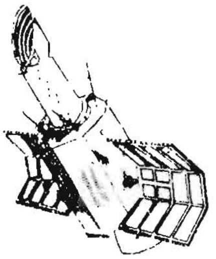


esa

NEWSLETTER

TABLE OF CONTENTS

NO. 26 JULY 1986

IUE ESA NEWSLETTER

Editor:- C. Lloyd

Published by:- The ESA IUE Observatory
Apartado 54065
28080 Madrid, Spain.
Telephone:- +34-1-4019661
Telex:- 42555 VILS E

Typing:- C. Ramirez Palacios

OBSERVATORY CONTROLLER'S MESSAGE

At the writing of this message the IUE project has just finished its biannual three Agency meeting, which was this time held at ESTEC to confirm the ties with the Space Sciences Department under which the IUE Observatory in VILSPA functions.

The conclusions indicated that most of the problems associated with the implementation of the 2 Gyro-FSS system have been overcome now and even though quite a lot of new S/C commanding structure has been implemented, the operations are running quite smoothly. The low Beta angle oscillations have been overcome and are usually damped out very quickly. The decrease in the Solar array output is still considerably less then predicted and therefore realistic options are now considered possibly allowing IUE lifetime predictions to be extended till 1992, rather than 1990 as was the case before till now.

In its June meeting the ESA SPC has approved the extension of IUE for 1987, and we can now start the preparations for the 10th round of IUE observing.

In this newsletter you will find the call for IUE proposals for the 10th round. Please note the deadline for proposals which has changed from previous years.

Barbara Hassall has now left VILSPA to take up a position at Oxford University. She has been replaced by Jacques van Santvoort who has taken up duty in VILSPA in August. The development of the off-line image processing facilities in the VSCC (VILSPA Scientific Computing Center) is progressing quite well, although this has not yet reached the stability required for general usage, both due to new hardware acquisition and the necessary S/W integration.

The user community has responded quite well to the installation of the VILSPA-LAN and the possibilities of computer communications supplied by this. We hope that this will continue in the future.

Apart from the good health of IUE there has been additional good news for the UV astronomers. Late last year the SPC approved a Phase A study for the Quasat and Lyman project. Especially the Lyman project as outlined in the assessment reports ESA SCI (85)4, is of great interest to the IUE User community since it will open up the far UV region and EUV region for observation. In view of the overlapping interest group for Lyman and the IUE project, it was decided to start a regular information, and Phase A progress section in the IUE Newsletter. As a first step in this direction we give in this newsletter the composition of the Lyman Science Working Group. In the next newsletter a more detailed Phase A study report will be presented. We hope that this exciting project will be able to count on your support. Anybody wishing to obtain further information on the Lyman study is requested to contact Lyman Study Scientist or the Lyman Science Team Leader.

Willem Wamsteker

S/C STATUS REPORT

INTRODUCTION

The IUE S/C continues to support Science operations normally and effectively in its 9th year of very succesful in-orbit operations.

SPECIAL OPERATIONS

On February 11th an OBC patch was succesfully up-linked in order to modify the FSS Roll control law. With the new law, still under testing, the Roll oscillations at low β-angles have been substantially reduced.

The 17th. Shadow Season ran smoothly from Feb.16th to Mar.13th with no difficulties been noted. The maximum depth of discharge of the two on-board batteries was 53.3%.

On March 19th a Station keeping manoeuvre (Delta V) was successfully performed.

ANOMALIES

On March 2nd. an attempt to make a safety read on the SWR camera failed because of lack of voltage on Grid#1. This camera has been very scarcely used ever since launch. The usefulness of performing any further read attempt is being discussed at present.

SPACECRAFT STATUS

The status of the spacecraft is nominal. The temperatures in the area of the HAPS (Hydrazine tanks enclosure) have continued to rise but the cause of the overall increase has yet to be explained. The other spacecraft temperatures have continued to remain relatively steady for the last twelve months.

Solar array #1 continues to produce slightly more current than solar array #2. The maximum current produced occurs at approximately β=74°. The average power reduction between 1984 and 1985 has been 3.9%. Enough power is supplied by the arrays to keep the spacecraft power positive over the range of beta angles between 27° and 119°, based on a minimum power requirement of approximately 172 watts.

Approximately 20.5 Kg of hydrazine remain in the tanks at the end of April. Usage rate is less than 0.5 Kg/year for the purpose of reaction wheel unloading and station keeping (Delta-V) manoeuvres.

IUE OPERATIONS AT VILLAFRANCA. STATISTICS

In the Table below, we show the evolution of various parameters since launch in 1978.

F. Franco / VILSPA SOE

YEAR

		1978	1979	1980	1981	1982	1983	1984	1985	TOTAL
COMMANDS		629965	984492	754009	692712	719408	678447	695953	665486	5820472
OBJECTS		581	911	869	793	841	754	749	600	6098
COARSE MANEUVERS		640	1092	967	859	931	809	772	726	6796
FINE MANEUVERS		5497	8773	7434	6370	6457	6277	6300	6353	53461
IMAGE RECOVERY	LWP	100	20	51	121	158	273	784	592	2099
	LWR	581	1014	879	687	722	571	89	53	4596
	SWP	654	1079	964	836	866	828	865	777	6469
	SWR	54	27	7	5	6	1	4	1	105
	TOTAL	1389	2140	1901	1649	1752	1673	1742	1423	13669
	HIGH RESOL.(*)	572	775	549	499	491	475	411	454	4226
	LOW RESOL.(*)	628	1227	1269	1025	1090	1032	1157	877	8305
	SPECTRA(*)	1391	2310	2079	1696	1733	1689	1747	1445	14090
GROUND SYSTEM AVAILABILITY		96.95 %	97.74 %	98.37 %	97.33 %	98.90 %	98.27 %	98.98 %	99.93 %	98.31 %

(*) Excluding engineering images

IUE OPERATIONS AT VILLAFRANCA. STATISTICS

NOTE FROM THE SCHEDULER

IUE has entered its 9th year of successful orbital operations. Some of the causes of that success have been the freedom for the observer to point the telescope here and there on the sky deciding in "real time" the best use of his observing allocation, and the ability to adapt to any unforseen astronomical events like supernovae, comets,... or operational problems like the gyro failures. We always try, and normally succeed, to accommodate any last minute request for a coordinated observation, or to change a date for any reason, or...

However IUE is getting older and older, and therefore this ability to adapt to any circumstance is obviously decreasing (The restricted regions on the sky are bigger, but mostly the requirements of the users are becoming more and more complex).

You have noticed that for the 9th year we have changed the way in which the scheduling was done. You have received the results of the Allocation Committee together with a tentative schedule of your programmes, done on the basis of the information provided in the proposal. This does not mean that we have suddenly lost our flexibility, but in some way that we are anticipating possible restrictions and preparing for times when some form of "integrated" scheduling might be necessary. This represents one of the responses of the IUE project to the suggestions from the IUE-LRPC.

In any case, do not worry, because we expect to be still "flexible" for a couple of years (what an optimistic view!!!).

I would like to wish you all the best for this new (IUE) year.

Your Scheduler

APPENDIX: Since the Beta angle is still the most critical Spacecraft parameter here are some values ot interest:

- POWER CONSTRAINT FREE REGIONS (PREDICTIONS) -

MONTH		BETA RANGE
May	86	29 - 114
June	86	30 - 112
July	86	30 - 111
August	86	30 - 111
September	86	29 - 113
October	86	29 - 114
November	86	28 - 115
December	86	28 - 115
January	87	28 - 115
February	87	29 - 114
March	87	30 - 112

- HOT OBC REGULATIONS -

The next target must be outside the indicated lower or upper Beta limit to cool down the OBC!

MONTH	LOWER BETA LIMIT	UPPER BETA LIMIT
January	55	100
February	55	95
March	60	95
April	65	90
May	--	--
June	--	--
July	--	--
August	--	--
September	70	85
October	65	90
November	65	90
December	60	95

esa

serc

July 1, 1986

PROPOSALS FOR OBSERVATIONS WITH IUE IN 1987

Dear Colleague

The International Ultraviolet Explorer (IUE) spacecraft is currently operating very successfully and continues to provide valuable UV spectroscopic data in the 1200 to 3000 A wavelength region. Such data are obtained on a routine basis, 8 hours per day at the ESA Villafranca IUE Observatory and 16 hours per day at the NASA IUE Observatory at Goddard in Maryland. The observing programmes carried out have been those recommended by the relevant European and US selection committees.

The present observing programmes extend to June 1987. Thereafter and additional year of observations will be initiated. In preparation for this, the European Allocation Committee (IUEAC, a single committee which has replaced the separate ESA and SERC Selection Committees) will meet early next year to review those observing proposals which have been received by 15 December 1986. The recommendations of this committee will be the basis for the one year European observing programme starting June 1987.

We therefore invite European astronomers to submit proposals for IUE observations in accordance with the procedures set out in the attached letter.

Yours sincerely,

Professor R.M. Bonnet
Director of Scientific Programmes
European Space Agency

Dr. B. Martin
Head of Astronomy, Space and
Radio Division
UK Science and Engineering
Research Council

esa

serc

Dear Colleague,

As previous users know, the International Ultraviolet Explorer (IUE) is an astronomical satellite designed to obtain ultraviolet spectra in the region from about 1200 to 3000 Angstroms. Its characteristics and performance have been described by Boggess, et al. in Nature, volume 275, pages 372 and 377, 1978. The satellite was built jointly by NASA, ESA and SERC and is operated 16 hours each day by NASA from a control center at the Goddard Space Flight Center and 8 hours each day for ESA and SERC observers from the ESA control center at Villafranca.

The observing program for IUE is based on unsolicited proposals for use of the satellite. Proposals may be submitted at any time but, as a matter of practice, those in hand by 15 December 1986 will be reviewed in order to establish the year's observing program starting the following June. While proposals of a genuine emergency nature may be dealt with more promptly, other proposals received too late will not be considered. Applications are accepted both from observers proposing new programs and from current IUE observers who wish to apply for more time than they have currently been alloted.

Normally, the observer is expected to be present at either the Goddard or Villafranca control center. Observing procedures are flexible and adaptable to individual needs, the observer being able to direct his own program, monitor it in real time, and alter it if necessary to enhance its scientific value. Responsibility for actual operation of the spacecraft, however, lies with a trained operations staff. Scientists from all countries may apply to use the IUE. Those interested in observing with this facility should send a letter requesting current proposal instructions to the most appropriate one of the following addresses:

IUE Operations Scientist
Code 684.1
Goddard Space Flight Center
Greenbelt, MD 20771
U.S.A.

IUE Observatory Controller
ESA Villafranca SAtellite
Tracking Station
Apartado 54065
28080 Madrid, SPAIN

Note: SERC and ESA have agreed to combine their allocating procedures with the administrative aspects handled by ESA.

Responders will receive additional information regarding the satellite operations and proposal submission procedures for the tenth observing episode.

Sincerely

Yoji Kondo
NASA/IUE Project
Scientist

Willem Wamsteker
ESA/IUE Observatory
Controller

Robert Wilson
SERC/IUE Project
Director

LYMAN SCIENCE WORKING GROUP

B. ASCHENBACH	MAX-PLANCK-INSTITUT FUR PHYSIK UND ASTROPHYSIK	GERMANY
M. GREWING	UNIVERSITAT TUBINGEN ASTRONOMISCHES INSTITUT	GERMANY
R. HOEKSTRA	SPACE RESEARCH LABORATORY	HOLLAND
M. LAGET	LABORATOIRE D'ASTRONOMIE SPATIALE	FRANCE
H.J. LAMERS	SPACE RESEARCH LABORATORY	HOLLAND
W. MOOS [1]	JOHN HOPKINS UNIVERSITY	U.S.A.
M.V. PENSTON (Science Team Leader)	ROYAL GREENWICH OBSERVATORY	UNITED KINGDOM
M.C.W. SANDFORD	RUTHERFORD LABORATORY	UNITED KINGDOM
G. TONDELLO	ISTITUTO ELETTRONICA UNIVERSITA DI PADOVA	ITALIA
A. VIDAL-MADJAR	INSTITUT D'ASTROPHYSIQUE	FRANCE
W. WAMSTEKER (Study Scientist)	ESA SATELLITE TRACKING STATION	SPAIN
R. WILSON	UNIVERSITY COLLEGE LONDON	UNITED KINGDOM
B. WOODGATE [1]	NASA GODDARD SPACE FLIGHT CENTER	U.S.A.

1) Representing the U.S. Lyman Science working group

EUROPEAN IUE PROPOSALS 9TH YEAR 1986-1987

FINAL ALLOCATION

IUE observations of high galactic	Pottasch	Groningen	HL	IC 002
latitude F supergiants HD 161796	Parthasarath	Bangalore	IN	IC 002
and 163075				IC 002
Monitoring the quiescent behaviour	Bath	Oxford	UK	II 003
of a long period dwarf nova	Pringle	Cambridge	UK	II 003
	Hassall	VILSPA	SP	II 003
	Verbunt	Munich	GE	II 003
A study of accretion discs and	Pringle	Cambridge	UK	II 004
white dwarfs in eclipsing dwarf	Berriman	Cambridge	UK	II 004
nova: HT Cas and IP Peg	Wood	Cambridge	UK	II 004
	Hassall	VILSPA	SP	II 004
	Verbunt	MPI	GE	II 004
Evolution problems in dwarf	Fracassini	Milano	IT	IC 006
Cepheids of population I and II	Pasinetti	Milano	IT	IC 006
	Schmidt	Nebraska	US	IC 006
	Antonello	Milano	IT	IC 006
	Castelli	Trieste	IT	IC 006
Dynamics of high velocity halo	de Boer	RGO	UK	IM 007
gas	Schwarz	Groningen	HL	IM 007
	van Woerden	Groningen	HL	IM 007
	Tobin	Marseille	FR	IM 007
UV observations of Supernovae	Panagia	Baltimore	US	IE 009
	Macchetto	Baltimore	US	IE 009
Low-resolution study of field	Tobin	Marseille	FR	IA 011
HBB stars				IA 011
The symbiotic star CH Cygni	Hack	Trieste	IT	II 013
	Selvelli	Trieste	IT	II 013
	Marsi	Trieste	IT	II 013
The symbiotic star HBV 475	Nussbaumer	Zurich	SW	II 014
	Vogel	Zurich	SW	II 014
	Schmutz	Kiel	GE	II 014
Stellar activity cycle in Beta	Dravins	Lund	SE	IC 015
Hydri	Linde	Lund	SE	IC 015
	Fredga	Stockholm	SE	IC 015
	Gahm	Stockholm	SE	IC 015
Remarkable broad low velocity	Prinja	London	UK	IA 016
absorption components in the	Howarth	London	UK	IA 016
winds of four-early type stars	Wilson	London	UK	IA 016
Observations of a UV flare in	Courvoisier	ST/ECF	GE	IQ 019
the Quasar 3C 273	Ulrich	ESO/Munich	GE	IQ 019
	Blecha	Geneva	SW	IQ 019
	Wamsteker	VILSPA	SP	IQ 019
Search for chromospheric Mg II	Seggewiss	Daun	GE	IA 020
emission in Ap-type stars	Melcher	Bonn	GE	IA 020
Atmospheric structure of white	Bues	Bamberg	GE	IC 021
dwarfs in binary and suspected	Rupprecht	Munich	GE	IC 021
binary systems	Muller	Bamberg	GE	IC 021
High dispersion observations	Koppen	Heidelberg	GE	IM 022
of Planetary Nebulae	Wehrse	Heidelberg	GE	IM 022
The structure of cataclysmic	Verbunt	Munich	GE	II 023
variables winds	Drew	Oxford	UK	II 023
Variations of the absorption	Ulrich	ESO/Munich	GE	IQ 024
lines in NGC 3516	Altamore	Roma	IT	IQ 024
	Boksenberg	RGO	UK	IQ 024
	Bromage	RAL	UK	IQ 024
	Clavel	VILSPA	SP	IQ 024
	Elvius	Stockholm	SE	IQ 024
	Penston	RGO	UK	IQ 024
	Perola	Roma	IT	IQ 024
	Snijders	RGO	UK	IQ 024
	Tanzi	Milano	IT	IQ 024
Hydrogen-poor binary systems	Hack	Trieste	IT	IA 025
	Cornachin	Trieste	IT	IA 025
	Parthasarath	Bangalore	IN	IA 025
A search for short-period UV	Willis	London	UK	IA 026
variations in HD 192163 (WN6)	Howarth	London	UK	IA 026
	Smith	London	UK	IA 026
	Conti	JILA	US	IA 026
	Garmany	BOULDER	US	IA 026
Development of the superoutburst	Charles	Oxford	UK	II 027
and superhump phenomenon in the	Naylor	Oxford	UK	II 027
eclipsing SU UMa systems	Hassall	VILSPA	SP	II 027
	Bath	Oxford	UK	II 027
Ofpe/WN 9 stars in the LMC	Wolf	Heidelberg	GE	IA 028
	Stahl	ESO Munich	GE	IA 028
	Appenzeller	Heidelberg	GE	IA 028
	Klare	Heidelberg	GE	IA 028
	Leitherer	Heidelberg	GE	IA 028
	Zickgraf	Heidelberg	GE	IA 028
Ultraviolet observations of very	Wilson	UCL	UK	IQ 030
high redshift Quasars	O'Brien	UCL	UK	IQ 030
	Gondhalekar	RAL	UK	IQ 030
	Huchra	CFA	USA	IQ 030
Phase-covering observations of	Reimers	Hamburg	GE	II 031
the cataclysmic variable type				II 031
companion of the M giant 4 Dra				II 031

Mass-loss of Red Giants with Hot Companions	Reimers	Hamburg	GE	IC 033
	Hempe	Hamburg	GE	IC 033
	Baade	Hamburg	GE	IC 033
	Schroder	Hamburg	GE	IC 033
Mass-loss from metal deficient Giant Stars	Reimers	Hamburg	GE	IC 034
	Dupree	SAO	US	IC 034
	Hartmann	SAO	US	IC 034
Far-UV extinction law and gas to dust ratio in distant regions of the galaxy	Prevot	Marseille	FR	IM 035
	Lequeux	Marseille	FR	IM 035
	Prevot, ML	Marseille	FR	IM 035
	D'Hendecourt	Marseille	FR	IM 035
	Leger	Marseille	FR	IM 035
	Puget	Marseille	FR	IM 035
Multifrequency behaviour of the X-ray/Be system A0535+26/HDE 245770	Giovannelli	Frascati	IT	II 037
	van Dessel	Bruxelles	BE	II 037
	Burger	Bruxelles	BE	II 037
	de Loore	Bruxelles	BE	II 037
	Coe	Southampton	UK	II 037
	Bartolini	Bologna	IT	II 037
	Guarnieri	Bologna	IT	II 037
	Piccioni	Bologna	IT	II 037
	Kurt	Moscow	UR	II 037
	Sheffer	Moscow	UR	II 037
	Gnedin	Leningrad	UR	II 037
Multifrequency monitoring of RU Lupi	Giovannelli	Frascati	IT	IC 038
	Bisnovatyi	Moscow	UR	IC 038
	Kurt	Moscow	UR	IC 038
	Sheffer	Moscow	UR	IC 038
	Lamzin	Moscow	UR	IC 038
	Vittone	Napoli	IT	IC 038
Accretion behaviour in SS Cygni	Giovannelli	Frascati	IT	II 040
	Gaudenzi	Roma	IT	II 040
	Lombardi	Roma	IT	II 040
	Vittone	Napoli	IT	II 040
Temperature and bolometric luminosity of WR-type PN nuclei	Bianchi	Torino	IT	IA 045
	Cerrato	Torino	IT	IA 045
	Grewing	Tubingen	GE	IA 045
Mass loss rates from PN nuclei and their correlation with nebular ionization and dynamical structure	Bianchi	Torino	IT	IM 046
	Cerrato	Torino	IT	IM 046
	Grewing	Tubingen	GE	IM 046
	Baessgen	Tubingen	GE	IM 046
	Ferrari	Torino	IT	IM 046
UV observations of recently identified X-ray binaries	Bianchi	Torino	IT	II 047
	Pakull	Berlin	GE	II 047
Search for long term variations of the Mg II lines in FK Comae stars	Bianchi	Torino	IT	IC 048
	Grewing	Tubingen	GE	IC 048
				IC 048
Detailed study of the UZ Librae system at UV and optical wavelengths	Bianchi	Torino	IT	IC 049
	Grewing	Tubingen	GE	IC 049
	Walter	Boulder	US	IC 049
	Brown	Boulder	US	IC 049
	Bopp	Toledo	US	IC 049
Observations of galactic single WN stars	Schmutz	Kiel	GE	IA 050
	Hamann	Kiel	GE	IA 050
	Hunger	Kiel	GE	IA 050
	Wessolowski	Kiel	GE	IA 050
UV bright stars in globular clusters and their evolutionary state	de Boer	RGO	UK	IA 051
	Philip	??	??	IA 051
				IA 051
NLTE analysis of sdO stars in the Jaidee and Lynga survey	Heber	Kiel	GE	IA 052
	Hunger	Kiel	GE	IA 052
UV spectroscopy of White Dwarfs	Weidemann	Kiel	GE	IC 053
Ultraviolet observations of RCB stars	Evans	Keele	UK	IC 056
	Albinson	Keele	UK	IC 056
	Goldsmith	Keele	UK	IC 056
	Bode	Preston	UK	IC 056
	Whittet	Preston	UK	IC 056
	Kilkenny	SAAO	??	IC 056
Observations of the Coronae Austrinae Star forming region	Evans	Keele	UK	IA 057
	Albinson	Keele	UK	IA 057
	Hutchinson	Keele	UK	IA 057
	Bode	Manchester	UK	IA 057
	Whittet	Manchester	UK	IA 057
RS Ophiuchi - The return to quiescence	Evans	Keele	UK	II 059
	Snijders	RGO	UK	II 059
	Albinson	Keele	UK	II 059
	Callus	Keele	Uk	II 059
Circumstellar dust in RV Tauri stars	Evans	Keele	UK	IC 060
	Albinson	Keele	UK	IC 060
	Goldsmith	Keele	UK	IC 060
	Bode	Manchester	UK	IC 060
IUE spectroscopy of the Bipolar Jet system Th 28	Krautter	Heidelberg	GE	IM 061
	Mundt	Heidelberg	GE	IM 061
Variable blue compact galaxy Tololo 1924-416	Gondhalekar	RAL	UK	IE 063
	Morgan	ROE	UK	IE 063
UV observations of a complete X-ray selected sample of AGN	Boisson	Meudon	FR	IQ 067
	Elvis	Harvard	US	IQ 067
	Lawrence	Queen-Mary	UK	IQ 067
	Ward	Cambridge	UK	IQ 067
The symbiotic star HM Sge	Kindl	Zurich	SW	II 068
	Nussbaumer	Zurich	SW	II 068

Short term temporal changes	Praderie	Meudon	FR	IA 069
in the wind of the Ae star	Tjin a Djie	Amsterdam	HL	IA 069
HD 163296	The	Amsterdam	HL	IA 069
	Talavera	VILSPA	SP	IA 069
	Felenbok	Meudon	FR	IA 069
Observation of chromospheric	Tjin a Djie	Amsterdam	HL	IC 070
and transition region emission	The	Amsterdam	HL	IC 070
lines in the spectra of the	Brown	JILA	US	IC 070
Herbig FOe stars BN Ori and	Linsky	JILA	US	IC 070
NGC 2264 W158				IC 070
UV studies of the extended	Tjin	Amsterdam	HL	IA 071
atmospheres around Herbig	The	Amsterdam	HL	IA 071
Ae/Be stars				IA 071
Probing the winds of WR stars	Stickland	RAL	UK	IA 072
	Lloyd	RAL	UK	IA 072
	Willis	UCL	UK	IA 072
The IR-X-radio variable WR star	van der Huch	Utrecht	HL	IA 073
HD 193793: is the temporary CS	Williams	ROE	UK	IA 073
dust condensation caused by	Wamsteker	VILSPA	SP	IA 073
stellar wind (density) variations?	Pollock	Birmingham	UK	IA 073
UV studies of the unusual Seyfert	Barr	EXOSAT	GE	IQ 074
Galaxy Markarian 766	Giommi	EXOSAT	GE	IQ 074
	Shafer	EXOSAT	GE	IQ 074
	Wamsteker	VILSPA	SP	IQ 074
	Clavel	VILSPA	SP	IQ 074
Ultraviolet spectroscopy of the	Dworetsky	UCL	UK	IA 075
extreme metal-poor A star HR 4049	Coates	UCL	UK	IA 075
A subdwarf's unique stellar wind	Howarth	UCL	UK	IA 076
	Prinja	UCL	UK	IA 076
Coordinated far UV and visual	Doazan	Paris	FR	II 079
observations of AX Mon	Danezis	Athens	GR	II 079
The association between short	Doazan	Paris	FR	IA 080
term and long-term variations	Thomas	IAP	FR	IA 080
in Be stars	Sedmak	Trieste	IT	IA 080
	Rusconi	Trieste	IT	IA 080
Radiative energy flux and	Doazan	Paris	FR	IA 081
distribution of Be phases	Thomas	IAP	FR	IA 081
	Barylak	VILSPA	SP	IA 081
Evolutionary status of the	Lennon	Belfast	UK	IA 083
peculiar B3Ia supergiant	Dufton	Belfast	UK	IA 083
HD 157038	Keenan	Belfast	UK	IA 083
	Kingston	Belfast	UK	IA 083
	Walborn		US	IA 083
Observations of nearly-aligned	Harris	VISLPA	SP	IM 085
early-type stars in the disc/	Bromage	RAL	UK	IM 085
halo interface region				IM 085
Star formation and extinction	Sanz	INTA	SP	IE 087
in giant HII regions in M33	Benvenuti	ST-ECF	GE	IE 087
Quiescent state of the unique	Hassall	VILSPA	SP	II 089
dwarf nova WZ Sge	Pringle	Cambridge	UK	II 089
Absolute spectrophotometry of	Harris	VILSPA	SP	IA 090
faint blue stars for calibration	Gry	VILSPA	SP	IA 090
of the Space Telescope				IA 090
Variations in the envelope	Talavera	VILSPA	SP	IA 091
structure and stellar winds of	Gomez	Madrid	SP	IA 091
A-type supergiants				IA 091
The P Cygni star AG Car: its	Barylak	VILSPA	SP	IA 092
rapid evolution towards O stars	Cassatella	VILSPA	SP	IA 092
	Viotti	Frascati	IT	IA 092
UV behaviour of the shock	Gilmozzi	VILSPA	SP	IC 093
propagation in Mira variables	Cassatella	VILSPA	SP	IC 093
	Gillet	H-Provence	FR	IC 093
	Gry	VILSPA	SP	IC 093
The nature of the accreting	Gilmozzi	VILSPA	SP	II 094
object in T Cr B	Cassatella	VILSPA	SP	II 094
	Selvelli	Trieste	IT	II 094
The stellar content of the young	Cassatella	VILSPA	SP	IE 095
clusters of the Magellanic Clouds	Geyer	Bonn	GE	IE 095
	Barbero	Madrid	SP	IE 095
Recurrent novae: nature of the	Cassatella	VILSPA	SP	II 097
primaries and evolution of the	Kenyon	Cambridge	US	II 097
remnants	Gilmozzi	VILSPA	SP	II 097
	Selvelli	Trieste	IT	II 097
The UV decline of Novae towards	Selvelli	Trieste	IT	II 098
quiescence	Bianchini	Asiago	IT	II 098
	Friedjung	IAP	FR	II 098
	Cassatella	VILSPA	SP	II 098
	Gilmozzi	VILSPA	SP	II 098
Probing the wind of P Cygni by	Lamers	Utrecht	HL	IA 099
studying its variable shells	Cassatella	VILSPA	SP	IA 099
Ascending giant branch to	Cassatella	VILSPA	SP	IC 100
Planetary Nebula phase: two	Eiroa	Madrid	SP	IC 100
candidates	Fernandez-C.	Madrid	SP	IC 100
Stellar activity of G-type stars	Geyer	Bonn	GE	IC 102
in galactic clusters of different	Cassatella	VILSPA	SP	IC 102
ages				IC 102
UV investigation of Peculiar	Israel	Leiden	HL	IE 103
Stellar objects in starburst	Wamsteker	VILSPA	SP	IE 103
galaxy NGC 1569				IE 103

