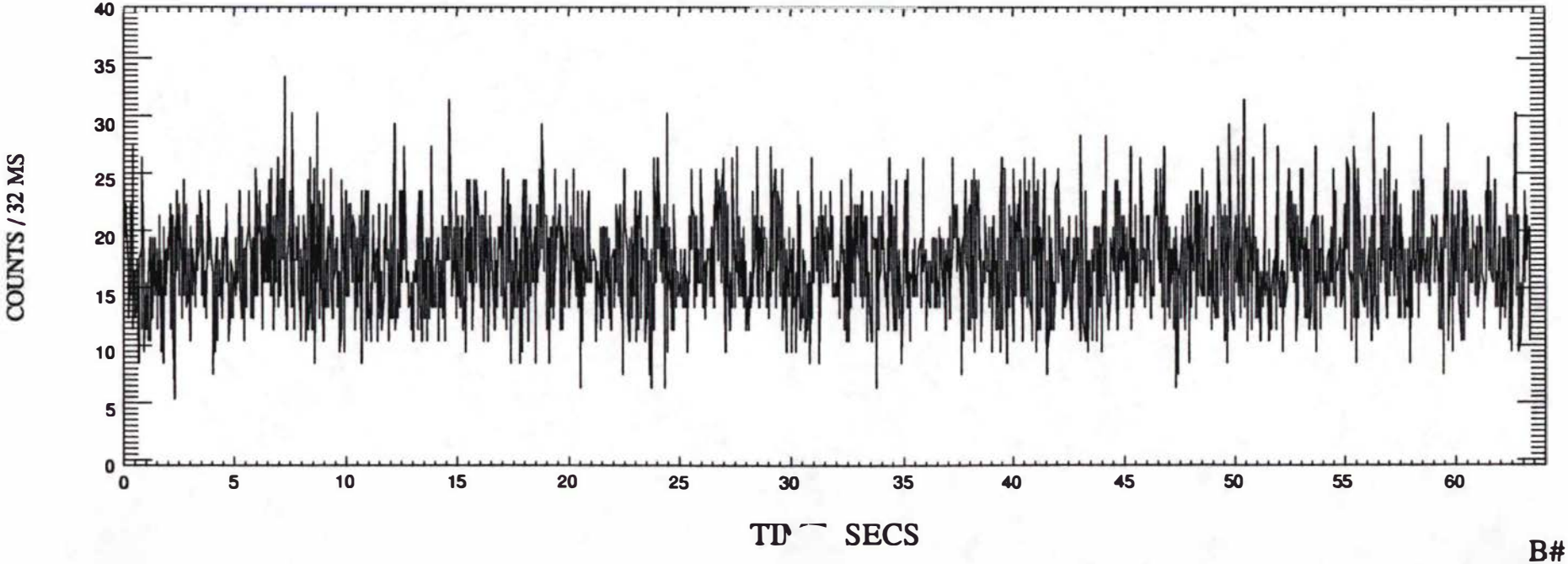


B# 1

HUS 2A TRIGGERED DATA EDR day 82, year 1992 5/6/92

Burst Counter 3 at UT=14.824907565647 h=53369.667 s

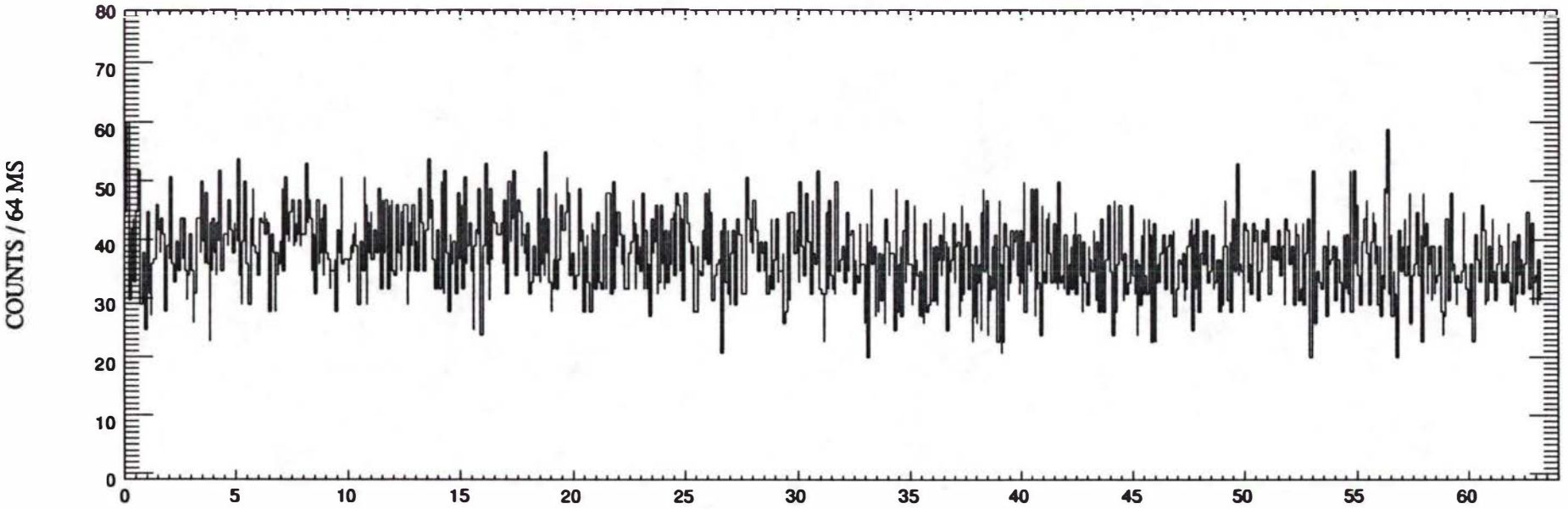


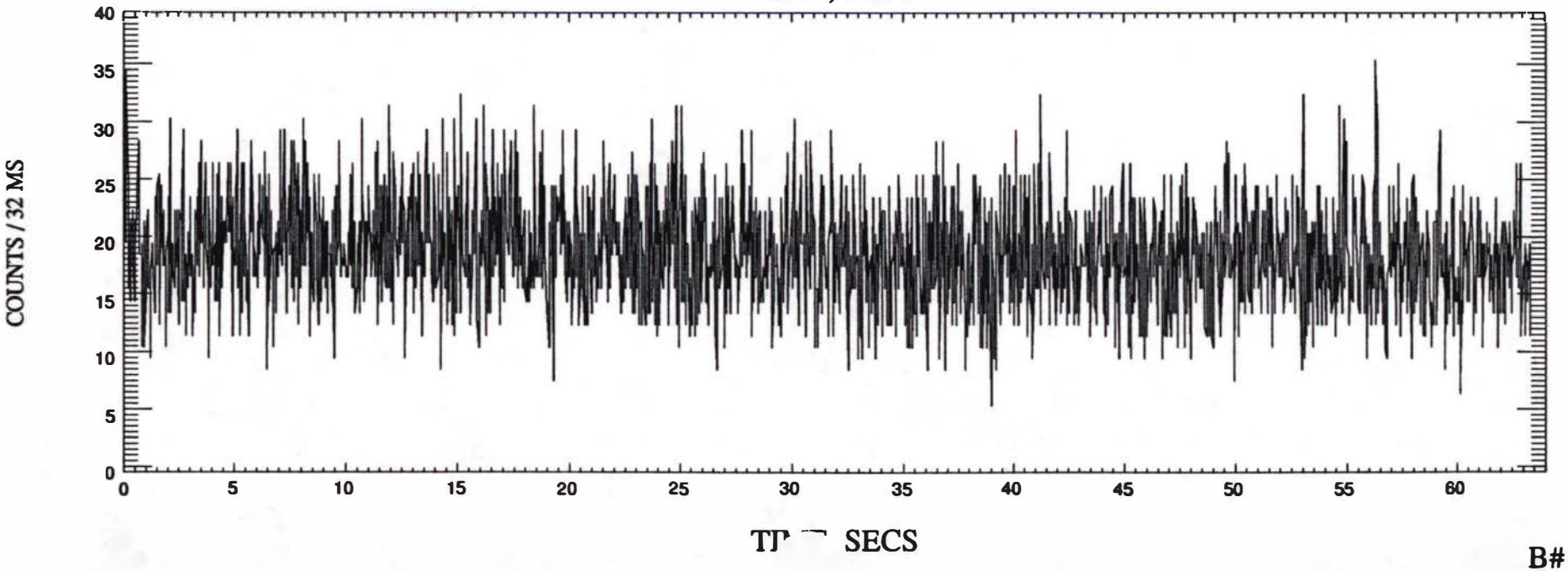


B# 2

HUS 2A TRIGGERED DATA EDR day 82, year 1992 5/6/92

Burst Counter 4 at UT=17.257308519151 h=62126.311 s

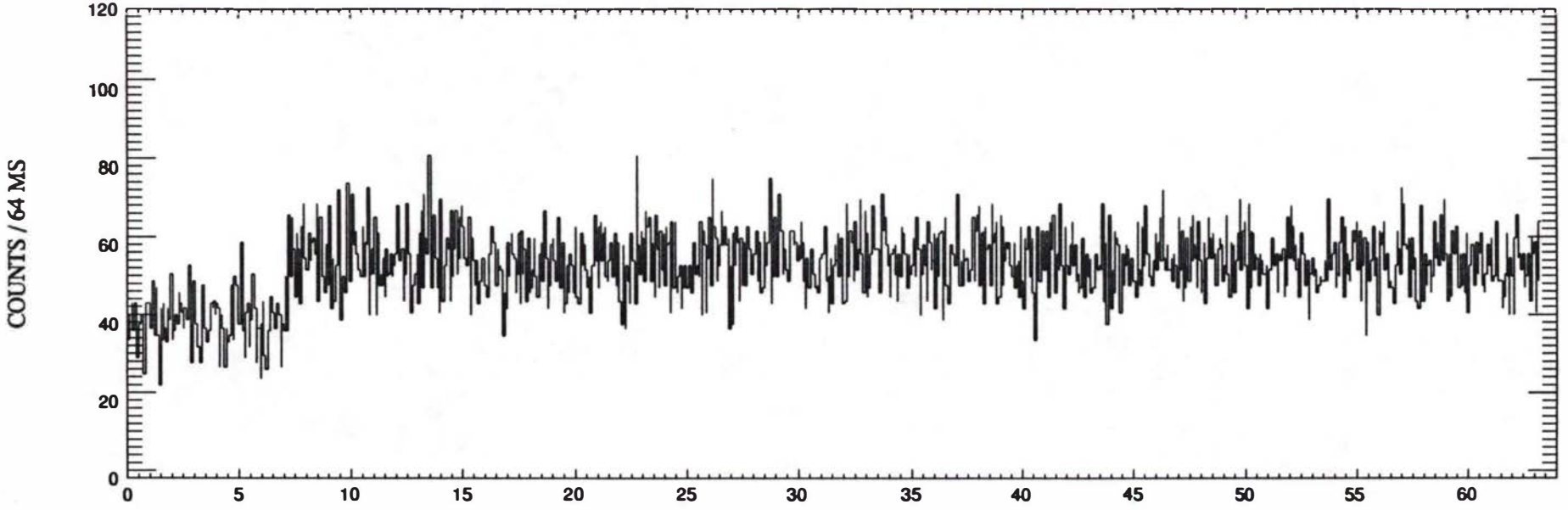


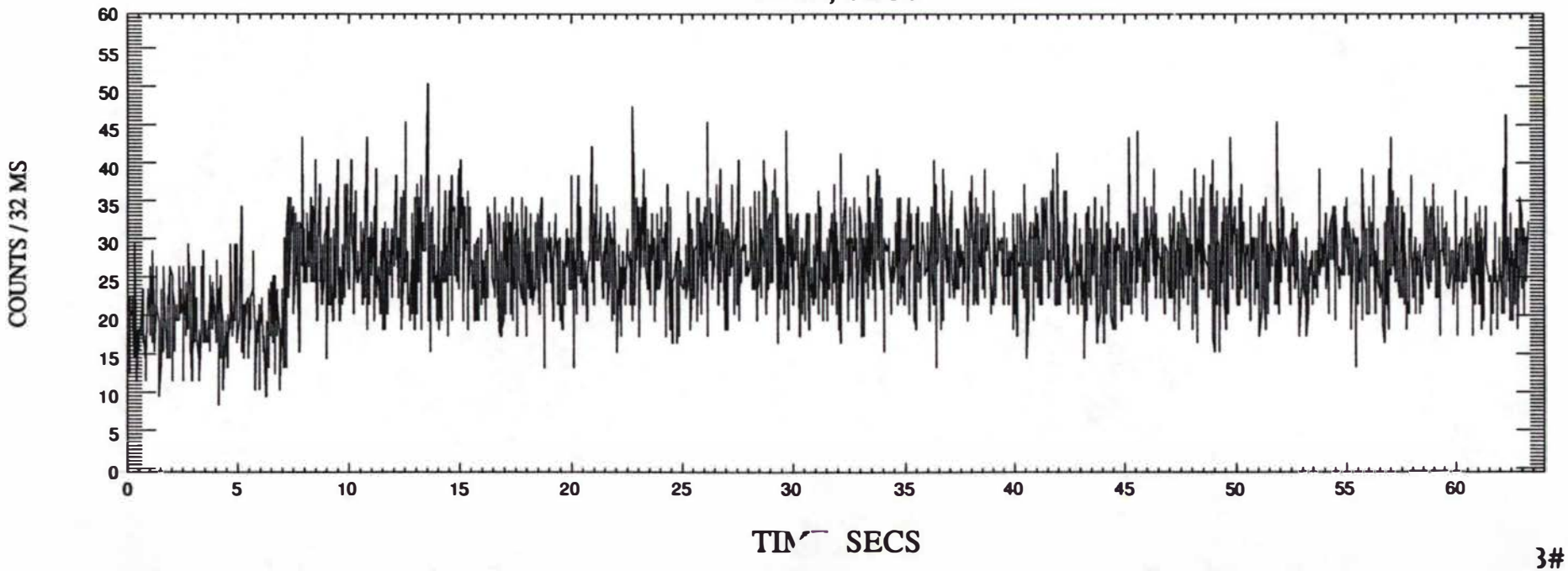


B# 3

HUS 2A TRIGGERED DATA EDR day 82, year 1992 5/6/92

Burst Counter 5 at UT=18.513572925991 h=66648.863 s

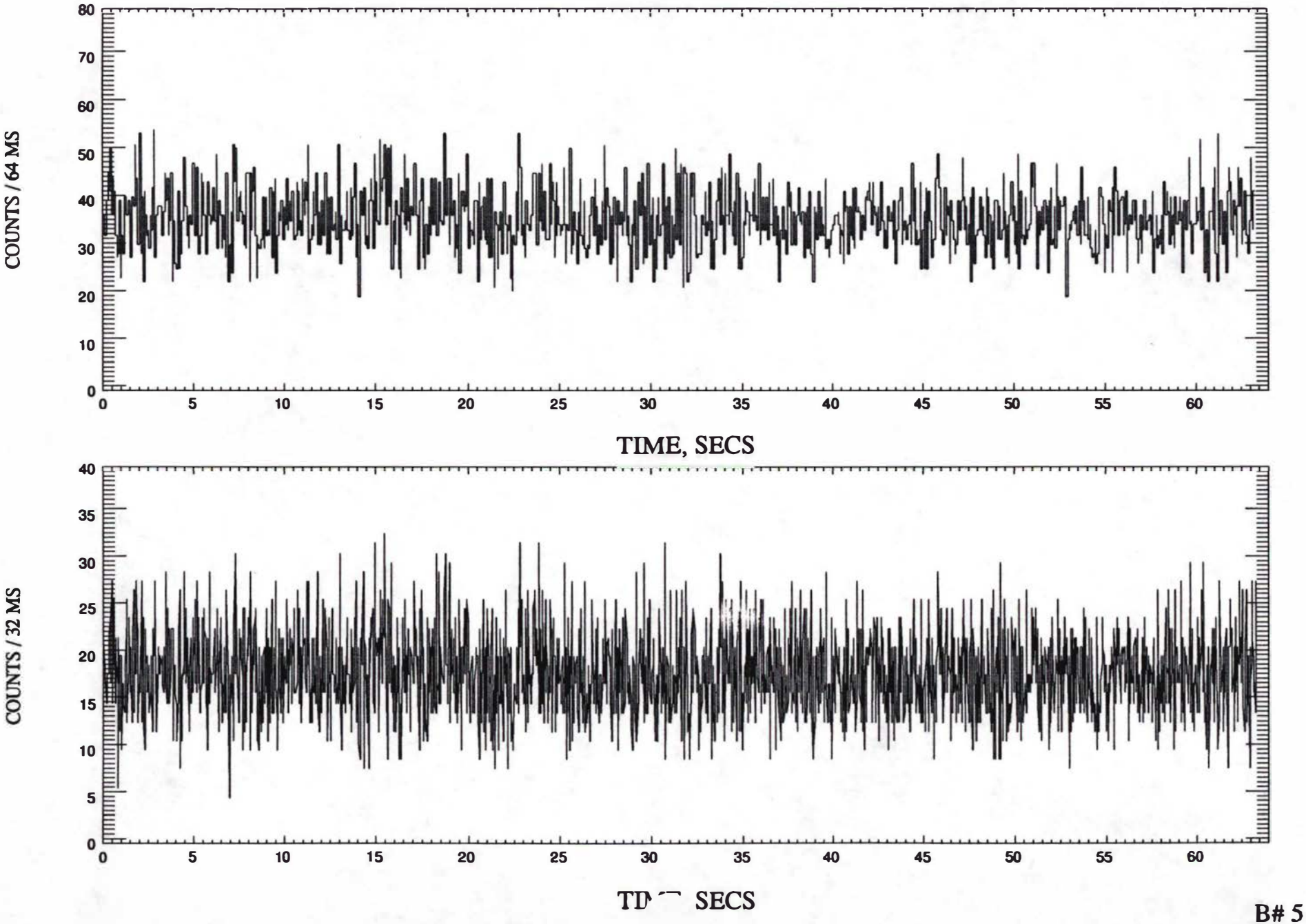




3# 4

HUS 2A TRIGGERED DATA EDR day 82, year 1992 5/6/92

Burst Counter 6 at UT=19.792591412862 h=71253.329 s



B# 5

From PREECE@ssl.msfc.nasa.gov Fri Apr 10 15:15:34 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21729; Fri, 10 Apr 92 15:15:32 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA01421; Fri, 10 Apr 92 14:11:38
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21724; Fri, 10 Apr 92 15:15:24 PDT
Date: Fri, 10 Apr 1992 17:16:21 -0500 (CDT)
From: PREECE@ssl.msfc.nasa.gov
Message-Id: <920410171621.35200a5d@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01514

Mar 23

TIME: TJD=8704 SECONDS=57173

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT.

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          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1515
EVENT OF 1992 MAR 23 DAY OF YEAR= 83
EVENT CROSSING TIME AT BATSE      : 63536. S. OR 17:38:55.7
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 331.300  -34.700
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 23/ 3/  92 IS:
RA=  154.039 DEC=     9.334 DIST=     4.507 AU
BATSE-ULYSSES DISTANCE =  674271136. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 25.49 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2030.21 SECS.
CROSSING TIME AT ULYSSES     IS 65566. S. OR 18:12:45.9 +/-  248.87 SECONDS
```

NO

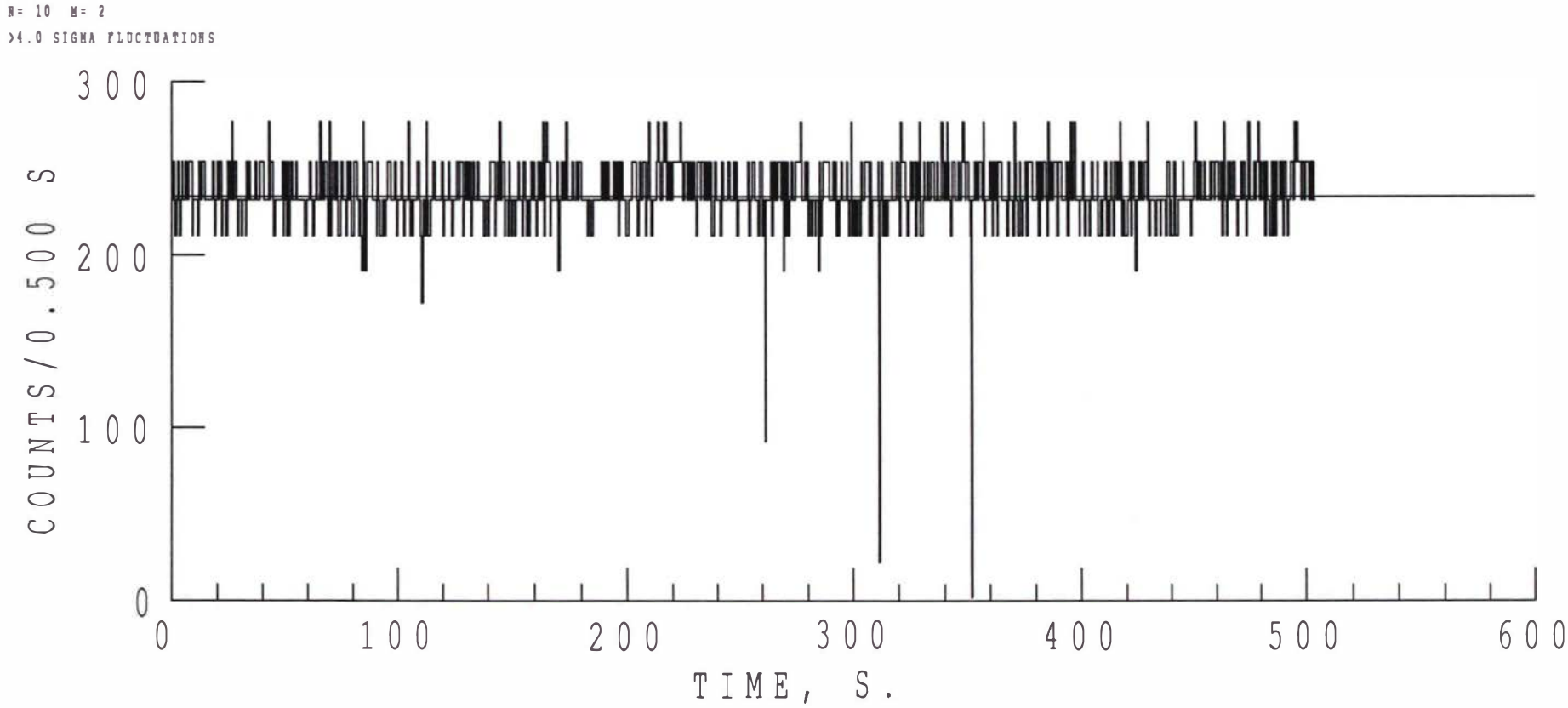
BATSE BURST# 1515

7/ 6/94

ULYSSES RT

23/ 3/92 65304.172 s

0- 0 keV



From PREECE@ssl.msfc.nasa.gov Fri Apr 10 08:51:13 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA17293; Fri, 10 Apr 92 08:51:07 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA01266; Fri, 10 Apr 92 07:47:08
Received: from SSL.MSFC.NASA.GOV ([128.158.1.50]) by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA17283; Fri, 10 Apr 92 08:50:50 PDT
Date: Fri, 10 Apr 1992 10:51:17 -0500 (CDT)
From: PREECE@ssl.msfc.nasa.gov
Message-Id: <920410105117.35200415@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01515

TIME: TJD=8704 SECONDS=63537 No data yet

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=072.2 AZIMUTH=25.3 ERROR=006 DEGREES

COMMENTS:
GRB OF MODERATE INTENSITY. 20 SEC. DURATION MAIN PEAK PLUS WEAK, SOFT EMISSION
IN A SMOOTH ENVELOPE OUT TO ABOUT 80 SEC. MAIN PEAK SEEN ABOVE 300 KEV.

From PREECE@ssl.msfc.nasa.gov Fri Apr 10 08:54:25 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA17362; Fri, 10 Apr 92 08:54:19 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA01268; Fri, 10 Apr 92 07:50:25
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA17355; Fri, 10 Apr 92 08:54:13 PDT
Date: Fri, 10 Apr 1992 10:55:09 -0500 (CDT)
From: PREECE@ssl.msfc.nasa.gov
Message-Id: <920410105509.35200457@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01516

Mar 23

TIME: TJD=8704 SECONDS=72778

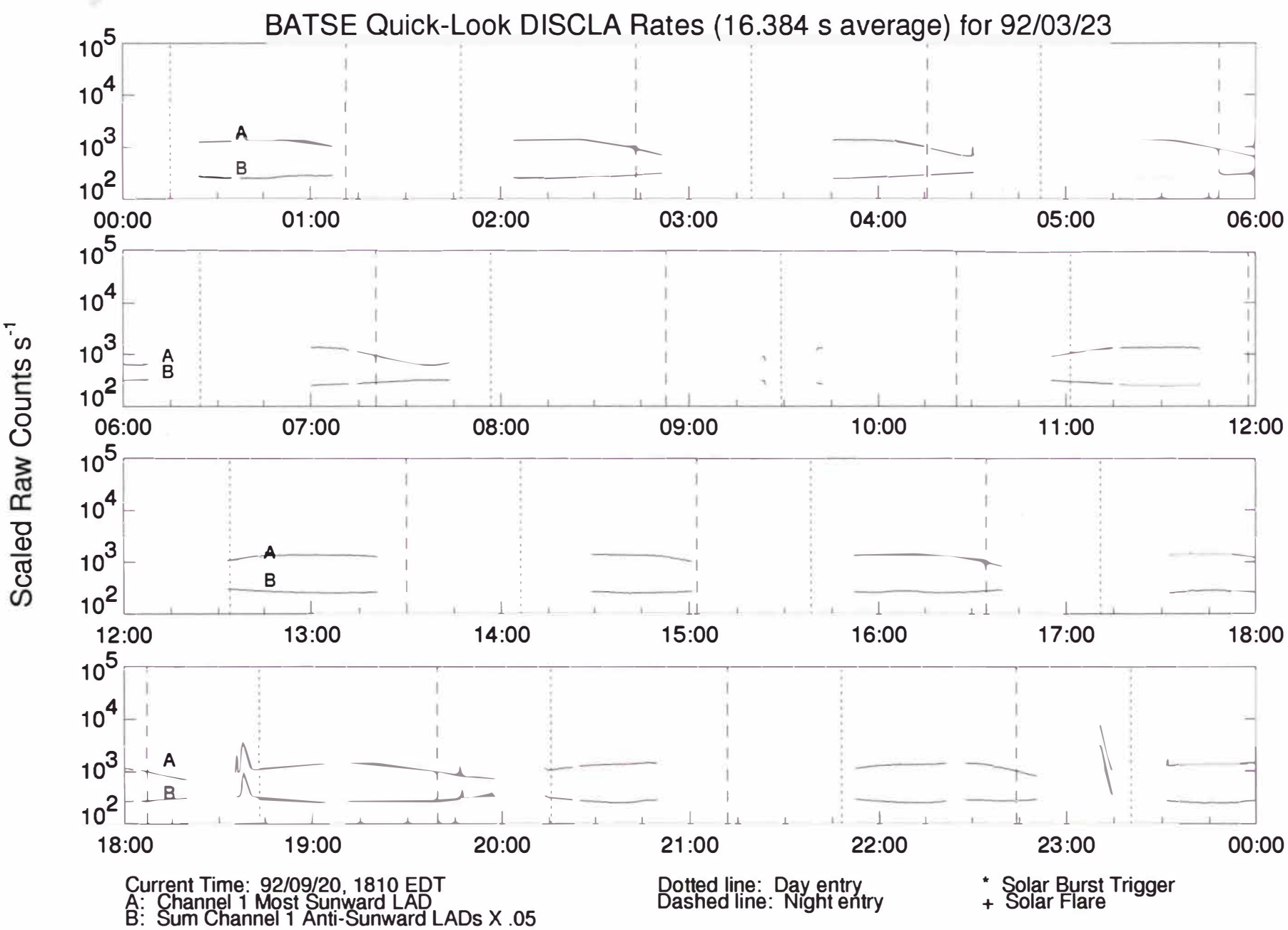
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

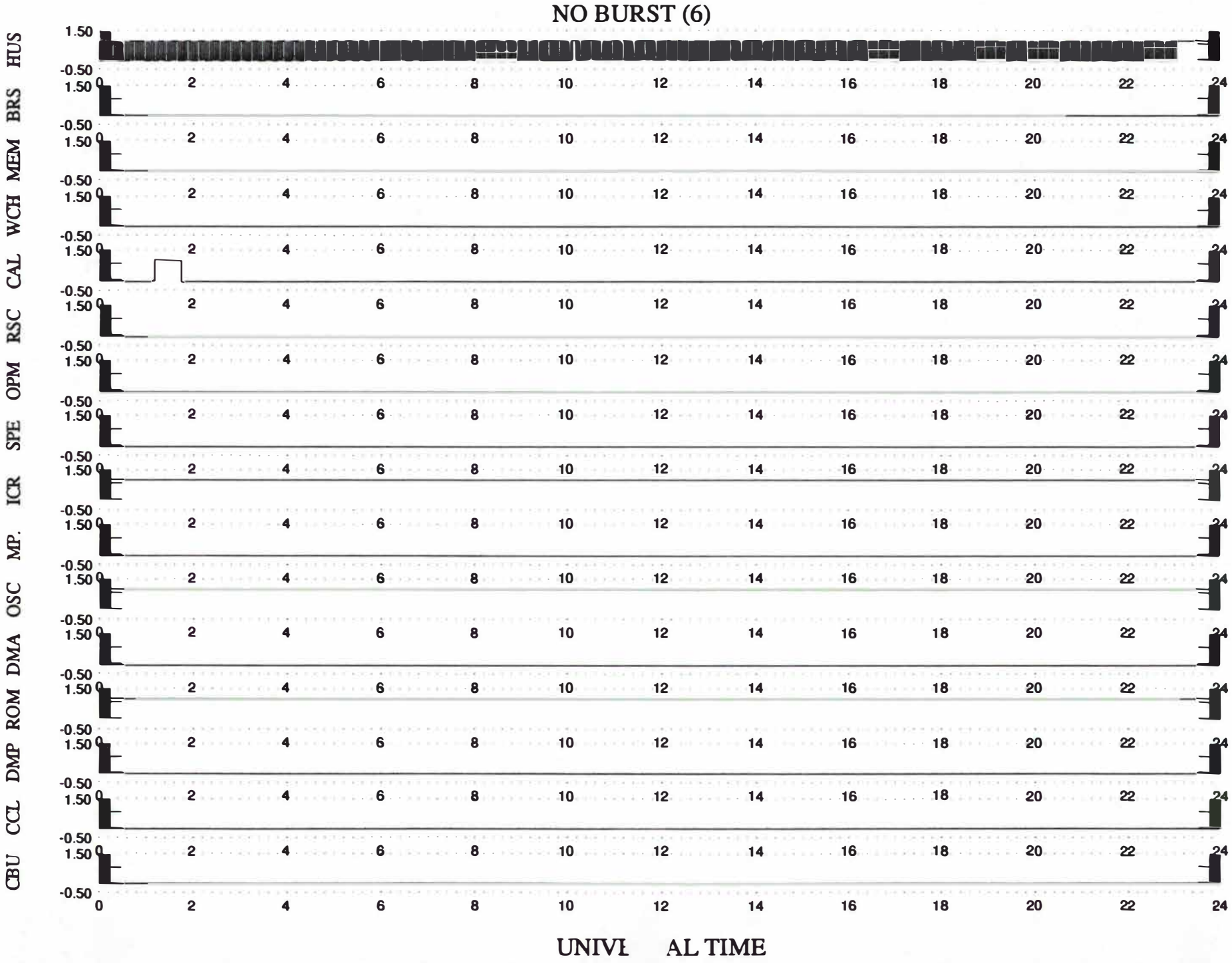
INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT. MISSING 30 SEC. OF DISCSC DATA AFTER THE TRIGGER.

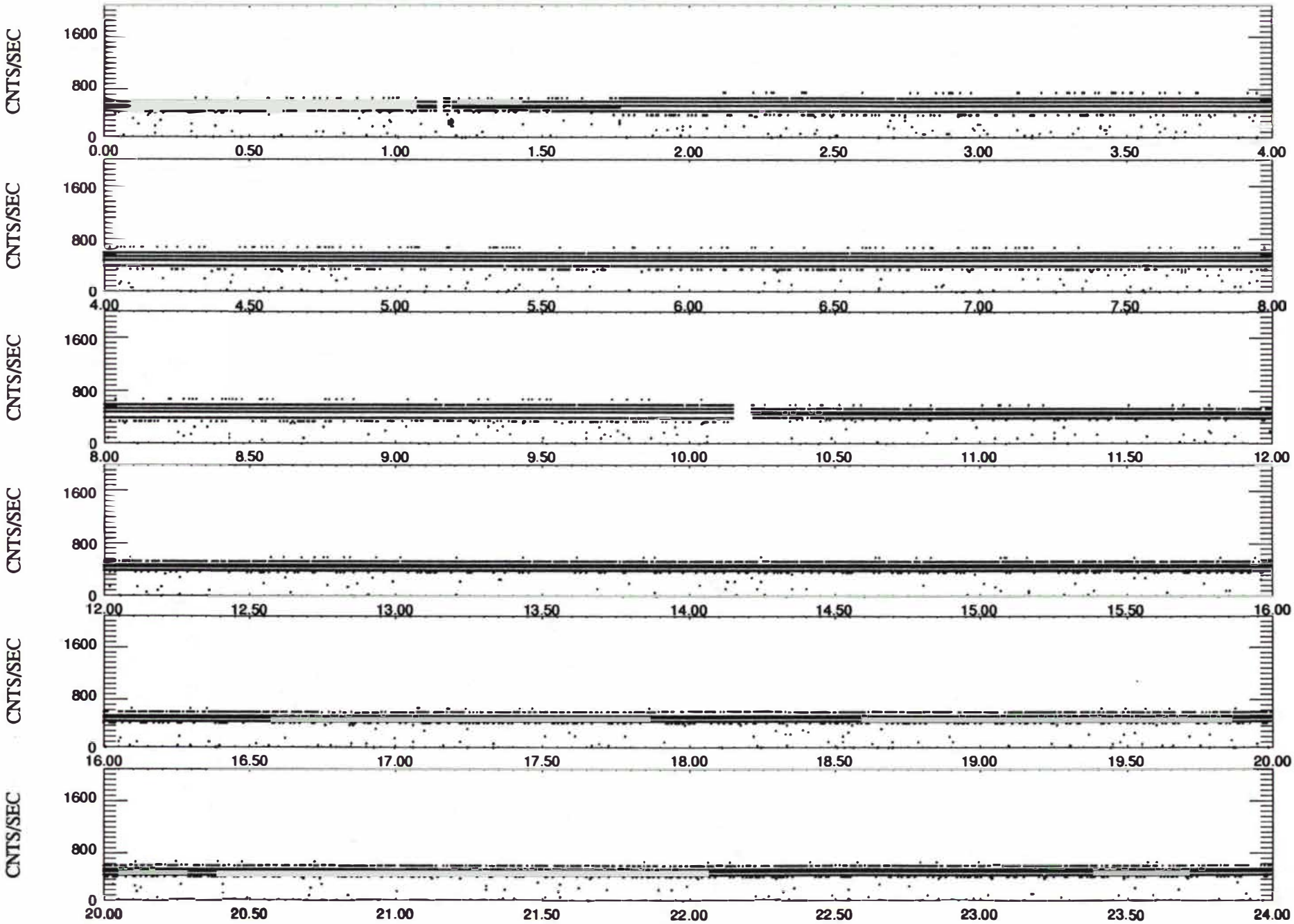

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/23
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1810 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 83, year 1992 to day 83, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 83, year 1992 to day 83, year 1992 4/27/92

CALIBRATION DATA INCLUDED



UNIV. AL TIME

B:\HTEST181.CMP
92-083
01:14:01

REC 2 - 1

HV 1490 V

ULD 3.00 Volt
MLD 0.60 Volt
LLD 0.44 Volt

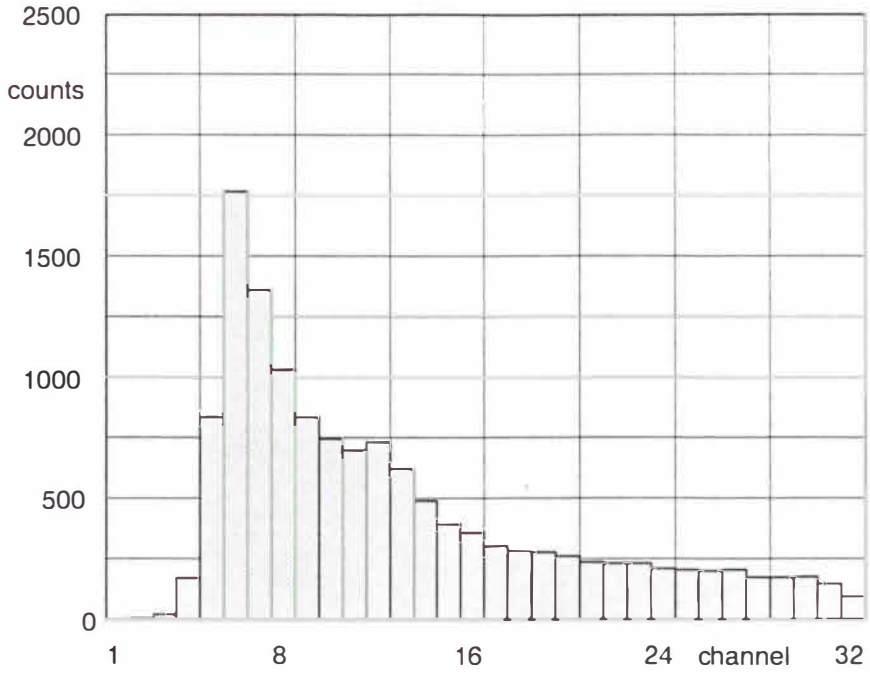
SensTemp 9.7 C

A2 Temp -5.4 C

REC 2 - 2

HV 1480 V

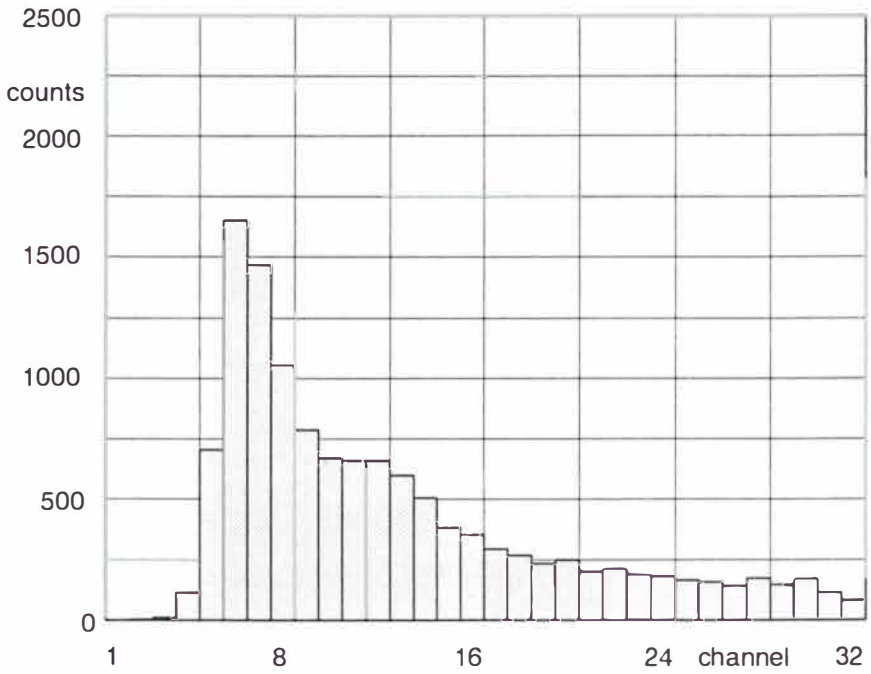
PM-1 (anti-earth)



13466 counts 210.41 counts/seconds

252.16 counts/seconds dead time corrected

PM-2 (earth)



12576 counts 196.5 counts/seconds

231.66 counts/seconds dead time corrected

23.03.1992	ULYSSES GRB		MPI FUER EXTRATERRESTRISCHE PHYSIK

B:\HTEST137.CMP
91-333
01:20:18

REC 3 - 3

HV 1450 V

ULD 3.00 Volt
MLD 0.60 Volt
LLD 0.34 Volt

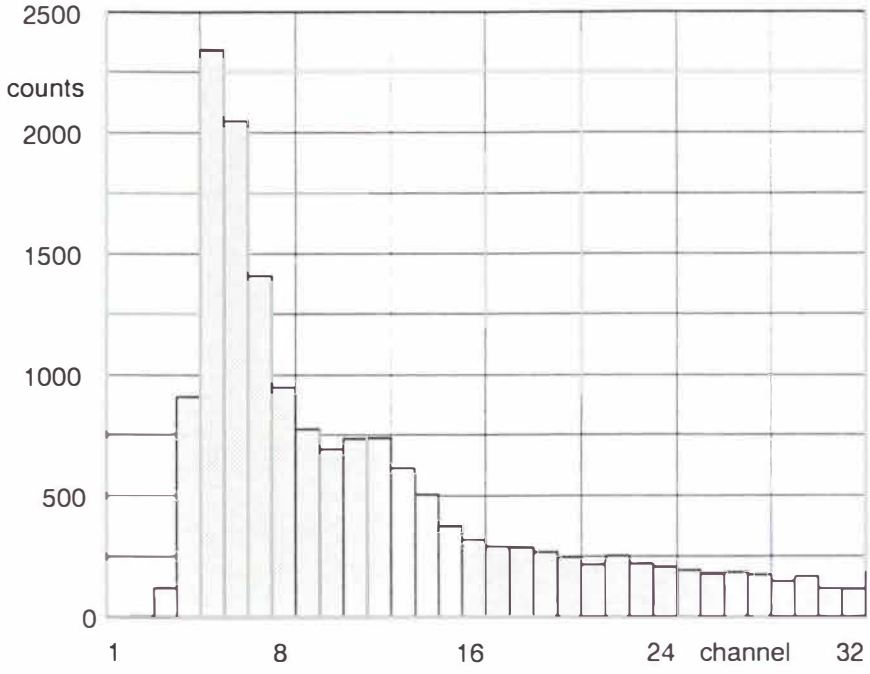
SensTemp 9.5 C

A2 Temp -5.4 C

REC 3 - 4

HV 1460 V

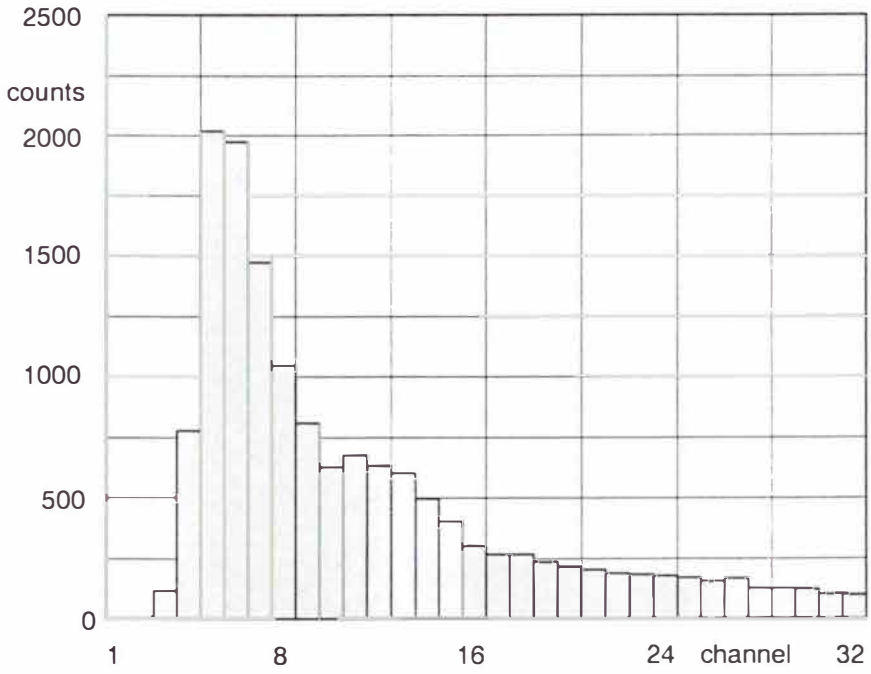
PM-1 (anti-earth)



15773 counts 246.45 counts/seconds

297.93 counts/seconds dead time corrected

PM-2 (earth)



14750 counts 230.47 counts/seconds

273.9 counts/seconds dead time corrected

23.03.1992	ULYSSES GRB		MPI FUER EXTRATERRESTRISCHE PHYSIK

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1517
EVENT OF 1992 MAR 24 DAY OF YEAR= 84
EVENT CROSSING TIME AT BATSE     : 75267. S. OR 20:54:27.3
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 142.200  -33.600
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 24/ 3/  92 IS:
RA=  153.847 DEC=    9.346 DIST=    4.515 AU
BATSE-ULYSSES DISTANCE =  675476912. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=135.65 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1611.16 SECS.
CROSSING TIME AT ULYSSES    IS 73656. S. OR 20:27:36.2 +/-  298.99 SECONDS
```

No

B:\HTEST181.CMP
92-083
01:14:01

REC 2 - 1

HV 1490 V

ULD 3.00 Volt
MLD 0.60 Volt
LLD 0.44 Volt

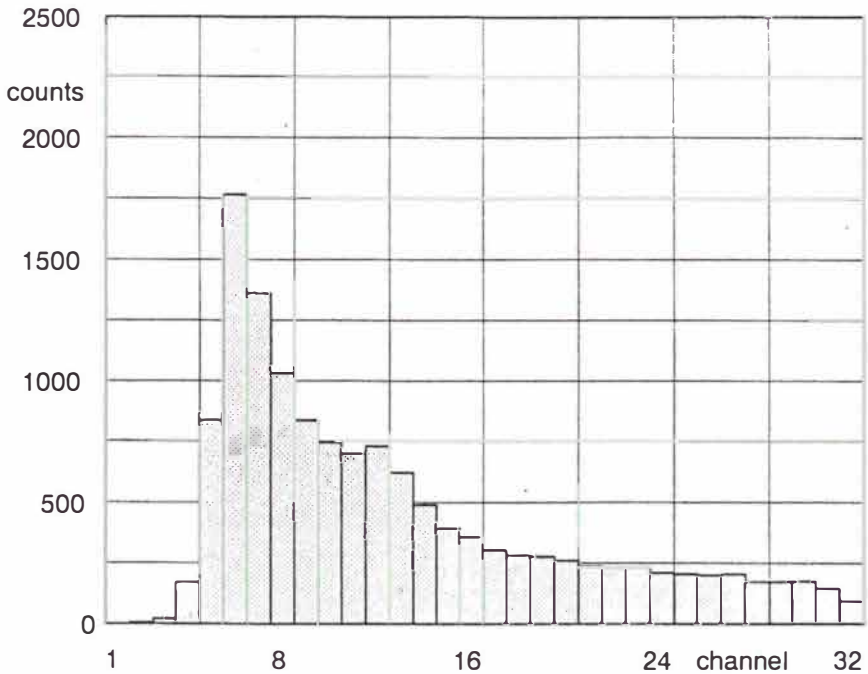
SensTemp 9.7 C

A2 Temp -5.4 C

REC 2 - 2

HV 1480 V

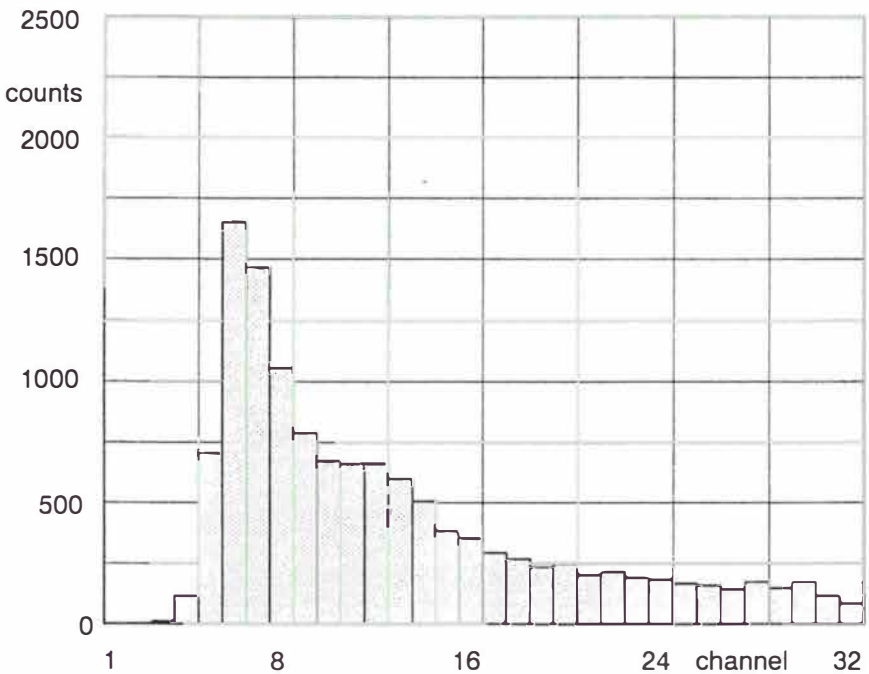
PM-1 (anti-earth)



13466 counts 210.41 counts/seconds

252.16 counts/seconds dead time corrected

PM-2 (earth)



12576 counts 196.5 counts/seconds

231.66 counts/seconds dead time corrected

B:\HTEST137.CMP

91-333

01:20:18

REC 3 - 3

HV 1450 V

ULD 3.00 Volt

MLD 0.60 Volt

LLD 0.34 Volt

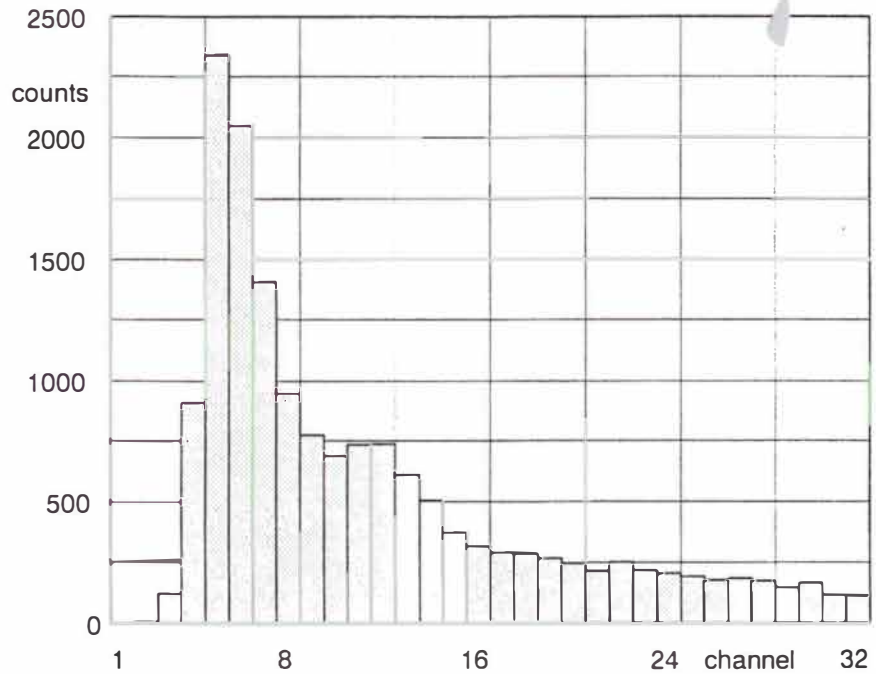
SensTemp 9.5 C

A2 Temp -5.4 C

REC 3 - 4

HV 1460 V

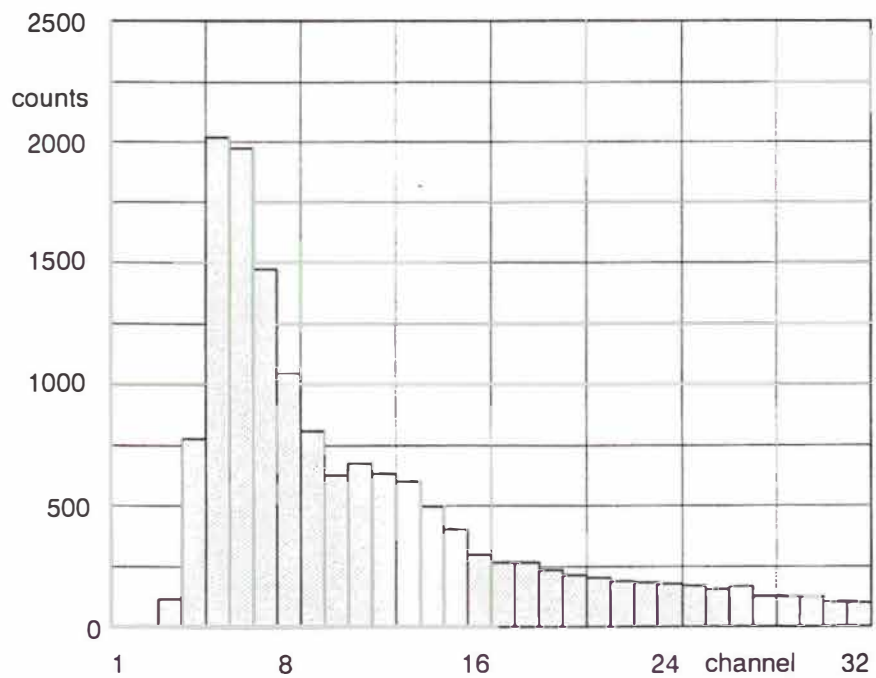
PM-1 (anti-earth)



15773 counts 246.45 counts/seconds

297.93 counts/seconds dead time corrected

PM-2 (earth)



