578

IUE

78-012A-01F

MERGED (NASA/VILSPA) OBSERVATORY LOG

ASUV-00013

Table of Contents

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1. INTRODUCTION:

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP's).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

When printing, special settings may be required to make the text box appear on the printed output.

Version	Date	Person	Page	Description of Change
01				
02				

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC INFORMATION SYSTEM:

http://nssdc.gsfc.nasa.gov/nmc/

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

a. Associated Documents To find associated documents you will need to know the document ID number and then click here. http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/

b. Core Catalog Materials

IUE

MERGED (NASA/VILSPA) OBSERVATORY LOG

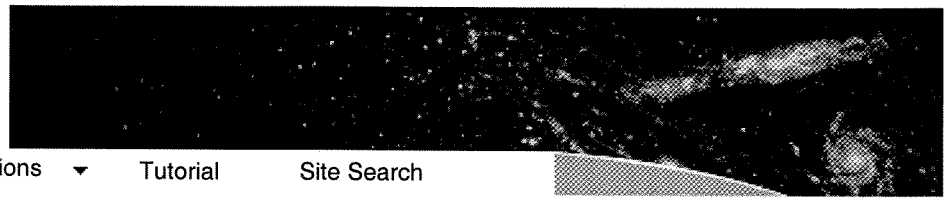
78-012A-01F ASUV-00013

This dataset has been updated onto one CD-RW. The original dataset was written on a 9trk, 1600 bpi tape. The replacement CD-RW includes the data that existed previously and data that was generated since the DD and DC tapes were created. The data has been downloaded from MAST-held IUE Merged Observation Log. The data is written in ASCII format and compressed. The KD and KW numbers along with the time spans are as follows:

78-012A-01F

KD #	KW #	DD #	DC #	Files	Time Span
KD021657	KW000175				02/08/1978 09/27/1996
		DD051694	DC023079	130	04/03/1978 07/25/1985

IUE International Ultraviolet Explorer



Please fill out our User Survey.

User Specified Search Field

You may now search on any column in the mission database. Select the field you wish to search on and type in the qualification. NOTE that if you choose a field in BOTH the form and in the User Option field, then you may not get results or the result you expect.

In the table below is a list of all the column names available for search. Where reasonable a range or set of valid values is listed. Additional useful notes are included. If you click on the field name, a more detailed description of the data will be found. The column label is used in the search forms and search results. The column name needs to be specified for GET requests.

Column Name	Column Label	Data Type	Valid Values	Notes
iue_aper	Aper	Character	LARGE,SMALL	
iue_xtrasym	Asym Ext Prof	Character	Y,N	
iue_go_bv	BV	Float	Range -2.00 to 9.00	B-V color GSFC observations only GO designations
iue_badscan	Bad Scans	Integer	Range 0 to 20	
iue_cc_medn	CC Median	Float	Range 0.0 - 1.0	
iue_cc_percent	CC Percentage	Float	Range 0.0 to 100.0	
iue_cam_no	Camera No	Integer	1,2,3,4	1 = LWP 2 = LWR 3 = SWP 4 = SWR (Not calibrated)
iue_category	Category (Also called Object Class)	Integer	Range 0-99	See IUE Object Class Translations
iue_comments	Comments	Character	GSFC format: E=nnn, C=nnn, B=nnn VILSPA used numeric form	
iue_data_bkg	Data Background	Integer	Range 0 to 256 DN	
iue_data_cnt	Data Counts	Integer	Range 0 to 256 DN	

iue_data_id	Data ID	Character	e.g. SWP02456, LWR00501, LWP12345	Observation Identifier Camera and Image number Always 8 characters
iue_dec1950	Dec (B1950)	Float	Decimal Degrees Range -90 to +90 deg	For user specified search, must be decimal degrees
dec	Dec (J2000)	Float	Decimal Degrees Range -90 to +90 deg	For user specified search, must be decimal degrees
iue_disp	Disp	Character	HIGH, LOW	
iue_go_ebv	EBV	Float	Range -5.5 to 9.5	E(B-V excess GSFC observations only GO designations
iue_ex	EX	Integer	Range -50 to 48 FES units	
iue_ey	EY	Integer	Range -46 to 45 FES units	
iue_elat	Ecliptic Latitude	Float	-90 to +90 deg	
iue_elong	Ecliptic Longitude	Float	0 to 360 deg	
iue_eff_exp_time	Eff. Exp. Time	Float	Range 0 to 90,000 seconds	
iue_com_exp_time	Exp Time	Integer	Range 0 - 90000 seconds	
iue_fa_flag	FA Data at MAST	Character	F	F = NEWSIPS available null if NEWSIPS data unavailable
iue_fa_proc_ts	FA Processing Date	Date	Range Mar 18, 1993 to Jan 7, 2000	
iue_fes_counts	FES Counts	Integer	Range 0 - 28673	
iue_fes_mode	FES Mode	Character	S,F,U,O,NO,SO,BO,FU,FO	S=Slow F=FAST U=Underlap O=Overlap NO= SO= BO=Blind Offset
				Radiation

iue_fpm	FPM	Float	Range 0.0 - 4.0 Generally not more that 3.5	Monitor became unreliable after May 14, 1991 and turned off Oct 4, 1991
iue_focus	Focus	Float	Range -24.00 - 11.20	
iue_go_object_name	GO Object Name	Character	Original GO assigned target name Not homogeneous e.g. AR PAV, AR PAVONIS BD+75 325, BD+75 0325	All caps Recommend Target Name
iue_glat	Galactic Latitude	Float	Range -90 to +90 deg	
iue_glong	Galactic Longitude	Float	Range 0 to 360 deg	
iue_heater_warmup	Heater Warmup	Integer	Range 1 - 15 minutes	Only for LWR camera after 1981
iue_hcat	Homog Catalog	Character	AAO, ABCG, AOO, AOO*, BDB, BDO, CD, CPD, CPD-, ESO*, ESOB, GD, HD, IC, IUE, LHS, MC, MCG, MRK, NGC, NGC*, NOVA, PG, PK, QSO, SAO, SKY, SN, ST, UM, V*, WD, ZZ	Homogeneous Catalog/Object assigned by CDS Recommend use of Target Name field
iue_hcomp_id	Homog Complimentary ID	Character		Sometimes more specific designation, sometime continuation from homogenous object Recommend use of Target Name field
iue_hdec1950	Homog Dec (B1950)	Float	Range -90 to +90 deg	Assigned by CDS Coordinates the center of extended fields
iue_hdec2000	Homog Dec (J2000)	Float	Range 90 to +90 deg	Asssigned by CDS Coordinates the center of extended fields
				Assigned by CDS Use with

iue_hobject	Homog Object ID	Character		Homog. Cat and Comp ID fields Recommend use of Target Field
iue_hra1950	Homog RA (B1950)	Float	Range 0 to 360 deg	Asssigned by CDS Center of extended fields
ra	Homog RA (J2000)	Float	Range 0 to 360 deg	Asssigned by CDS Center of extended fields
iue_image_no	Image No	Integer	for LWP 501-515,1067 - 32696 for LWR 501, 1274 - 18765 for SWP 501 - 512, 1303 - 58388	Images numbers were occasionally skipped
iue_imtype	Image Type	Character	B,D,L,M,S,Y	B = Both Dispersions D=Double Aperture L=Double Aperture Multiple Exposure M= Multiple Exposure in Large Aper S=Single Y = Double Aperture, Both Dispersion
iue_lost_flag	Lost Flag	Character	N,R,U,Y	N=Not processed R=raw image lost U=unverified entry Y=orginal data lost
iue_go_lum	Luminosity	Character	I, Ia, Ib, Iab, II, III, IV, V, VI	GO supplied Data Only available for GSFC datGO supplied Data Only available for GSFC data
iue_go_mag	Magnitude	Float	-22 to +30	GO supplied data
iue_max_shift	Max Shift	Float	Range 0.0 - 646.3	

iue_mean_shift	Mean Shift	Float	Range 0.0 - 9.908	
iue_microphonics	Microphonics	String	N,Y	
iue_miss_mf	Missing Minor Frames	Integer	Range 0 - 6151	
iue_multiple_flag	Multiple Flag	Character	A,N,O,X,Y	X = along X axis Y = along Y axis A = along aperture length O = along other axis N = not multiple
iue_badpix	Num Bad Pixels	Float	Range 0.0 - 98.9	
iue_nonstandard	Non Standard Image	Character	N,Y	
iue_splnft	Num. Spline Nodes	Integer	Range 2 - 15	
iue_obs_start_time	Obs Start Time	Date	Apr 3, 1978 - Sep 27 1996	
iue_obs_station	Obs Station	Character	GSFC, VILSPA	
iue_obs_name	Observer's Name	Character		Name of person observing All Caps Use wildcard
iue_cri_flag	Only Raw Image Archived Flag	Character	N,Y	
iue_pi_name	PI Name	Character		Name of PI Mixed Case Use wildcard
iue_pos_angle	Position Angle	Float	Range 0.0 - 360.	
iue_prep	Prep	Character	S, X, XS, T, F	
iue_program_id	Program ID	Character		
iue_ra1950	RA (B1950)	Float	Range 0 to 360 deg	Decimal Degrees
ra	RA (J2000)	Float	Range 0 to 360 deg	Decimal Degrees
iue_raw_flag	Raw Data at MAST	Character	R	
iue_readmode	Read Mode	Character	F,P	Full, Partial
iue_roll_angle	Roll Angle	Float	Range 0 to 360	
				E = IUESIPS

iue_se_flag	SIPS Extracted Data at MAST	Character	E	Extracted data files available null if IUESIPS data unavailable
iue_sips_proc_ts	SIPS Processing Date	Date	Apr 3 1978 - Sep 19 1997	
iue_page	Script Page	Integer		GSFC Observations only Mostly used for display of scripts through preview
iue_volnum	Script Volume Number	Integer	1 - 433	GSFC observations only Mostly used for display of scripts through preview
iue_segmented_flag	Segmented Flag	Character	N,Y	
iue_go_spectype	Spectral Type	Character	Letter and number e.g. A3, K7	GO assigned GSFC Observations only
iue_thda_end	THDA at End	Float	Range 0.0 to 29.6	
iue_thda_read	THDA at Read	Float	Range -5.0 to 99.99	
iue_thda_start	THDA at Start	Float	Range 0.0 to 29.6	
iue_target_name	Target Name	Character	Name of target e.g. HD 36395,NGC 3918,V* Z Cam	Assigned by MAST Staff using preferred NED/SIMBAD name where possible Mixed Case
iue_trackmode	Track Mode	Character	FES,GYROS,BOTH	
iue_trail_flag	Trail Flag	Character	N,X,Y	N = Not Trailed X = Trailed along X axis Y = Trailed along Y axis
iue_uvc_voltage	UVC Voltage	Float	-5.0 kV -4.5 kV (LWR only)	

Gail L. Schneider

From: "Gail L. Schneider" <gail@mail630.gsfc.nasa.gov>
To: "Beth Brown" <Beth.A.Brown@nasa.gov>
Cc: "Gail L. Schneider" <gail@mail630.gsfc.nasa.gov>; "Ralph Post" <POST@ndadsb-f.gsfc.nasa.gov>
Sent: Thursday, October 02, 2003 2:02 PM
Subject: Re: IUE Log

Beth,

I have copied the IUE log to my ndadse account and will work with Ralph to get it processed.