The carbon proto-planetary nebula HD 59643	Querci F.	Toulouse	FR	IC 104
	Querci M.	Toulouse	FR	IC 104
	Johnson	Bloomington	US	IC 104
	Baumert	Bloomington	US	IC 104
Extreme horizontal branch stars in NGC 6752 and M13	Caloi	Frascati	IT	IA 108
	Castellani	Roma	IT	IA 108
	Kudritzki	Muchen	GE	IA 108
A test of the binarity hypothesis for Ba II stars from IUE spectra	Cornide	Madrid	SP	IC 112
				IC 112
				IC 112
Mass-loss and evolution of the intrinsically extremely blue O stars in NGC 6611	Pettersson	Uppsala	SE	IA 113
	Westerlund	Uppsala	SE	IA 113
	The	Amsterdam	HL	IA 113
	Feinstein	La Plata	AR	IA 113
A search for acetylene and aurorae at Neptune	Fricke, K.H.	Bonn	GE	IS 115
	Caldwell	Stony Brook	US	IS 115
	Combes	Meudon	FR	IS 115
	Encrenaz	Meudon	FR	IS 115
	Owen	Stony Brook	US	IS 115
	Wagner	Stony Brook	US	IS 115
	von Zahn	Bonn	GE	IS 115
Study of abnormal extinction curves in the Cygnus Rift	Prevot	Marseille	FR	IM 116
	Divan	IAP	FR	IM 116
Spectrophotometry of UV objects detected by the very-wide-field camera on Spacelab 1	Viton	Marseille	FR	IA 117
	Sivan	Marseille	FR	IA 117
				IA 117
UV-observations of shocked interstellar gas in the L 1551 outflow: HH 29	Liseau	Stockholm	SE	IM 118
	Fridlund	Stockholm	SE	IM 118
	Gahm	Stockholm	SE	IM 118
	Nordh	Stockholm	SE	IM 118
	Olofsson	Stockholm	SE	IM 118
	Axnas	Stockholm	SE	IM 118
	Brenning	Stockholm	SE	IM 118
The ultraviolet continua of Herbig-Haro objects	Liseau	Stockholm	SE	IM 119
				IM 119
UV diagnostics for the interacting galaxy pair ESO 296-IG11	Colina	Gottingen	GE	IE 126
	Wamsteker	VILSPA	SP	IE 126
Continued monitoring of NGC 4151	Snijders	RGO	UK	IQ 128
	Boksenberg	RGO	UK	IQ 128
	Penston	RGO	UK	IQ 128
	Pettini	RGO	UK	IQ 128
	Bromage	RAL	UK	IQ 128
	Clavel	VILSPA	SP	IQ 128
	Elvius	Stockholm	SE	IQ 128
	Fosbury	ECF	GE	IQ 128
	Perola	Roma	IT	IQ 128
	Altamore	Roma	IT	IQ 128
	Ulrich	ESO	GE	IQ 128
Search for UV emission from selected X-ray emitting PMS stars in the Rho Oph cloud	Lago	Porto	PT	IC 129
	Montmerle	Saclay	FR	IC 129
	Bouvier	IAP	FR	IC 129
Observations of the X-ray bright BL Lac object 1H0414+009	Bromage	RAL	UK	IQ 131
	Warwick	Leicester	UK	IQ 131
	George	Leicester	UK	IQ 131
	McHardy	Leicester	UK	IQ 131
The new activity phase of Z Andromedae	Viotti	Frascati	IT	II 134
	Cassatella	VILSPA	SP	II 134
	Friedjung	IAP	FR	II 134
	Oliversen	NASA	US	II 134
	Kenyon	Cambridge	US	II 134
High resolution of UV spectroscopy of extreme helium stars	Jeffery	St Andrews	UK	IA 135
				IA 135
Study of the ultraviolet modulation with the orbital period of magnetic white dwarfs in binaries	Mouchet	Meudon	FR	II 136
	Beuermann	Berlin	GE	II 136
	Bonnet-B.	Saclay	FR	II 136
	Charles	Oxford	UK	II 136
	Chiappetti	ESOC	GE	II 136
	Maraschi	Milano	IT	II 136
	Motch	Besancon	FR	II 136
	Osborne	ESOC	GE	II 136
	Stella	ESOC	GE	II 136
	Tanzi	Milano	IT	II 136
	Treves	Milano	IT	II 136
	van Paradijs	Amsterdam	HL	II 136
UV observations of CX Dra - interacting binary system	Koubsky	Ondrejov	CZ	II 137
	Horn	Ondrejov	CZ	II 137
	Harmanec	Ondrejov	CZ	II 137
Multi-wavelength study of Seyfert I galaxies	Wamsteker	VILSPA	SP	IQ 138
	Gilmozzi	VILSPA	SP	IQ 138
C IV in galactic halos	Blades	Baltimore	US	IM 139
	York	Chicago	US	IM 139
	Caulet	Chicago	US	IM 139
	Morton	AAO	AU	IM 139
Intergalactic Lyman-alpha systems	Wamsteker	VILSPA	SP	IQ 140
	Blades	Baltimore	US	IQ 140
	Morton	AAO	AU	IQ 140
	Jenkins	Princeton	US	IQ 140
	York	Chicago	US	IQ 140
	Caulet	Chicago	US	IQ 140
Ultraviolet observations and modelling of T Tauri stars	Lago	Porto	PT	IC 141
	Penston	RGO	UK	IC 141
	Sa	Porto	PT	IC 141
Coordinated X-ray and UV observations of the X-ray transient A0535+26 at Periastron and Apoastron	Mouchet	Meudon	FR	II 143
	Motch	Besancon	FR	II 143
	Janot-Pachec	Sao Paulo	BR	II 143
	Pakull	Berlin	GE	II 143

Coordinated UV and optical	Tanzi	Milano	IT	IQ 144
observations of variable	Bouchet	La Silla	CH	IQ 144
active galactic nuclei	Falomo	Asiago	IT	IQ 144
	Maraschi	Milano	IT	IQ 144
	Treves	Milano	IT	IQ 144
	Wamsteker	VILSPA	SP	IQ 144
Population II reference stars	Cacciari	Baltimore	US	IC 146
	Buser	Baltimore	US	IC 146
Search for the ionisation source	Grewing	Tubingen	GE	IA 147
of the P.N. Abell 35 and study	Bianchi	Torino	IT	IA 147
of the ionisation structure of	Baessgen	Tubingen	GE	IA 147
the nebula	Cerrato	Torino	IT	IA 147
UV observations of the very	Wall	RGO	UK	IQ 148
bright BL Lac object PKS	Danziger	ESO	GE	IQ 148
2005-489	Pettini	RGO	UK	IQ 148
	Warwick	Leicester	UK	IQ 148
	Wamsteker	VILSPA	SP	IQ 148
Expanding shells of interstellar	Pettini	RGO	UK	IM 149
gas around OB associations				IM 149
Time variation of accretion in	Solheim	Tromso	NO	II 150
twin degenerate systems	Moe	Oslo	NO	II 150
Ultraviolet and X-ray obser-	Viotti	Frascati	IT	II 156
servations of R Aquarii and	Altamore	Rome	IT	II 156
its jet	Cassatella	VILSPA	SP	II 156
	Michalitsian	GSFC	US	II 156
Doppler-Imaging of HD 199178	Vilhu	JILA	US	IC 157
An FK Comae Type star	Walter	CASA	US	IC 157
CM Draconis - A key to the	Vilhu	JILA	US	IC 158
M-dwarf problem	Ambruster	JILA	US	IC 158
	Linsky	JILA	US	IC 158
Lyman Alpha in contact binaries	Vilhu	JILA	US	IC 159
VW Cep, 44 Boo and AW UMa	Neff	JILA	US	IC 159
	Linsky	JILA	US	IC 159
IUE observations of surface	Doyle	Armagh	UK	IC 160
structures on II Peg	Byrne	Armagh	UK	IC 160
	Andrews	Armagh	UK	IC 160
	Butler	Armagh	UK	IC 160
	Neff	JILA	US	IC 160
	Linsky	JILA	US	IC 160
	Rodono	Catania	IT	IC 160
	Catalano	Catania	IT	IC 160
Study of active regions of the	Catalano	Catania	IT	IC 161
K component stars of RS CVN and	Rodono	Catania	IT	IC 161
HD 5303 during secondary eclipse	Foing	Paris	FR	IC 161
	Linsky	JILA	US	IC 161
	Neff	JILA	US	IC 161
	Gibson	N-Mexico	US	IC 161
Search for delimitation of the	Catalano	Catania	IT	IC 162
Lyman alpha and chromospheric	Marilli	Catania	IT	IC 162
emission between A and F stars	Freire Ferre	Strasbourg	FR	IC 162
	Gouttebroze	Paris	FR	IC 162
Deep lores study of the chromo-	Byrne	Armagh	UK	IC 163
spheres/transition regions of	Doyle	Armagh	UK	IC 163
two dM stars				IC 163
Deep hires study of UV line	Byrne	Armagh	UK	IC 164
profiles in the RS CVn star	Panagi	Armagh	UK	IC 164
II Peg	Mullan	Delaware	US	IC 164
Structure of main sequence star	Jordan	Oxford	UK	IC 166
transition regions and coronae	Judge	Oxford	UK	IC 166
	Harper	Oxford	UK	IC 166
UV studies of IRAS galaxies	Coe	Southampton	UK	IE 167
	Bassani	Bologna	IT	IE 167
	Mandolesi	Bologna	IT	IE 167
	Spinoglio	Frascati	IT	IE 167
Study of interstellar C IV and	Molaro	Trieste	IT	IM 170
Si IV in the local interstellar	Vladilo	Trieste	IT	IM 170
medium (d<200 pc)	Beckman	Canarias	SP	IM 170
Chromospheric modelling of late-	Beckman	Canarias	SP	IC 171
type active and Quiescent Dwarfs	Crivellari	Trieste	IT	IC 171
	Foing	Verrieres	FR	IC 171
Multifrequency (UV, optical, IR)	Giovannelli	Frascati	IT	IA 173
observations of Z Canis Maioris	Vittone	Napoli	IT	IA 173
	Covino	Catania	IT	IA 173
	Foing	La Silla	CH	IA 173
The symbiotic star V 1016 Cyg	Nussbaumer	Zurich	SW	II 175
	Deuel	Zurich	SW	II 175
Anomalous overabundances of	Freire Ferre	Strasbourg	FR	IA 176
both gallium and silicon in	Artru	Meudon	FR	IA 176
Ap stars				IA 176
Late B and A stars as probes	Freire Ferre	Strasbourg	FR	IM 177
of the hot component of the	Ferlet	IAP	FR	IM 177
local interstellar medium				IM 177
Distribution of MgII inter-	Vladilo	Trieste	IT	IM 180
stellar towards cool supergiants	Beckman	Canarias	SP	IM 180
in the galactic longitude range	Molaro	Trieste	IT	IM 180
180 < l < 270	Genova	Canarias	SP	IM 180
	Cameron	UCL	UK	IM 181
	Glencross	UCL	UK	IM 181
	Lightfoot	UCL	UK	IM 181
	Whitmore	UCL	UK	IM 181
The ultraviolet stellar	Kunth	IAP	FR	IE 182
spectrum of blue compact	Arnault	IAP	FR	IE 182
galaxies	Schild	IAP	FR	IE 182

Star formation Bursts in Blue	Fricke, K.J.	Gottingen	GE	IE 185
Compact Dwarf Galaxies	Kollatschny	Gottingen	GE	IE 185
	Loose	Gottingen	GE	IE 185
IUE spectroscopy of the massive	Leitherer	Heidelberg	GE	IA 186
Of-type binary HD 167971	Krautter	Heidelberg	GE	IA 186
The unique eclipsing binary	Eriksson	Uppsala	SE	IC 187
system TZ Fornacis	Gustafsson	Stockholm	SE	IC 187
	Saxner	Uppsala	SE	IC 187
Stellar wind variability in	Henrichs	JILA	US	IA 188
3 O stars: simultaneous UV and	Prinja	UCL	UK	IA 188
high S/N optical spectroscopy	Gies	Texas	US	IA 188
Ultraviolet spectrophotometry of	Barlow	UCL	UK	IM 190
low heavy element abundance	Clegg	UCL	UK	IM 190
Magellanic Cloud planetary	Monk	UCL	UK	IM 190
nebulae				IM 190
Ultraviolet spectrophotometry	Barlow	UCL	UK	IM 191
of HST GTO target Magellanic	Clegg	UCL	UK	IM 191
Cloud planetary nebulae	Monk	UCL	UK	IM 191
UV spectroscopy of W Ser and	Strupat	Bamberg	GE	II 192
related objects	Drechsel	Bamberg	GE	II 192
	Boenhardt	Bamberg	GE	II 192
	Haug	Bamberg	GE	II 192
IUE observations of IRAS selected	Shafer	EXOSAT	GE	IQ 194
Seyfert 1's	Barr	EXOSAT	GE	IQ 194
	Giommi	EXOSAT	GE	IQ 194
	Ward	Cambridge	UK	IQ 194
	Fabian	Cambridge	UK	IQ 194
Observations of comet P/Halley	Festou	Besancon	FR	IS 196
	Arpigny	Liege	BE	IS 196
	Bertaux	Verrieres	FR	IS 196
	Encrenaz	Meudon	FR	IS 196
	Ip	Lindau	GE	IS 196
	Keller	Lindau	GE	IS 196
	Rahe	Bamberg	GE	IS 196
	Benvenuti	ST/ECF	GE	IS 196
	Cosmovici	Frascati	IT	IS 196
	Gilmozzi	VILSPA	SP	IS 196
	Patriarchi	Firenze	IT	IS 196
	Tozzi	Firenze	IT	IS 196
	Carey	Canterbury	UK	IS 196
	Zarnecki	Canterbury	UK	IS 196
	Danks	ESO	GE	IS 196
	Evans	Keele	UK	IS 196
	Wallis	Cardiff	UK	IS 196
	Hughes	Sheffield	UK	IS 196
	Swamy	Bombay	UK	IS 196
CII line electron density	Byrne	Armagh	UK	IC 197
diagnostics in late-type	Dufton	Belfast	UK	IC 197
stars	Kingston	Belfast	UK	IC 197
Observation of the IO Torus	Festou	Besancon	FR	IS 198
emissions	Bertaux	Verrieres	FR	IS 198
Ultraviolet study of the pulsar	Bonnet-B.	Saclay	FR	II 199
period in 2A0526-328 (TV Col)	Mouchet	Meudon	FR	II 199
	Motch	Besancon	FR	II 199
Late B fast rotators to probe	Molaro	Trieste	IT	IM 200
the local interstellar medium	Vladilo	Trieste	IT	IM 200
(d<100 pc)	Crivellari	Trieste	IT	IM 200
	Beckman	Canarias	SP	IM 200
Circumstellar envelopes around	Crivellari	Trieste	IT	IC 201
late-type binary systems	Glebocki	Gdansk	PO	IC 201
	Sikorski	Gdansk	PO	IC 201
Diffuse Lyman alpha emission	Norgaard-N.	Copenhagen	DK	IE 204
from dominant galaxies	Hansen	Copenhagen	DK	IE 204
	Jorgensen	Copenhagen	DK	IE 204
The long-term variability of	Fricke, K.H.	Bonn	GE	IS 205
the Lyman alpha emission from	von Zahn	Bonn	GE	IS 205
Jupiter, Saturn and Uranus				IS 205
Deep SWP echelle exposures of	Engvold	Oslo	NO	IC 206
the solar-twin alpha Centauri A	Jensen	Oslo	NO	IC 206
(G2 V) and its companion alpha	Moe	Oslo	NO	IC 206
Centauri B (K1 V)				IC 206
A deep-high-dispersion, doppler	Engvold	Oslo	NO	IC 207
compensated SWP exposure of the	Elgaroy	Oslo	NO	IC 207
primary of the HR 1099 system	Joras	Oslo	NO	IC 207
Periodic and new comets	Wallis	Cardiff	UK	IS 208
	Wickramasing	Cardiff	UK	IS 208
	Hughes	Sheffield	UK	IS 208
	Festou	Besancon	FR	IS 208
	Zarnecki	Kent	UK	IS 208
	Burton	RAL	UK	IS 208
	Evans	Keele	UK	IS 208
	Morley	ESOC	GE	IS 208
Local interstellar hydrogen and	Vidal-Madjar	IAP	FR	IM 211
deuterium	Murthy	Baltimore	US	IM 211
	Henry	Baltimore	US	IM 211
	Landsman	GSFC	US	IM 211
	Moos	Baltimore	US	IM 211
	Linsky	JILA	US	IM 211
The circumstellar disk around	Vidal-Madjar	IAP	FR	IM 212
Beta Pictoris	Lagrange	IAP	FR	IM 212

Coordinated X-rays, UV, optical, IR, and radio observations of stellar flares	Rodono	Catania	IT	IC 215
	Cutispoto	Catania	IT	IC 215
	Butler	Armagh	UK	IC 215
	Ambruster	JILA	US	IC 215
	Linsky	JILA	US	IC 215
	Gibson	New Mexico	US	IC 215
	Haisch	Palo Alto	US	IC 215
	Foing	Verrieres	FR	IC 215
	Simon	Hawaii	US	IC 215
High resolution observations of solar analog candidates	Altamore	Roma	IT	IC 217
	Rossi, C.	Roma	IT	IC 217
	Rossi, L.	Frascati	IT	IC 217
	Malagnini	Trieste	IT	IC 217
Observations of the UV energy distribution of elliptical galaxies	Bertola	Padova	IT	IE 218
	Burstein	Arizona	US	IE 218
	Buson	Padova	IT	IE 218
Deuterium in the upper atmosphere of Venus + monitoring of SO2 in upper atmosphere	Bertaux	Verrieres	FR	IS 220
				IS 220
				IS 220