14750 counts 230.47 counts/seconds

273.9 counts/seconds dead time corrected

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1517
EVENT OF 1992 MAR 24 DAY OF YEAR= 84
EVENT CROSSING TIME AT BATSE      : 75267. S. OR 20:54:27.3
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 142.200  -33.600
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 24/ 3/  92 IS:
RA=  153.847 DEC=     9.346 DIST=     4.515 AU
BATSE-ULYSSES DISTANCE =  675476912. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=135.65 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1611.16 SECS.
CROSSING TIME AT ULYSSES     IS 73656. S. OR 20:27:36.2 +/-  298.99 SECONDS
```

NO

From PACIESAS@ssl.msfc.nasa.gov Tue Apr 21 08:58:41 1992
Date: Tue, 21 Apr 1992 11:00:04 -0500 (CDT)
From: PACIESAS@ssl.msfc.nasa.gov (BILL PACIESAS (205) 544-7712)
Subject: burst trigger messge
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @MOPS$SEND_MSG:BURST_SPAN
Content-Length: 1295

BATSE BURST TRIGGER

NO.: 01517 Mar 24

TIME: TJD=8705 SECONDS=75269

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=40. AZIMUTH=242. ERROR= DEGREES

COMMENTS:
SHORT SINGLE SPIKE EVENT. 1 SEC DURATION. VERY SOFT. NOT
SEEN ABOVE 100 KEV. WEAK INTENSITY.

Possible Ulysses trigger —

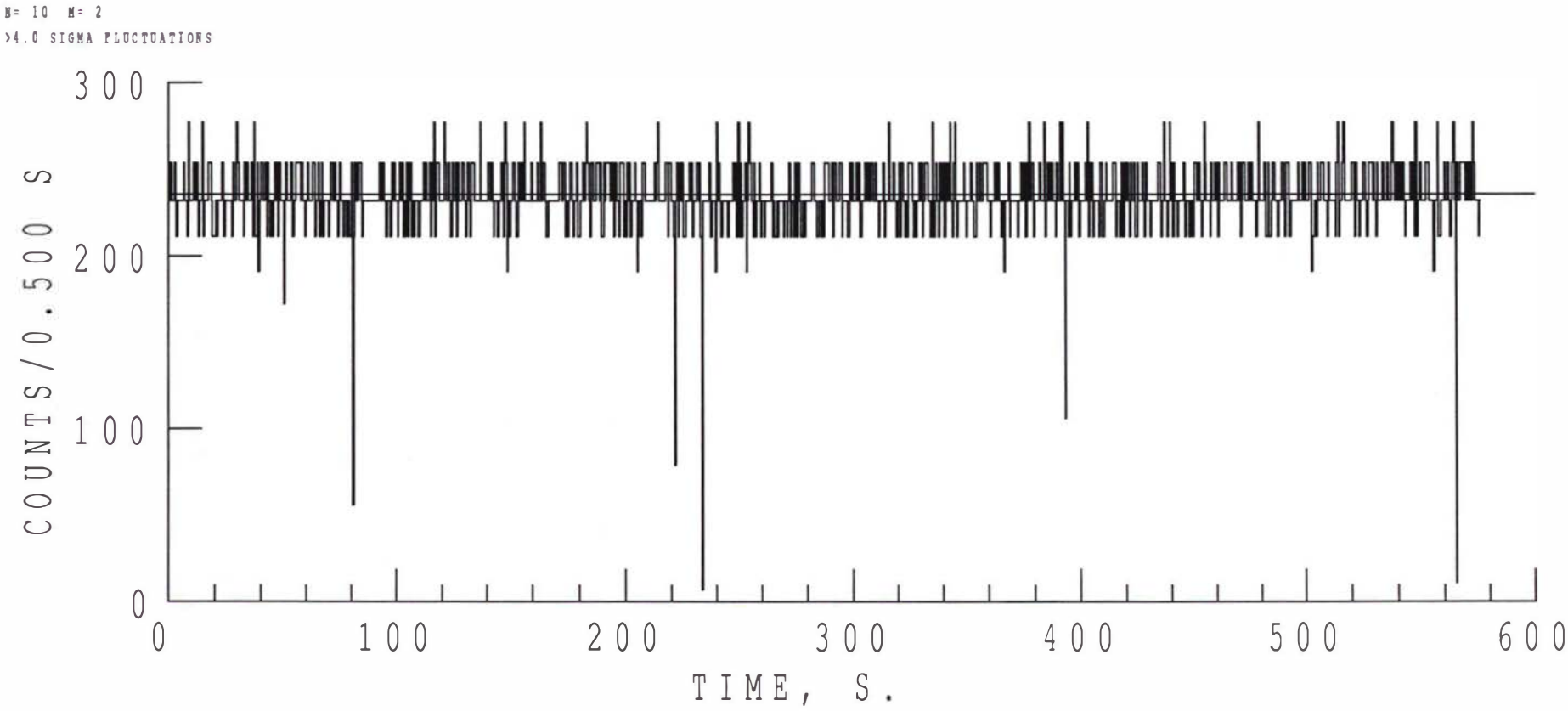
No - trigger was at 1400

7/ 6/94

ULYSSES RT

24/ 3/92 73368.227 s

0- 0 keV



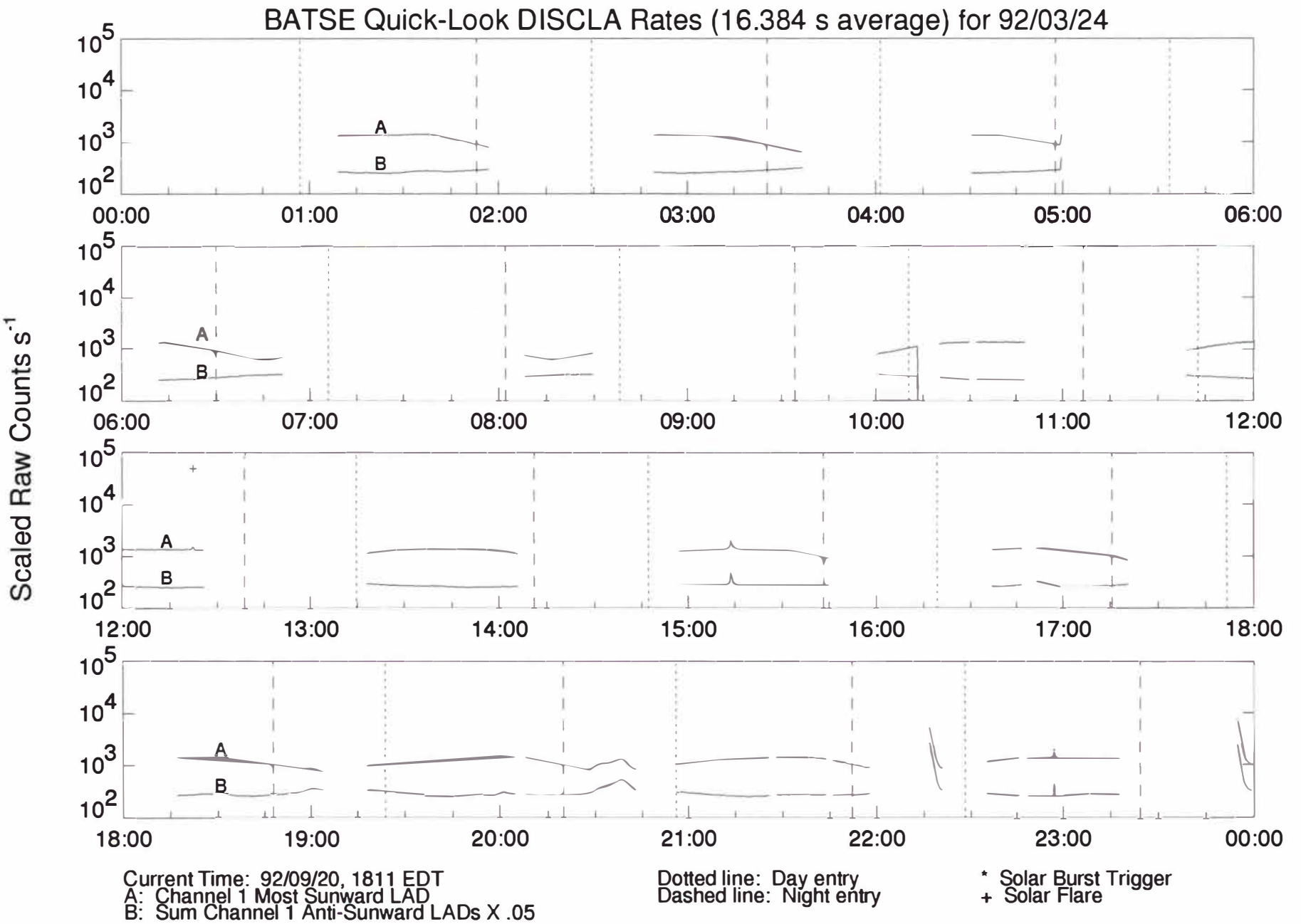
From kouveliotou%batse.span@Sdsc.Edu Tue Apr 28 15:42:22 1992
Date: Tue, 28 Apr 92 22:43:22 GMT
From: kouveliotou%batse.span@Sdsc.Edu
Subject: grb locations
To: khurley@sunspot.ssl.berkeley.edu
X-St-Vmsmail-To: HURLEY
Content-Length: 410

Hi Kevin,
I got today's fax. I asked around and Bill did not remember another fax from you last week. Jerry has left for the day, so I will ask him tomorrow. The nice thing is that the BATSE location center is very close to the network error box ! We are getting better it seems...

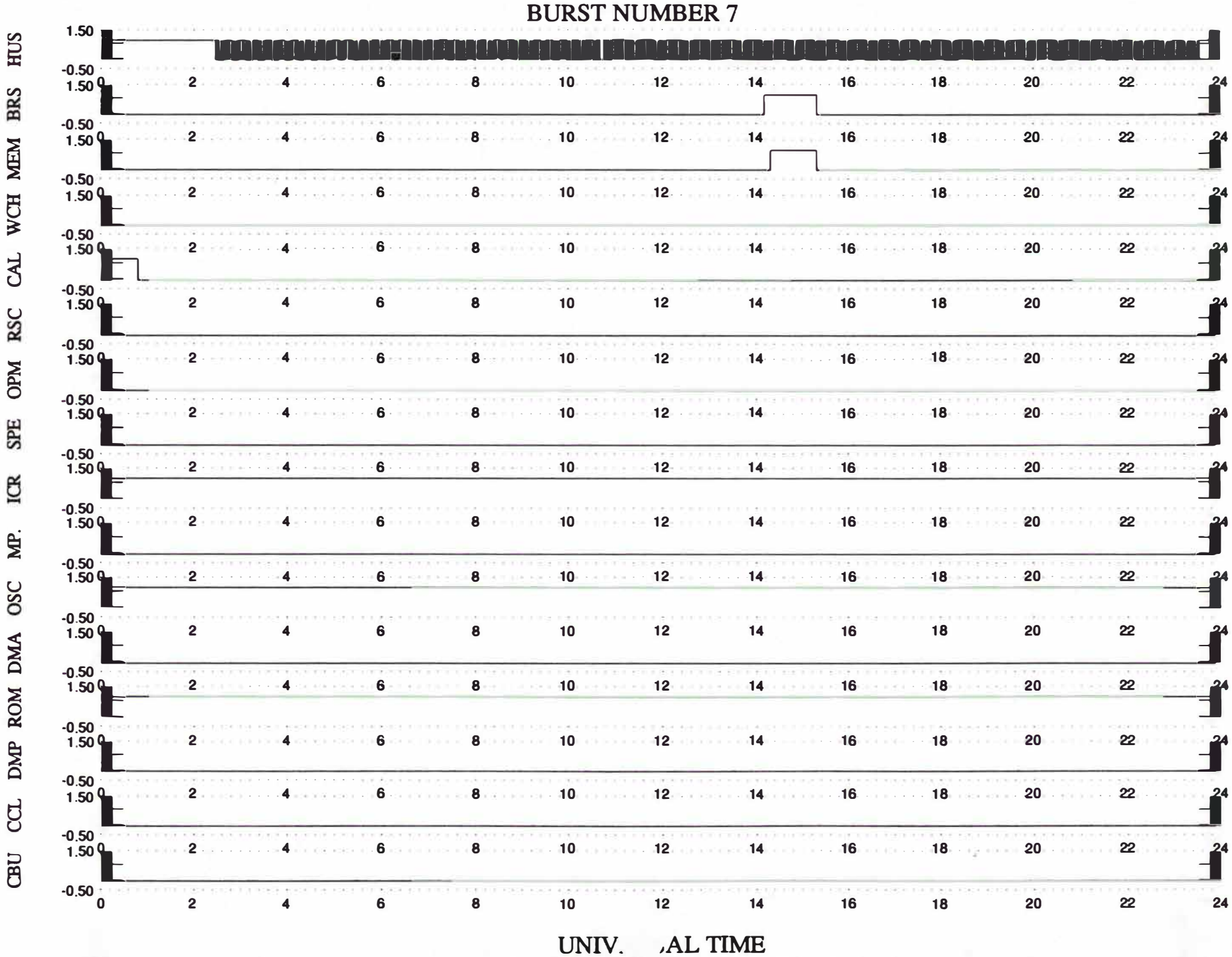
The locations you asked for are:

1517 ra= 142 dec = -34 Mar 24 75269s ls duration, soft event (< 100 keV) - weak
1550 ra= 236 dec = -7 Apr 12 72126 s
1566 ra= 38 dec = 66 Apr 23 63624 s

Good luck !
CK

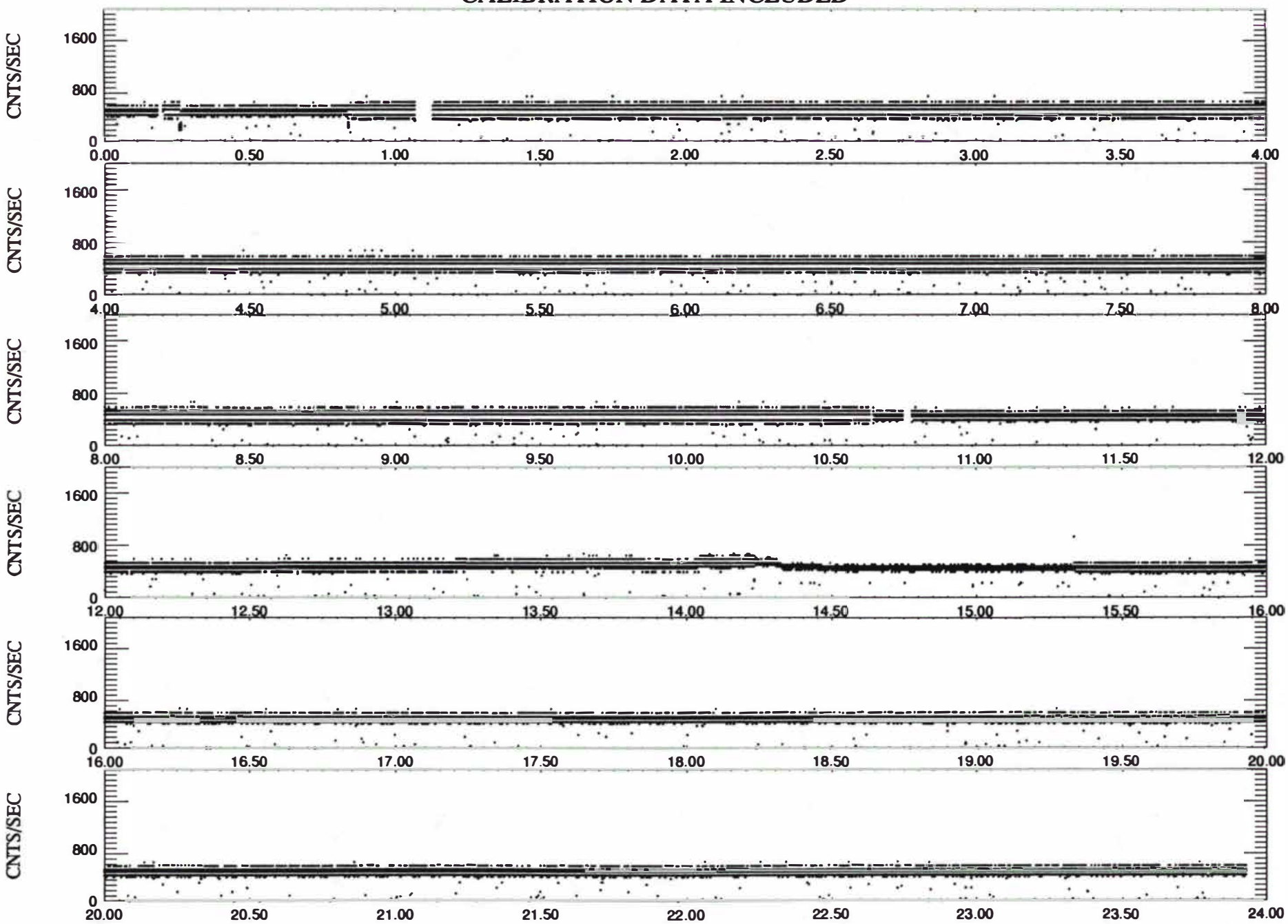

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/24
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1811 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 84, year 1992 to day 84, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 84, year 1992 to day 84, year 1992 4/27/92

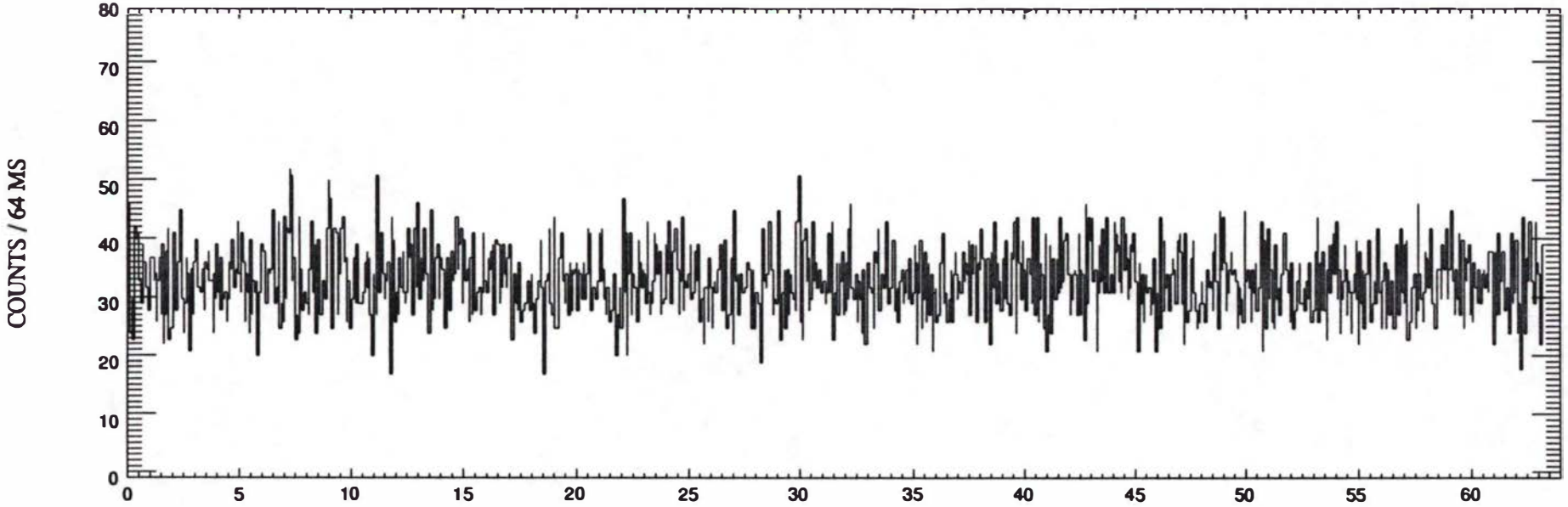
CALIBRATION DATA INCLUDED

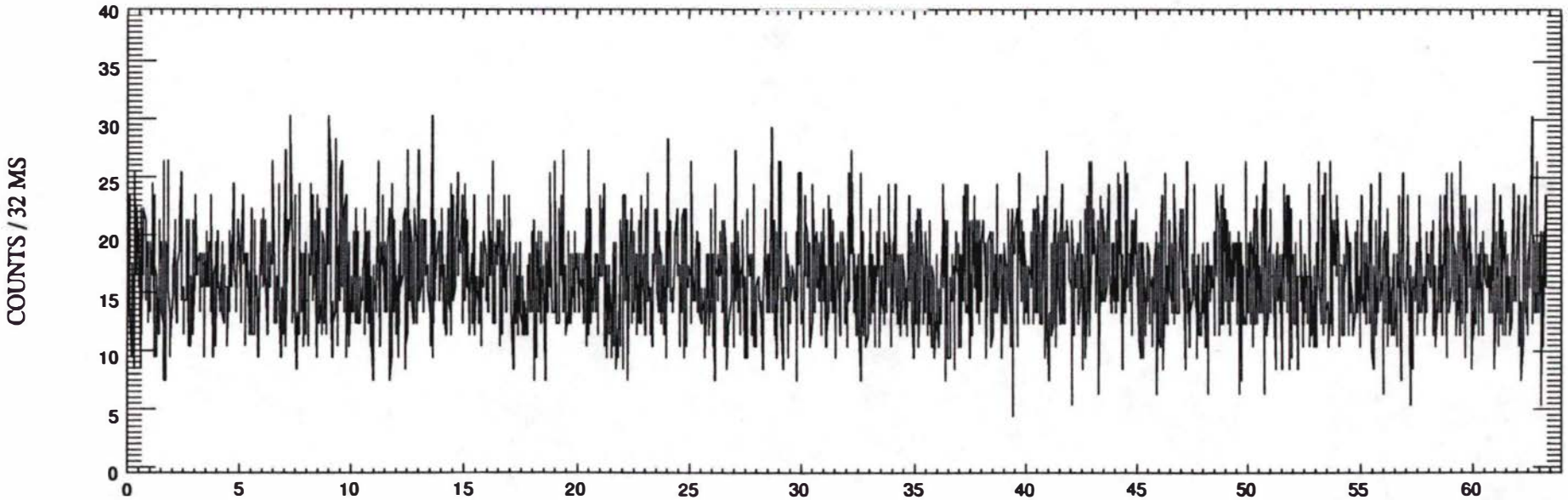


UNIV. AL TIME

HUS 2A TRIGGERED DATA EDR day 84, year 1992 5/6/92

Burst Counter 7 at UT=14.078256823222 h=50681.725 s

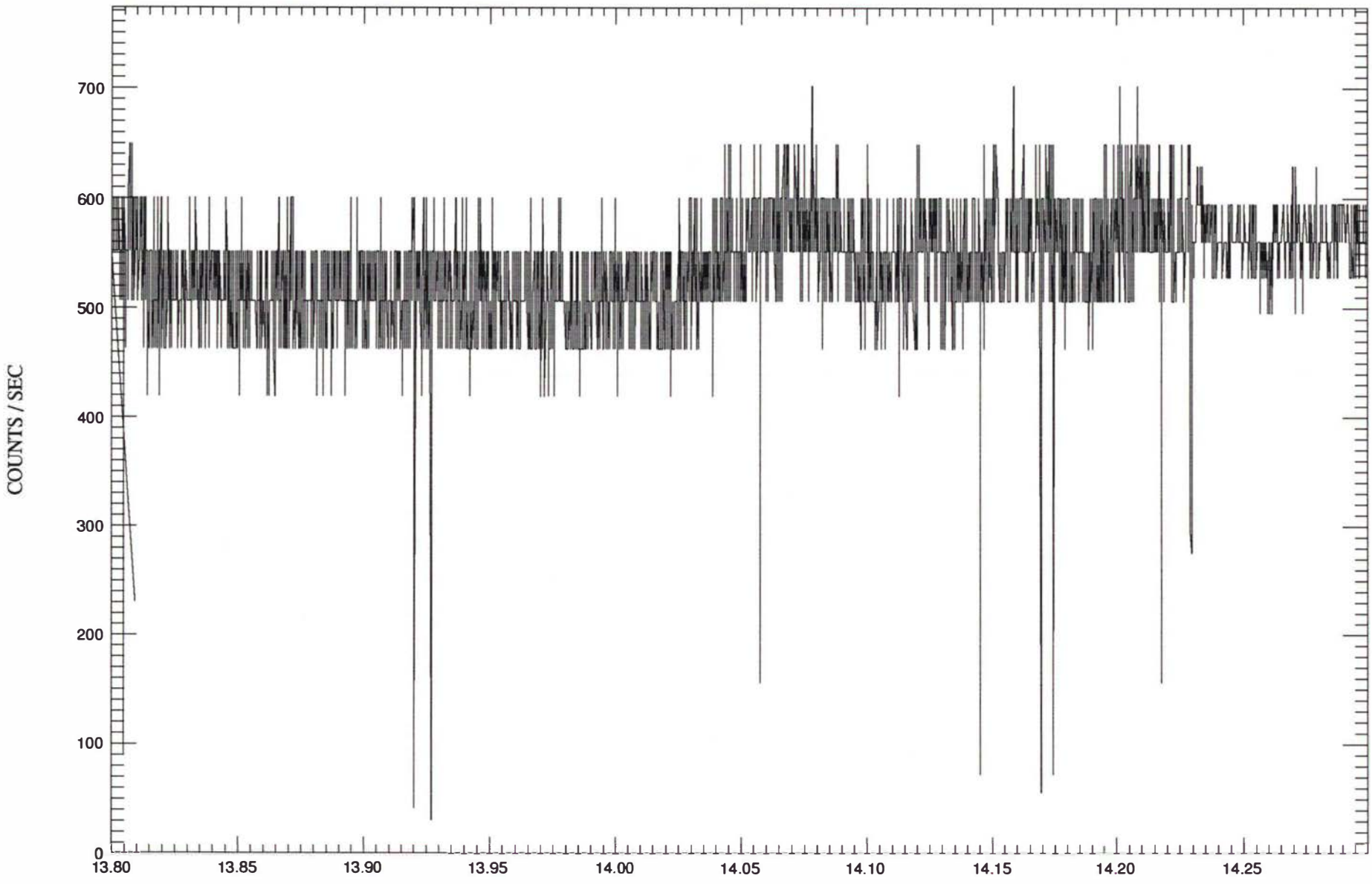




B# 1

HUS 2A, MODE 1, NOT AVERAGED EDR day 84, year 1992 to day 84, year 1992 4/23/92

CALIBRATION DATA INCLUDED



```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1518
EVENT OF 1992 MAR 25 DAY OF YEAR= 85
EVENT CROSSING TIME AT BATSE      : 46688. S. OR 12:58:07.8
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 296.400  -47.800
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 25/ 3/  92 IS:
RA=  153.657 DEC=     9.357 DIST=     4.524 AU
BATSE-ULYSSES DISTANCE =  676726072. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 49.61 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1462.68 SECS.
CROSSING TIME AT ULYSSES    IS 48151. S. OR 13:22:30.5 +/-  370.71 SECONDS
```

No - this was ~ .3 s long

From PACIESAS@ssl.msfc.nasa.gov Wed Apr 22 07:07:30 1992
Date: Wed, 22 Apr 1992 9:08:58 -0500 (CDT)
From: PACIESAS@ssl.msfc.nasa.gov (BILL PACIESAS (205) 544-7712)
Subject: Burst trigger message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @MOPS$SEND_MSG:BURST_SPAN
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01518

Mar 25

TIME: TJD=8706 SECONDS=46689

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= 50. AZIMUTH= 42. ERROR= DEGREES

COMMENTS:
DURATION 1 SECOND. SEEN ABOVE 320 KEV.



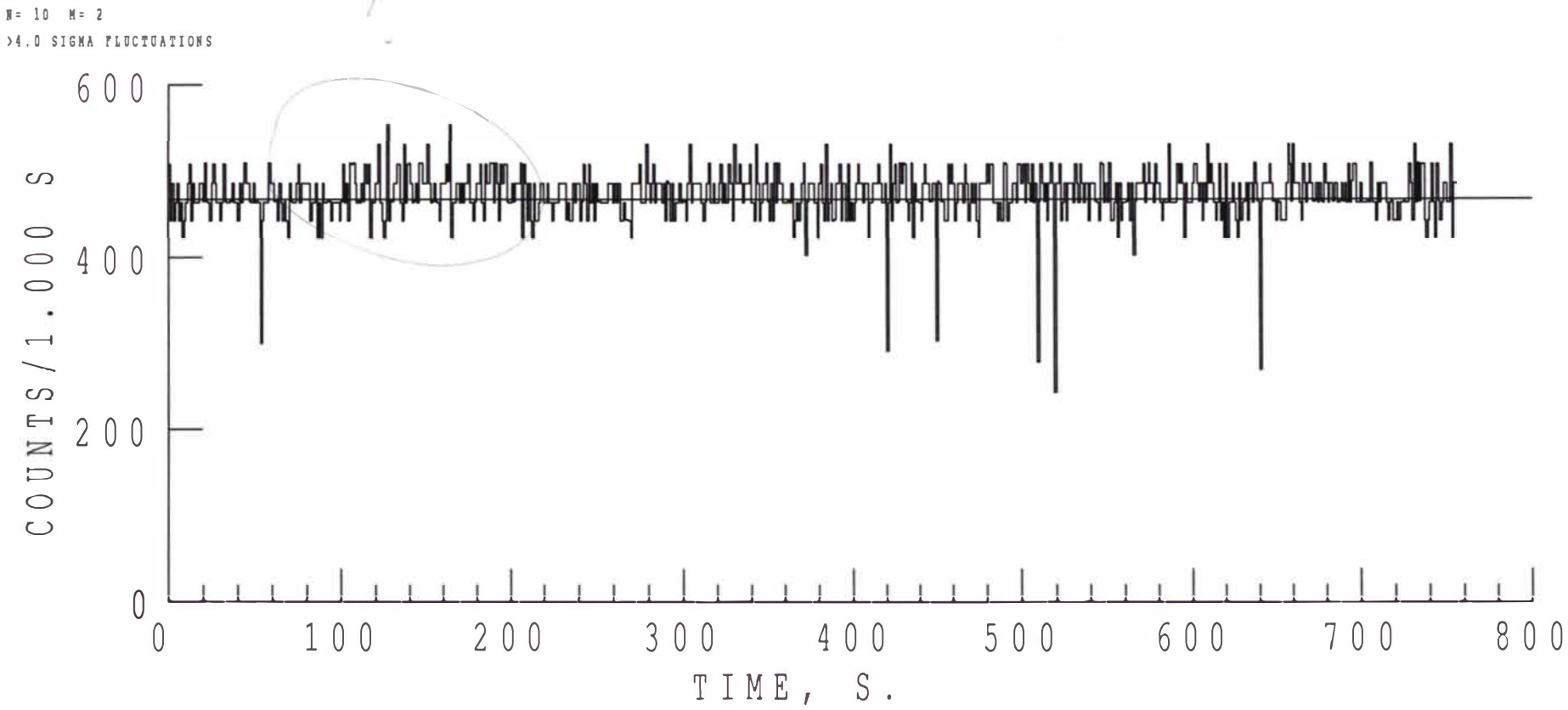
7/ 6/94

ULYSSES RT

25/ 3/92 47772.230 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1519
EVENT OF 1992 MAR 25 DAY OF YEAR= 85
EVENT CROSSING TIME AT BATSE      : 62256. S. OR 17:17:35.9
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 351.400    11.800
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 25/ 3/  92 IS:
RA=  153.657 DEC=     9.357 DIST=     4.524 AU
BATSE-ULYSSES DISTANCE =  676726072. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 27.54 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2001.46 SECS.
CROSSING TIME AT ULYSSES     IS 64257. S. OR 17:50:57.4 +/-  261.62 SECONDS
```

TRIGGER

From KOSHUT@ssl.msfc.nasa.gov Mon Apr 27 13:05:30 1992
Date: Mon, 27 Apr 1992 15:06:55 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1458

BATSE BURST TRIGGER

NO.: 01519 Mar 25

TIME: TJD=8706 SECONDS=62258

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=119 AZIMUTH=38 ERROR= DEGREES

COMMENTS:
CONFIRMED BURST LASTING UNTIL ~ 60 SECONDS AFTER TRIGGER. COMPLEX TIME HISTORY CONSISTS OF INTENSE PULSE PEAKING AT ~ TRIGGER + 1 SECOND, WITH A DUARTION OF ~ 0.5 SECONDS. THIS IS FOLLOWED BY EXTENDED COMPLEX STRUCTURE. THE BURST IS OBSERVED AT ENERGIES GREATER THAN 300 KEV.

Helio corr removed

Date: Dec 20 1996

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied? – 15 ms

☐ Ephemeris calculated for start of record of real time data? N/A

☒ Final ephemeris used?

☒ Does ULYTRIG program output contain trigger time, and not SOR? (Ditto for FILE.ult)

☑ Final, CDROM data used? No timing diff.

☑ Were data checked by Joe Springer for 0.5 s errors? - None

2. BATSE Data

☑ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)?

☒ Does T_0 in data file agree with T_0 in plot? No - there is ~ 17 ms difference

☒ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☑ If MER data were used, is a 30 ms systematic error included?

3. PVO Data

☑ Ephemeris of PVO used (not Venus)?

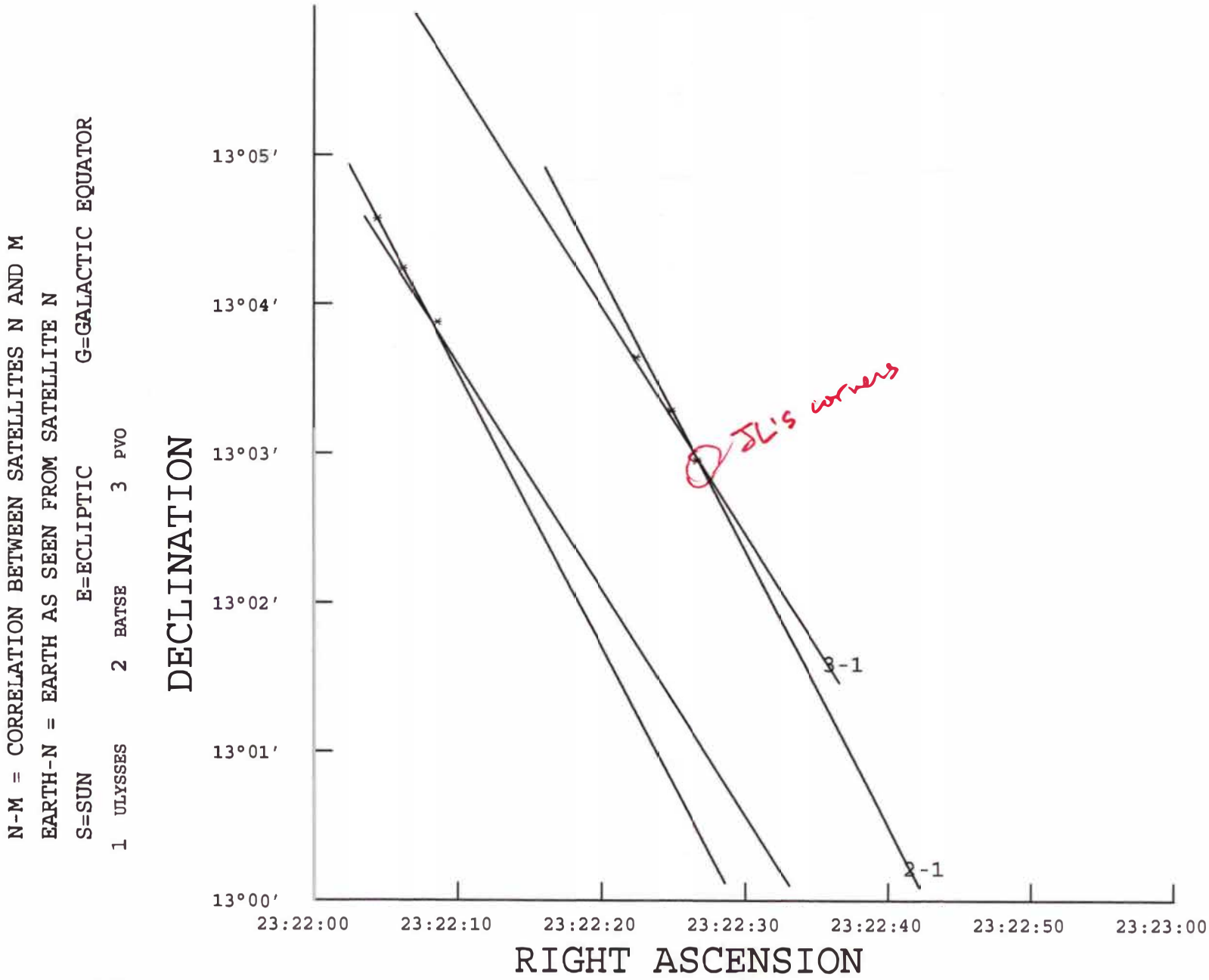
☑ 2000 coordinates used?

☑ Geocentric time used?

Access database updated

EVENT OF MAR 25, 1992 17:51

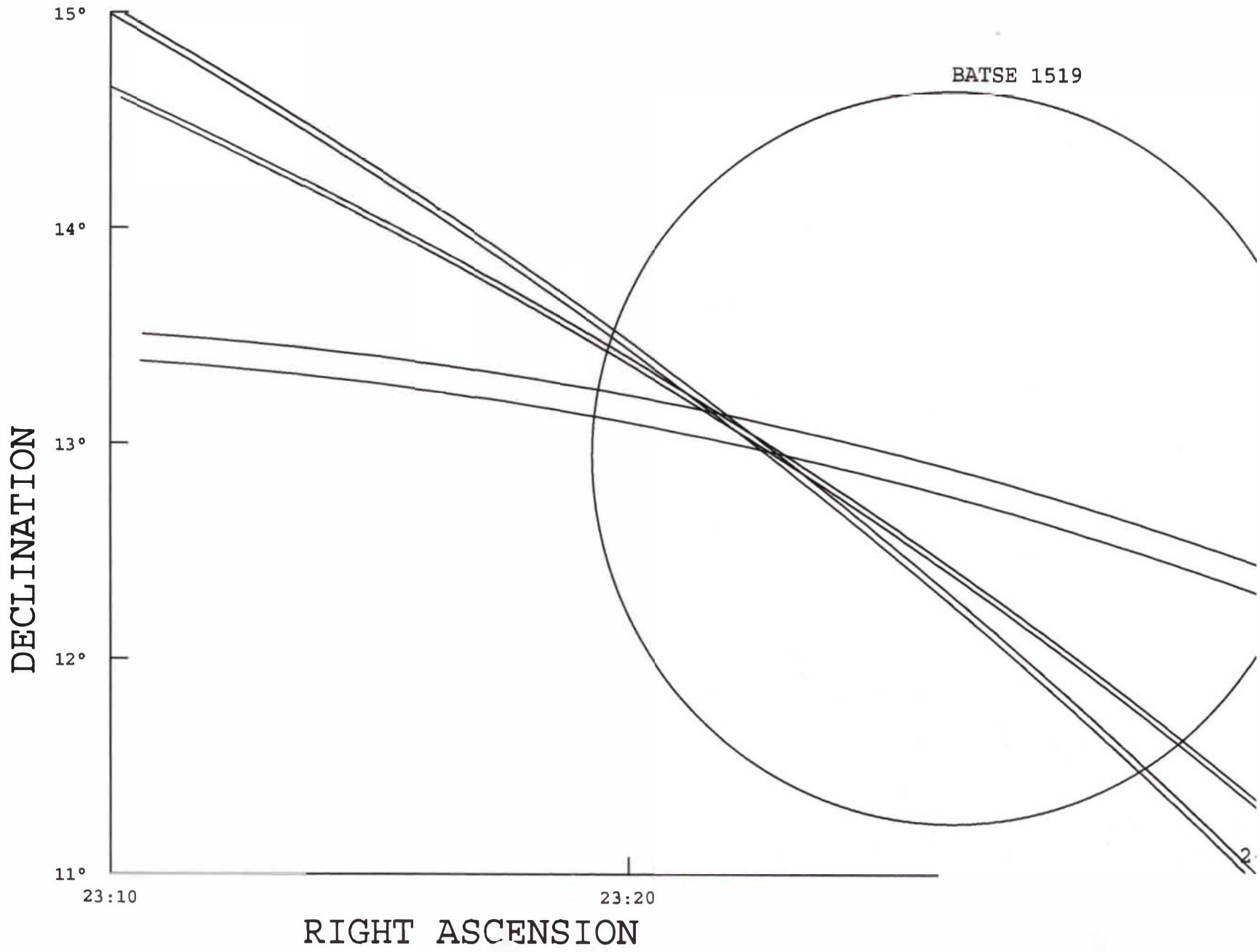
9/10/97

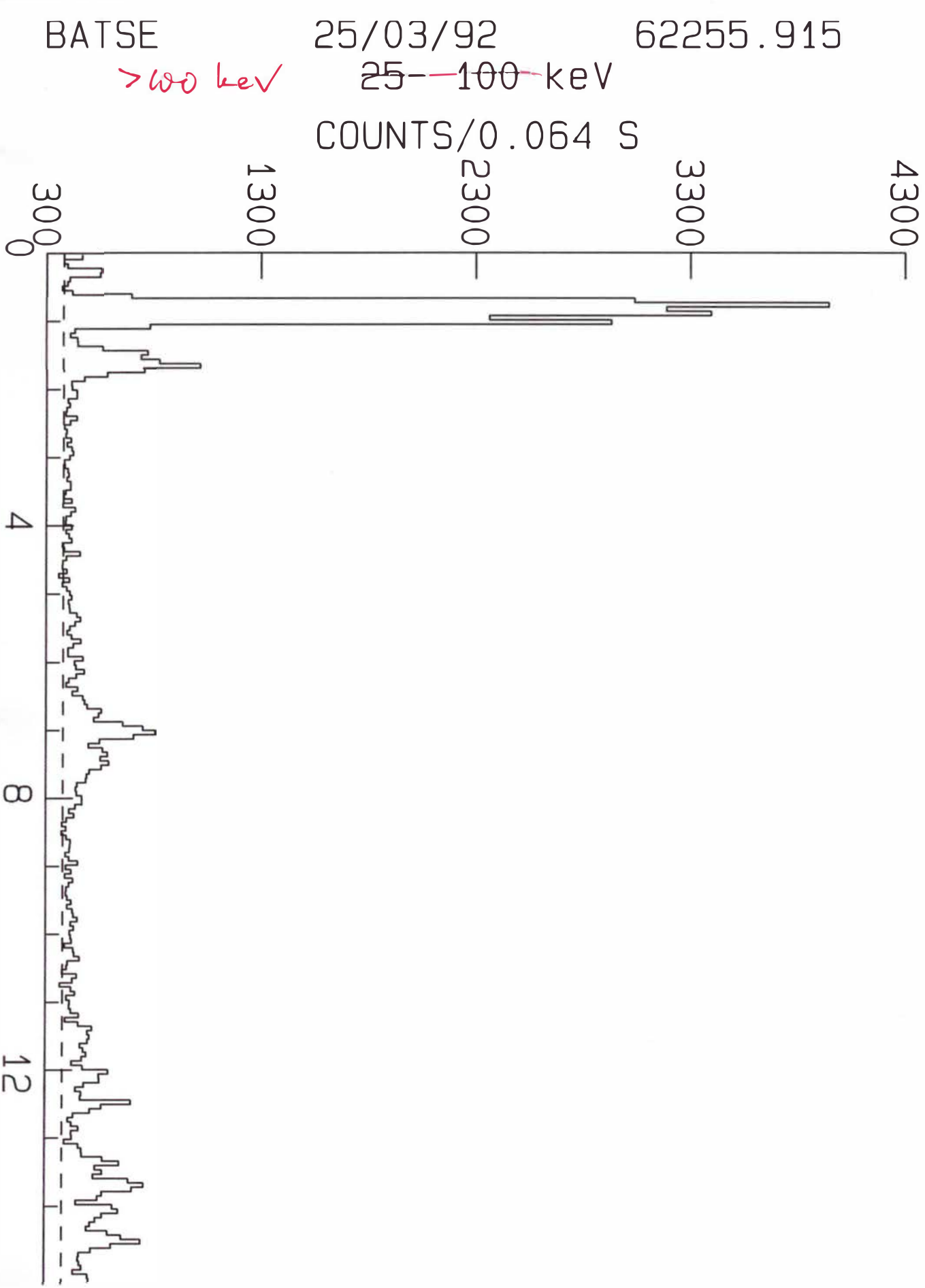


EVENT OF MAR 25, 1992 17:51

20/12/96

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO



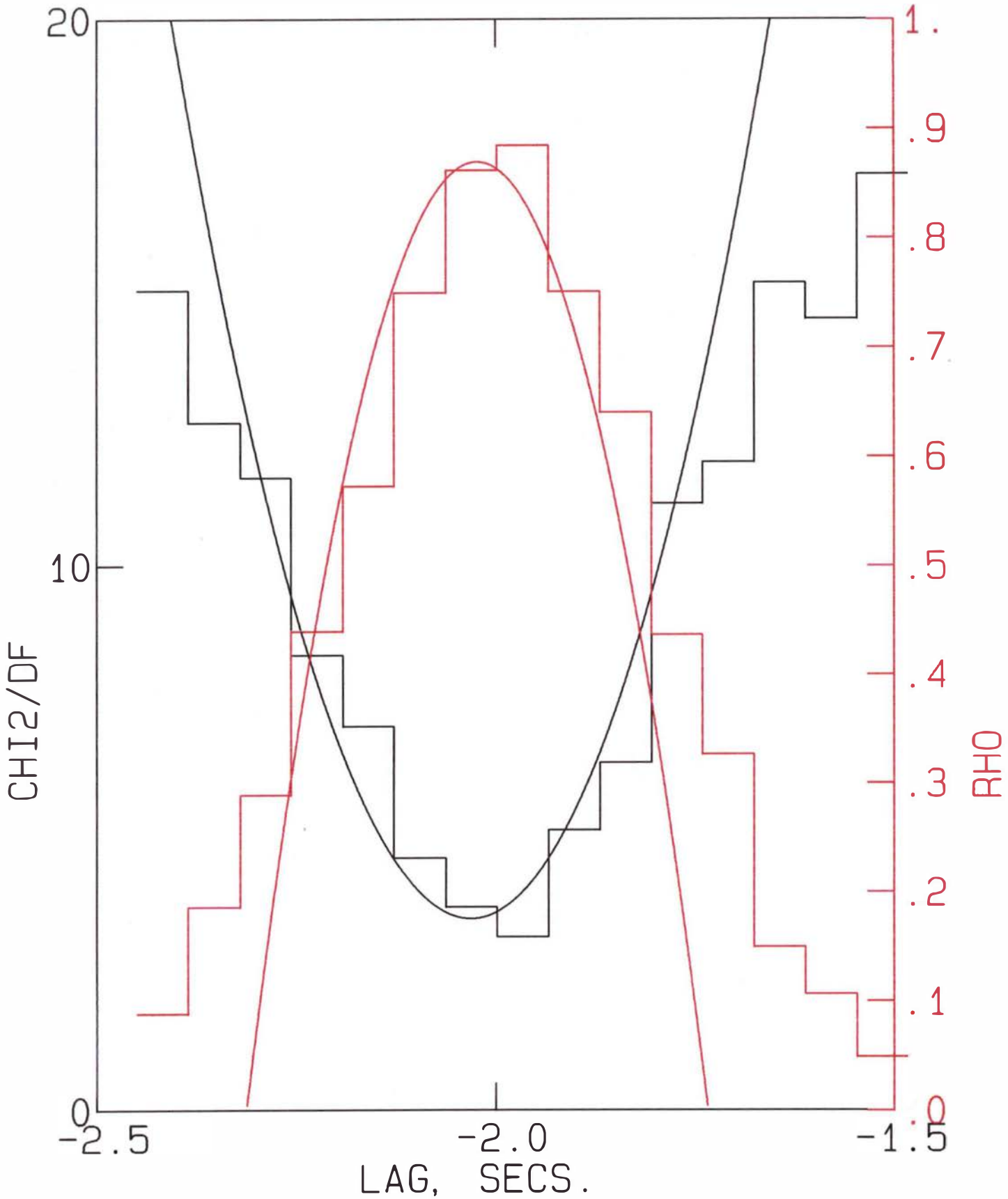

BATSE
25/03/92
62255.915
>100 keV
25--100 keV
COUNTS/0.064 S
0
1300
2300
3300
4300
4
8
12

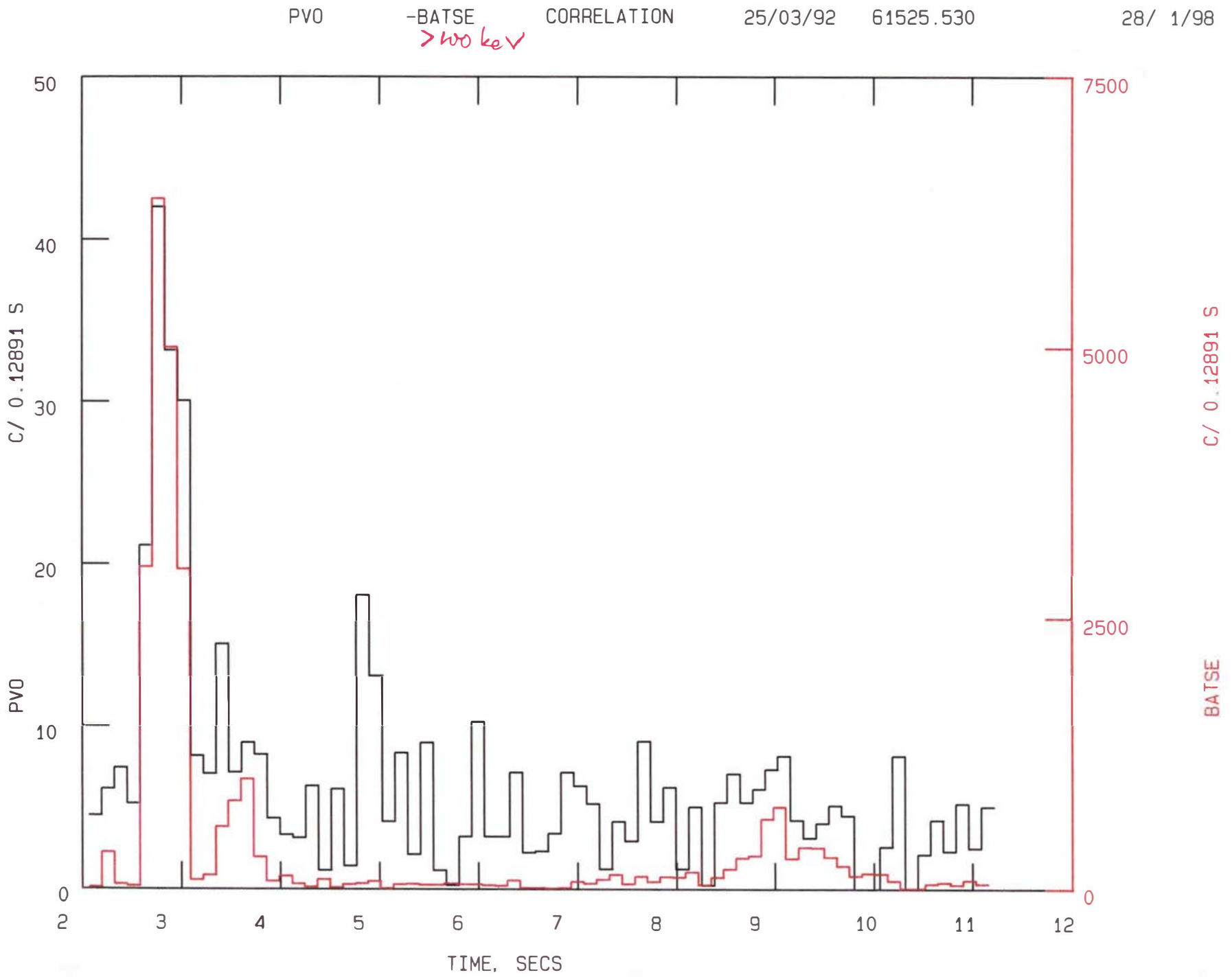
28/ 1/98

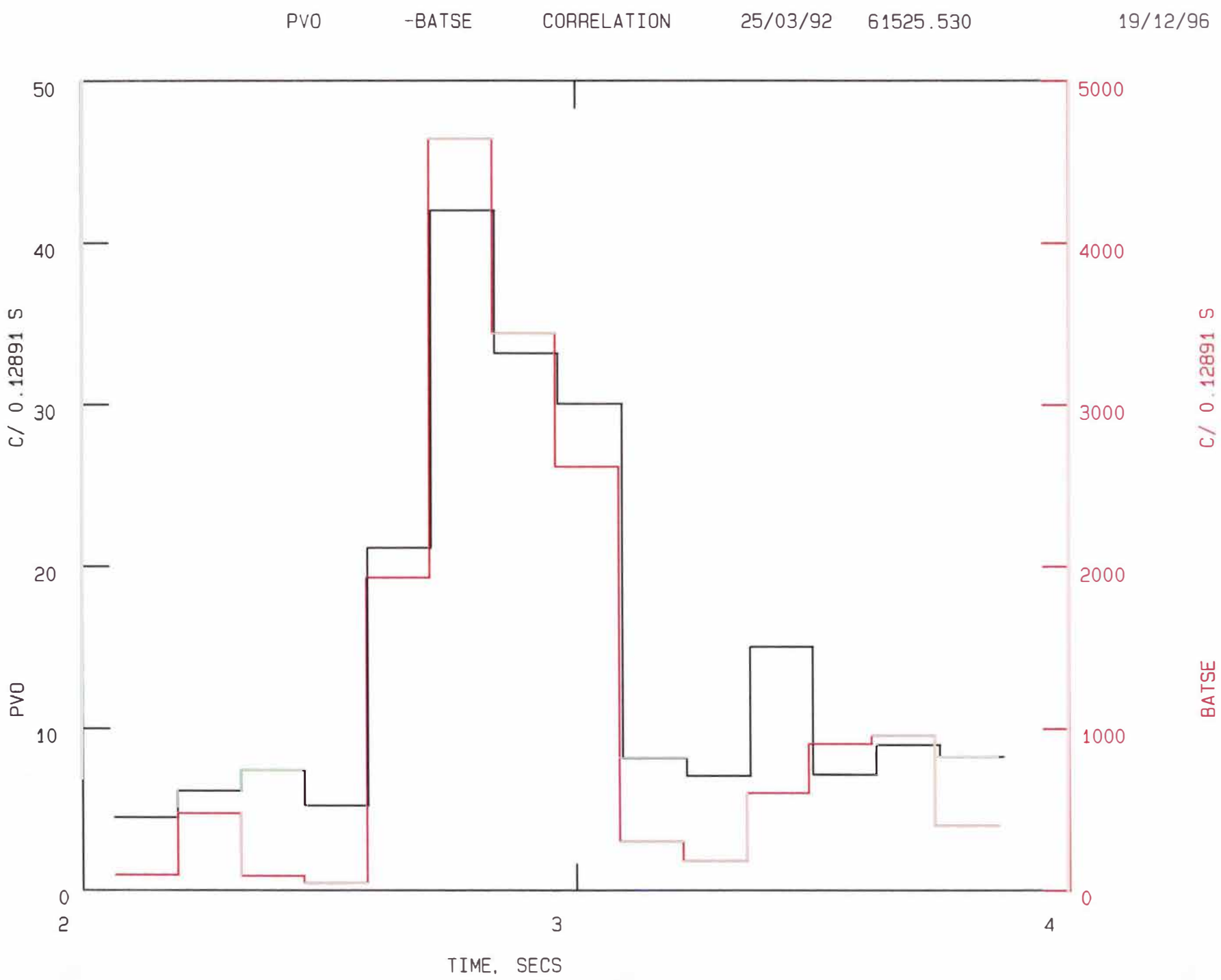
28/ 1/98

PVO -BATSE CORRELATION 25/03/92 61525.530

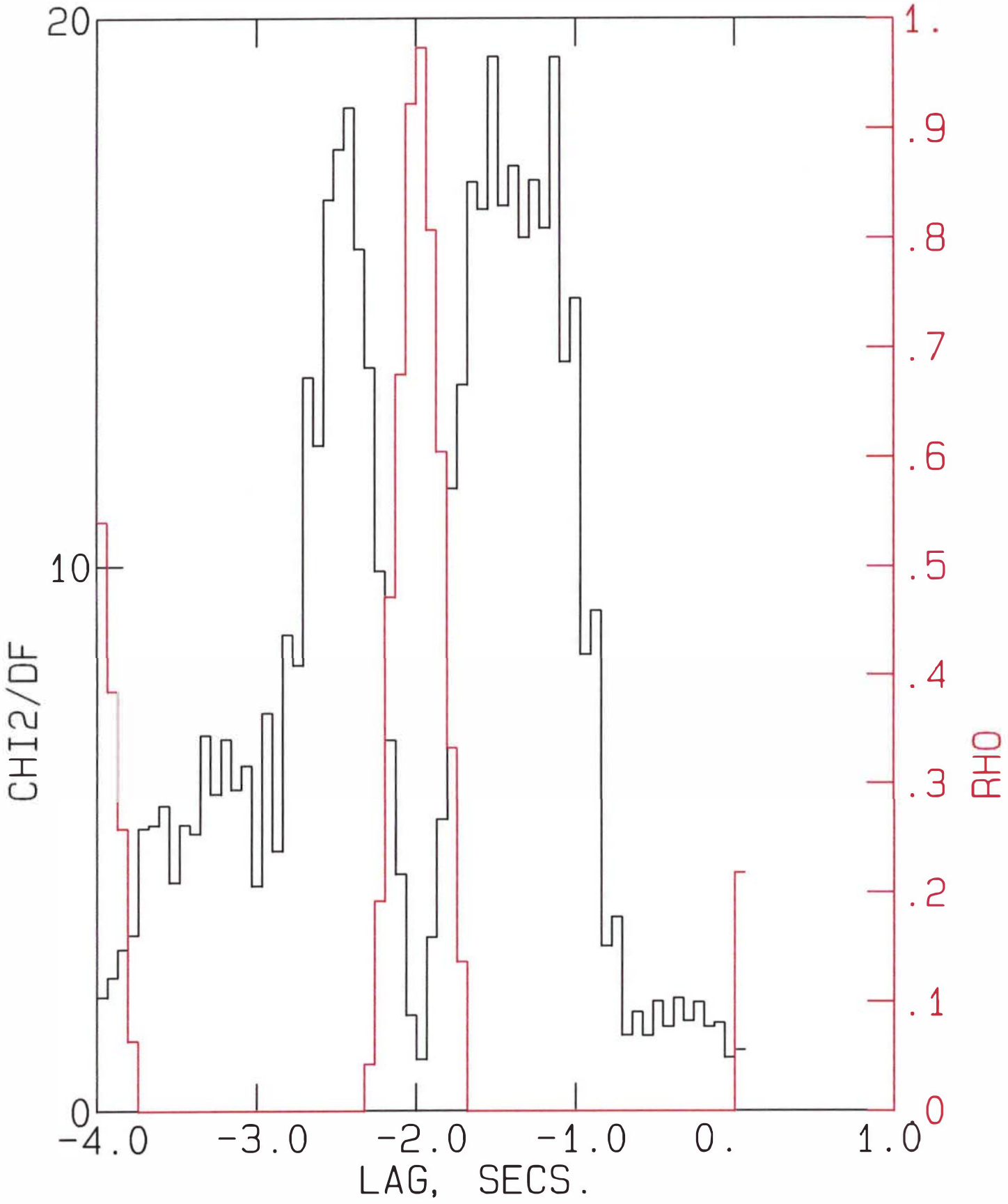
>100 keV

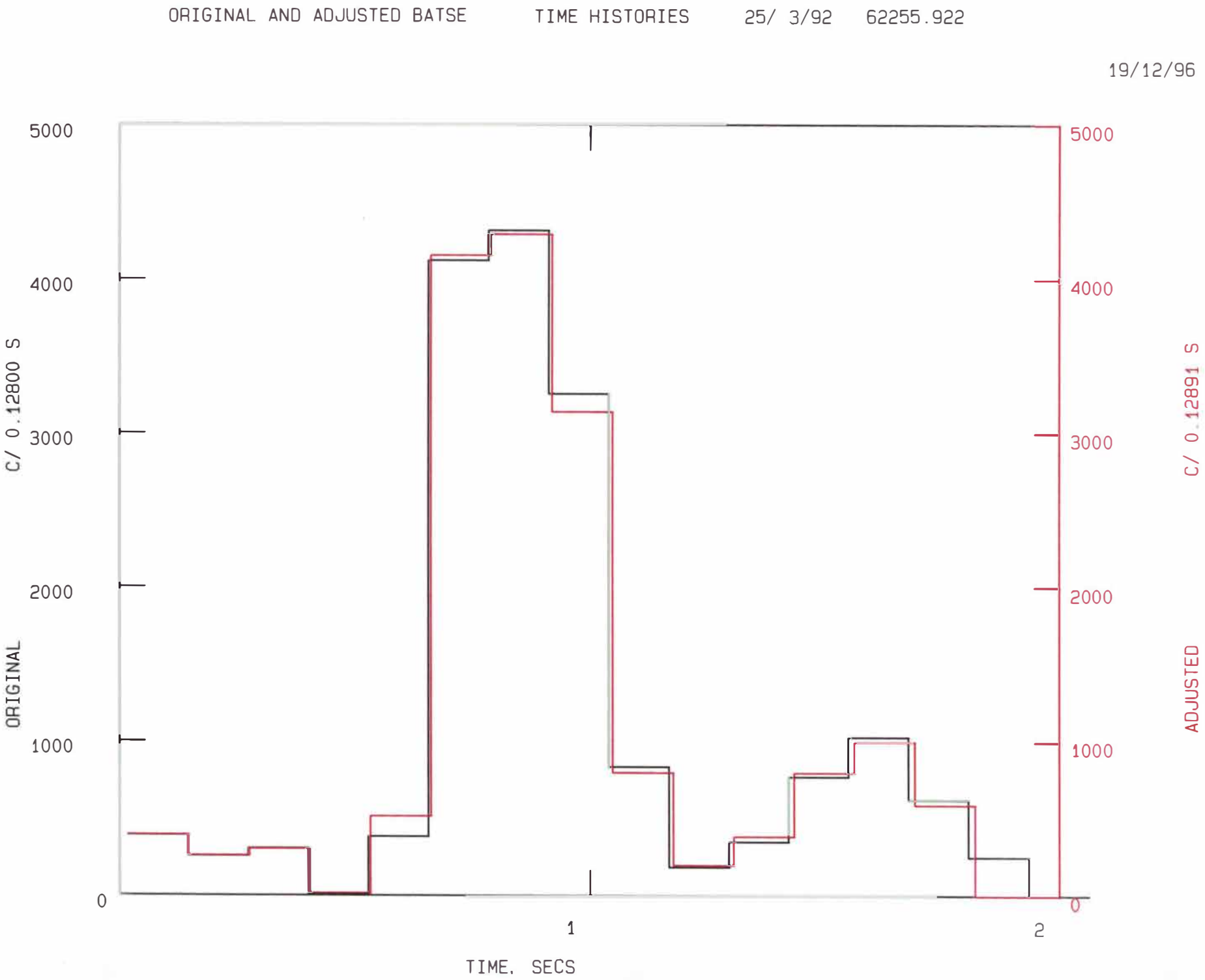


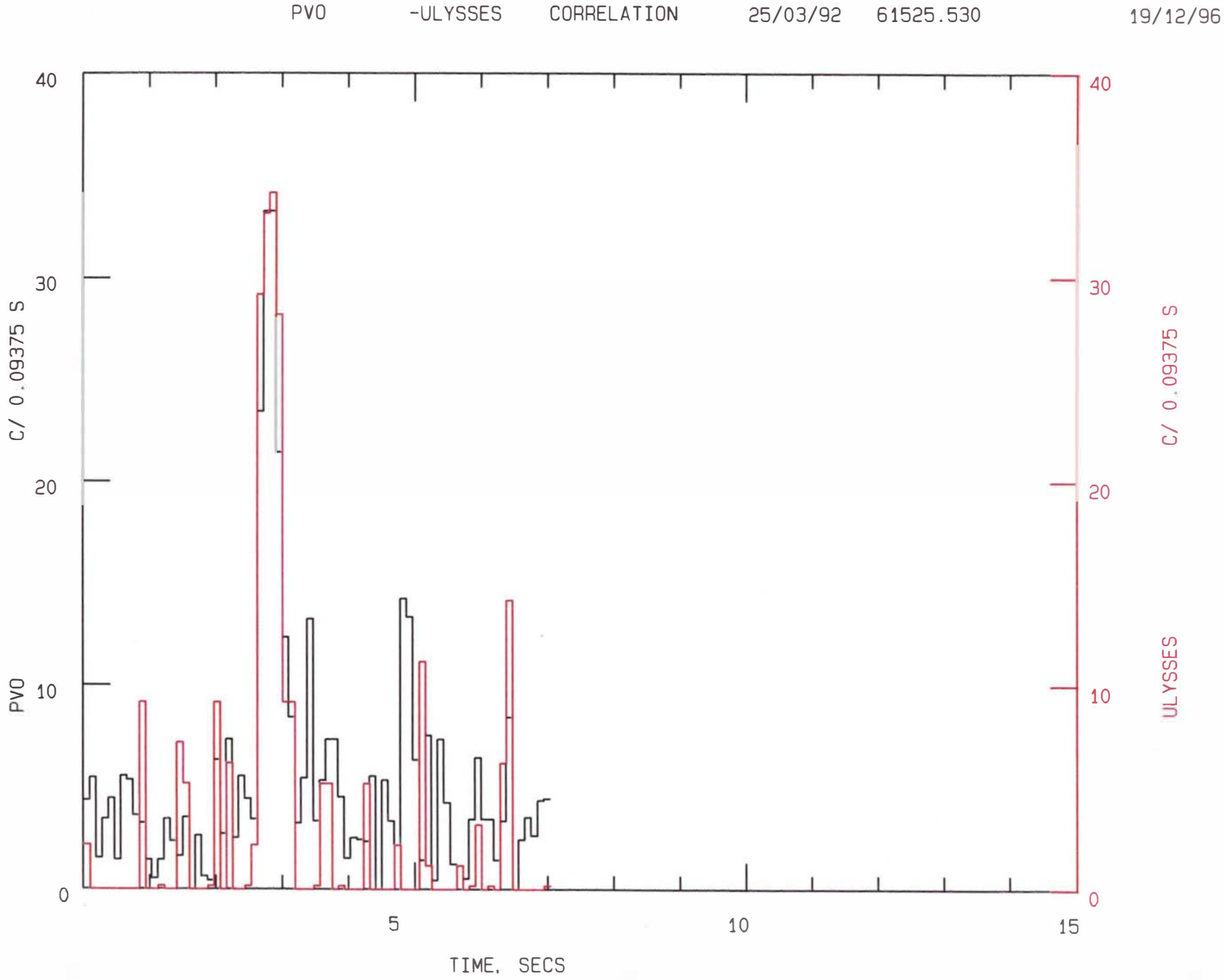

PVO -BATSE CORRELATION 25/03/92 61525.530 28/ 1/98
>100 keV
50
40
30
20
10
0
C/ 0.12891 S
PVO
7500
5000
2500
0
C/ 0.12891 S
BATSE
2
3
4
5
6
7
8
9
10
11
12
TIME, SECS