Gail

----- Original Message -----
From: "Beth Brown" <Beth.A.Brown@nasa.gov>
To: "Gail L. Schneider" <gail@mail630.gsfc.nasa.gov>; "Ralph Post" <POST@ndadsb-f.gsfc.nasa.gov>
Sent: Thursday, October 02, 2003 1:16 PM
Subject: Fwd: IUE Log

> Below is a message from Karen about the MASt-held IUE Merged
> Observation Log.
>
> Beth
>
> >Date: Thu, 2 Oct 2003 11:55:55 -0400 (EDT)
> >From: Karen Levay <klevay@stsci.edu>
> >Reply-To: Karen Levay <klevay@stsci.edu>
> >Subject: IUE Log
> >To: Beth.A.Brown@nasa.gov
> >Cc: klevay@stsci.edu, rthomp@stsci.edu
> >
> >
> >Beth,
> >
> >I just put a tab separated dump of the the iuelog from today into
> >the anonymous
> >ftp area on archive.stsci.edu
> >
> >cd pub2/misc/nssdc
> >
> >Explanations of what the columns are at
> >http://archive.stsci.edu/iue/help/quickcol.html
> >
> >which has links to this page with slightly more detailed explanation of the

Gail L. Schneider

From: "Beth Brown" <Beth.A.Brown@nasa.gov>
To: "Randall Thompson" <rthomp@stsci.edu>
Cc: "Gail L. Schneider" <gail@mail630.gsfc.nasa.gov>
Sent: Thursday, July 24, 2003 9:29 AM
Subject: Re: IUE obs. logs

Ok. Great. I'll take a look.

>Hi Beth,
> I forgot to write you before, sorry. > 100,000 images
>The ASCII catalogs are a subset of what
>is stored in Sybase. The page you are looking
>at has the observations divided according to object
>class and sorted different ways. There are more
>fields in the Sybase database table. A more complete
>description of these fields is at:
>
>http://archive.stsci.edu/iue/help/quickcol.html
>
> Karen thinks Mike got a copy of the complete IUE
>table at one time.

I see. So, it looks like I should get a MAST copy of
the database table, since you said that Karen had updated
it at some point. The ADC held "Merged Log of IUE Observations"
(NASA-ESA, 1999) is probably an older version.
I am cc'ing Gail Schneider to this. She can help determine
whether the ADC catalog is an older version or not.

Thanks, Randy.

Beth

> Merged log, IUE catalog, and IUE database has all been
>used interchangeably. The "Merged log" referred to combining
>the Goddard observations with those from VILSPA.
>
>Randy
>

43,44,45,46

> >contents.
> >
> >http://archive.stsci.edu/iue/help/columns.html
> >
> >Hope this is what you need.
> >
> >Karen
> >
> >
> >The schema:
> >
> >

Column_name	Type	Length
iue_data_id	varchar	11
iue_cam_no	tinyint	1
iue_image_no	int	4
iue_go_object_name	varchar	16
iue_target_name	varchar	50
iue_disp	varchar	4
iue_aper	varchar	5
iue_category	int	4
iue_ra1950	float	8
iue_dec1950	float	8
iue_ra2000	float	8
iue_dec2000	float	8
iue_glat	float	8
iue_glong	float	8
iue_elat	float	8
iue_elong	float	8
iue_obs_start_time	datetime	8
iue_program_id	varchar	5
iue_com_exp_time	int	4
iue_eff_exp_time	float	8
iue_obs_station	varchar	6
iue_thda_read	float	8
iue_thda_start	float	8
iue_thda_end	float	8
iue_trail_flag	char	1
iue_multiple_flag	char	1
iue_segmented_flag	char	1
iue_pi_name	varchar	20
iue_obs_name	varchar	20
iue_go_spectype	varchar	4
iue_go_lum	varchar	4
iue_go_mag	float	8
iue_go_bv	float	8
iue_go_ebv	float	8
iue_fes_mode	varchar	2
iue_fes_counts	int	4
iue_comments	varchar	20

```
>> iue_uvc_voltage          float          8
>> iue_pos_angle            float          8
>> iue_roll_angle           float          8
>> iue_fa_proc_ts           datetime       8
>> iue_sips_proc_ts         datetime       8
>> iue_cc_percent           float          8
>> iue_cc_medn              float          8
>> iue_hcat                 varchar        4
>> iue_hobject              varchar        12
>> iue_hcomp_id             varchar        12
>> iue_hra1950              float          8
>> iue_hdec1950             float          8
>> iue_miss_mf              int            4
>> iue_microphonics         char           1
>> iue_nonstandard          char           1
>> iue_badscan              tinyint        1
>> iue_heater_warmup        tinyint        1
>> iue_readmode             char           1
>> iue_lost_flag            char           1
>> iue_cri_flag             char           1
>> iue_ex                   int            4
>> iue_ey                   int            4
>> iue_data_bkg             int            4
>> iue_data_cnt             int            4
>> iue_xtrasym              varchar        3
>> iue_splnft               int            4
>> iue_badpix               float          8
>> iue_mean_shift           float          8
>> iue_max_shift            float          8
>> iue_prep                 varchar        3
>> iue_imtype               char           1
>> iue_raw_flag             char           1
>> iue_fa_flag              char           1
>> iue_se_flag              char           1
>> iue_volnum               int            4
>> iue_page                 int            4
>> iue_reference            int            4
>> iue_fpm                  float          8
>> iue_focus                float          8
>> iue_trackmode            varchar        5
>> iue_hra2000              float          8
>> iue_hdec2000             float          8
>> iue_hlsp                 int            4
>
```

Gail L. Schneider

From: "Gail L. Schneider" <gail@mail630.gsfc.nasa.gov>
To: "Beth Brown" <Beth.A.Brown@nasa.gov>
Cc: "Gail L. Schneider" <gail@mail630.gsfc.nasa.gov>; "Ralph Post" <POST@ndadsb-f.gsfc.nasa.gov>
Sent: Monday, July 28, 2003 10:31 AM
Subject: Re: IUE obs. logs

Hi Beth,

The ADC held "Merged Log of IUE Observations" (NASA-ESA, 1999) covers the same fields as those
contained in the IUE ASCII LOGS (http://archive.stsci.edu/al.html). Some additional ADC data fields are also contained
in the Sybase table (i.e. Homog Object ID, Homog RA [B1950], Homog DE [B1950], Position Angle, FES Counts and FES Mode).
Although the Sybase table contains a number of fields not include in ADC held data, there are three fields listed for the ADC held data
that are not included on either lists.

XtrMode [PE] Extraction mode (Point or Extended)

HJDobs ? Heliocentric corrected Julian date
of mid-exposure

AbnCode *Abnormality codes
Note on AbnCode:

A = Abnormal READ (ABNREAD)
B = BAD Scans LWP (ABNBADSC)
C = CORRUPTION including 159 DN
H = History Play back (ABNHISTR)
M = Missing THDA, any of THDAEND, THDAREAD, or THDASTRT
N = Non-standard image acquisition ABNNOSTD
O = OFFSET from nucleus; from center; etc.
P = Readmode = PARTIAL
R = REMNANT of previous spectrum visible
S = Serendipity Exposure
T = TRACK LOST
U = UVC voltage other than -5Kev
W = ABNHTRWU = LWR Heater Warm Up
Z = contamination by solar spectrum or extended source
8 = Cross-correlation less than 80% - CC-PERCN

Not knowing the importance of these three fields, they may have been excluded from the MAST database.
Note the last field, "AbnCode", this may have been part of Karen's update.

My conclusion, it looks like the mission database held at MAST supersedes the ADC

held data.

Gail
----- Original Message -----
From: "Beth Brown" <Beth.A.Brown@nasa.gov>
To: "Randall Thompson" <rthomp@stsci.edu>
Cc: "Gail L. Schneider" <gail@mail630.gsfc.nasa.gov>
Sent: Thursday, July 24, 2003 9:29 AM
Subject: Re: IUE obs. logs

> Ok. Great. I'll take a look.
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> >
> >http://archive.stsci.edu/iue/help/quickcol.html
> >
> > Karen thinks Mike got a copy of the complete IUE
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>
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> I see. So, it looks like I should get a MAST copy of
> the database table, since you said that Karen had updated
> it at some point. The ADC held "Merged Log of IUE Observations"
> (NASA-ESA, 1999) is probably an older version.
> I am cc'ing Gail Schneider to this. She can help determine
> whether the ADC catalog is an older version or not.
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> Thanks, Randy.
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> Beth
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> > Merged log, IUE catalog, and IUE database has all been
> >used interchangeably. The "Merged log" referred to combining
> >the Goddard observations with those from VILSPA.
> >
> >Randy
> >

REQ. AGENT	RAND NO.	ACQ. AGENT
DEW	V0182	WHW

IUE

MERGED (NASA/VILSPA) OBSERVATORY LOG

78-012A-01F

This data set catalog consists of one tape. The tape is 1600 BPI, EBCDIC, 9 track with one file of data. The tape was created on an IBM 3081 computer. The tape is sorted by camera frames not by time coverage. The D and C numbers are as follows:

D#	C#	TIME SPAN
D-51694	C-23079	04/03/78 - 07/25/85

Gail,

This copy of the IUE observatory log has a new record format. The logical record length is 109 bytes, blocksize is 32700 bytes/block. Your copy has density 1600 bpi, and this copy will replace the copy presently in D-51694. Experiment number is 78-012A-01F. The last copy was received by you 2/7/85.