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. MICHAEL F. A'HEARN	MARYLAND	U. S.	SCIMA	TARG OF OPP	
MULTI-YEAR PROPOSAL FOR IUE OBSERVATIONS OF COMETS AS TARGETS OF OPPORTUNITY					
DR. IMAD A. AHMAD	IMAD-AD-DEAN	U. S.	IWIIA	ARCHIVAL	
STELLAR WIND INTERACTION IN 31 CYG					
DR. IMAD A. AHMAD	IMAD-AD-DEAN	U. S.	ACIIA		
ACCRETION IN 22 VUL					
DR. THOMAS B. AKE, III	CSC	U. S.	SBITA		
WINDS IN SUPERGIANT BINARIES					
DR. LAWRENCE H. ALLER	CAL LA	U. S.	NPILA		
PLANETARY NEBULAR C/O RATIOS, MORPHOLOGY, AND EVOLUTION					
DR. BRUCE M. ALTNER	A. R. CORP.	U. S.	GCIBA		
ADVANCED EVOLUTION IN BHB GLOBULAR CLUSTERS					
DR. BRUCE M. ALTNER	A. R. CORP.	U. S.	VVIBA		
POST-ECLIPSE OBSERVATIONS OF THE EPISILON AURIGAE SYSTEM					
DR. BRUCE M. ALTNER	A. R. CORP.	U. S.	LDIBA	ARCHIVAL	
ROTATIONAL MODULATION IN LATE-TYPE DWARFS					
DR. THOMAS R. AYRES	COLORADO-CASA	U. S.	MRITA		
LONG-TERM CYCLES IN THE MAGNETIC ACTIVE REGIONS OF COOL STARS					
DR. THOMAS R. AYRES	COLORADO-CASA	U. S.	RSITA		
A DEEP, DOPPLER-COMPENSATED, SWP ECHELLOGRAM OF HR 1099					
DR. SALLIE L. BALIUNAS	CFA - SAO	U. S.	LGISB		
MAPPING OF THE ACTIVITY IN FF AQR					
DR. TIMOTHY BARKER	WHEATON	U. S.	NPITB		
UV SPECTRA OF PECULIAR PLANETARY NEBULAE					
DR. GIBOR S. BASRI	CAL BERKELEY	U. S.	PMIGB		
DIFFERENTIAL ACTIVITY ANALYSIS ALONG THE PRE-MAIN SEQUENCE					
DR. ROGER A. BELL	MARYLAND	U. S.	SDIRB		
IUE OBSERVATIONS OF SUBDWARFS AND RR LYRAE STARS					
DR. ROGER A. BELL	MARYLAND	U. S.	GCIRB		
GLOBULAR CLUSTER STUDIES					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. ALBERT BOGGESS	GSFC	U. S.	AGIAB		
UV OBSERATIONS OF SEYFERT GALAXIES					
DR. BRUCE BOHANNON	COLORADO-CASA	U. S.	OBIBB		
SPECTROPHOTOMETRY OF H-ALPHA EMISSION-LINE STARS IN THE LMC					
DR. RALPH C. BOHLIN	ST SC. I.	U. S.	STIRB	ARCHIVAL	
IUE SENSITIVITY DEGRADATION FUNCTIONS					
DR. RALPH C. BOHLIN	ST SC. I.	U. S.	HSIRB		
UV SPECTROPHOTOMETRY OF BLUE STARS IN THE LANDOLT STANDARD AREAS FOR HST CALIBRATION					
DR. KARL-HEINZ BOHM	WASH.	U. S.	NSIKB	ARCHIVAL	
A TEST OF BOW-SHOCK MODELS OF HH-OBJECTS USING IUE SPECTRA					
DR. ERIKA BOHM-VITENSE	WASH.	U. S.	CGIEB		
MG II LINE PROFILES IN W VIR					
DR. ERIKA BOHM-VITENSE	WASH.	U. S.	OBIEB		
THE EFFECTS OF METALLICITY ON STELLAR WINDS					
DR. HOWARD E. BOND	ST SC. I.	U. S.	CGIHB		
WINDS AND SHELLS AROUND LOW-MASS SUPERGIANTS					
DR. DOUGLAS N. BROWN	WASH.	U. S.	OBIDB		
IUE SPECTROTOMETRIC CENSUS OF ORION OB1 ASSOCIATION B STARS, II					
DR. EDWARD W. BRUGEL	COLORADO-CASA	U. S.	MGIEB		
MG II EMISSION FROM MIRA VARIABLES					
DR. FREDERICK C. BRUHWEILER	CATHOLIC UNIV	U. S.	MLIFB	TARG OF OPP	
THE UNUSUAL MASS LOSS/ACCRETION PHENOMENA OF THE O SUBDWARF HD 128220 B					
DR. FREDERICK C. BRUHWEILER	CATHOLIC UNIV	U. S.	CMIFB		
BETA PICTORIS AND OTHER CANDIDATE PROTO-PLANETARY SYSTEMS NEAR THE SUN					
DR. FREDERICK C. BRUHWEILER	CATHOLIC UNIV	U. S.	XGIFB		
CONDENSATIONS IN COOLING FLOWS OF X-RAY EMITTING CLUSTER GAS					
DR. DAVID BURSTEIN	ARIZONA ST.	U. S.	EGIDB		
OBSERVATIONS OF THE UV ENERGY DISTRIBUTIONS OF ELLIPTICAL GALAXIES					
DR. DAVID BURSTEIN	ARIZONA ST.	U. S.	LDIDB		
K GIANT SPECTRA FOR STELLAR POPULATION MODELS					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. JOHN J. CALDWELL	N. Y. STATE	U. S.	SNIJC		
IUE SOLAR SYSTEM OBSERVATIONS II. NEPTUNE					
DR. JASON A. CARDELLI	WISCONSIN	U. S.	IDIJC		
CHARACTERISTICS OF 2175 A EXTINCTION					
DR. KENNETH G. CARPENTER	COLORADO-CASA	U. S.	MGIKC		
THE WINDS OF HIGH LUMINOSITY K AND M STARS					
DR. JOHN T. CLARKE	GSFC	U. S.	SUIJC		
H LYMAN ALPHA EMISSION FROM URANUS					
DR. PETER S. CONTI	COLORADO-JILA	U. S.	MLIPC		
SIMULTANEOUS UV AND OPTICAL STELLAR WINDS IN 3 O STARS					
DR. FRANCE ANNE CORDOVA	LOS ALAMOS	U. S.	CVIFC		
THE NATURE OF ACCRETION DISK WINDS					
DR. LENNOX L. COWIE	ST SC. I.	U. S.	XCILC		
UV EMISSION LINES STUDIES OF GAS IN THE CORES OF X-RAY LUMINOUS CLUSTERS					
DR. D. MICHAEL CRENSHAW	CSC	U. S.	RGIDC		
OBSERVATIONS OF BROAD-LINE RADIO GALAXIES					
DR. STEPHEN A. DRAKE	SASC	U. S.	RSISD		
A SURVEY OF SHORT-PERIOD RS CVN BINARIES					
DR. JOHN S. DRILLING	LOUISIANA ST.	U. S.	HSIJD		
UV SPECTROSCOPY OF VERY HOT SDO STARS					
DR. JOHN S. DRILLING	LOUISIANA ST.	U. S.	RCIJD		
UV SPECTROSCOPY OF V348 SGR					
DR. REGINALD J. DUFOUR	RICE	U. S.	NBIRD		
IUE OBSERVATIONS OF NEBULOSITY AROUND AG CARINAE					
DR. REGINALD J. DUFOUR	RICE	U. S.	NEIRD		
IUE OBSERVATIONS OF NEBULOSITY AROUND HD 148937					
DR. ANDREA K. DUPREE	CFA - SAO	U. S.	MLIAD		
MASS LOSS FROM METAL DEFICIENT GIANT STARS					
DR. ANDREA K. DUPREE	CFA - SAO	U. S.	LSIAD		
MONITORING THE VARIABLE ATMOSPHERE OF ALPHA ORIONIS					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. JOEL A. EATON	INDIANA	U. S.	CBIJE		
GRAVITY DARKENING OF V535 ARAE					
DR. JOEL A. EATON	INDIANA	U. S.	ISIJE		
BINARIES INITIATING MASS EXCHANGE					
DR. MARTIN S. ELVIS	CFA - SAO	U. S.	XQIME		
QSO'S WITH IPC X-RAY SPECTRA					
DR. NANCY REMAGE EVANS	CSC	U. S.	MSINE		
FLUXES, TEMPERATURES, AND RADII OF STARS DEFINING THE ZAMS					
DR. NANCY REMAGE EVANS	CSC	U. S.	DCINE		
LONG PERIOD AND OVERTONE CEPHEIDS					
DR. NANCY REMAGE EVANS	CSC	U. S.	CCINE		
THE MASS OF THE CLASSICAL CEPHEID SU CYGNI					
DR. NANCY REMAGE EVANS	CSC	U. S.	CBINE		
CEPHEID BINARITY AND STAR FORMATION					
DR. WALTER A. FEIBELMAN	GSFC	U. S.	NPIWF		
BIPOLAR AND EVOLVING PLANETARY NEBULAE AND RELATED OBJECTS					
DR. WALTER A. FEIBELMAN	GSFC	U. S.	NCIWF		
ULTRAVIOLET ECLIPSES OF THE NUCLEUS OF THE PLANETARY NEBULA NGC 2346					
DR. FRANCIS C. FEKEL	VANDERBILT	U. S.	HCIFF		
SEARCH FOR WHITE DWARF COMPANIONS OF CHROMOSPHERICALLY ACTIVE GIANTS					
DR. FRANCIS C. FEKEL, JR.	VANDERBILT	U. S.	CCIFF		
UV OBSERVATIONS OF SINGLE CHROMOSPHERICALLY ACTIVE GIANTS					
DR. PAUL D. FELDMAN	JOHNS HOPKINS	U. S.	SCIPF	TARG OF OPP	
IUE OBSERVATIONS OF COMETS AS TARGETS OF OPPORTUNITY					
DR. PAUL D. FELDMAN	JOHNS HOPKINS	U. S.	SHIPF		
IUE OBSERVATIONS OF HALLEY'S COMET					
DR. ROBERT A. FESEN	COLORADO-CASA	U. S.	NSIRF		
UV EMISSION-LINE DIAGNOSTICS FOR LOW-VELOCITY SHOCKS					
DR. ROBERT A. FESEN	COLORADO-CASA	U. S.	NRIRF		
THE NATURE OF THE FILAMENTARY NEBULA 1723-46					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. ROBERT A. FESEN	COLORADO-CASA	U. S.	NCIRF	TARG OF OPP	
PECULIAR ABUNDANCES IN THE CRAB NEBULA'S FILAMENTS					
DR. EDWARD L. FITZPATRICK	COLORADO-JILA	U. S.	IEIEF	ARCHIVAL	
THE PROPERTIES OF ULTRAVIOLET EXTINCTION CURVES					
DR. EDWARD L. FITZPATRICK	COLORADO-JILA	U. S.	OBIEF		
ENERGY DISTRIBUTIONS OF LMC OB SUPERGIANTS					
DR. DAVID B. FRIEND	WISCONSIN	U. S.	OBIDF	ARCHIVAL	
STELLAR WINDS FROM RAPIDLY ROTATING HOT STARS					
DR. PRISCILLA C. FRISCH	CHICAGO	U. S.	ISIPF		
INTERSTELLAR CLOUDS NEAR THE SUN. II.					
DR. CATHARINE D. GARMANY	COLORADO-JILA	U. S.	MLICG	ARCHIVAL	
MASS LOSS RATES FROM ARCHIVE O-STAR IMAGES					
DR. CATHARINE D. GARMANY	COLORADO-JILA	U. S.	WRICG		
A SEARCH FOR SHORT-PERIOD VARIATIONS IN HD 192163 (WN6)					
DR. CATHARINE D. GARMANY	COLORADO-JILA	U. S.	OBICG		
CONTINUUM STUDIES OF MAGELLANIC CLOUD O-STARS					
DR. MARK S. GIAMPAPA	NOAO - NSO	U. S.	DMIMG		
CHROMOSPHERIC AND CORONAL EMISSION IN DM STARS					
DR. CAROL A. GRADY	CSC	U. S.	HSICG	ARCHIVAL	
SURVEY OF STELLAR WINDS IN BE STARS					
DR. RICHARD F. GREEN	ARIZONA	U. S.	QSIRG		
QUASARS AND GALACTIC HALO EVOLUTION					
DR. RICHARD F. GREEN	ARIZONA	U. S.	QCIRG	ARCHIVAL	
THE DISTRIBUTION OF QUASAR EMISSION LINE STRENGTHS					
DR. EDWARD F. GUINAN	VILLANOVA	U. S.	RSIEG	ARCHIVAL	
LONG-TERM EVOLUTION OF CHROMOSPHERIC, TRANSITION-REGION & STARSPOT ACTIVITY IN V711 TAU					
DR. EDWARD F. GUINAN	VILLANOVA	U. S.	CBIEG		
ECLIPSING BINARY SYSTEMS IN CONFLICT WITH GENERAL RELATIVITY: AS CAMELOPARDALIS					
DR. JOSEPH B. GURMAN	GSFC	U. S.	KGIJG		
A SEARCH FOR CHROMOSPHERIC P-MODE OSCILLATIONS IN LATE-TYPE GIANTS					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. KENNETH L. HALLAM	GSFC	U. S.	LDIKH		
UV CHROMOSPHERIC ACTIVITY CYCLES					
DR. J. P. HALPERN	COLUMBIA	U. S.	CPIJH		
RAPID VARIATIONS IN THE FAR-ULTRAVIOLET SPECTRUM OF THE COOL AP STAR 21 COM					
DR. J. P. HALPERN	COLUMBIA	U. S.	XLIJH		
X-RAY SELECTED BL LAC OBJECTS					
DR. J. P. HALPERN	COLUMBIA	U. S.	APIJH		
ULTRAVIOLET VARIATIONS OF COOL AP STARS WITH STRONG MAGNETIC FIELDS					
DR. J. P. HALPERN	COLUMBIA	U. S.	EGIJH		
ELLIPTICAL SEYFERT GALAXIES					
DR. LEWIS M. HOBBS	CHICAGO	U. S.	ISILH	ARCHIVAL	
A HIGH-SENSITIVITY SEARCH FOR NEW INTERSTELLAR MOLECULES, ATOMS, AND IONS					
DR. JAY B. HOLBERG	ARIZONA	U. S.	WDIJH		
WHITE DWARF LYMAN ALPHA PROFILES					
DR. JAY B. HOLBERG	ARIZONA	U. S.	DAIJH		
HOTTEST MOST LUMINOUS DA WHITE DWARFS					
DR. ALBERT V. HOLM	CSC	U. S.	RCIAH		
EMISSION LINE SPECTRUM OF R CRB VARIABLIES					
DR. KEITH HORNE	ST SC. I.	U. S.	CVIKH		
ACCRETION DISKS AND WHITE DWARFS IN ECLIPSING DWARF NOVAE					
DR. JOHN P. HUCHRA	CFA - SAO	U. S.	HZIJH		
VERY HIGH REDSHIFT QUASARS					
DR. DAVID P. HUENEMOERDER	PENN ST.	U. S.	RSIDH		
INVESTIGATION OF MASS TRANSFER IN THE RS CVN BINARY, RT LACERTAE					
DR. DONALD J. HUTTER	A. R. CORP.	U. S.	BLIDH	ARCHIVAL	
SPECTRA OF BL LAC OBJECTS THROUGH IMPROVED CONTINUUM DEFINITION					
DR. WILLIAM M. JACKSON	CAL DAVIS	U. S.	SCIWJ	TARG OF OPP	
A PROPOSAL FOR OBSERVATIONS OF COMETS, AS TARGETS OF OPPORTUNITY					
DR. WILLIAM M. JACKSON	CAL DAVIS	U. S.	SHIWJ		
A PROPOSAL FOR OBSERVATIONS OFCOMET P/HALLEY					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. KENNETH JANES	BOSTON U.	U. S.	CCIKJ		
UV STUDY OF THE CHROMOSPHERES OF M67 GIANTS					
DR. EDWARD B. JENKINS	PRINCETON	U. S.	QSIEJ		
INTERGALACTIC LYMAN ALPHA SYSTEMS					
DR. HOLLIS R. JOHNSON	INDIANA	U. S.	LGIHJ		
UPPER ATMOSPHERES OF LATE M STARS					
DR. HOLLIS R. JOHNSON	INDIANA	U. S.	CSIHJ		
THE CARBON PROTO-PLANETARY NEBULA HD 59643					
DR. MINAS C. KAFATOS	GEORGE MASON	U. S.	NJIMK		
TEMPORAL UV LINE EMISSION IN THE R AQUARII JET					
DR. JAMES B. KALER	ILLINOIS	U. S.	NPIJK		
SOUTHERN PLANETARY NEBULAE					
DR. ROBERT P. KIRSHNER	CFA - HARVARD	U. S.	SNIRK	TARG OF OPP	
SUPERNOVA SPECTROSCOPY					
DR. GLORIA KOENIGSBERGER	U.N.A. DE MEX	MEXICO	WRIGK		
WIND STRUCTURES IN MAGELLANIC CLOUD WOLF-RAYET STARS.					
DR. WAYNE B. LANDSMAN	GSFC	U. S.	ISIWL		
NEW PROBES OF LOCAL INTERSTELLAR DEUTERIUM AND HYDROGEN					
DR. KENNETH R. LANG	TUFTS UNIV.	U. S.	FSIKL		
SIMULTANEOUS I.U.E. AND V.L.A. OBSERVATIONS OF DWARF M FLARE STARS AND RS CVN TYPE STARS					
DR. KAM-CHING. LEUNG	NEBRASKA	U. S.	CBIKL	ARCHIVAL	
FAR UV STUDY OF SUPERGIANT SEMIDETACHED AND CONTACT SYSTEMS					
DR. ALBERT P. LINNELL	MICHIGAN ST.	U. S.	IBIAL		
SPECTROPHOTOMETRIC SYNTHESIS STUDY OF MR CYGNI					
DR. JEFFERY L. LINSKY	COLORADO	U. S.	RMIJL		
ROTATIONAL MODULATION OF 44 BOOTIS					
DR. JEFFERY L. LINSKY	COLORADO	U. S.	XBIJL		
OBSERVATIONS OF LONGER PERIOD, X-RAY SELECTED, RS CVN SYSTEMS					
DR. JEFFERY L. LINSKY	COLORADO	U. S.	FSIJL		
MASS MOTIONS DURING A MAJOR FLARE ON AD LEONIS					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. JEFFERY L. LINSKY	COLORADO	U. S.	TTIJL		
CONTINUED LONG-TERM ULTRAVIOLET MONITORING OF RY TAU					
DR. JEFFERY L. LINSKY	COLORADO	U. S.	PMIJL		
THE CHROMOSPHERIC AND TRANSITION REGION EMISSION LINES OF THE HERBIG FOE STARS BN ORI AND NGC 2264 W158					
DR. JEFFREY L. LINSKY	COLORADO-JILA	U. S.	ARIJL	ARCHIVAL	
LYMAN ALPHA PROFILES OF HR 1099 AND AR LAC					
DR. JEFFREY L. LINSKY	COLORADO-JILA	U. S.	LDIJL		
CM DRACONIS - A KEY TO THE M-DWARF PROBLEM					
DR. JEFFREY L. LINSKY	COLORADO-JILA	U. S.	DMIJL		
COORDINATED OBSERVATIONS OF STELLAR FLARES					
DR. JEFFREY L. LINSKY	COLORADO-JILA	U. S.	CSIJL		
ULTRAVIOLET EMISSION FROM COOL STARS WITH MEASURED MAGNETIC FIELDS					
DR. JEFFREY L. LINSKY	COLORADO-JILA	U. S.	CCIJL		
CHROMOSPHERIC & CORONAL HEATING FOR A STATISTICALLY COMPLETE SAMPLE OF K STARS					
DR. JEFFREY L. LINSKY	COLORADO-JILA	U. S.	RSIJL		
STUDY OF ACTIVE REGIONS ON THE K STAR COMPONENTS OF RS CVN AND HD 5303					
DR. GORDON M. MACALPINE	MICHIGAN	U. S.	HZIGM		
A NEW, BRIGHT HIGH-REDSHIFT BAL QUASAR					
DR. MATTHEW A. MALKAN	CAL LA	U. S.	QSIMM		
THE BLUEST QUASARS: SPECTRAL ENERGY DISTRIBUTIONS EXTENDING BELOW THE LYMAN LIMIT					
DR. MATTHEW A. MALKAN	CAL LA	U. S.	QCIMM	ARCHIVAL	
THE BLUEST QUASARS: SPECTRAL ENERGY DISTRIBUTIONS EXTENDING BELOW THE LYMAN LIMIT					
DR. MATTHEW A. MALKAN	CAL LA	U. S.	EGIMM		
POLARIZATION AND THE ULTRAVIOLET EXCESS OF QUASARS					
DR. MATTHEW A. MALKAN	CAL LA	U. S.	AGIMM	ARCHIVAL	
VARIABILITY OF BRIGHT SEYFERT 1 GALAXIES AND QUASARS					
DR. DERCK MASSA	A. R. CORP.	U. S.	MLIDM		
RAPID WIND VARIABILITY IN THE B SUPER-GIANTS HD 164402 AND HD 167756					
DR. DERCK MASSA	A. R. CORP.	U. S.	HSIDM	ARCHIVAL	
A STUDY OF PHOTOSPHERIC SILICON AND CARBON LINES IN EARLY B STARS					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. PHILIP L. MASSEY	NOAO - KPNO	U. S.	MLIPM		
HOT STARS IN NEARBY GALAXIES					
DR. H. RICHARD MILLER	GEORGIA ST.	U. S.	BLIHM		
ULTRAVIOLET OBSERVATIONS OF BL LAC OBJECTS					
DR. H. WARREN MOOS	JOHNS HOPKINS	U. S.	SSIHM		
VARIATIONS IN SATURN AND URANUS					
DR. H. WARREN MOOS	JOHNS HOPKINS	U. S.	SJIHM		
JOVIAN MAGNETOSPHERIC-ATMOSPHERIC INTERACTIONS					
DR. H. WARREN MOOS	JOHNS HOPKINS	U. S.	SIIHM		
THE IO TORUS					
DR. NANCY D. MORRISON	TOLEDO	U. S.	HSINM		
WINDS IN HOT MAIN-SEQUENCE STARS					
DR. JOHN S. NEFF	IOWA	U. S.	SPIJN		
UV GEOMETRIC ALBEDOS OF URANUS AND NEPTUNE					
DR. JOY NICHOLS-BOHLIN	ST SC. I.	U. S.	SGIJN		
EVOLUTIONARY STATUS OF THE PECULIAR B3IA SUPERGIANT HD 1570038					
DR. JOY NICHOLS-BOHLIN	ST SC. I.	U. S.	IGIJN		
INVESTIGATION OF HIGH-VELOCITY INTERSTELLAR GAS IN LINE-OF-SIGHT TO TWO WOLF-RAYET STARS					
DR. NANCY A. OLIVERSEN	CSC	U. S.	ZAINO	TARG OF OPP	
NOVA-LIKE OUTBURSTS OF Z ANDROMEDAE AND OTHER SYMBIOTIC STARS					
DR. JOSEPH O. PATTERSON	COLUMBIA	U. S.	CVIJP	ARCHIVAL	
PSEUDO WHITE DWARFS IN CATACLYSMIC VARIABLES					
DR. GERALDINE J. PETERS	USC	U. S.	BSIGP		
IUE, VOYAGER, AND VISUAL OBSERVATIONS OF B SUPERGIANTS					
DR. GERALDINE J. PETERS	USC	U. S.	HSIGP		
ABUNDANCES IN FOUR SHARP-LINED, EARLY B-TYPE STARS					
DR. GERALDINE J. PETERS	USC	U. S.	SEIGP		
FAR UV, WIND AND SHELL VARIATIONS IN BE-SHELL STARS					
DR. GERALDINE J. PETERS	USC	U. S.	BCIGP		
MULTIFREQUENCY OBSERVATIONS OF DELTA CETI					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. BRADLEY M. PETERSON	OHIO ST.	U. S.	AGIBP		
AGN EMISSION LINE REGION VARIABILITY					
DR. MIREK J. PLAVEC	CAL LA	U. S.	ZAIMP		
SYMBIOTIC STARS					
DR. MIREK J. PLAVEC	CAL LA	U. S.	CBIMP		
EMISSION IN NON-DEGENERATE INTERACTING BINARIES: INTENSITIES AND SPATIAL DISTRIBUTIONS					
DR. MIREK J. PLAVEC	CAL LA	U. S.	HDIMP	ARCHIVAL	
THE HYDROGEN-DEFICIENT BINARY UPSILON SAGITTARII					
DR. RONALD S. POLIDAN	ARIZONA	U. S.	ACIRP		
ACCRETION DISKS IN MASSIVE BINARIES					
DR. LAWRENCE W. RAMSEY	PENN ST.	U. S.	RBILR		
COORDINATED OPTICAL AND UV OBSERVATIONS OF DH LEO					
DR. JOHN C. RAYMOND	CFA - SAO	U. S.	CVIJR	ARCHIVAL	
LINE EMISSION IN QUIESCENT DWARF NOVAE					
DR. JOHN C. RAYMOND	CFA - SAO	U. S.	SNIJR		
THE VELA SUPERNOVA REMNANT					
DR. JOHN C. RAYMOND	CFA - SAO	U. S.	HHIJR		
BRIGHT KNOTS IN HH-1 AND HH-2					
DR. GAIL A. REICHERT	CSC	U. S.	AGIGR	TARG OF OPP	
SIMULTANEOUS UV AND EUV OBSERVATIONS OF ACTIVE GALAXIES					
DR. RICHARD J. RUDY	AEROSPACE COR	U. S.	QSIRR		
UV/OPTICAL SPECTROPHOTOMETRY OF SEYFERT 1.8/1.9 GALAXIES					
DR. B. D. SAVAGE	WISCONSIN	U. S.	HGIBS	ARCHIVAL	
ULTRAVIOLET AND RADIO STUDIES OF HALO GAS					
DR. B. D. SAVAGE	WISCONSIN	U. S.	GHIBS		
MOTIONS OF HIGH LATITUDE HALO GAS					
DR. EDWARD G. SCHMIDT	NEBRASKA	U. S.	DCIES		
CHROMOSPHERES OF DELTA SCUTI STARS					
DR. DONALD E. SHEMANSKY	ARIZONA	U. S.	SSIDS		
OBSERVATIONS OF HYDROGEN EMISSION FROM SATURN					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. DONALD E. SHEMANSKY	ARIZONA	U. S.	SJIDS		
OBSERVATIONS OF HYDROGEN EMISSION FROM JUPTIER					
DR. J. MICHAEL SHULL	COLORADO-CASA	U. S.	IMIJS	ARCHIVAL	
INTERSTELLAR STUDIES WITH IUE ARCHIVES					
DR. J. MICHAEL SHULL	COLORADO-CASA	U. S.	EGIJS	ARCHIVAL	
ARCHIVE STUDIES OF SEYFERT ABSORPTION COMPONENTS					
DR. J. MICHAEL SHULL	COLORADO-CASA	U. S.	ISIJS		
INVESTIGATION OF THE ANTI-CENTER SUPERSHELL					
DR. THEODORE SIMON	HAWAII	U. S.	TTITS		
CHROMOSPHERIC ACTIVITY ON A T TAURI STAR					
DR. THEODORE SIMON	HAWAII	U. S.	SDITS		
LYMAN ALPHA SPECTRA OF THREE STANDARD CANDLES					
DR. THEODORE SIMON	HAWAII	U. S.	AEITS		
VARIABILITY OF HD 163296					
DR. EDWARD M. SION	VILLANOVA	U. S.	CMIES		
EXPANDING CIRCUMBINARY GAS AROUND V471 TAURI					
DR. MICHAEL L. SITKO	NOAO - KPNO	U. S.	XQIMS		
MULTIFREQUENCY OBSERVATIONS OF GQ COMAE-II					
DR. THOMAS E. SKINNER	COLORADO	U. S.	SAITS		
OUTER-PLANET AURORAE					
DR. THEODORE SNOW	COLORADO-CASA	U. S.	CEITS		
EXTINCTION AND GRAIN PROPERTIES IN CIRCUMSTELLAR SHELLS					
DR. THEODORE SNOW	COLORADO-CASA	U. S.	CSITS		
COMPARISON OF GAS ABUNDANCES IN OXYGEN RICH AND CARBON RICH CIRCUMSTELLAR ENVELOPES					
DR. THEODORE SNOW	COLORADO-CASA	U. S.	BEITS		
UV OBSERVATIONS OF BE STARS STUDIED WITH IRAS					
DR. THEODORE SNOW	COLORADO-CASA	U. S.	NRITS		
DEPLETIONS IN REFLECTION NEBULAE CONTAINING TINY GRAINS					
DR. THEODORE SNOW	COLORADO-CASA	U. S.	IMITS		
DEPLETION IN DENSE DIFFUSE CLOUDS					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. GEORGE SONNEBORN	CSC	U. S.	CVIGS	TARG OF OPP	
SUPEROUTBURST DEVELOPMENT IN ECLIPSING SU UMA SYSTEMS					
DR. SUMNER G. STARRFIELD	ARIZONA ST.	U. S.	CVISS	TARG OF OPP	
TARGET OF OPPORTUNITY OBSERVATIONS OF GLACTIC NOVAE IN OUTBURST					
DR. SUMNER G. STARRFIELD	ARIZONA ST.	U. S.	NVISS		
ULTRAVIOLET OBSERVATIONS OF NOVA VUL 1984 #1 AND #2					
DR. JOHN T. STOCKE	COLORADO-CASA	U. S.	GXIJS		
ANOMALOUS X-RAY SELECTED STARS					
DR. RONALD E. STONER	BOWLING GREEN	U. S.	QSIRS	ARCHIVAL	
EMISSION PROFILES AND CONTINUUM OF SEYFERT 1 GALAXIES					
DR. J. H. SWANK	GSFC	U. S.	RSIJS		
MONITORING THE RS CVN STAR II PEG					
DR. PAULA SZKODY	WASH.	U. S.	CVIPS		
A STUDY OF THE CATACLYSMIC VARIABLES V426 OPH AND IP PEG					
DR. PAULA SZKODY	WASH.	U. S.	CDIPS	ARCHIVAL	
ARCHIVAL STUDY OF DISKS IN CATACLYSMIC VARIABLES AT QUIESCENCE					
DR. PAULA SZKODY	WASH.	U. S.	WDIPS	TARG OF OPP	
TWO YEAR TARGET OF OPPORTUNITY: THE LOW STATES OF NOVA-LIKE SYSTEMS					
DR. TRINH X. THUAN	VIRGINIA	U. S.	EGITT		
THE EFFECTS OF CLUSTER ENVIRONMENT ON STAR FORMATION IN DWARF GALAXIES					
DR. C. MEGAN URRY	MIT	U. S.	XLICU		
COORDINATED OBSERVATIONS OF X-RAY BRIGHT BL LACERTAE OBJECTS					
DR. DAVE VAN BUREN	COLORADO-CASA	U. S.	NGIDV		
IUE TOMOGRAPHY OF THE ROSETTE NEBULA					
DR. RICHARD A. WADE	ARIZONA	U. S.	ISIRW	ARCHIVAL	
UNIFORM MODELLING OF IUE DATA FOR CATACLYSMIC VARIABLES					
DR. J. H. WAITE, JR.	NASA/MSFC	U. S.	SPIJW		
ONGOING OBSERVATIONS OF JUPITER AND SATURN					
DR. FREDERICK M. WALTER	COLORADO-CASA	U. S.	ADIFW		
TRANSITION REGIONS IN A DWARFS					

NAME / TITLE	INSTITUTION	COUNTRY	PROG ID	OBSERVATIONAL/ ARCHIVAL/ TARG OF OPP	REMARKS
DR. FREDERICK M. WALTER	COLORADO-CASA	U. S.	IBIFW		
DETAILED STUDY OF THE UZ LIBRAE SYSTEM					
DR. FREDERICK M. WALTER	COLORADO-CASA	U. S.	TTIFW		
POST T TAURI AND NAKED-T TAURI STARS					
DR. DANIEL W. WEEDMAN	PENN ST.	U. S.	AGIDW	ARCHIVAL	
COMPARING ULTRAVIOLET AND INFRARED FLUXES FOR ACTIVE GALAXIES					
DR. GARY A. WEGNER	DARTMOUTH	U. S.	WDIGW		
ULTRAVIOLET SPECTRA OF TWO MAGNETIC WHITE DWARFS					
DR. GARY A. WEGNER	DARTMOUTH	U. S.	SDIGW		
ULTRAVIOLET SPECTRA OF SUBLUMINOUS OBJECTS FOUND IN THE KISOSCHMIDT SURVEY					
DR. FRANCOIS WESEMAEL	MONTREAL	CANADA	WDIFW		
OBSERVATIONS OF ZZ CETI STARS					
DR. LEE ANNE WILLSON	IOWA STATE	U. S.	FGILW		
HIGH TEMPERATURE REGIONS IN CEPHEID ATMOSPHERES AND WINDS					
DR. P. FRANK WINKLER	MIDDLEBURY C.	U. S.	NSIPW		
THE COMPOSITION OF SUPERNOVA EJECTA IN PUPPIS A					
DR. CHI-CHAO WU	CSC	U. S.	GHICW	ARCHIVAL	
GALACTIC ABSORPTION FROM LOW DISPERSION SPECTRA OF ACTIVE GALAXIES					
DR. CHI-CHAO WU	CSC	U. S.	AGICW		
UV AND OPTICAL OBSERVATIONS OF LINERS					
DR. CHI-CHAO WU	CSC	U. S.	MLICW		
WIND AND POLARIZATION VARIABILITY IN BE STARS					
DR. DONALD G. YORK	CHICAGO	U. S.	GHIDY		
CIV IN GALACTIC HALOS					
DR. DONALD G. YORK	CHICAGO	U. S.	CSIDY		
OSCILLATOR STRENGTHS FOR SI II					

A Study of Spatially-Smoothed ITFs

E.H. Scott

22 October 1985

ABSTRACT: The S/N in images processed with spatially-smoothed ITFs is poorer than that for images processed with the normal ITF. These results suggest that it is not advisable to smooth the ITF in production processing. They also suggest that the geometric correction used in applying the ITF to IUE images is fairly accurate.