PVO -BATSE CORRELATION 25/03/92 61525.530 19/12/96
50
40
30
20
10
0
C/ 0.12891 S
PVO
5000
4000
3000
2000
1000
0
C/ 0.12891 S
BATSE
2
3
4
TIME, SECS

PVO -BATSE CORRELATION 25/03/92 61525.530

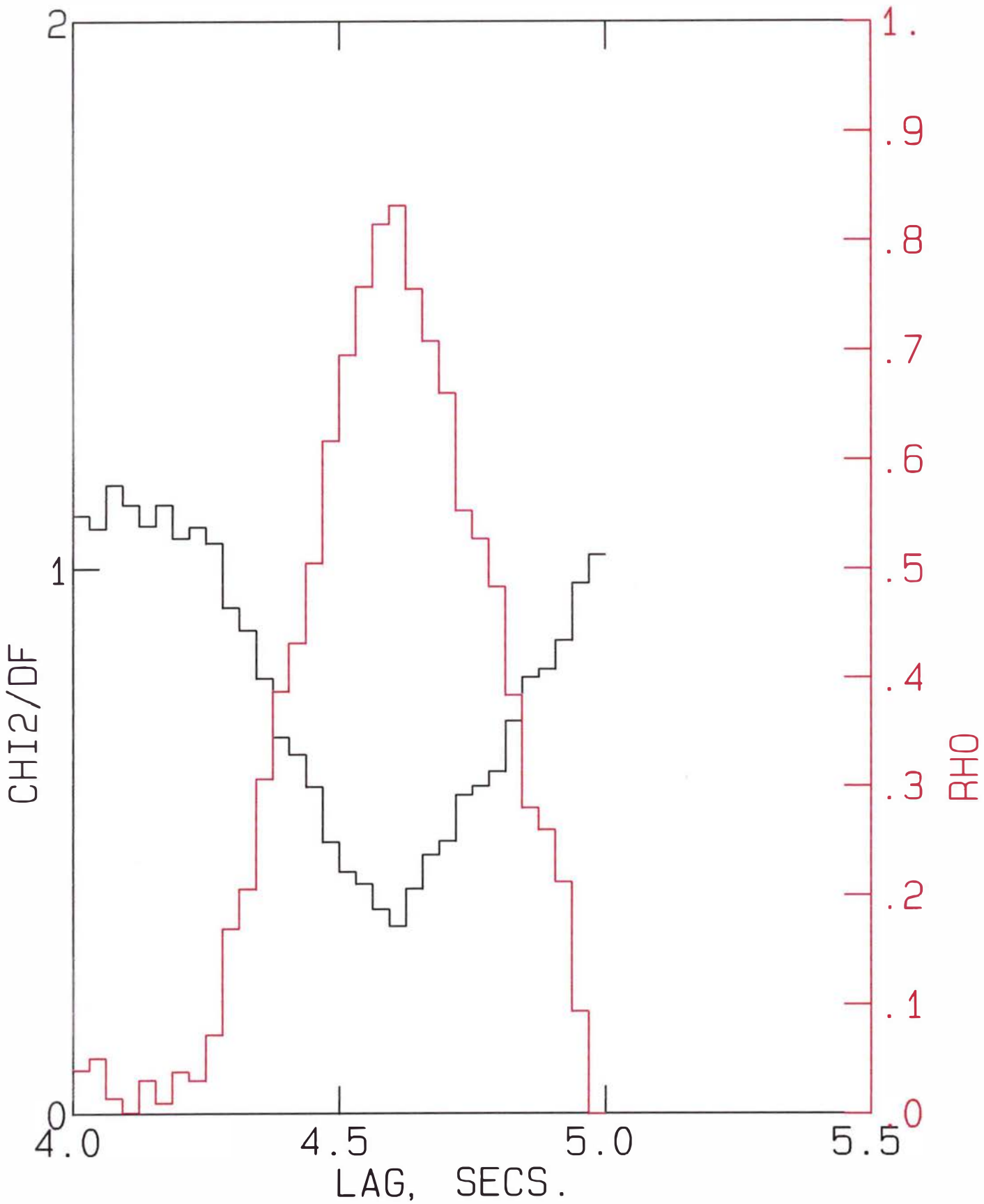


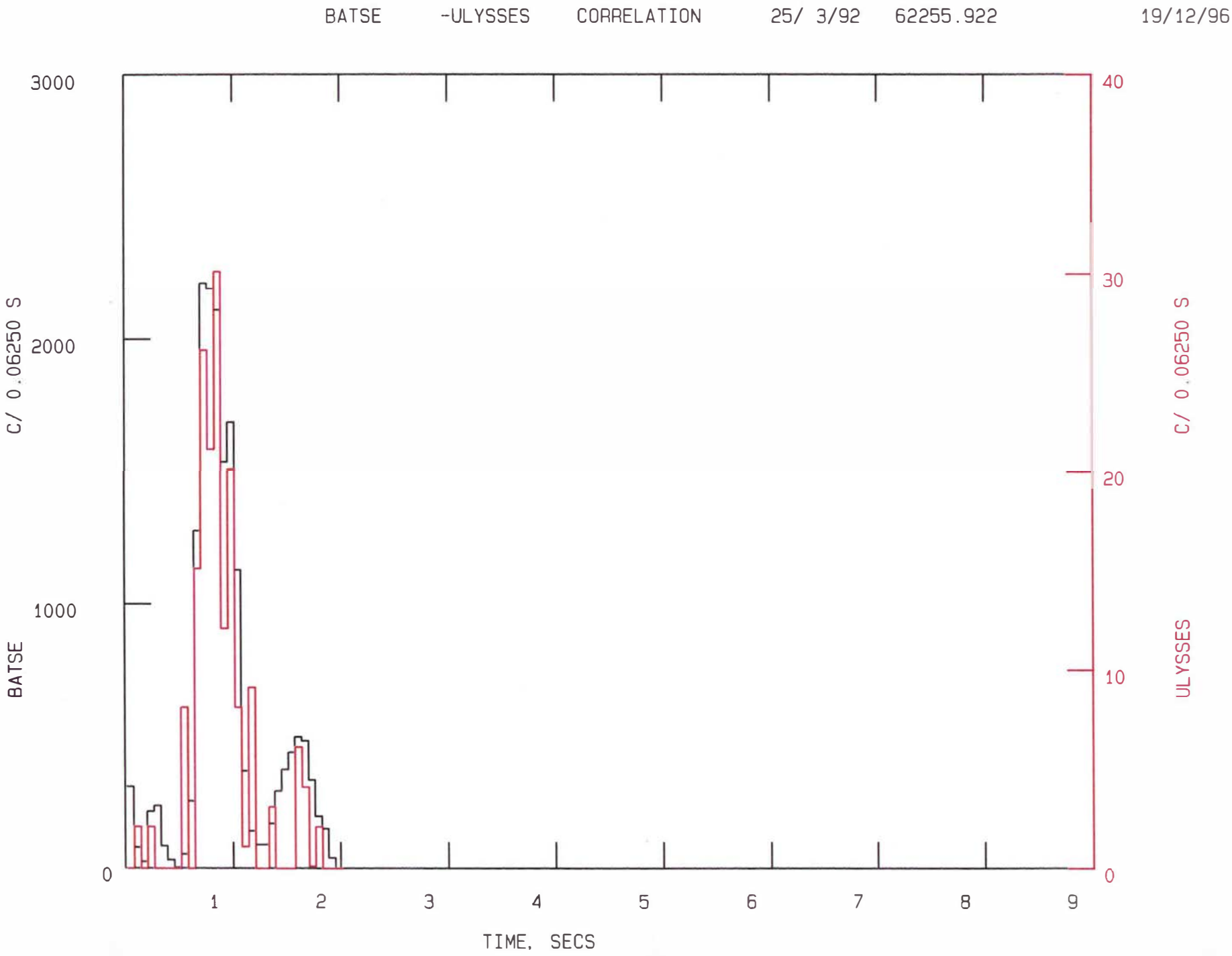

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 25/ 3/92 62255.922
19/12/96
5000
4000
3000
2000
1000
0
C/ 0.12800 S
ORIGINAL
5000
4000
3000
2000
1000
0
C/ 0.12891 S
ADJUSTED
1
2
TIME. SECS


PVO -ULYSSES CORRELATION 25/03/92 61525.530 19/12/96
40
30
20
10
0
C/ 0.09375 S
PVO
5
10
15
TIME, SECS
ULYSSES

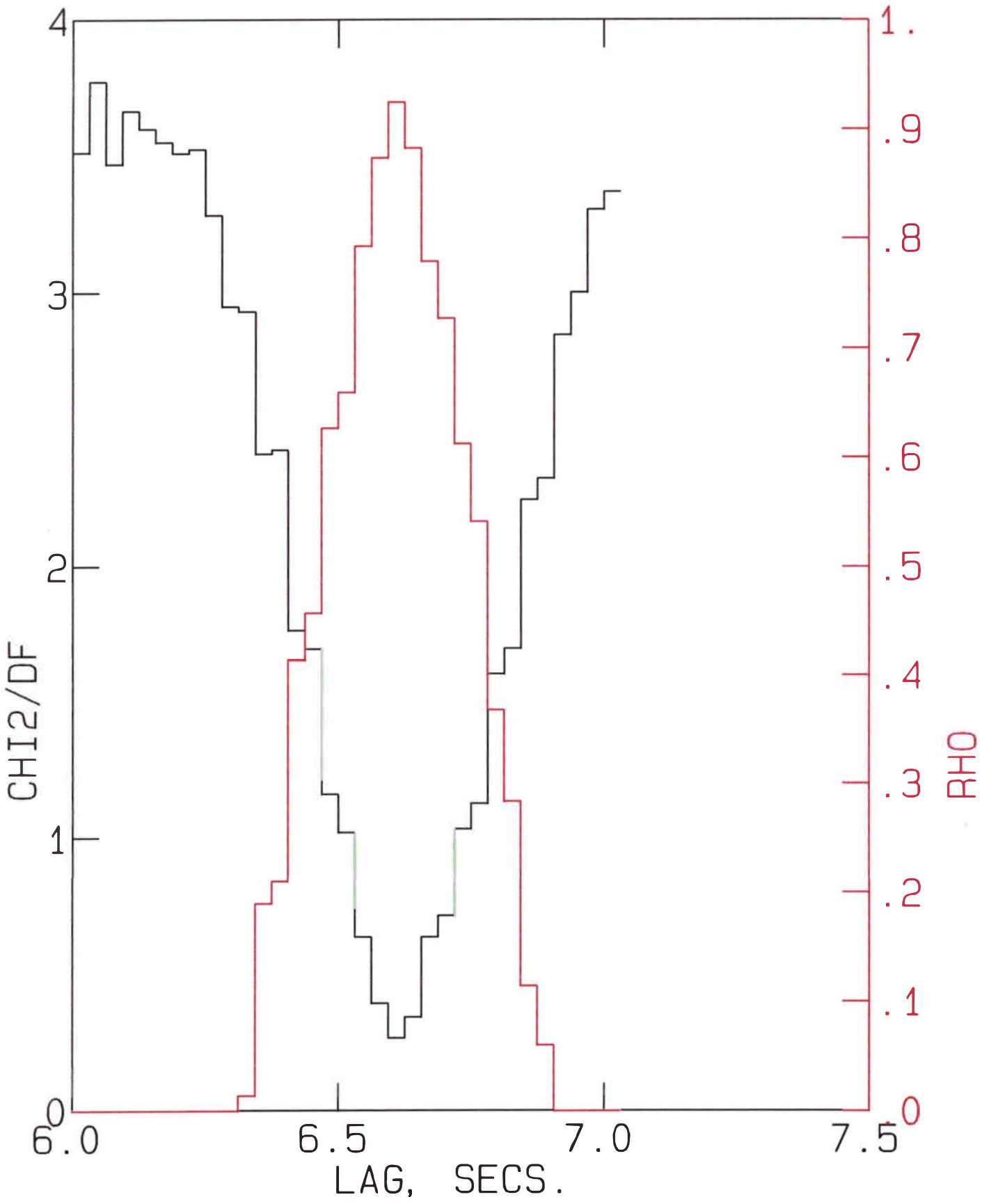
19/12/96

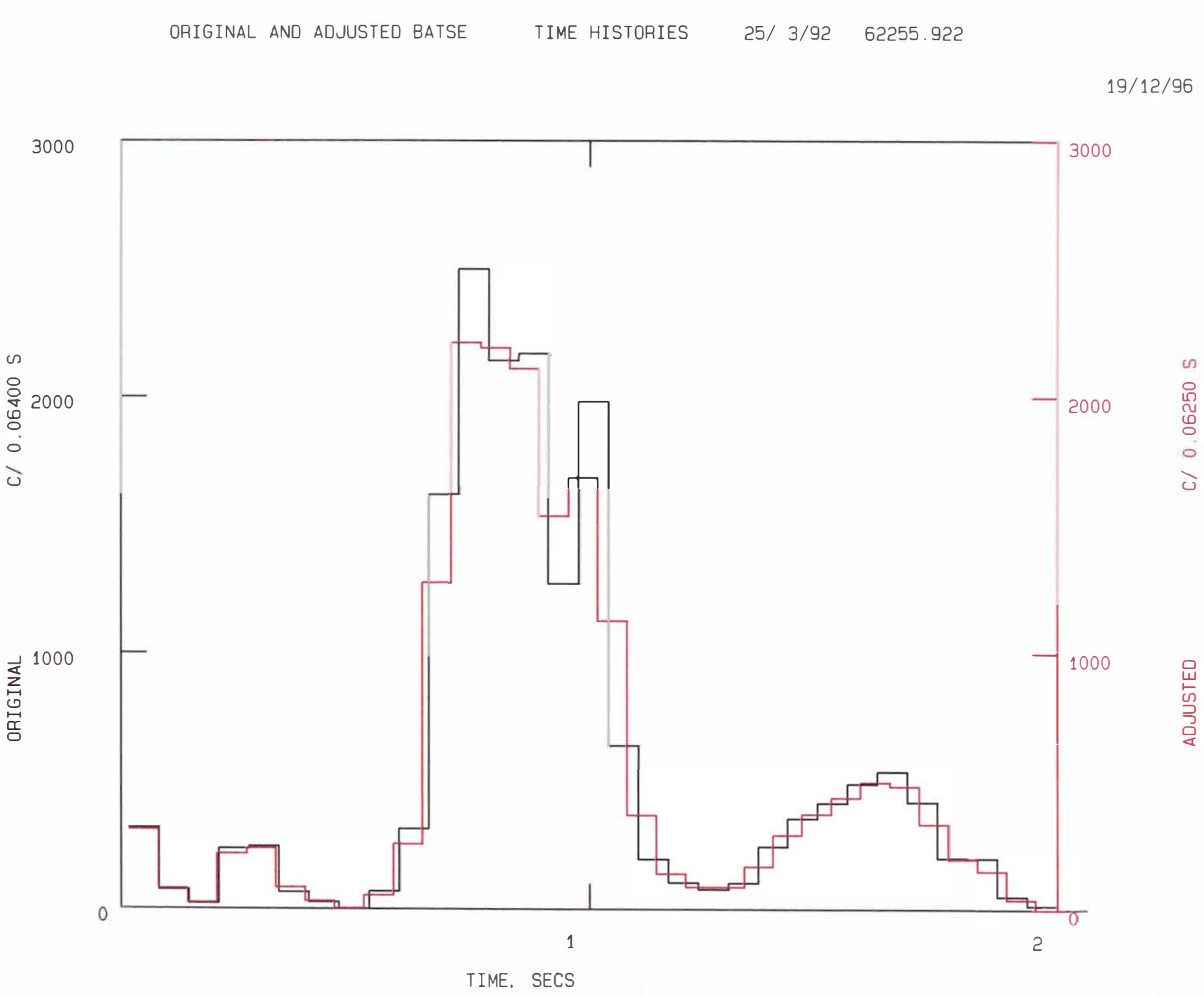
PVO -ULYSSES CORRELATION 25/03/92 61525.530




BATSE -ULYSSES CORRELATION 25/ 3/92 62255.922 19/12/96
3000
2000
1000
0
C/ 0.06250 S
BATSE
40
30
20
10
0
C/ 0.06250 S
ULYSSES
1
2
3
4
5
6
7
8
9
TIME, SECS

BATSE -ULYSSES CORRELATION 25/ 3/92 62255.922

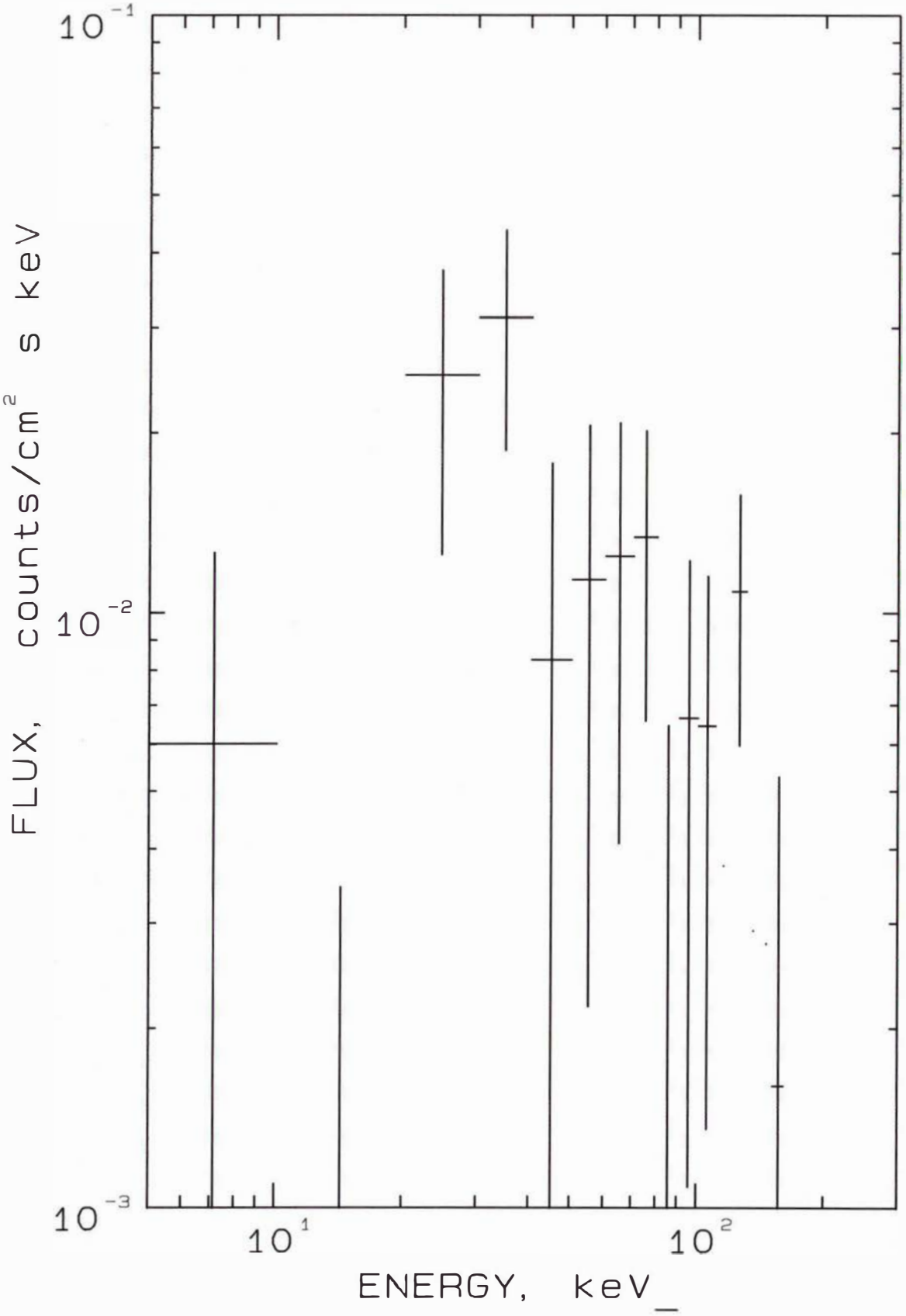


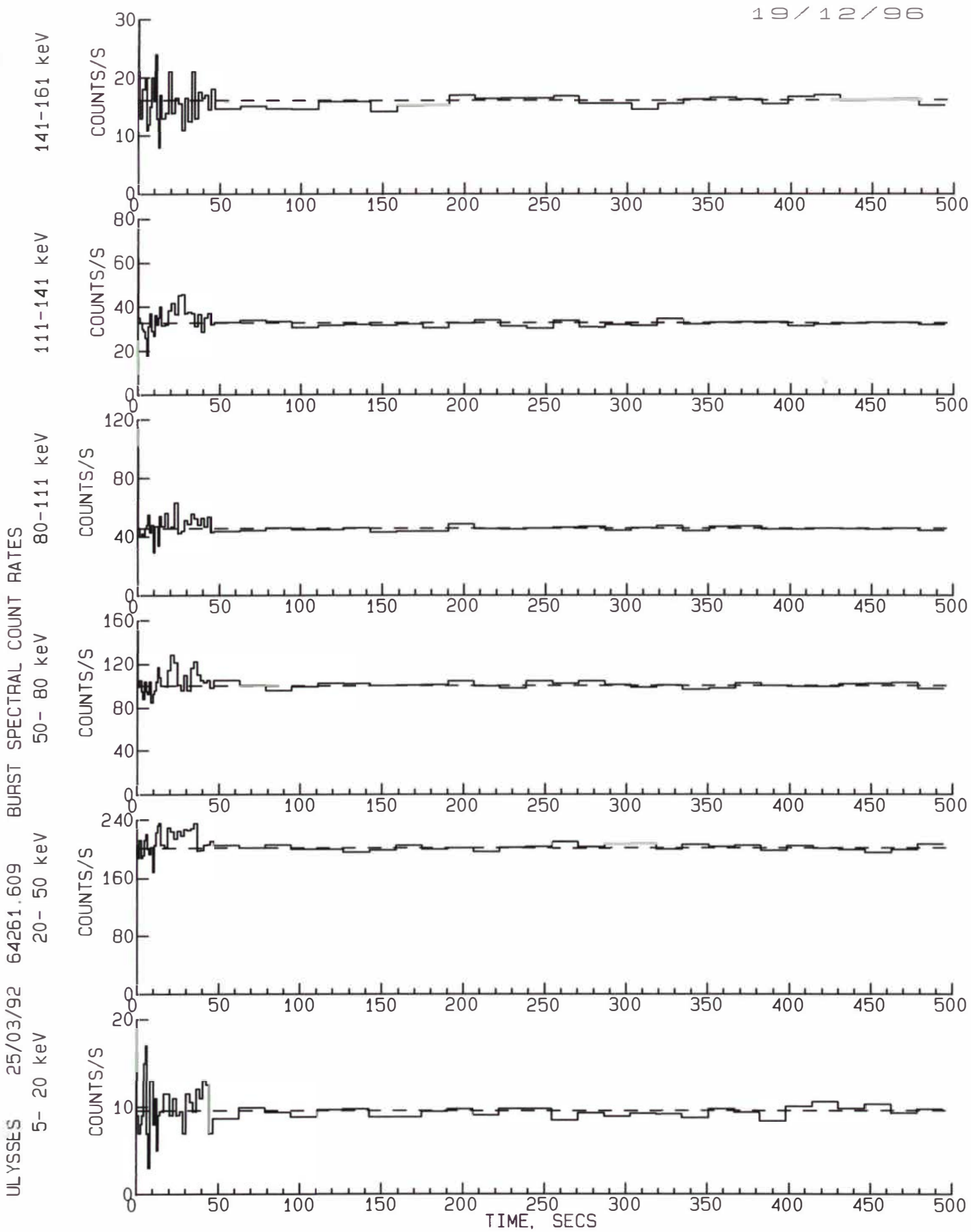

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 25/ 3/92 62255.922
19/12/96
3000
2000
1000
0
C/ 0.06400 S
ORIGINAL
3000
2000
1000
0
C/ 0.06250 S
ADJUSTED
1
2
TIME, SECS

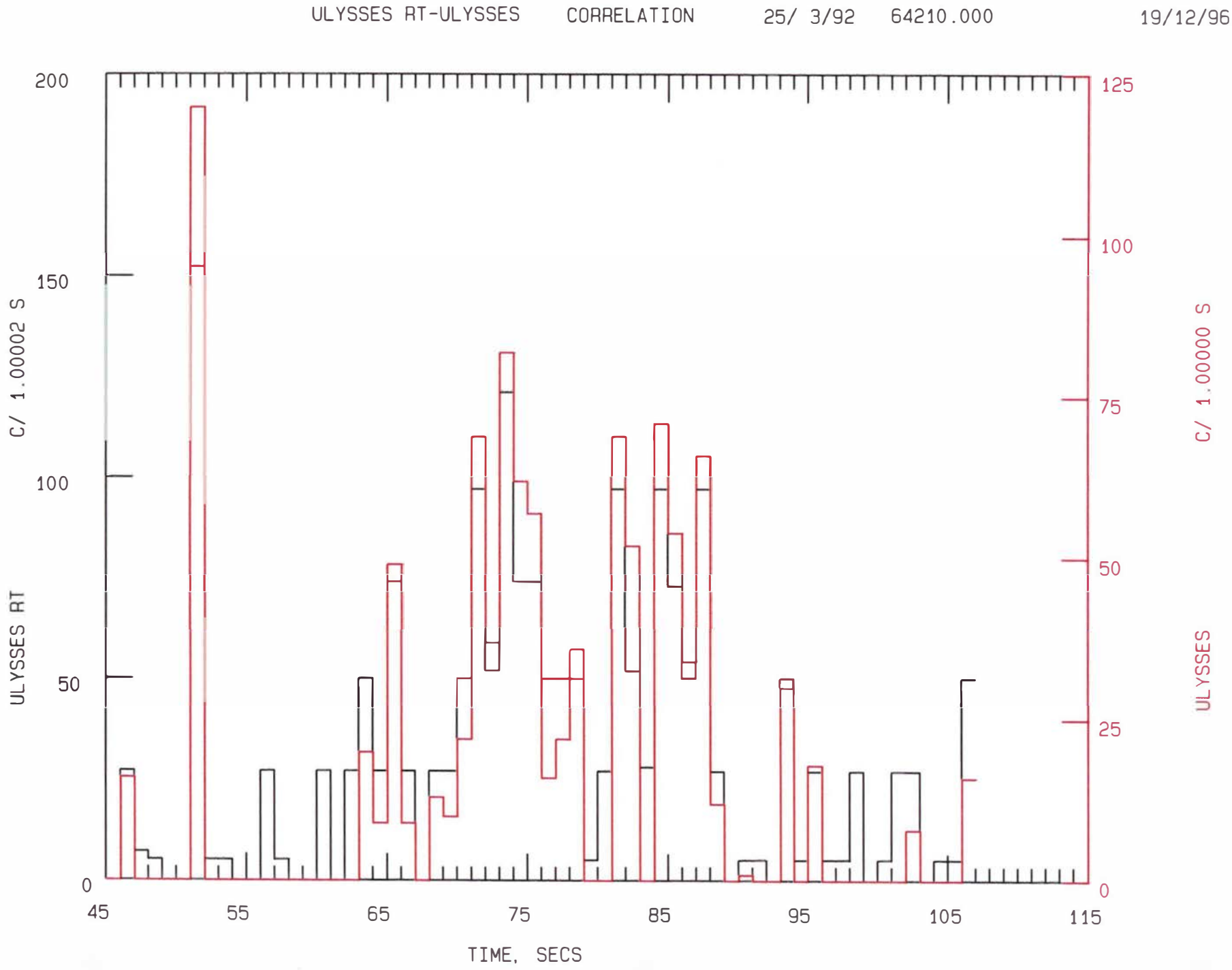
ULYSSES 25/03/92 64261.609

19/12/96

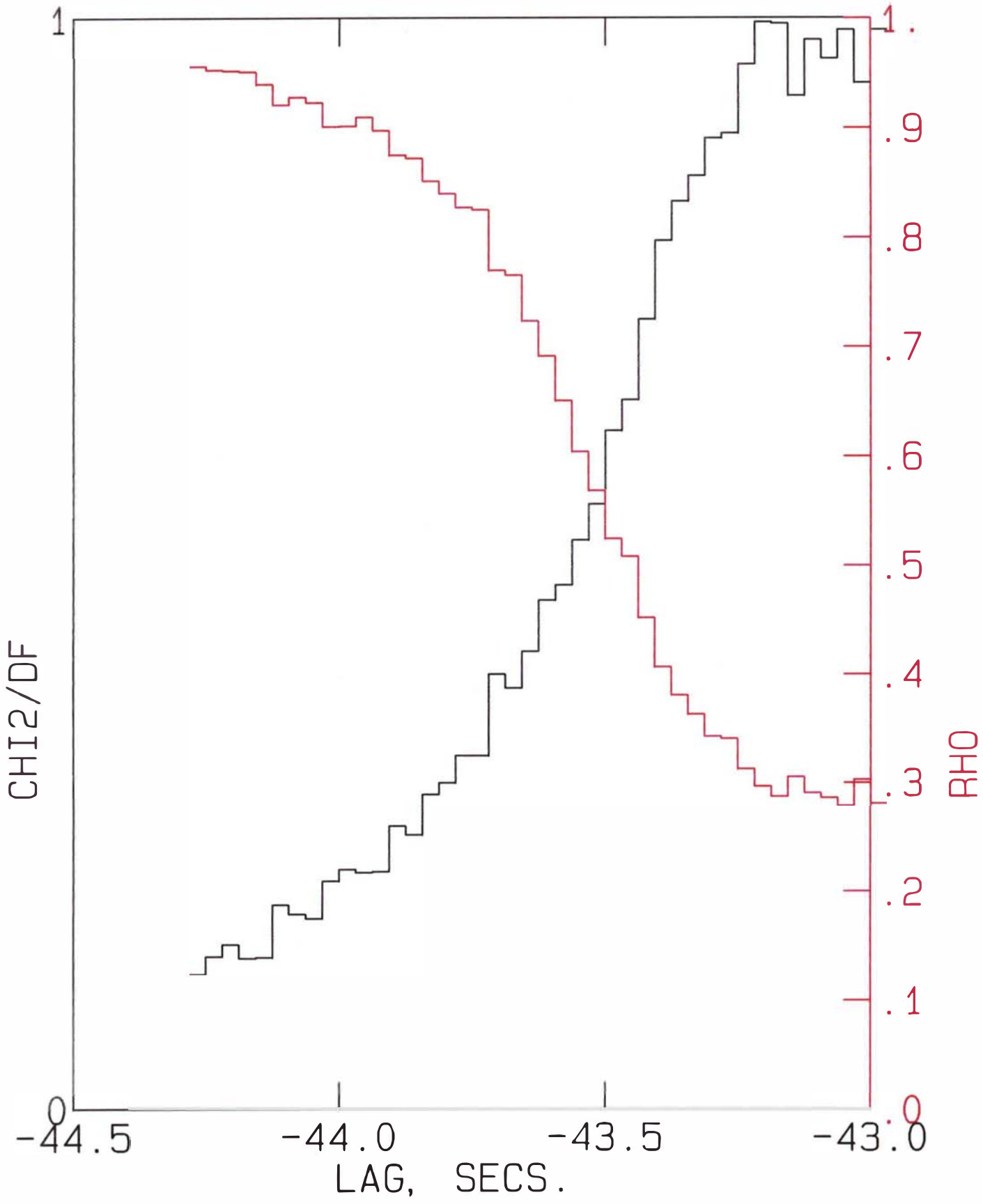
SPECTRUM INTEGRATED OVER 20.4 SECONDS, INTERVALS 2 TO 20

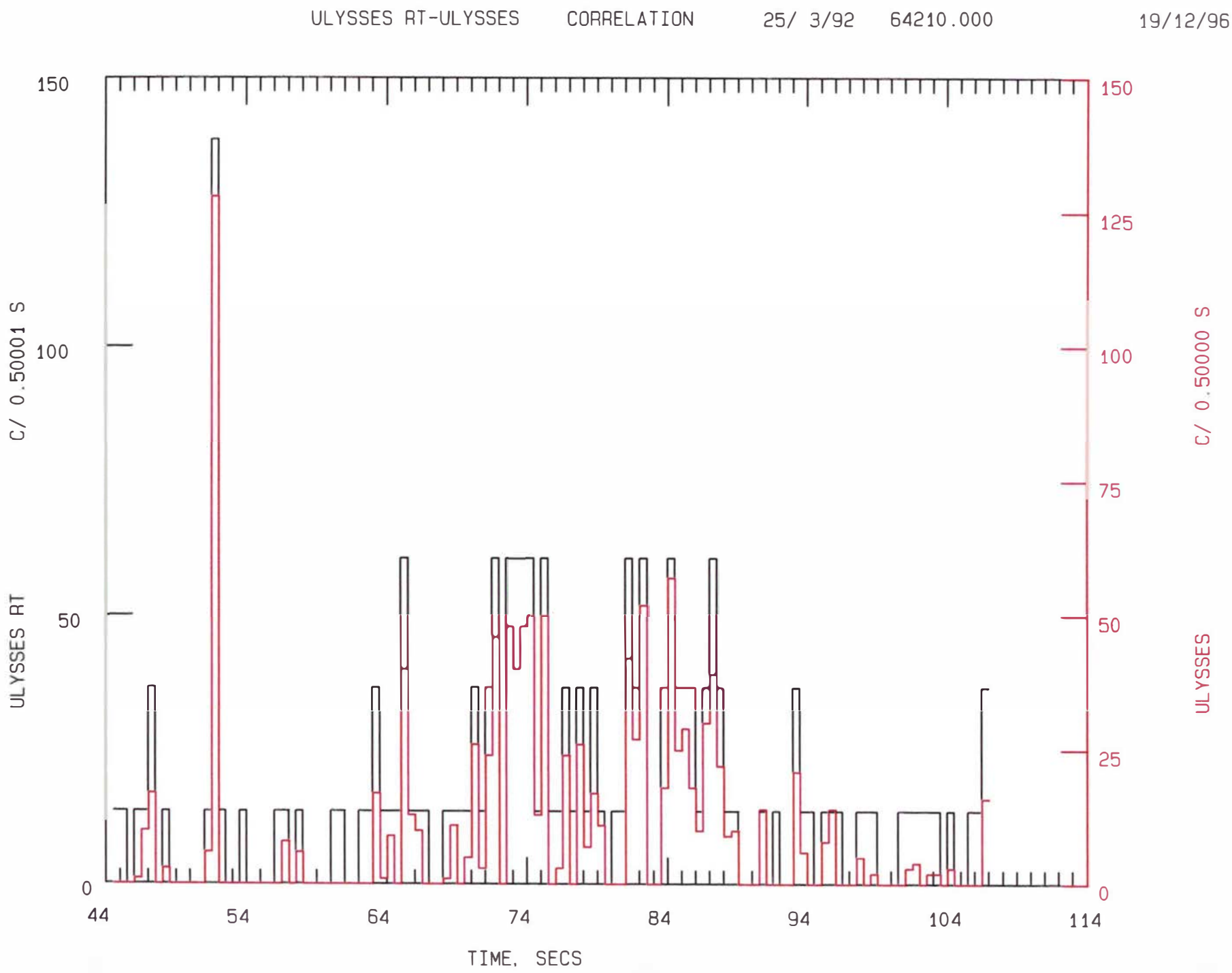



19/12/96
ULYSSES 25/03/92 64261.609 BURST SPECTRAL COUNT RATES
5- 20 keV
20- 50 keV
50- 80 keV
80-111 keV
111-141 keV
141-161 keV
COUNTS/S
TIME, SECS

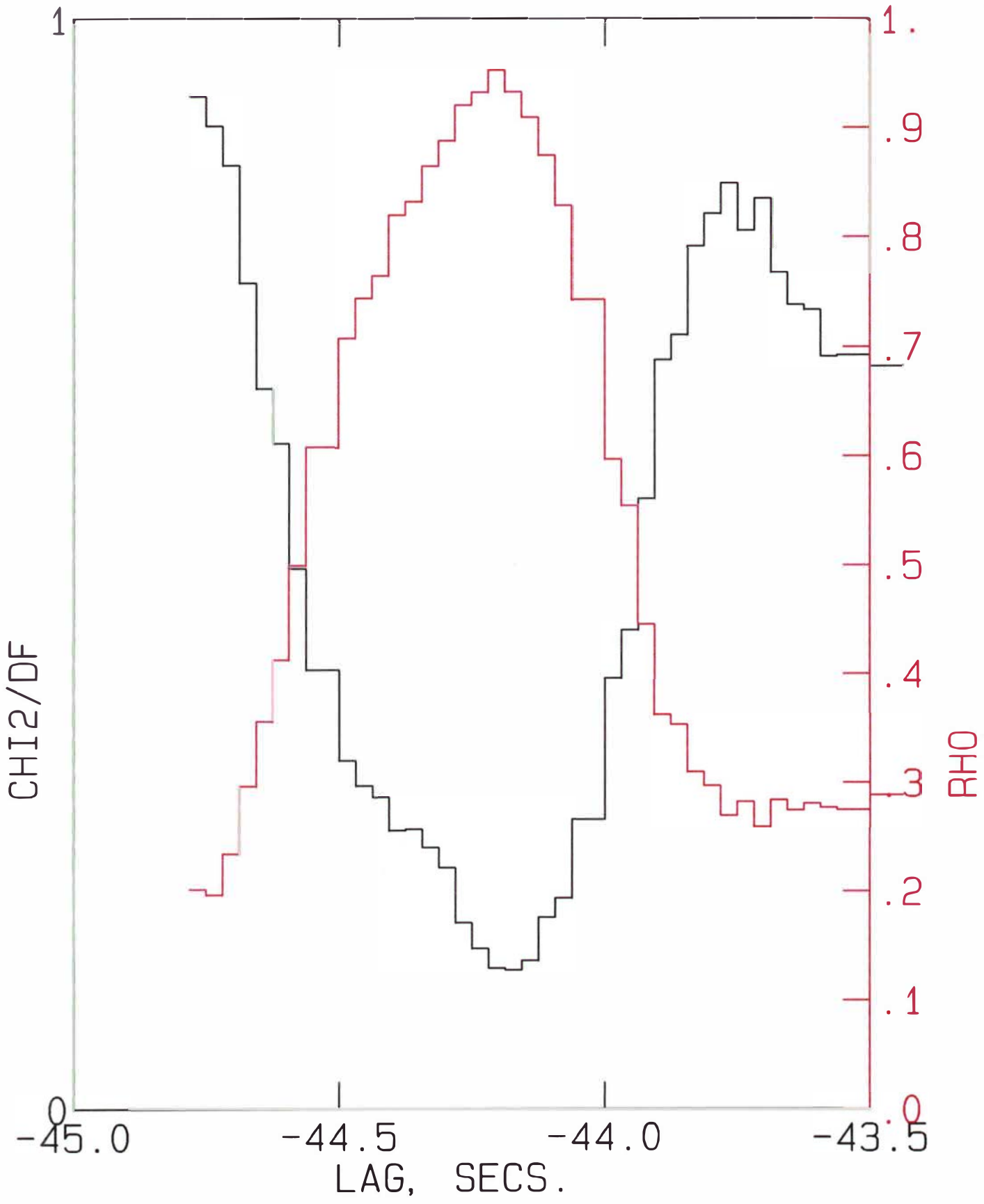

ULYSSES RT-ULYSSES CORRELATION 25/ 3/92 64210.000 19/12/96
200
150
100
50
0
C/ 1.00002 S
ULYSSES RT
125
100
75
50
25
0
C/ 1.00000 S
ULYSSES
45
55
65
75
85
95
105
115
TIME, SECS

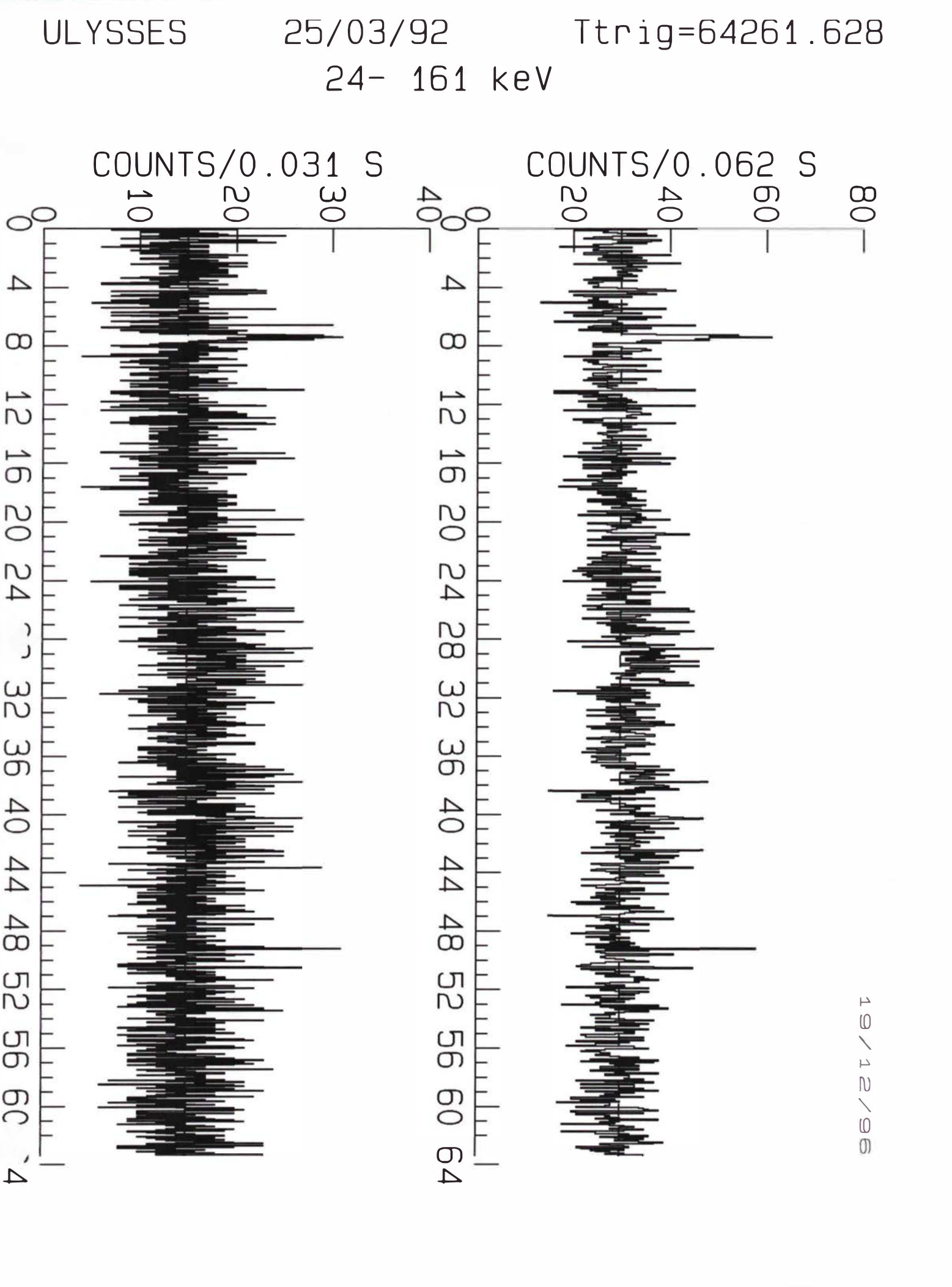
ULYSSES RT-ULYSSES CORRELATION 25/ 3/92 64210.000




ULYSSES RT-ULYSSES CORRELATION 25/ 3/92 64210.000 19/12/96
150
100
50
0
C/ 0.50001 S
ULYSSES RT
150
125
100
75
50
25
0
C/ 0.50000 S
ULYSSES
44
54
64
74
84
94
104
114
TIME, SECS

ULYSSES RT-ULYSSES CORRELATION 25/ 3/92 64210.000



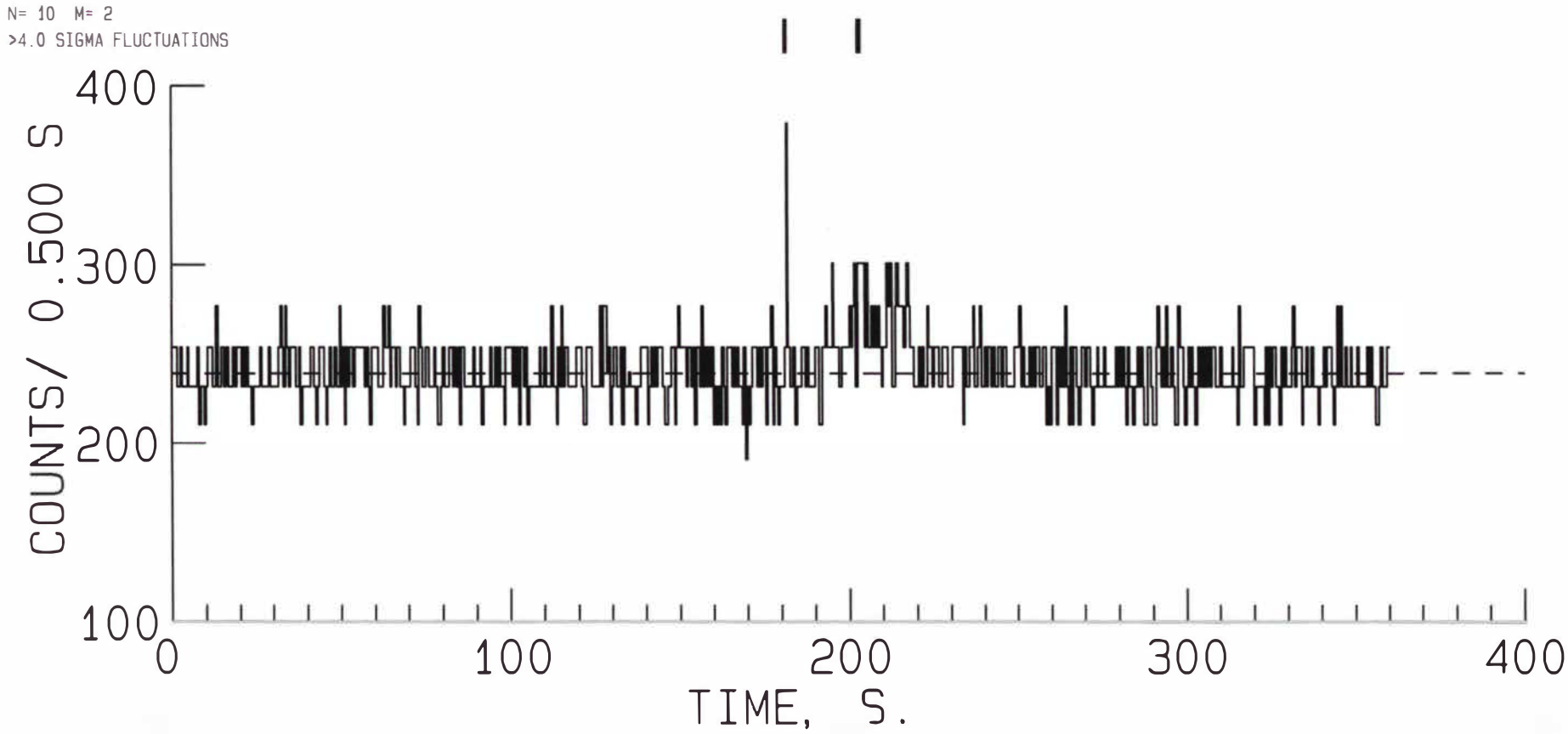

ULYSSES 25/03/92 Ttrig=64261.628
24- 161 keV
COUNTS/0.031 S
COUNTS/0.062 S
19/12/96

ULYSSES RT

19/12/96

25/ 3/92 64080.000 s

24- 161 keV



From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing a paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

Kevin

Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

From lamb@pion.uchicago.edu Mon Dec 11 09:53 PST 1995
Date: Mon, 11 Dec 95 12:02:45 CST
From: lamb@pion.uchicago.edu (Don Lamb)
To: khurley@sunspot.ssl.berkeley.edu, lamb@haven.uchicago.edu
Subject: Systematic error study and upcoming observation of GB920325

Dear Kevin,

Carlo and I appreciated the ''Thanksgiving turkey'' that came early, thanks to you. Here's the status of our systematic error study. We are not including the latest IPN arcs for BATSE 3B bursts in the paper we are submitting for the proceedings of the Huntsville Symposium. We will include them in the ApJ paper we are preparing.

On a separate, urgent matter, Bob Nichol and I are scheduled to observe the IPN error box for GB920325 on the night of 17 December 1995. We used the earlier computer listings that you provided to us to draw the three IPN error boxes that you list for this burst (derived from the various pairings of the BATSE, PVO, and Ulysses spacecraft). Generally, they are wider and much, much longer than the 2' x 7' error box size you give in the summary listing of small 3rd IPN error boxes. Even the overlap of all three error boxes is much longer than 7' (is considering only the overlap valid?). Are we missing something?

Also, the output that you provided earlier did not include the corrections for aberration because you were transferring your files from one computer to another. While the aberration corrections are no doubt small, they could make some difference in this particular case, since the IPN arcs intersect at a rather oblique angle. Could you provide us with an updated error box for this burst that includes the aberration corrections? And any other information that you think we should have? Thanks!!

With warm best wishes, Don

From fjv@nofs.navy.mil Mon Oct 17 13:38 PDT 1994
To: khurley@sunspot.ssl.berkeley.edu

Hi Kevin:

We got your letter a few days ago about the Anna Zytkow request for the 1 May localization. Let me answer in a somewhat roundabout way. Below is a summary of what data has been thus far obtained for the IPN^3 fields and what their reduction status is. I thought that you would be interested in the overall status of this work since you are our collaborator. As you can see much work has been done, but much remains to be done for some of the fields in terms of data reduction. The 1 May field data are essentially unreduced. One reason for it not being completed is our feeling from the IPN^1 work that only rather global statistics will be helpful in unraveling what's in these boxes and we have been waiting to see if we get CTIO time to get the Southern boxes. If I knew now that we wouldn't get CTIO time, I would be much more interested in getting this stuff cleaned up ASAP. We will know soon enough.

So, on the one hand, experience has shown that Zytkow probably won't get a whole lot out of observing just one field. On the other hand, the one-shot artists certainly managed to help muddy the waters wrt what is in the IPN^1 fields. I guess I don't have any big objections to her having the localization. But it probably will diminish somewhat the value of our work. But I would think that the bigger IPN politics would have the ruling vote in this matter. So, as both an IPN guru and a photometry collaborator, you are in the best position to judge. Do these comments help at all?