The dates for images observed are 4/3/78 - 7/25/85. There are 51495 records on the tape.

Joanne

```
TAPESCAN 4.3  -  GSFC TAPE ANALYSIS AND COPYING PROGRAM    08/06/85   15:08:02.3   INPUT VOL=JAS007   (LAST MOD-07/25/84)   PAGE   1
OPTIONS IN EFFECT: LIST=001,NOHEX

    ORI NEBU     0532000-0525                  72       FES     1F2 16000793341255V*    0                      HD     47129BCSRH063443

TAPEMARK NO 0001                  BLOCK LENGTHS:  MIN=21255  MAX=32700  AVG=32633    NUMBER OF BLOCKS=000172

TAPEMARK NO 0002 -- EOV NO 001

TRUE DENSITY AT END OF PROCESSING:  DEN=3

LENGTH ESTIMATE=0302 FEET 03 INCHES FOR DEN=3 AND TRTCH=STANDARD

(LENGTH ESTIMATE USUALLY ACCURATE WITHIN PLUS OR MINUS TEN PERCENT;  ALMOST ALWAYS WITHIN TWENTY PERCENT)

PROCESSING OF THIS TAPE COMPLETED:    TOTAL BYTES READ=0005612955    NUMBER OF DATA BLOCKS READ=000172
```

IUE Merged Observatory Log (Minilog)
Copy for NSSDC Archive

LRECL = 109 bytes

images observed 4/3/78 - 7/25/85

5/1495 records

MAST IUE

IUE Target Search
IUE Abstract Search
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Getting Started

Data Search & Retrieval

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Retrieval form
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Acknowledgments

IUE Search Output Columns
Data ID
IUE image identifier
The camera name plus a sequential number (e.g., swp16877) used to uniquely identify each IUE observation. The numbering began at 1000, but a handful of images with duplicated image numbers were reassigned with numbers in the 500's. Some image numbers were accidentally skipped as well.
Note that the value of this field is always 8 characters long. For sequence numbers less than 10000, the sequence number is padded with 0 e.g. SWP03456 or LWP00501.
If you enter an image sequence number for a target that has been classified as an "engineering" observation (Wavelength calibration, null, flat field, etc) with an object class of 98 or 99, you will need to select the object class 98 or 99 to see the entry, as these images are not included in the default search.
You may search on this field using a wild card (e.g. SWP1234*)
Clicking on the Image ID entries will display the IUE browse file page which includes:
a plot of the calibrated fluxes versus wavelength,
a list of selected keywords from the FITS file primary header,
the program ID, proposal title and PI name, (the program ID is a link

to a program page which includes link to the abstract for GSFC proposals).
a list of published papers referencing the specific IUE observation, and links to:
- a downloadable ASCII file of fluxes and wavelengths,
- the IUE observing scripts,
- the SI image browse file page, and
- an abbreviated version of the FITS primary header
(i.e., minus the vicar label and processing history).

Camera Number
Camera Number
The camera used in the observation. Approximate wavelength ranges:

Camera Number	Camera Name	Wavelength Range, Å
3	SWP	1150 - 1975
1	LWP	1850 - 3350
2	LWR	1850 - 3350

Camera 4 or the SWR camera was rarely used due to malfunction.
Image No
Image number
Sequential image number assigned to uniquely identify each image obtained. The numbering began at 1000, but a handful of images with duplicated image numbers were reassigned with numbers in the 500's. Some image numbers were accidentally skipped as well.
This is a numeric field. You may search on ranges of sequence numbers (e.g. 501..520)
Target Name
Target Name
The Target Name name was assigned using the "preferred" NED or SIMBAD name where available. Otherwise the Name is a version of the "homogeneous" ID assigned by CDS for the IUE project.
GO Object Name
Object name
Object name as given by Guest Observer. Observers were encouraged to use the Henry Draper catalog designation for stars where appropriate, but a variety of names were used for many objects.
All alphebetic characters in this field are capitals, and if you select this field to search on you will need to use all caps. You may use a wild card search for this field e.g. *JUP*
Clicking on the entries in the Object name column of the search results page will display a plot of absolutely-calibrated flux versus wavelength (as originally produced by the staff of the Astrophysics Data Facility (ADF) at the Space Science Data Operations Office at Goddard Space Flight Center). Links to the SI browse image, a gzipped ASCII file of fluxes and wavelengths, and an ASCII file containing an abbreviated version of the FITS primary header, are also included on this page.
Dispersion
Dispersion
Dispersion mode used for the observation. High dispersion mode produces a two-dimensional echelle spectrum containing approximately 60 orders, with a resolution of roughly 0.2 Å. Low dispersion mode produces a single spectrum, or two if both apertures were used, with lower spectral resolution, approximately 6 Å.
The values of this column are HIGH and LOW.
Aperture
Aperture
Aperture used for the exposure. Each spectrograph has a pair of entrance apertures, consisting of a large approximatly 10 x 20 arcsecond oval and a small 3 arcsecond diameter circle. The image size at the focal plane is typically about 3 arcseconds for a point source. Spectra may be trailed along the large aperture. In addition, multiple exposures may be offset within in the large aperture to create a pseudo-trailed spectrum or series of time resolved spectra. The throughput of the small aperture varied significantly depending on the object centering and tracking,

with a maximum throughput of about 60%. Thus most point-source spectra were taken using the large aperture. The aperture field is left blank only when the dispersion is not applicable (e.g. flat field images). The values of this column are LARGE and SMALL.

Reference

Literature References

The ref column specifies the number of published papers referencing the listed IUE observation. A dash (i.e., "-") indicates that there are no known papers referencing the listed observation. Note that. the database is not complete (see details below). Clicking on an entry in this column (i.e., an entry other than a "-"), will display the list of referenced papers including title, primary author, and journal citation. The journal references use the ADS Bibliography code, and are links to the ADS Abstract Service.

The papers cited in the IUE reference database were primarily compiled by IUE staff member Pat Pitts, from 26 journals (see list below) published between 1978-1985, and 1990-1994. Publications from other years were completed by MAST staff members. In some papers, the specific observations that were used could not be determined.

- Astronomical Journal
- Astronomy and Astrophysics Supplement
- Astronomy and Astrophysics
- Astrophysical Journal
- Astrophysical Journal Supplement
- Icarus
- Bulletins of the Astronomical Institute of Czechoslovakia
- Canadian Journal of Physics
- Geophysical Research Letters
- Monthly Notices of the Royal Astronomical Society
- Irish Astronomical Journal
- Journal Of Geophysical Research
- Nature
- Moon & Planets
- Science
- Observatory
- Physica Scripta
- Proceedings of the Astronomical Society of Australia
- Proceedings of the National Academy of Sciences
- Publications of the Astronomical Society of Japan
- Publications of the Astronomical Society of the Pacific
- Review of Geophysics & Space Physics
- Revista Mexicana Astronomia y Astrofisica
- Royal Society Philosophical Transactions
- Advances in Space Research
- Astrophysics and Space Science

HLSP

High Level Science Products

The HLSP column specifies the number of high level or science ready data products are available that used this spectra. If the IUE observation was a double aperture exposure, the number will appear in the entry for both apertures. The information provided does not always specfy if both apertures were used or if only one of the apertures was used. Click on the number in the column to see a list of the projects using this spectra. The number indicates the number of products, not the number of projects, so if a project produced more than one product using the observation, all are counted.

Category or IUE Object Class

IUE object class

An IUE classification system used for categorizing IUE observations. The object class was specified by the Guest Observer; thus, one object may be archived under more than one object class. Note: by default, object classes 98 and 99 are excluded from queries. This can be over-ridden by specifying object class as one of the search criteria.

If you do not use the category selection on the main page, but choose to search on the category field using one of the "user-specified" fields, you will need to use the numeric number. (See the link above for the translation).
RA (B1950)
Object Right Ascension (B1950)
The right ascension, in the B1950 equinox, as specified by the Guest Observer. These values may not represent the precise pointing, since acquisition was performed in real time.
Dec (B1950)
Object Declination (B1950)
The declination, in the B1950 equinox, as specified by the Guest Observer. These values may not represent the precise pointing, since acquisition was performed in real time.
RA (J2000)
Object Right Ascension (J2000)
The right ascension, in the J2000 equinox, as specified by the Guest Observer. These values may not represent the precise pointing, since acquisition was performed in real time.
Dec (J2000)
Object Declination (J2000)
The declination, in the J2000 equinox, as specified by the Guest Observer. These values may not represent the precise pointing, since acquisition was performed in real time.
Angular Separation
The angular separation in arcminutes between the observation and the search center (the coordinates you're searching on). This is calculated during the search, and the search results are sorted in order of increasing angular separation. It has the nice effect of sending parallels to the bottom of the list. (If you're interested in the parallels, you can sort the list in descending order of angular separation.)
It also means that you can give a search radius like, say, 2 .. 8 to find all observations between 2 and 8 arcminutes from some position. This could be used, for example, to exclude observations of the nucleus of a galaxy, or the central star in a planetary nebula.
Ecliptic Latitude
Ecliptic Latitude for the observation.
Ecliptic Longitude
Ecliptic Longitude for the observation
Galactic Latitude
Galactic Latitude for the observation.
Galactic Longitude
Galactic Longitude for the observation.
Obs Start Time
Observation date and time
The starting date and time of the exposure. Greenwich Mean Time (GMT) is used.
Program ID
IUE program identification code
Alphanumeric code identifying the observing program under which the observation was made. The program IDs were assigned for each episode of observing proposals. NASA, ESA, and SERC followed different naming conventions.
Clicking on a Program ID entry will return a page with information about the proposal, access to the abstract, a list of journal articles using data acquired for this program and a list of all IUE observations associated with the given program ID.
You may search on this field using wild cards (e.g. CS*AD) This can be useful as some US observers had multiyear programs with similar Program IDs
Trail Flag
Trail flag.