The ITFs used in IUE image processing are applied on a pixel-by-pixel basis. Each pixel has its own ITF determined from the individual pixel DNs in the ITF flat-field images. However, a limitation to the data quality is the ability to register the ITF with the spectral image pixels. Any misregistration will appear as a failure to correct for the pixel-to-pixel variations in camera sensitivity. If misregistration is a serious problem, then smoothing the ITF over adjacent pixels could improve the S/N in the processed image.

The current study uses the new LWR ITF2 as a test case; it is presumed that the conclusions would apply to the other cameras as well. Two smoothed ITFs have been produced by inserting an extra step in the creation of the ITF which applies a box filter to the averaged images at each level. This was done using box filters of 2x2 pixels (the "2x2 ITF") and of 3x3 pixels (the "3x3 ITF"). Four images have been processed with each of the three ITFs, the 2x2, the 3x3 and the normal LWR ITF2. Three of these images are current low-dispersion images, while the fourth is a 70 percent UVFLOOD from the set of images acquired for LWR ITF2 (but not actually used in LWR ITF2).

Using the extracted spectral file, the S/N was measured in various spectral regions of each spectral image processed with each of the three ITFs. Ten-point box-filtered means in 90A bandpasses and the rms dispersions about the means are shown in Table 1. As can be seen from the Table, in each case the best S/N was obtained for the normal ITF, the worst was with the 3x3 ITF, while the 2x2 was intermediate. The S/N in the 2x2 ITF was about seven percent worse than the normal ITF while that in the 3x3 was about 11 percent worse, on average.

The results of applying the three ITFs to the flat-field image are shown in Table 2. Shown are the standard deviations in several arbitrarily selected 12x12 pixel boxes in the PBI image (which contains scaled FNs). The noise level as measured by these standard deviations is about 14 percent worse using the 2x2 ITF than for the normal ITF and about 18 percent worse using the 3x3 ITF, on average.

The results strongly suggest that spatially smoothing the ITF degrades the S/N rather than improving it as had been hoped. If the ITF could be perfectly registered with the raw image, then it is clear that the normal, unsmoothed ITF should be best. It is the presumed misregistration of the image with the ITF that motivated the smoothing; thus, the results could be interpreted as suggesting that the registration is better than might have been expected. In order to check this hypothesis that the superior performance of the normal ITF is due to fairly good registration, a test was run in which the same flat-field image (LWR 17136) was intentionally de-registered by one pixel in both line and sample, then photometrically corrected with the normal ITF. As shown in Table 2, the S/N in this image was not only lower than in the properly registered image, but also poorer than if the same (properly registered) image is processed with the smoothed ITFs. This suggests that it is indeed the registration that is crucial in determining the S/N.

There are other effects that could help explain the poor results of smoothing the ITF. At various stages of the image processing, interpolation is performed which can be thought of as applying "effective smoothing" even in the nominally unsmoothed ITF. At least four such steps exist:

1) Several images are averaged to form each level of the ITF. These images are not perfectly registered with each other; the errors should be on the order of a few tenths of a pixel (Thompson, 1985).

2) The geometric correction of the raw ITF images involves a resampling and thus an effective smoothing of up to the equivalent of a 2x2 pixel filter. (A 2x2 pixel filter would correspond to the raw data point lying equidistant from the four neighboring ITF pixels.)

3) The application of the ITF involves an interpolation, again leading to an effective smoothing box of up to 2x2 pixels.

4) For spectral data, the extraction procedure resamples and thus smoothes the data.

These effects are by no means uniform across the image; the net result is a complicated variation of "effective smoothing box" size across the image. If the registration is good enough so that errors are typically smaller than the size of this box over most or all of the image, then further, "artificial," smoothing can only degrade the S/N and is therefore counter-productive. This is what appears to be occurring in the present case for both data images and flat-field images. It would also follow that using spatially-smoothed ITFs would not be advisable in production processing. This confirms the results of Northover (1981), who also reached the conclusion that smoothing the ITF (in this case for both the SWP and LWR cameras) led to no improvement in S/N of processed images.

ACKNOWLEDGEMENT: I wish to thank Bruce Coulter for valuable aid in data reduction for this study.

REFERENCES

Northover, K. 1981, unpublished report to IUE Three-Agency Meeting, "Smoothing the IUE ITFs."

Thompson, R.W. 1985, private communication.

Table 1

RMS Dispersion About the Mean of Spectral Data
Processed with LWR ITF2 and Two Smoothed LWR ITFs
(Units are FN)

	Normal ITF	2x2 ITF	3x3 ITF	Ratio of 2x2 to Normal	Ratio of 3x3 to Normal
LWR 17642					
2070-2160 A	1685	1784	1858	1.059	1.103
3010-3100 A	2077	2250	2332	1.083	1.123
LWR 17674					
2070-2160 A	2632	2685	2747	1.020	1.044
3010-3100 A	2571	2987	3174	1.162	1.235
LWR 17675					
1980-2070 A	1515	1604	1640	1.059	1.083
3010-3100 A	2144	2216	2254	1.034	1.051
Mean, Standard Deviation of the Sample				1.070±0.050	1.107±0.070

Table 2

Standard Deviations for Selected 12x12 Pixel Areas
in a Flat-Field UVFLOOD Image (LWR 17136) Processed
with LWR ITF2 and with Two Smoothed ITFs
(Units are FN/70)

	Normal ITF	2x2 ITF	3x3 ITF	Normal ITF (Deregistered)	Ratio of 2x2 to Normal	Ratio of 3x3 to Normal	Ratio of Normal(Deregistered) to Normal(Registered)
15,14	10.9	12.6	13.1	14.5	1.156	1.202	1.330
32,14	9.6	10.1	10.4	10.9	1.052	1.083	1.135
15,31	21.2	24.0	24.7	27.1	1.132	1.165	1.278
32,31	19.0	25.1	26.3	30.3	1.321	1.384	1.595
33,14	8.6	9.1	9.3	10.6	1.058	1.081	1.233
50,14	6.9	7.2	7.3	9.4	1.043	1.058	1.362
33,31	21.1	24.3	25.2	27.6	1.152	1.194	1.308
50,31	9.4	11.4	12.0	13.2	1.213	1.277	1.404
33,32	19.7	23.0	23.8	27.9	1.168	1.208	1.416
50,32	9.6	10.8	11.3	13.3	1.125	1.177	1.385
15,49	17.1	20.9	21.7	23.5	1.222	1.269	1.374
32,49	20.2	21.7	22.2	24.3	1.074	1.099	1.203
Mean, Standard Deviation of the Sample					1.143 ±0.082	1.183 ±0.096	1.335 ±0.119

Notation: 15,14 means line 15, sample 14 in "BOXSTAT" coordinates, which are line or sample divided by 12

INVESTIGATION OF RANDOM AND FIXED PATTERN NOISE IN HIGH DISPERSION IUE SPECTRA

Saul J. Adelman[1,2] and David S. Leckrone[2]

Laboratory for Astronomy and Solar Physics
NASA Goddard Space Flight Center
Greenbelt, MD 20771

---

[1] NRC-NASA Research Associate

[2] Guest Investigator with the International Ultraviolet Explorer Satellite which is sponsored and operated by the National Aeronautics and Space Administration, by the Space Research Council of the United Kingdom, and by the European Space Agency; Guest Investigator at the Regional Data Analysis Facility of NASA Goddard Space Flight Center

SUMMARY

To obtain ultraviolet data with suitably high signal-to-noise ratios for quantitative spectral analyses, we composited IUE spectra for six sharp-lined normal B and A stars. As IUE detectors have limited dynamic ranges, we obtained three images in both the SWP and LWR cameras at each of three different exposure levels. Coaddition of these images reduces random noise (RN). For three stars, an image at each exposure level was taken at each of three different positions in the large aperture, thus causing the stellar spectra to be displaced relative to the background of fixed pattern noise (FPN). Images of the other stars were taken with the small aperture over a period of a month. If FPN varies slowly in a time scale of a few weeks, then coaddition of these spectra also should reduce FPN. We examined two well-exposed orders of each camera for all six stars. By shifting the stellar features of each exposure into coincidence

with the coadded spectrum and subtracting, we obtained difference spectra with components of both RN and FPN. Analyses of these difference spectra for the images taken with the large aperture produced a best estimate of RN = 4% and FPN = 6% on a single well-exposed image. These values reflect a 3-data point (2.1 pixel) smoothing. The signal-to-noise ratios of the coadditions produced from large aperture images are about twice those of single well-exposed images.

I. INTRODUCTION

To obtain ultraviolet data with suitably high signal-to noise ratios for quantitative spectral analyses, we have added together numerous high dispersion IUE exposures for each of six normal sharp-lined Population I B and A type stars. These stars are not known to be either photometric or spectroscopic variables. In this paper, we discuss our techniques and assess the amount of both random noise (RN) and fixed pattern noise (FPN) in both individual and averaged images. In IUE exposures, FPN is a low amplitude instrumental signal superimposed on the image. It may be variable on a scale of months and at a given time has a definite spatial and amplitude distribution on the surface of the detector. We assume that Gaussian statistics are appropriate to describe its amplitude distribution. Random noise is the result of photon statistics. There is also a contribution to RN due to errors in the placement of the beam as it is moved to read out the next pixel (Holm 1982). The images are also affected by microphonics due a ringing in the camera while the camera is read as well as data transmission problems and cosmic rays. We did not study spectral regions of images obviously affected by such problems. Our exposure times are sufficiently short that there are few if any cosmic ray signatures in our data.

Our choice of sharp-lined early type stars, which was made to simplify the task of synthesizing lines in the complex ultraviolet spectra, is not ideal for studying noise. For the latter, the spectra of rapidly rotating stars, in which the noise and spectral feature frequencies are better separated, would be a more desirable choice. However, data for such stars suitable for coadding in the manner described in this paper have not been obtained.

II. THE OBSERVING PROCEDURES

As the IUE detectors, which are SEC Vidicon cameras, have limited dynamic ranges, we obtained high dispersion images in both the SWP and LWR cameras at three different exposure times to achieve adequate exposure levels over the entire wavelength ranges of the IUE spectrographs. To be able to reduce noise we obtained three images at each of the three exposure times. For three stars, π Cet, 134 Tau, and ν Cap, we obtained images with the star centered in the small aperture to maximize the spectral resolution. To minimize FPN we took images at each exposure level of each camera at two week intervals. For our other three stars, 21 Aql, θ Leo, and o Peg, we used the large aperture and for each exposure time took images at three different spatial positions. This shifted the pattern of FPN relative to the stellar spectrum. Table 1 contains the numbers of high dispersion images we obtained for each star and used in this analysis.

The images we studied were the extracted spectral (MEHI) files which were processed from the raw data using the IUESIPS Version 2 software (Turnrose and Thompson 1984), the standard IUE project software with standard ITFs for each camera. Our images are not affected by any of the systematic errors discussed by Turnrose, Thompson, and Gass (1985). Thus we coadded images identically processed with the same software. As all the images of a given star were obtained within an interval of a few weeks, the camera sensitivities remained constant.

III. THE COADDITION PROCEDURES

For each star and camera, one exposure was adopted as reference, often one with an exposure time of middle duration. Then we determined the effective radial velocities of the other images, relative to this reference, by cross-correlating the central regions of selected well-exposed orders. Radial velocity offsets were caused by deliberate positional offsets in large aperture exposures and orbital Doppler shifts in both apertures. Before these cross-correlations were performed, the spectra were smoothed by a 3-point running boxcar routine to insure that spectral features rather than noise gave maxima in the correlation function. The IUE extraction routine oversamples the data. Each data sample point corresponds to a width of 0.707

pixels on the detector. 3-point smoothing increases the signal-to-noise per pixel by 1.46. In this paper we give results only for the smoothed data. We also measured the ratios of the apparent stellar fluxes to obtain relative exposure times. For small aperture exposures in particular, the fraction of total light passing through the aperture varied somewhat from image to image.

When we coadded the fluxes from different images, we used the relative exposure times as weights. But fluxes derived from using the extrapolated intensity transfer function had their relative exposure times divided by 10 and values clearly affected by microphonics or reseaus had their relative exposure times divided by 1000. Saturated fluxes were given zero weight. Even when the local continuum values were overexposed and not used, values from the line cores might be properly exposed, especially in the long wavelength ends of both cameras where they are most sensitive. Hence our technique of coaddition tends to equalize the numbers of photons included in the coaddition at wavelengths corresponding to the continuum and line cores for the middle and longward portions of the spectral ranges for the IUE cameras.

IV. THE NOISE INVESTIGATION PROCEDURES

For the present investigation we examined two orders of each camera for all six stars (orders 89 and 80 for SWP and orders 98 and 91 for LWR). These orders were chosen so that, on the average, the first order had all of the exposures contributing to the coaddition's continuum values and none were seriously overexposed. For this order the images with the longest exposure times were well-exposed. The second order studied in each camera fell at longer wavelengths. In this latter case images with the longest exposure times were overexposed in the continuum, but not in the line cores. Usually the middle duration exposures were well-exposed while the shorter duration exposures were somewhat underexposed.

The basis of our noise investigation procedure for <u>large aperature images</u> is illustrated with a very simple example in Figure 1. We consider three images with the same exposure time. Here a single square represents a stellar line and the arrow represents a single FPN spike. Our exposures are taken at three positions in the large aperture (right, center, and left). This shifts the stellar spectrum within the image format. The fixed pattern noise is thus shifted relative to the stellar spectrum by about ±30 km s^{-1}. Column 1 of figure 1 shows the resulting displacements in FPN in the three exposures when the stellar features are brought into wavelength coincidence. At the bottom of column 1, we show the results of adding the three spectra so aligned. There are now three identical noise spikes with one-third the amplitude of the original spike. Two of them are displaced symmetically from the central position. Random noise is not depicted in the figure for the sake of simplicity. Let a and b be the amplitudes, as a fraction of the signal strength, of the coherent or fixed pattern noise and incoherent or random noise, respectively, in a single exposure. In our example, we have only one FPN spike while each image has a distribution of such spikes. Then in the average of the spectra taken at these three positions in the large aperture, the mean amplitude of the fixed pattern noise at those positions where it occurs is

$$\sigma_{fp} = \sqrt{\{3(a/3)^2\}} = a/\sqrt{3} \qquad (1)$$

and the amplitude of the random noise is

$$\sigma_r = b/\sqrt{3}. \qquad (2)$$

We are assuming here that the fixed pattern noise has a random amplitude and a random spatial distribution yet is unchanged between images and can be studied by applying Gaussian statistics.

Column 2 of figure 1 shows the results of subtracting the average spectrum from each individual spectrum with the stellar features in coincidence. In these difference spectra, the stellar line has disappeared. Two of the three noise spikes in each difference spectra are negative echoes of the original spike with one-third of its amplitude while the third has a positive amplitude two-thirds of the original spike.

For this case

$$\sigma_{fp} = a\sqrt{\{2(1/3)^2+(2/3)^2\}} = 0.82a \qquad (3)$$

or a decrease in FPN. As we have a difference spectrum, the random noise has increased with

$$\sigma_r = b\sqrt{(1+3^{-1})}. \qquad (4)$$

When we combine these two sources of noise we find the total noise amplitude

$$\sigma_t = \sqrt{\{(0.82a)^2+(1.15b)^2\}} \qquad (5)$$

When we cross-correlate the left and right difference spectra with the central difference spectrum, the maximum correlation occurs for the alignment seen in column 3 of Figure 1. Correlations come from the central noise spike as well as from some of the negative echoes. At the bottom of this column, we averaged these aligned difference spectra. The central spike has an amplitude two-thirds of that of the original spike and there are four negative echoes, two with an amplitude 0.11 and two with an amplitude 0.22 of the original spike.

For this average difference spectrum

$$\sigma_r = b\{\sqrt{(3+1)}\}/3 = 0.67\ b \quad (6)$$

and

$$\sigma_{fp} = \sqrt{\{(2a/3)^2 + 2(a/9)^2 + 2(2a/9)^2\}} = 0.75a \quad (7)$$

so

$$\sigma_t = \sqrt{\{(0.75a)^2 + (0.67b)^2\}} \quad (8)$$

If we now subtract the individual difference spectra in column 3 of figure 1 from the average difference spectrum, we obtain the results in column 4. The central noise spike has disappeared and we are left with four reduced amplitude noise spikes. For the left and right cases

$$\sigma_{fp} = \sqrt{\{2(a/9)^2 + 2(2a/9)^2\}} = 0.35a \quad (9)$$

and for the central case

$$\sigma_{fp} = \sqrt{\{4(a/9)^2\}} = 0.22a. \quad (10)$$

Thus we use as an average $\sigma_{fp} = 0.31a$.

For all three cases

$$\sigma_r = \sqrt{\{b^2 + (b^2/3) + b^2([3+1]/3^2)\}} = 1.33\ b. \quad (11)$$

Hence,

$$\sigma_t = \sqrt{\{(0.31a)^2 + (1.33b)^2\}} \quad (12)$$

Typically for each camera we obtained a 3 x 3 array of images corresponding to three spatial positions in the large aperture and three exposure levels at each position. If we assume that the ratio of FPN amplitude to exposure level is constant, regardless of exposure level, then the relative amplitude is preserved when we coadd the three images of different density obtained at a given position. Coaddition thus reduces the matrix to a set of three images, which correspond exactly to the case illustrated in figure 1 so that the values of σ_{fp} are as given above.

On the other hand RN is affected in a different manner when the nine images are averaged. As the relative exposure times were used as weights in the averaging process, RN is reduced in a manner appropriate to the number of equivalent images, n, with the same exposure time. For well-exposed orders of the final average image, n is usually about 6. This necessitates modifying equation (2) for the average spectrum to

$$\sigma_r = b\surd n, \qquad (13)$$

equations (4) and (5) for the difference spectra to

$$\sigma_r = b\surd(1+n^{-1}) \qquad (14)$$

and (for n = 6)

$$\sigma_t = \surd\{(0.82a)^2 + (1.08b)^2\}, \qquad (15)$$

equations (6) and (8) for the average difference spectra to

$$\sigma_r = b\ \{\surd(n+1)\}/n \qquad (16)$$

and (for n = 6)

$$\sigma_t = \surd\{(0.75a)^2 + (0.44b)^2\}, \qquad (17)$$

and equations (11) and (12) for the difference between the individual and average difference spectra to

$$\sigma_r = \surd\{b^2+(b^2/n)+b^2([n+1]/n^2\}\qquad(18)$$

and (for n = 6)

$$\sigma_t = \surd\{(0.31a)^2 + (1.17b)^2\}.\qquad(19)$$

We fit straight lines through both individual difference spectra (corresponding to column 2 of figure 1) and difference-average difference spectra (corresponding to column 4) to determine their respective noise amplitudes. Substituting these measured noise amplitude values in equations (15) and (19), respectively, allows a simultaneous solution for a and b. The values of a and b given in Table 2 are for the best determined cases. They suggest that for individual images the random noise amplitude in well-exposed regions is about 4% and the fixed pattern noise amplitude is about 6% of the average intensity. Thus in well-exposed orders the total noise amplitude in an individual spectrum is 7% of the signal or S/N = 14. Our estimate of RN is similar to that found by York and Jura (1982).

For our small aperture images, the stars could not shift in the aperture. If FPN were constant during the observations and neglecting the small Doppler shifts in the spectra due to spacecraft motion, then FPN would be subtracted out when the difference spectra are produced. Thus, to first order we can set a = 0 in equation (15) and thus

$$\sigma_t=1.08b.\qquad(20)$$

We fit straight lines through the difference spectra of π Cet, 134 Tau, and ν Cap and found σ_t. Table 3 shows the average σ_t values grouped by exposure time, restated in terms of b. These data yield $\langle b\rangle \simeq 0.05$ for the well-exposed orders. This value is slightly larger than the average RN obtained for the large aperture images. Since there is no reason to believe that the actual RN should be different between large and small aperture exposures, we infer that variations in FPN over a period of one month have had the effect of increasing the noise amplitude in the small aperture difference spectra. When we cross-correlated the small aperture difference spectra, we found no sensible pattern. Any contribution due to changes in FPN over the period of a month has either been randomized sufficiently or has too small an amplitude so that we could not detect it.

V. NOISE IN THE AVERAGE SPECTRA

A major goal of this investigation was to evaluate the reduction in noise achieved by our coaddition procedures. In the average images, random noise is reduced by $1/\sqrt{n}$ where n is the number of well-exposed images. For π Cet, 134 Tau, and ν Cap, our small aperture cases, it is difficult to determine the values for a and b. An upper limit for b is 0.05 (see Table 3). We believe it appropriate to assume the same values as for the large aperture a = 0.06 and b =0.04. If so, then the random noise amplitude for both the large and the small aperture coadded spectra is 0.016.

So far we have neglected the relative Doppler shifts of stellar features and FPN due to spacecraft motion. This smears out the FPN and reduces its average amplitude in coadded spectra. Table 4 shows the average spacecraft motion for each star and camera and the rms deviation about this value.

Comparison of the mean of the σ's with the 7.2 km s^{-1} and 7.7 km s^{-1} widths of each pixel for LWP and for SWP, respectively, and allowance for our 3-point smoothing indicates this motion reduces the amplitude of FPN in coadded spectra obtained over a range of spacecraft velocities to about 83% of what its value would have been if the spacecraft had been stationary.

For the large aperture average spectra, the fixed pattern noise is also reduced by a factor of $\sqrt{3}$ as there are three stellar positions in the aperture. Its amplitude is thus $0.83 \times 0.060 / \sqrt{3} = 0.029$, which implies a total noise amplitude of 0.033 or S/N = 30.

For the small aperture case, we take the amplitude of FPN in coadded spectra to be the same as in individual images except for the 83% reduction due to Doppler smearing by spacecraft motion. Thus, FPN $< 0.83 \times 0.06 = 0.05$ and the total noise amplitude is < 0.053 or S/N > 19.

These results for large aperture coadded images indicate a factor of 2 improvement in signal-to-noise over the comparable 3-point smoothed well-exposed orders of individual images which have S/N = 14. These noise estimates are given for average fluxes and not with respect to the continuum. If they were given in such a manner, then the signal-to-noise values would increase by about a third.

Figures 2 and 3 show examples of these results for the SWP camera. The λλ1520-1540 region is shown for two stars with similar effective temperatures, π Cet, a small aperture case, and 21 Aql, a large aperture case. For both stars, an individual well-exposed image is shown as well as the average of 9 images. The signal-to-noise ratio is clearly greater for the coadditions. FPN has been removed to a far greater extent in the large aperture case with the high frequency components being removed to a considerable extent.

The noise in the average spectra is dominated by fixed pattern noise. A possible approach to further reduce it is to take exposures at four different places in the large aperture rather than three. There is sufficient space to do so and not have the patterns of fixed pattern noise lie on top of one another. In this way one could reduce the FPN by an additional 15 %. A second approach is to obtain additional exposures after FPN has completely changed its characteristics. It is not clear what is the minimum time period for this to occur. Our results suggest a significant coherence in FPN in exposures taken a month apart. It is possibly safe to separate such sets of exposures by a year. For example, if another set of 3 images were obtained at each of our 3 exposure levels after a year had elapsed, these would possibly reduce FPN by up to 40%. This coupled with a further reduction in RN might reduce the total noise amplitude to 0.023, corresponding to S/N = 43.

An alternative possibility is that FPN is due to a slight misregistration of the ITF with time and hence is a function of camera temperature. For the images which we coadded, a variation of 2 to 3 K in camera temperature was seen.

Our analysis also ignores possible linearity errors. Oliversen (1984a,b) and Harris (1984) have discussed such problems at low dispersion and their relation to the ITF. When one coadds spectra with different exposure levels, it is not clear whether such effects cancel or increase.

Our results differ from those of West and Shuttleworth (1981) who concluded that the summing of more than five high dispersion spectra is probably unwarranted. They used only images with the star centered in the aperture so that their summed image was most likely dominated by FPN. We avoided this difficulty by moving the star in the large aperture and so reduced FPN.

ACKNOWLEDGMENTS

We thank the IUE and Goddard RDAF staffs, in particular Mr. Keith Feggans, for their help in this investigation and Drs. Cathy Imhoff and Carol Grady for their comments on this paper. The cross-correlation routine was originally written by Dr. Sidney B. Parsons and the coaddition routine by Dr. F. H. Schiffer, III.