Best Wishes, Fred and Chris

********** IPN3 Observation and Reduction Status **********
Last update: 23Se94

PM? = Photometric Sky?
  T = Telescope (1 = NOFS 1.0m, 2 = NOFS 1.5m)
Status Block:
 A = hardcopy in notebook?
 B = IPN3 box on hardcopy?
 C = Photometry done (s=std system, i=instrumental)
 D = Final cleanup of photometry done?
****

Field 920711: RA=18:46:08.6 DEC=+72:53:00 (2000) 1x4 l=103.9 b=+26.3

Night	fno	Filt	Exp	PM?	T	ABCD	Notes
y93d174/23jn93	135	V	60min	y	1	n sy	Reduced all data. Remains to
y93d175/24jn93	136	I	60	y	1	yys	combine I measures obtained
	137	U	100	y	1	y s	y93d253 into final database.
	138	B	80	y	1	y s	
y93d253/10se93	123	I	45		1	s	
	124	I	45		1	s	
	125	I	45		1	s	
	126	I	45		1	s	

Field 920325: RA=23:22:18.5 DEC=+13:03:12 (2000) 2x7 l=90 b=-44

Night	fno	Filt	Exp	PM?	T	ABCD	Notes
y93d253/10se93	127	V	60	y	1	y s	First pass reduction done:
	128	I	60	y	1	y s	remains to clean up measures
y93d254/11se93	114	U	100	y	1	y s	contaminated by residual images.
	115	B	80	y	1	y s	
y93d255/12se93	130	V	60		1		

```
                131  I   20+/-     1


Field 920723: RA=19:08:34.3 DEC=+27:14:18 (2000) 1x4  l=59.0  b=+8.8
============
   Night        fno Filt  Exp  PM? T ABCD       Notes
y93d254/11se93  112  B  100    y   1 y s        First pass reduction done:
                113  U  100    y   1 y s        remains to clean up measures
y93d255/12se93  113  I   60    ?   1 y s        contaminated by ? - note low
                114  V   60    ?   1 y s        latitude field.

Field 911109: RA=07:25:19.2 DEC=-27:14:18 (2000) 1x6
============
   Night        fno Filt  Exp  PM? T ABCD       Notes
y94d069/10mr94  113  I   60    n   1 y          No reductions.
                114  V   60    n   1 y
y94d091/01ap94  110  U   60    y   1 y
                111  I    5    y   1 y
                112  V    5    y   1 y
                113  B   30    y   1 y

Field 920720: RA=13:29:25.9 DEC=+37:14:12 (2000) 1x3
============
   Night        fno Filt  Exp  PM? T ABCD       Notes
y94d069/10mr94  121  I   60    n   1 y          Quick reduction of v for bright
                122  V   60    n   1 yy         galaxy (compared to two gsc *s).
                123  U  100    n   1 y          No further reductions.
                124  B  34+/-  n   1 y
y94d091/01ap94  124  I    5    y   1 y
                125  V    5    y   1 y
                126  B    5    y   1 y
                127  U   10    y   1 y

Field 910219: RA=14:14:48.7 DEC=+58:41:36 (2000) 2x3
============
   Night        fno Filt  Exp  PM? T ABCD       Notes
y94d091/01ap94  118  V   60    y   1 yy         No reductions: one very red
                119  I   60    y   1 yy         object noted just outside
y94d092/02ap94  114  B   60    n   1 y          IPN3 box: quick reductions
                115  U  100    n   1 y          against two stds on 1.0m I
y94d097/07ap94  123  I   15    n   2 y          and against 2 gsc *s on 1.0m V.
                124  I   30    n   2 yy         Note 1.5m frames(Tek2k).
                125  V   50    n   2
                126  R   45    n   2 y
y94d105/15ap94  138  U   10    ?   1
                139  B   10    ?   1
y94d106/16ap94  142  B   10    y   1
                143  U   20    y   1

Field 920501: RA=08:15:19.2 DEC=-32:44:54 (2000) 1x2
============
   Night        fno Filt  Exp  PM? T ABCD       Notes
y94d092/02ap94  107  V    1    n   1 y          No reductions.
                108  B    1    n   1 y
                109  U    5    n   1 y
                110  I    1    n   1 y
                111  V   30    n   1 yy
                112  U   50    n   1 y
                113  I   30    n   1 y
y94d106/16ap94  115  B   60    y   1 y
```

From fjv@nofs.navy.mil Wed Sep 7 12:11 PDT 1994
Date: Wed, 7 Sep 1994 12:02:05 -0700
From: fjv@nofs.navy.mil
To: khurley@sunspot.ssl.berkeley.edu

Hi Kevin:

Oops, you're absolutely right about your last e-mail message. I read it, promised myself I'd get to it the next day, and then forgot about it.

We have indeed done UBVI photometry on the 920325 field. It is reduced and largely analyzed, although we have quite looked at everything yet. As you probably know there is a bright (V ~ 9.0 star) fairly close to the center of the IPN^3 localization, but a bit off in the direction of the localization minor axis. This star is GSC 11681577 = BD +12 4975 = SAO 108569. The SAO givens a spectral type of F8. It's way too bright for us to have any data on it. It also screws up an area near the center of the box where we can't tell whats there.\

Otherwise, we find no objects of unusual colors in our 5.7' x 5.7' CCD field. There are a fair number of obvious galaxies, which is to be expected at Gal lat ~ -44 deg. Not much of a statement, but if you wish to use anything from this as a private comm, please feel free.

- Fred

PS - I have not been able to contact Ski or Shri.

```
From root Wed Sep  7 07:48  1994
Received: by space6.ssl.berkeley.edu (AIX  2.1 2/4.03)
          id AA06345; Wed, 7 Sep 94 07:48:09
R   ived: from TGRS.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
        id AA24196; Wed, 7 Sep 1994 07:59:00 +0800
Date: Wed, 7 Sep 1994 07:59:00 +0800
Message-Id: <9409071459.AA24196@sunspot.ssl.berkeley.edu>
Received: from [128.183.8.198] ([128.183.8.198]) by TGRS.GSFC.NASA.GOV with SMTP;
          Wed, 7 Sep 1994 11:04:04 -0400 (EDT)
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: KHURLEY@space6.ssl.berkeley.edu
From: cline@tgrs.gsfc.nasa.gov (T L Cline)
Subject: Ulysses 3-spacecraft event input data
Content-Length: 2811
Status: R

KEVIN:
Here is the 2000-equinox and Sun-time conversion table for the data you sent,
with accuracy to one second and/or light second.  I am messing around with a
few events, but still don't have Laros data, as you know, for the last few.
No surprises or major errors have been uncovered.  Question:  Anything new
or of breakthough significance from the conferences?  -  TLC
----------------
 1991  4 21 113.2608  23.4971         34040.305
           114.0119  23.3855 -0.135 34040.170  1378.693
 event
 1991  4 30 116.1729  22.9446         60378.427
           116.9185  22.8202 -0.142 60378.285  1488.041
    nt
   91  5  3 116.9858  22.7835         24143.572
           117.7299  22.6556 -0.144 24143.428  1518.173
 event
 1991  5 22 123.0661  21.4768         43556.351
           123.7977  21.3234 -0.149 43556.202  1737.717
 event
 1991  6 27 134.1165  18.6189         15334.664
           134.8236  18.4239 -0.124 15334.540  2103.168
 event
 1991  7 17 140.0115  16.8382         17265.301
           140.7054  16.6238 -0.089 17265.212  2272.113
 event
 1991  8 14 147.8796  14.2022         70976.031
           148.5569  13.9655 -0.016 70976.015  2454.177
 event
 1991 11  4 164.7180   7.7939         52695.431
           165.3682   7.5249  0.217 52695.648  2527.808
 event
 1991 11  9 165.2888   7.5681         11321.862
           165.9383   7.2984  0.224 11322.086  2514.175
 event
 1991 11 18 166.3305   7.1593         66112.979
           166.9789   6.8884  0.236 66113.215  2480.950
 event
 1991 11 26 166.9834   6.9076         43717.172
           167.6312   6.6360  0.241 43717.413  2450.974
 event
 1992  3 11 156.4982   9.1383          7038.075
           157.1561   8.8824 -0.055  7038.020  2213.119
 event
```

```
 1992  3 25 153.5174   9.3668         64261.613
            154.1779   9.1169 -0.118 64261.495  2260.354
 event
 1992  4  6 151.5806   9.4338         11128.491
            152.2426   9.1882 -0.162 11128.329  2318.519
 event
 1992  5  1 148.8008   9.1566         75040.670
            149.4640   8.9176 -0.234 75040.436  2497.670
 event
 1992  5 17 148.2303   8.7103         10549.835
            148.8928   8.4728 -0.257 10549.578  2619.504
 event
 1992  5 25 148.2227   8.3959         14411.494
            148.8844   8.1584 -0.261 14411.233  2684.313
 event
 1992  7 11 151.3011   5.5653         58453.215
            151.9542   5.3203 -0.197 58453.018  3009.551
 event
 1992  7 18 152.1018   5.0060         79135.445
            152.7533   4.7592 -0.175 79135.270  3043.801
 event
 1992  7 20 152.2398   4.9105          9807.222
            152.8911   4.6634 -0.171  9807.051  3048.967
 event
 1993  7  6 145.7214 -11.6627         20275.572
            146.3295 -11.8936 -0.171 20275.401  2546.013
-------------------------------------------------------

-- T. L. Cline ----- LHEAVX::CLINE
```

GRB	RA°	DEC°	DIMENSIONS	SOURCE
17 FEB 94	29	+4	6'x60'	IAUC 5940
25 APR 91	90	-22		A&A Suppl. 97, 75
09 NOV 91	111	-27	1'x6'	CoI calculation
01 MAY 92	124	-33	1'x2'	CoI calculation
11 MAR 92	132	-36	1'x4'	CoI calculation
22 MAY 91	138	-51	2'x2'	CoI calculation
18 NOV 91	167	-23	2'x10'	CoI calculation
31 JAN 93	184	-10	0.3'x96'	Hurley et al. (preprint)
27 JUN 91	199	-4		A&A Suppl. 97, 75
17 MAY 92	203	-17	2'x6'	CoI calculation
17 JUL 91	247	-58	1'x1'	CoI calculation
SGR 1900+14	285	+14		pos. of G42.8+0.6
06 APR 92	289	-58	2'x2'	CoI calculation
22 JAN 91	297	-71	2'x6'	CoI calculation
25 MAY 92	301	-43	2'x3'	CoI calculation
25 MAR 92	351	13	2'x7'	CoI calculation

From this list, approx. half will be selected for study (depending on season). SGR 1900+14 is one of the three *soft-gamma repeaters*. It has been tentatively associated with a supernova-remnant G42.8+0.6 (Hurley et al., preprint).

21. For SEST proposals, indicate:

a) Your preferred LST interval :

b) The period when the targets can be observed, taking into account the Sun constraint (50°) :

22. Justification of requested number of observing nights. Do not include any correction for expected meteorological conditions:

Eight fields are to be imaged in four colours, twice. The exposure time will be 10 min in B, and 5 in V, R, and Z. Hence, in total, 400 min integration.

CoIs are constantly revising the list of targets. Some reduction in the size of error boxes is possible; this may limit the need to image by mosaic.

23. Reasons why the observations cannot be performed in remote mode.

24. **Important notice:**
If the programme described in this application requires excellent seeing or photometric conditions or low water vapour content, **a back-up programme using the same instrumentation** has to be described on a separate page.

From holger@astro.ku.dk Thu Jul 7 00:49 PDT 1994
Date: Thu, 7 Jul 94 09:51:25 +0200
From: holger@astro.ku.dk (Holger Pedersen)
To: boer@cesr.cnes.fr, hpedersen@nbivax.nbi.dk,
khurley@sunspot.ssl.berkeley.edu
Subject: NTT_observing_time
Content-Type: text
Content-Length: 1062

Kevin, Michel:

I am pleased to report verbal information from ESO that we have been granted one night of observing time on the 3.5-m New Technology Telescope, in March 1995, for the execution of the observing program mailed to you earlier. The observations are to be conducted using remote control, from Garching. I hope that you can join me in Garching.

Similar observations will be done at the 1.54-m Danish telescope, La Silla, August 5 - 12, 1994. If there is any update to Kevin's list of positions, please let me know.

Best regards

Holger

July 7, 1994

Holger Pedersen	e-mail	holger@astro.ku.dk
Copenhagen University Observatory	phone	(45) 3532 3966
Oster Voldgade 3	-	(45) 3532 3999 (secretary)
DK 1350 Copenhagen	-	(45) 3888 6779 (private)
Denmark	fax	(45) 3532 3989

From sammy@astro.ucla.edu Thu Dec 5 10:39 PST 1996
From: sammy@astro.ucla.edu
To: khurley@sunspot.ssl.berkeley.edu (Kevin Hurley)
Subject: Re: IPN3
Date: Thu, 05 Dec 96 10:39:35 -0800
X-Mts: smtp

Good idea about doing a final check. Here is my target list:

910122✓
910219✓
911118 Re-do - JL's + my PVO times disagree by 1.4s ✓
920325✓
920406✓
920501✓
920525✓
920711✓
920720✓
920723 ✓

I believe that 920406 was further reduced. You sent me the new, smaller box for that, but I decided to stick with the larger box because I want a consistent sample of boxes and the others weren't further reduced.

I'm glad I asked you about the aberration - I never would have thought of that!

Sammy

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SPACE PHYSICS RESEARCH GROUP
SPACE SCIENCES LABORATORY
BERKELEY, CALIFORNIA 94720

April 25, 1994

Dr. R. Hudec
Ondrejov Observatory
Ondrejov 25165
Czech Republic

Dear Rene,

Enclosed are print-outs and plots of the small error boxes above declination -20°. These are 19 Feb 91, 30 Apr 91, 04 Nov 91, 26 Nov 91, 25 Mar 92, 11 Jul 92, 20 Jul 92, and 23 Jul 92. They are still preliminary, but I do not expect them to change substantially. For each burst, there are two plots. Usually one of them covers a relatively large area, while the other zooms in on the error box. Please note that in these plots, right ascension does not go in the usual direction, but rather, increases from left to right. In the print-outs, you will find the coordinates of all the intersections in the plots, which define the error box. There are two intersections printed out, so just reject the one which is not appropriate.

Yours truly,

Kevin

Kevin Hurley

From root Wed Apr 20 00:44 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA18144; Wed, 20 Apr 94 00:43:48
Received: from asu.cas.cz ([147.231.24.1]) by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
id AA25627; Wed, 20 Apr 1994 00:49:34 +0800
Received: by asu.cas.cz (4.1/SMI-4.2)
id AA14008; Wed, 20 Apr 94 09:51:40 +0200
Date: Wed, 20 Apr 94 09:51:40 +0200
From: rhudec@asu.cas.cz (Rene HUDEC)
Message-Id: <9404200751.AA14008@asu.cas.cz>
To: khurley@space6.ssl.berkeley.edu
Subject: IPN3 positions
Content-Length: 789
Status: R

Dear Kevin,
we have started the CCD imaging of northern (above -20 deg declination) IPN3 positions from your e-mail list from 1993. We use our 65 cm CCD telescope with FOV of 10 x 13 It would be helpful to known the exact position of your IPN error boxes i.e the corresponding corners for the evaluation of obtained frames. Could you perhaps help us in this direction? The most convenient for us would be to re ceive the corresponding plots if possible. Thank you.
Best regards
Rene Hudec
NB With the above mentuioned telescope, we achieve typically lim mag 21 in unfiltered 2 min exposure and correspondingly deeper in longer exposures. One of our ideas is to get the UBVRI photometry on longer-term basis and to look for possible variability.

19 Feb 91 ✓
30 Apr 91 ✓
04 Nov 91 ✓
26 Nov 91 ✓
25 Mar 92 ✓
11 Jul 92 ✓
20 Jul 92 ✓
23 Jul 92

From root Fri Mar 11 15:16 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA05898; Fri, 11 Mar 94 15:16:33
Received: from sun.nofs.navy.mil (SUN-GW.NOFS.NAVY.MIL) by sunspot.ssl.berkeley.edu (5.0/SMI-S
        id AA21943; Fri, 11 Mar 1994 14:24:00 +0800
Received: by sun.nofs.navy.mil (4.1/SMI-4.1)
        id AA05916; Fri, 11 Mar 94 15:22:55-070
Date: Fri, 11 Mar 94 15:22:55-070
From: cbl@nofs.navy.mil (Chris Luginbuhl)
Message-Id: <9403112222.AA05916@sun.nofs.navy.mil>
To: khurley@space6.ssl.berkeley.edu
Subject: IPN3 Localizations
Cc: cbl@nofs.navy.mil, fjv@nofs.navy.mil
Content-Length: 1417
Status: RO

Hi Kevin,

Fred Vrba and I are continuing in our efforts to get UBVI photometry of your the IPN3 localizations. In the coming month we hope to observe the following six fields: per your recommendation in the June '93 emailing with preliminary positions, we're checking with you for any updates on the positions (# from June 93 list):

#	DATE
2	19 FEB 1991
6	04 NOV 1991
7	09 NOV 1991
13	01 MAY 1992
14	17 MAY 1992
17	20 JUL 1992

Also, we have already obtained UBVI frames of the following fields:

#	DATE
11	25 MAR 1992
16	11 JUL 1992
18	23 JUL 1992

Updates for these would also be helpful, though it might have been smarter to check on this *before* observations!

In addition to any improvements in RA/DEC of the box centers, we could also use the error boxes for these at some time, to compare more carefully with any interesting objects we may find. We already have an error box for the 11 July 1992 event (FAXed by you on 7 Sept '93).

For your information, our observations to date have turned up one or two interesting objects (one very faint blue stellar object just outside the 11 July 92 error box, another not too faint galaxy/galaxy cluster), but we'll wait on further proclamations until we know if the boxes have moved!

Thanks!

Chris Luginbuhl
Fred Vrba

From root Thu Feb 3 13:55 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00852; Thu, 3 Feb 94 13:55:12
Received: from SSTDP2.LANL.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
id AA13978; Thu, 3 Feb 1994 12:59:12 +0800
Date: Thu, 3 Feb 1994 14:00:37 -0700 (MST)
From: 046369@SSTDP2.LANL.GOV
To: KHURLEY@space6.ssl.berkeley.edu
Message-Id: <940203140037.23c05074@SSTDP2.LANL.GOV>
Subject: DMSP OBSERVATIONS OF GRO GRB
Content-Length: 2739
Status: R

FROM: SMTP%"TERRELL@ESSDP2.LANL.GOV" (ESSDP2::TERRELL) (JAMES TERRELL 94/02/03)
TO: SSL::KOUVELIOTOU AND GIBSON::COLE (CHRYSSA KOUVELIOTOU AND STAYCE COLE)
CC: SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU" (KEVIN HURLEY)
SUBJ: DMSP OBSERVATIONS OF GRO GRB

Chryssa and Stayce:
Thanks very much for the listing of strong Batse bursts sent to me 11/1/93.
I have now managed to check all of them against DMSP data, and find that
many of them were also detected by DMSP8,9,10, or 11. Probably the higher percent
of detections in recent data is due to more extraction of full data. In many
cases such added effort would not be necessary if source direction
(and consequent obscuration of some DMSP satellites) were known to me.
I would appreciate data on more strong events. Here is the present list:

NOTES:
NA: Not apparent in 20-second averaged data (extracting the 2-sec data is
a more time-consuming task, not undertaken in every case).
NA?: Some slight indication of a peak in 20-second averaged data.
SA: South Atlantic Anomaly, obscuring data with high background rates.
SR: South Radiation Belt background.
NR: North Radiation Belt background.
ND: No data for this time.
YES: Burst definitely detected by one or more DMSP satellites (8,9,10,11).
NO: No evidence of a peak in 2-sec data. (NO/OBSC: Obscured by Earth)

DATE	UT	DMSP
910421	33245	8NO 9SR 10NR
910627	16159	8NA 9NR 10ND
910629	71750	8NA 9SR 10NA
910703	18225	8NA 9NA? 10SR
910717	16386	8NA 9SA 10SR
910718	76051	8NA 9SA 10SA
910802	2718	ND
910814	69275	ND
911024	76208	ND
911104	54283	YES--54286 PEAK
911109	12459	8NO 9NR 10NO
911118	68260	ND
911119	23343	YES--23342
911126	46129	8SR 9SR 10NO
911127	15730	YES--15739
911202	73731	YES--73733
911209	66959	8SR 9SR 10NR 11ND
920226	29730	8SA 9NA? 10SA 11SA
920229	69769	8SR 9ND 10NA 11NA
920311	8246	YES--8431
920315	15569	8NA 9NR 10NA 11NA
920325	62258	YES--62256
920404	47506	8NA 10NA? 11NR
920406	9855	8NO/OBSC 10SR 11SR/OBSC
920414	84163	NA
920517	11877	YES--11883
920525	12423	YES--12427

920622	25504	8SA 10NR 11SA
920627	46956	NA
920711	53140	YES--58157
920718	77563	8NA 10SA 11NA
920720	11524	8NA/OBSC 10NA/OBSC 11SR
920824	39183	YES--39186
920902	1736	YES--1743
921009	24070	YES--24073
921022	55259	8ND 10NA 11NA
921123	22711	YES--22727
921123	46583	YES--46542
921207	57647	YES--57649
921209	41738	8NR 10NA 11NR
930106	56259	YES--56260
930110	6698	8NA 10NR 11NA
930120	84700	YES--84779
930131	68231	YES--68231
930201	60115	YES--60129
930309	11269	NA
930329	11365	8NA 10SR 11NA
930405	32089	YES--32105
930406	26185	8NA 10NR 11NA
930428	04032	8NA 1ONA 11SR
930506	53571	YES--53578
930506	65631	NA

FAXCOVER

DANISH SPACE RESEARCH INSTITUTE
GL. LUNDTOFTEVEJ 7
DK-2800 LYNGBY
DENMARK

PHONE: +45 42 88 22 77 TELEFAX: +45 45 93 02 83 TELEX: 37198 dsrsu dk

DATE: Nov 23, 1993 Page 1 of 2

From: Alberto J. CASTRO-TIRADO

TO : Kevin HURLEY

FAX no
Name : 510 643 8640

Dear Kevin.

Thank you for you answer. Enclosed I send you the list of CONFIRMED 69 GRBs plus 14 CANDIDATES. Now you may fill the WATCH response in the Master GRB list for WATCH-GRANAT in the period 1/1/90 – 25/9/92.

GRB 920321 (at 13:00:44) is a ≤ 1 s burst in WATCH data, so I think it could be the same event seen by Ulysses. We do not have better time resolution.

The other repeater is 900126/920311. The two error boxes are separated by 1°, at $\sim \alpha = 08\ 46$ $\delta = -38$ (1450.0)

Kind regards, Alberto

R=93%

First GRANAT/WATCH Gamma-Ray Burst Catalogue

[illegible] (yymmdd)	U.T. (hh:mm:ss)
900118	17:40:48
900120	20:37:33
900123a	01:42:13
900123b	18:44:17
900126	18:04:27
900222	11:56:35
900308	09:32:02
900327	10:24:28
900404	17:54:36
900413	10:11:21
900708a	11:30:21
900708b	18:44:53
900901	01:35:47
900925	20:25:22
900929	01:49:18
901009	00:15:46
901015b	08:44:48
901027	04:21:07
901112	14:57:37
901116	01:42:10
901119	18:08:32
901219	21:52:43
910117	00:57:51
910122	15:13:40
910202	20:57:35
910219	11:45:25
910310	13:02:06
910312	12:43:09
910425	00:37:52
910517	05:02:20
910627	04:29:24
910717a	04:44:07
910717b	13:07:25
910721	19:30:12
910723	14:06:20
910814	19:14:31
910815	14:24:32
910817	17:09:26
910818	13:44:46
910821	10:33:36
910901	05:24:14
910925	03:35:36
910927	23:26:53
911016	11:03:31
911018	05:33:00
911022	04:14:58
911202	20:28:51
911205	23:04:41
911209	18:36:00
920105	17:41:17
920116	18:30:35
920130	00:29:07
920302	06:16:54
920307	00:18:06
920311	02:20:20
920325	17:17:37
920615	14:24:5[illegible]
920714	13:04:52
920718a	14:41:16
920718b	21:32:47
920720	05:53:04
920723a	01:00:44
920723b	20:03:11
920814	06:10:25
920902	00:29:04
920903a	01:36:15
920903b	23:28:52
920925a	19:30:44
920925b	20:45:14
920925c	22:46:14

CANDIDATES

900415	06:20:58
900603	06:20:50
900616	03:56:50
900618	23:12:22
900625	22:04:16
900628	11:17:53
900815	11:35:12
900914	04:46:40
901015a	02:42:16
910408	22:24:18
910414	07:38:27
910816	01:57:40
920314	05:48:32
920721	13:00:49
920721	06:17:25

From fjv@nofs.navy.mil Thu Oct 7 16:59:42 1993
Date: Thu, 7 Oct 1993 16:57:44 -0700
From: fjv@nofs.navy.mil
To: khurley@sunspot.ssl.berkeley.edu
Content-Length: 1939

Hi Kevin:

Several things to tell/ask you:

First, our OT/QSO paper was finally accepted by ApJ. It will appear in the 20 March, 1994 issue.

Second, we thank you for the localization box for GBS920711. We indeed have a very blue object at V = 21.8 sitting on the very edge of the error box more or less dead-centered on the long axis. We will try to get an MMT spectrum of it before it disappears for the season in another month or so.

Third, we now have obtained deep CCD photometry for the locaization positions you gave us for GRB920723 and GRB920325. Reductions of the data are in progress. Would you be kind enough to send us the localization error boxes for those as you did for the earlier one?

Finally, I would like to ask you to make a brief presentation, along the lines you suggested, at the OT discussion session Dieter and I are organizing in Huntsville. It will now be held on Wednesday evening between 8-9 PM. While this is a more convenient time for most people, we won't have much time for extended discussions. I really want to keep scientific results out of the discussion, unless they dramatically affect strategies. I am more interested in policies, prospects, and strategies. Gerry Fishman has volunteered to make a short presentation on official policy for the distribution of BATSE positions. I would like for you to talk about small error boxes. My thought is to start the session with 2 (or at most 3) short 5-7 minute talks (you and Gerry for sure). These topics are of broad interest and will be a good way to get discussion started. Can I count on you for a 5-7 min talk? If so, can you give me a working title since I would like to send out a final e-mailing this weekend describing what the form of the discussion will be. Thanks very much in advance and I'm looking forward to seeing you in Huntsville.

Best Wishes, Fred Vrba

Dezalay -> KH 7/93

DATE	U.T.	Nr UGB	Event Nature
1992-01-22	09:19:43.748	395-a	Solar Flare
1992-01-25	08:57:27.156	397-a	GRB
1992-01-26	15:27:47.181	398-a	Solar Flare
1992-01-30	09:36:04.439	400-a	Solar Flare
1992-02-05	13:16:18.413	401-a	Solar Flare
1992-02-06	18:55:30.506	402-a	Solar Flare
1992-02-07	11:54:15.583	402-b	Solar Particles
1992-02-07	13:57:21.179	402-c	Solar Particles
1992-02-08	03:03:12.168	403-a	Unknown
1992-02-08	~03:15	403-b	Solar Flare ?
1992-02-10	09:53:52.511	404-a	GRB
1992-02-11	04:22:31.263	405-a	Solar Flare
1992-02-11	20:56:14.388	406-a	Unknown
1992-02-11	21:11:06.397	406-b	Unknown
1992-02-12	05:28:23.479	406-c	Unknown
1992-02-14	23:07:22.311	408-a	Solar Flare
1992-02-15	21:29:26.098	409-a	Solar Flare
1992-02-16	12:32:56.671	409-b	Solar Flare
1992-02-18	18:44:19.178	411-a	GRB
1992-02-20	04:20:06.490	412-a	Unknown
1992-02-29	19:21:17.526	415-a	GRB
1992-03-03	10:52:09.629	417-a	Unknown
1992-03-03	11:43:17.434	417-b	Unknown
1992-03-03	~11:56	417-c	Unknown
1992-03-07	16:44:00.135	420-a	Solar Particles
1992-03-11	02:20:27.297	422-a	GRB
1992-03-11	12:23:20.018	422-b	Solar Flare ?
1992-03-25	17:17:36.626	430-a	GRB
1992-04-04	22:37:28.456	434-a	GRB
1992-04-05	07:41:37.612	434-b	GRB
1992-04-13	11:58:56.617	440-a	Unknown
1992-04-14	23:22:42.474	441-a	GRB
1992-04-20	02:12:27.422	444-a	GRB
1992-04-24	19:18:18.006	447-a	Solar Flare
1992-05-19	16:28:38.427	449-a	GRB
1992-06-22	07:05:04.644	468-a	GRB

From root Wed May 26 11:13 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA03824; Wed, 26 May 93 11:13:30
Received: from TGRS.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA26152; Wed, 26 May 93 11:13:36 PDT
Date: Wed, 26 May 93 11:13:36 PDT
Message-Id: <9305261813.AA26152@sunspot.ssl.berkeley.edu>
Received: from [128.183.8.198] ([128.183.8.198]) by TGRS.GSFC.NASA.GOV with SMTP;
          Wed, 26 May 1993 14:16:34 -0400 (EDT)
To: SCHNEE@cygnus.ucsc.edu
From: cline@tgrs.gsfc.nasa.gov (T L Cline)
Subject: Four event source locations
Cc: KHURLEY@space6.ssl.berkeley.edu
Status: RO

Dear Richard Schnee:
I did, just now, get your note. Regarding the four events of interest,
we can give you directional improvements on three of them at this time,
as listed below. However, I will have to do some work on the event of
91 Apr 21 (this one has timing from three spacecraft to be sure, but
only extremely poor quality data from one detector, so the true source
locus will be a long, narrow box, not like the others). The analyses
of the three events listed are presently in the intermediate stages, and
may yet be improved before we will define the results to be 'final.'
As you see, the 92-Jul-20 IAU source location was in systematic error,
outside the limits quoted in the IAU telegram. This location is correct.
These three source fields are now fairly small.
1992-Jul-20:
RA = 202.34 +/- 0.1 degrees, Dec = +37.24 +/- 0.1 degrees (Equinox 2000).
1992-Mar-25:
RA = 350.58 +/- 0.1 degrees, Dec = +13.05 +/- 0.1 degrees (Equinox 2000).
1991-Nov-04:
RA = 212.20 +/- 0.2 degrees, Dec = +35.35 +/- 0.2 degrees (Equinox 2000).
1991-Apr-21:
(?) - I will try to get this to you tomorrow.
Thomas L. Cline
-- T. L. Cline ----- LHEAVX::CLINE

From root Fri May 28 12:27 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA03869; Fri, 28 May 93 12:27:08
Received: from TGRS.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA03530; Fri, 28 May 93 12:27:14 PDT
Date: Fri, 28 May 93 12:27:14 PDT
Message-Id: <9305281927.AA03530@sunspot.ssl.berkeley.edu>
Received: from [128.183.8.198] ([128.183.8.198]) by TGRS.GSFC.NASA.GOV with SMTP;
          Fri, 28 May 1993 15:30:24 -0400 (EDT)
To: Schnee@cygnus.ucsc.edu
From: cline@tgrs.gsfc.nasa.gov (T L Cline)
Subject: P.S. on source locations
Cc: KHURLEY@space6.ssl.berkeley.edu
Status: RO

Richard Schnee:
I believe that I sent you all the updated (but unfinalized) analyses that you requested, except for 91 Apr 21. I really don't like the looks of this one and would like to work on it some more - if you think that it's worth it. Let me know if it should be abandoned, or if there is any promise in this one. The truly preliminary source locus is unavoidably long, from about RA = 271.0, dec = +26.5, to about RA = 268.5, dec = +25.7, with about a 0.1-degree half width on this annular segment. And I don't guarantee that; it's a question of whether that is close enough to your direction to warrant more work. - Another thing:
Kevin Hurley has put you on his mailing list for preliminary notifications. He will send, or has recently sent, to you a description of what that means.
Thomas L. Cline
-- T. L. Cline ----- LHEAVX::CLINE

From jcg@mpe.dnet.nasa.gov Tue Jan 19 12:53:47 1993
Date: Tue, 19 Jan 93 15:58:43 -0500
From: jcg@mpe.dnet.nasa.gov
To: "khurley@space6.ssl.berkeley.edu"@east.dnet.nasa.gov
Subject: first error boxes
Content-Length: 1723

Dear Kevin,

I have completed the first 5 error boxes. So far there is no source within an error box. Details are given below. Note, that for GRB 920501 (your TOO target) I find really nothing, i.e. even no 1 sigma fluctuation (which is in contrast to what Michel thinks to see).
For the case of GRB 11_MAR_92 I just sent you a fax containing an image together with the detections in this field. The numbers on the circles are the likelihood values for the existence of a point source (3.1 = 2 sigma, 5.9 = 3 sigma), so all three sources along the error box are strong sources. The distance of the pair and the lonely source is about 1 degree, so in principle they would fit into a PSPC FOV. Note that these sources have quit different spectra: the lonely one is rather soft, the other two hard.

I hope to analyze the remaining 10 fields within the next days. The extraction of the data out of the archive took a little longer, since the processing (including the FITS conversion which is needed for the extraction) was stopped over the two weeks holiday period.

Sincerely yours
Jochen

No.	GB_NAME	size of long axis	comments
1	19_FEB_91	10'	1sigma fluctuation (soft) 1' outside of box
2	21_APR_91		
3	22_MAY_91	35'	3 2.5sigma fluctuations in 4'-10' distance new SNR 20' away
4	17_JUL_91		
5	04_NOV_91		
6	09_NOV_91		
7	18_NOV_91		
8	26_NOV_91		
9	02_DEC_91		
10	11_MAR_92	2 degree	3 sources along the long axis in 5'-10' distance
11	25_MAR_92		
12	06_APR_92	30'	nothing
13	01_MAY_92	8'	nothing
14	17_MAY_92		
15	25_MAY_92		

From jcg@mpe ıasa.gov Mon Jan 25 02:37:22 1993
Date: Mon, 25 93 05:35:57 -0500
From: jcg@mpe.dnet.nasa.gov
To: "khurley@space6.ssl.berkeley.edu"@east.dnet.nasa.gov
Subject: next 5 error boxes
Content-Length: 1639

Dear Kevin,

here are the next 5 error boxes. There is only one interesting case, namely GRB 920325. The position of the source is empty on the Palomar plates; the next star (about 17th mag.) is in 1' distance. Normally, the error in the X-ray positions are of the order of 20-30 arcsec. Though this X-ray source is quite faint, I would think that this 1' distant star is too far away from the X-ray position to be the optical counterpart.
The coordinates of the X-ray source are (please, do not circulate):

alpha (2000.0) = 23h 25m 10.7s
delta (2000.0) = 13d 20' 10"

The PSPC countrate is 0.023 cts/sec, and the survey exposure time was 450 sec.
If you think of proposing this target for AO4 then let me know.

Sincerely yours
Jochen

No.	GB_NAME	size of long axis	comments
1	19_FEB_91	10'	1sigma fluctuation (soft) 1' outside of box
2	21_APR_91		
3	22_MAY_91	35'	3 2.5sigma fluctuations in 4'-10' distance new SNR 20' away
4	17_JUL_91		
5	04_NOV_91	30'	3 2-3sigma fluct. around box in 2'-5' distance
6	09_NOV_91	60'	2sigma and 1sigma fluct. in 8' and 5' distance
7	18_NOV_91		
8	26_NOV_91		
9	02_DEC_91	22'	2sigma fluct. 2' off the box
10	11_MAR_92	2 degree	3 sources along the long axis in 5'-10' distance
11	25_MAR_92	45'	5sigma source 2' off the box
12	06_APR_92	30'	nothing
13	01_MAY_92	8'	nothing
14	17_MAY_92	22'	nothing
15	25_MAY_92		

From jcg@mpe.dnet.nasa.gov Mon Jan 25 10:11:55 1993
Date: Mon, 25 Jan 93 13:10:31 -0500
From: jcg@mpe.dnet.nasa.gov
To: "khurley@space6.ssl.berkeley.edu"@east.dnet.nasa.gov
Subject: remaining 5 error boxes
Content-Length: 1433

Dear Kevin,

here is the final list of all 15 error boxes. There is no other interesting feature in addition to GRB 920325 (see last report). For the large error boxes one expects sources to be inside the error box.

M. Sommer told me that you possibly will visit MPE next week. I would be glad to show you the results and discuss further details.

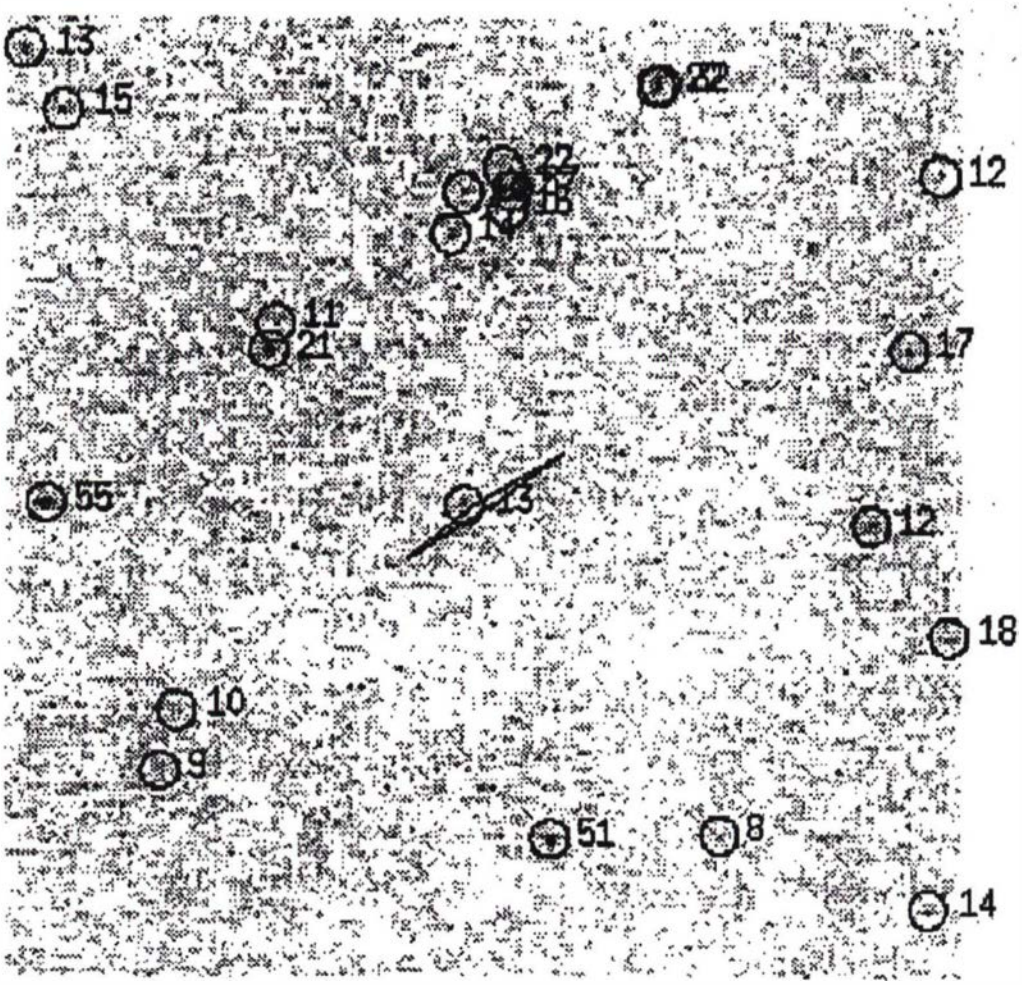
Best regards
Jochen

No.	GB_NAME	size of long axis	comments
1	19_FEB_91	10'	1sigma fluctuation (soft) 1' outside of box
2	21_APR_91	2.7 deg.	7sigma source 7' outside of box
3	22_MAY_91	35'	3 2.5sigma fluctuations in 4'-10' distance new SNR 20' away
4	17_JUL_91	2.6 deg.	2.5sigma fluctuation in box
5	04_NOV_91	30'	3 2-3sigma fluct. around box in 2'-5' distance
6	09_NOV_91	60'	2sigma and 1sigma fluct. in 8' and 5' distance
7	18_NOV_91	38'	bright source 13' outside of box
8	26_NOV_91	47'	2.5sigma fluctuation in box
9	02_DEC_91	22'	2sigma fluct. 2' off the box
10	11_MAR_92	2 deg	3 sources along the long axis in 5'-10' distance
11	25_MAR_92	45'	5sigma source 2' off the box
12	06_APR_92	30'	nothing
13	01_MAY_92	8'	nothing
14	17_MAY_92	22'	nothing
15	25_MAY_92	8'	2sigma fluctuation at box boundary

To: K. Hurley
Univ. of California, Berkeley
FAX (510) 643 8640
from: J. Greiner
1 p.

g25_mar_92

mps_sel.tbl

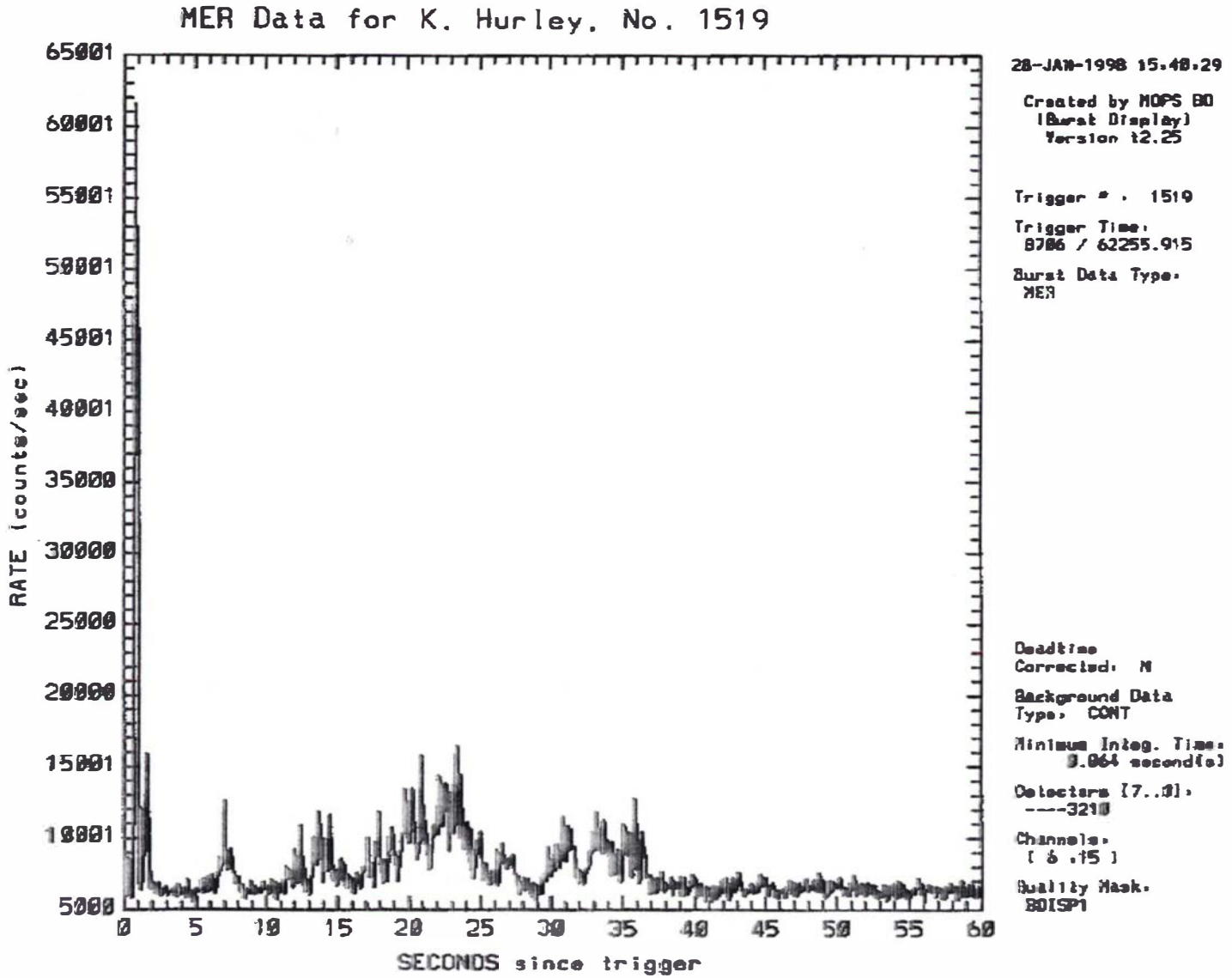


From khurley@space6.ssl.berkeley.edu Wed Apr 14 14:36:27 1993
Date: Wed, 14 Apr 93 13:29:07
From: khurley@space6.ssl.berkeley.edu
Content-Length: 403

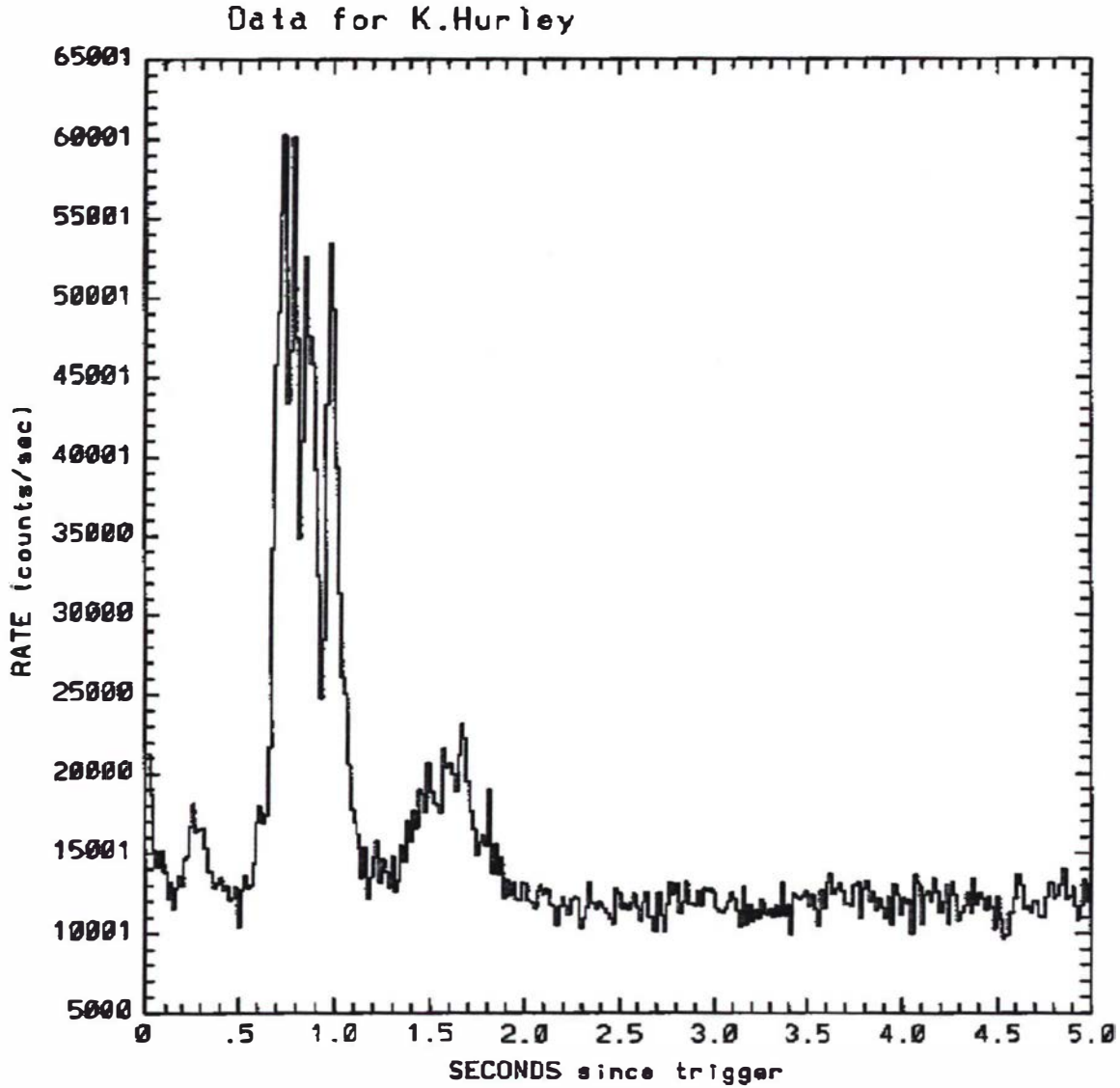
Dear Tom,

I've sent you my new version of the March 25 1992 error box by fax and e-mail. Please check it out and pass it along to Dave Palmer for his VLA run. The only real difference between this and the previous run is the GRO ephemeris, which has a negligible effect. To be safe, I've taken pretty large timing errors (+/- 300 ms) which can probably be shrunk by a factor of two or three.

Kevin


MER Data for K. Hurley, No. 1519
RATE (counts/sec)
65001
60001
55001
50001
45001
40001
35000
30000
25000
20000
15001
10001
5000
0
5
10
15
20
25
30
35
40
45
50
55
60
SECONDS since trigger
28-JAN-1998 15:48:29
Created by MOPS BD
(Burst Display)
Version 2.25
Trigger # : 1519
Trigger Time:
8786 / 62255.915
Burst Data Type:
MER
Deadtime
Corrected: N
Background Data
Type: CONT
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
----3210
Channels:
[0 ,15]
Quality Mask:
BDISP1

PAGE.01
MAY 17 '92 17:38 BATSE 0 - G



17-MAY-1992 18.33.19

Created by MOPS BD
(Burst Display)
Version 2.11

Trigger # : 1519

Trigger Time:
8796 / 62257.981 - 2.042 =

Burst Data Type:
MER

62255.939

3B cat. gives .922
Since this is MER data, use a systematic error of 30 ms

only 16 ms data available

Deadtime Corrected: N

Background Data Type: CONT

Minimum Integ. Time:
0.016 second(s)

Detectors [7..0]:
00001111

Channels:
(0. 6)

Quality Mask:
BDISP0

05-17-92 04:37PM P001 #36
544 5800
R=94%

JLA 10/19/92

Date	Heure Phebus		Sigma	Heure Ulysse	Seance	Cmax Phebus	Cmax Ulysse	Loc. α, δ	Comment.
1991-09-01	19467				327	145			faible
1991-09-07	3910	I		2066	330	177	90		
1991-10-16	39695				355	213			HUS : lim sup
1991-10-18	19936	I		21720	356	553	375		
1991-10-25	77116				362	107			faible
1991-11-19	61954		gca		367	131			faible
1991-12-22	54010	I		53610	381	277	179		
1992-01-10	33540	I	ac	34298	386		151		bdf Phebus faux
1992-01-25	32247		ac/gca		397				HUS : lim sup
1992-02-10	35633		ac		404				HUS : no data
1992-02-18	67459				411				HUS : manque données
1992-02-29	69678				415				HUS : lim sup
1992-03-11	8427	I	ac/gca	7045	422		505	131.6 -36.1	loc Network
1992-03-25	62257	I	ac/gca	64262	430		154		
1992-04-04	81448	I		79239	434		212		
1992-04-05	27698	I	ac	28498	434		91		
1992-04-14	84162	I	gca	84257	441		171		
1992-04-20	7947	I		7573	444		112		
1992-05-19	59421	I		61011	449		268		
1992-06-22	25505	I	ac/gca	23347	468		408		
1992-06-28	76453				473				HUS : no data
1992-07-14	47072	I	ac/gca	46282	482		221	219.9 +5.4	loc Sigma gca
1992-07-20	11529	I	ac/gca	9808	486		227		
1992-07-23	72189	I	ac/gca	73964	489		1084	285.8 +26.7	loc Sigma gca

From SCHAEFER@tgrs.gsfc.nasa.gov Thu Jan 14 07:37:15 1993
Date: Thu, 14 Jan 1993 10:35:58 -0500 (EST)
From: SCHAEFER@tgrs.gsfc.nasa.gov
Subject: Preferred positions
To: khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: SMTP%"khurley@space6.ssl.berkeley.edu"
Content-Length: 1975

Hi;

I guess that as I write this you are downtown presenting a talk! Sorry I'm not there, but the short notice on observing time is rushing many things.

My earlier note gave the error boxes that could be observed from CTIO and the second list was for the VLA. For CTIO, the preferred boxes are those south of the equator and roughly near RA=10hr. So I would suggest selecting from 22 May 1991, 9 Nov 1991, 18 Nov 1991, 11 March 1992, and 1 May 1992. I would feel comfortable with 4 boxes, and 2 boxes will lead to wasted telescope time. For VLA, the preferred boxes are north of -20 degrees and between RA=3hr and 16hr. Our long observing time implies that we need many boxes well spread out in RA over that range. We wouuld strongly prefer the smallest boxes. Our strong preferences are for bursts 911104, 920720, and 911109. These three boxes are the only ones with long periods of extended visibility, so that others may only be looked at for short periods.

We are in the A-n-B array which has a FOV with reasonable sensitivity of roughly 1' in diameter. David has recently discovered that we could use a different mode (spectroscopy mode, with smaller bandwidths but worse sensitivities) that can get to diameters of 5'. The trouble here is the reduced sensitivity. This means that any large (around 5') boxes that we look at should be for brief 'snapshots'. That is, increasing the observing time from 20 to 40 minutes has little impact on our time allocation, so that the deeply-searched boxes lose little, while the large boxes do not loose sensitivity. But the boxes we can stare at for a long time must be small (<1') or else we loose big (we loose big either by mosaicing or going to spectroscopy mode). Also, please be sure to send along your best position (of course including center and edge positions) for all the bursts. But concentrate on the three deep look boxes 911104, 920720, and 911109.