The trail mode indicates if the target was trailed along either the FES X-axis, the FES Y-axis, or not trailed.
Values for trailed exposures are:
Values for trailed are X (trailed along FES X-axis),
Y (trailed along FES Y-axis)
and N (not trailed).
Multiple Flag
Multiple flag.
This flag indicates the acquisition of multiple spectra in the large aperture. Multiple exposures result in 2 or more individual spectra spatially displaced from one another. The flag is set to indicate that these spectra were
displaced along the FES X-axis (flag set to X),
the FES Y-axis (flag set to Y),
the major axis of the large aperture (flag set to A)
or another configuration (flag set to O).
If the image does not contain multiple spectra, the flag is set to N.
Multiple spectra in the large aperture can be of the same object or of different objects. Multiple spectra may have been acquired by deliberately re-pointing the spacecraft for each separate spectrum or serendipitously, with a nearby object yielding an additional spectrum.
Segmented Flag
Segmented flag.
This value flags superimposed segmented spectra obtained by more than one commanded exposure. This situation may occur if no guide star is available for FES tracking during a long exposure and the target must be re-centered in the aperture or if the length of the exposure is greater than the maximum commandable exposure time (447 minutes). Segmented exposures result in a single spectrum, as opposed to multiple exposures flaged under the multiple flag.
Values for segmented are N (no) and Y (yes).
Primary Investigator Name
PI Name
Name of the Primary Investigator of the program for which the data were acquired.
Exposure Time
Commanded exposure length
The commanded integration time in seconds. The effective exposure time (which is the actual time used to derive the absolute fluxes) will differ somewhat depending on how the observation was obtained.
Trailed exposure times are not based on a commanded exposure time, but on the effective trail rate, the aperture size, and the number of passes through the aperture. The effective trail rate is derived from the commanded trail rate by applying an OBC quantitization correction.
EBV
Color excess
The color excess, E(B-V), of the observed object as given by the Guest Observer. Color Excess value not assigned for most VILSPA observations.
BV
Color index
The color index, B-V, of the observed object as given by the Guest Observer. Color index not assigned for most VILSPA observations.
Spectral Type
Spectral type
The MK spectral type of the observed object, as given by the Guest Observer. Not assigned for most VILSPA observations.
Luminosity
Luminosity
The luminosity of the observed object, as given by the Guest Observer. Not assigned for most VILSPA observations.
FES Mode
FES mode
The FES mode used during acquisition of the object. The two characters

denote either fast or slow (F, S) track, and underlap or overlap (U, O) mode; e.g. FO means fast track, overlap.
FES Counts
FES counts
The FES counts recorded for the object during acquisition. The mode and counts can be used to compute an apparent FES magnitude, which may be converted to a visual magnitude.
FA Status flag
FA Status at MAST
The Final Archive status flag. If Final Archive data exists for the observation, the flag is set to F. Otherwise the field is null.
Raw Status Flag
Raw Status at MAST
This flag indicates if the GO format Raw data are archived at MAST. If available the flag is set to R otherwise it is null. Some data were lost at read or later lost or corrumpted in the archiving process at NSSDC.
SIPS Status Flag
IUESIPS Status at MAST
This flag indicates if the GO format IUESIPS extracted data are archived at MAST. If available the flag is set to S otherwise it is null.
Volume Number
Script Volume Number
The binder number the original observing script for GSFC observations was stored in. The GSFC Observing Scripts have been scanned and are now stored in directories by the original volume number.
Page Number
Script page number
The estimated "page number" for the original observing script. Used to help find and display the scanned GSFC observing scripts. The scripts are most easily found by clicking on the appropriate link of the IUE preview pages.
Comments
Comments
Comments about the raw image quality, recorded just after the data were read down. For Goddard images, the DN values for emission lines, continuum spectrum, and background level are recorded in the form E=nnn, C=nnn, B=nnn. VILSPA used a numerical code.
Img Type
Image type
The image type, used for data processing. S = single spectrum, D = double (large and small aperture) spectra, M = multiple (psuedo-trailed) spectra in the large aperture, L = multiple spectra in the large aperture plus a small aperture spectrum, B = single image with both dispersions used, each using a single aperture, and Y = single image with both dispersions with both apertures used for at least one of those dispersions.
UVC Voltage
UVC voltage
The voltage on the camera's Ultraviolet Converter during the observation. The LWR camera was operated at a reduced voltage of -4.5 kV after October 1983, reducing its sensitivity. The SWP and LWP were operated only at -5.0 kV, as well as the LWR before October 1983.
Lamp
Lamp
Lamp used during the observation. For most observations, no lamp was used. The possible entries are N (none), T (tungsten flood lamp), and U (UV-flood lamp).
Roll Angle
Spacecraft roll angle
The roll angle of the spacecraft during the observation. This may be used to compute the orientation of the apertures as projected on the sky.
Pos Angle

Position angle
The position angle of the large apertures during the observation.
Missing Minor Frames
Missing minor frames
Number of missing minor frames. Data lost during transmission to the ground occur in packets of 96 pixels (a minor frame of telemetry).
Microphonics
Microphonics
Microphonics affecting the image. This flag may be either N (no) or Y (yes). This was typically seen in the LWR camera as several lines of periodically corrupted data (a "ping"). Weak pings were seen on rare occasions on the SWP camera but are not flagged. In addition, early SWP images were contaminated with low-level microphonics due to intereference from the Panoramic Area Sensor, which was subsequently turned off.
Non-standard Image
Non-standard image
Non-standard image flag. Values are N (no) or Y (yes). If the image is flagged as non-standard, it was obtained using unusual camera parameters and may not be a useful image.
Bad Scan
Bad scan
Bad scan flag. Values are N (no) or Y (yes). The LWP camera experienced scan difficulties, primarily early in the mission. The command software was revised to detect the scan failure and recommanded the scan, possibly having some small effects on the data quality. The anomaly largely disappeared after the camera became the default long-wavelength camera in late 1983.
Heater Warmup
Heater warm-up time
Values range from 0 to 5 minutes. This technique to avoid microphonic noise on the LWR camera was used often after 1981, typically with a heater warm-up time of 4 minutes. By turning on the read beam, the camera warmed up and the "ping" typically occured before the image read began or high in the image where it did not affect the spectrum.
Read Mode
Read flag
Values are F (full) and P (partial). The technique of reading down just the portion of the image containing the low dispersion spectrum, i.e. the partial image, was used on rare occasions. The image was then embedded into a 768 by 768 pixel array before processing.
Lost Flag
Image lost flag
Image has been lost and is unrecoverable.
Values are:
N - RAW GO format data unreadable
R - RAW GO format data lost
U -
Y -
Only Raw Image Archived
"Copy Raw Image" flag
Values are N (no) and Y (yes). Some images were deemed to be not useful, and only the raw data were archived (in IUESIPS format). When possible, these data were later processed with the Final Archive Processing System (NEWSIPS).
Other
Other abnormal condition flag
Values are N (no), Y (yes), D (DMU corruption), and B (both DMU corruption and some other abnormality). DMU corruption of the camera data occurred very late in the mission on a sporadic basis.
FES-X
FES-X
Location of the guide star in the FES during the observation, given in

FES units.
FES-Y
FES-Y
Location of the guide star in the FES during the observation, given in FES units.
Prep
Camera prep
Camera preparation sequence. Values are S (standard), XS (overexposed), X (XPREP only), N (N prep), F (fast prep), T (TPREP), and BAD (none or bad prep). Only images obtained with the S and XS preps are considered fully calibrated.
Effective Exposure Time
Effective exposure time
Effective integration time in seconds, used in deriving the absolute fluxes. The effective time is equal to the commanded exposure time corrected for camera rise time and camera exposure quantization for most exposures, or aperture length and trail rate quantization for trailed exposures. Note for multiple exposures in the large aperture, the absolute fluxes are based on the total of the individual effective exposure times.
V Magnitude
Visual magnitude
The visual magnitude of the observed object, as given by the Guest Observer for GSFC observations. For VILSPA observations, the magnitude was calculated.
Observing Station
Observing station
Values are VILSPA and GSFC (Goddard Space Flight Center). Some images were started at one station and read down at the other. The station that performed the read is considered to be the observing station. Usually NASA programs were observed from Goddard, and ESA and UK programs from VILSPA. However on occasion, usually due to pointing constraints, a NASA program was observed from VILSPA or vice versa.
Observer's Name
Guest Observer's name

The name of the IUE Guest Observer. Note that frequently the Guest Observer was different than the Principal Investigator to whom the observing time was awarded. As needed, names were truncated to 16 characters.
Track Mode
Track Mode
The spacecraft tracking mode. Values may be G (gyros), F (FES only), or B (both FES and gyros, used in the two gyro mode). In general, tracking with gyros was used only for short exposures or for moving targets, since better pointing stability could be maintained with FES tracking.
THDA at Read
THDA Read
Records the temperature of the camera head amplifier during the read of the image. Used in calibrations.
THDA at Start
THDA Start
Records the temperature of the camera head amplifier at the beginning of the exposure. Used in calibrations.
THDA at End
THDA End
Records the temperature of the camera head amplifier at the end of the exposure. Used in calibrations.
Focus
Telescope Focus
Values are on a unitless scale, where values of -1 to -2 are considered optimum out of a possible range of -12 to +8.
FPM