REFERENCES

Harris, A. W.: 1984, NASA IUE Newsletter 24, 42

Holm, A.: 1982, NASA IUE Newsletter 18, 10

Oliversen, N. A.: 1984a, NASA IUE Newsletter 24, 27

Oliversen, N. A.: 1984b, NASA IUE Newsletter 24, 50

Turnrose, B. E., Thompson, R. W.: 1984, "International Ultraviolet Explorer Imaging Processing Manual Version

2.0 (New Software)", CSC/TM-84/6058

Turnrose, B. E., Thompson, R. W., Gass, J. E.: 1985, NASA IUE Newsletter 25, 40

West, K., Shuttleworth, T.: 1981, ESA IUE Newsletter 12, 27

York, D. G., Jura, M.: 1982, Astrophys. J. 254, 88

Table 1: Number of Images Coadded

Star	Camera SWP	Camera LWR
π Cet	9	7
134 Tau	10	8
ν Cap	8	7
21 Aql	9	9
o Peg	9	9
θ Leo	10	9

Table 3
Derived Average Noise Amplitudes from Small Aperture Images

Star	Well-Exposed Region	SWP 1542-1556	SWP 1716-1735	LWR 2326-2344	LWR 2530-2548
π Cet	Long	0.081↑	0.057	0.099↑	0.065
	Middle	0.056	0.041	0.067	0.044
	Short	0.066*	0.156*	0.056	0.080*
134 Tau	Long	0.093↑	0.083↑	0.103↑	0.071↑
	Middle	0.064	0.051	0.078↑	0.060
	Short	0.061	0.045*	0.054	0.059
ν Cap	Long	0.091↑	0.069↑	0.099↑	0.065
	Middle	0.047	0.036	0.067	0.044
	Short	0.045	0.042	0.056	0.089*

Notes: With different exposure times, the wavelengths which are properly exposed change. * = Overexposed and ↑ = underexposed, otherwise the regions measured are properly exposed.

Table 2
Fixed Pattern Noise and Random Noise Amplitudes
From Selected Large Aperture Images

Star	Camera	Well-Exposed Region	Number of Images	Wavelengths	Noise Amplitudes Fixed Pattern	Random
o Peg	SWP	Short	3	1526-1539	0.063	0.055
		Middle	3	1716-1735	0.062	0.036
		Short	2	1716-1735	0.061	0.043
	LWR	Middle	3	2326-2344	0.075	0.045
		Short	3	2326-2344	0.062	0.044
		Middle	3	2530-2548	0.080	0.038
θ Leo	SWP	Short	2	1542-1556	0.079	0.035
		Middle	3	1716-1735	0.052	0.042
	LWR	Short	3	2326-2344	0.052	0.043
		Middle	2	2326-2344	0.078	0.046
21 Aql	SWP	Short	3	1542-1556	0.073	0.030
		Middle	3	1716-1735	0.043	0.040
		Long	3	1716-1735	0.071	0.047
	LWR	Short	2	2326-2344	0.032	0.042
		Middle	2	2326-2344	0.066	0.049
Average	SWP				0.063	0.041
	LWR				0.064	0.044

Notes: The column 'Well-Exposed Region' indicates approximately where this region occurs for the spectra under consideration. 'Wavelengths' indicates where the measurements were made.

Table 4
Spacecraft Motion Velocities

Star	Camera	Mean Velocity	Dispersion (km s^{-1})	Range
π Cet	SWP	-28.2	±1.8	-25.6 to -30.0
	LWR	-27.4	±1.7	-25.7 to -29.6
ν Cap	SWP	+24.8	±1.2	+23.2 to +26.4
	LWR	+24.9	±1.1	+23.3 to +26.1
134 Tau	SWP	-26.3	±4.0	-20.9 to -31.5
	LWR	-26.3	±3.9	-21.7 to -31.4
o Peg	SWP	+20.1	±1.7	+17.1 to +21.7
	LWR	+19.9	±1.5	+17.1 to +20.9
21 Aql	SWP	+14.9	±4.2	+11.2 to +20.6
	LWR	+14.7	±4.2	+11.3 to +20.6
θ Leo	SWP	-26.1	±1.7	-23.7 to -28.2
	LWR	-25.8	±1.5	-23.8 to -27.9

Figure Captions

Figure 1: We illustrate our procedure to reduce fixed pattern noise schematically with a single square stellar line and a single fixed pattern noise (FPN) spike, the arrow. Our exposures are taken at three places in the large aperture (left, center, and right). Column 1 shows the resulting displacements in FPN in the three exposures when the stellar features are brought into coincidence. At the bottom of column 1 we show the result of coadding the three spectra so aligned. There are now three noise spikes with one-third of the amplitude of the original spike.

Column 2 shows the results of subtracting the average spectrum from each individual spectrum with the stellar features in coincidence. In these difference spectra, the stellar line has disappeared. Two of the three noise spikes in each difference spectra are negative echoes of the original spike with one-third of its amplitude while the third has a positive amplitude two-thirds of the original spike.

If we now cross-correlate the left and right difference spectra with the central difference spectra, we expect the alignment seen in column 3. Correlations come from the central spike as well as from some of the negative echoes. At the bottom of this column, we averaged these aligned difference spectra. The central spike has an amplitude two-thirds that of the original spike and there are four negative echoes with amplitudes of 0.11 and 0.22 of the original spike.

If we now subtract the individual difference spectra in column 3 from the average difference spectrum, we obtain the results in column 4. The central noise spike has disappeared and we are left with two negative and two positive spikes of 0.11 and 0.22 of the amplitude of the original spike.

The spectra in column 4 have significantly supressed FPN so that their noise amplitudes are largely dominated by RN. Thus by comparing the noise amplitudes of spectra in columns 2 and 4, we can estimate the separate amplitudes of FPN and RN. In our simple illustration, we have neglected the relative Doppler shifts of stellar features and FPN due to spacecraft motion. This smears out the FPN and reduces its average amplitude in coadded spectra.

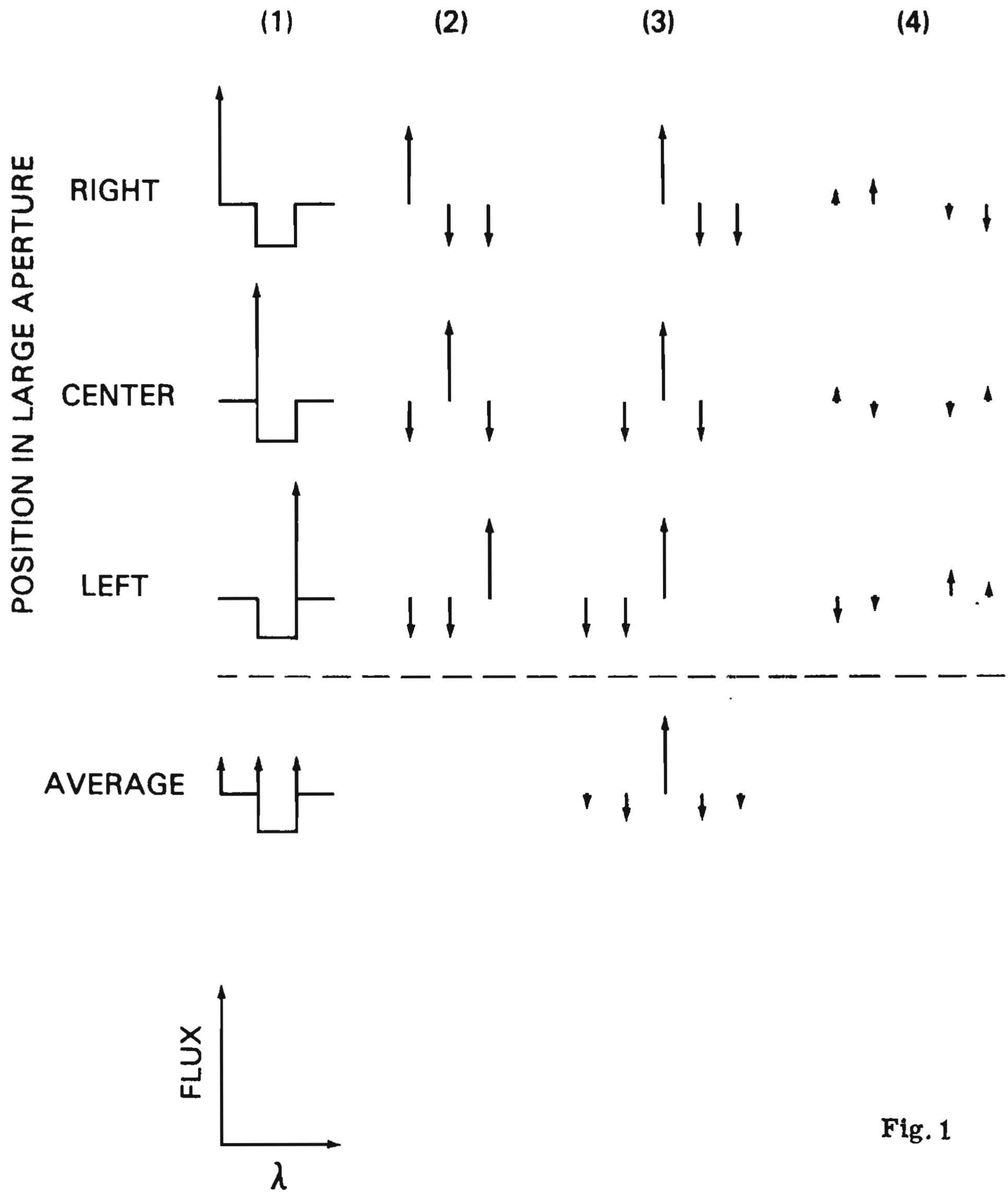

(1)
(2)
(3)
(4)
POSITION IN LARGE APERTURE
RIGHT
CENTER
LEFT
AVERAGE
FLUX
λ

Fig. 1

Figure 2: The $\lambda\lambda$1520-1540 region in SWP 16248, a single small aperture high dispersion exposure of π Cet, and in the coadded spectrum. RN has been reduced in the coaddition relative to the individual images. However, as the individual images were taken in the same place in the aperture, the FPN of each image is similar.

Figure 3: The $\lambda\lambda$1520-1540 region in SWP 19971, a single large aperture high dispersion exposure of 21 Aql, and in the coadded spectrum. Both RN and FPN have been reduced in the coaddition relative to the individual images. Comparison of figures 2 and 3 shows that taking exposures with the star in several places in the large aperture is a method of reducing FPN.

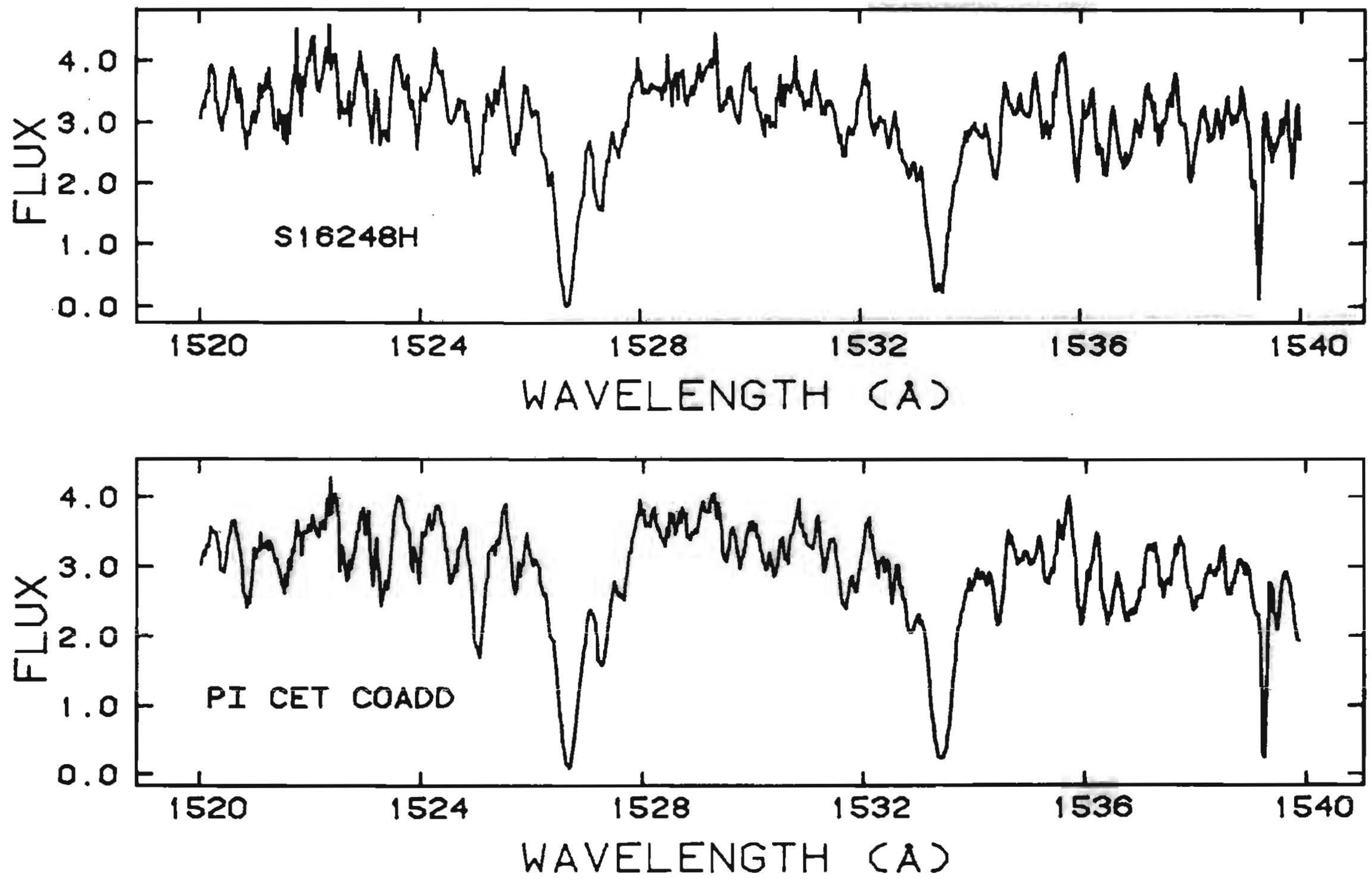

FLUX
4.0
3.0
2.0
1.0
0.0
S16248H
1520
1524
1528
1532
1536
1540
WAVELENGTH (Å)
FLUX
4.0
3.0
2.0
1.0
0.0
PI CET COADD
1520
1524
1528
1532
1536
1540
WAVELENGTH (Å)

Fig. 2

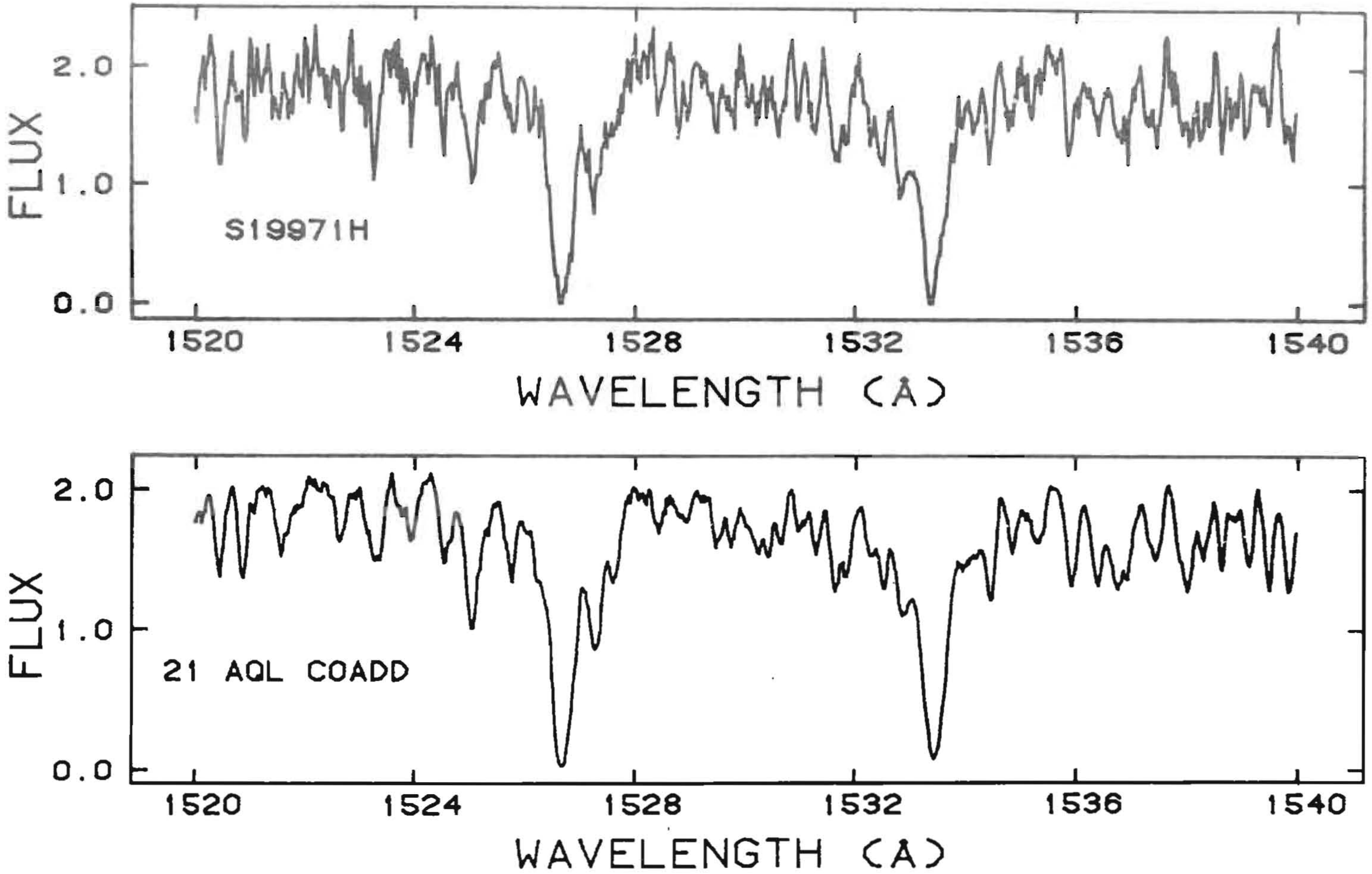

FLUX
2.0
1.0
0.0
S19971H
1520
1524
1528
1532
1536
1540
WAVELENGTH (Å)
FLUX
2.0
1.0
0.0
21 AQL COADD
1520
1524
1528
1532
1536
1540
WAVELENGTH (Å)

Fig. 3

A CORRECTION METHOD FOR THE DEGRADATION OF THE LWR CAMERA (II) : ERRATUM AND FINAL RESULTS.

Clavel,J.,Gilmozzi,R.,Prieto,A.

1. Introduction

In Paper I (Clavel,Gilmozzi & Prieto 1985), we published an analysis of the degradation of the IUE LWR camera from 1978 up to 1983, and proposed a simple algorithm to correct for this effect. Later, Imhoff (1986) compared our correction method with that of Holm (1985) and concluded that both techniques yielded reasonable results.

Following the recomendations made at a previous 3-Agency meeting, we performed various checks of the correction method and, in the process, we discovered an error which significantly alters our previous results.

The whole analysis was performed again and yielded a revised curve of the loss of sensitivity of the LWR camera as a function of wavelength. In the present note, we describe the new results, and investigate possible systematic effects which could possibly affect them. We also go through extensive checks of the correction method.

2. The error

Beside long term changes, the sensitivity of the IUE cameras depends primarily on the temperature of their head-amplifier (THDA) at the time of the observation. Any study of the degradation of the camera should therefore correct for this effect by dividing the flux by:

$$E(THDA) = 1.0 - 0.011 * (THDA - 12)$$

as we stated correctly in Paper I. However, we discovered that the computer code was actually doing the opposite, i.e. multiplied by E(THDA).

In principle, this should have simply increased the scatter in the results without drastically changing the trends. Unfortunately, like the temperature of most other subsystems, the average THDA increases as the S/C ages. This is illustrated in figure 1 where we plot the THDA versus the time of observation t (expressed as days after launch) for the 308 spectra of the 5 IUE calibration stars which form the data-base used in the present study. The usual statistical tests show that THDA is linearly correlated with t at better than the 99.9 % confidence level. The slope of the best-fit regression line yields an increase of 0.30 ± 0.14 C/year which translates into a decrease in sensitivity of 0.33 % per year. This agrees reasonably well with the finding by Schiffer (1982) that THDA increases by 0.6 C/year given our longer time base-line.

Therefore, we expect the results of Paper I to overestimate the loss of sensitivity of the LWR camera by twice that amount, i.e. 0.67 % per year.

3. The revised degradation curve

Having properly corrected the spectra for THDA, we have performed the whole analysis again. The method and the data-base were identical to those described in Paper I:
We have used all (308) the low resolution LWR Net spectra of the 5 IUE standard stars which (i) had a "nominal" exposure time (ii) had been obtained through the large aperture (iii) were neither "trailed" nor multiple.
All the spectra had been processed (or re-processed when necessary) with the current low-dispersion S/W.
The Net fluxes were divided by the exposure times - taking into account the OBC timing as well as the camera rise-time (Paper I) - and averaged in bins 50 A wide from 1850 A to 3300 A.
For each star separately and each wavelength bin, we performed a linear regression which yielded the net count-rate as a function of time. The 5 separate data-set were then normalized so that the count rate at launch time is one, prior to being merged. A second regression and renormalization was performed on the combined data-set. The best-fit coefficients of the final regression yielded the rate of sensitivity loss of the LWR camera (in % per year) as a function of wavelength, D1(λ) listed in Table 1. The D1(λ) curve is

plotted in figure 2, together with the wrong curve of Paper I, Dw(λ).

4. Quality control

4.a THDA

The difference between the two curves averaged over the 28 wavelength bins is 0.67 %, exactly as expected (see section 2). Also as expected, this difference is almost independent of wavelength (r.m.s. scatter is 0.16 %) since the effect of THDA variation on the sensitivity is supposedly "grey".

As a check, we have performed the same analysis as described in section 3, but without correcting the spectra for the effect of THDA. This yielded a different Do(λ) curve which is also plotted in figure 2. As expected, Do falls exactly at midway in between the erroneous Dw(λ) of Paper I and the properly THDA corrected D1(λ) curve.

4.b Reality of the structure in the D1(λ) curve.

To check the reality of the structure in the D1(λ) curve, we have shifted our initial wavelength grid by 25 A (without changing the bin size) and performed the same analysis again. The corresponding D2(λ) curve is shown in figure 3 together with D1(λ). The two have been merged in Table 1 to form a unique and final curve of the sensitivity loss which will hereinafter be referred to as D(λ). For illustration purposes, we show in figure 4, the individual D(λ) curves as derived independently for each of the 5 stars.

As it can be seen, the D1 and D2 curves agree fairly well. Most of the structure is therefore real; in particular, the broad hump centered at 2325 A, the secondary maximum near 2775 A and the steep rise shortward of 1900 A. The deep narrow minimum near 2475 and the small peak near 2075 A are possibly real as well, since they are found in the individual D(λ) curves of each star. The remaining features of the D(λ) curve - in particular the large fluctuations at the long wavelength end - are spurious.

4.c Checks of the correction procedure

We have then checked that the correction procedure described in Paper I works properly and removes the effect of the sensitivity loss of the LWR camera.

We have selected 55 spectra (11 for each of the 5 stars) with sequential numbers in the range ~ 14000 to 17000. These are listed in Table 2, together with their epoch of acquisition, exposure time and THDA.
These spectra were corrected for THDA and exposure times as described in section 2 and 3, rebined in steps of 5 A from 1900 to 3200 A and then divided by

$$1 - D(\lambda)*(t - 1978.8)$$

to correct for the sensitivity loss. A linear interpolation was used to bring the $D(\lambda)$ curve onto the same wavelength grid as the spectra.

Following Imhoff (1986), we have then ratioed these 55 corrected spectra to the IUE fluxes of the 5 IUE standard stars as given by Bohlin (1986). To be consistent, we have calibrated the spectra with the revised Bohlin (1986) IUE flux-scale, so that the ratios are independent of the adopted calibration. The mean ratio as a function of wavelength, $R(\lambda)$, is shown in figure 5. Its average value each 50 A (and r.m.s. deviation) is listed in table 3. The mean value of $R(\lambda)$ averaged over the entire 1900-3200 A range is 0.999 ± 0.052. As can be judged, the correction procedure works fairly well. The departures of $R(\lambda)$ from one are well within the error bars and also within the residual uncertainty in the IUE calibration.

In Paper I, we compared a single "corrected" spectrum (LWR13623 - THDA = 14.8) with a single reference spectrum (LWR2225 - THDA = 9.2) of BD+28 4211. Since we applied to both spectra the erroneous THDA correction (section 2) which almost perfectly compensated for the overestimated sensitivity loss, the error was not detected.

4.d Non applicability of the method for recent spectra

We retrieved from the data-bank 8 of the 9 recent spectra that Imhoff used (the 9th one was not yet available at Vilspa) in her study, and we perform the same analysis as in 4.c. The mean ratio for these 8 spectra is shown in figure 6. It is clear that the revised correction curve does <u>not</u> apply to these spectra which had all been acquired after October 1983, i.e. when the LWR camera was no longer routinely used. It is therefore likely that the rate of sensitivity loss increased after the camera was switched-off. This change is wavelength dependent, as can be seen in figure 6. It turns-out (by pure coincidence) that the curve of Paper I provides an acceptable correction for these very recent spectra, which explains why Imhoff (1986) did not detect our error.

It is worth noting that the increase in the degradation rate took place predominantly longward of 2300 A, i.e. in that part of the camera format most affected by the development of the flare. Also, it seems that the change did not occur immediately after the camera was turned-off, but came in somewhat later, since some of the spectra used to check the D(λ) curve had been obtained in late 1983 or even early 1984 (see Table 2). This probably accounts for the fact that the increase in the rate of sensitivity loss does not show-up in the quick-look monitoring of Sonneborn (1984). The temporal behaviour of the LWR sensitivity after 1983 is reminiscent of the exponentially increasing flare rate (Harris 1985). It is not clear why the rate of sensitivity loss increased after October 1983. It could be due, for instance, to a change in the characteristics of the detector as it was not routinely used anymore. However, both the spectral and the temporal behaviour of this increase rather suggest that it is linked in some way to the flare itself. More work is obviously needed to get a full understanding of the phenomenon.

References

Bohlin,R.1986,Ap.J. 308 (in press).
Clavel,J.,Gilmozzi,R.,Prieto,A.1985,ESA Newsletter 23,48.
Harris,A.W.1985,Report to the 3 Agencies (April).
Holm,A.1985,NASA Newsletter 26,11.
Imhoff,C.L.1986,NASA Newsletter 29,5.
Schiffer,F.H.1982,NASA Newsletter 19,33.
Sonneborn,G.1984,Report to the 3 Agencies (November).