Cheers,
Brad & David

Schmidling's corrections and assessment of other timing pulses, as of 1/93

CTIO

22 May 91 (142) 4350 s 12:05 No RT data +.007 No other pulses

~~9~~ Nov 91 (313) 11209 s (grazing inc.) } No pulses

~~TX~~ [illegible] 91 (322) 66100 [illegible] (encounters on BATSE) }

11 Mar 92 (071) 0700 00:11:40 (grazing inc) -.002 No other pulses

---

VLA

~~V~~ Nov 4 91 No pulse -.015

~~V~~ Nov 9 91 +.024

~~V~~ Nov 18 91 +.005

May 17 92 (138) No pulses

Jul [illegible] 92 (193) David knows -.004

July 20 92 (202) No pulses -.021

~~May~~ 25 92 (085) 12.51 No other pulses

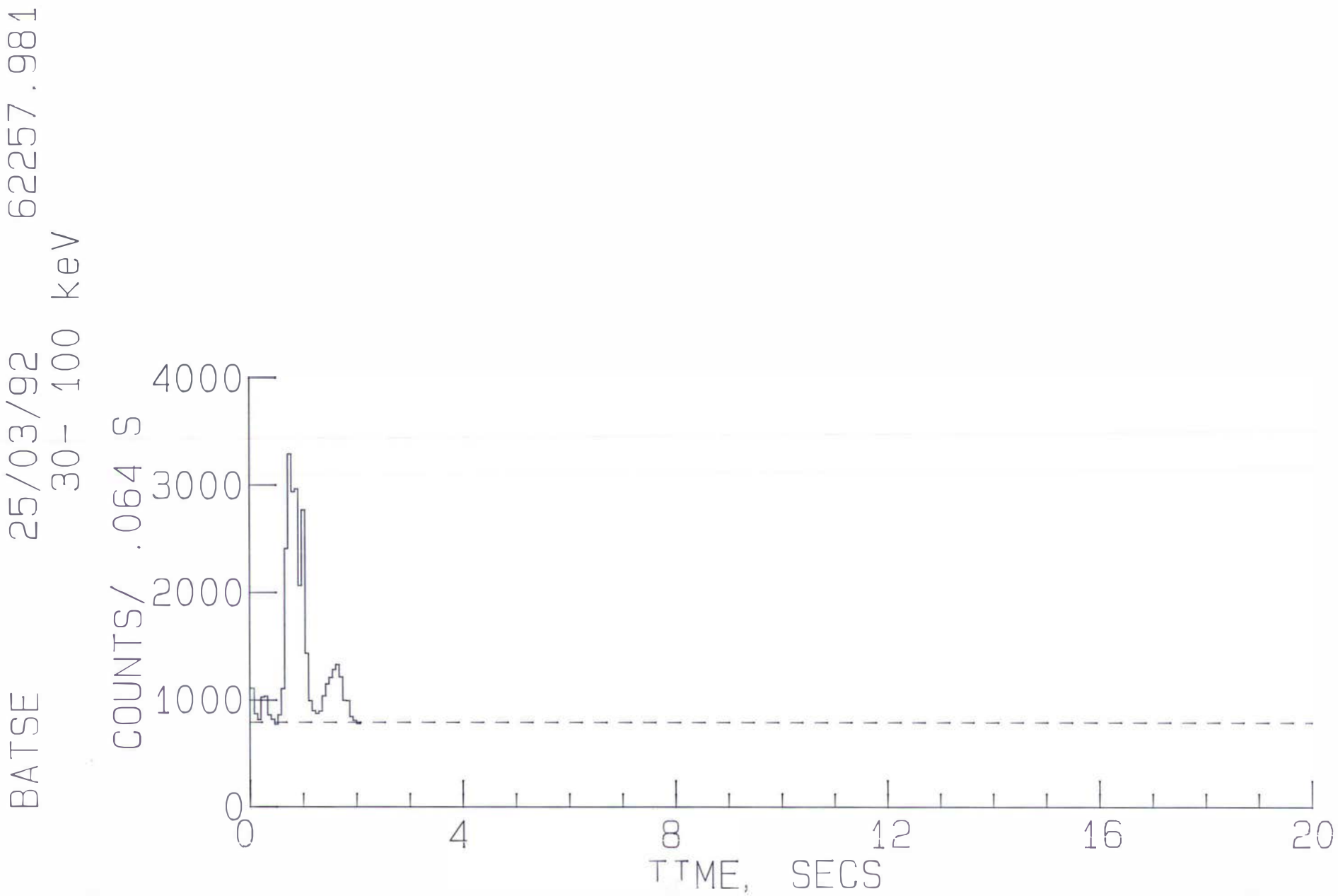
~~May~~ 1 92 (122) No pulse

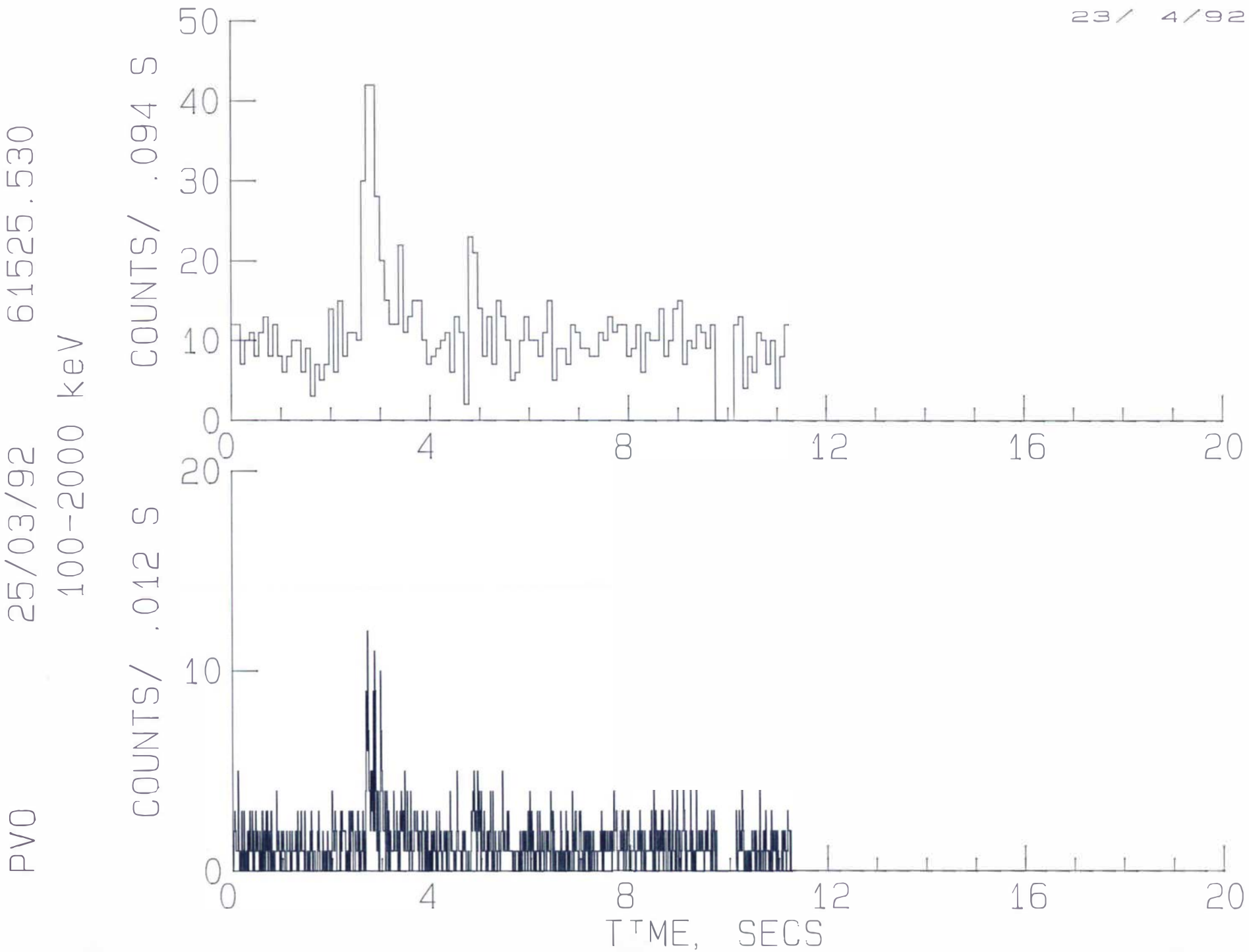
From @UCBSP.SSL.BERKELEY.EDU:BOER@OBSHPA.SPAN.NASA.GOV Fri Sep 25 05:29:38 1992
Date: Fri 25 Sep 92 05:31:31-PST
From: $C <BOER@OBSHPA.SPAN.NASA.GOV>
To: KHURLEY@sunspot.ssl.berkeley.edu
Subject: [Resent-MM Mail] GRB 920325
Content-Length: 881

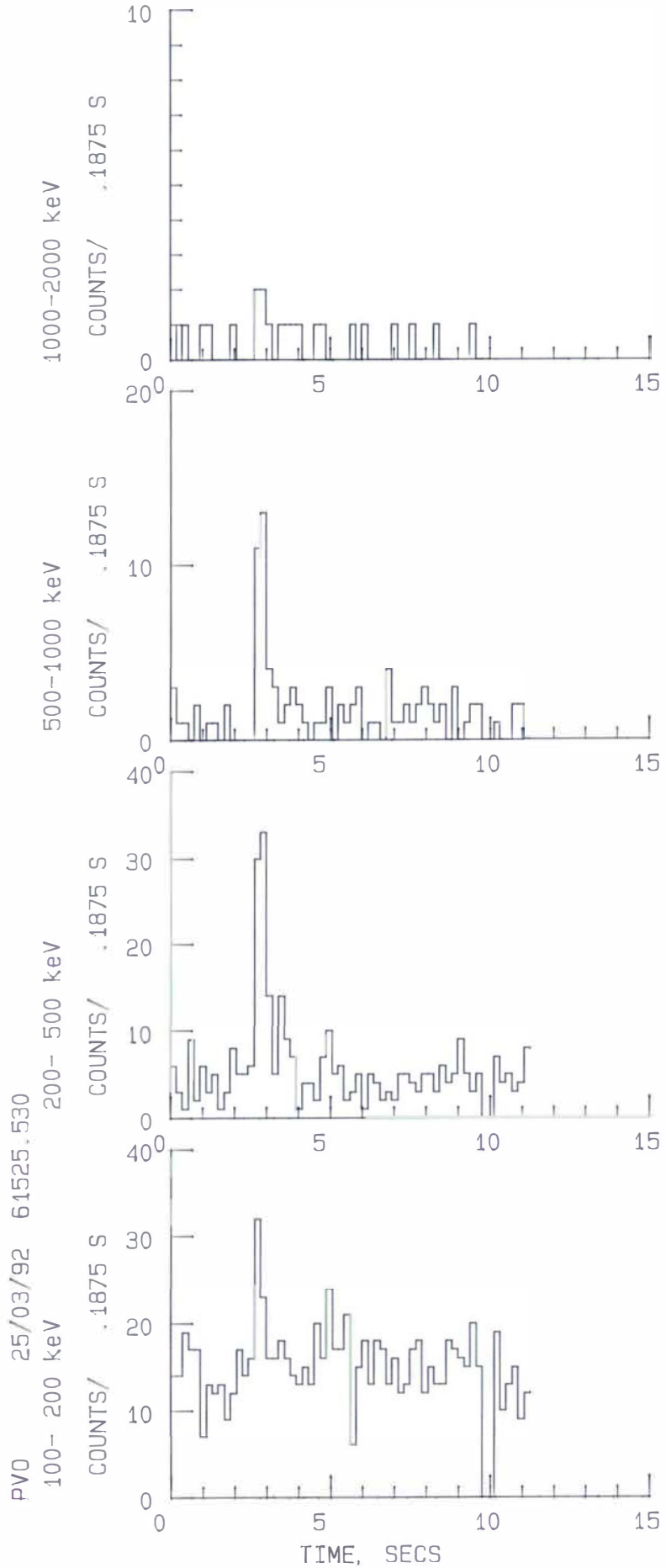
Received: from OBSHPA by UCBSP.SSL.BERKELEY.EDU via MAIL-11 with
          DECnet; Fri, 25 Sep 92 05:31:01-PST
Date: Fri 25 Sep 92 05:31:01-PST
From: BOER@OBSHPA.SPAN.NASA.GOV (Michel Boer Visiting Astronomer OHP)
Subject: GRB 920325
To: "UCBSP::KHURLEY"@OBSHPA.SPAN.NASA.GOV

Salut Kevin,
Je suis a l'OHP ce week end encore.
Hier j'ai pu observer la source de GRB 920325
Il y a des sources a moins d'une arcmin de la position
que tu donnes dans ton dernier mail, mais
je pense que le mieux serait que tu me fasse parvenir les
coordonnees exactes de la boited'erreur
ici a l'OHP. S'il te plait, Pourrais tu me les faxer,
car le vax va etre arrete a partir de demain?
Le numero de fax est ici est le (33) 92 76 62 95.
La position de la boite d'erreur est ideale en ce moment
d'ici et jusqu'a maintenant le temps etait beau.
Merci, Michel

PS: Vas tu au prochain SWT a Paris pour Ulysses?


BATSE 25/03/92 62257.981
30- 100 keV
COUNTS/ .064 S
4000
3000
2000
1000
0
0
4
8
12
16
20
TIME, SECS


23/ 4/92
PVO
25/03/92
61525.530
100-2000 keV
COUNTS/ .094 S
COUNTS/ .012 S
0
10
20
30
40
50
0
4
8
12
16
20
TIME, SECS


PVO 25/03/92 61525.530
100- 200 keV
200- 500 keV
500-1000 keV
1000-2000 keV
COUNTS/ .1875 S
TIME, SECS

From KOSHUT@ssl.msfc.nasa.gov Tue Apr 21 12:36:48 1992
Date: Tue, 21 Apr 1992 14:37:57 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01520 Jan 25

TIME: TJD=8706 SECONDS=71282

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE PRECIPITATION EVENT.

From KOSHUT@ssl.msfc.nasa.gov Tue Apr 21 12:44:36 1992
Date: Tue, 21 Apr 1992 14:45:59 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01521 Jan 25

TIME: TJD=8706 SECONDS=78098

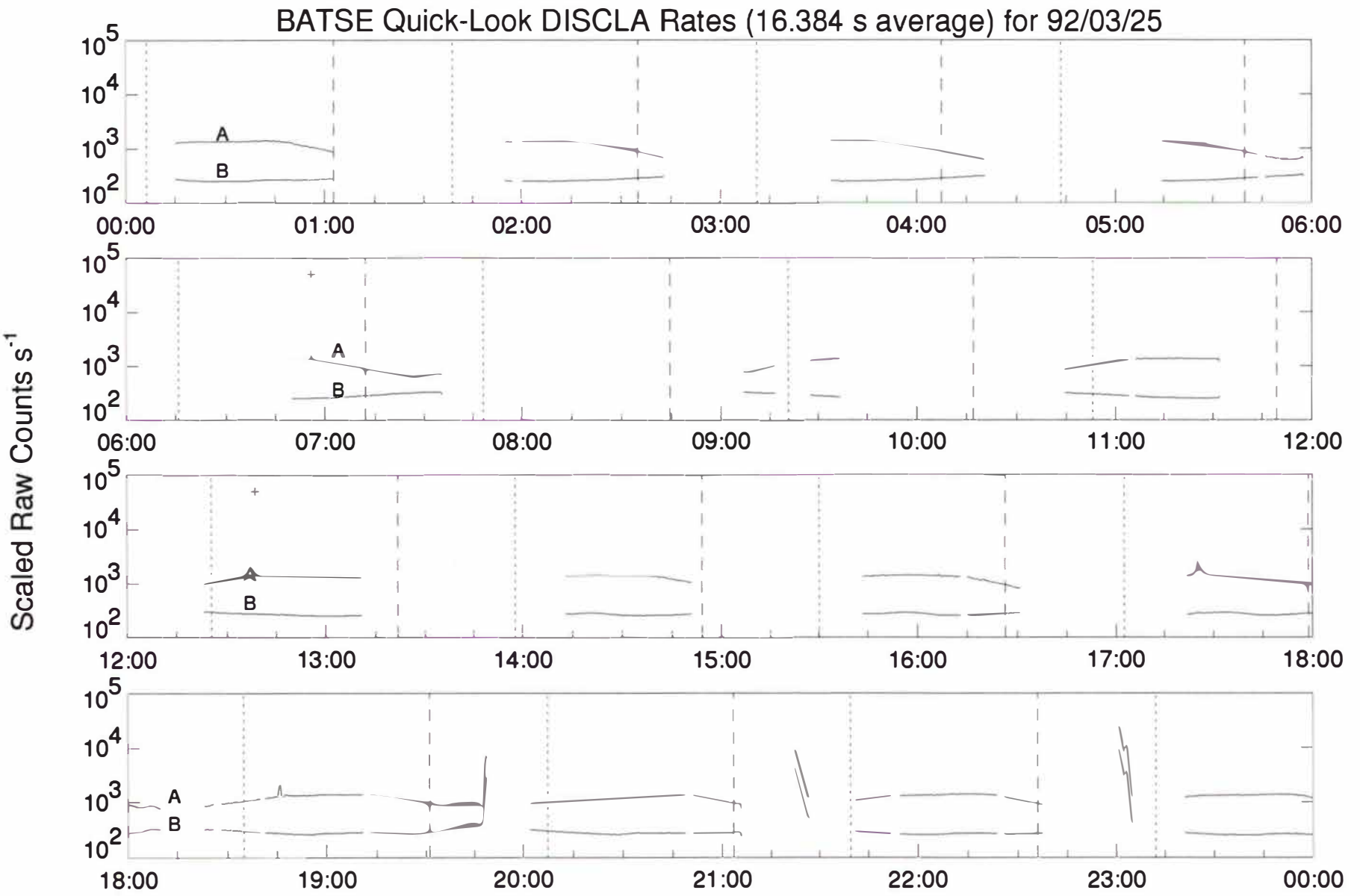
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

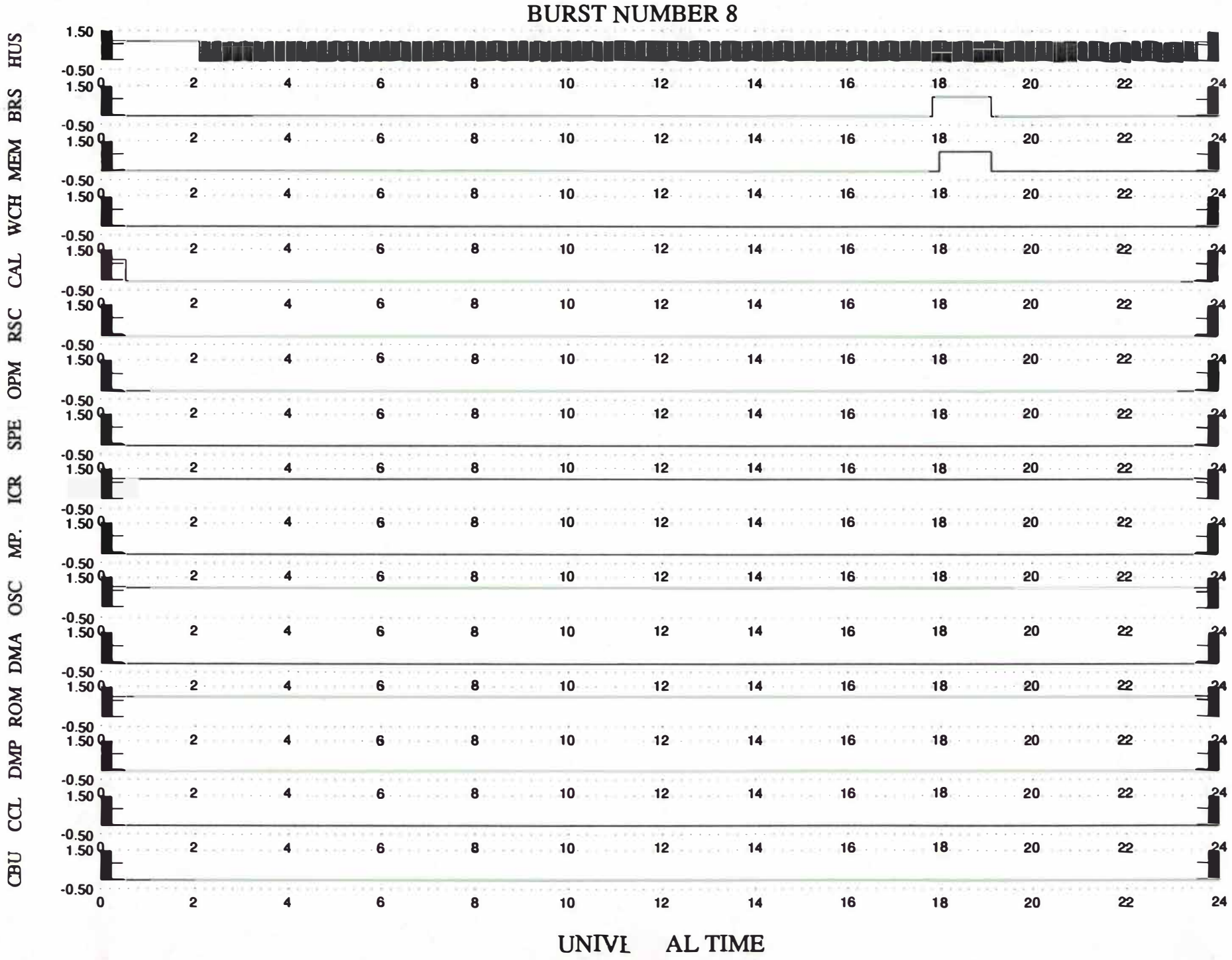
INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
TRIGGERED ON EXIT OUT OF SAA.

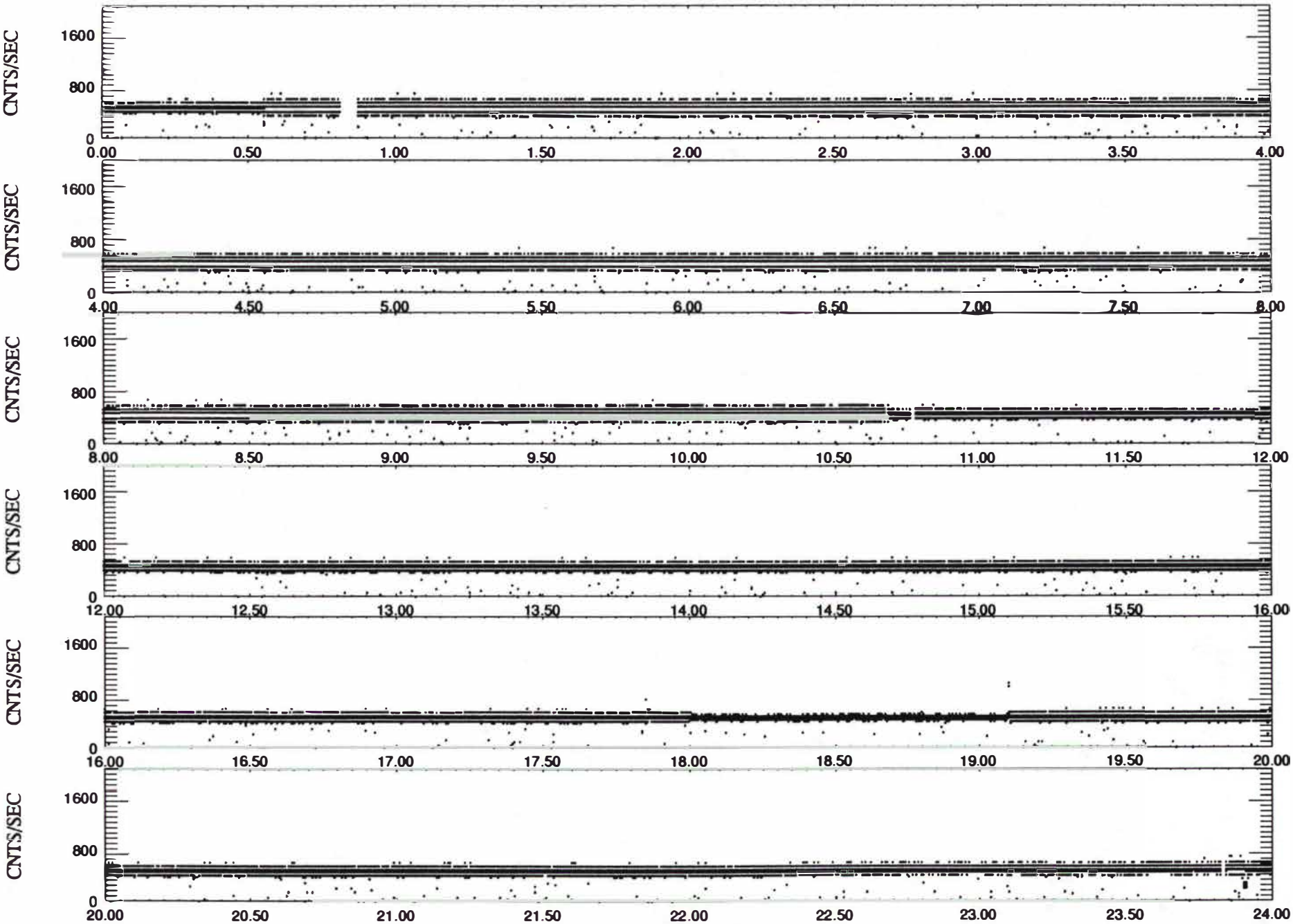

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/25
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1812 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 85, year 1992 to day 85, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 85, year 1992 to day 85, year 1992 4/27/92

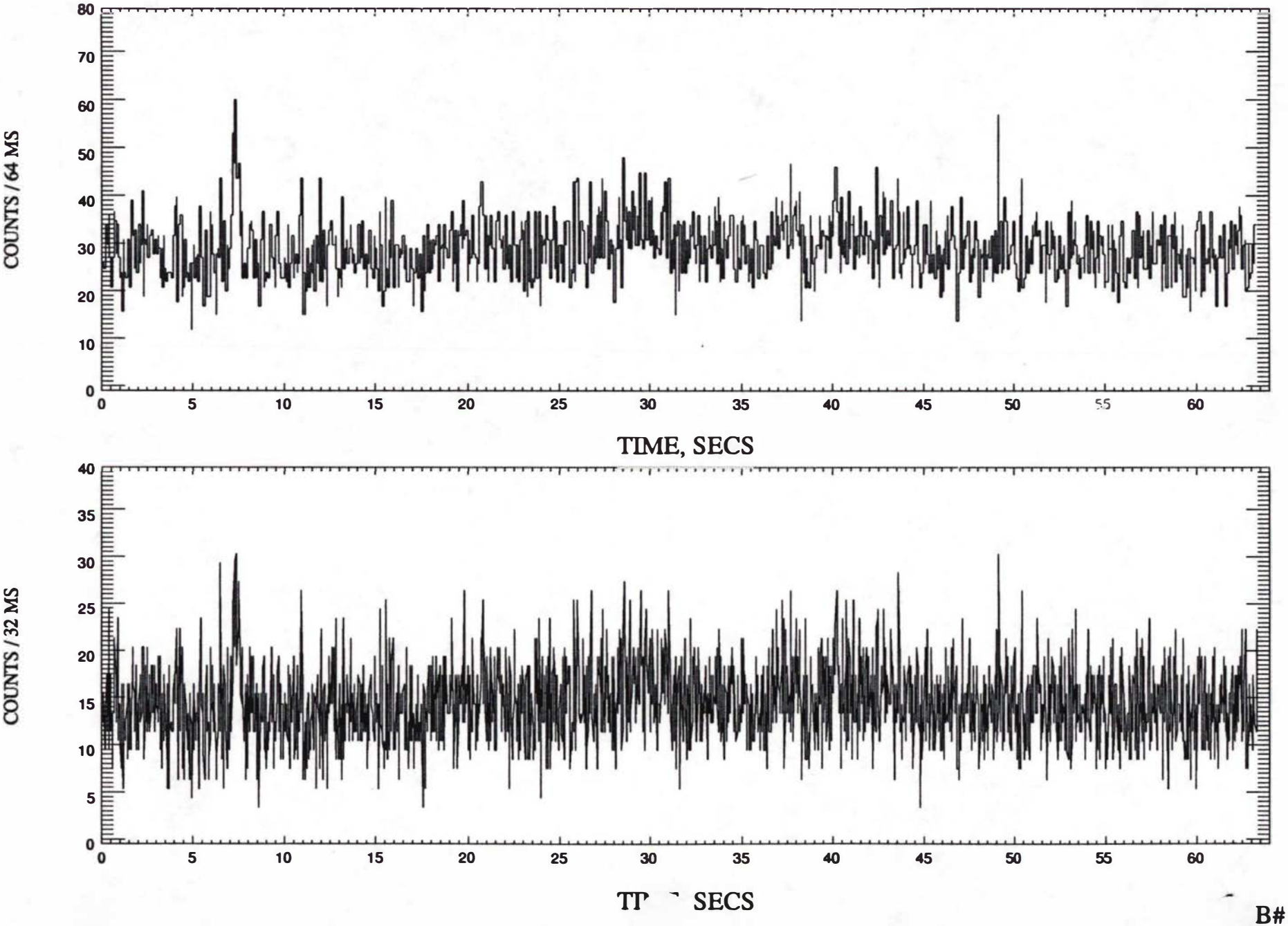
CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 85, year 1992 5/6/92

Burst Counter 8 at UT=17.850446993510 h=64261.609 s



B# 1

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

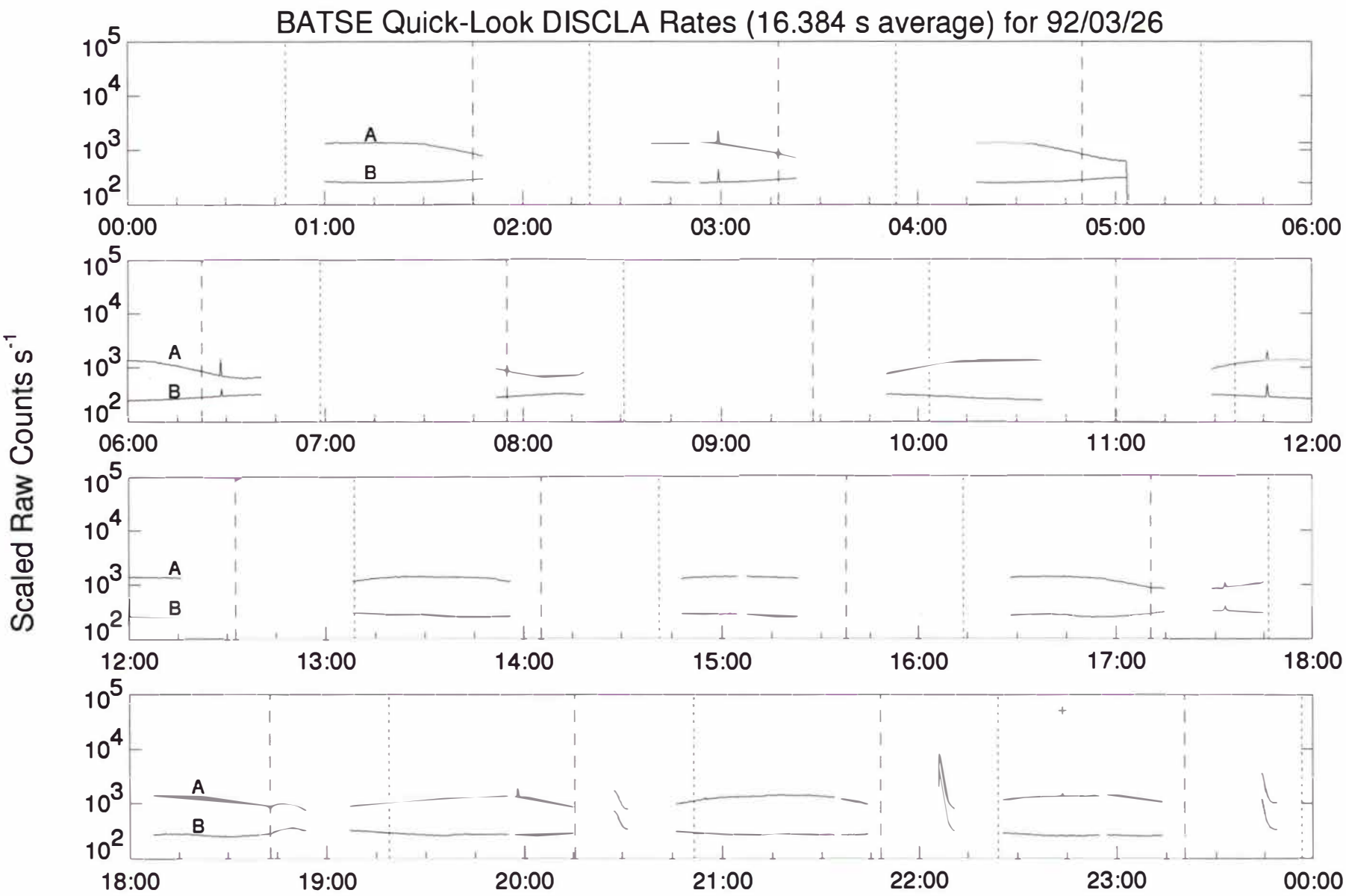
REGARDS,

RAY

From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
          (utk-mail11d v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

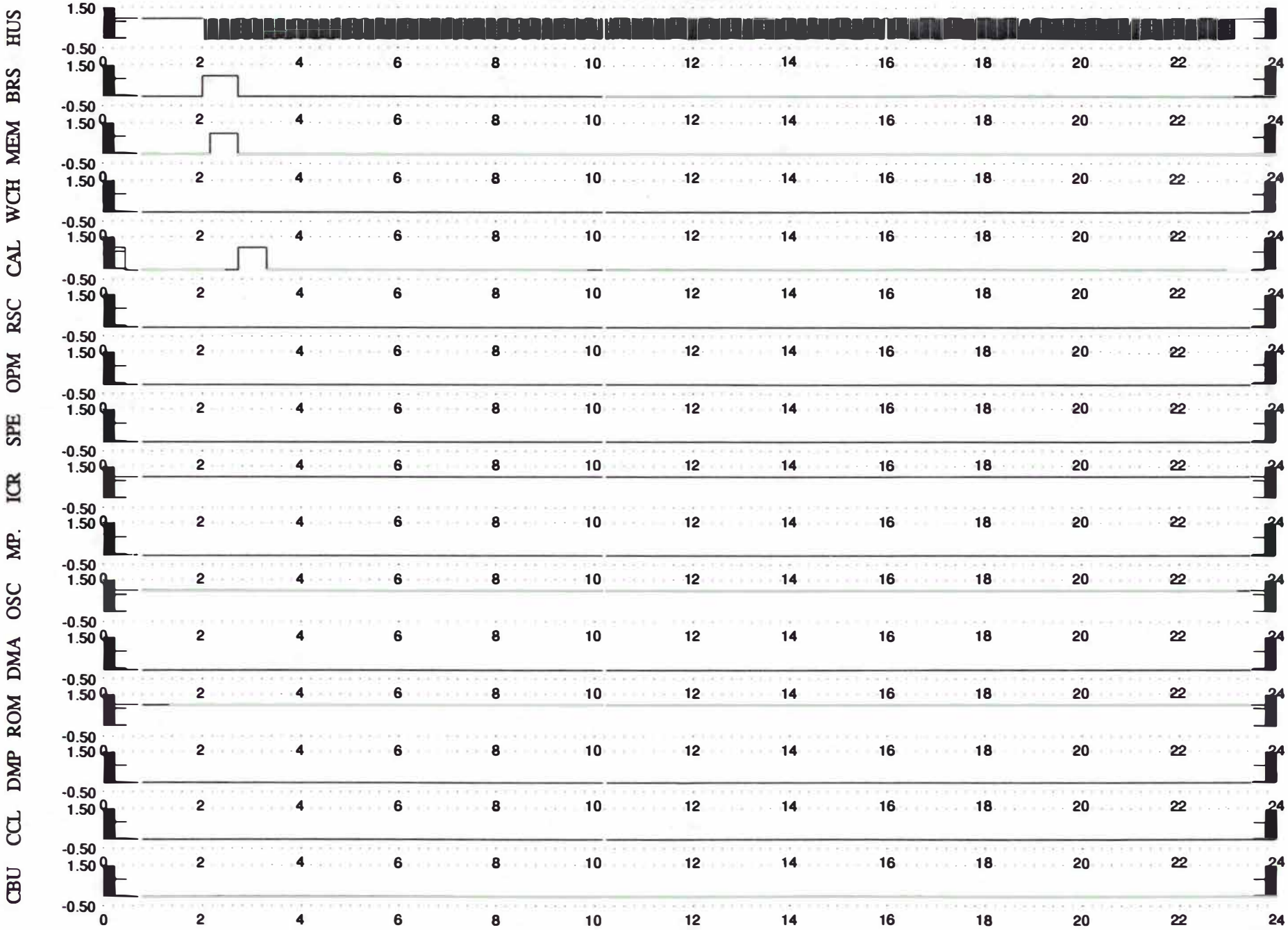
KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF
RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/26
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1814 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 86, year 1992 to day 86, year 1992 4/28/92

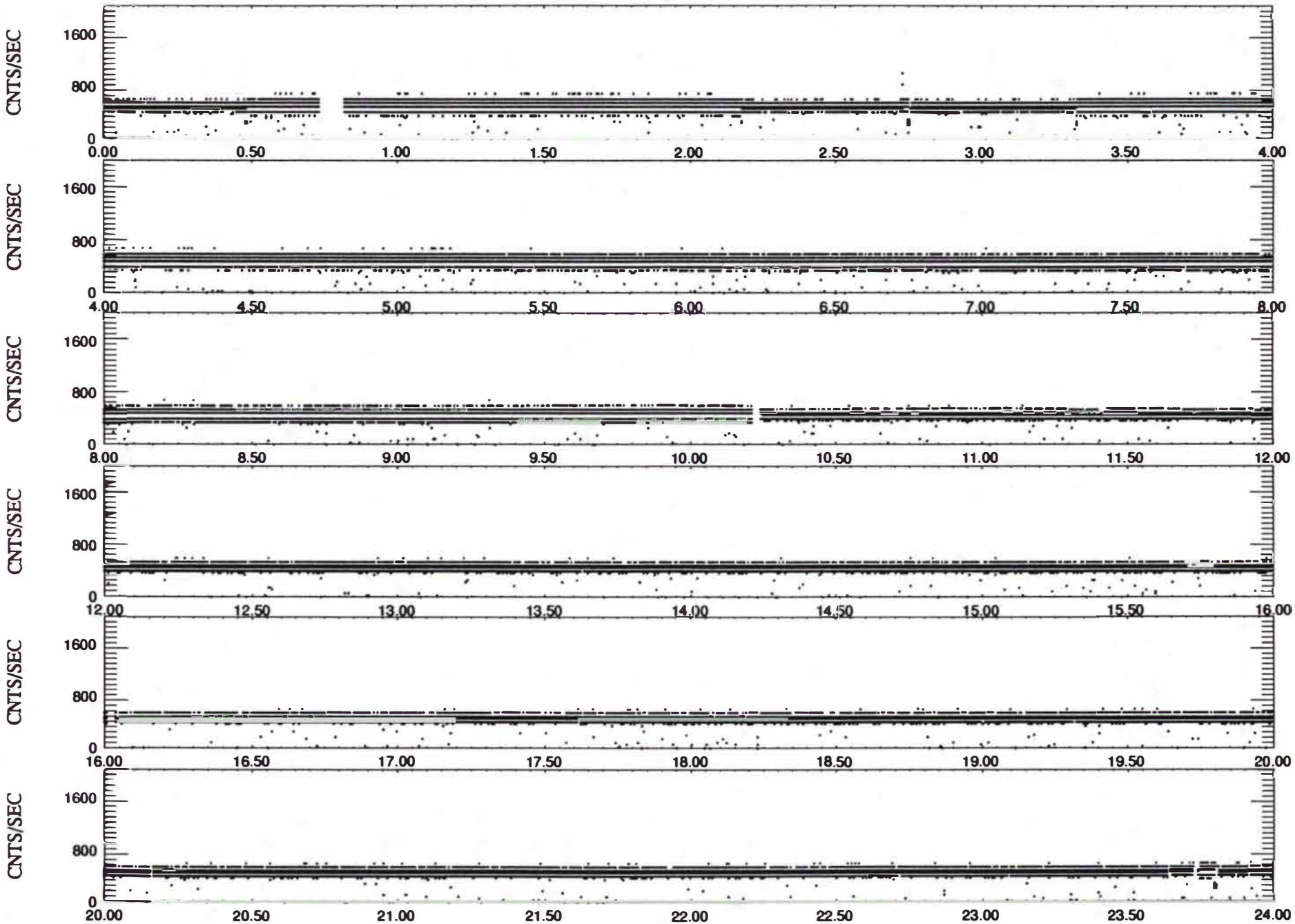
BURST NUMBER 9



UNIVE. AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 86, year 1992 to day 86, year 1992 4/27/92

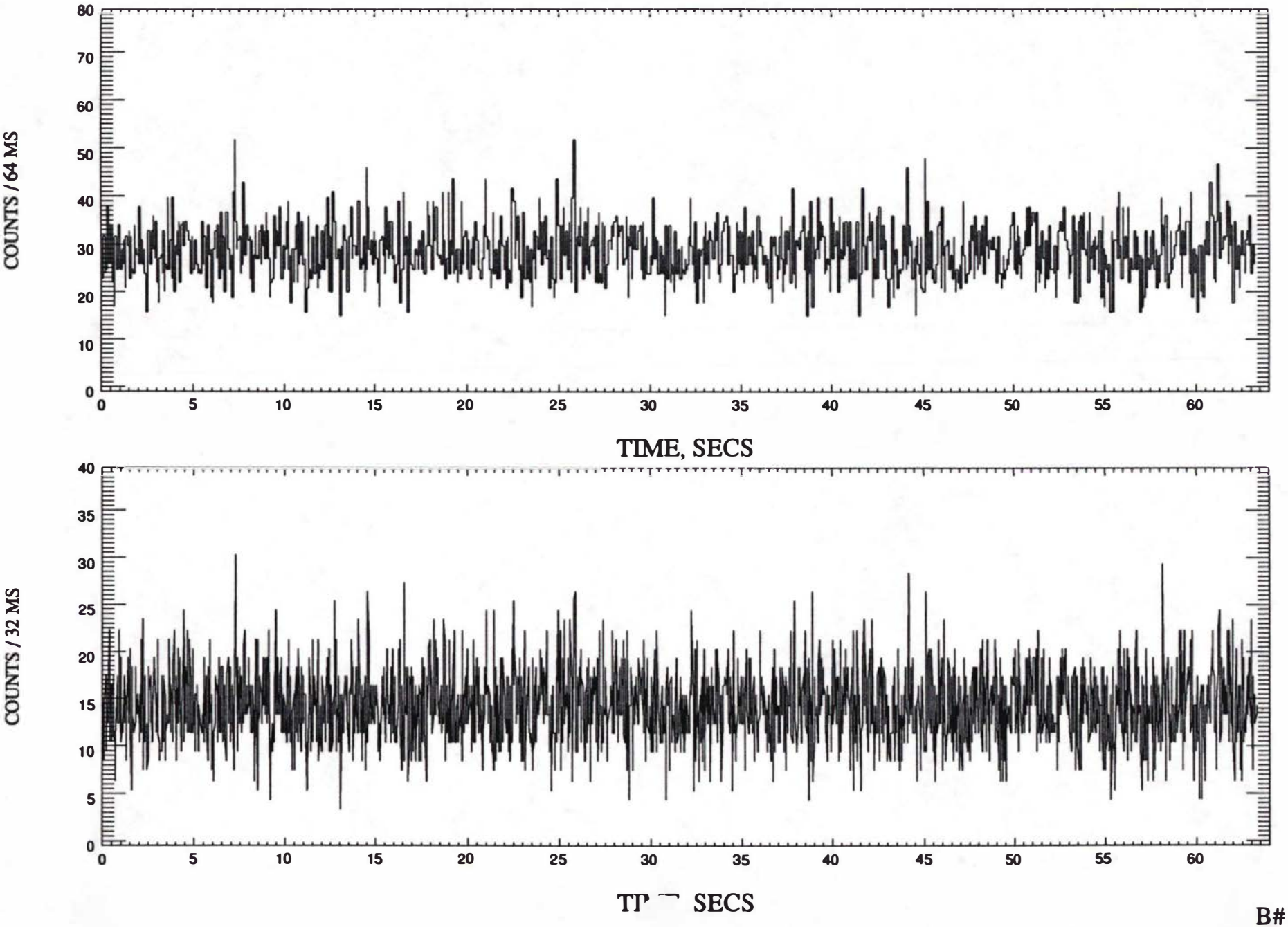
CALIBRATION DATA INCLUDED



UNIV. AL TIME

HUS 2A TRIGGERED DATA EDR day 86, year 1992 5/6/92

Burst Counter 9 at UT= 2.022806900872 h= 7282.105 s



B# 1

From root Thu Dec 9 12:43 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA09627; Thu, 9 Dec 93 12:43:06
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA01739; Thu, 9 Dec 93 11:45:54 PST
Received: Thu, 9 Dec 93 11:49:12 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312091949.AA08202@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-mail11d v1.7); Thu, 9 Dec 93 11:49:13 PST
Date: Thu, 9 Dec 93 11:49:13 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,

THESE ARE THE EVENTS FOR WHICH WE HAVE DATA RECORDED AT 64 S RESOLUTION
CAN YOU TELL ME WHICH ARE THE MOST LIKELY CANDIDATES FOR DETECTION?

DATE	TIME
91/01/23	12:40
91/06/19	14:14
91/06/26	07:15
91/07/09	11:33
91/07/23	14:06
91/07/25	13:12
91/08/09	06:15
91/08/18	13:44
91/09/01	05:24
91/10/08	17:56
91/10/26	13:07
91/10/31	09:36
92/03/27	12:15
92/04/05	07:41
92/05/02	06:03

REGARDS,

RAY

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

REGARDS,

RAY

From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-maillld v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O

From KOSHUT@ssl.msfc.nasa.gov Tue Apr 21 12:52:18 1992
Date: Tue, 21 Apr 1992 14:53:39 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 01522 Mar 27

TIME: TJD=8708 SECONDS=41406

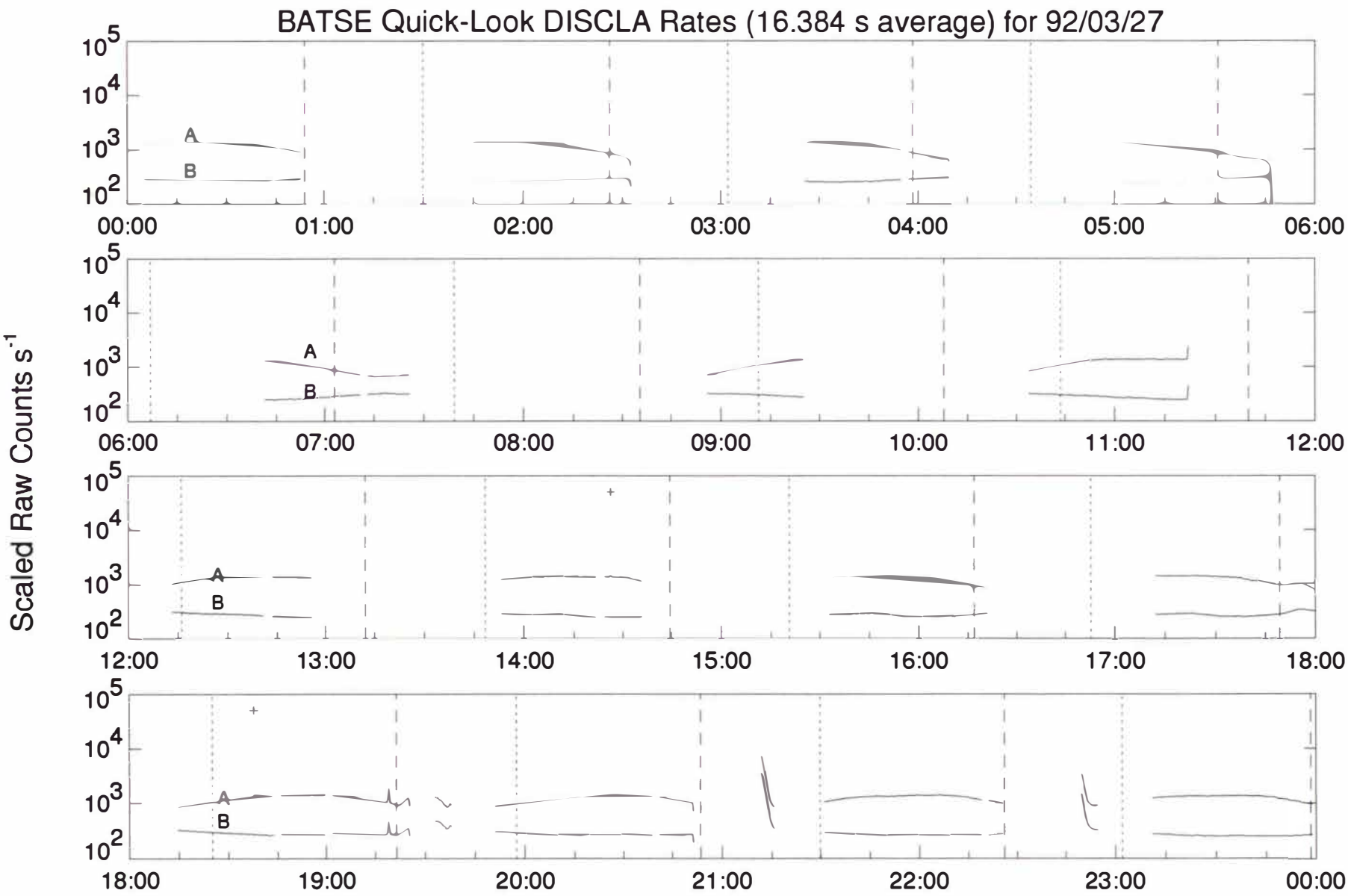
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

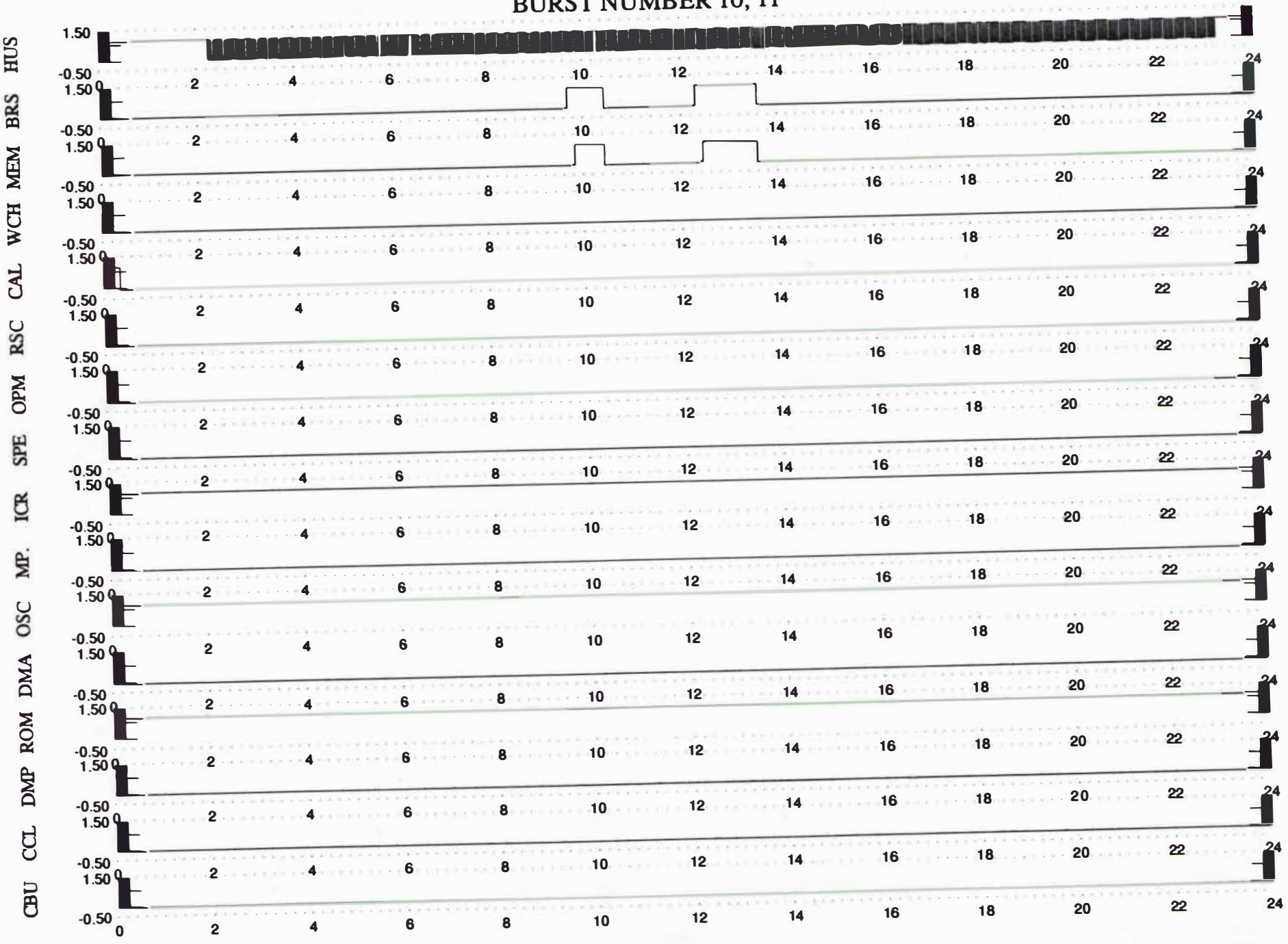
COMMENTS:
SOLAR FLARE WHICH LASTS ~5 SECONDS AFTER TRIGGER TIME. NO PRE-TRIGGER DATA IS AVAILABLE. NO EMISSION DETECTED ABOVE 100 KEV. CLASSIFIED AS C1.5 FLARE IN GOES X-RAY DATA.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/27
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1815 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 87, year 1992 to day 87, year 1992

4/28/92

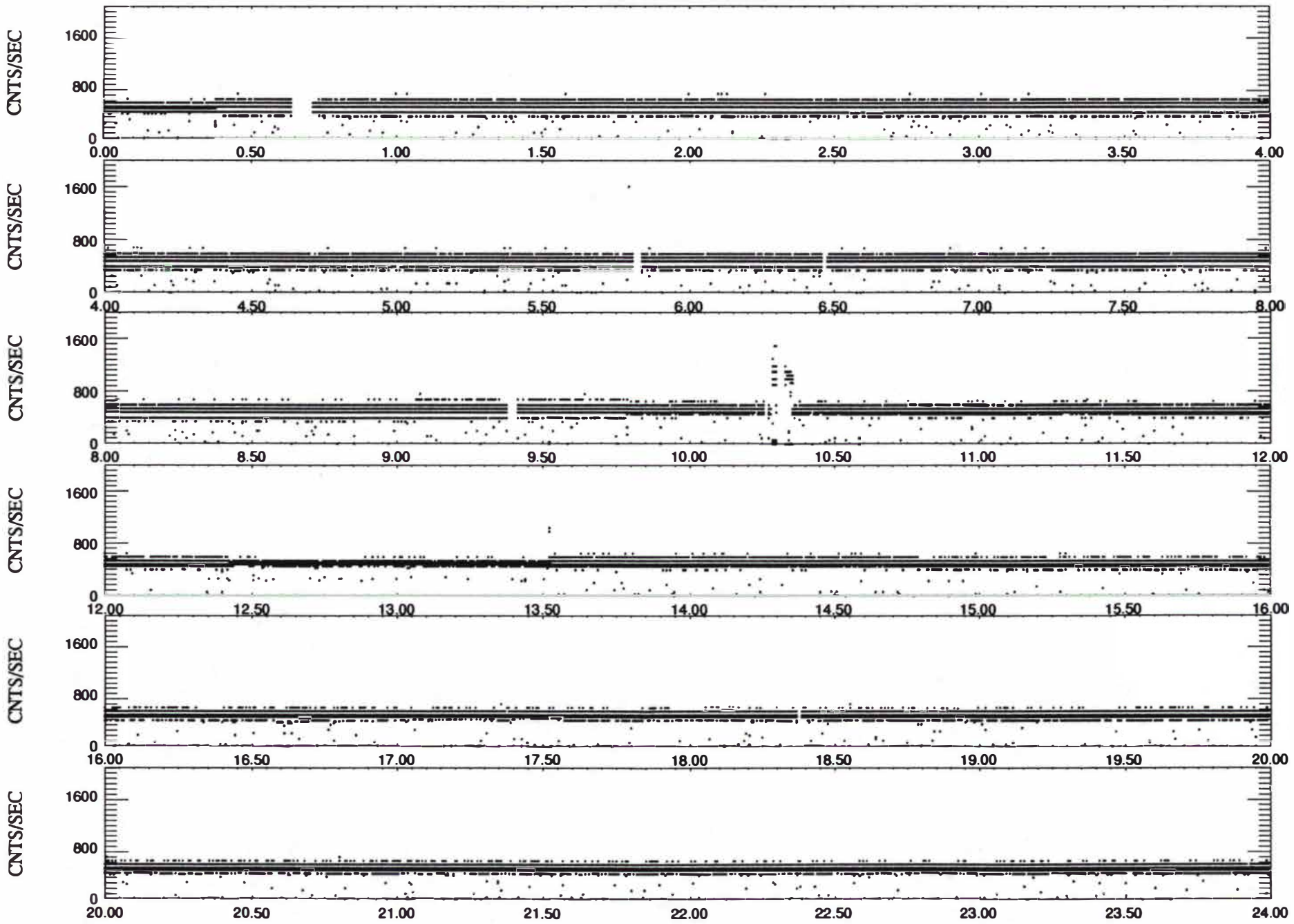
BURST NUMBER 10, 11



UNIVI AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 87, year 1992 to day 87, year 1992 4/27/92

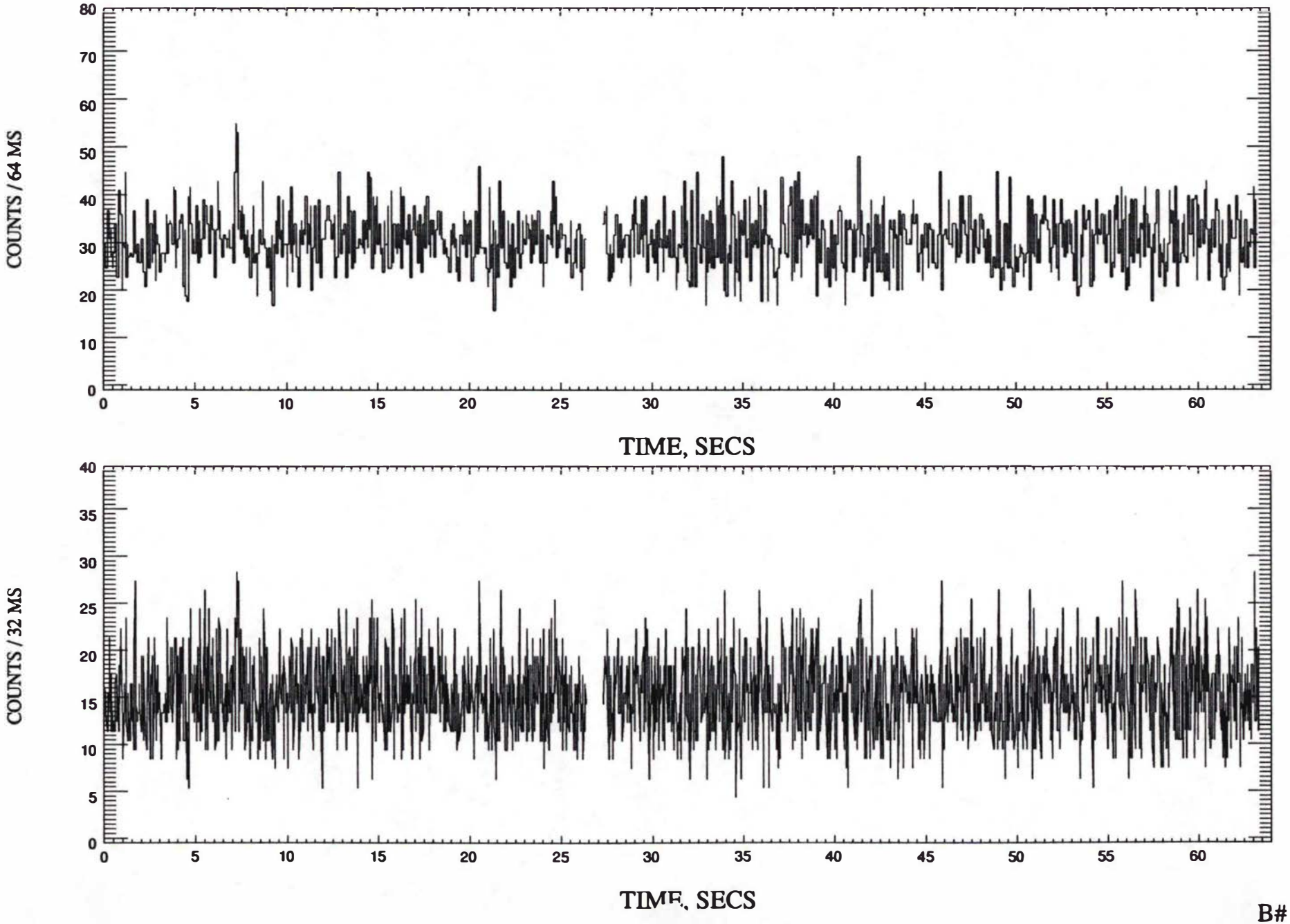
CALIBRATION DATA INCLUDED



UNIV. AL TIME

HUS 2A TRIGGERED DATA EDR day 87, year 1992 5/6/92

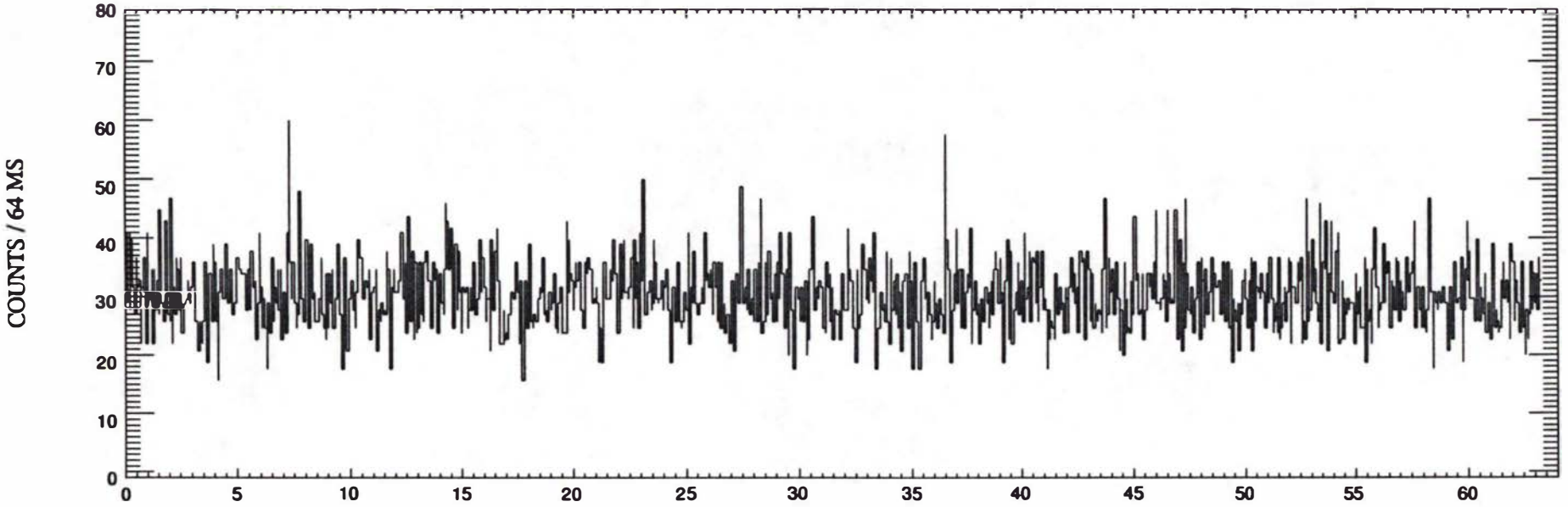
Burst Counter 10 at UT= 9.638362180922 h=34698.104 s