Background Radiation
Reading on the Flux Particle Monitor (FPM) at the beginning of the observation. Values range from 0.08 to 3.5. High radiation or radiation during a long exposure results in a high background level on the image. The flux monitor began to give occasional spurious reading starting May 14, 1991, and steadily became worse. It was useless by late September and was turned off Oct. 4, 1991.
IUESIPS Processing Date
IUESIPS Processing Date
The date that the IUESIPS version of the data were processed.
FA Date
The IUE Final Archive processing Date
The date that the NEWSIPS version of the data was processed.
Data Background
The background level.
The background level in DNs in the raw image, as estimated by the NEWSIPS processing algorithm.
Data Counts
Data Counts
The continuum level in DNs in the raw image, as estimated by the NEWSIPS processing algorithm.
Asym Ext Prof
The asymmetrical profile flag.
Indicates that the NEWSIPS processing software detected asymmetry in the spectrum perpendicular to the dispersion. May indicate a multiple source or extended source.
Num. Spline Nodes
The number of spline nodes.
For low dispersion images, indicates the number of spline nodes used in the SWET extraction algorithm. The maximum value used is 15, the minimum 3.
No. Bad Pixels
The percentage of bad pixels
The percentage of bad pixels as indicated by the nu flags in the SI image.
CC Percentage
Cross Correlation Percentage
The percentage of cross-correlations that were successful. For low dispersion images, typically 95% or more cross-correlations were successful. For high dispersion images, the success rate was often as low as 60% for well-exposed images.
CC Median
The median cross-correlation coefficient.
In general the best signal-to-noise ratio is achieved when this value is 0.7 or greater, i.e. there is a good match between the image and the ITF.
Mean Shift
Mean Shift
The mean shift between the image and the ITF, determined during the cross-correlation step. Mean shifts of 0.5 pixel or less tend to yield the best signal-to-noise ratio.
Max Shift
Max Shift
The maximum shift between the image and the ITF, determined during the cross-correlation step. Values greater than 1 pixel may indicate a large local distortion in the image, where the signal-to-noise ratio may be degraded.
Homogeneous Catalog
The homogeneous catalog ID.
The IUE Guest Observers used various object names and coordinates for the same objects, often making it difficult to find all the observations for a given object. To assist users, all objects observed by IUE have been assigned homogeneous data as provided by the Centre d'Donnee

Stellaire (SIMBAD). The data include the catalog, object name, RA, and DEC.
Homogeneous Object ID
The homogeneous object name.
See above.
Homogenous Complimentary ID
The homogeneous complementary ID.
See above.
Homogeneous RA (B1950)
Homgeneous Right Ascension
The homogeneous right ascension of the observed object, in the B1950 equinox. See above. For extended sources, the coordinates are the center of the source.
Homogeneous Dec (B1950)
The homogeneous declination of the observed object, in the B1950 equinox. See above. For extended sources, the coordinates are of the center of the source
Homogeneous RA (B2000)
The homogeneous right ascension of the observed object, in the B2000 equinox. See above. For extended sources, the coordinates are of the center of the source?
Mark
Mark this image for retrieval from MAST or to use the coplotting utility.
To Retrieve:
After selecting the desired files, either click the "Download NEWSIPS files as a tar file" button, or click the "more retrieval options" button for more options.
To Coplot:
After selecting up to 15 observations to be plotted, click on the "Plot marked spectra" button to coplot the selected observations.
The spectra that you selected will be automatically scaled to the full range of wavelengths and nearly the full range of fluxes (i.e., y axis plot scale runs from 0 (or .25 * the minimum flux for spectra with negative fluxes) to the 10th highest flux). Each spectrum is automatically assigned a color, up to a maximum of 15. The spectra are labelled by their dataset names, with a summary of the datasets plotted given below the plot. After inspecting the plot, you may wish to change the selection of datasets which are displayed. Use your browser "Back" button to do this.
Plot range
Adjust the minimum and maximum wavelengths (in Ångstroms) and minimum and maximum fluxes (in erg/cm2/sec/Å) to select the spectral region of interest and to exclude noisy data.
Plot dimensions
Adjust the X size and Y size in pixels to create the size of plot desired. The maximum dimensions are 850 by 640 pixels.
Redraw plot
Use this button to replot the spectra when you have changed the plot range or plot dimensions.
Image Type
Image Type
Image Type assigned during Core Item Verification. Values include:
S - Single Exposure
D - Double Aperture Exposure (Two exposures - one in Large and one in the small aperture)
B - Double Dispersion Exposure
M - Multiple Exposure (more than one spectrum in large aperture)
L - Double Aperture Multiple Exposure (one exposure in the small aperture, multiple exposures in the Large. Y - Double Aperture, Double Dispersion Exposure

Data Type

Requests can be submitted for either IUESIPS or NEWSIPS files. NEWSIPS data types include:

- MX - extracted spectra (the default file type and most used)
- EXTRACT-FA - the extracted files and the spatially resolved image file from which the spectra are extracted,
- ALL-FA - all the files produced by NEWSIPS,
- SI - the spatially-resolved image files only,
- RI - the raw image files (withoput any corrections),
- LI - the linearized image file.

IUESIPS data types include:

- ME - extracted spectral files,
- EXTRACT - the extracted files plus the low dispersion spatially-resolved image files
- ALL - the entire set of IUESIPS-produced files,
- ELBL - the low dispersion spatially resolved image file only,
- RAW - the uncorrected raw image file.

NEWSIPS files are in FITS format while IUESIPS data is archived in IUE GO format and needs special software to be read. IUESIPS data however is also available in RDAF format (see below). In general, NEWSIPS data is recommended for most users.

Conversion Options

IUESIPS data can be requested in either GO or RDAF formats. The default format is GO. IUE RDAF software uses RDAF format files, however the IDL program GOTORDAF can be used to convert GO format files to RDAF format (see also RDAFTOGO).

File Download Options The current IUE file download options include:

Data Format:

- NEWSIPS - FITS files produced by the IUE New Spectral Image Processing System,
- IUESIPS_GO - IUE GO format files produced by the original IUE Spectral Image Processing System,
- IUESIPS_RDAF - IUESIPS-processed files in RDAF-format.

Data Compression Options:

- .tar - uncompressed files bundled in a tar file. (Note, prior to 10/21/99, the individual files were also gzipped by default.)
- .tar.gz - files are bundled into a tar files which is then compressed using gzip.
- .zip - files are bundled (and compressed) into a zip file,

Download times vary according to the number of CD's needed to be mounted in order to fulfill the data request. Users know when the request is completed when the browsers "Download window" disappears. Requests for a few files are normally completed in a couple of minutes.

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printer-friendly page
http://archive.stsci.edu/iue/help/columns.html
archive@stsci.edu
Modified: Dec 26, 2002 14:44

NSSDC MINILOG FORMAT

FIELD NAME	FIELD LENGTH	BEGIN	END
Object ID	12	1 -	12
Program ID	5	13 -	17
Right Ascension	7	18 -	24
Hours	2	18 -	19
Minutes	2	20 -	21
Seconds	2	22 -	23
Tenths	1	24 -	24
Declination	7	25 -	31
Sign	1	25 -	25
Degrees	2	26 -	27
Minutes	2	28 -	29
Seconds	2	30 -	31
Magnitude	5	32 -	36
EBV	5	37 -	41
Spectral Type	3	42 -	44
Luminosity	3	45 -	47
Object Class	2	48 -	49
FES Mode	2	50 -	51
FES Counts	5	52 -	56
Camera	3	57 -	59
Sequence Number	6	60 -	65
Dispersion	1	66 -	66
Aperture	1	67 -	67
Large Aperture Status	1	68 -	68
Exposure Length	5	69 -	73
Minute	3	69 -	71
Second	2	72 -	73
Day and Time of Observation	9	74 -	82
Year	2	74 -	75
Day of Year	3	76 -	78
Hour of Day	2	79 -	80
Minute of Day	2	81 -	82
Acquisition Station	1	83 -	83
Notes	1	84 -	84
Processing Date	5	85 -	89
Year	2	85 -	86
Day of year	3	87 -	89
Comments	20	90 -	109