Table 1

Wavelength (A)	Sensivity loss (% per year)	Wavelength (A)	Sensivity loss (% per year)
1850.000	3.790 ± .510	2575.000	.880 ± .110
1875.000	2.150 ± .340	2600.000	.940 ± .120
1900.000	1.790 ± .220	2625.000	.820 ± .090
1925.000	1.510 ± .180	2650.000	.650 ± .090
1950.000	1.560 ± .150	2675.000	1.140 ± .090
1975.000	1.730 ± .150	2700.000	1.130 ± .080
2000.000	1.620 ± .100	2725.000	.740 ± .080
2025.000	1.510 ± .100	2750.000	1.180 ± .090
2050.000	1.860 ± .100	2775.000	1.710 ± .100
2075.000	2.170 ± .110	2800.000	1.600 ± .100
2100.000	1.750 ± .110	2825.000	1.220 ± .090
2125.000	1.410 ± .130	2850.000	1.420 ± .080
2150.000	1.480 ± .090	2875.000	1.220 ± .090
2175.000	2.020 ± .130	2900.000	.980 ± .090
2200.000	2.270 ± .120	2925.000	.880 ± .090
2225.000	2.240 ± .110	2950.000	.940 ± .090
2250.000	2.400 ± .100	2975.000	.840 ± .100
2275.000	2.670 ± .110	3000.000	.830 ± .110
2300.000	2.850 ± .100	3025.000	1.320 ± .130
2325.000	2.900 ± .110	3050.000	1.160 ± .140
2350.000	2.880 ± .090	3075.000	.590 ± .150
2375.000	2.610 ± .100	3100.000	1.030 ± .130
2400.000	1.680 ± .090	3125.000	1.220 ± .170
2425.000	1.710 ± .090	3150.000	.560 ± .190
2450.000	1.510 ± .090	3175.000	1.290 ± .370
2475.000	.720 ± .090	3200.000	2.810 ± .610
2500.000	.980 ± .090	3225.000	1.320 ± .480
2525.000	1.400 ± .090	3250.000	1.020 ± .450
2550.000	1.040 ± .100	3275.000	3.010 ± .660

Table 2

List of spectra used to test the correction method and generate the ratio spectrum of figure 5. Exposure times are nominal: 190 s, 3 s, 7 s, 24 s & 60 s for BD+33 2642, HD93521, HD60753, BD+75 325 & BD+28 4211 respectively. Dates are written as "yymmdd", where yy are the 2 last digits of the year, mm is the month, and dd is the day of the month. THDA is in Celsius degree.

LWR #	Star	THDA	date	LWR #	Star	THDA	date
15073	BD+33 2642	16.0	830119	16243	HD 60753	14.2	830626
15219		15.2	830209	16287		12.8	830703
15445		14.9	830308	16589		14.5	830814
15847		13.2	830430	16907		15.9	831001
15889		15.2	830507	16947		12.2	831008
16292		10.8	830704	14936	BD+75325	14.8	821227
16403		13.8	830721	15362		14.5	830223
16619		15.2	830818	15685		13.2	830409
17183		13.7	831216	15733		13.8	830414
17204		14.2	840101	15891		15.5	830507
17246		15.0	840213	16564		14.5	830810
14472	HD 93521	14.2	821024	16714		15.5	830901
14594		13.8	821110	16759		12.2	830909
14974		16.5	830101	16824		12.2	830918
15363		14.5	830224	16905		15.9	831001
15446		15.2	830308	17170		13.5	831129
15626		16.5	830331	14165	BD+28 4211	11.5	820913
15684		13.0	830409	14166		11.8	820913
15966		14.5	830518	14542		14.2	821101
16289		12.7	830703	14887		14.8	821224
17169		13.5	831129	14935		14.5	821227
17205		14.2	840101	15071		16.2	830119
14245	HD 60753	11.5	820924	15077		14.5	830119
14593		13.8	821110	16146		13.5	830613
14774		12.2	821203	16241		14.8	830625
15218		15.2	830209	16268		12.8	830630
15849		13.2	830430	16269		13.5	830701
16082		14.5	830606				

Table 3:

Mean ratio spectrum of the 55 spectra listed in table 2 to the flux of the IUE standard stars in Bohlin (1986). The spectra have been corrected for the sensitivity loss of the LWR camera as described in the text. The average flux of the mean ratio spectrum (figure 5) and the r.m.s. deviation in 50 A bins have been computed from 1900 to 3200 A.

Bin (A)	aver. ± r.m.s	Bin (A)	aver. ± r.m.s
1900-1950	0.994 ± 0.057	2550-2600	1.007 ± 0.044
1950-2000	0.968 ± 0.048	2600-2650	1.011 ± 0.029
2000-2050	0.995 ± 0.045	2650-2700	0.993 ± 0.032
2050-2100	1.015 ± 0.043	2700-2750	1.012 ± 0.030
2100-2150	1.010 ± 0.059	2750-2800	1.017 ± 0.036
2150-2200	0.975 ± 0.035	2800-2850	1.013 ± 0.029
2200-2250	0.998 ± 0.052	2850-2900	1.014 ± 0.033
2250-2300	0.989 ± 0.036	2900-2950	0.994 ± 0.052
2300-2350	0.988 ± 0.030	2950-3000	0.993 ± 0.039
2350-2400	0.986 ± 0.049	3000-3050	0.987 ± 0.052
2400-2450	0.975 ± 0.030	3050-3100	0.993 ± 0.091
2450-2500	0.994 ± 0.046	3100-3150	0.990 ± 0.071
2500-2550	0.998 ± 0.040	3150-3200	1.024 ± 0.111

Figure captions

Figure 1:

The temperature of the LWR camera head-amplifier (THDA) versus time (expressed as days after launch) fot the 308 spectra used in the present study.

Figure 2:

The revised D1(λ) curve of sensivity loss (% per year)as a function of wavelength, together with the erroneous curve of Paper I (*) and the one obtained without applying any THDA correction (o).

Figure 3:

The combined D(λ) curve of sensivity loss as a function of wavelength, obtained by merging the D1(λ) (*) and D2(λ) (o) curves. The D2 curve uses the same bin size of 50 A as the D1 curve but is shifted by +25 A as explained in the text.

Figure 4:

The individual curve of sensivity loss for each of the 5 standard stars plotted with different symbols and no error bars for clarity: BD+28 4211 (*), BD+33 2642 (+), BD+75 325 (o), HD60753 (#) and HD93521 ($).

Figure 5:

The average ratio of the 55 spectra listed in table 2 to the flux of the 5 IUE standard stars as given by Bohlin (1986). The spectra have been corrected for the sensitivity loss of the LWR camera as explained in the text. The unity line is shown for comparison.

Figure 6:

Similar ratio as in figure 5, but for 8 more recent spectra (listed in Imhoff 1986). The ratio spectrum clearly deviates from unity, especially longward of 2300 A.

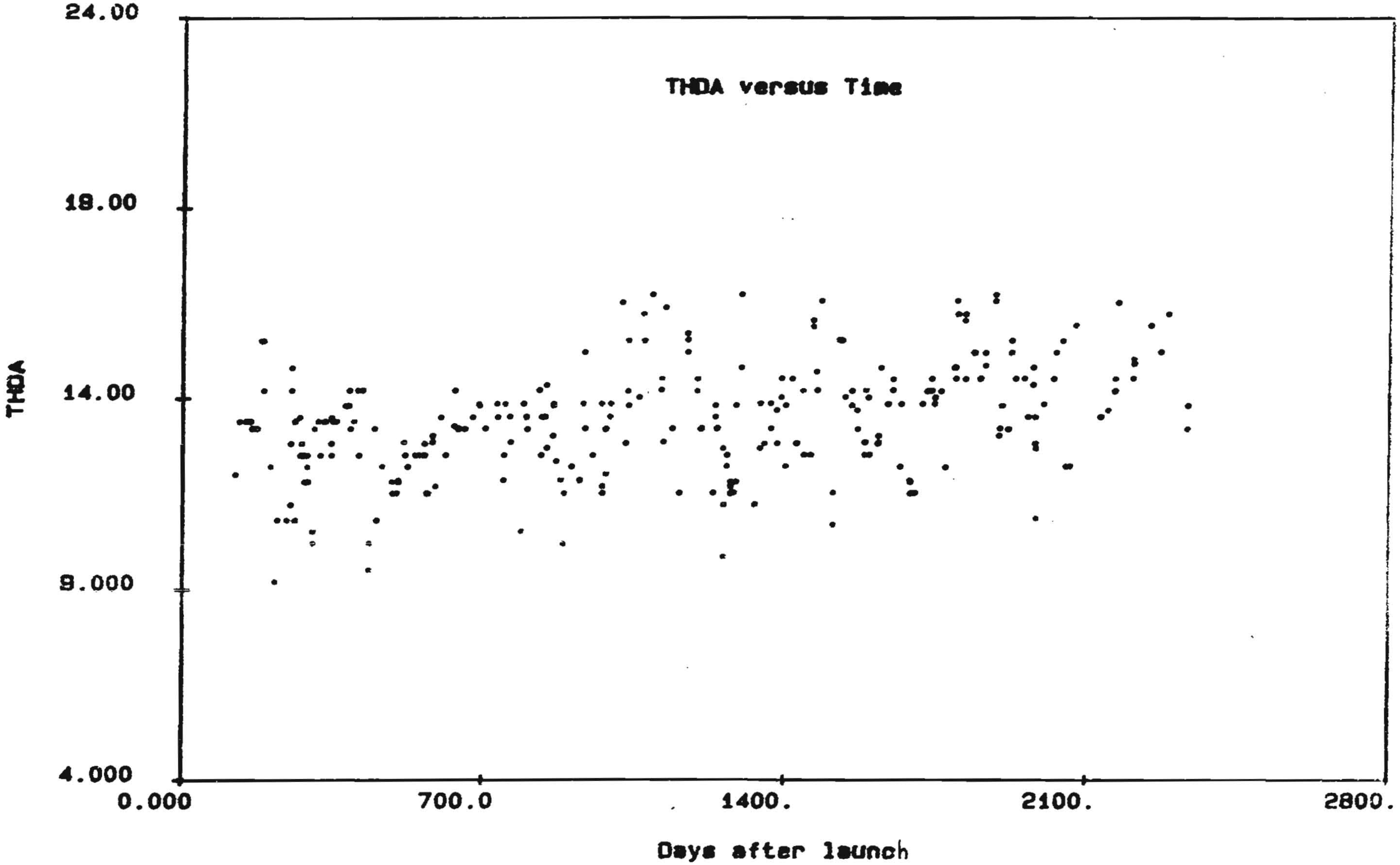

THDA versus Time
THDA
24.00
18.00
14.00
9.000
4.000
0.000
700.0
1400.
2100.
2800.
Days after launch

Figure 1

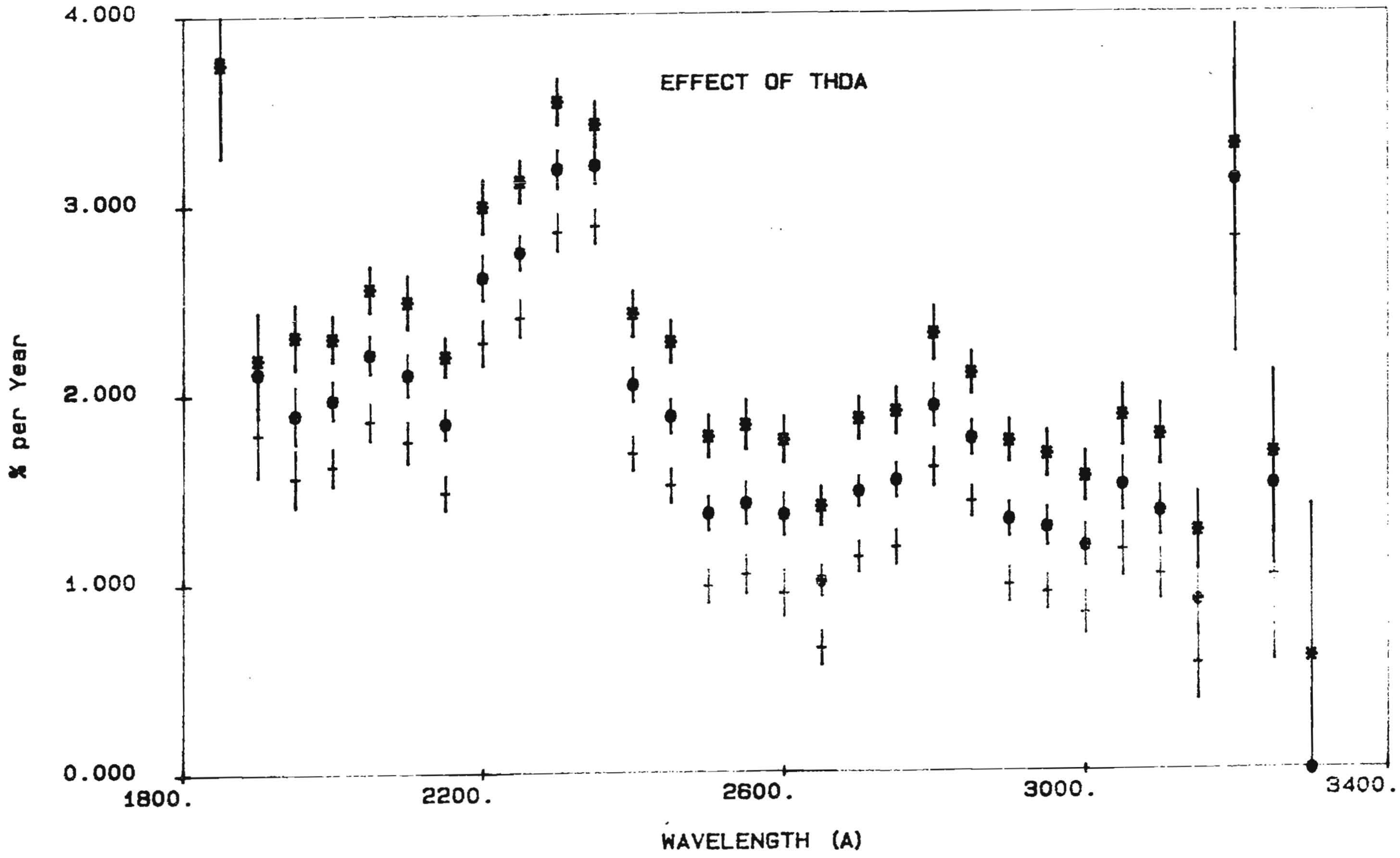

EFFECT OF THDA
% per Year
4.000
3.000
2.000
1.000
0.000
1800.
2200.
2600.
3000.
3400.
WAVELENGTH (A)

Figure 2

Figure 3

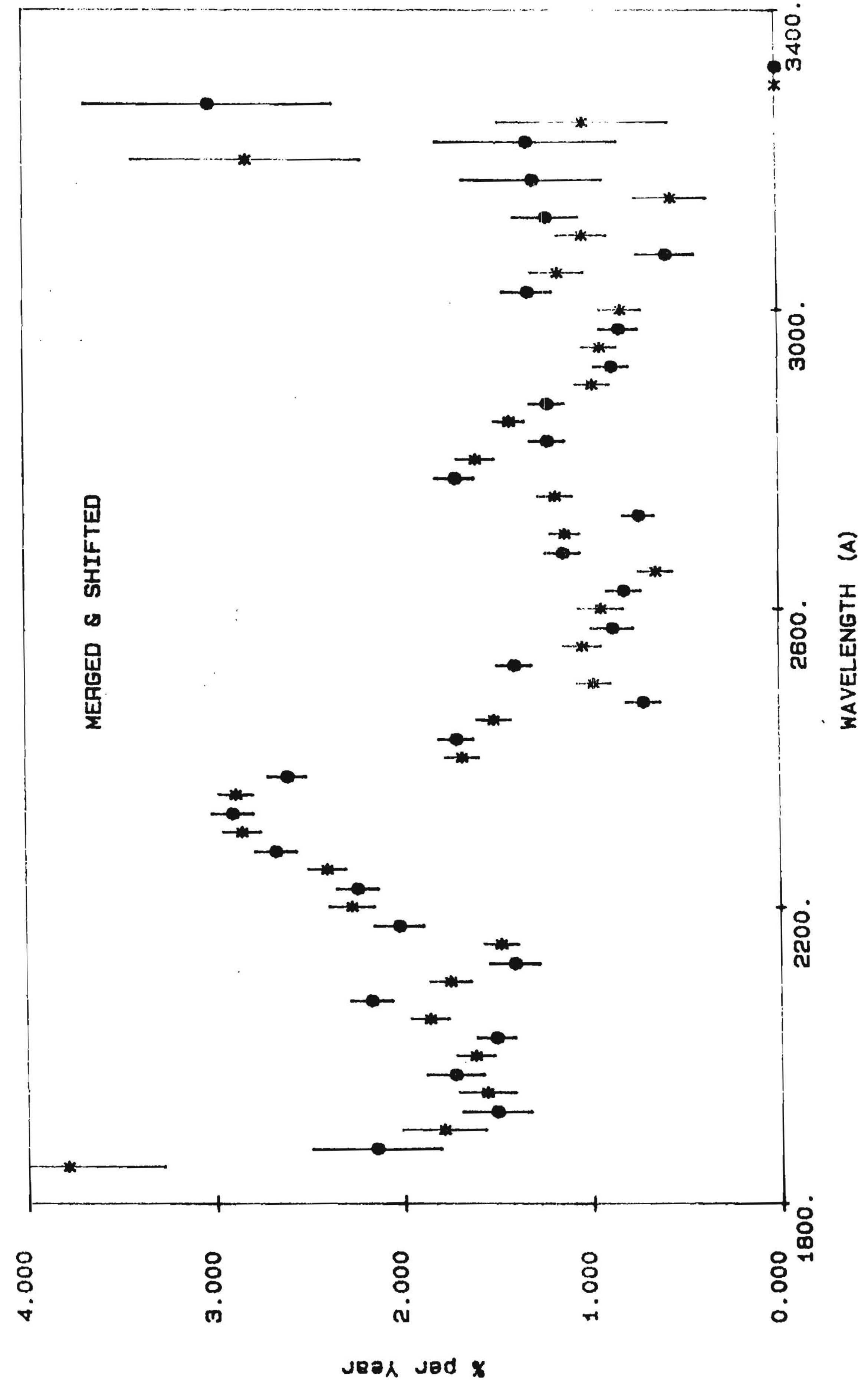
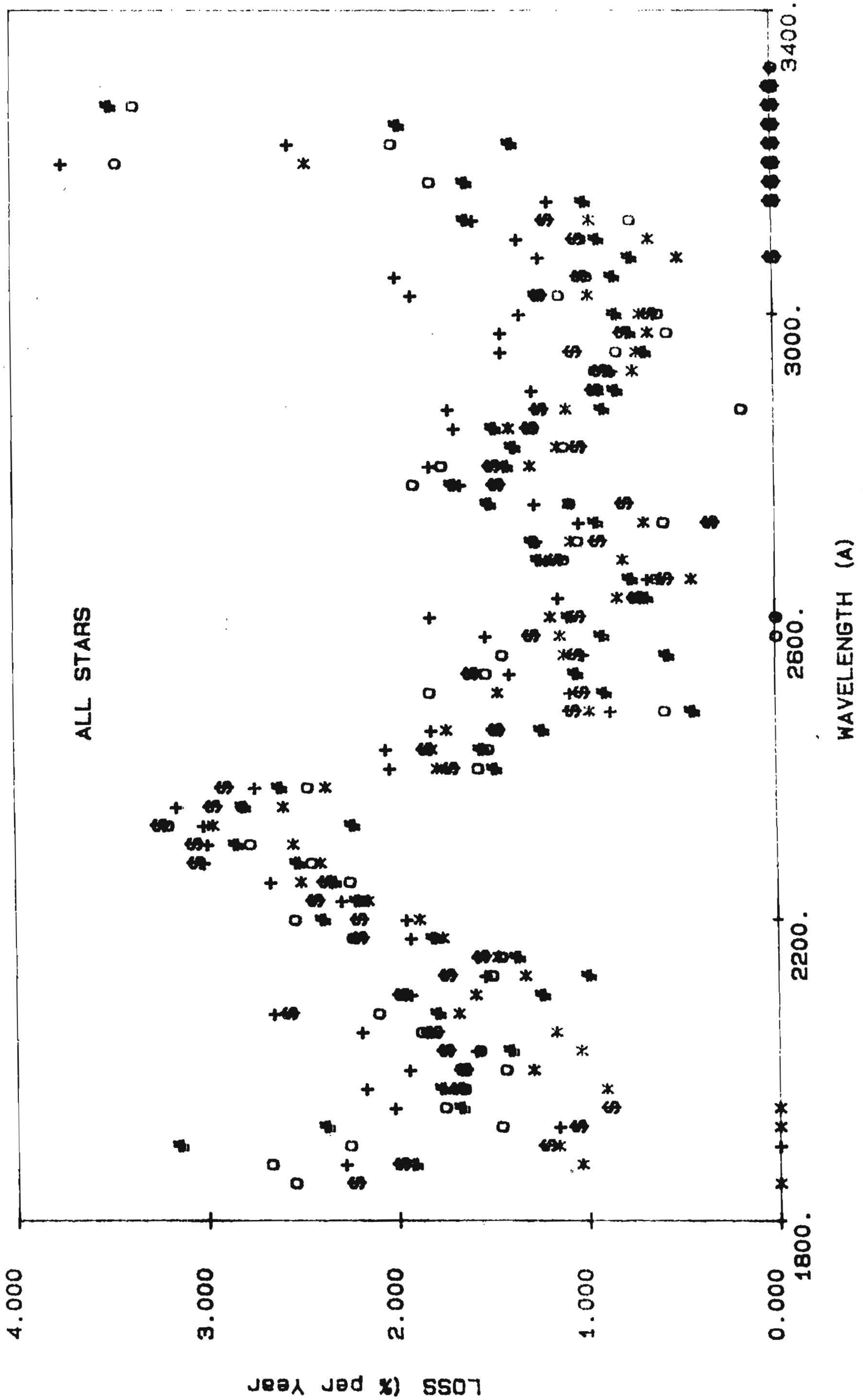
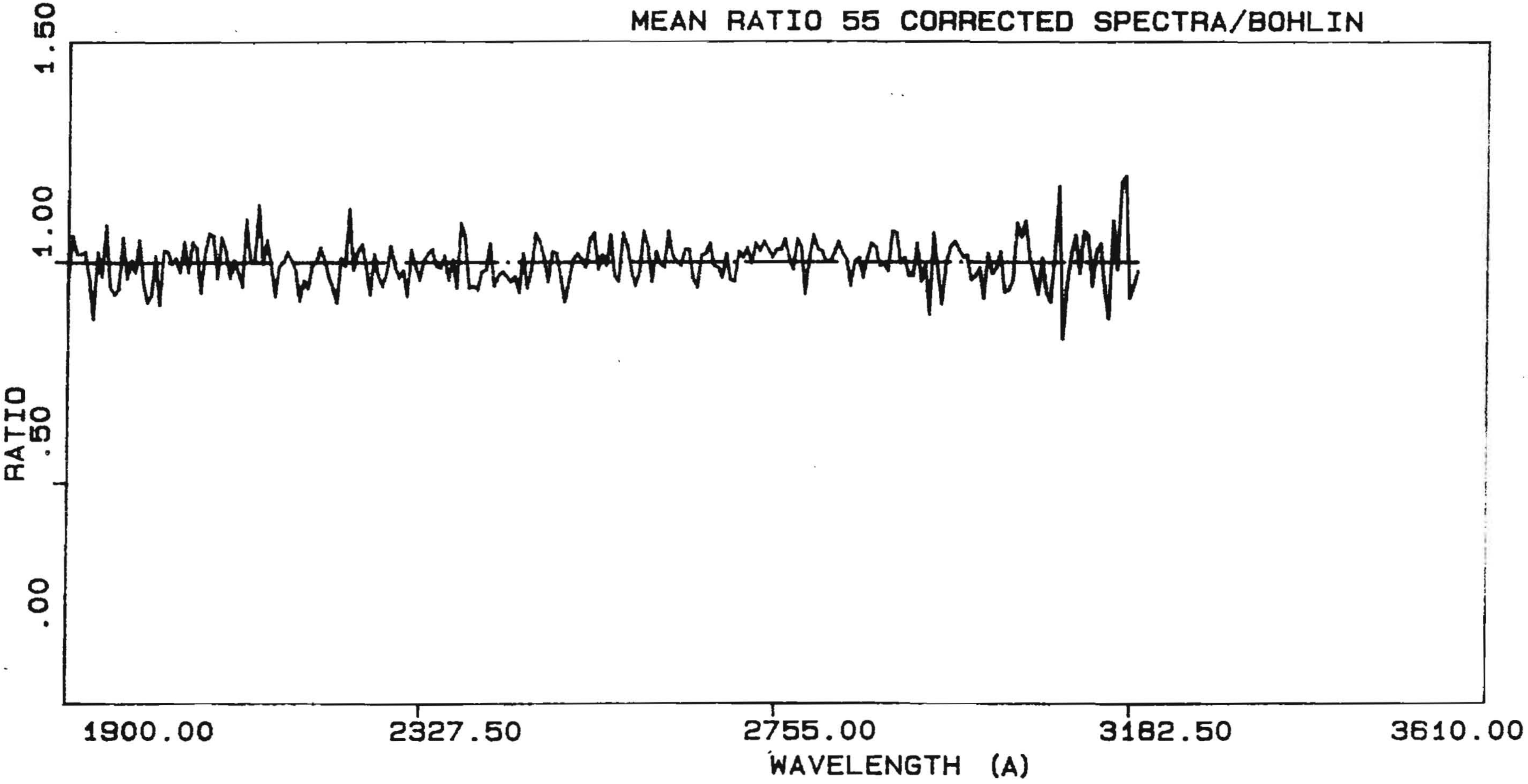

MERGED & SHIFTED
WAVELENGTH (A)
% per year
1800.
2200.
2600.
3000.
3400.
0.000
1.000
2.000
3.000
4.000

Figure 4

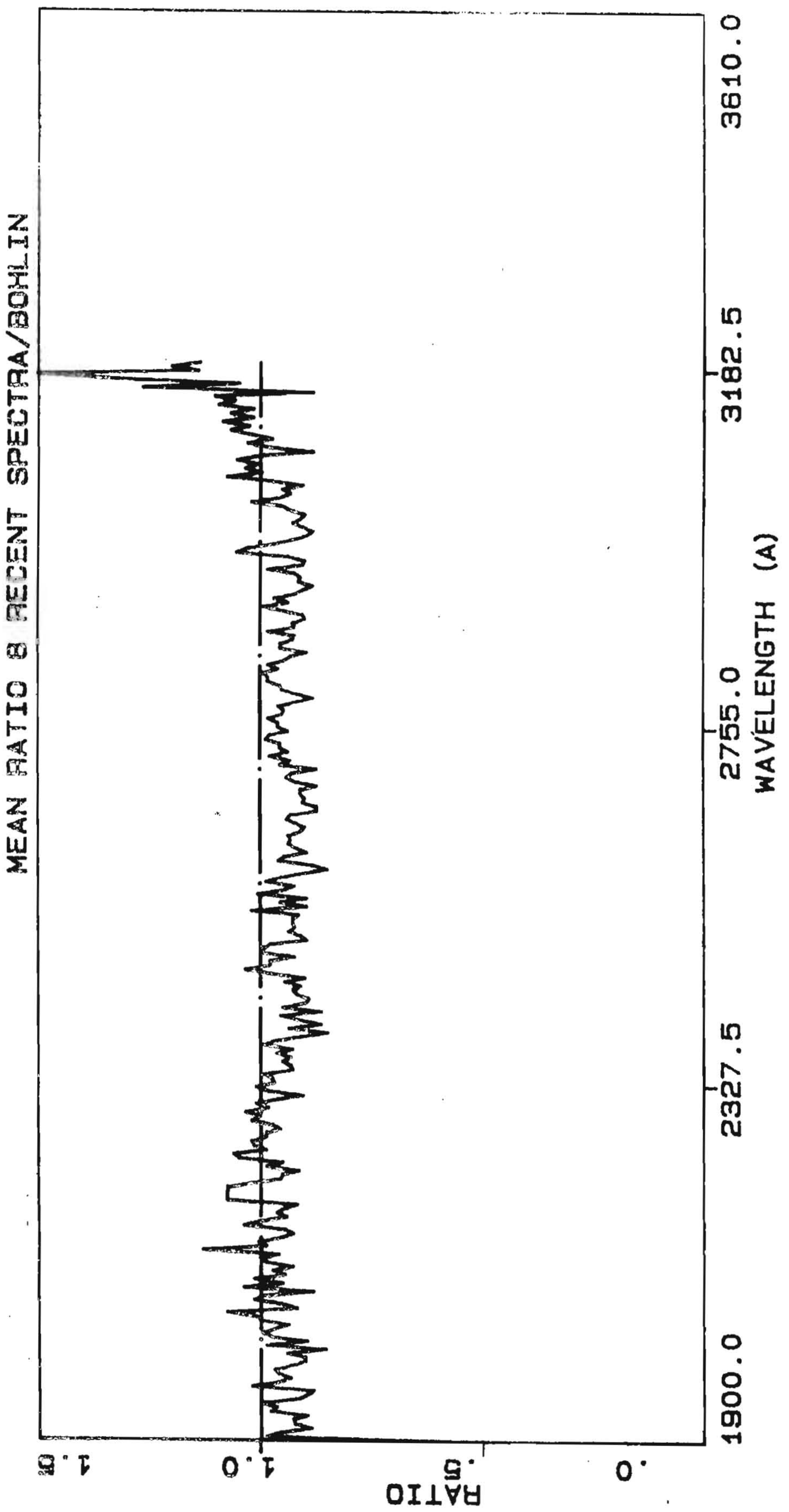

ALL STARS
LOSS (% per Year)
4.000
3.000
2.000
1.000
0.000
WAVELENGTH (A)
1800.
2200.
2600.
3000.
3400.