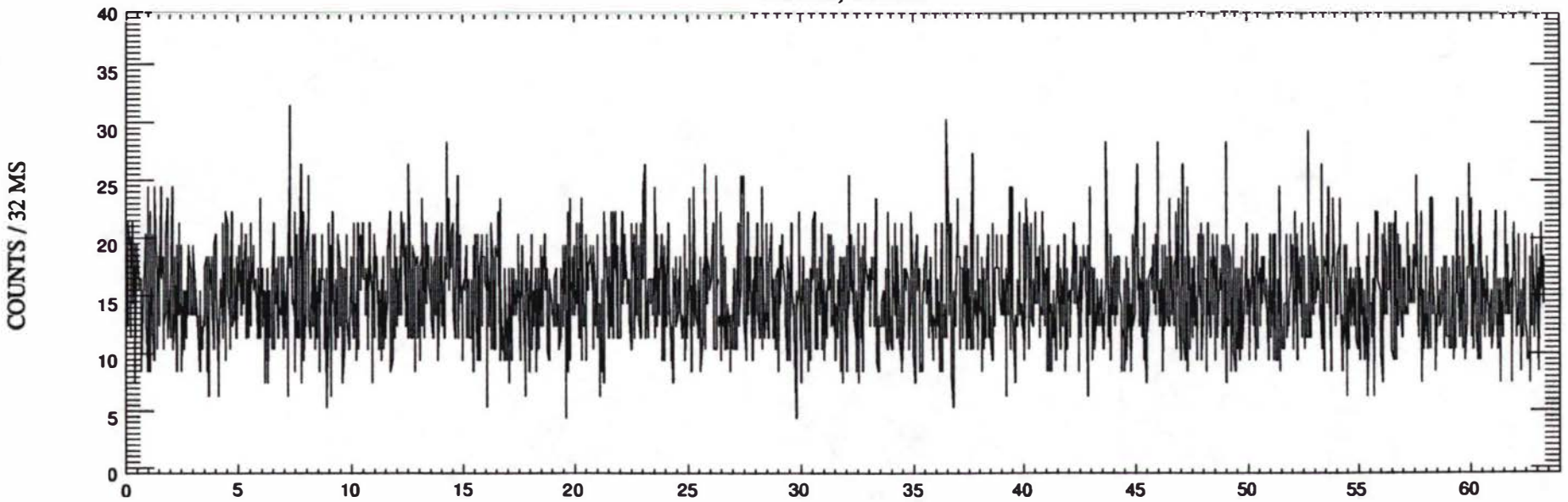


B# 1

HUS 2A TRIGGERED DATA EDR day 87, year 1992 5/6/92

Burst Counter 11 at UT=12.263094325595 h=44147.140 s





3# 2

From KOUVELIOTOU@ssl.msfc.nasa.gov Sun Apr 12 14:23:05 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA01997; Sun, 12 Apr 92 14:23:03 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA01598; Sun, 12 Apr 92 13:19:14
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA01994; Sun, 12 Apr 92 14:22:56 PDT
Date: Sun, 12 Apr 1992 16:23:55 -0500 (CDT)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Message-Id: <920412162355.3520107f@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01523 Mar 28

TIME: TJD=8709 SECONDS=66914

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT

1

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1524
EVENT OF 1992 MAR 28 DAY OF YEAR= 88
EVENT CROSSING TIME AT BATSE      : 76788. S. OR 21:19:48.3
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 316.900    -6.200
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 28/ 3/  92 IS:
RA=  153.104 DEC=     9.387 DIST=     4.550 AU
BATSE-ULYSSES DISTANCE =  680730864. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 16.36 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2178.69 SECS.
CROSSING TIME AT ULYSSES     IS 78967. S. OR 21:56:07.0 +/-  194.16 SECONDS
```

PJO ~ 16s long

From HAGEDON@ssl.msfc.nasa.gov Tue Apr 14 09:43:27 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA05920; Tue, 14 Apr 92 09:43:25 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA02082; Tue, 14 Apr 92 08:39:40
Received: from SSL.MSFC.NASA.GOV ([128.158.1.50]) by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA05917; Tue, 14 Apr 92 09:43:16 PDT
Date: Tue, 14 Apr 1992 11:44:23 -0500 (CDT)
From: HAGEDON@ssl.msfc.nasa.gov
Message-Id: <920414114423.352020a1@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01524

TIME: TJD=8709 SECONDS=76790 Mar 28

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=084.8 AZIMUTH=055.6 ERROR= DEGREES

COMMENTS:
WEAK DOUBLE STRUCTURED EVENT, ~ 30. S LONG. NOT SEEN ABOVE 320 KEV.

NO ULYSSES TRIGGER

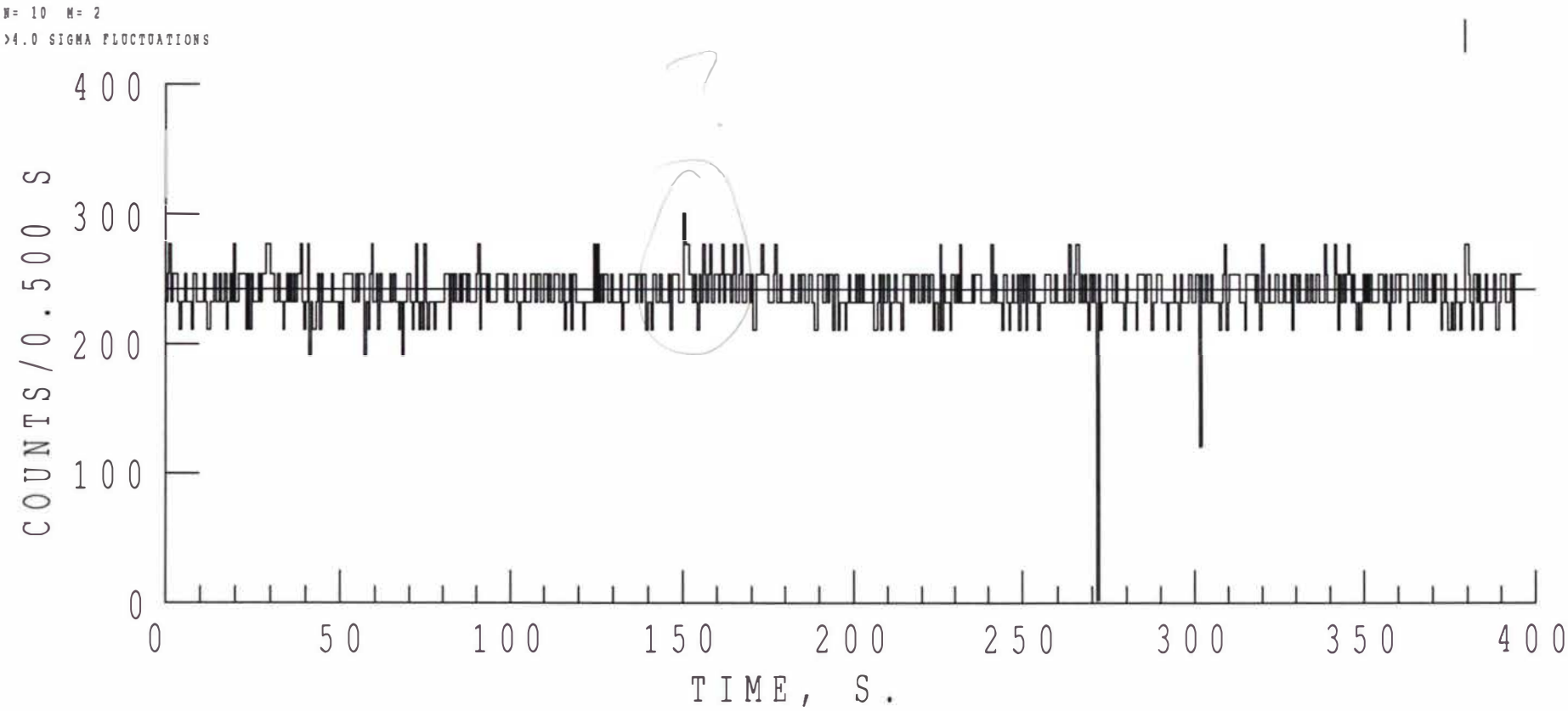
BATSE BURST# 1524

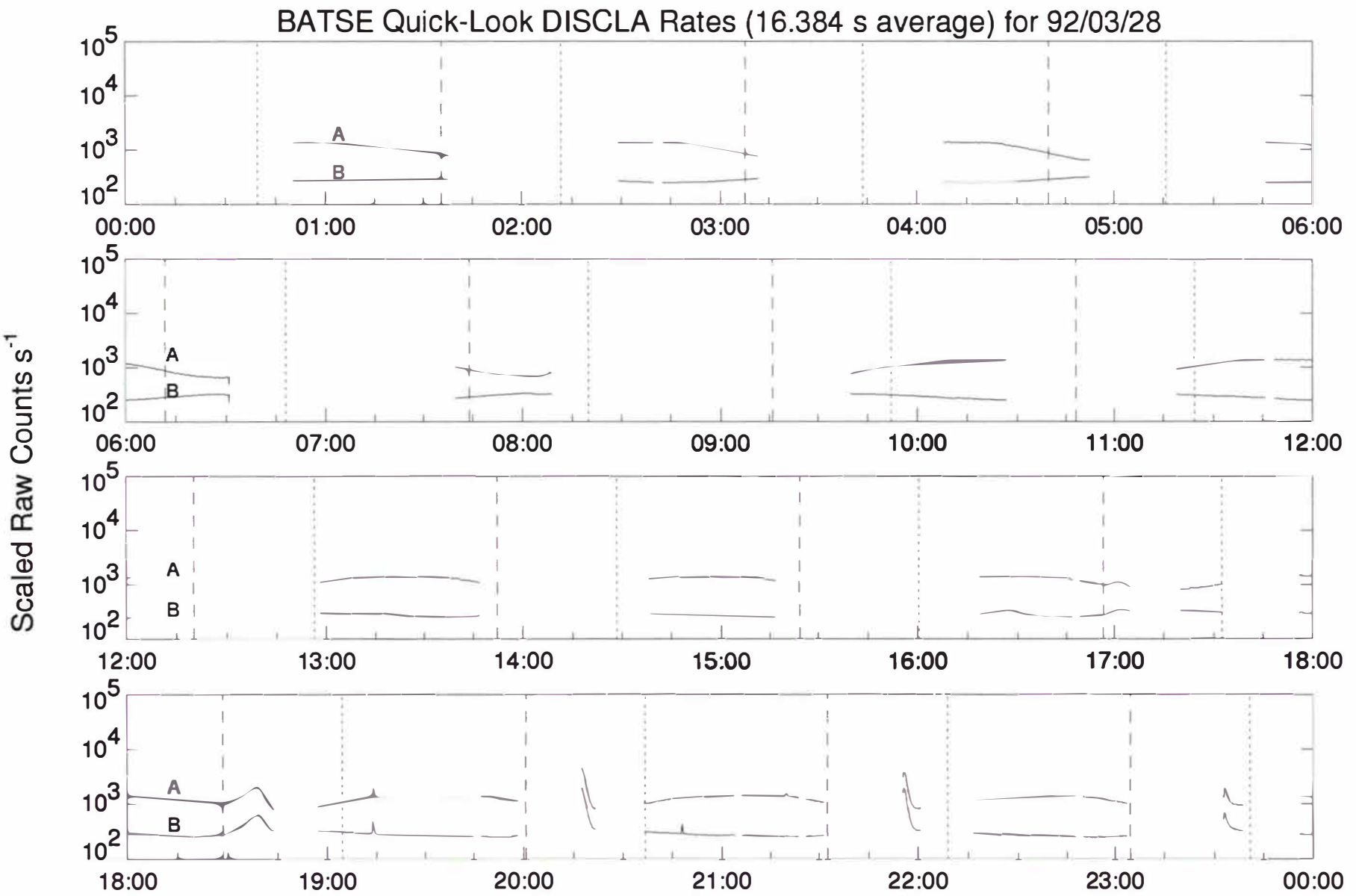
7/ 6/94

ULYSSES RT

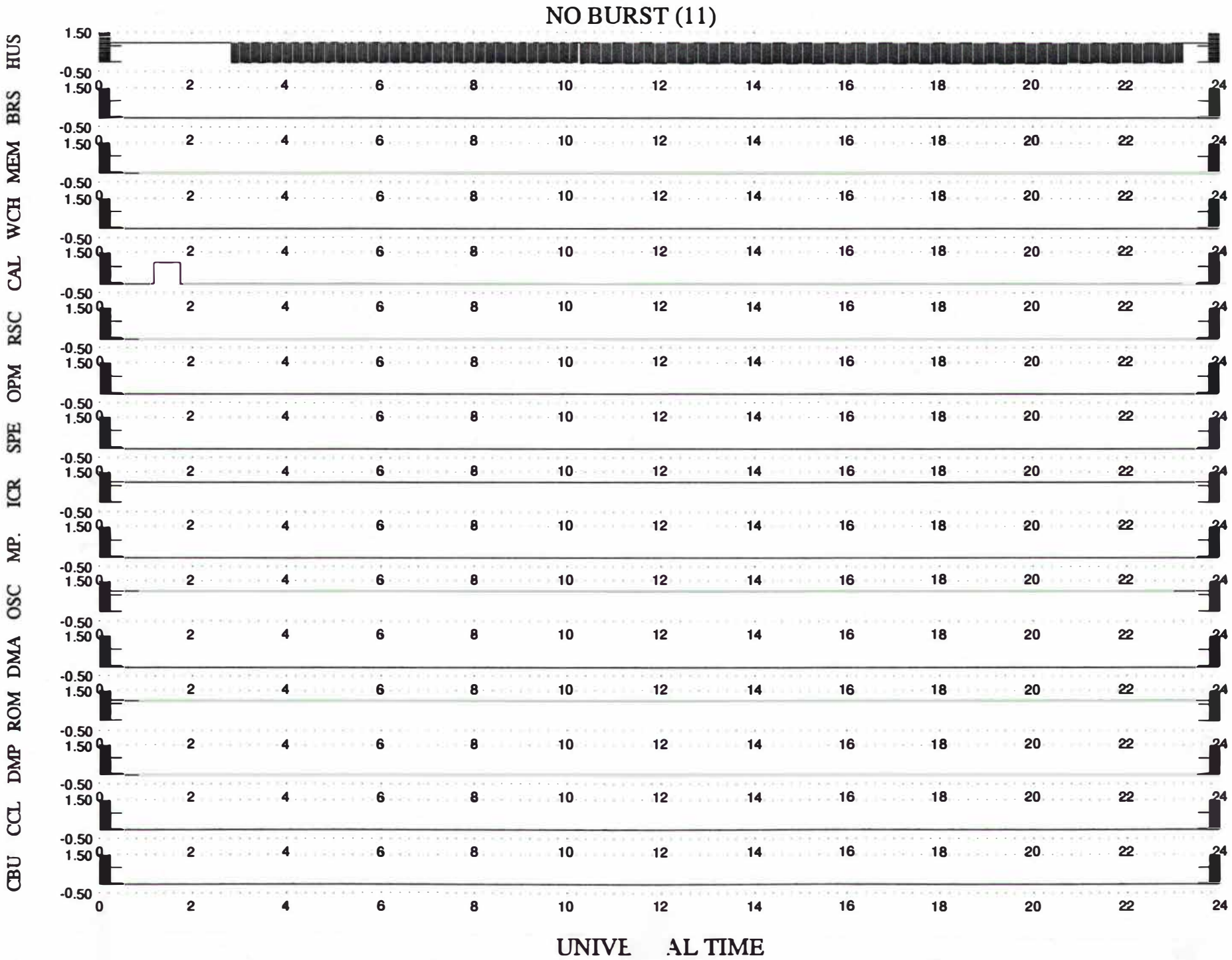
28/ 3/92 78768.008 s

0- 0 keV



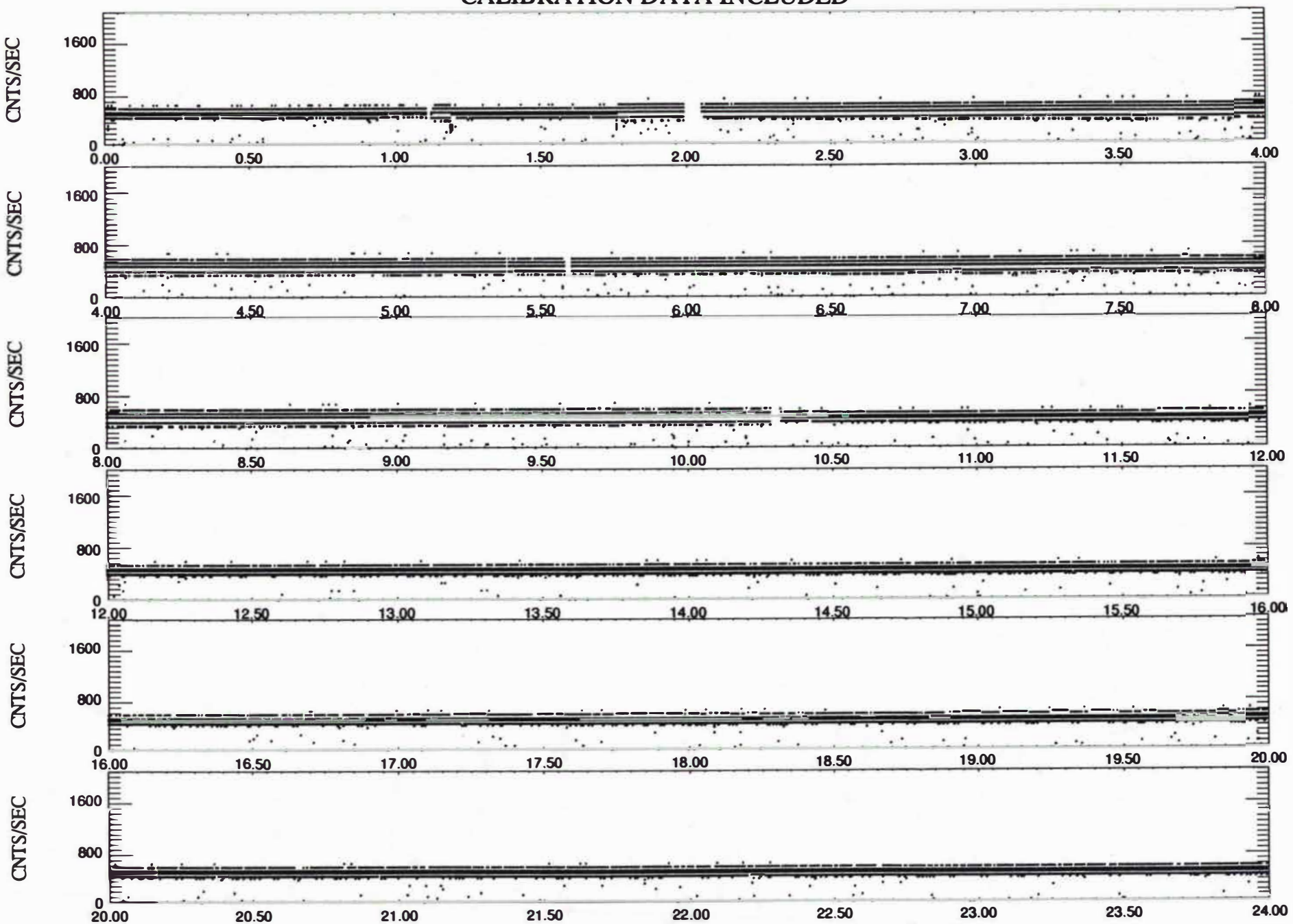

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/28
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/20, 1816 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 88, year 1992 to day 88, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 88, year 1992 to day 88, year 1992 4/27/92

CALIBRATION DATA INCLUDED



UNIV SAL TIME

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

REGARDS,

RAY

From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
          (utk-mail11d v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF
RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O

```
          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1525
EVENT OF 1992 MAR 29 DAY OF YEAR= 89
EVENT CROSSING TIME AT BATSE     : 59906. S. OR 16:38:26.3
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  17.900  -58.900
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 29/ 3/  92 IS:
RA=  152.925 DEC=    9.396 DIST=    4.560 AU
BATSE-ULYSSES DISTANCE =  682150568. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 59.98 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1138.37 SECS.
CROSSING TIME AT ULYSSES    IS 61045. S. OR 16:57:24.6 +/-  409.34 SECONDS
```

No - not reliably detected



From KOSHUT@ssl.msfc.nasa.gov Mon Apr 27 14:47:05 1992
Date: Mon, 27 Apr 1992 16:48:49 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 01525 Mar 29

TIME: TJD=8710 SECONDS=61358

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=63 AZIMUTH=346 ERROR= DEGREES

COMMENTS:
STRONG BURST OF ~0.8 SECOND DUARTION WITH EMISSION OBSERVED ABOVE 300 KEV.
COMPLEX TIME HISTORY WITH PEAK AT ~ TRIGGER + 0.5 SECONDS.

No trigger - request position
Requested

From kouveliotou%8868.span@Sdsc.Edu Mon Oct 5 12:21:24 1992
Date: Mon, 5 Oct 92 19:24:11 GMT
From: kouveliotou%8868.span@Sdsc.Edu (Chryssa Kouveliotou NASA/MSFC (205) 544-7711)
Subject: some gro ephemerides
To: khurley@sunspot.ssl.berkeley.edu
X-St-Vmsmail-To: HURLEY
Content-Length: 790

Dear Kevin, Tom,

I asked Martin Brock for the gro ephemerides for some grbs and I got 3 of them although they are not the recent ones that Kevin requested in his msg. Anyway, he said he will give me those soon, so in the mean time:

1525
TJD : 8710 Mar 29 '92
UT : 59908
sc position: ra = 229.7 dec = -11.33 height = 6780 Km
x-axis: ra = 11.72 dec = -29.97
z-axis : ra = 227.4 dec = -54.62

x -4299.77
y -5070.121
z -1332.0

1577
TJD : 8744 May 2 '92
UT : 21781
sc position: ra = 349.1 dec = -12.48 height = 6774 Km
x-axis : ra = 349.0 dec = -14.92
z-axis : ra = 241.1 dec = -49.05

x 6494.617
y -1250.67
z -1463.85

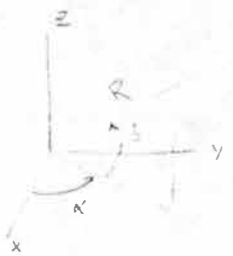
1872
TJD: 8858 Aug 24 '92
UT: 39183
sc position: ra = 300.4 dec = 10.91 height = 6764 Km
x-axis : ra = 98.42 dec = 26.22
z-axis : ra = 358.7 dec = 18.82

x 3360.947
y -5728.60
z 1280.20

Let me know if you have more questions on these numbers.

More to come...

CK



```
**********
*BATSEARCH PROGRAM*
**********

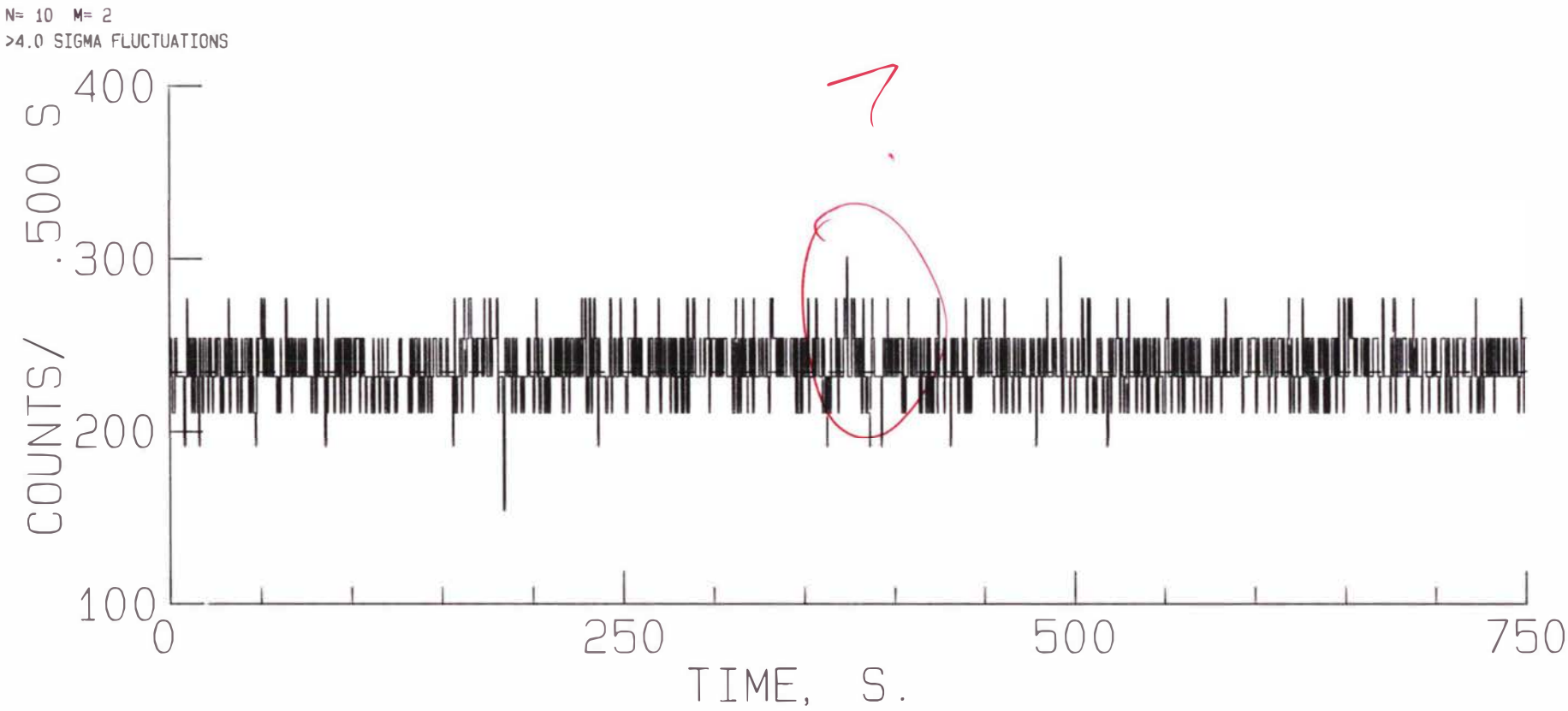
BATSE BURST #
EVENT OF 1992 MAR 29 DAY OF YEAR= 89
EVENT CROSSING TIME AT BATSE      : 59908. S. OR 16:38:28.0
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  18.000  -59.000
BATSE PEAK COUNTING RATE: 34000      C/S
EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 29/ 3/  92 IS:
RA=  152.925 DEC=     9.396 DIST=     4.560 AU
BATSE-ULYSSES DISTANCE =  682150560. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 60.08 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1134.91 SECS.
CROSSING TIME AT ULYSSES     IS 61043. S. OR   16:57:22 +/-  409.64 SECONDS
```

ULYSSES RT

6/ 5/95

29/ 3/92 60624.137 s

24- 162 keV

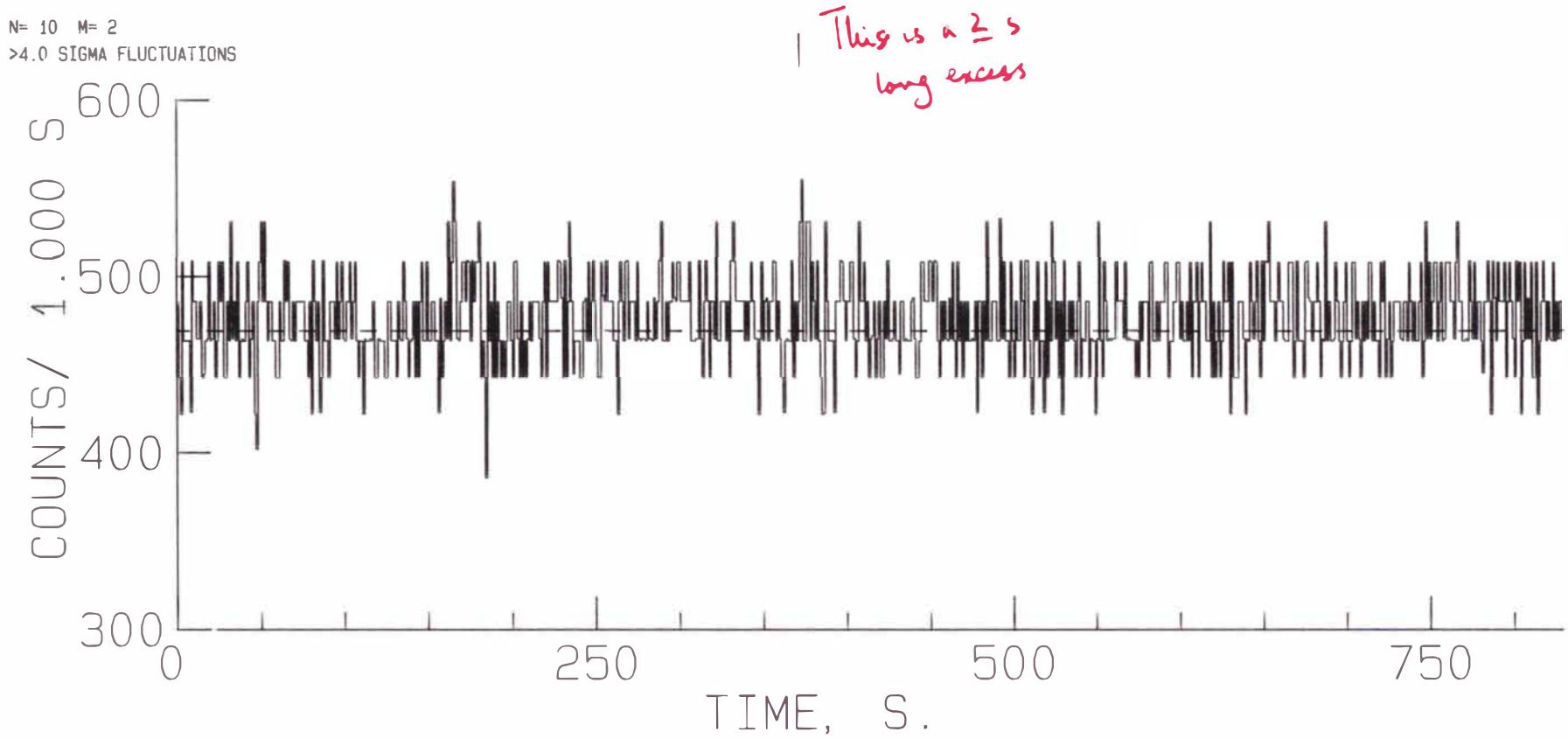


ULYSSES RT 6/ 5/95

29/ 3/92 60624.137 s

.500 S INTERVALS REGROUPED BY 2

24- 162 keV

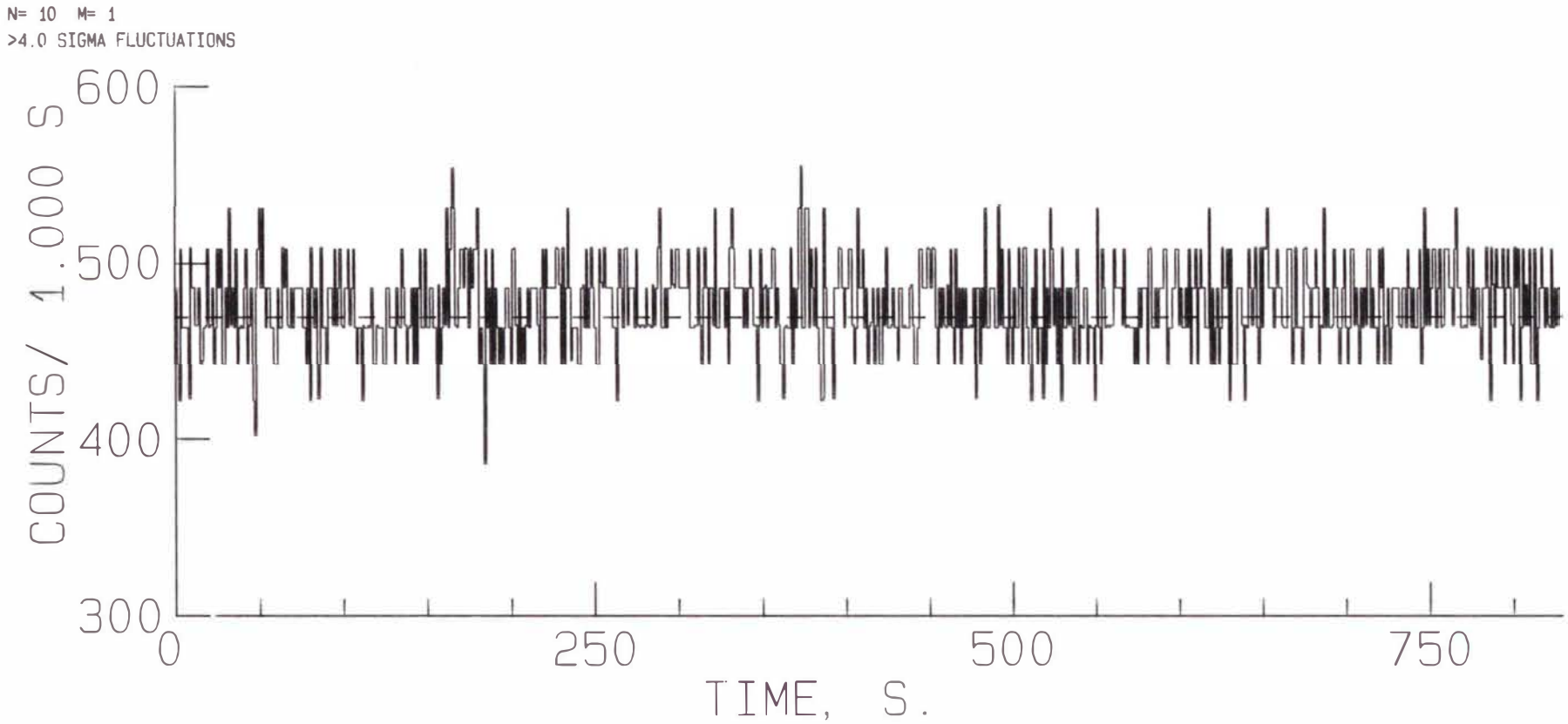


ULYSSES RT 6/ 5/95

29/ 3/92 60624.137 s

.500 S INTERVALS REGROUPED BY 2

24- 162 keV

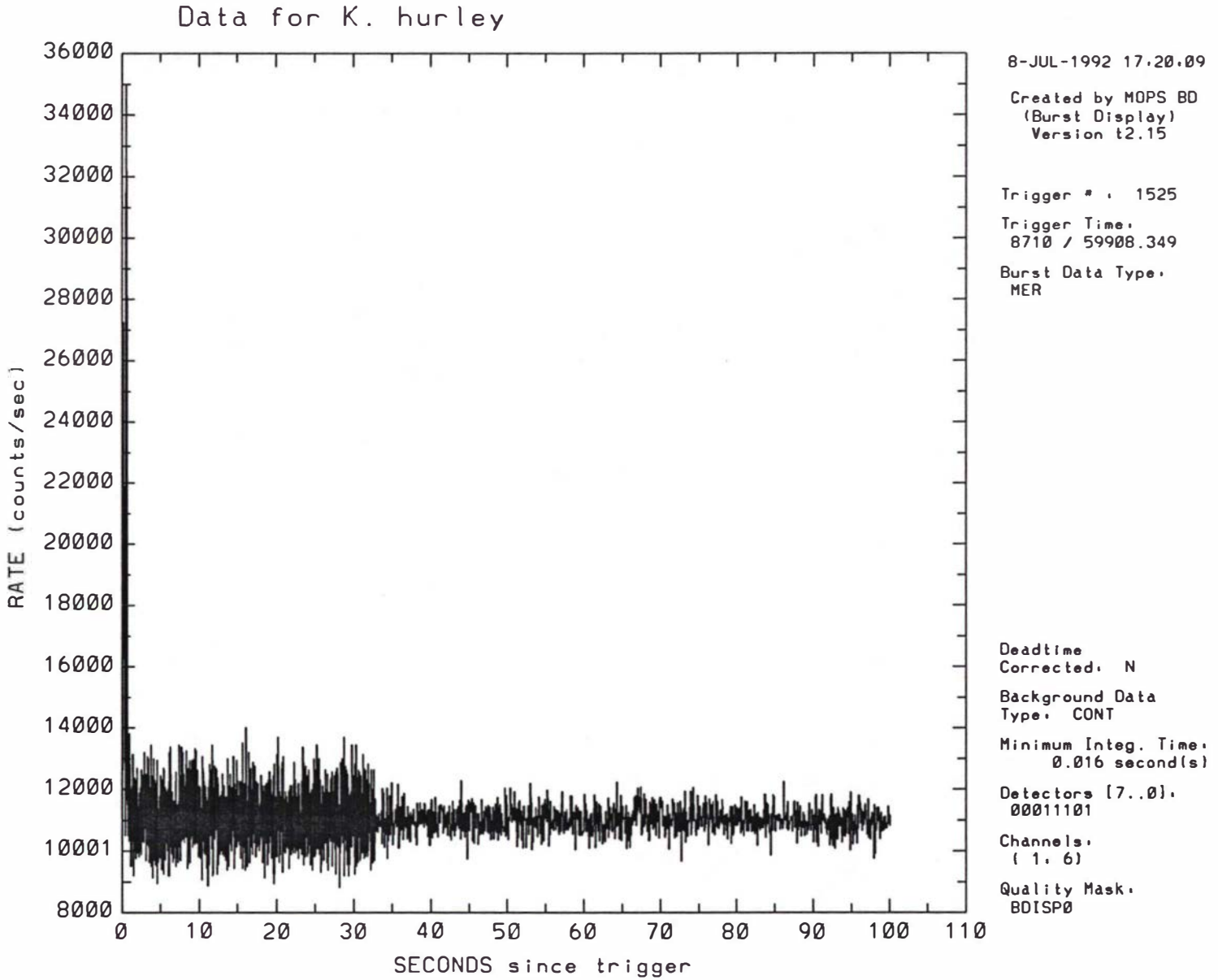


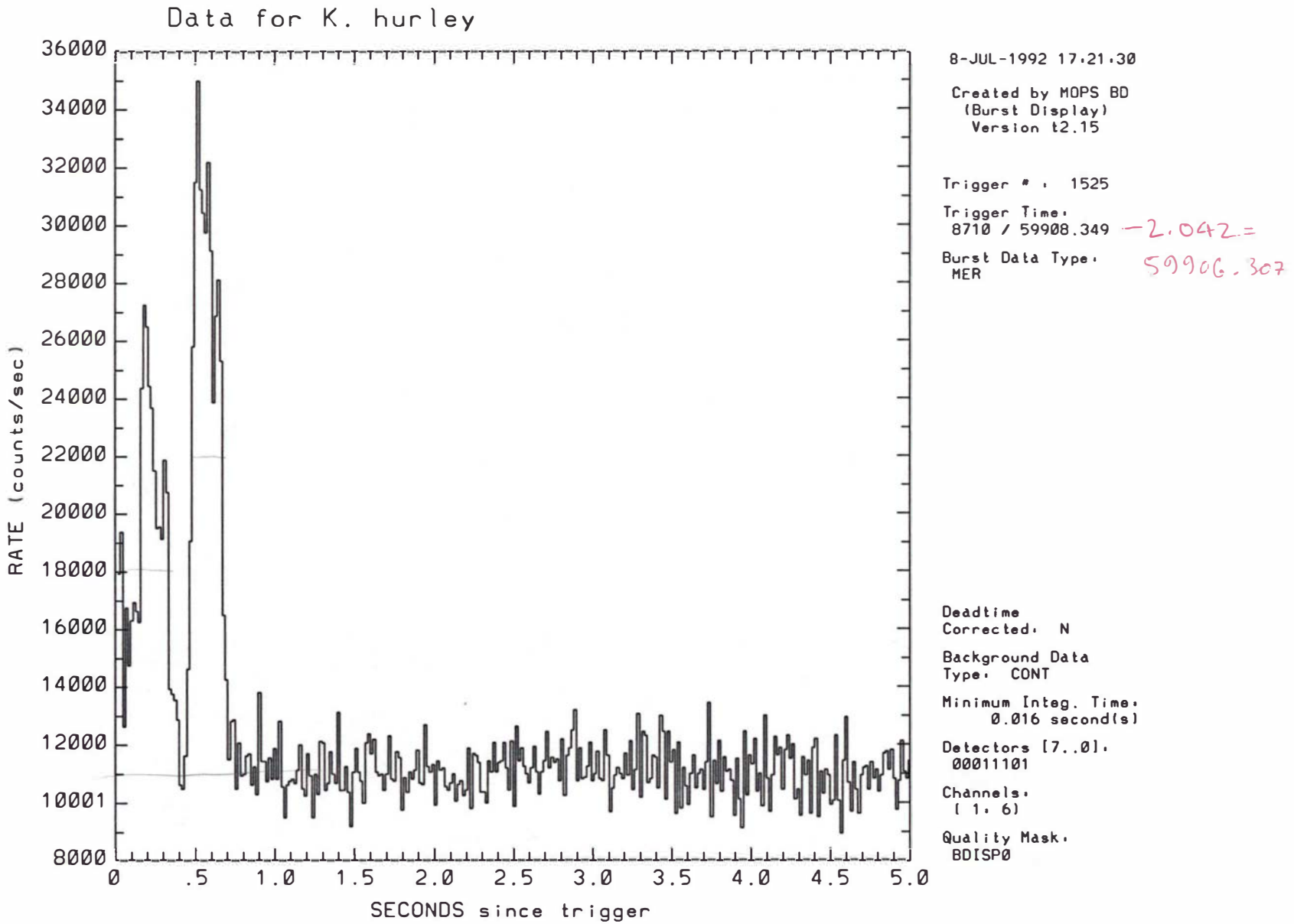
CK- 8/21/92

Mar 29 92

$\alpha = 18^\circ$ $\delta = -59^\circ$

Mar 29 '92

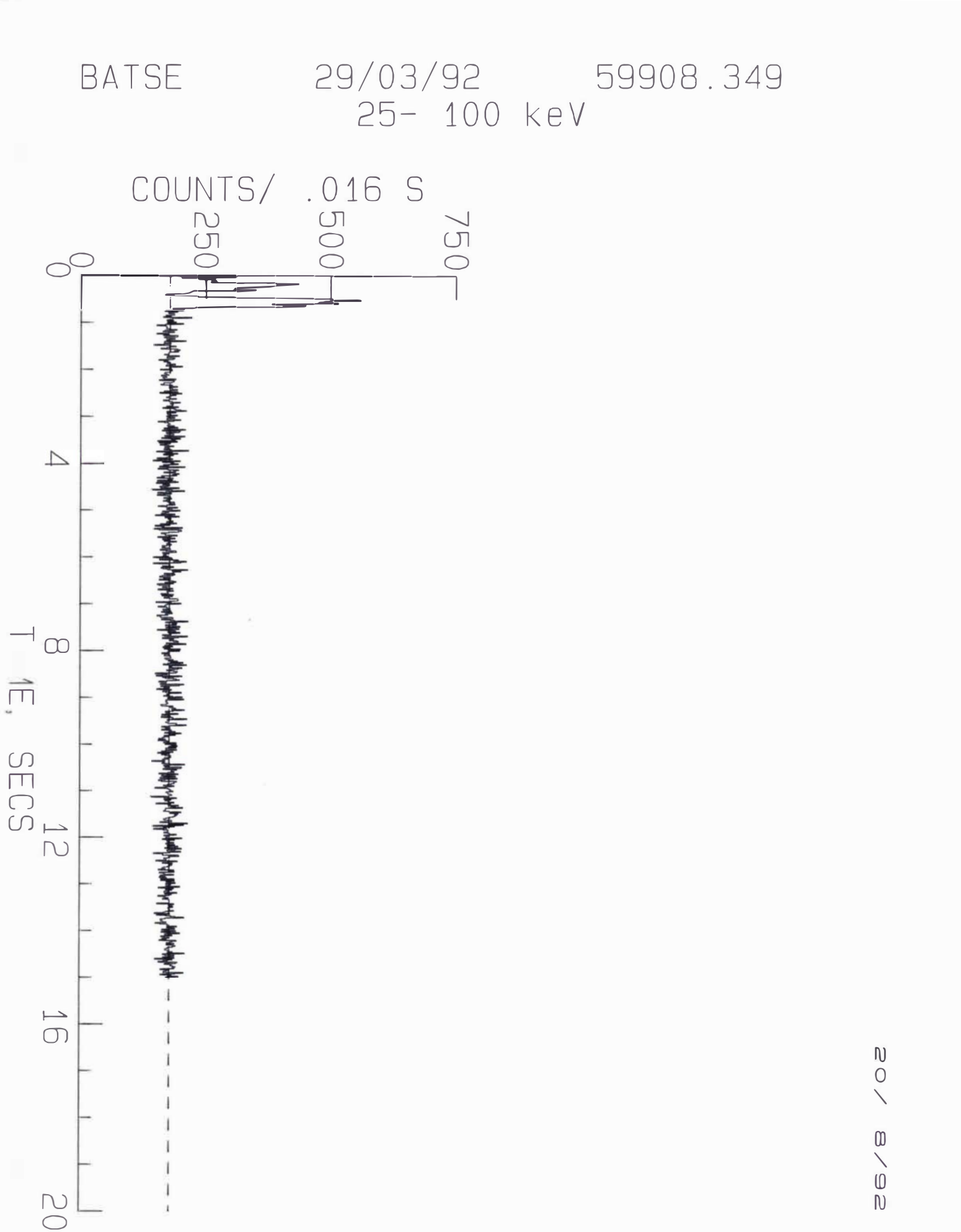

Data for K. hurley
RATE (counts/sec)
36000
34000
32000
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10001
8000
0
10
20
30
40
50
60
70
80
90
100
110
SECONDS since trigger
8-JUL-1992 17:20:09
Created by MOPS BD
(Burst Display)
Version t2.15
Trigger # : 1525
Trigger Time:
8710 / 59908.349
Burst Data Type:
MER
Deadtime
Corrected: N
Background Data
Type: CONT
Minimum Integ. Time:
0.016 second(s)
Detectors [7..0]:
00011101
Channels:
(1, 6)
Quality Mask:
BDISP0



-2.042 =
59906.307

7000 c/s × .25 s + 11000 c/s × .25 s = 4500 c

÷ 50 - 100 = 90-45 c in Ulysses


BATSE 29/03/92 59908.349
25- 100 keV
COUNTS/ .016 S
0
250
500
750
0
4
8
12
16
20
T 1E, SECS

#690 Aug 17 91
UT : 61227.6214

X = 5189.00
Y = A351.75 ✓
Z = 710.25

#907 Oct 16, '91
UT : 39696.9974

X = 6360.00 ✓
Y = 1137.50
2 = 2141.00

#1141 Dec 2 '91
UT : 73731.6854

X = -3400.75
Y = 5157.00 ✓
Z = 2822.75

#80 1525 Mar 29 mer data only
UT : 59908
gap. MB extrapolate coordinates

#1533 Mar 31 '92
UT : 65750.6293

X : 1289.00
Y : -6188.75 ✓
Z = 2427.50

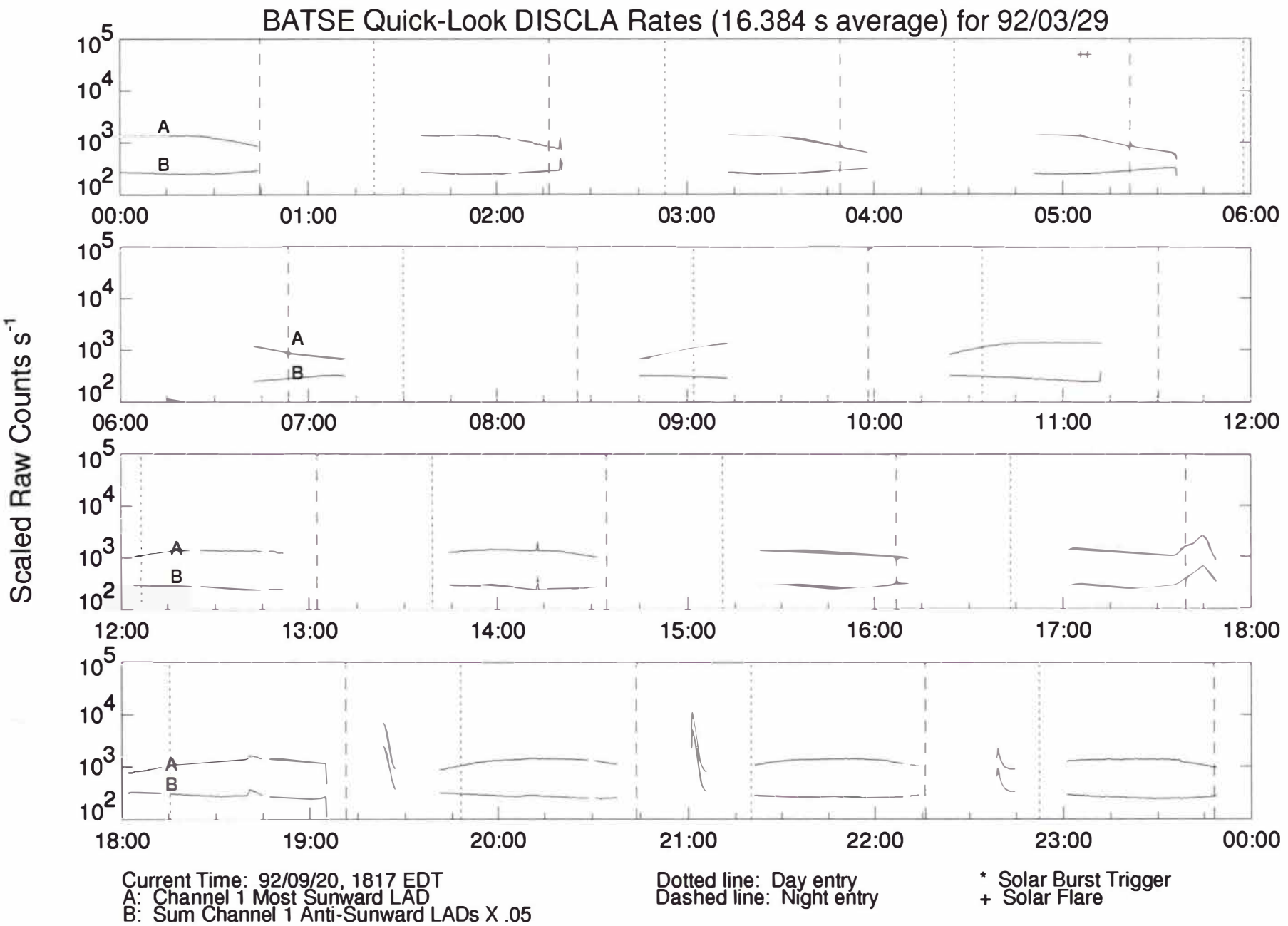
#1577 TTS data only
UT :

check

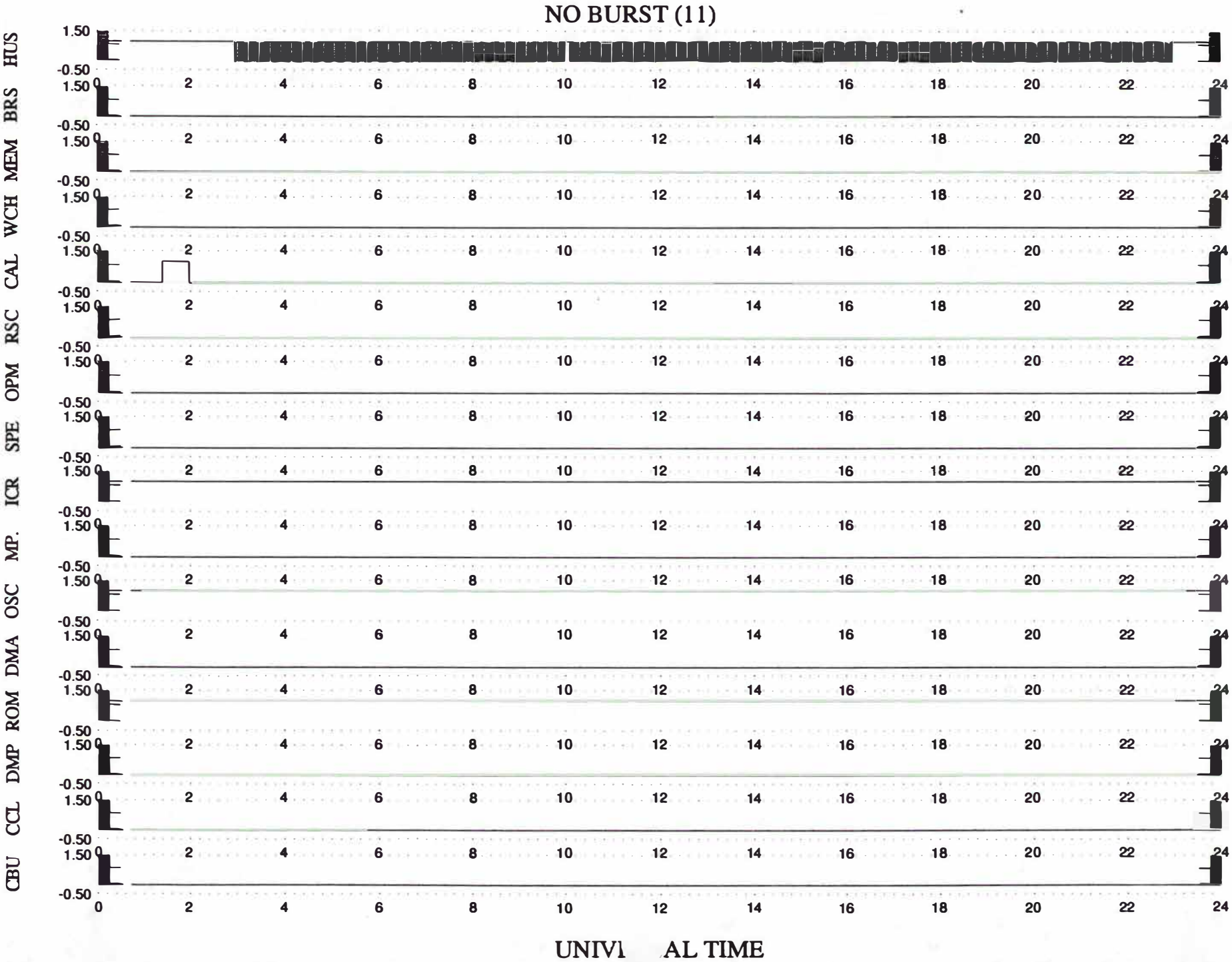
X :
Y :
Z =

#1663 Jun 22 '92
UT : 25506.4038

X = -6531.75
Y = 1243.75 ✓
2 = 1278.50

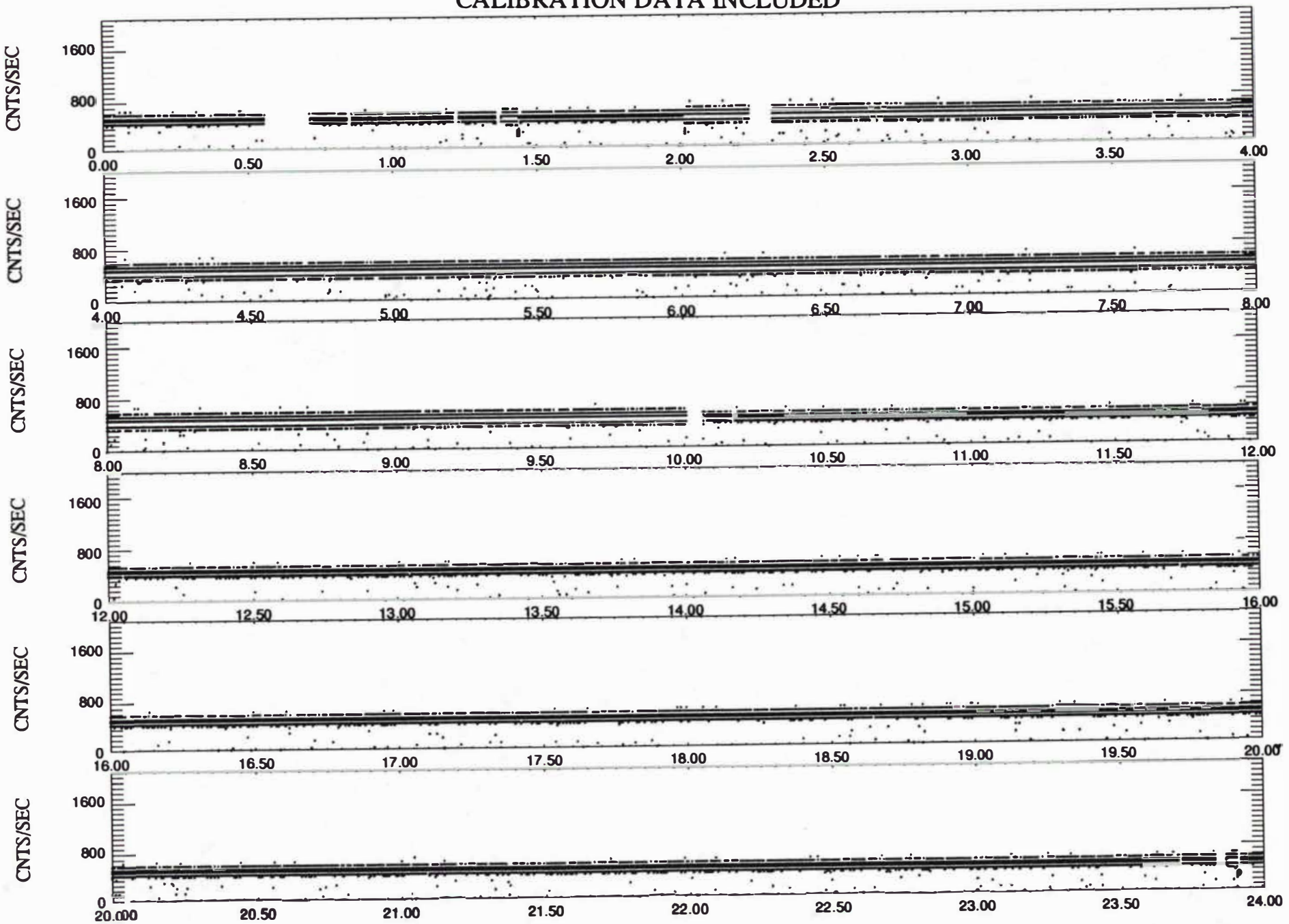

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/29
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1817 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 89, year 1992 to day 89, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 89, year 1992 to day 89, year 1992 4/27/92

CALIBRATION DATA INCLUDED



UNIV SAL TIME

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          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1526
EVENT OF 1992 MAR 30 DAY OF YEAR= 90
EVENT CROSSING TIME AT BATSE      : 37985. S. OR 10:33:04.9
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 344.900  -34.600
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 30/ 3/  92 IS:
RA=  152.749 DEC=     9.403 DIST=     4.570 AU
BATSE-ULYSSES DISTANCE =  683610664. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 27.54 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2021.83 SECS.
CROSSING TIME AT ULYSSES    IS 40007. S. OR 11:06:46.7 +/-  263.78 SECONDS
```

NO

From KOSHUT@ssl.msfc.nasa.gov Mon Apr 27 14:51:49 1992
Date: Mon, 27 Apr 1992 16:53:27 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

Mar 30 BATSE BURST TRIGGER
NO.: 01526

TIME: TJD=8711 SECONDS=37987

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=76 AZIMUTH=18.5 ERROR= DEGREES

COMMENTS:
WEAK BURST LASTING ~ WITH EMISSION OBSERVED UNTIL ~ 1 SECOND AFTER TRIGGER TIME.
(LIMITED AMOUNT OF PRE-TRIGGER DATA). BURST IS NOT OBSERVED ABOVE 300 KEV.