IUE

D-51694

```
$NOP
$NOP
$NOP
$NOP
$NOP
$NOP ******LIST OF 1ST AND LAST RECORDS OF GOUT1********
$EXE TPLIST BS

INPUT PARAMETERS ARE:  ED FL=1=1 1 1

 TAPE NO.   1            FILE NO.   1
 RECORD   1              LENGTH   32700
    ORI NEBU     0532000-0525                  72       FES     1F2 16000793341255V*     0
          HD     47129BCSRH063443  061044  6.0E0.3007 IIII3       FES  1008D2 16000790901340G 79122
                   HD    128220BCSRH143255  1925    8.7E0.05SD    16       FES  1009D2 16000790901
541G 79122                    HD    128220BCSRH143255  1925    8.7E0.05SD    16       FES  1010P2 1
60007909017366 79122                        BI 133  MSJDW051840 -6914  13.05     08     12       FES
  1011D1 020007909315006 82298S=D                    BD  +28 4211PHCAL214856  28373410.53E-.020P   12
       FES  1012D2 04000790962225GL     TEST OF OPSDEV2          SK213-69IEBAC0536350-69125111.97 0.
10B1    23       FES  1013D2 040007910022126L     <EEP SCI HEADER INFO    NULL    IEBAC
                 99       FES  1014S2 000007910100286L     TEST SHARED DISK        SK280-69IEBAC05
42110-69193912.66 0.09B1    23       FES  1015D2 040007910102466 82298TEST SHARED DISK        RY SG
R  RCBAH1913169-333641  7.7     G0 IB 52       FES  1016D2 160007910111596L
      SK   108IMBBS0101480-72224512.41 0.0106    13       FES  1017F2 080007910212186L     GYRO TRAC
KING      NGC     6397GCBAC173648 -5339    7.5  .76      83       FES  1018S2 160007910311456 7930
8GLOBULAR CLUSTER         GD 210  GCBAC1711368-5339  13.63  .10HB    39       FES  1019S2 16000791041
1400G 79308NO COMMENTS          HD     29589CMBBS0437162 120604  5.5 -.1388 IV 22       FES  1020D2
160007910523196L     DO NOT PROCESS       HD     37023NDBFS0532489-052516 5.36     06     12       FE
S  1021D2 160007911211146 79122                      NGC     1976NDBFS053245 -052416                 7
2       FES  1022D2 160007911212296 79115                    NGC     1976NDBFS053245 -052416
         72       FES  1023D2 160007911213506 79123                    NGC     1976NDBFS053245 -052
516                72       FES  1024D2 160007911214466 79123                    NGC     1976NDBFS0
53248 -052146              72       FES  1025D2 160007911215396 791233 1/2'N THT'C ORIONSNGC
1976NDBFS0532489-052646              72       FES  1026D2 160007911217156 791231.5'S THT'C ORIONI
S NGC     1976NDBFS0532450-052316              72       FES  1027D2 160007911219096 791231'W2'N T
HT'O CORIONSNGC     1976NDBFS0532450-052516              72       FES  1028D2 160007911220146 791
23S/C1'W THT'O CORIONSNGC     1976NDBFS0532390-052516              72       FES  1029D2 160007911
22318G 791232.5W THT'C ORIONIS  NGC     1976NDBFS053345 -052516              72       FES  1030D2
 160007911300326 79126                    NGC     1976NDBFS0532450-052516              72       F
ES  1031D2 160007911411296 791261'W THT'C ORIONIS   NGC     1976NDBFS0532330-052516
72       FES  1032D2 160007911415466 79126                    NGC     1976NDBFS0532450-052616
         72       FES  1033D2 160007911418026L79126NOT SHOW ON ARC TAPENGC     1976NDBFS0532410-05
2416               72       FES  1034D2 160007911419186 79126                    NGC     1976NDBFS
0532450-052516             72       FES  1035D2 160007911423306 79126                    NGC
 1976NDBFS0532450-052416              72       FES  1036D2 160007911500266 79126
       M42 AREANDBPP0532546-052709              72       FES  1037D2 160007911518396 79127
           NGC     1976NDBFS0532331-052216              72       FES  1038D2 160007911610506 79
1273'N4'W THT'C ORIONISNGC     1976NDBFS0532370-052316              72       FES  1039D2 16000791
161338G 791273'W,2'N THT'C ORIONSNGC     1976NDBFS0532390-052516              72       FES  1040D
2 160007911615596 791272.5'W THT'C ORIONIS NGC     1976NDBFS0532410-052416              72
FES  1041D2 160007911617236 791272'W,1'N THT'C ORIONSNGC     1976NDBFS0532410-052516
 72       FES  1042D2 160007911618466 791272'W THT'C ORIONIS   NGC     1976NDBFS0532489-052646
          72       FES  1043D2 160007911620296 791281.5'S THT'C ORIONIS NGC     1976NDBFS0532450-0
52616              72       FES  1044D2 160007911621486 791291'W.1'S THT'C ORIONSNGC     1976NDBF
S0532469-052516            72       FES  1045D2 160007911623306 791300.5'W THT'C ORIONIS NGC
  1976NDBFS0532489-052616              72       FES  1046D2 160007911700216 791301'S THT'C ORIONI
S     M42 AREANDBPP0532546-052709              72       FES  1047D2 160007911710366L791300RIGIN
AL FIELD          M42,AREANDBPP0532546-052528              72       FES  1048D2 160007911822366 7
9131                        U GEM   XBBGF075208  220818 14.1     SD    63       FES  1049S2 1600079
11823286 79131                       SNOVM100CV3CW122022  160415                56       FES  1050
D2 160007911911126L                          NOV VULPCVBCW201900  2126      9     F     63
 FES  1051D2 160007912816406 79207                    ETA U MAPHCAL134534  493344 1.84     B3 V
  21       FES  1052D2 160007912819096 79162                    NGC     6741NPBLA1900020-003112
           70       FES  1053S2 010007913217596 79144                    JUPITER SJBWM
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 208816VVBAD2155144 632313  5.0E0.55BM IB 39        FES  1056D2 16000791351626G 79148
                JUPITER SJBWM                -1.5          03         FES  1057D2 16000791391545G 79152
                          JUPITER SJBWM                                03         FES  1058D1 16000791392153G
79207                                  AR LAC  RSRLB2206395 452945  6.1E0.02G     44         FES  1059D2 160007
91400844G 79154                                       MOON    SL33H                              02        FES  106
0D2 16000791411730G 79147                                NGC      7582XGBYK2315384-423842 13.5      XR     88
  FES  1061D1 02000791451129G 79156                                     HD     204075CBBRW2123489-223744  3.7       G5
II 45        FES  1062D2 16000791461048G 81315                                         HD     177300CBBRW1902439-512942  7
.5  0.5F8     42        FES  1063D2 16000791461405G 81315                                      NGC       346NDBRD0057360
-7227   10.5       WN    72          FES  1064S2 04000791470920G 7915633X33PXL,281ARCSECSQNGC          346ND
BRD0057360 7227   10.5                72         FES  1065S2 04000791471211G 79157CAM,94,-89,512,33X33NGC
    1714NDBRD045206 -6700       11                72         FES  1066S2 02000791471550G 7915733X33
      NGC      2070NDBRD0538596-6905                            72        FES  1067S2 08000791471900G 79157
                 NGC        346NDBRD0057360-7227       12                72          FES  1068D2 04000791490851G
 79161                     NGC        346NDBRD0057360-7227       12                72          FES  1069S2 04000
791490958G 79161COLLECTED ABT SWLA          M32      EGBHS0039582 403530    12E0.10        81          FES  10
70S2 04000791500904G 79161LONG WL,LARGE APR           LAM  ANDEGBHS2335070+4611     3.88 1.02G8 III45
   FES  1071D2 16000791521657G 81092                                       CEN X-4  0D11B1455195-312807     13
    59         FES  1072S1 02000791530827G 79164                                            HM SGE   NPBA31939414+163733 1
1.5      PN      70         FES  1073F2 16000791531111G 79164                                      HD      217906CMBRS230120
8+274840 2.42 1.67M2 III49          FES  1074D2 16000791551545G 79166                                             HD       45348C
MBRS062251 -5240   -0.86       F0 IB 40          FES  1075S2 16000791562103G 79167                                         HD
     2151CCBDM002309 -773208 2.79E0.04G2 IV 44          FES  1076D2 16000791572004G 79168
             JUPITER SJBWM                   -1.4        G       03         FES  1077S2 16000791581950G 79170
                  HD      218356CCBDM2304389+251159 4.78+0.3 K0 II 47          FES  1087F2 16000791591410
G 79207                          HD       49798CBBGM0646350-4415388.27  0.1106 IB 14            FES  1088D2 1600
0791612216G 79170                                   HD      72350NSBGW0828579-443405                     21          FES  1
089D2 16000791621953G 79172                                        BD  +75  325PHCAL0804430 750648 9.54-0.37SD      16
    FES  1090D2 16000791651811G 79173                                       HD        72089NSBGW0827274-452323   7.6        B
5 III24        FES  1091D2 16000791680911G 79176                                            HD      167362NPBCP1817582-305312
11.8       PN      70         FES  1092D2 04000791691414G 79177                                        000S PERCMBAM02191
56+582135   9.5 2.50M4 IB 52          FES  1093F2 16000791700957G 79195                                                RY    SGR
RCBAH1913169-333641                      52          FES  1094D2 16000791711008G 79178HEADER FOR LWR 4817
   RY SGRRCBAH1913169-333641  7.7       GO IB 52          FES  1095D2 16000791711052G 79195
       CD  -2313833RCBAH1800409-232631   8.5        K2      47          FES  1096F2 16000791712020G 79178
                 HD       186408SCRFG1940290+502519   5.9 0.03G2 V   44          FES  1097S2 160007917310З
0G 79178AT 300,144;SIZE 700 HD      186427SCRFG1940319+502359 6.20        G5 V  44          FES  1098S2 160
00791731840G 79178                           NGC        4449OD8AB1225452+442215 14.0 0.0   0     82          FES
1099D2 16000791791830G 79185HEADER FOR LWR 4907 NGC       0598EGBCW0131046+302340   6.5 0.0   0     72
     FES  1100D2 04000791810707G 79190FES 1100 NONEXISTENT       CHI OPHCVBJG1624073-182041 4.5
      20         FES  1101D2 16000791851758G 79190                                  HD       120315PHCAL1345343+493344
  1.8  0.02B3  V   21           FES  1102D2 16000791971531G 79199N/A                                   HD       169515CB2JS1822
430-124319   9.4  0.0  B0 V   63           FES  1103D2 04000791980047G 79200N/A                                 HD         417
4CB2JS0041527+402419   7.5  0.0  M2  III57            FES  1104D2 16000791981552G 79200N/A
   BET  ANDMLBFS0106560 3521    2.03 1.63M0  III49          FES  1105D2 16000792010417GL       N/A
           HD         1760MLBFS0019150-202030   5.0-0.18M5 III49          FES  1106D2 16000792011624G 79203N
/A                   HD        18884MLBFS0259400+0354      2.2 1.64M2  III49          FES  1107D2 160007920117
42G 79204N/A                           HD       108903MLBFS1228230-5650     1.6 0.03M3  II 49          FES  1108F2 16
000792030521G 79205N/A                            HD      203467BEBJM2118201+643934   5.2 0.18B3 V   26           FES
 1109D2 16000792051800G 79209N/A                               NGC       7023NRBAW2100563+675748                       73
    FES  1110D2 04000792080513G 79215HEADER FOR LWR 5177       BET PEG APBJT2301208+274840   2.6 0.1
6M0  III49         FES  1111F2 08000792090421G 79216NA                            HD       38393APBJT0542226-22274