MEAN RATIO 55 CORRECTED SPECTRA/BOHLIN
RATIO
1.50
1.00
.50
.00
1900.00
2327.50
2755.00
3182.50
3610.00
WAVELENGTH (A)

Figure 5

Figure 6


MEAN RATIO 8 RECENT SPECTRA/BOHLIN
RATIO
1.5
1.0
.5
0.
WAVELENGTH (A)
1900.0
2327.5
2755.0
3182.5
3610.0

```
###############################################
#                                             #
#          VILSPA PUBLICATIONS LIST           #
#                                             #
#              IN MAIN JOURNALS               #
#                                             #
# Published 1 September - 31 December 1985   #
#                  and also                   #
#   Astrophysical Journal for the period      #
#           1 May - 30 August 1985            #
#                                             #
###############################################
```

This list contains all Vilspa papers that have appeared betweeen the above dates in major refereed journals (Mon. Not. R. astr. Soc., Astron. Astrophys., Astrophys. J.) and which originate from Europe. While the origin of the data is the main criterion for inclusion in this list, the affiliation of the authors is also taken into consideration. Underlining of an author's name indicates membership of the Vilspa Observatory staff, and papers by Observatory staff on topics not involving IUE data are marked by '(Obs)' after the entry.

We remind users that, in any publications resulting from IUE data, whether it be from their own allocated shifts or data released from the Archive, they should acknowledge the use of the IUE Satellite and the Agency - ESA, NASA or SERC as appropriate, in a footnote on the title page. The following are examples of some of the possibilities.

Based on observations by the International Ultraviolet Explorer, collected at Villafranca Satellite Tracking Station of the European Space Agency. (In the case of one's own observations).

Based on data from the International Ultraviolet Explorer, de-archived from the Villafranca Data Archive of the European Space Agency. (In the case of archive data).

EDITOR'S NOTE

Due to supply problems we were unable to include IUE publications from Astrophysical Journal in the previous issue of this Newsletter. Publications from all the main journals are now complete to the date above.

LIST OF IUE PAPERS IN MAIN JOURNALS

Veron, P., Veron-Cetty, M.P., Tarenghi, M.
The ultraviolet absorption spectrum of NGC 4151
Astron. Astrophys., 150, 317-324, 1985

Westin, B.A.M.
The nucleus of the Seyfert 1 galaxy NGC 7469: physical conditions and structure
Astron. Astrophys., 151, 137-143, 1985

Haug, K., Drechsel, H.
Spectroscopy and spectrophotometry of the nova-like system V 3885 Sagittarii
Astron. Astrophys., 151, 157-168, 1985

Schroder, K.P., Che-Bohnenstengel, A.
Photometric and UV spectroscopic observations of 22 Vul at eclipse: observational evidence for an extended chromosphere of a 'solar type' G supergiant
Astron. Astrophys., 151, L5-L6, 1985

de Freitas Pacheco, J.A., Faria Lopes, D., Landaberry, S.C., Selvelli, P.L.
HD 87643: a B[e] star with a cold wind
Astron. Astrophys., 152, 101-106, 1985

Malagnini, M.L., Morossi, C., Rossi, L., Kurucz, R.L.
Effective temperature and bolometric correction for HD 61421, HD 87901, HD 15961, and HD 216956
Astron. Astrophys., 152, 117-120, 1985

Festou, M.C., Carey, W.C., Evans, A., Wallis, M.K., Keller, H.U.
IUE observations of comet P/Crommelin (1983n)
Astron. Astrophys., 152, 170-173, 1985

Doazan, V., Grady, C.A., Snow, T.P., Peters, G.J., Marlborough, J.M., Barker, P.K., Bolton, C.T., Bourdonneau, B., Kuhi, L.V., Lyons, R.W., Polidan, P.S., Stalio, R., Thomas, R.N.
The development of the new Be phase of 59 Cyg in the visual and in the far UV in 1978-1983
Astron. Astrophys., 152, 182-198, 1985

Jaschek, M., Baschek, B., Jaschek, C., Heck, A.
Observation of λλ 1600 and 3040 features in the spectra of field horizontal branch stars
Astron. Astrophys. 152, 439-440, 1985

Leitherer, C., Appenzeller, I., Klare, G., Lamers, H.J.G.L.M., Stahl, O., Waters, L.B.F.M., Wolf, B.
The massive wind of S Dor
Astron. Astrophys., 153, 168-178, 1985

Guthrie, B.N.G.
New line identifications in the blue spectra of Hg-Mn stars
Mon. Not. R. astr. Soc., 216, 1-15, 1985

Sembay, S., Coe, M.J., Clement, R., Dean A.J., Hanson, C.G., Ferrari-Toniolo, M., Persi, P., Spinoglio, L., Bassani, L., Di Cocco, G., Macdougall, J.R., Elsmore, B.
IRAS observations of MKN 501 with quasi-simultaneous observations at radio, near-infrared and ultraviolet wavelengths
Mon. Not. R. astr. Soc., 216, 121-125, 1985

Hassall, B.J.M., Pringle, J.E., Verbunt, F.
Dwarf novae in outburst: monitoring WX Hydri with IUE
Mon. Not. R. astr. Soc., 216, 353-363, 1985

Hassall, B.J.M.
A superoutburst of the dwarf nova EK Trianguli Australis
Mon. Not. R. astr. Soc., 216, 335-352, 1985

Treves, A., Drew, J., Falomo, R., Maraschi, L., Tanzi, E.G., Wilson, R.
UV and optical observations of PG 1351+64, a bright Seyfert galaxy or a low-luminosity QSO
Mon. Not. R. astr. Soc., 216, 529-536, 1985

de Boer, K.S., Fitzpatrick, E.L., Savage, B.D.
Abundances of O, Mg, S, Cr, Mn, Ti, Ni and Zn from absorption lines of neutral gas in the Large Magellanic Cloud in front of R136
Mon. Not. R. astr. Soc., 217, 115-126, 1985

Wallis, M.K., Carey, W.C.
Observations of Comet Crommelin - V. Anomalous hydrogen source
Mon. Not. R. astr. Soc., 217, 673-678, 1985

Evans, A., Zarnecki, J.C., McDonnell, A.M., Bode, M.F., Taylor, G.E., Morley, T.
Observations of Comet Crommelin - IV. Upper limit on the optical depth in the coma at ultraviolet wavelengths
Mon. Not. R. astr. Soc., 217, 669-671, 1985

Cassatella, A., Holm, A., Reimers, D., Ake, T., Stickland, D.J.
IUE high-resolution observations of Mira B
Mon. Not. R. astr. Soc., 217, 589-595, 1985

Gondhalekar, P.M.
Depletion of sulphur in the interstellar medium
Mon. Not. R. astr. Soc., 217, 585-588, 1985

Hanson, C.G., Coe, M.J.
The ultraviolet variability of the BL Lacertae object OJ287
Mon. Not. R. astr. Soc., 217, 831-842, 1985

Evans, A., Whittet, D.C.B., Davies, J.K., Kilkenny, D., Bode, M.F.
IUE observations of RCB stars during extinction minima
Mon. Not. R. astr. Soc., 217, 767-778, 1985

Wamsteker, W., Barr, P.
Outflow in the nucleus of the Seyfert I Galaxy NGC 3783
Astrophys. J., 292, L45, 1985

Netzer, H., Wamsteker, W., Beverley, J.W., Wills, D.
The ultraviolet spectra of active galaxies with weak optical Fe II lines
Astrophys. J., 292, 143-147, 1985

Raassen, A.J.J.
Additional identifications of high ionization stages of iron and nickel in the ultraviolet spectrum of the slow Nova RR Telescopii
Astrophys. J., 292, 696-698, 1985

Hobbs, L.M., Vidal-Madjar, A., Ferlet, R., Albert, C.E., Gry, C.,
The gaseous component of the disk around Beta Pictoris
Astrophys. J., 293, L29-L33, 1985

Turnshek, D.A., Foltz, C.B., Weymann, R.J., Lupie. O.L., McMahon, R.G., Peterson, B.M.
Observations of the low-redshift broad absorption line QSO PG 1700+518: limits on the fraction of QSOs with broad absorption lines at low redshift and the physical conditions in thr broad absorption line region
Astrophys. J., 294, L1-L5, 1985

Festou, M.C., Bertaux, J.L.
Long-term stability of the IO high-temperature plasma Torus
Astrophys. J., 294, 369-382, 1985

Maraschi, L., Schwartz, D.A., Tanzi, E.G., Treves, A.
Multifrequency observations of the BL Lacertae object PKS 0537-441
Astrophys. J., 294, 615-618, 1985

Wamsteker, W., Alloin, D., Pelat, D., Gilmozzi, R.
Balmer profile variations during the fading of the Seyfert I Galaxy Fairall 9
Astrophys. J., 295, L33-L37, 1985

Ferlet, R., Vidal-Madjar, A., Gry, C.
Na I as a tracer of HI in the diffuse interstellar medium
Astrophys. J., 298, 838-843, 1985
(OBS)

Gry, C., York, D.G., Vidal-Madjar, A.
The exceptionally vacant line of sight to Beta Canis Majoris
Astrophys. J., 296, 593-599, 1985
(OBS)

Hartmann, L., Jordan, C., Brown, A., Dupree, A.K.
On the outer atmospheres of Hybrid stars
Astrophys. J., 296, v576-592, 1985

Reimers, D., Cassatella, A.
The ultraviolet spectrum of the companion of Mira (o Ceti): observational evidence for a disk formed by wind accretion
Astrophys. J., 297, 275-287, 1985

```
######################################
#                                    #
#  MERGED LOG OF IUE OBSERVATIONS    #
#                                    #
#   1 October - 31 December 1985     #
#                                    #
######################################
```

The merged log of Vilspa and Goddard images for the above dates is listed in order of right ascension. (For non-standard images the information given can be incomplete.)

The programme reference codes (column 1) identifying the ESA and NASA programmes for the seventh round can be found in ESA IUE Newsletter No.19 p17 and p23 for ESA and NASA respectively, and for the eighth round in ESA IUE Newsletter No.23 p11 and 17.

The Object Classification Codes (column 3) and the Vilspa Exposure Classification Codes (column 16) are listed overleaf.

CLASSIFICATION OF OBJECTS USED IN THE JOINT ESA/SERC LOG OF IUE OBSERVATIONS
##

00	SUN	50	R, N OR S TYPES
01	EARTH	51	LONG PERIOD VARIABLE STARS
02	MOON	52	IRREGULAR VARIABLES
03	PLANET	53	REGULAR VARIABLES
04	PLANETARY SATELLITE	54	DWARF NOVAE
05	MINOR PLANET	55	CLASSICAL NOVAE
06	COMET	56	SUPERNOVAE
07	INTERPLANETARY MEDIUM	57	SYMBIOTIC STARS
08	GIANT RED SPOT	58	T TAURI
09		59	X-RAY
10	W C	60	SHELL STAR
11	W N	61	ETA CARINAE
12	MAIN SEQUENCE O	62	PULSAR
13	SUPERGIANT O	63	NOVA-LIKE
14	OE	64	STELLAR OBJECT NOT INCLUDED ABOVE
15	OF	65	MISIDENTIFIED TARGETS
16	SD O	66	INTERACTING BINARIES
17	WD O	67	
18		68	
19	UV-STRONG	69	
20	B0-B2 V-IV	70	PLANETARY NEBULAR+CENTRAL STAR
21	B3-B5 V-IV	71	PLANETARY NEBULAR-CENTRAL STAR
22	B6-B9,5 V-IV	72	H II REGION
23	B0-B2 III-I	73	REFLECTION NEBULA
24	B3-B5 III-I	74	DARK CLOUD (ABSORPTION SPECTRUM)
25	B6-B9,5 III-I	75	SUPERNOVA REMNANT
26	BE	76	RING NEBULA (SHOCK-IONISED)
27	BP	77	
28	SDB	78	
29	WDB	79	
30	A0-A3 V-IV	80	SPIRAL GALAXY
31	A4-A9 V-IV	81	ELLIPTICAL GALAXY
32	A0-A3 III-I	82	IRREGULAR GALAXY
33	A4-A9 III-I	83	GLOBULAR CLUSTER
34	AE	84	SEYFERT GALAXY
35	AM	85	QUASAR
36	AP	86	RADIO GALAXY
37	WDA	87	BL LACERTAE OBJECT
38	HORIZONTAL BRANCH	88	EMISSION LINE GALAXY (NON-SEYFERT)
39	COMPOSITE	89	
40	F0-F2	90	INTERGALACTIC MEDIUM
41	F3-F9	91	
42	FP	92	
43	LATE TYPE DEGENERATE STARS	93	
44	G (TO 1FEB79); GIV-VI (FROM 1FEB79)	94	
45	G I-II (FROM 1FEB79)	95	
46	K (TO 1FEB79); K IV-VI (FROM 1FEB79)	96	
47	K I-III (FROM 1FEB79)	97	
48	M (TO 1FEB79); M DWARFS (FRM 1FEB79)	98	WAVELENGTH CALIBRATION (NASA LOG)
49	M I-III (FROM 1 FEB79)	99	NULLS AND FLAT FIELDS (NASA LOG)

THE CLASSIFICATION IS SUPPLIED BY D STICKLAND FOR USE ONLY WITHIN THE PROJECT

EXPOSURE CLASSIFICATION CODES
#############################

The exposure levels of Vilspa images are described by a 3-digit code listed in column 16 in the merged log.

DIGIT 1: EXPOSURE LEVEL OF CONTINUUM
DIGIT 2: EXPOSURE LEVEL OF EMISSION LINES
DIGIT 3: BACKGROUND LEVEL

The CONTINUUM and EMISSION are both classified as follows:-

0: NOT APPLICABLE
1: NO SPECTRUM VISIBLE
2: FAINT SPECTRUM: MAX DN < 20 ABOVE LOCAL BACKGROUND
3: UNDEREXPOSED: MAX DN < 100 ABOVE LOCAL BACKGROUND
4: WEAK: MAX DN BETWEEN 100 AND 150 ABOVE LOCAL BACKGROUND
5: GOOD: NO SATURATION BUT MAX DN OVER 150 ABOVE LOCAL BACKGROUND
6: A BIT STRONG: A FEW PIXELS SATURATED
7: SATURATED FOR LESS THAN HALF THE SPECTRUM
8: MOSTLY SATURATED BUT SOME PARTS USABLE
9: COMPLETELY SATURATED

The BACKGROUND is classified in terms of a standard region of each camera outside the area affected by the high resolution orders. The value used is the mean DN given by a subset histogram approximately 10 pixels in width.

The BACKGROUND classification codes are:- (limits inclusive)

0 DN<20
1 21<DN<30
2 31<DN<40
3 41<DN<50
4 51<DN<60
5 61<DN<70
6 71<DN<80
7 81<DN<90
8 91<DN<100
9 DN>101
X SATURATED

NOTES

1) No exposure classification code was assigned to VILSPA images before 1 August 1978.

2) Prior to 1 Sept 1979, the BACKGROUND digit was not included and the ECC occupied the first two places in the comment line.

3) The Goddard images are described in the comments by the gross DN of the CONTINUUM (C), EMISSION LINES (E) and BACKGROUND (B).

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
PHCAL	NULL	99	9999	0000000	000000	L	1	07376		85122416	000000	000000	162000	000000	000	V	AFTER TURN ON
HS212	URANUS	03	0614	0000000	000000	E	9	01702	2	85100220	000000	000000	200700	016000		V	FIELD FOR LWP6848
PHCAL	NULL	99	9999	0000000	000000	L	2	17835		85122412	000000	000000	121600	000000	001	V	LWR:4.5KV AFTER DEGA
HI224	NULL	99	9999	0000000	000000	L	2	17817		85111117	000000	000000	170644	000000		V	
HI224	NULL	99	9999	0000000	000000	L	1	07077		85111118	000000	000000	183200	000000		V	
HC090	WAVECAL+TF	98	9999	0000000	000000	H	3	26949		85101820	204011	000018	203843	000005	065	V	
WDHFB	OO 0004+33	37	1380	0004579	+330047	H	3	27176	L	85112620	000000	000000	201300	040000		G	C=165,B=86
HC106	TV CAS	22	0744	0016360	585142	L	1	06912	L	85101415	000000	000000	151636	000030	501	V	
HC106	TV CAS	22	0748	0016360	585142	L	3	26935	L	85101415	000000	000000	150748	000100	401	V	
HCHDL	HD 1760	49	0550	0019145	-202006	L	3	27408	L	85122823	000000	000000	232500	008500		G	B=43
PHCAL	HD 3360	20	0370	0034102	+533718	H	1	07052	L	85110708	000000	000000	084600	000021		G	C=220,B=45
PHCAL	HD3360	20	0384	0034103	533720	L	1	07211	L	85120111	000000	000000	112021	000000	702	V	
PHCAL	HD3360	20	0377	0034103	533720	L	1	07070	L	85111018	000000	000000	183405	000001	704	V	
PHCAL	HD3360	20	0377	0034103	533720	L	3	27078	LS	85111018	182927	000000	182528	000001	701	V	401$
PHCAL	HD3360	20	0381	0034103	533720	L	3	27077	LS	85111017	180015	000000	175553	000041	501	V	401$
PHCAL	HD 3360	20	0370	0034103	+533719	L	2	17787	L	85100605	000000	000000	052500	000002		G	C=2X,B=30
PHCAL	HD 3360	20	0370	0034103	+533719	L	2	17788	L	85100606	000000	000000	060200	000002		G	C=2X,B=26
PHCAL	HD 3360	20	0370	0034103	+533719	L	2	17785	S	85100603	035600	000001	000000	000000		G	C=202,B=27
PHCAL	HD 3360	20	0370	0034103	+533719	L	2	17786	L	85100604	000000	000000	044400	000001		G	C=195,B=25
PHCAL	HD 3360	20	0370	0034103	+533719	L	2	17789	SL	85100606	064800	000001	063700	000001		G	C=2X,B=27
PHCAL	HD 3360	20	0370	0034103	+533719	H	3	27045	L	85110708	000000	000000	085100	000024		G	C=190,B=37
PHCAL	HD 3360	20	0370	0034103	+533719	H	1	07382	L	85122506	000000	000000	062500	000021		G	C=222,B=41
PHCAL	HD 3360	20	0370	0034103	+533719	L	2	17784	SL	85100603	031900	000001	031300	000001		G	C=190,B=25
PHCAL	HD 3360	20	0370	0034103	+533719	H	2	17844	L	85123108	000000	000000	083500	000029		G	C=200,B=31
PHCAL	HD 3360	20	0370	0034103	+533719	L	3	26873	L	85100607	000000	000000	072800	000001		G	C=2X,B=21
PHCAL	HD 3360	20	0370	0034103	+533719	H	3	27379	L	85122506	000000	000000	062000	000024		G	C=190,B=35
PHCAL	HD 3360	20	0370	0034103	+533719	L	3	26874	L	85100607	000000	000000	075700	000001		G	C=2X,B=23
PHCAL	HD 3360	20	0370	0034103	+533719	L	3	26875	L	85100608	000000	000000	084100	000002		G	C=2X,B=27
PHCAL	HD3360	20	0384	0034103	533720	L	1	07210	L	85120110	000000	000000	102314	000000	502	V	
PHCAL	HD3360	20	0383	0034103	533720	L	3	27197	LS	85120110	101811	000000	101352	000000	500	V	400$
PHCAL	HD 3360	20	0370	0034103	+533719	H	2	17829	L	85112906	000000	000000	061800	000021		G	C=200,B=30
PHCAL	HD 3360	20	0370	0034103	+533719	H	3	26905	L	85100912	000000	000000	121700	000024		G	C=200,B=38
PHCAL	HD 3360	20	0370	0034103	+533719	L	2	17783	L	85100602	000000	000000	022300	000001		G	C=199,B=26
PHCAL	HD 3360	20	0370	0034103	+533719	H	2	17796	L	85101611	000000	000000	115300	000029		G	C=200,B=35
PHCAL	HD 3360	20	0370	0034103	+533719	H	2	17795	L	85101611	000000	000000	110500	000021		G	C=185,B=30
PHCAL	HD3360	20	0388	0034103	533720	H	1	07212	L	85120112	000000	000000	120113	000021	502	V	
PHCAL	HD3360	20	0384	0034103	533720	H	3	27198	L	85120111	000000	000000	112414	000024	400	V	
PHCAL	HD 3360	20	0370	0034103	+533719	H	1	06879	L	85100912	000000	000000	121300	000021		G	C=235,B=50
HC088	HD3627	47	0364	0036389	303516	H	1	07141	L	85111912	000000	000000	121300	006000	462	V	
HC088	HD3627	47	0363	0036389	303516	L	3	27140	L	85111913	000000	000000	132124	032600	343	V	
GPHPH	NG 205B	81	0890	0037365	+412524	L	3	27036	L	85110514	000000	000000	143100	069700		G	C=175,B=111
GPHPH	OO BKGRD	81	0890	0037365	+412524	L	3	27041	L	85110622	000000	000000	222700	068000		G	B=110
GPHPH	NG 205	81	1500	0037379	+412443	L	3	27023	L	85110320	000000	000000	205000	032745		G	C=128,B=90
GPHPH	NG 205	81	0890	0037379	+412445	L	1	07054	L	85110719	000000	000000	195600	037000		G	C=165,B=118
GPHPH	OOSKY BKGD	81	0890	0037379	+412445	L	3	27048	L	85110720	000000	000000	201900	034700		G	B=80