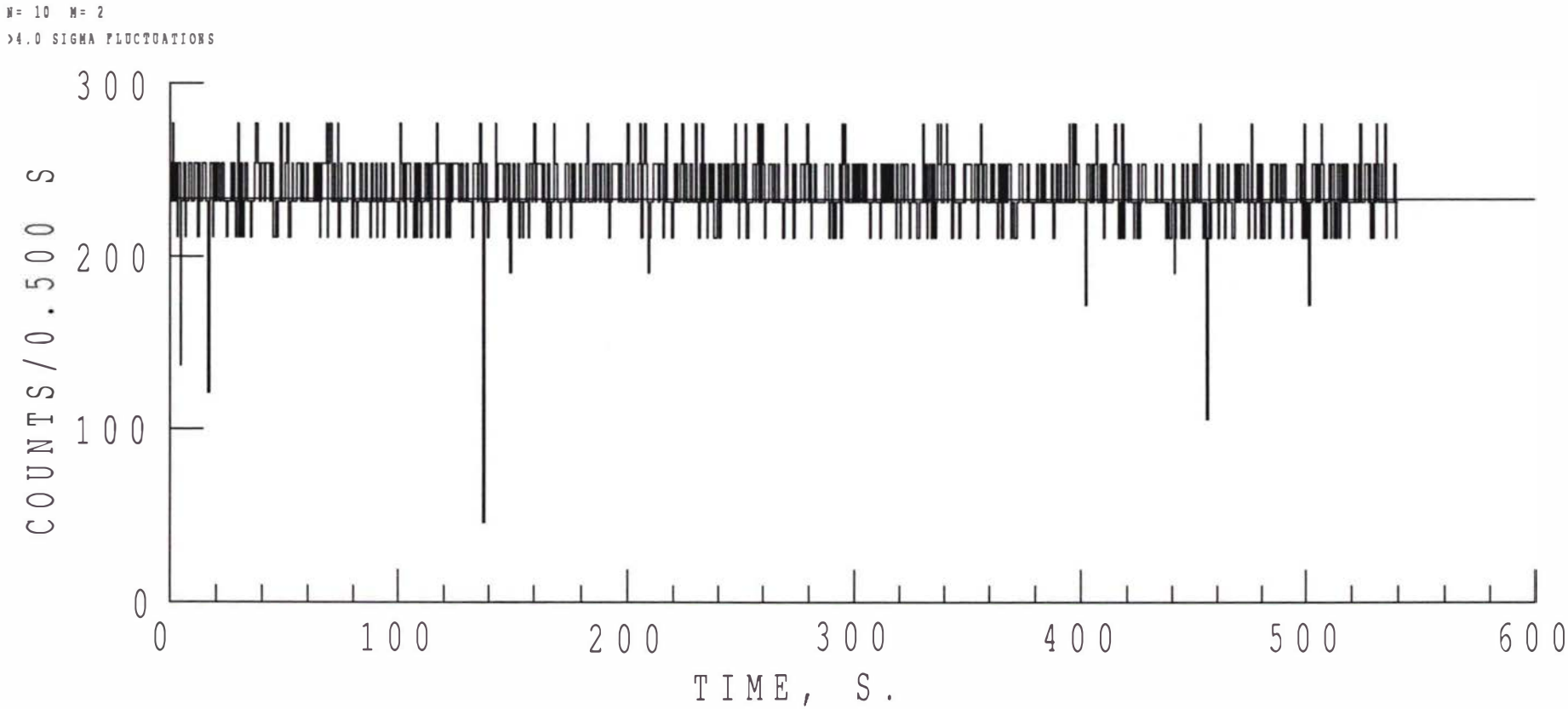
No trigger

7/ 6/94

ULYSSES RT

30/ 3/92 39744.172 s

0- 0 keV



From KOSHUT@ssl.msfc.nasa.gov Tue Apr 21 12:56:34 1992
Date: Tue, 21 Apr 1992 14:57:50 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01527 Mar 30

TIME: TJD=8711 SECONDS=52094

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE PRECIPITATION EVENT.

From KOSHUT@ssl.msfc.nasa.gov Tue Apr 21 13:00:44 1992
Date: Tue, 21 Apr 1992 15:01:54 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01528

TIME: TJD=8711 SECONDS=85714

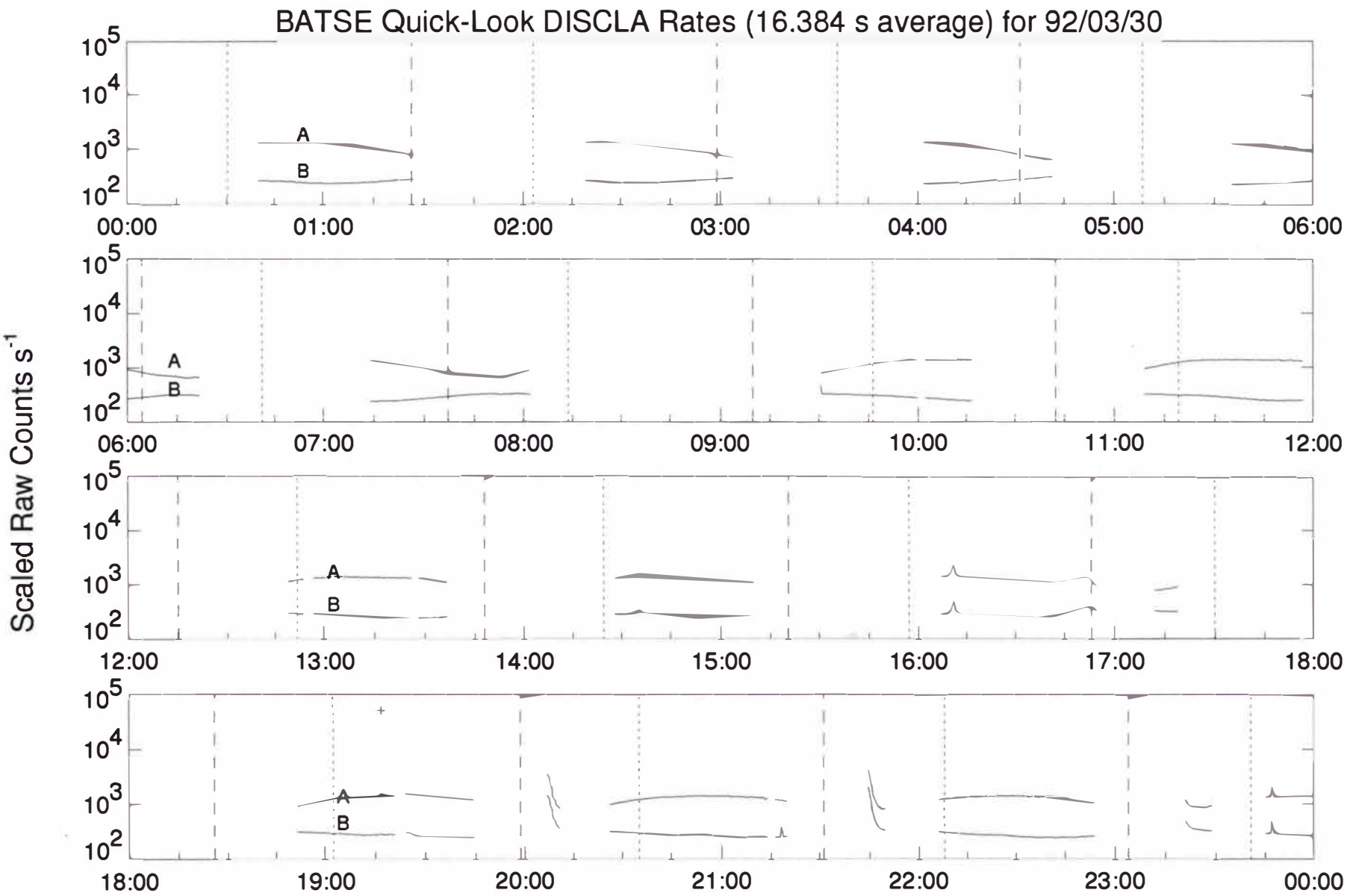
TYPE: CYGNUS SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

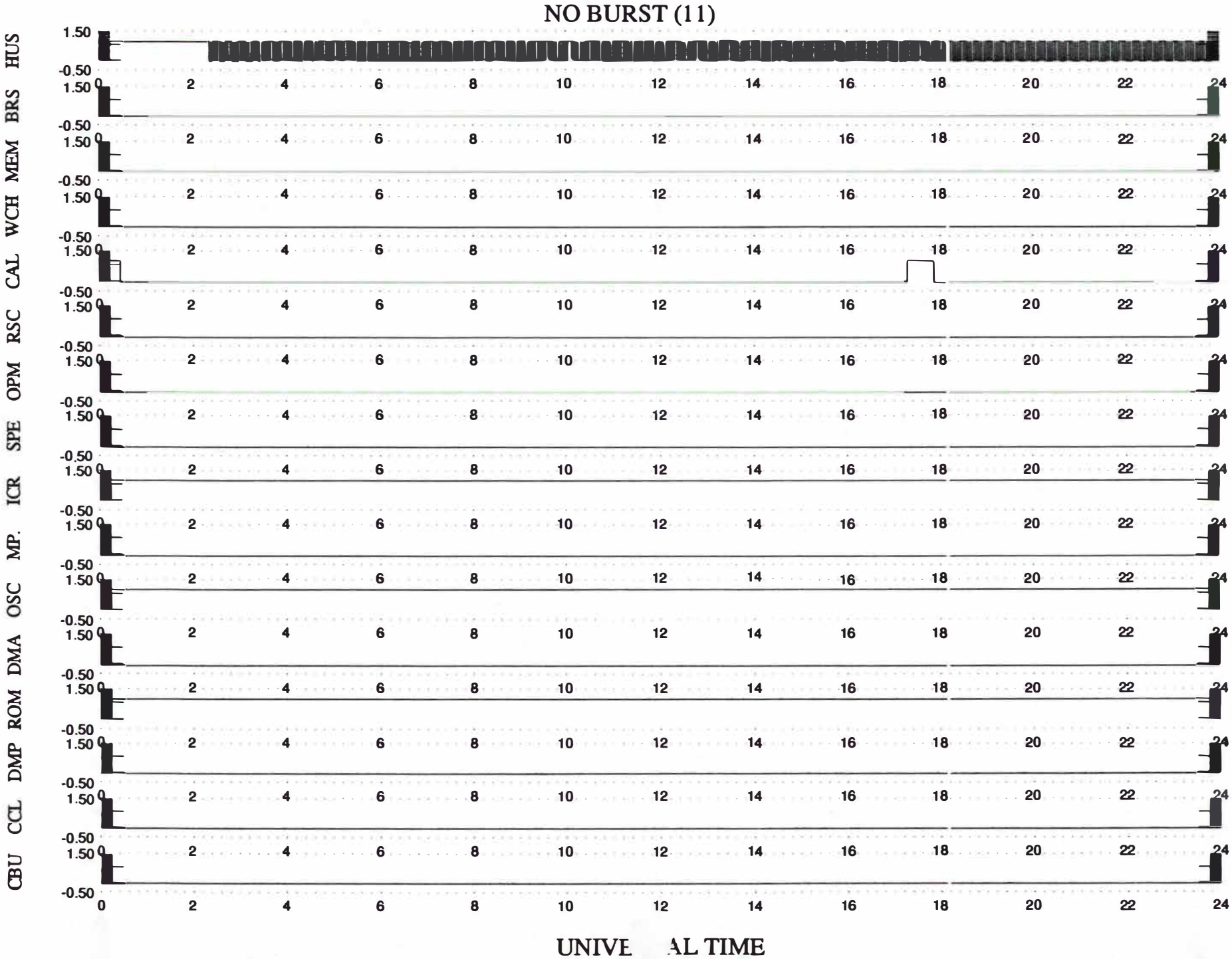
INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
CYGNUS X-1 FLUCTUATION.

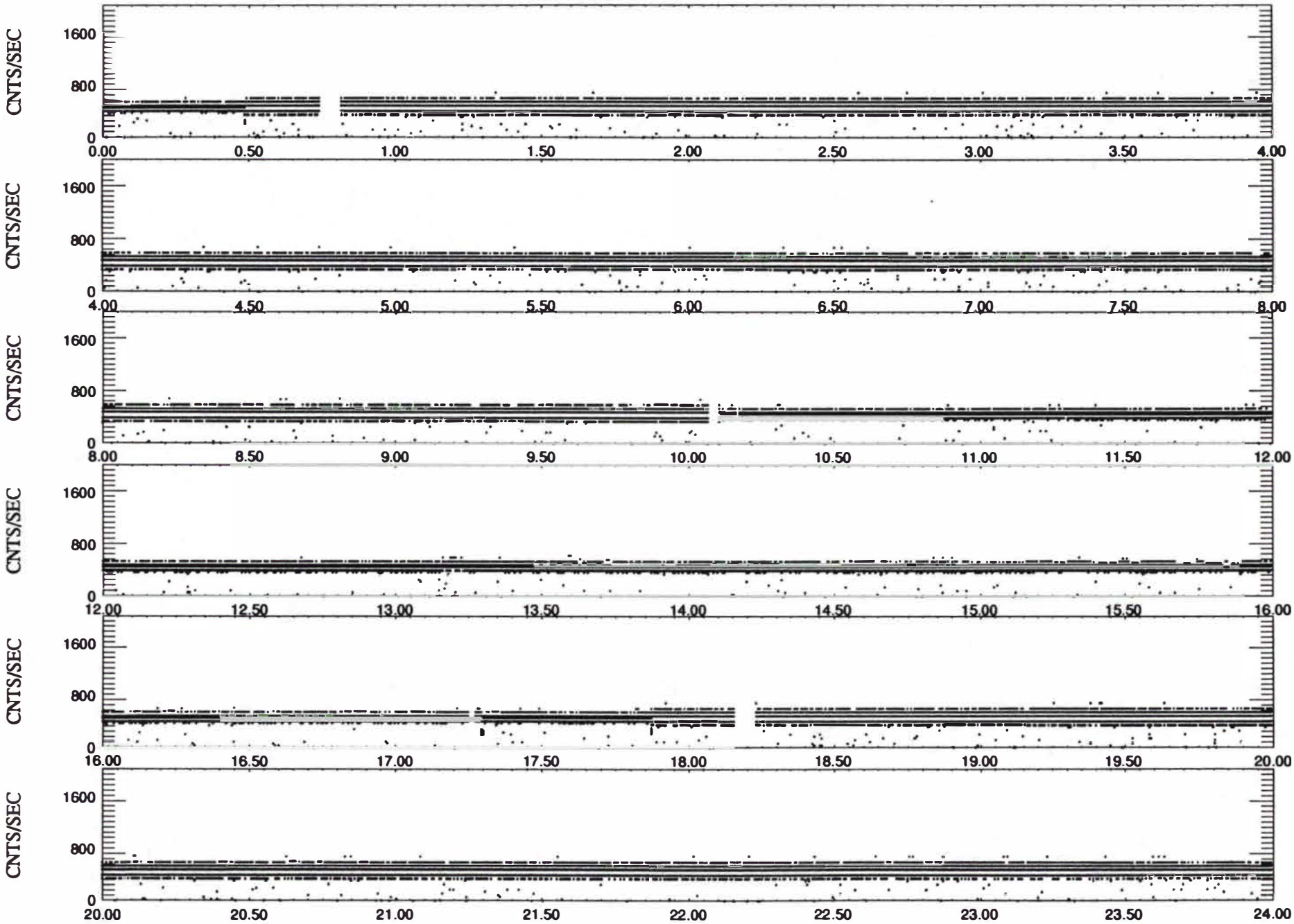

BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/03/30
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/20, 1818 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 90, year 1992 to day 90, year 1992 4/28/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 90, year 1992 to day 90, year 1992 4/27/92

CALIBRATION DATA INCLUDED



UNIV AL TIME

From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing a paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

Kevin

Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

From HORACK@ssl.msfc.nasa.gov Wed Apr 15 10:44:12 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14523; Wed, 15 Apr 92 10:44:09 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA02703; Wed, 15 Apr 92 09:40:25
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA14511; Wed, 15 Apr 92 10:43:38 PDT
Date: Wed, 15 Apr 1992 12:44:40 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Message-Id: <920415124440.35202e3f@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01529

TIME: TJD=8712 SECONDS=42169

TYPE: CYG RIS SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
WEAK TRIGGERING EVENT IN THE CYGNUS X-1 DETECTORS. DATA FOR THIS EVENT IS EXTRE
MELY LIMITED. COINCIDES WITH THE RISE OF CYG X-1 OVER THE LIMB OF THE EARTH.
DURING SPACECRAFT NIGHT, SO POSITIVELY NON-SOLAR, IN ADDITION TO THE WRONG DETEC
TORS. CLASSIFIED AS CYG-X1 RISE BASED ON WEAKNESS, DETECTORS TRIGGERED, AND THE
 COINCIDENT RISE OF THE SOURCE.

****
CATSEARCH PROGRAM
****

:SE BURST # 1530
EVENT OF 1992 MAR 31 DAY OF YEAR= 91
EVENT CROSSING TIME AT BATSE : 52332. S. OR 14:32:12.1
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 27.520 57.680
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 31/ 3/ 92 IS:
RA= 152.575 DEC= 9.410 DIST= 4.580 AU
BATSE-ULYSSES DISTANCE = 685109656. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 80.52 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 376.58 SECS.
CROSSING TIME AT ULYSSES IS 52709. S. OR 14:38:28.7 +/- 447.06 SECONDS

From HORACK@ssl.msfc.nasa.gov Wed Apr 15 11:23:24 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA14984; Wed, 15 Apr 92 11:23:22 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA02705; Wed, 15 Apr 92 10:19:40
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA14978; Wed, 15 Apr 92 11:23:15 PDT
Date: Wed, 15 Apr 1992 13:24:28 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Message-Id: <920415132428.35202e98@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER
NO.: 01530

TIME: TJD=8712 SECONDS=52234

TYPE: UNKNOWN SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=155 AZIMUTH=217 ERROR= DEGREES

COMMENTS:
WEAK EVENT, BASED ON THE MAXIMUM RATES. DETECTOR SELECTION INCONSISTENT WITH PA
RTICLES, AND SOLAR ORIGINS. LOCATES ABOVE HORIZON, WITH NO OCCULTATION CANDIDAT
ES. PROBABLY A WEAK BURST, BUT CANNOT BE CERTAIN. ONLY INCOMPLETE MER AND TTS
AVAILABLE FOR THIS EVENT. CURRENLY IN THE UNKNOWN BIN.

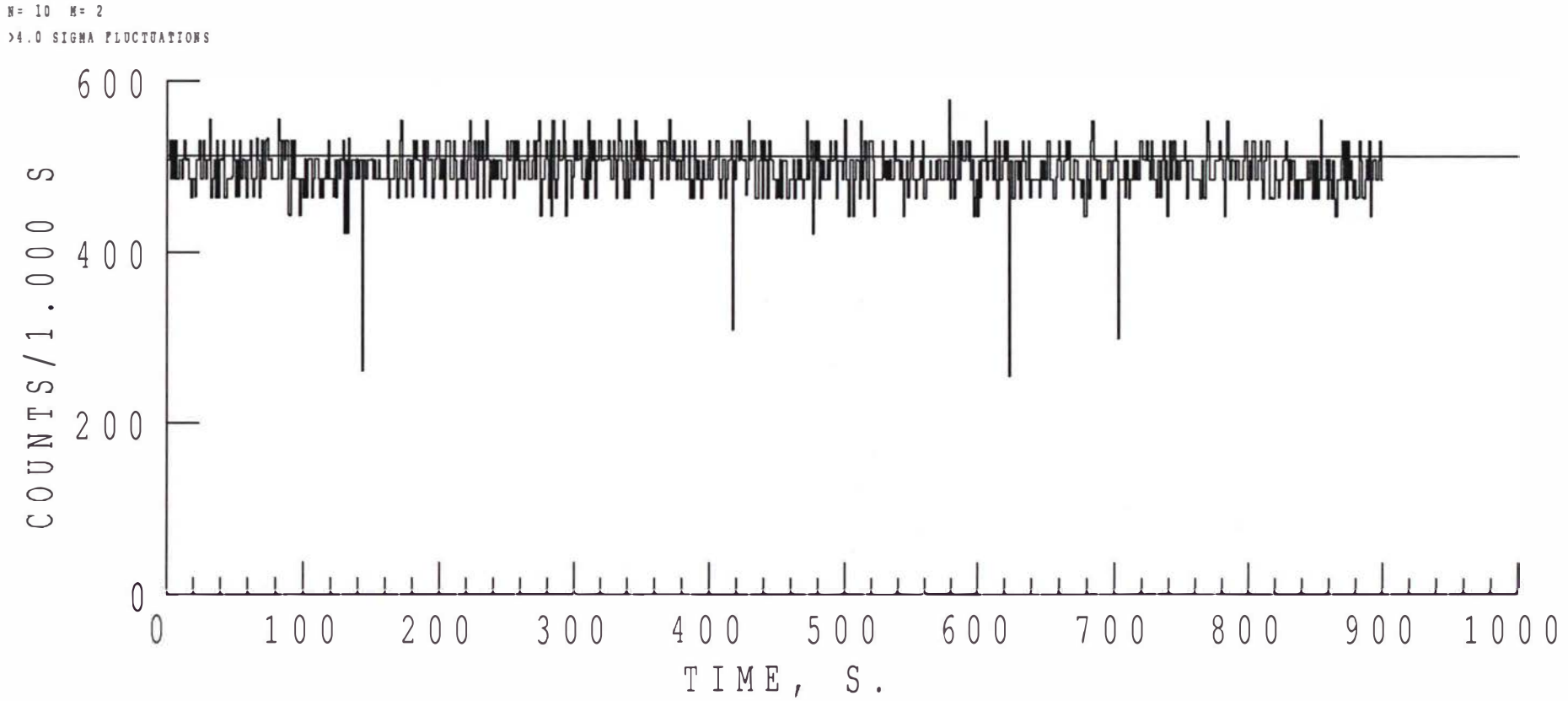
9/11/95

ULYSSES RT

31/ 3/92 52272.293 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



From HORACK@ssl.msfc.nasa.gov Wed Apr 15 11:36:02 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA15138; Wed, 15 Apr 92 11:36:00 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA02707; Wed, 15 Apr 92 10:32:18
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA15135; Wed, 15 Apr 92 11:35:54 PDT
Date: Wed, 15 Apr 1992 13:37:07 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Message-Id: <920415133707.35202ece@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01531

TIME: TJD=8712 SECONDS=56238

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=19 AZIMUTH=130 ERROR= DEGREES

COMMENTS:
GOES M-3.5 FLARE LASTING WELL OVER 1200 SECONDS. MAIN PEAK OF EMISSION AT TIME OF TRIGGER, WITH ANOTHER LARGE PEAK AT T+250 SECONDS. DETAILED STRUCTURE ON EIT HER SIDE OF THESE EMISSION PEAKS. SEEN IN CHANNELS ONE AND TWO ONLY

From HORACK@ssl.msfc.nasa.gov Wed Apr 15 11:38:18 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA15162; Wed, 15 Apr 92 11:38:16 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA02709; Wed, 15 Apr 92 10:34:33
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA15159; Wed, 15 Apr 92 11:38:05 PDT
Date: Wed, 15 Apr 1992 13:39:16 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Message-Id: <920415133916.35202ed1@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER

NO.: 01532

TIME: TJD=8712 SECONDS=62641

TYPE: SAA ENT SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SAA ENTRY.



Helio corr removed

Date: 2/26/97

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☐ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration? N/A

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution?

2. BATSE Data

☑ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)?

☑ Does T_0 in data file agree with T_0 in plot?

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included? N/A

3. PVO Data

☑ Ephemeris of PVO used (not Venus)?

☑ 2000 coordinates used?

☑ Geocentric time used?

Access database updated

****
CATSEARCH PROGRAM
****

BATSE BURST # 1533
EVENT OF 1992 MAR 31 DAY OF YEAR= 91
EVENT CROSSING TIME AT BATSE : 65748. S. OR 18:15:48.2
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 264.200 30.900
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 31/ 3/ 92 IS:
RA= 152.575 DEC= 9.410 DIST= 4.580 AU
BATSE-ULYSSES DISTANCE = 685109656. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 76.82 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 521.06 SECS.
CROSSING TIME AT ULYSSES IS 66269. S. OR 18:24:29.2 +/- 444.22 SECONDS

RI

From HORACK@ssl.msfc.nasa.gov Wed Apr 15 11:48:15 1992
Received: from space6.ssl.berkeley.edu by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA15215; Wed, 15 Apr 92 11:48:13 PDT
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA02711; Wed, 15 Apr 92 10:44:31
Received: from SSL.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA15212; Wed, 15 Apr 92 11:48:05 PDT
Date: Wed, 15 Apr 1992 13:49:19 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Message-Id: <920415134919.35202eed@ssl.msfc.nasa.gov>
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Status: R

BATSE BURST TRIGGER
NO.: 01533
Mar 31
TIME: TJD=8712 SECONDS=65750

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=92 AZIMUTH=126 ERROR= DEGREES

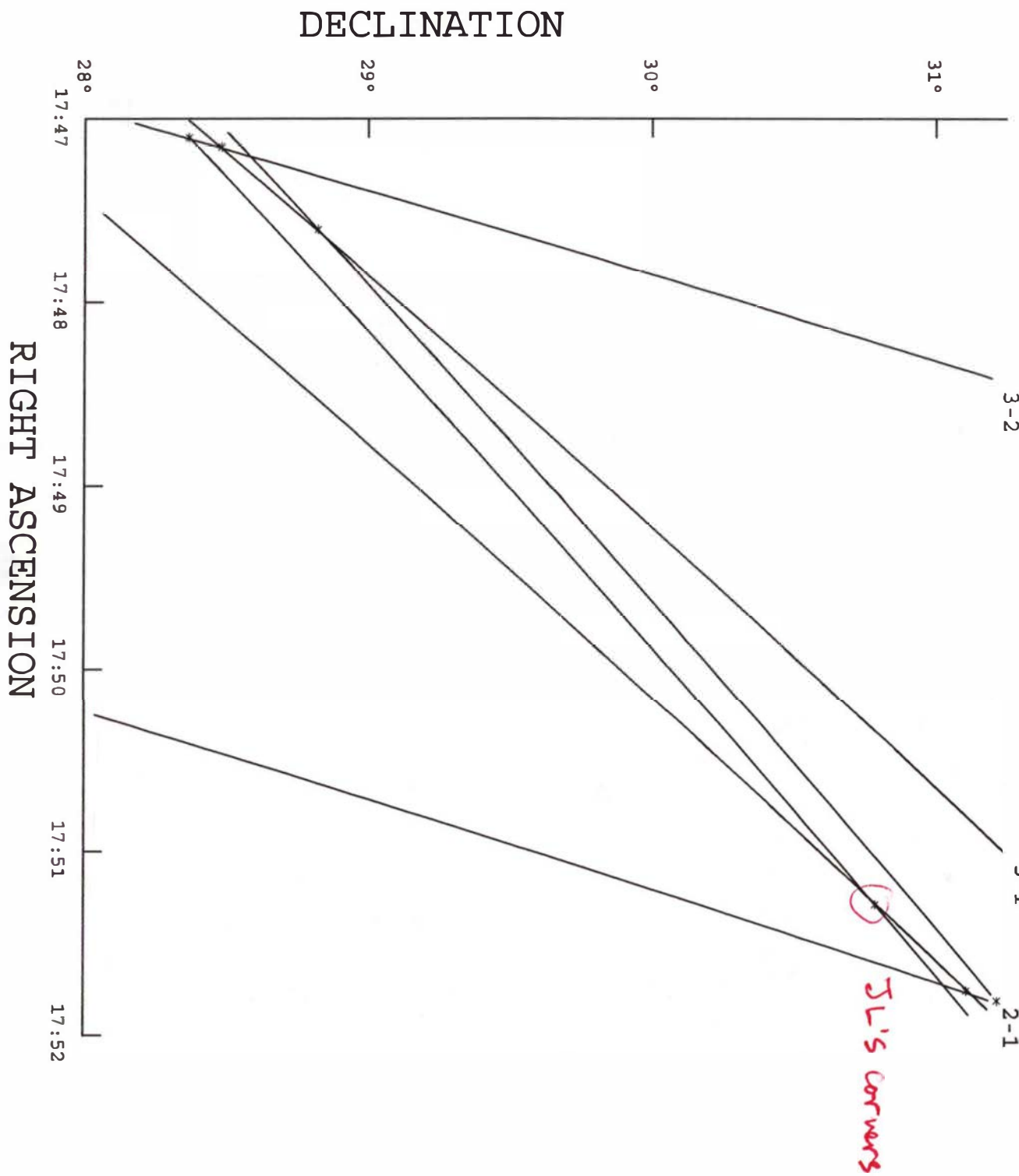
COMMENTS:
EXCELLENT BURST FOR WHICH WE HAVE LOTS OF DATA. COMPLEX EVENT WITH 3 MAIN REGIO
NS. 1ST- ENVELOPE OF ~20 SEC WITH OVERLYING STRUCTURE, AND HARD. 2ND- T+30-60 S
EC IS EXTREMELY SPIKY, WITH SOMEWHAT SOFTER SPECTRUM THAN 1ST. 3RD- T+90-110 SE
C IS HARDER THAN 2ND. MORE FLAT-TOPPED, BUT SOME SPIKY STRUCTURE. SEEN WELL IN
CHANNEL 4. CHANNEL 3 HAS MOST INTERESTING STRUCTURE, ESP. IN 2ND REGION

N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

1 ULYSSES 2 BATSE 3 PVO



EVENT OF MAR 31, 1992 18:25

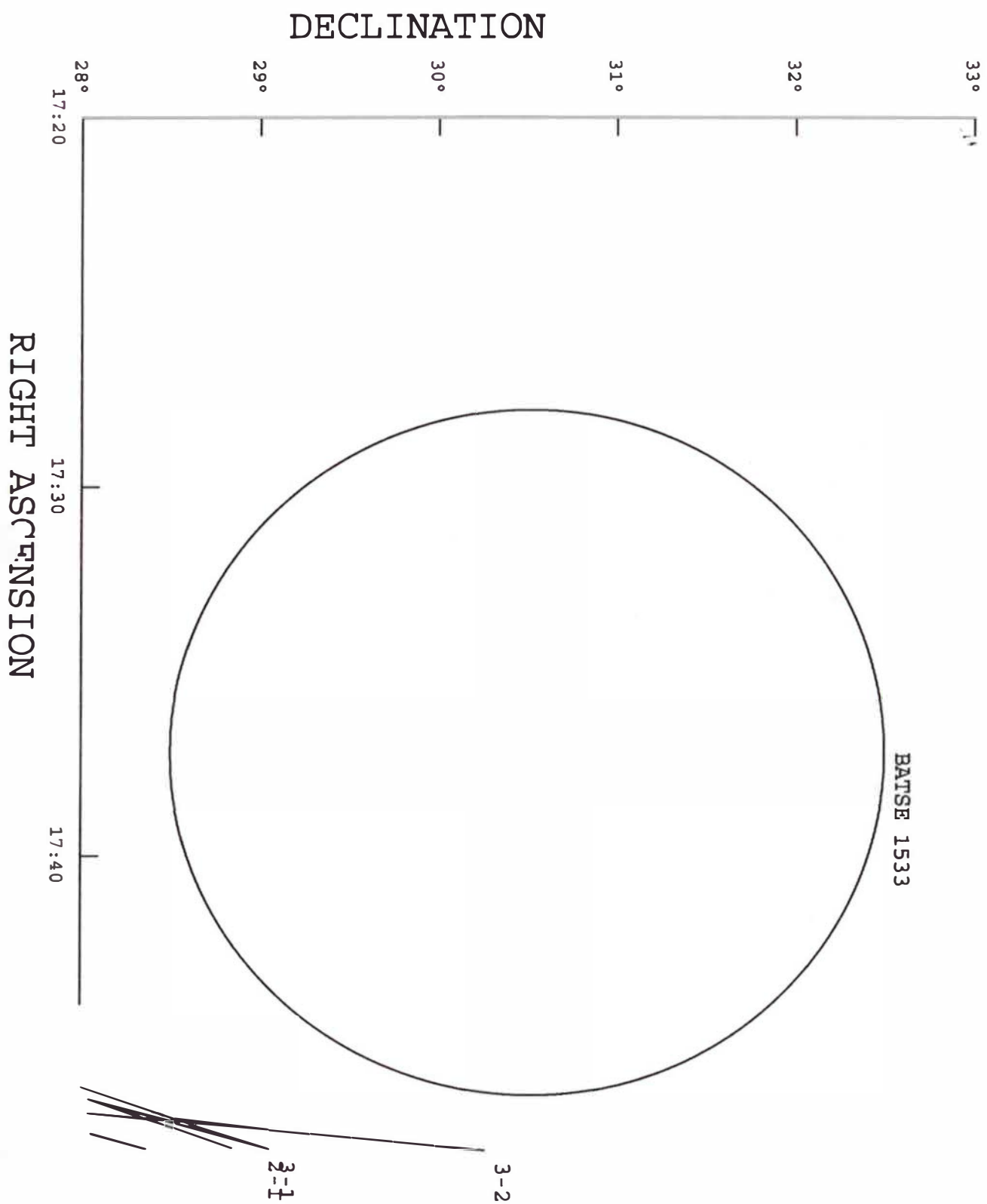
9/10/97

N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

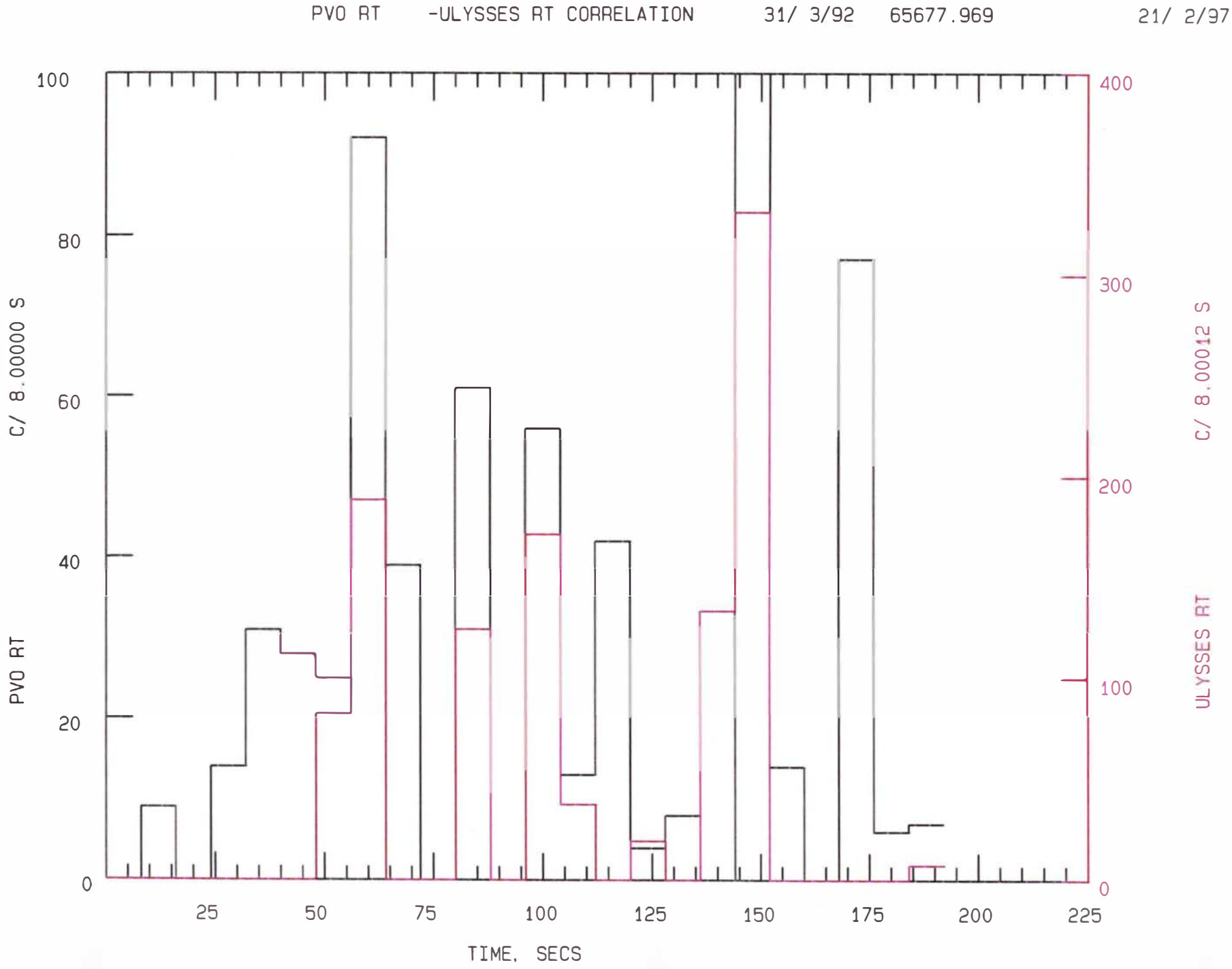
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

1 ULYSSES 2 BATSE 3 PVO

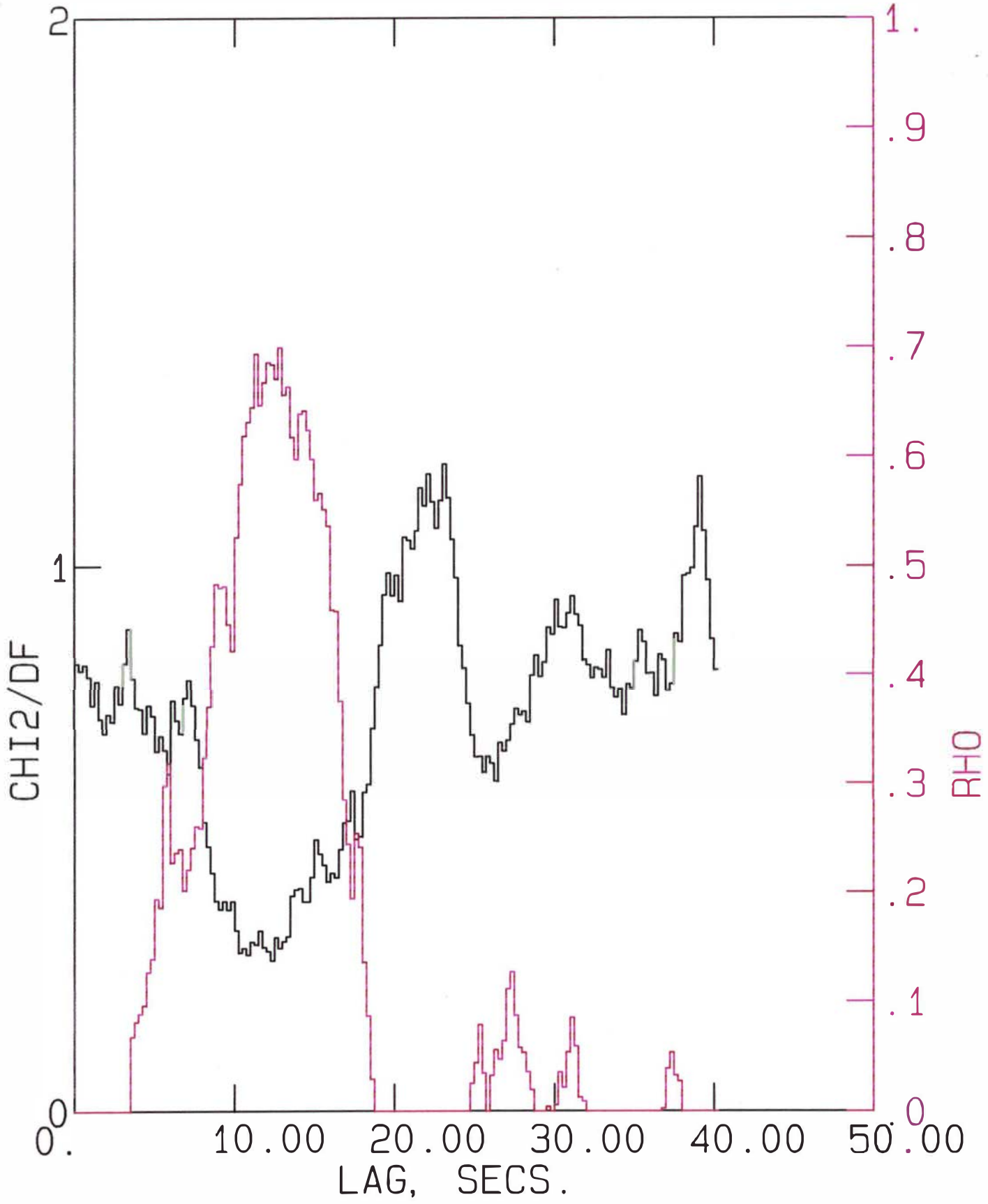


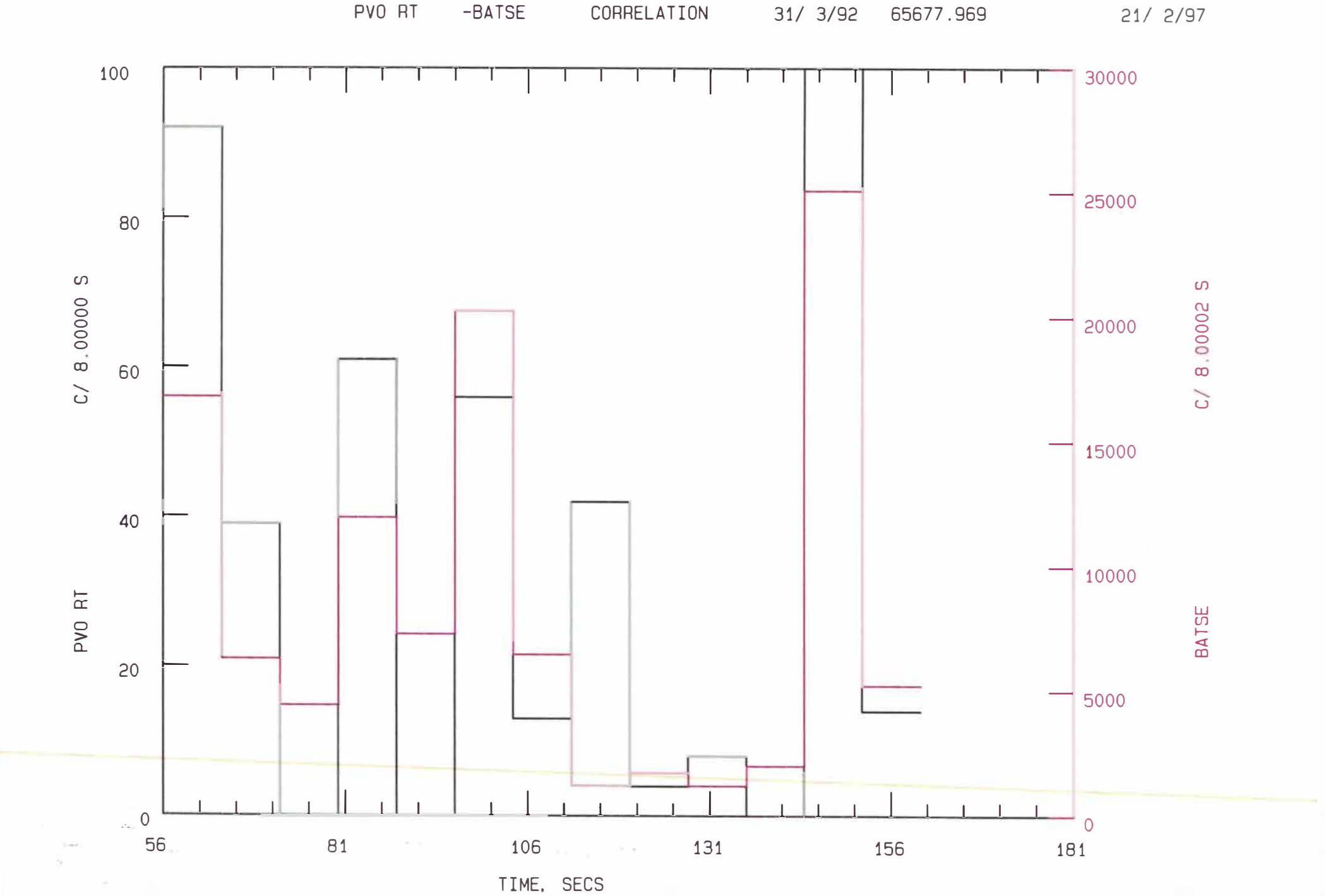
EVENT OF MAR 31, 1992 18:25

26/ 2/97

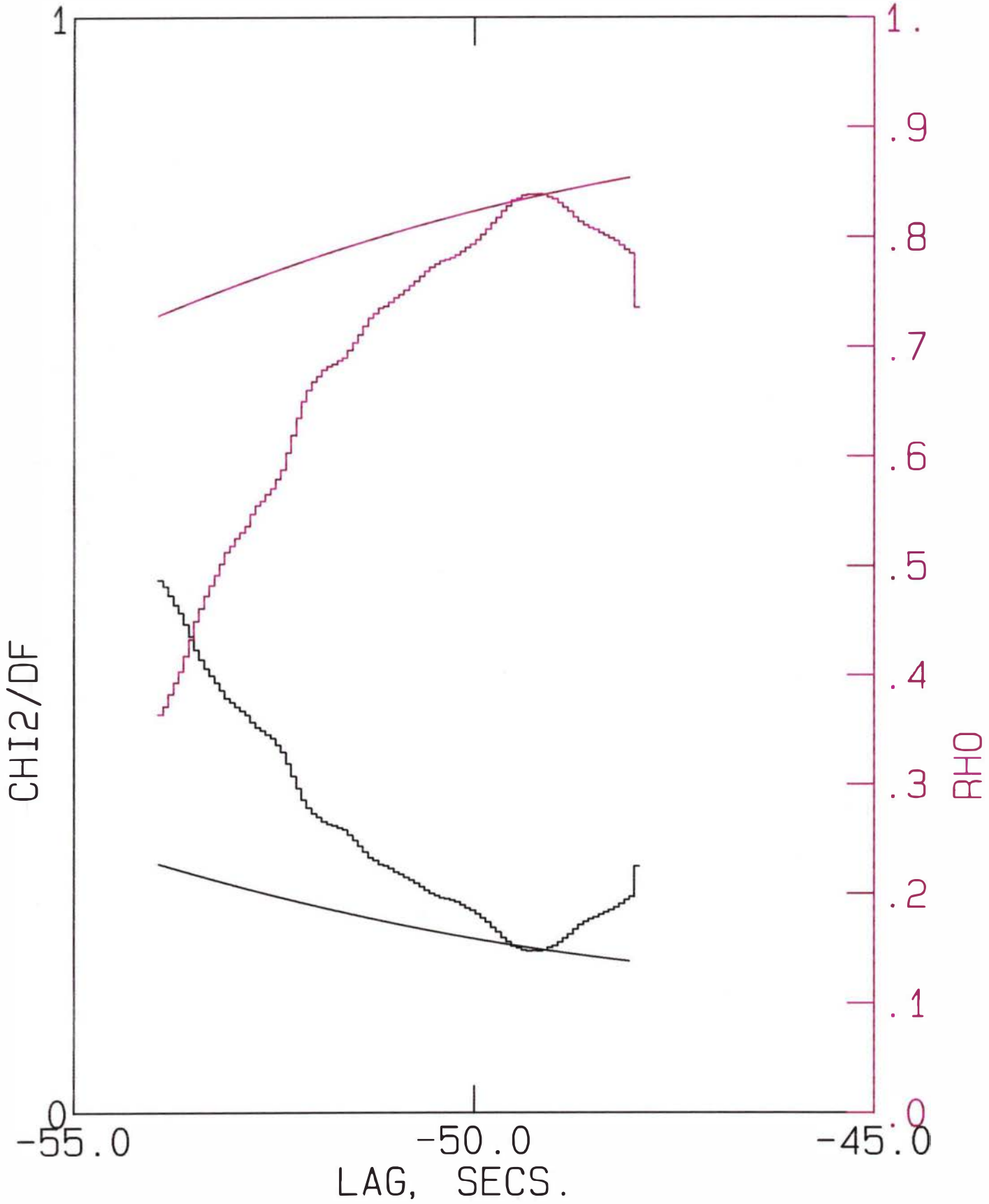

PVO RT -ULYSSES RT CORRELATION 31/ 3/92 65677.969 21/ 2/97
100
80
60
40
20
0
C/ 8.00000 S
PVO RT
400
300
200
100
0
C/ 8.00012 S
ULYSSES RT
25
50
75
100
125
150
175
200
225
TIME, SECS

PVO RT -ULYSSES RT CORRELATION 31/ 3/92 65677.969

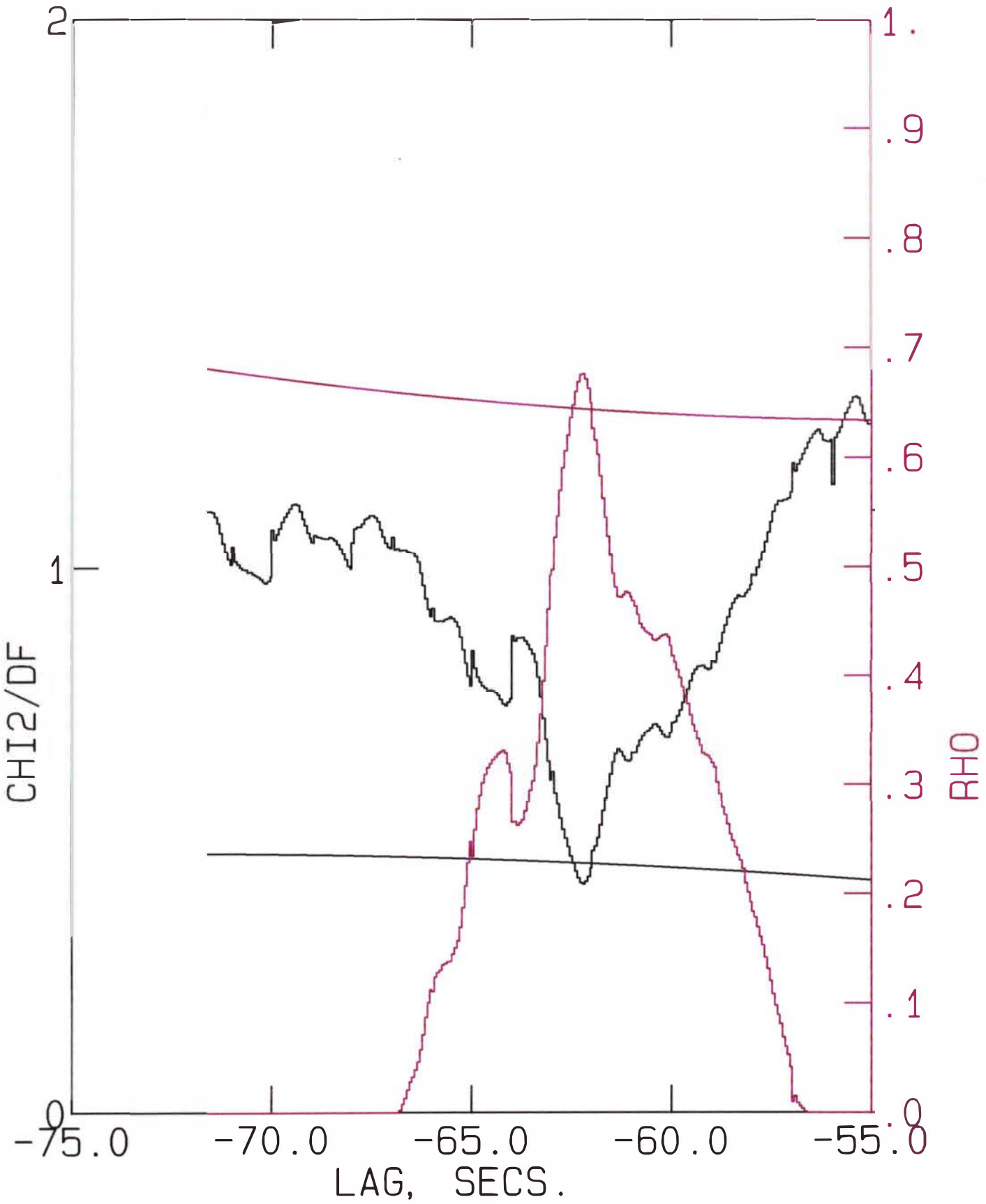


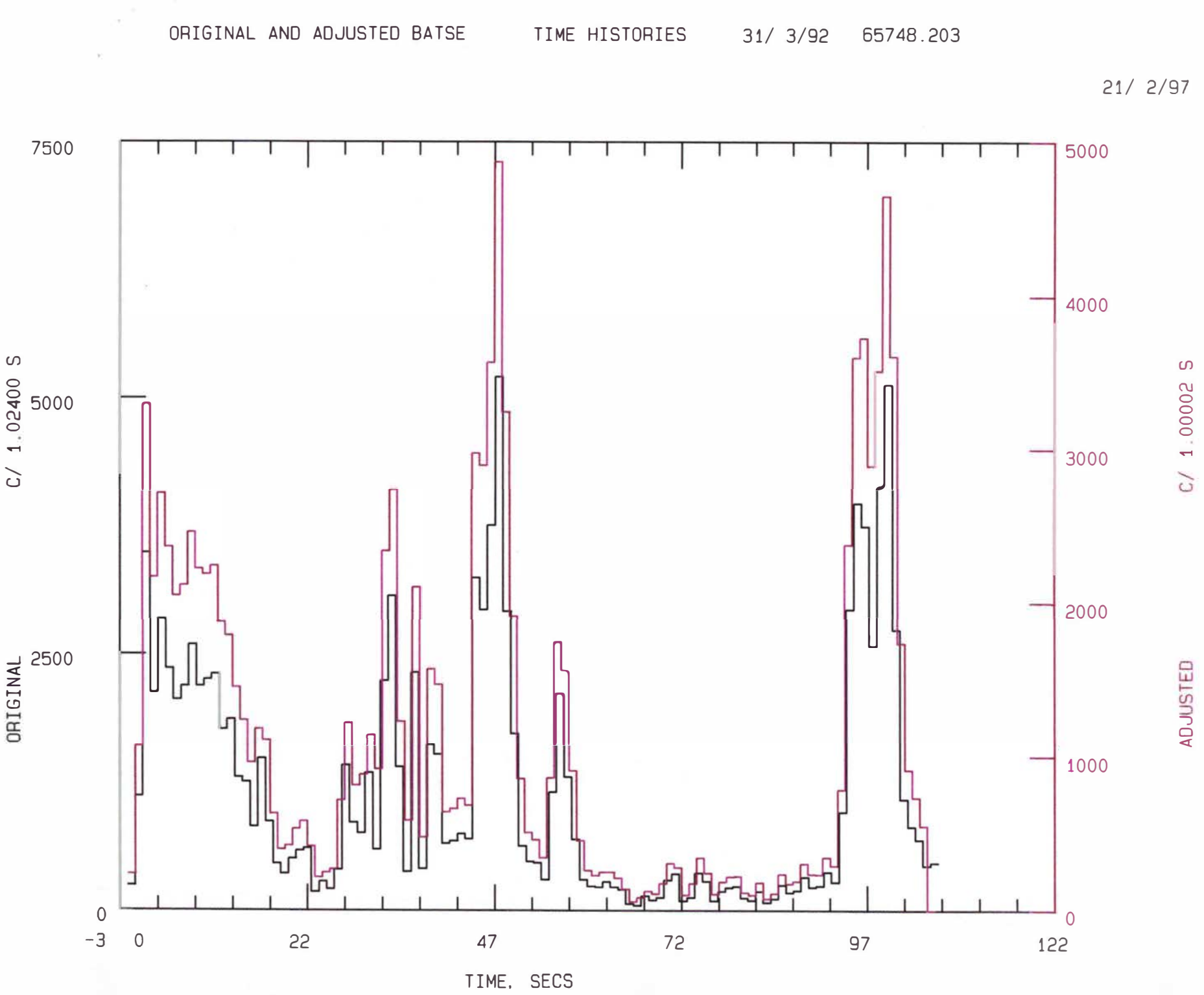

PVO RT -BATSE CORRELATION 31/ 3/92 65677.969 21/ 2/97
100
80
60
40
20
0
C/ 8.00000 S
PVO RT
30000
25000
20000
15000
10000
5000
0
C/ 8.00002 S
BATSE
56
81
106
131
156
181
TIME, SECS