7 3.80       F8      41          FES  1112D2 16000792091855G 79218HEADER FOR LWR 5195      MEROPNEBNRBAW034
3212+234639                        73          FES  1113F2 16000792100436GL          AUTO WARMSTART          HD         234
08NRBAW0342508+241247   3.9 0.07B7  III25           FES  1114F2 16000792101454G 79218HEADER FOR SWP 5982
     DEL EQUAPBJT2112027 094812   4.3 0.04F4      41          FES  1115F2 16000792110941G 79219
          NGC        1432NRBAW0342507+241206              0      73          FES  1116D2 16000792130734G 79222
N/A                    NGC        3031EGBMP0951300+6918   10              0      80          FES  1117F2 04000792161
426G 79227N/A                               CRAB NEBNSBSM0531337+215755                        75           FES  1118F2 0
2000792171105G 79234N/A                                  CRAB NEBNSBSM0531289+215835                        75             FES
  1119F2 02000792171451G 79232                                 NGC       5461EGBMP1401545+540311    13                  80
      FES  1120D2 02000792180345G 79232N/A                                     CRAB NEBNSBSM0531337+215756
       75          FES  1121F2 02000792200317G 79232                                          CRAB NEBNSBSM0531337+2157
56                 75          FES  1122S2 00500792200410G 79232                                       HD       37479HRDAK05
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NEBNSBSM0531337+215157                75        FES  1124F2 02000792210513G 79232N/A
      CRAB NEBNSBSM0531337+215157                75        FES  1125F2 01000792210630G 79232N/A
                    CRAB NEBNSBSM0531337+215157                75        FES  1126F2 02000792210735G 7923
2N/A              HD         108IGBDY0003269+632406              06    12         FES  1127D2 1600079222
0410G 79272N/A                   NGC       7293NPBRB2227006-210540                          71         FES  1128D2
02000792240330G 79233N/A                              CRAB NEBNSBKD0531337+215835                       75         FE
S  1129F2 02000792250431G 79234N/A                              HD      142860CCBEB1554085+154925  3.80.40 F6 IV 4
4        FES  1130D2 16000792260940G 79235N/A                              CRAB NEBNSBKD0531337+215835  9.2
         75         FES  1131D2 16000792270234G 79236                                   CRAB NEBNSBKD0531337+215
835  9.2                75         FES  1132D2 16000792270308G 79236                                   CRAB NEBNSBKD0
531287+215838                75         FES  1133F2 02000792270520G 79236                                   CRAB
 NEBNSBKD0531287+215838                75         FES  1134F2 02000792270541G 79236
     CRAB NEBNSBKD0531305+220001                75         FES  1135F2 02000792271006G 79236
                    A16PSYCHSABDM2041356-164943                    05         FES  1136D2 16000792280420G 792
38N/A                    A16PSYCHSABDM2041356-164943  9.5 0.12G2 V  05         FES  1137D2 160007922
80420G 79238N/A                   GC       27517DCBDD1949555+005233  3.5 0.38F6 IB 53         FES  1138S2
 16000792281038G 79236N/A                   GC       31421DCBDD2227185+580932  4.3 0.10G1 IB 53         F
ES  1139S2 02000792281515G 79238N/A                              R CRB   RCBAH1545307+281832  6.0
52        FES  1140D2 16000792291012G 79239N/A                              HD      32630PHCAL0503002+411007 3.28
    B3    21        FES  1142P2 16000792300411G 79239N/A                              VESTAPHCAL0301297+08
2917                05        FES  1143D2 04000792300824G 79240N/A                              GC      27517DCBDD
1949555+005233  3.5 0.38F6 IB 53        FES  1144S2 16000792301113G 79238N/A                              GC
24135DCBDD1744247-274849  4.2 0.58F8 IB 53        FES  1145D2 16000792301637G 79238N/A
      ETA  AQLDCBDD1949554+005232 3.50       F6 IB 53        FES  1146D2 16000792321055G 79241N/A
                    000BLLACBLBKH2200393+420207 15.0 0.0  0     87         FES  1147D2 16000792330300G 79
242                          APLIBBLBKH1514452-241122 14.5 0.0  0     87         FES  1148P2 00125792
340255G 79242                         U    SCOCVBJG1619376-174543 14.0 0.0 P0    55         FES  1149P
2 00125792370245G 79246N/A                   NGC       5128EODCM1322240-4245     7.2 0.0  0    86
FES  1150D2 04000792381450G 79246N/A                   NGC       5128EODCM1322240-4245     7.2 0.0  0
 86        FES  1151D2 04000792381627G 79246N/A                              MK    509QSBMG2041300-1054    13.1
 0.0  0    84        FES  1152P2 00125792390255G 79247N/A                              NGC      1068EODCM0240050-0
01357 12.5    SF    84        FES  1153D2 04000792400240G 79246N/A                              HD       74371MLBJ
C0840147-451351  5.2 0.28B6 IA 25        FES  1154D2 16000792410635G 79247N/A                              BX
 MON  CMBAM0722538-033001   11     M3    52        FES  1156F2 04000792440202GL      N/A
     HD      60753PHCAL0732081-502829  6.7 0.11B3 IV 21        FES  1157D2 16000792441358G 79249N/A
                HD      207757CVBDL2148367+122359  8.5 0.20M3 III57        FES  1158D2 16000792450020G 7
9250N/A                HD      93205BCSRH1042373-592827 7.75       03 V  12         FES  1159D2 1600079
2460435G 79253N/A                   SAO    125159DCBES1949555+005233  3.9E0.71G0 IB 53         FES  1160
D2 16000792470503G 79252N/A                   HD      199579BCSRH2054487+444353 5.96       06 III12
 FES  1161D2 16000792480210G 79254N/A                              HD      165052BCSRH1802064-242410 6.87       06 V
  12        FES  1162D2 16000792480715G 79254N/A                              HD      135240BCSRH1512529-604624 5.0
8     07 III15        FES  1163D2 16000792480825G 79254N/A                              HD      37041BCSRH0532550-
052650 5.07-0.10G9 V  12        FES  1164D2 16000792481532G 79254                              NGC      6853NPB
RB1957258+223351                71        FES  1165S2 02000792490053G 79253                              A
T MIC  CCBJL2038437-323635 10.1       M4    48        FES  1166D2 04000792500015GL      N/A
     HD      93250BCSRH1042479-591807 7.38+0.4503     15        FES  1167F2 16000792510900G 79256
                HD      47129BCSRH0634432+061043 6.05+0.0607 III12        FES  1168D2 16000792511220G
79256                   NGC      7213QSBAB2206094-472452 12.3     SF    84        FES  1169F2 040007
92511740G 79255                   NGC      6720NPBRB1851441+325813            0    71         FES  117
0S2 00500792530556G 79257N/A                              VW CEP XBBGF2038029+752457 7.95+0.00G  V  44
  FES  1171D2 16000792590837G 79263N/A                              HD      93130IGBJH1042045-593642  8.1 0.5406
III12        FES  1172D2 16000792640118G 79269                              HD      169454IEBTS1822249-1400256.6
1 E1.16B1 IA 20        FES  1173D2 16000792651029G 79266                              8-28AEGBDM0842453
+161645                88        FES  1174P2 00125792742245G 79277N/A                              8-28AEG
BDM0842453+161645 16        H2    88        FES  1175P2 00125792742245G 79277N/A                              HR
     6407MLBAB1712220+1426  3.1  1.2  G5 III49        FES  1176S2 16000792780412G 79281
     HR       9022GD2GH2346540+0048  5.76 +0.16A5 V  31        FES  1177D2 16000792820420G 79284
                HD      60344HRDAK0731000-234959  7.8-0.07B5    21        FES  1178D2 16000792830718G
 79285                   HZ   HERXBBHG1656017+352505 13.0E0.05A5    59        FES  1179D2 04000
792852229G 79287                   DQ   HERXSBAD1806060+455056 14.6 0.0  0 WD 55        FES  11
80P2 01000792860330G 79287                              MARS    SMBAL                     1.3 0.0 G     03
   FES  1181D2 16000792940629G 79295                              0SMC/AB7HSBPC0101580-721926 13.2 0.04WN
    11        FES  1182D2 02000792970043G 79297                              WAVCAL  PHCAL
5.6            99        FES  1183D2 16000792982223G 79299ENGINEERING TEST          T     TAUTTBGH041904
2+192506 10.2 0.43K0 V  58        FES  1184F2 16000792992315G 79301                              HD       60753P
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                                                                    FES  1186P2 00500793202045G 79322
          MRK  421CBBGM1918518-160301 4.61      B8    25        FES  1187D2 16000793210315G 79322
                GC         9313DCBDD0701087+203843  4.1 0.19G1 IB 53        FES  1188D2 1600079325052 5
G 79327                GC        8371DCBDD0625213+303133  5.4 0.0 G0 IB 53        FES  1189D2 1600
07932509336 79327                        PG  0935+417QSBMS0935370+4143   16.1 0.0  0     85        FES  1
190P2 00125793252030G 79327                        PG  0002+051QSBMS0002466+050728 16.5 0.0 QS    85
    FES  1191P2 00125793272100G 79329                              NGC      6720NPBTB1851434+325749  8.8E0.10
0    71       FES  1192S2 02000793302118G 79331                           CPD-69  2698HRDAK1707000-7002
 9.3-0.11B5    21       FES  1193D2 16000793312000G 79334                            HD    260858HRDAK06345
90+1249    9.0 0.0 09    12       FES  1194D2 16000793320006G 79334                             IC  5217
NCBJH2221560+50424511.2     0    71       FES  1195D2 16000793322027G 79337
  IC  2165NCBJH0619242-12574013       0    71       FES  1196D2 16000793330031G 79337
         TON  490QSBBW1011056+25040916.5      0    85       FES  1197S2 02000793342033G 79338
               AH   HERCVBPS1642095+252450           0    54       FES  1198S2 02000793370 14
7G 79340                HD      116713CCBEB1323131-392941 5.101.10 KO III47        FES  1199S2 160
00793392307G 79342                        NGC      4151QSBAB1208004+394102 12.7 0.0  0    84       FES
1200D2 04000793412306G 79344                                GL 411CCBJL1100369+361817  7.5      M2 V  48
   FES  1201S2 16000793420430G 79344                          HD     34816PHCAL0517162-131337  4.3E0.03
B0 IV 20        FES  1202F2 16000793480020G 79348                         HR       8414CSBKN2203129-003348
 2.9 0.13G2 IB 45       FES  1203F2 16000793551923G 79356                            HD     37479APBSA0536
150-023630  6.5 0.05B2 V  20       FES  1204D2 16000800042227G 80006                            HD      3701
7APBSA0532532-043130  6.0-0.02B2 V  27       FES  1205D2 16000800050540G 80006
  C 1979 LSCBMA1608300-460808                 06        FES  1206D2 16000800101721G 80012
        COM BRADSCBMA1608300-460808   4        *    06       FES  1207F2 16000800101743G 80012
               COM BRADSCBMA1608300-460808   4        *    06       FES  1208D2 02000800101 8
05G 80012                      COM BRADSCBMA1608340-461609   4        *    06       FES  1209D2 16
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   FES  1211D2 16000800102130G 80012                              COM 1979SCBMA1608390-462125