PVO RT -BATSE CORRELATION 31/ 3/92 65677.969



ULYSSES RT-BATSE CORRELATION 31/ 3/92 66308.030




ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 31/ 3/92 65748.203
21/ 2/97
7500
5000
2500
0
ORIGINAL
C/ 1.02400 S
5000
4000
3000
2000
1000
0
ADJUSTED
C/ 1.00002 S
-3
0
22
47
72
97
122
TIME, SECS

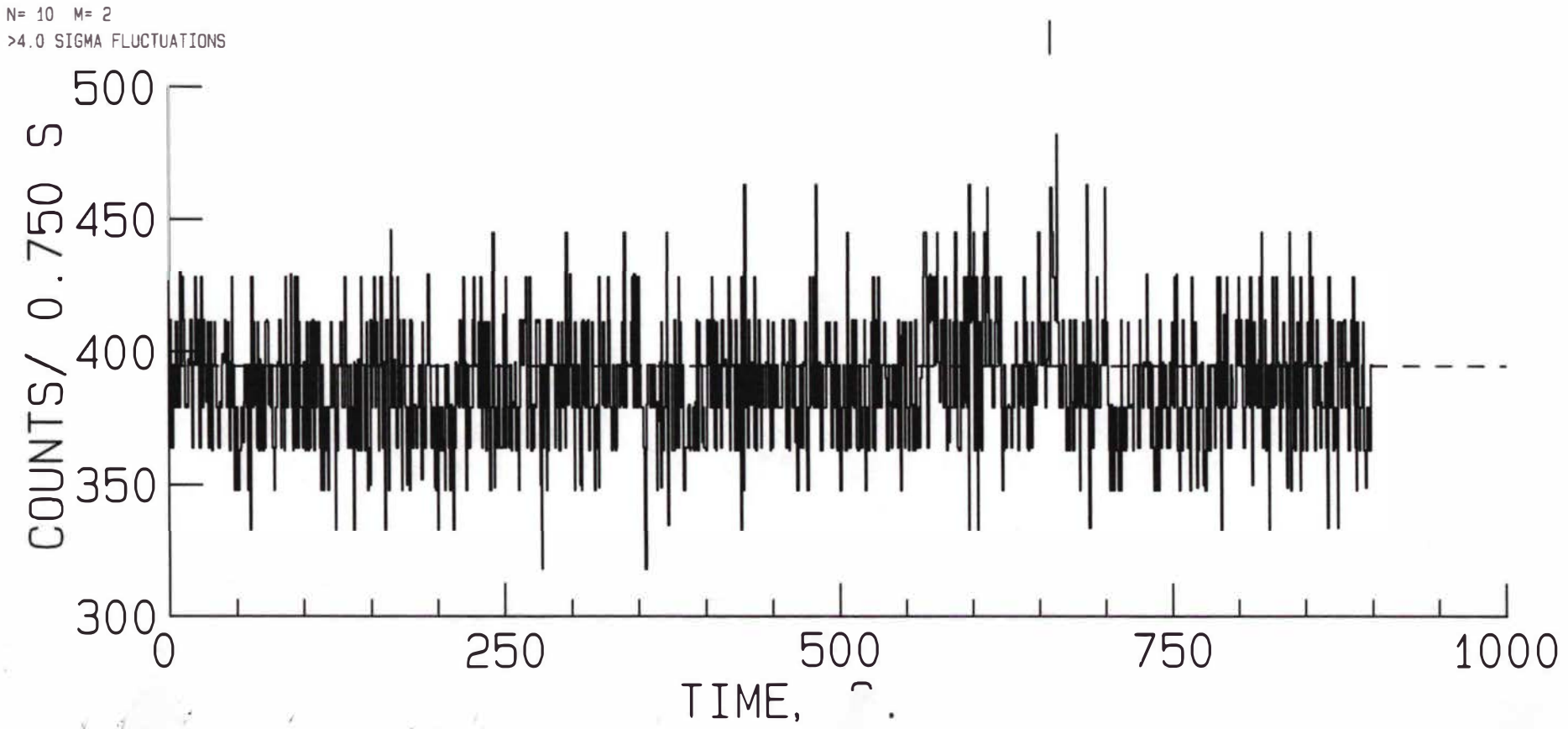
ULYSSES RT

21/ 2/97

31/ 3/92 65808.014 s

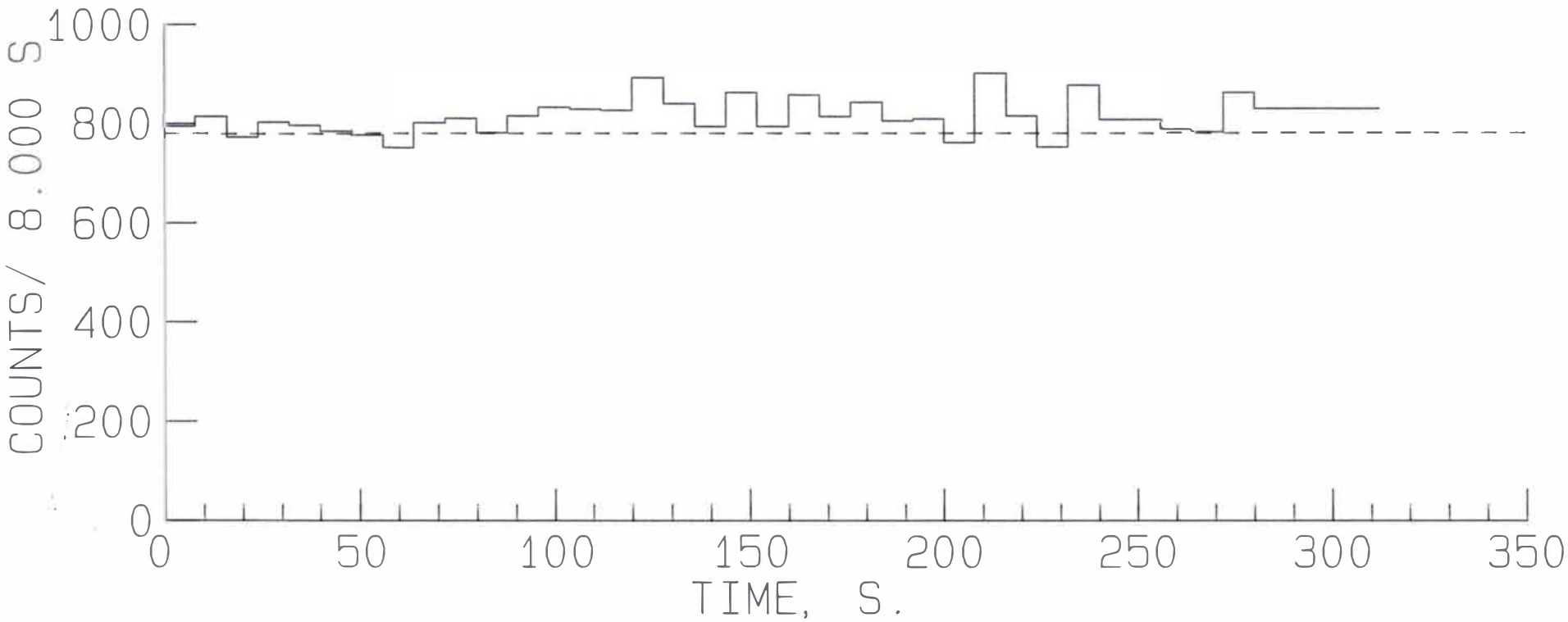
0.250 S INTERVALS REGROUPED BY 3

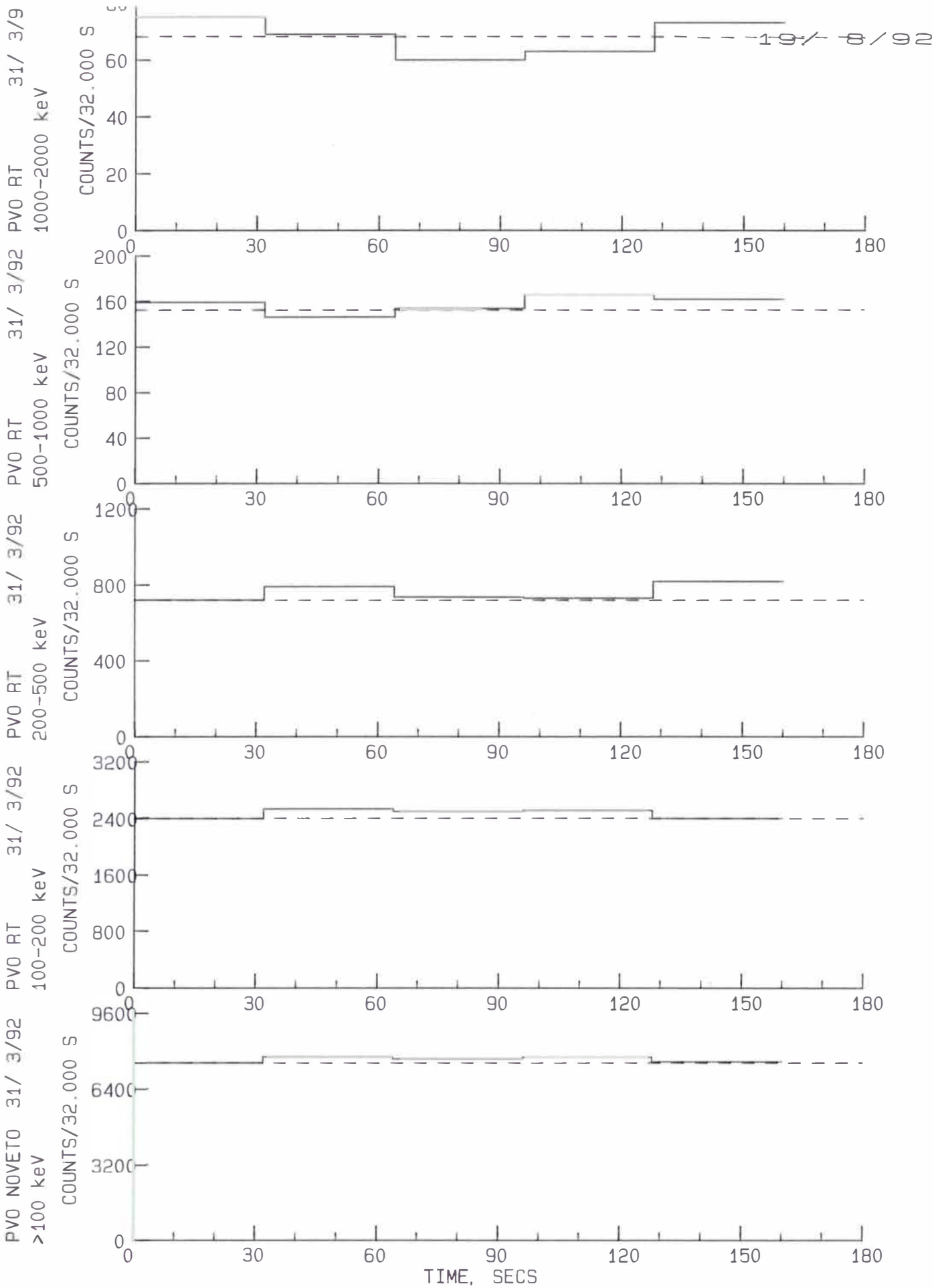
23- 160 keV

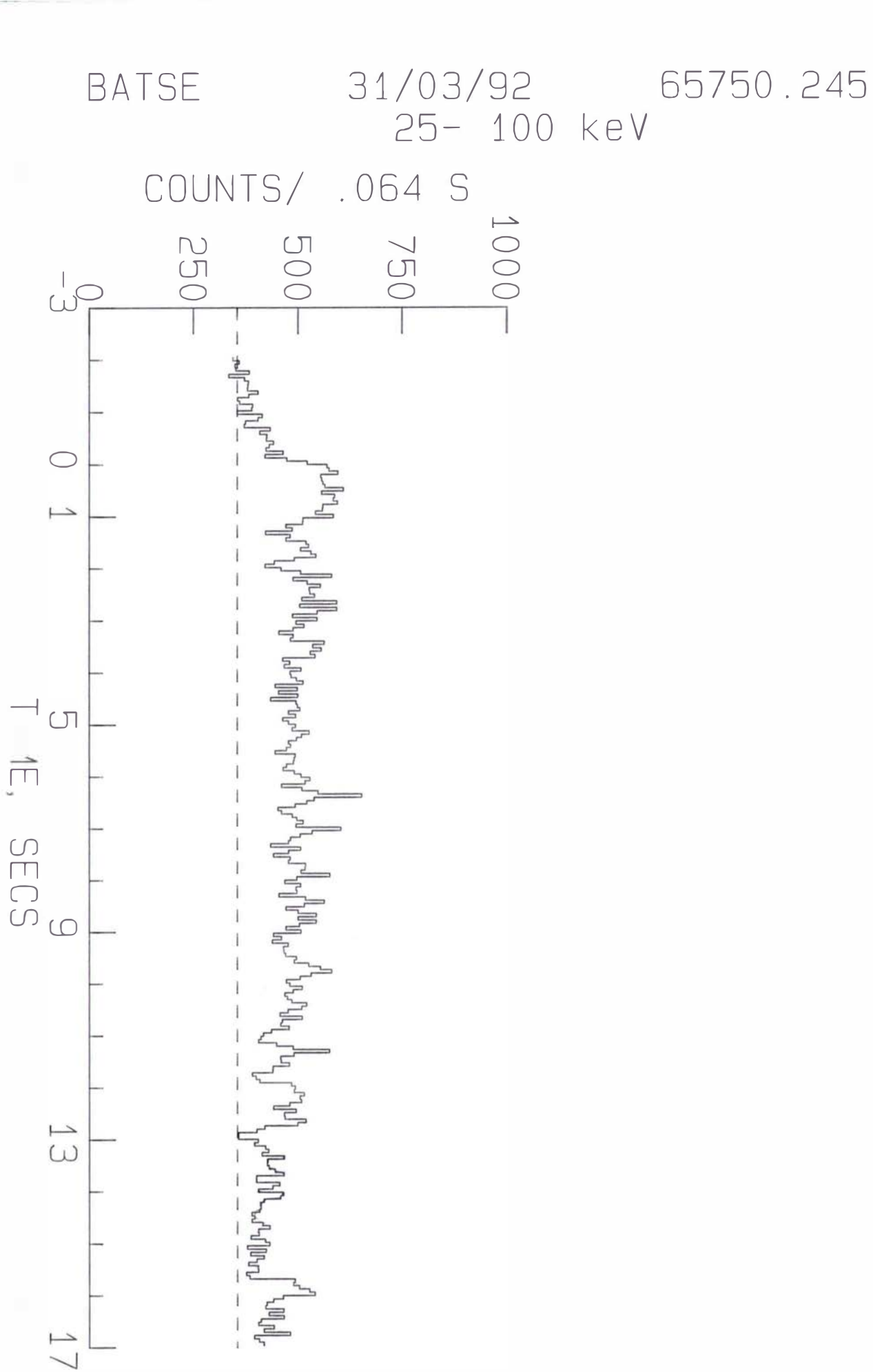


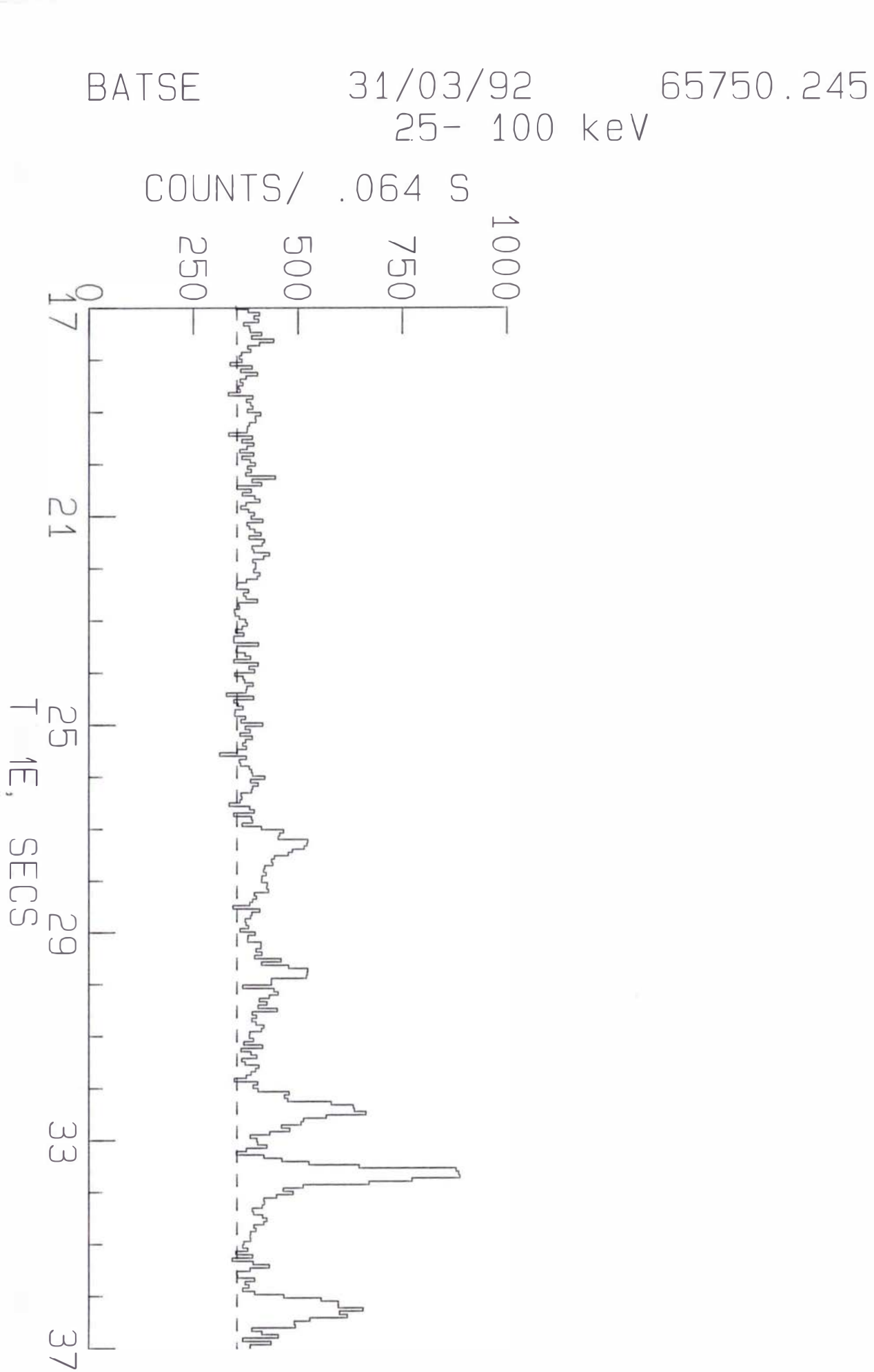
19/ 8/92

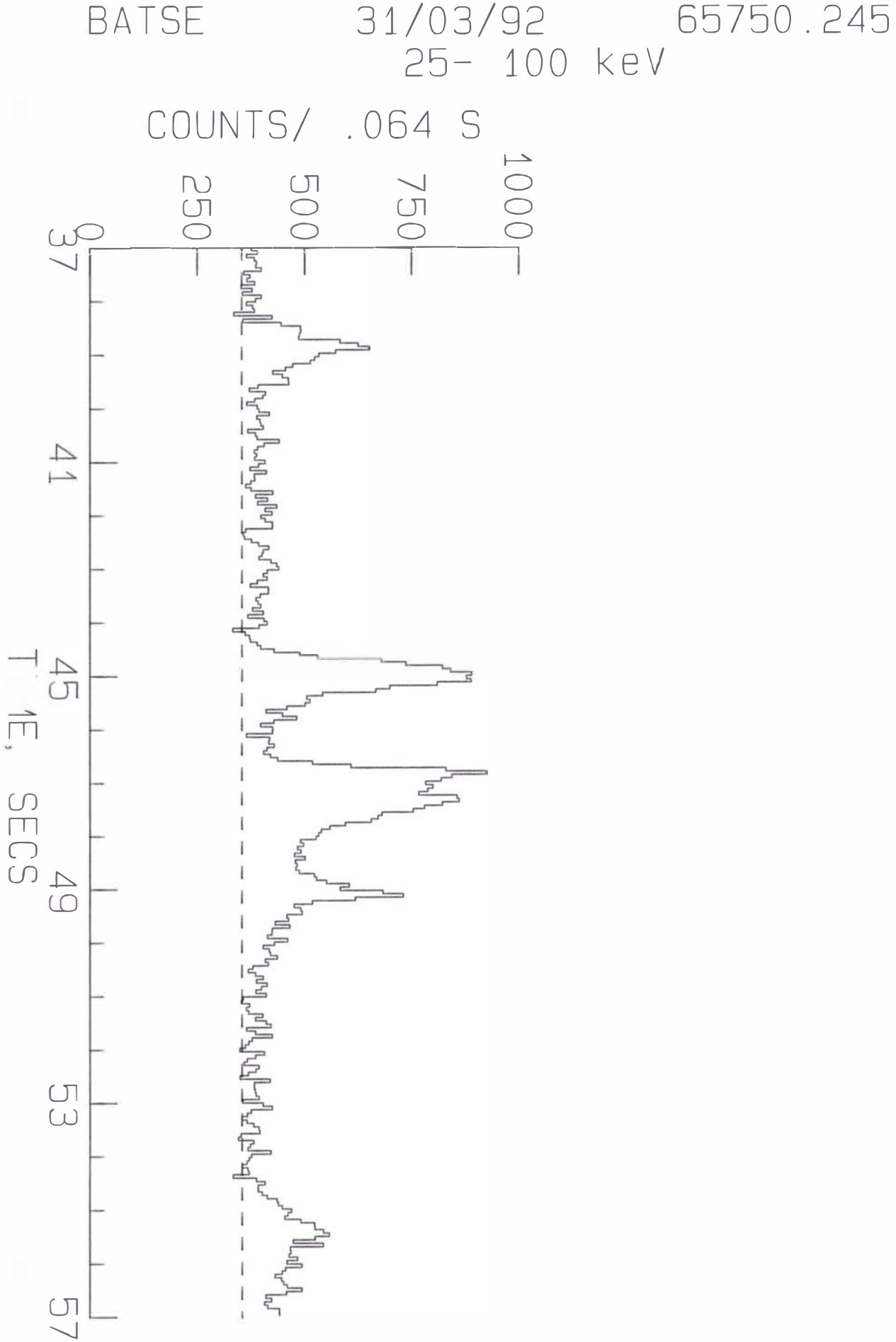
PVO-RT
31/ 3/92
65613.969 s.
8.000 S. INTERVALS REGROUPED BY 1
100-2000 keV




PVO RT 31/ 3/9
1000-2000 keV
COUNTS/32.000 S
19/ 8/92
PVO RT 31/ 3/92
500-1000 keV
COUNTS/32.000 S
PVO RT 31/ 3/92
200-500 keV
COUNTS/32.000 S
PVO RT 31/ 3/92
100-200 keV
COUNTS/32.000 S
PVO NOVETO 31/ 3/92
>100 keV
COUNTS/32.000 S
0
30
60
90
120
150
180
TIME, SECS

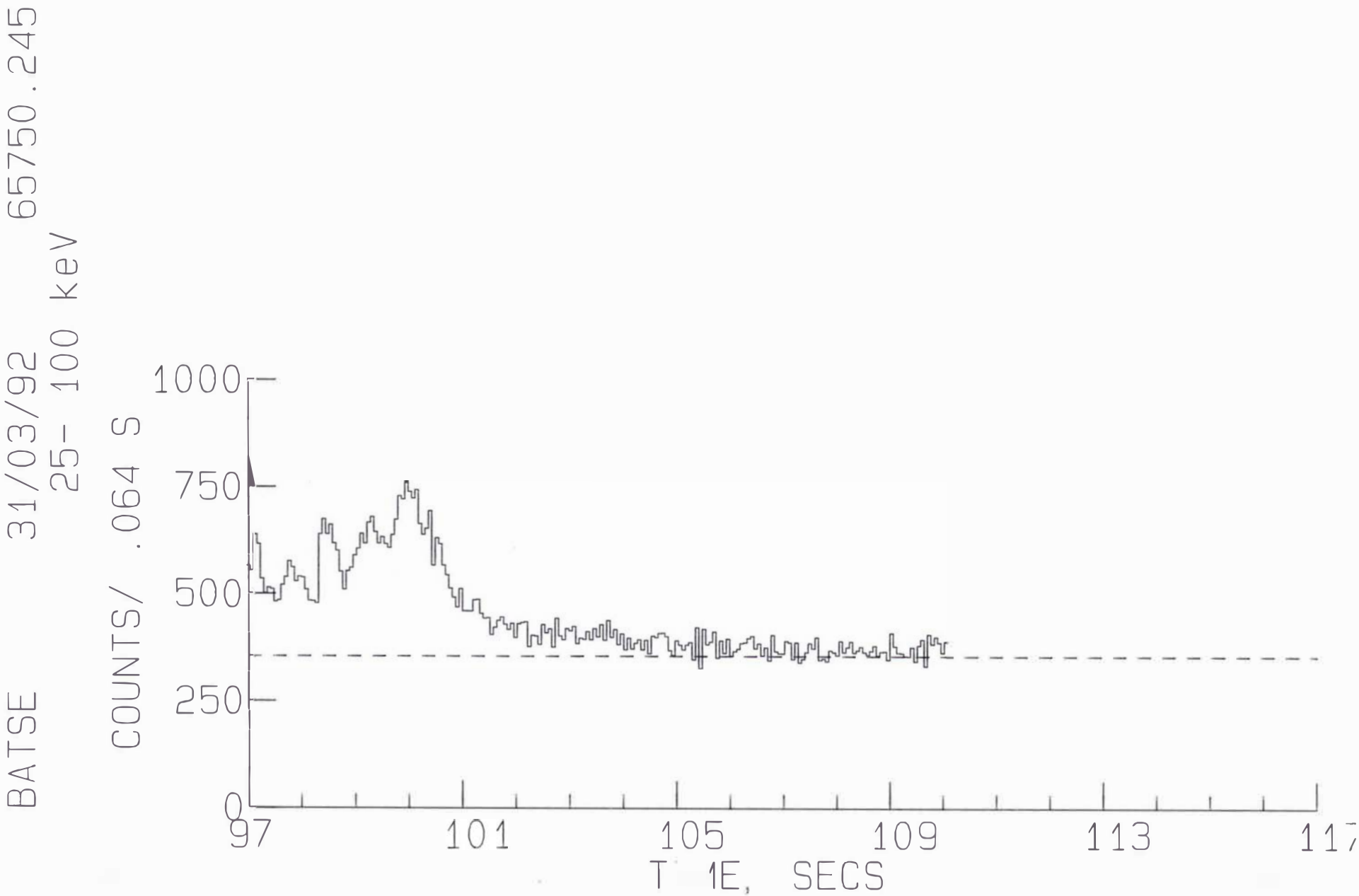

BATSE 31/03/92 65750.245
25- 100 keV
COUNTS/ .064 S
250
500
750
1000
-3
0
1
5
9
13
17
T 4E, SECS


BATSE 31/03/92 65750.245
25- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
17
21
25
29
33
37
T, SECS

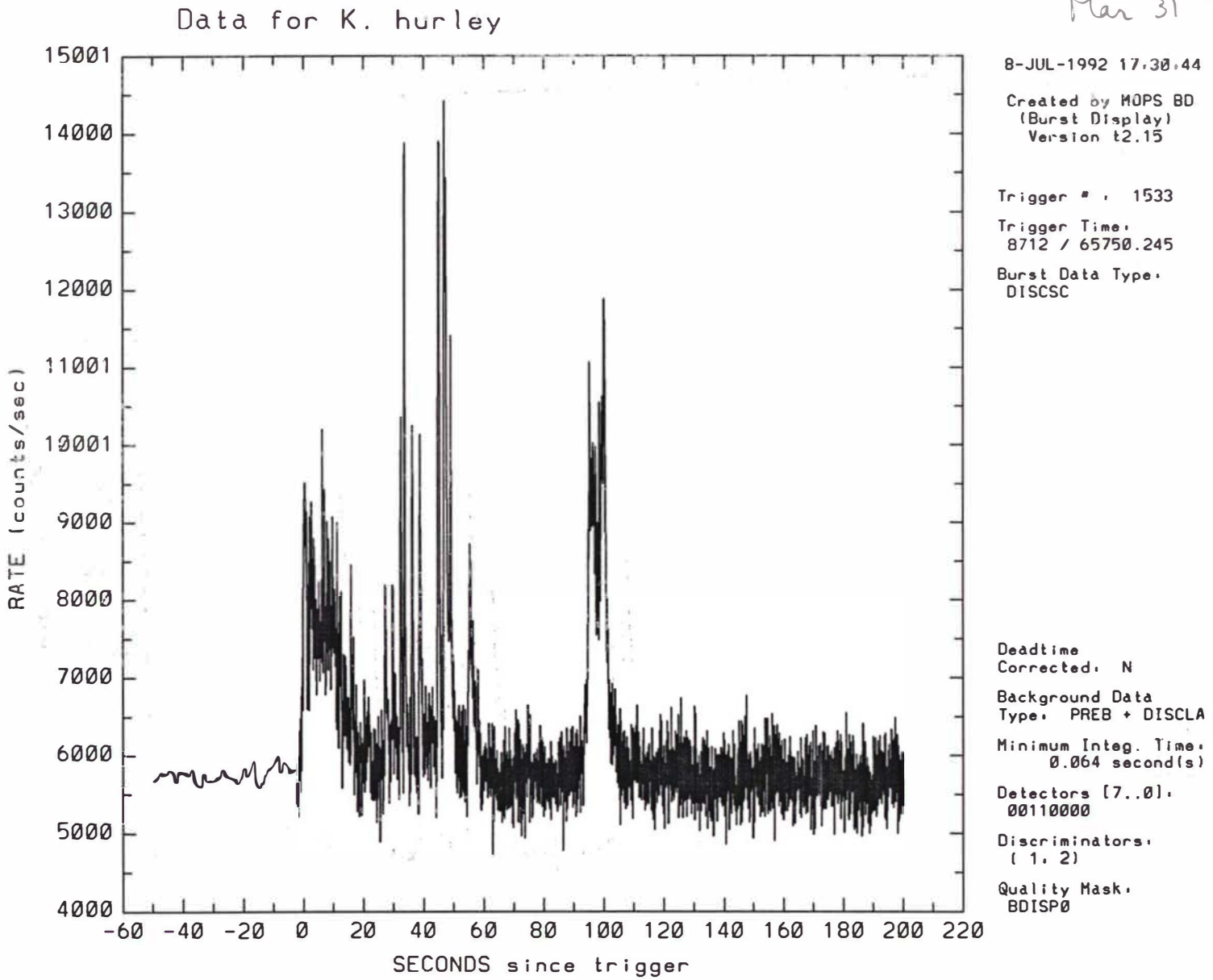

BATSE 31/03/92 65750.245
25- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
37
41
45
49
53
57
T, SECS

BATSE 31/03/92 65750.245
25- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
57
61
65
69
73
77
TIME, SECS

BATSE 31/03/92 65750.245
25- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
77
81
85
89
93
97
T1E, SECS


BATSE 31/03/92 65750.245
25- 100 keV
COUNTS/ .064 S
1000
750
500
250
0
97
101
105
109
113
T 1E, SECS

Mar 31 '92


Data for K. hurley
15001
14000
13000
12000
11001
10001
9000
8000
7000
6000
5000
4000
RATE (counts/sec)
-60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220
SECONDS since trigger
8-JUL-1992 17:30:44
Created by MOPS BD
(Burst Display)
Version t2.15
Trigger # : 1533
Trigger Time:
8712 / 65750.245
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
00110000
Discriminators:
(1, 2)
Quality Mask:
BDISP0

```
```

```
         9 071  8432 GRB, PEAKS 8431.7,8437.4 @102DEG                      8430-448
        11 071  8429 GRB, VERY WEAK PEAKS 8429.2,8433.2 @38  (10NR@162)   8433-441
920325     085 62258 BATSE GRB, STRONG, SPIKY, RA6.5,DEC-8.5 (BNEWS17)
           085 61525 PVO TRIG 61525.5 @1.57A.U.
         8 085 62228 GRB, PEAKS 62228.2WEAK,256.2,282.2WEAK @107DEG       62230-284
         9 085 62256 GRB, PEAKS 62256.1,62278.1 @100 (10NA@60,11NRAD)     62258-282
920331     091 65750 BATSE GRB, INTENSE,110SEC, RA256,DEC33 (BNEWS18)
        10 091 65848 SOFT PEAKS 65805.9VW,847.9 @108 (GLIT65866)8SR,9SR   65811-859
        11 091 65750 PEAKS 65749.7,755.7,GAP781-831,843.7,849.7 @90DEG    65747-855
920403     094 86400   END OF DMSP-9 DATA
920406     097  9855 BATSE GRB,V.INTENSE,RA293,D-60(BN19) PVOTRIG9756.4
         8 097  9855 NO DET @141DEG (10SR,11NO @137DEG)
920408   8 099~37700 BURST? (10SRAD,11NA) (BATSE OFF)
920423   8 114~78600 HIGH SOFT BURST? (10NR,11NA) (BATSE OFF)
920501     122 76695 BATSE GRB,CMPLX,HARD.ULYS,PVO 123.84,-32.76(2000.0)
           122 76695 BATSE GRB: IAU5547,BN20 (123.35,-32.61(1950))
         8 122 76695 NO BURST@127(10NO@157,NO@147) (PVO TRIG 76840.7)
920517     138 11875 BATSE GRB,EX.INT.,RA201.0,DEC-21.9(2000.0) +PVO,UL
           138 11875 BATSE GRB:IAU5547(200.9,-21.8(1992)) (PVO 12672.8)
         8 138 11882 GRB, PEAK 11882.0(1000C/S) @54.6  JUST BEFORE SRAD 11878-888
        10 138 11885 GRB, PEAK 1184.6 (700C/S) @78.8 (11SRAD)            11886-892
920518   8 139~82100 BURST?, ALSO ~82400 (10NA,11NA) (BATSE OFF)
920519 10 140~59400 GRB (8SR,11NA) (PVO TRIGGER 59211.9) PHOEBUS/GRAN

                                                    TERRELL/DMSP.GAM 930505
920525     146 12427 BATSE GRB,V.INT.,RA302.4,D-43.6(2000.0) +PVO,ULYSS
           146 12427 BATSE GRB:IAU5547(302.2,-43.6(1992)) (PVO 12882.0)
        11 146 12427 GRB, STR PEAKS 12426.9,434.9,440.9UNRES(8SR,10NR)   12432-446
920615 10 167         GLITCHES END ON DMSP10 UNTIL 6/22 (MODE CYCLES)
        11 171~64666 WEAK BURST @96DEG (8NO @75, 10NA @68) (IAU5567)
920619     171 64666 BATSE SOFTREPEATER SGR,RA287,D11(1950?)(8,10,11NO)
920622     174 25506 BATSE HARD GRB, L172,B51 (GRONEWS #73.TRIG 1663)
         8 174~25506 NO DMSP DETECTION (8SAA,10NR,11SAA)
920623     175  3634 BATSE GRB (LAROS) (8NA,10YES?,11NA)
920625   8 177         HIGH POLAR COUNTS (ALSO DMSP10,11)
920628 10 180 76452 GRB PEAK 76452.3(250/S),464.3(350/S) (8ND,11NO)
           180 76453 GRB, PHOEBUS/GRANAT, GRO N/O
920629 10 181         GLITCHES END (MODE CHANGE)
920629 10 181 75897 SOFT BURST, PEAKS 75897.4,907.4 SUN@108(BATSE OFF)  75891-921
        11 181 75896 SOFT BURST, PEAKS 75896.0,906.0 ANGSUN=124 (8NA)    75888-920
920630 11 182 21781   GLITCH, RECURRING TO 920707 (MODE)
920630     182 86400   LEAP SECOND INTERCALATED HERE
920708     190 18957 BATSE SOFT REPEATER AGAIN (SEE 920619)(B1908+11)
         8 190~18957 NO DMSP BURST (8NO@70,10NO@52,11SAA)
920711     193 58157 BATSE GRB+PVO+ULY RA281.9,D73.0(2000.0) (IAU5565)
         8 193 58157 GRB PKS 58157.9(300/S),63.9,221.9,225.9,235.9@56.1 58160-238
        10 193 58157 GRB PKS157.8(550/S),65.8,73.8,81.8,221.8,25.8 @101 58159-249
        11 193 58157 NOT USEFUL (N.RAD)
920714     196 47071 GRANAT GRB(219.8,-29.9(1950))IAU5579(8,11NA,10SAA)
920716 10 198 60933 SOFT BURST PKS 60933.4(200/S),949.4(200),SUN@58.1
        11 198 60933 SOFT(1DET)PKS60933.4(150/S),949.4(200),SUN85.9,8NA
           198 60934 GRB,SIGMA/GRANAT
920720     202 11524 GRB BAT,ULY (PVO 11155)(202.94,36.74,J)(8,10,11NA)
920723     205 72188 GRANAT GRB(285.7,26.8(1950))IAU5579(8ND,10NA,11NR)
           205 72694 PVO TRIGGER, 72694.1
920805     218 ?     BATSE HARD X-RAY TRANSIENT,RA66,D32,VAR.,IAU5580
```

From @UCBSP.SSL.BERKELEY.EDU:046369@ESSDP2.SPAN.NASA.GOV Wed May 5 13:41:17 1993
Date: Tue 5 May 92 13:42:27-PST
From: SC <046369@ESSDP2.SPAN.NASA.GOV>
To: KHURLEY@sunspot.ssl.berkeley.edu
Subject: [Resent-MM Mail] DMSP GRB DATA
Content-Length: 8912

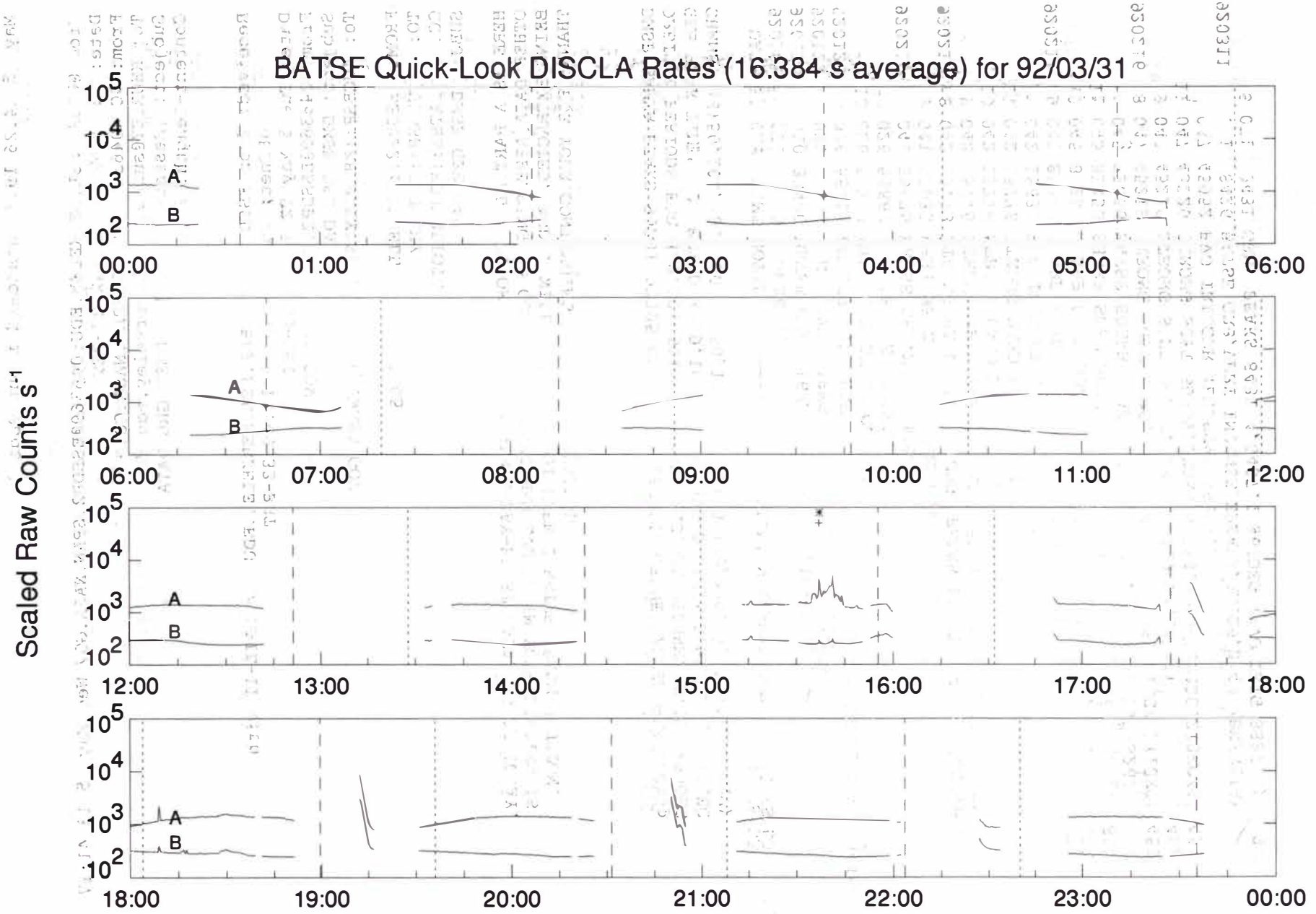
Received: from ESSDP2 by UCBSP.SSL.BERKELEY.EDU via MAIL-11 with
DECnet; Tue, 5 May 92 13:40:33-PST
Date: Tue 5 May 92 13:40:33-PST
From: 046369@ESSDP2.SPAN.NASA.GOV
Subject: DMSP GRB DATA
To: "UCBSP::KHURLEY"@ESSDP2.SPAN.NASA.GOV

FROM: ESSDP2::TERRELL 93/05/05
TO: UCBSP::KHURLEY
CC: BATSE::KOUVELIOTOU
SUBJ: DMSP GRB DATA

HERE IS A PARTIAL LIST OF 1992 DMSP GAMMA-RAY-BURST DATA, AS OF TODAY.
OTHER DATA APPEARING TO CONFIRM UNCONFIRMED EVENTS IN YOUR LISTING IS
BEING EXTRACTED, AND I WILL CHECK IT OUT WHEN I RETURN FROM HOUSTON.
THANKS FOR YOUR CONTINUING HELP--JIM TERRELL

DMSP;GAMMA PEAKS 90281-92305 CHECKED,2-SEC CTS,TERRELL/DMSP.GAM 930505
ORBITAL PERIODS FOR 8,9,10: 6110,6080,6040SEC. ALT=800KM. INCLIN=99DEG
GRB PEAK TIMES CORRECTED (8,9,10=11) FOR AVG DELAYS: 1.82,1.98,5.50SEC
CHANS: (8)50,100,200,420 (9)50,100 (10,11)20,100,200,430,550(-1000KEV)

DATE	FL	DAY	TIME	NOTES--------(ND=NO DATA,NA=NOT APPARENT)----NOTES	DATATIMES
920101		001	0	JD8622.5	
920110		010	33480	BATSE GRB (16XMIN) (8ND,9NA,10SAA,11NA)	
920122		022		NO DMSP TAPES, DAYS 22-25 (92022-25)	
920126	9	026	55714	BURST? WIDE SOFT PEAK 55714.0 (4KC/S)(8SRAD,11SAA)	55646-768
	10	026	55704	STR SOFT BURST,COMPLEX PEAKS 55704.2,714.2(3KC/S)	55624-748
		026	55667	PVO TRIGGER (BURST?) AT 55666.9	
920210		041	35625	BATSE GRB,MOD STRONG RA154,DEC49 8NO,10SAA,11SAA	
	9	041	35633	VERY WEAK SOFT BURST,PEAKS 35632.6,636.6	35635-639
920211	8	042	15773	STRONG HARD BURST(+CHG),PEAKS 15772.7-4.7(2500C/S)	15765-783
	9	042	15775	STRONG HARD BURST, PEAK 15774.7(7KC/S) (BATSE OFF)	15761-791
	10	042	15776	STRONG HARD BURST,PEAK 15775.6(1700C/S) +SOFT BASE	15775-785
	11	042	15776	STRONG HARD BURST, PEAK 15775.8(12KC/S),ASYMM RESP	15765-799
		042	15631	PVO TRIGGER 15630.7 (0.7 HARDNESS RATIO)	
920214	9	045	83249	SHARP SOFT BURST, PEAK 83249.4 (8ND=NO DATA)	83243-273
	10	045	83250	SHARP SOFT BURST, PEAK 83250.1 (1000C/S),254.1	83244-280
	11	045	83250	SHARP SOFT BURST PEAKS 83249.8 (8KC/S),265.8	83237-295
		045	83066	BATSE SOLAR FLARE#2721, PEAK 83252(70K/S)&~83267	
920216	8	047	45219	STRONG SOFT BURST,PEAKS 45219.3,223.3(1KC/S)(10NO)	45177-239
	9	047	45220	STRONG SOFT BURST, PEAK 45219.7 (2KC/S)	45214-236
	11	047	45220	STRONG SOFT BURST,PEAKS 45184.2,196.2,220.2(8KC/S)	45180-252
		047	45052	PVO TRIGGER (BURST?) 45052.5	
920311		071	8426	BATSE GRB,VERY INTENSE,2PEAKS,RA129,D-40 (BNEWS16)	
	8	071	8431	GRB, PEAKS 8431.4,8437.4 @63DEG (PVO TRIG 8887.3)	8429-443



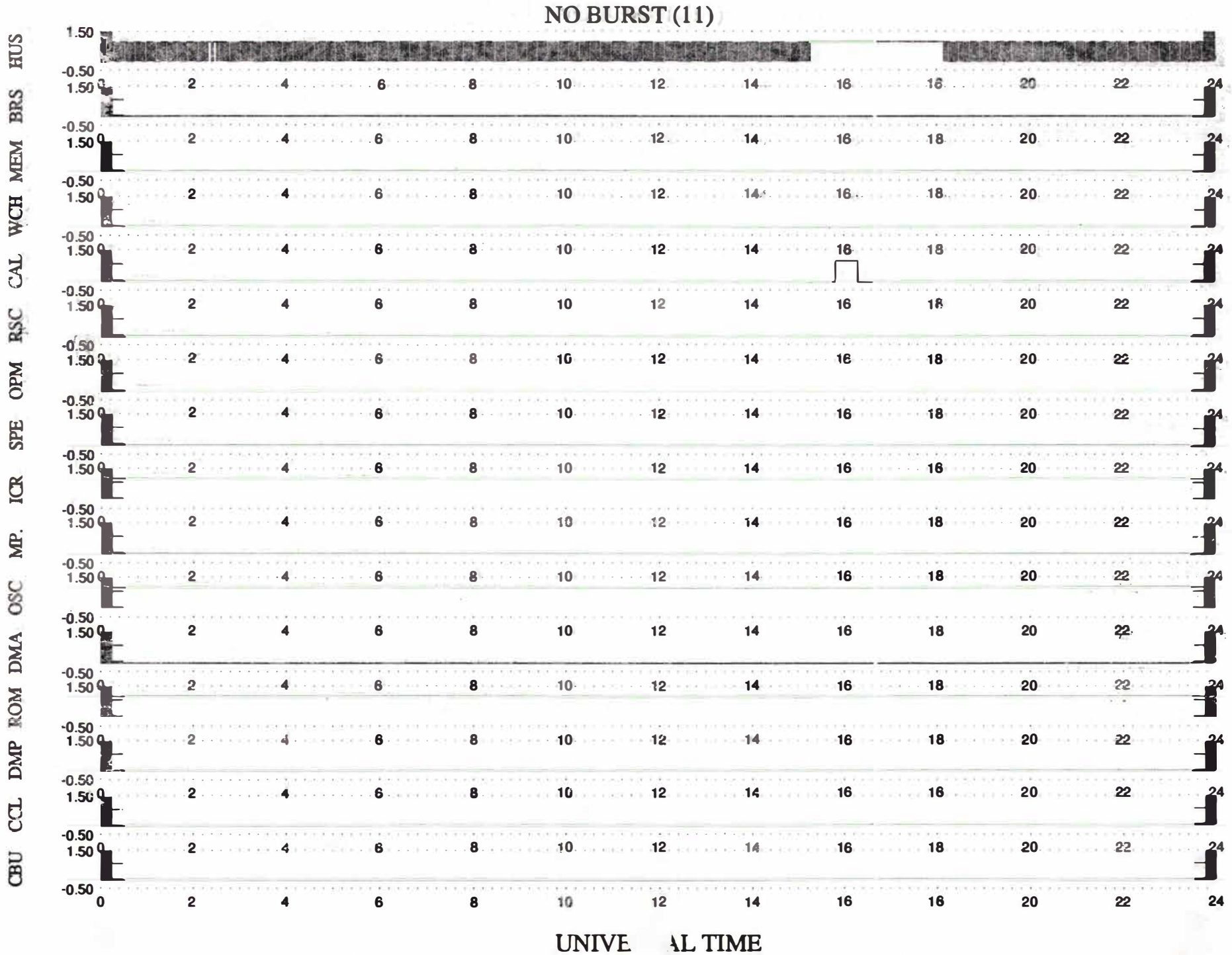
Current Time: 92/09/20, 1819 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

HUS MOJES SEDEM SUN
1991 May 21, Tue to day 20 Sat June 1 May 21, Tue
NO BURST (1)

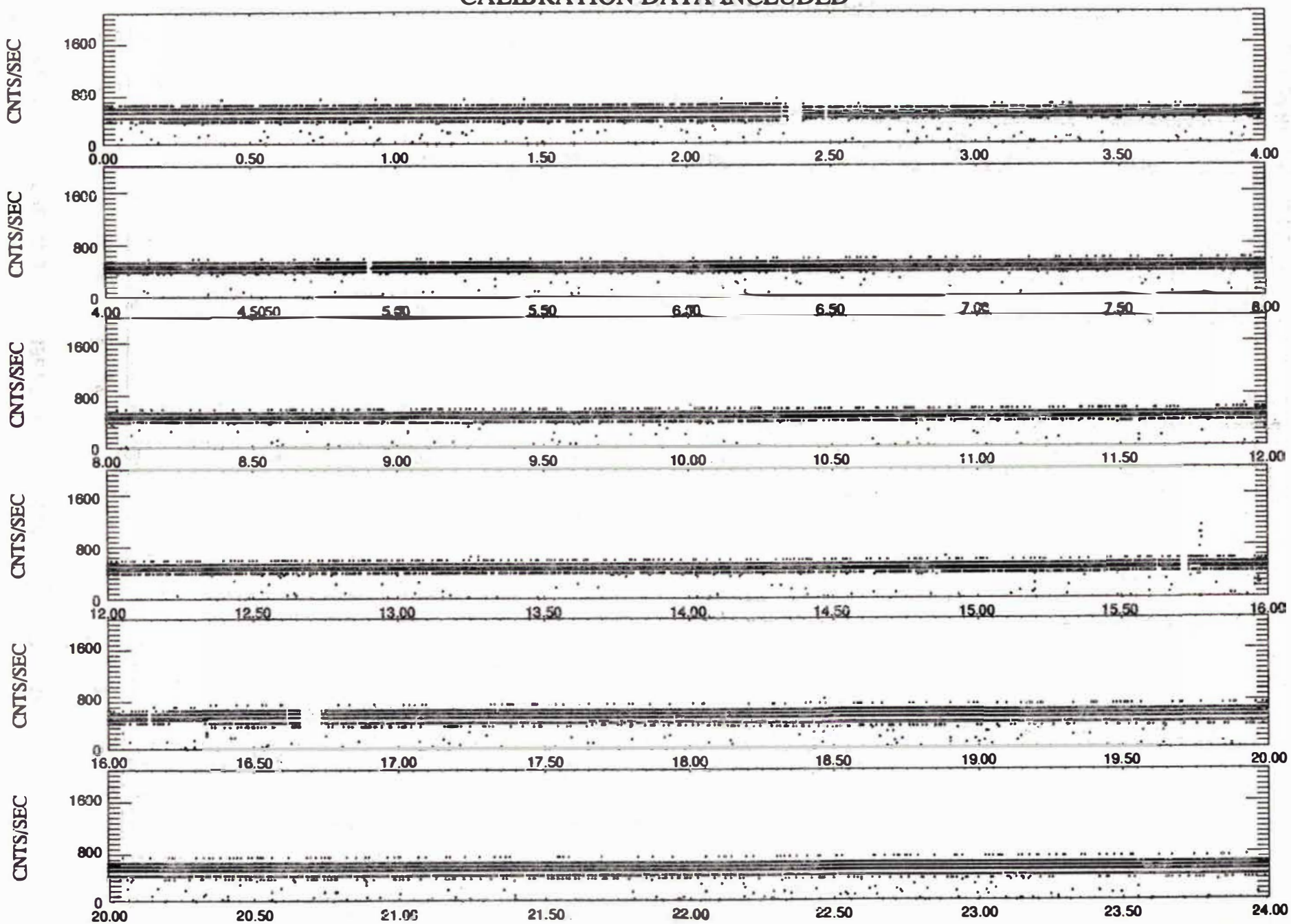
HUS MODES EDR day 91, year 1992 to day 91, year 1992 4/28/92



CALIBRATION DATA INCLUDED
HUS 24, MODE 1, NOT AVERAGED EDR day 91, Year 1992 to day 91, Year 1992
4/27/92

HUS 2A, MODE 1, NOT AVERAGED EDR day 91, year 1992 to day 91, year 1992 4/27/92

CALIBRATION DATA INCLUDED



UNIV AL TIME