    06       FES  1212D2 16000800102214G 80012                              COM 1979SCBMA1608430-46240
4          06       FES  1213D2 16000800102245G 80012                              COM 1979SCBMA160
8464-462645               06       FES  1214D2 16000800110007G 80012                              COM 19
79SCBMA1608560-463223               06       FES  1215D2 16000800110216G 80012
  COM 1979SCBMA1608406-463618                 06       FES  1216D2 16000800110310G 80012
       COM 1979SCBMA1609177-464901                 06       FES  1217D2 16000800110635G 80012
              HD    186427STBDB1940320+502403  6.2-0.02G5 V  44       FES  1218D2 16000800120
009G 80013                    COMET79LSCBMA1623120-562502  4.4           06        FES  1219S2 1
6000800161727G 80017                    COMET79LSCBMA1623430-564003  4.4           06        FES
 1220S2 16000800161833G 80017                    COMET79LSCBMA1623480-564322  4.4           06
   FES  1221S2 16000800161939G 80018                    COMET79LSCBMA1624020-564927  4.4
    06       FES  1222S2 16000800162040G 80018                    COMET79LSCBMA1624500-5707
47  4.4          06       FES  1223D2 16000800162050G 80018                              URANUSSPBJC
          5.5      G2 V  03       FES  1224F2 16000800171640G 80018                              NGC     3
031EGBMP0951299+691759  10 E0.15SP    80       FES  1225S2 02000800182154G 80019
   COM BRADSCBMA                  5.          06       FES  1226P2 16000800182227G 80019
        HD      96917IGBDY1106319-564740  7.0E0.0809 IB 13       FES  1227D2 16000800191627G 8002
1              HD      96670IGBDY1105067-593607 7.50E0.1708     13       FES  1228D2 1600080022
2242G 80025                        MARSSMBAL                  -0.3  0.0  0     03       FES  1229S2
16000800232015G 80025                        MARSSMBAL                  -0.3  0.0  0     03       FE
S  1230S2 16000800232129G 80025                        COM BRADSCBMA0119260-705601 10.0             0
6       FES  1231D2 16000800241640G 80026                        COMET79LSCBMA0124510-701058 11.5
    06       FES  1232F2 02000800241647G 80026                        COMET79LSCBMA0132020-690
028 11.5           06       FES  1233D2 16000800242139G 80026                            HD      203190D19B0
313323-0606086.16 -0.02B9 V  22       FES  1234D2 16000800322009G 81272                            HD     15
2623IGBAD1652461-403453 6.73E0.4407 V  12       FES  1235D2 16000800322316G 80033
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         COM BRADSCBMA0325130+080230                 06       FES  1237F1 02000800381438G 800
38                    COM BRADSCBMA0331400+215936           0     06       FES  1238D1 020008004
42256G 80045                        0ABELL30FBBJG0844035+18034814.1 -0.3 05 SD 16       FES  1239P2
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ES  1240S2 00500800512308G 80053                    COM BRADSCBMA0337270+190940          0
06       FES  1241S2 00500800512321G 80053                    COM BRADSCBMA0337280+191017
   0    06       FES  1242D2 02000800520215G 80053                              AH   HERCVBPS1642049+25
202814.5       0    54       FES  1243S2 00500800601722G 80061                              CCM BRADSCBMA
0346010+225250                 06       FES  1244S2 00500800631300G 80064                              CCM
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CCM BRADSCBMA0346050+225403 06 FES 1248S2 00500800
6315106 80064 CCM BRADSCBMA0346060+225421 06 FES 1249S
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56 FES 1272D2 020008030521576 80307 SNWILD80CVBCW2034270
+595559 11.5 56 FES 1273F2 040008030620376 81018 C/ENCKE SC
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G 80355NO COMMENTS HD 62058CCCRS0738570-3133 6.6 G2 IB 45 FES 1289D2 1600
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FES 1291S2 160008100221466 81003NO COMMENTS HD 47398NSCGW0635576+044019 8.4 B
1 IV 24 FES 1292D2 160008100916286 81010NO COMMENTS ALPHABOOCSCJL1413229+192630
+0.1 K2 III47 FES 1294F2 160008101216376 81014NO COMMENTS SN131680CVCCW03210
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7G 81029NO COMMENTS HD 931460D4281042068-594941 8.44E0.3406 V 12 FES 1300F2 160
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30G 81066NO COMMENTS BORRELLYSCDMA0232370+170615 10 06 FES 1310D2 02
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3200+582948 12.0 DA WD 37 FES 1315D2 1600081081015 3G 81081NO COMMENTS ABELL
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239G 81087NO COMMENTS

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008 3.4 M3 III49FU 1122SWP 26421LL0025008519618 09G*85202E=82,C=65,B=40 HD 216489RSHLR2
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SWR 1081 0000078197000 0V 00000 NULL - TEST 12.4 0000000+000000+99.9
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TEST 12.8 0000000+000000+99.9 99 SWR 1087 0000078204000 0V 00000
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- TE                  0000000+000000+99.9             99        SWR  1126   00000782310000V 00000    NU
LL - TEST 17.8                  0000000+000000+99.9             99        SWR  1127   00000782310000V 0
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2310000V 00000    TFLOOD,00:32 - T                   0000000+000000+99.9             99        SWR  1129
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  99        SWR  1131   00000790080000V 00000    SAFETY READ                    0000000+000000+99.
9           99        SWR  1132   00000790080000V 00000    NULL - TEST 18.1                    0000000+
000000+99.9           99        SWR  1133   00000790080000V 00000    NULL - TEST 18.2
  0000000+000000+99.9             99        SWR  1134   00000790080000V 00000    CALUV,01:15 - TE
          0000000+000000+99.9             99        SWR  1135   00000790080000V 00000    CALUV,02:30
 - TE                  0000000+000000+99.9             99        SWR  1136   00000790080000V 00000    C
ALUV,03:45 - TE                  0000000+000000+99.9             99        SWR  1137   00000790080000V
00000    CALUV,05:00 - TE                   0000000+000000+99.9             99        SWR  1138   000007
90080000V 00000    CALUV,06:15 - TE                   0000000+000000+99.9             99        SWR  113
9   00000790080000V 00000    CALUV,09:23 - TE                    0000000+000000+99.9             99
  SWR  1140   00000790080000V 00000    NULL - TEST 18.9                    0000000+000000+99.9
 99        SWR  1141   00000790080000V 00000    CALWL,HIRES,00:0                    0000000+000000+99
.9          99        SWR  1142   00000790080000V 00000    CALWL,HIRES,10:0                    0000000
+000000+99.9          99        SWR  1143   00000790080000V 00000    CALUV,03:45 - TE
   0000000+000000+99.9             99        SWR  1144   00000790080000V 00000    CALWL,HIRES,10:0
          0000000+000000+99.9             99        SWR  1145   00000790080000V 00000    CALUV,03:4
5 - TE                  0000000+000000+99.9             99        SWR  1146   00000790290000V 00000
SAFETY READ                   0000000+000000+99.9             99        SWR  1147   00000790330000V
 00000    HIGH GAIN NULL                   0000000+000000+99.9             99        SWR  1148   00000
790330000V 00000    HIGH GAIN NULL                   0000000+000000+99.9             99        SWR  11
49   00000790330000V 00000    NULL - TEST 20.5                   0000000+000000+99.9             99
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9.9          99        SWR  1152   0000079066O000VL00000    CALUV,10:00 - TE                    000000
0+000000+99.9              99        SWR  1153   0000079066O000VL00000    SECOND READ - TE
     0000000+000000+99.9              99        SWR  1154   0000079066O000VL00000    CALWL,HIRES,00:0
               0000000+000000+99.9              99        SWR  1155   0000079115O000V 00000    SAFETY RE
AD                        0000000+000000+99.9              99        SWR  1156   0000079171O000V 00000
 SAFETY READ                        0000000+000000+99.9              99        SWR  1157   0000079203O000
V 00000    SAFETY READ                        0000000+000000+99.9              99        SWR  1158   0000
0800700000V 00000    SAFETY READ                        0000000+000000+99.9              99        SWR  1
159   0000080070O000V 00000    NULL                        0000000+000000+99.9              99
     SWR  1160   0000080112O000V 00000     SAFTY READ GI F                    0000000+000000+99.9
      99        SWR  1161   0000080199O000V 00000     SAFETY READ                    0000000+000000+
99.9          99        SWR  1162   0000080276O000V 00000     SAFETY READ                    00000
00+000000+99.9              99        SWR  1163   0000080310O000V 00000     SAFETY READ
     0000000+000000+99.9              99        SWR  1164   0000080357O000V 00000     SAFETY READ
               0000000+000000+99.9              99        SWR  1165   0000081015O000V 00000     SAFETY
READ                        0000000+000000+99.9              99        SWR  1166   0000081068O000V 00000
   SAFETY READ                        0000000+000000+99.9              99        SWR  1167   0000081185O000
0V 00000        SAFETY READ                        0000000+000000+99.9              99        SWR  1168   000
0081288O000V 00000        SAFETY READ   NULL      FB5840000000+000000+99.9              99        SWR
1169  0000081321O000V 00000SAFETY READ             NULL      SP5580000000+000000+99.9              99
      SWR  1170   0000082011O000V 00000SAFETY READ             NULL              0000000+000000+99.9
       99        SWR  1171   0000082072O000V 00000                    NULL      EE2780000000+000000
+99.9          99        SWR  1172   0000082122O000V 00000SAFETY READ             NULL              0000
000+000000+99.9              99        SWR  1173   0000082245O000V 00000SAFETY READ             SAFETYREA
DEE2140000000+000000+99.9              99        SWR  1174HL0000008234800000V 82348TFDC=19.0
 SECONDREADEE2140000000+000000                    99        SWR  1175HL0000008234800000V 82348
          NULL      FE1910000000-000000+99.9              99        SWR  1176  0000008314600000V 83146S
WR SAFETY READ      NULL      FI1580900132-402125+99.9              99        SWR  1177L 0000008400408
49V 84004SAFETY READ,TFDC=19.  SAFETYREADPHCAL0000000+000000+99.9              99        SWR  1178LL000
0008416021O4V 84161                    NULL      GE0380000000+000000+99.9              99        SWR
 1179  0000008430711127V 8430800X SAFETY RD. TFDC=  NULL      PHCAL0000000+000000+99.9              99
       SWR  1180L 0000078434810l5V 84348004 SAFETY READ TFDC  NULL      PHCAL0000000+000000+99.9
        99        SWR  1181L 0000008505809l5V*85058000 TFDC=18.7

***** JOB DONE.
$WEO LPS

$$
$NOP ******     LAJ     *******     LAJ     ******     LAJ     ******     LAJ     ******
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