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
GPHPH	00SKY BKGD	81	9999	0037379	+412443	L	1	07037	L	85110321	000000	000000	215600	026500		G B=115
GPHPH	00SKY BKGD	81	9999	0037379	+412443	L	1	07036	L	85110321	000000	000000	210200	001500		G B=38
HE134	NGC205	81	9999	0037385	412507	E	9	01716	2	85110613	000000	000000	134200	016000		V FOR LWP7051SWP27041
GPHPH	00SKY BKGD	81	0890	0037385	+412507	L	1	07048	L	85110521	000000	000000	212500	064500		G C=183,B=148
HE134	NGC205	81	9999	0037386	412508	E	9	01715	2	85110514	000000	000000	141500	016000		V FOR SWP 27036
PHCAL	00 WAVCAL	98	0000	0037468	+402605	L	2	17798	S	85103106	060000	000001	000000	000000		G E=10X,B=82
OBHPM	00M31CFHT5	13	1760	0037468	+402605	L	3	27004	L	85103012	000000	000000	125500	092000		G C=200,B=145
PHCAL	00 WAVCAL	98	0000	0037468	+402605	H	2	17799	S	85103106	062600	000022	000000	000000		G E=50X,B=105
PHCAL	00 NULL	99	9999	0037468	+402605	L	2	17797	L	85103105	000000	000000	053300	000000		G C=55,B=15
OBHPM	00M31CFHT5	13	1760	0037468	+402605	L	1	07021	L	85103012	000000	000000	125200	094000		G C=1.5X,B=175
HC106	YZ CAS	30	0589	0042184	744255	L	3	26934	L	85101414	000000	000000	140051	000040	501	V
SCHPF	00P/HALLEY	06	1100	0043251	+115251	L	1	07227	L	85120306	000000	000000	062100	001500		G E=234,C=205,B=170
SCHPF	00P/HALLEY	06	1100	0043251	+115251	L	1	07228	L	85120307	000000	000000	072700	001500		G E=208,C=170,B=140
SCHPF	00P/HALLEY	06	1100	0043251	+115251	L	1	07226	L	85120305	000000	000000	050100	002000		G E=208,C=139,B=112
SCHPF	00P/HALLEY	06	1100	0043251	+115251	L	3	27213	L	85120304	000000	000000	042000	002000		G E=59,B=26
SCHPF	00P/HALLEY	06	1100	0043251	+115251	L	1	07225	L	85120303	000000	000000	032300	002000		G E=139,C=55,B=45
SCHPF	00P/HALLEY	06	1100	0044163	+115705	L	3	27212	L	85120302	000000	000000	022900	000500		G E=71,B=16
SCHPF	00P/HALLEY	06	1100	0044163	+115705	L	1	07224	L	85120302	000000	000000	021100	001000		G E=119,C=58,B=42
SCHPF	00P/HALLEY	06	9999	0044163	+115705	D	9	01729	L	85120302	000000	000000	020400	002000		G NO COMMENTS
HA158	HD4539	28	1049	0044537	094225	L	1	07169	L	85112215	000000	000000	153627	000130	501	V
HE171	MKN347	88	1480	0045171	220602	D	9	01725	2	85112912	000000	000000	123600	002000		V FIELD FOR SWP27190
EGHJH	0000MK 347	88	1460	0045180	+220600	L	3	27190	L	85112919	000000	000000	193500	086000		G C=192,B=125
HS231	SKY BGD	07	9999	0048576	123048	L	3	27206	L	85120209	000000	000000	095435	001000	030	V FOR P/HALLEY
HS231	P/HALLEY	06	1095	0050267	122611	L	1	07221	L	85120212	000000	000000	120911	009500	382	V ON NUCLEUS
HS231	P/HALLEY	06	9999	0050267	122611	E	9	01727	2	85120213	000000	000000	134000	016000		V AT R. P.
HS231	P/HALLEY	06	1095	0050267	122611	L	3	27208	L	85120212	000000	000000	125531	004000	050	V NUCLEUS IN LWLA
HS231	P/HALLEY	07	1096	0050267	122611	L	3	27207	L	85120211	000000	000000	113930	001000	030	V NUCLEUS AT R. P.
HS231	P/HALLEY	06	1096	0050267	122611	L	1	07220	L	85120211	000000	000000	112625	001000	232	V ON NUCLEUS
HS231	P/HALLEY	06	1098	0050267	122612	H	1	07222	L	85120215	000000	000000	150725	007400	032	V NUCLEUS IN SWLA
HS231	P/HALLEY	06	1090	0050267	122612	D	9	01726	2	85120213	000000	000000	130500	002000		V
HS231	P/HALLEY	06	1098	0050267	122612	L	3	27209	L	85120214	000000	000000	143610	011700	021	V ON NUCLEUS SWLA
HS231	P/HALLEY	06	1090	0050267	122612	D	9	01728	2	85120215	000000	000000	152100	002000		V
HA048	HD5394	22	0223	0053402	602646	H	3	27390	L	85122615	000000	000000	155216	000008	510	V
HA048	HD5394	20	0230	0053403	602647	H	3	26822	L	85100116	000000	000000	161953	000008	500	V
HA048	HD5394	20	0230	0053403	602647	H	1	06839	L	85100116	000000	000000	162431	000006	501	V
HI110	HD5394	20	0232	0053403	602647	H	1	07390	L	85122615	000000	000000	155555	000007	510	V
HI110	HD5394	20	0221	0053403	602647	H	3	27391	L	85122616	000000	000000	162519	000008	510	V
HA048	HD5394	26	0231	0053403	602647	H	3	27268	L	85121413	000000	000000	132954	000008	500	V
QSHCH	00 0055-26	85	1700	0055324	-265924	L	3	26996	L	85102815	000000	000000	153800	077300		G B=122
QSHCH	00 0055-26	85	1700	0055324	-265925	L	1	07016	L	85102923	000000	000000	233300	076000		G B=135
HQ233	0055-2659	85	1700	0055325	-265926	E	9	01710	2	85102916	000000	000000	161200	004000		V FOR LWP 7016
HQ233	0055-2659	85	1700	0055325	-265926	E	9	01709	2	85102816	000000	000000	164200	004000		V FOR SWP26996
PHCAL	00 WAVCAL	98	0000	0056118	-293737	H	3	27002	S	85103007	074900	000200	000000	000000		G E=50X,B=130
PHCAL	00 WAVCAL	98	0000	0056118	-293737	L	1	07017	S	85103006	060700	000001	000000	000000		G E=10X,B=100
PHCAL	00 WAVCAL	98	0000	0056118	-293737	H	1	07018	S	85103006	063700	000016	000000	000000		G E=50X,B=110

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE		EXP.SMALL		EXP.LARGE	ECC	COMMENT
PHCAL	00 WAVCAL	98	0000	0056118	-293737	L	3	27001	S	85103007	072400	000002	000000	000000		G E=10X,B=105
MLHSS	HD 5737	27	0440	0056119	-293738	H	3	27069	L	85111008	000000	000000	081900	000200		G C=230,B=40
MLHSS	HD 5737	27	0440	0056119	-293738	H	3	27037	L	85110607	000000	000000	073800	000200		G C=220,B=42
MLHSS	HD 5737	27	0440	0056119	-293738	H	3	27053	L	85110809	000000	000900	090200	000200		G C=227,B=45
MLHSS	HD 5737	27	0440	0056119	-293737	H	3	27025	L	85110407	000000	000000	074600	000200		G C=225,B=42
MLHSS	HD 5737	27	0440	0056119	-293738	H	3	27043	L	85110705	000000	000000	052800	000200		G C=225,B=36
MLHSS	HD 5737	27	0440	0056119	-293738	H	1	07081	L	85111209	000000	000000	091900	000145		G C=1.5X,B=50
MLHSS	HD 5737	27	0440	0056119	-293738	H	3	27092	L	85111209	000000	000000	091000	000200		G C=220,B=40
HA124	PHL932	70	1224	0057190	152800	L	3	27142	L	85112012	000000	000000	125827	000330	400	V
HA124	PHL932	70	1232	0057190	152800	L	1	07144	L	85112016	000000	000000	164456	000448	501	V
HA124	PHL932	70	1220	0057190	152800	H	3	27143	L	85112013	000000	000000	133926	029000	402	V
HA124	PHL932	70	1229	0057190	152800	H	1	07154	L	85112112	000000	000000	120948	039700	505	V
HC005	GD 274	16	1250	0104140	505424	L	3	27349	L	85122112	000000	000000	120056	001100	501	V
AGHCW	NG 404	88	1100	0106393	+352710	L	3	27232	L	85120718	000000	000000	182000	038500		G C=116,B=85
AGHCW	NG 404	88	1100	0106393	+352710	L	1	07215	L	85120118	000000	000000	181700	039300		G C=208,B=135
ISHPF	HD 7964	30	0480	0116426	+270006	H	1	07297	L	85121318	000000	000000	185400	001000		G C=187,B=48
ISHPF	HD 7964	30	0480	0116426	+270006	H	3	27260	L	85121319	000000	000000	192900	002700		G C=255,B=50
HC030	GD1339	85	1460	0119303	-283637	L	1	07188	L	85112615	000000	000000	151535	009000	313	V
HC030	GD1339	85	1460	0119303	-283637	L	3	27174	L	85112613	000000	000000	134545	008000	341	V
HQ038	FAIRALL 9	84	1431	0121511	-590358	L	1	07023	L	85110117	000000	000000	173849	006900	452	V
HQ038	FAIRALL 9	84	1347	0121511	-590358	L	1	07022	L	85110114	000000	000000	145041	007300	452	V
HQ038	FAIRALL 9	84	1399	0121511	-590358	L	3	27007	L	85110111	000000	000000	115500	017000	372	V
HQ038	FAIRALL 9	84	1421	0121511	-590358	L	3	27008	L	85110116	000000	000000	161011	008300	362	V
HQ038	FAIRALL 9	84	1410	0121512	-590359	L	1	07396	L	85122710	000000	000000	104629	007000	353	V
HQ039	FAIRALL 9	84	1427	0121512	-590359	L	3	27399	L	85122712	000000	000000	120240	007000	351	V
HQ038	FAIRALL 9	84	1421	0121512	-590359	L	3	27400	L	85122714	000000	000000	140343	016300	361	V
HQ038	FAIRALL 9	84	1424	0121512	-590359	L	1	07397	L	85122713	000000	000000	131741	004000	342	V
EGHCB	OOMINK.OBJ	65	1750	0123226	-013751	L	3	27218	L	85120318	000000	000000	184400	020500		G C=70,B=58
EGHCB	OOMINK.OBJ	65	1750	0123226	-013751	L	3	27219	L	85120322	000000	000000	224700	011200		G E=75,C=120,B=90
OBHJS	BD+60 261	12	0860	0129124	+605222	L	3	26980	L	85102510	000000	000000	102800	000230		G C=121,B=20
SCHPF	OOP/HALLEY	06	0600	0132489	+031432	H	1	07313	L	85121519	000000	000000	192400	006000		G E=145,B=45
HA023	GD419	37	1335	0134550	831948	H	3	27188	L	85112811	000000	000000	115009	041700	504	V
OBHJS	HD 10125	13	0820	0137215	+635514	L	3	26981	L	85102511	000000	000000	112900	000210		G C=131,B=16
XBHGR	OOH0139-68	59	1600	0139375	-680832	L	3	27345	L	85122017	000000	000000	175300	031100		G E=227,B=81
XBHGR	OOH0139-68	59	1600	0139375	-680832	L	1	07348	L	85122020	000000	000000	200500	009000		G E=97,B=45
EGHGM	00 MKN573	84	1400	0141228	+020556	L	1	07283	L	85121022	000000	000000	220900	016000		G E=101,C=85,B=65
EGHGM	00 MKN573	84	1400	0141229	+020556	L	3	27247	L	85121018	000000	000000	181700	022500		G E=255,C=72,B=45
HC030	GD1401	37	1430	0145489	-254739	L	3	27175	L	85112617	000000	000000	172258	008400	601	V
OBHJS	HD 236894	12	0940	0148496	+581119	L	3	26979	L	85102509	000000	000000	093800	000300		G C=134,B=23
DMHJL	L1159-16	48	1230	0157279	+125005	L	3	27289	L	85121618	000000	000000	182500	038500		G B=100
DCHNE	HD 236948	53	0930	0204180	+581223	L	1	06953	L	85102005	000000	000000	055300	005000		G C=207,B=88
OX30K	HD 15008	30	0408	0220511	-685310	H	1	07418	S	85123007	070100	000900	000000	000000		G C=200,B=42
OBHJS	HD 15137	13	0780	0224343	+521933	H	3	26978	L	85102507	000000	000000	073100	001600		G C=125,B=55
OBHJS	HD 15137	13	0780	0224343	+521933	H	1	06990	L	85102508	000000	000000	081400	001400		G C=206,B=107
HC005	G 174-5	37	1370	0232510	523111	L	3	27350	L	85122113	000000	000000	131507	004000	401	V

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
HQ235	NGC1068	84	1121	0240070	-001331	L	1	07248	L	85120513	000000	000000	130848	003500	342	V	UNCERTAIN EXP. TIME
CSHDH	HD 17081	22	0423	0241444	-140410	L	1	07151	SL	85112107	073700	000005	073700	000005		G	C=3X,B=31
CSHDH	HD 17081	22	0423	0241444	-140410	L	3	27150	SL	85112107	074600	000007	074700	000007		G	C=210,B=18
CSHDH	HD 17081	22	0423	0241449	-140409	L	1	07152	SL	85112109	091700	001200	091800	001200		G	C=155,B=39
CSHJL	00 WAVECAL	98	9999	0247018	+554121	H	1	07025	S	85110202	024600	000016	000000	000000		G	E=50X,B=105
CSHJL	HD 17506	49	0380	0247019	+554122	H	1	07024	L	85110120	000000	000000	201800	035000		G	E=8X,C=230,B=95
CSHJL	HD 17506	49	0380	0247019	+554122	F	9	01712	L	85110120	000000	000000	200000	016000		G	NO COMMENTS
CCHMG	HD 17925	46	0604	0250060	-125807	L	3	27358	L	85122218	000000	000000	181000	018000		G	E=138,C=95,B=55
CCHMG	HD 17925	46	0604	0250060	-125807	L	1	07362	L	85122221	000000	000000	211600	000130		G	C=175,B=35
SBHFF	HD 17878	39	0400	0250419	+523334	H	1	07184	L	85112508	000000	000000	083400	002200		G	C=1.5X,B=59
SBHFF	HD 17878	39	0400	0250419	+523334	H	1	07183	L	85112507	000000	000000	072100	002200		G	C=2X,B=79
CCHJL	HD 18884	49	0250	0259397	+035341	H	1	07266	L	85120806	000000	000000	064700	001800		G	E=1.2X,C=108,B=72
CSHDB	HD 19476	47	0380	0306068	+444010	L	1	07026	L	85110204	000000	000000	040500	000252		G	C=255,B=35
CVHES	PG0308+096	37	1380	0308129	+093809	0	3	27392	L	85122618	000000	000000	181300	012000		G	
CCHHJ	HD 20234	50	0570	0311168	-573029	H	1	07290	L	85121209	000000	000000	094900	079500		G	E=190,C=215,B=155
HC202	TW HOR	50	9999	0311169	-573030	E	9	01732	2	85121209	000000	000000	094000	016000		V	LWP 7290
EBHJL	HD 20301	45	0688	0312419	-354433	L	3	27056	L	85110823	000000	000000	230000	022000		G	C=1.5X,B=35
EBHJL	00 WAVECAL	98	9999	0312419	-354433	H	1	07056	L	85110823	000000	000000	234400	000016		G	E=60X,B=105
EBHJL	HD 20301	45	0688	0312419	-354433	H	1	07055	L	85110820	000000	000000	202300	015000		G	E=136,C=198,B=60
HC036	HD20630	44	0525	0316441	031116	H	3	27344	L	85122010	000000	000000	101716	039000	344	V	
CCHTS	HD 20630	44	0480	0316441	+031117	L	3	26814	L	85100104	000000	000000	042200	002000		G	E=52X,C=60,B=32
CCHTS	HD 20630	44	0480	0316441	+031117	H	1	06834	L	85100102	000000	000000	025800	007500		G	E=3.0X,C=3.0X,B=81
CCHJL	HD 20720	49	0370	0317175	-215620	L	3	27234	L	85120808	000000	000000	081800	003000		G	C=43,B=29
CCHJL	HD 20720	49	0370	0317175	-215620	H	1	07269	L	85120901	000000	000000	012500	005000		G	E=1.5X,C=80,B=44
OD77K	00 MRK 607	84	1400	0322180	-031303	L	3	27431	L	85123117	000000	000000	172300	026000		G	C=130,B=100
MLHSS	HD 21071	27	0610	0322237	+485647	H	3	27039	L	85110609	000000	000000	094400	000900		G	C=200,B=45
HA184	HD21551	22	0599	0327043	475601	H	3	26895	L	85100815	000000	000000	152930	002000	611	V	
MLHSS	HD 21699	27	0550	0328359	+475117	H	3	27093	L	85111210	000000	000000	103100	000700		G	C=235,B=40
MLHSS	HD 21699	27	0550	0328359	+475117	H	3	27054	L	85110810	000000	000000	103800	000700		G	C=243,B=42
MLHSS	HD 21699	27	0550	0328359	+475117	H	3	27040	L	85110610	000000	000000	104200	000700		G	C=240,B=40
PHCAL	00 WAVECAL	98	0000	0330071	-031850	H	3	27254	S	85121208	082800	000200	000000	000000		G	E=60X,B=125
PHCAL	00 WAVECAL	98	0000	0330071	-031850	L	3	27253	S	85121208	080200	000002	000000	000000		G	E=20X,B=102
IMHRH	HD 22049	46	0370	0330318	-093734	H	3	26919	S	85101122	223100	043500	000000	000000		G	E=130,C=138,B=99
IMHRH	HD 22049	46	0370	0330319	-093734	H	3	27141	L	85111920	000000	000000	203200	037500		G	E=2X,C=171,B=127
CCHMG	SA 130564	46	0370	0330343	-093734	H	1	07355	L	85122203	000000	000000	033200	000700		G	E=218,C=125,B=41
CCHMG	SA 130564	46	0370	0330343	-093734	L	3	27354	L	85122202	000000	000000	022400	006000		G	E=186,C=100,B=41
CCHMG	SA 130564	46	0370	0330344	-093735	H	1	07369	L	85122322	000000	000000	221800	000700		G	B=35
CCHMG	SA 130564	46	0370	0330344	-093735	L	3	27367	L	85122321	000000	000000	211700	005500		G	E=198,C=98,B=38
CCHMG	SA 130564	46	0370	0330344	-093735	L	3	27346	L	85122101	000000	000000	014800	006000		G	E=200,C=99,B=35
CCHMG	SA 130564	46	0370	0330344	-093735	H	1	07349	L	85122102	000000	000000	025800	002000		G	E=2X,C=140,B=39
CCHMG	SA 130564	46	0370	0330344	-093735	H	1	07364	L	85122303	000000	000000	034600	000700		G	E=208,C=125,B=45
CCHMG	SA 130564	46	0370	0330344	-093735	L	3	27360	L	85122302	000000	000000	023000	007000		G	E=210,C=120,B=50
MLHSS	HD 22136	27	0690	0332270	+465534	H	3	27044	L	85110706	000000	000000	064600	003000		G	C=250,B=105
IMHRH	HD 22468	46	0140	0334130	+002527	H	3	27236	S	85120818	180700	038500	000000	000000		G	E=216,B=91
SBHFF	HD 23089	39	0480	0341387	+631122	H	1	07182	L	85112506	000000	000000	060200	002600		G	C=1.5X,B=72

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL	EXP.LARGE	ECC	COMMENT
PHCAL	OOSAFTY RD	99	9999	0346573	+241152	L	2	17782	L	85100522	000000 000000	220100 000000		G B=50
PLHNE	HD RW CAM	53	0860	0350150	+583022	L	1	07378	L	85122422	000000 000000	220800 003500		G C=205,B=40
PLHNE	HD RW CAM	53	0860	0350150	+583022	L	3	27377	L	85122422	000000 000000	225100 011500		G C=105,B=41
HA184	HD24712	36	0636	0352550	-121439	H	1	06872	L	85100813	000000 000000	135237 003000	513	V 30+15M BUT OUT OF AP
ISHJS	HD 26326	21	0540	0407015	-163059	H	1	07008	L	85102808	000000 000000	085000 000200		G C=203,B=51
PTHTA	HD 26965	46	0440	0412581	-074345	H	1	06895	L	85101210	000000 000000	105600 002000		G E=198,C=210,B=85
PTHTA	HD 26965	46	0440	0412581	-074345	L	3	26921	L	85101210	000000 000000	103500 001500		G E=82,C=70,B=60
TTHGB	00V410 TAU	58	1090	0415248	+282002	L	1	06964	L	85102206	000000 000000	063000 005000		G E=140,C=82,B=51
PMHGB	00 HP TAU	58	1210	0416086	+285916	H	1	06963	L	85102202	000000 000000	020000 018000		G E=145,B=85
TTHJL	HD 283571	58	1000	0418508	+281934	L	1	06927	L	85101704	000000 000000	042500 001000		G E=189,C=70,B=39
TTHJL	HD 283571	58	1000	0418508	+281934	H	1	06926	L	85101622	000000 000000	222000 031500		G E=254,C=135,B=96
TTHJL	HD 283571	58	1000	0418508	+281934	L	1	06915	L	85101500	000000 000000	000600 001000		G E=160,C=60,B=33
TTHJL	HD 283571	58	1000	0418508	+281934	L	3	26939	L	85101421	000000 000000	215800 038000		G E=171,C=120,B=6?
TTHJL	00 NULL	99	9999	0418508	+281934	L	3	26947	L	85101622	000000 000000	224400 000000		G B=17
TTHGB	HD 283572	44	0910	0418525	+281107	L	1	06977	L	85102310	000000 000000	104300 001200		G E=154,C=155,B=73
HQ235	NGC1566	84	1110	0418527	-550323	L	3	26910	L	85101016	000000 000000	161959 026700	332	V
HQ235	NGC1566	84	1294	0418528	-550324	L	1	07247	L	85120509	000000 000000	094939 012000	334	V
HQ235	NGC1566	84	1125	0418528	-550324	L	1	07249	L	85120515	000000 000000	154358 006300	332	V
HQ235	NGC 1566	84	1288	0418528	-550324	L	1	06887	L	85101014	000000 000000	141010 012000	334	V
CSHJL	HD 284419	58	1020	0419042	+192505	L	1	06941	L	85101811	000000 000000	112400 001500		G E=3X,C=117,B=48
CSHJL	HD 284419	58	1020	0419042	+192505	L	1	06932	L	85101711	000000 000000	111500 000500		G E=216,C=75,B=53
CSHJL	HD 284419	58	1020	0419042	+192505	L	1	06933	L	85101711	000000 000000	115900 000500		G E=221,C=60,B=40
CSHJL	HD 284419	58	1020	0419042	+192505	L	1	06934	L	85101712	000000 000000	124100 000500		G E=195,C=60,B=3?
HC090	HD284419	58	1020	0419042	192506	L	1	06943	L	85101813	000000 000000	135417 018000	115	V
HC090	HD28441	58	1019	0419042	192506	E	9	01703	2	85101713	000000 000000	132300 016000		V FES FOR SWP26948
CSHJL	HD 284419	58	1020	0419042	+192505	L	1	06940	L	85101810	000000 000000	103800 000500		G E=230,C=79,B=50
CSHJL	HD 284419	58	1020	0419042	+192505	L	1	06942	L	85101812	000000 000000	121200 001500		G E=3X,C=117,B=42
HC090	HD 284419	58	1020	0419042	192506	H	3	26948	L	85101713	000000 000000	133457 114500	128	V READ AT VILSPA 18OCT
HE077	NGC1569	82	1316	0426025	644431	L	3	27235	L	85120811	000000 000000	115428 015000	231	V
HE077	NGC1569	82	1322	0426025	644431	L	1	07268	L	85120814	000000 000000	143156 013500	313	V
HE077	NGC1569	82	1323	0426037	644429	L	1	07267	L	85120810	000000 000000	101138 008000	313	V
HE077	NGC1569	82	1500	0426037	644429	L	3	27231	L	85120710	000000 000000	103409 037300	412	V
TTHGB	00UX TAU A	58	1130	0427098	+180722	L	1	06974	L	85102305	000000 000000	053300 009000		G E=151,C=140,B=107
TTHGB	00UX TAU A	58	1130	0427098	+180722	L	1	06980	L	85102403	000000 000000	032900 007000		G E=140,C=126,B=89
TTHGB	00UX TAU A	58	1130	0427098	+180722	L	1	06978	L	85102311	000000 000000	114000 005700		G E=112,C=116,B=60
TTHGB	00UX TAU A	58	1130	0427098	+180722	L	1	06966	L	85102209	000000 000000	092500 000900		G B=85
TTHGB	00 GG TAU	58	1240	0429370	+172522	L	1	06967	L	85102210	000000 000000	102200 002000		G E=250,C=140,B=114
TTHGB	00 GG TAU	58	1240	0429370	+172522	L	1	06975	L	85102308	000000 000000	082900 001200		G E=177,C=120,B=100
HQ226	3C 120	84	1452	0430316	051500	L	3	27009	L	85110213	000000 000000	131945 012000	331	V
HQ226	3C 120	84	1400	0430316	051500	L	3	26930	L	85101319	000000 000000	194902 006000	231	V
TTHGB	00 DN TAU	58	1250	0432255	+240852	L	1	06968	L	85102211	000000 000000	114700 006000		G E=175,C=87,B=64
HC161	HD29697	46	0840	0438220	204834	E	9	01707	2	85102516	000000 000000	164000 016000		V FOR SWP26984
LDHDD	HD 29697	46	0800	0438220	+204834	L	1	06992	L	85102602	000000 000000	023600 000600		G E=120,C=63,B=35
LDHDD	HD 29697	46	0800	0438220	+204834	L	3	26984	L	85102516	000000 000000	165600 056000		G E=221,C=139,B=110
TTHGB	00 DS TAU	58	1230	0444389	+291956	L	1	06976	L	85102309	000000 000000	095400 001200		G E=186,C=140,B=112

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
TTHGB	00 DS TAU	58	1230	0444389	+291956	L	1	06965	L	85102208	000000	000000	080900	003000		G E=1.5X,C=157,B=113
PMHGB	00 GM AUR	58	1200	0452001	+301711	H	1	06973	L	85102222	000000	000000	221700	036000		G E=219,B=157
LGHJL	HD 31398	47	0270	0453440	+330520	H	1	06939	L	85101809	000000	000000	091900	003000		G E=2X,C=222,B=160
LGHJL	HD 31398	47	0270	0453440	+330520	H	1	06931	L	85101710	000000	000000	100400	001000		G E=226,C=165,B=118
KGHJL	HD 31767	47	0450	0455573	+013820	L	3	26922	L	85101211	000000	000000	114500	003000		G B=23
KGHJL	HD 31767	47	0450	0455573	+013820	H	1	06896	L	85101212	000000	000000	122000	003000		G E=86,C=80,B=40
HE208	N 11 ALP	12	1200	0456480	-662900	L	3	27258	L	85121313	000000	000000	134939	002000	500	V
HE208	N 11 ALP	12	1192	0456480	-662900	L	1	07294	L	85121313	000000	000000	131343	001400	502	V
HE208	N II ALP	12	1195	0456480	-662900	L	3	27257	L	85121312	000000	000000	122905	001300	400	V
HE208	N11SK-6633	12	1204	0457000	-662900	L	3	27259	L	85121315	000000	000000	154230	002200	601	V
HE208	N11SK-6633	12	1212	0457000	-662900	L	1	07295	L	85121314	000000	000000	144616	001400	603	V
HE208	N11SK-6641	12	1166	0457420	-663200	L	1	07296	L	85121316	000000	000000	161554	001200	703	V
ISHJS	HD 32612	20	0640	0501349	-142619	H	1	07007	L	85102807	000000	000000	072700	000400		G C=205,B=50
HA181	R71	23	1108	0502429	-712359	H	1	07121	L	85111712	000000	000000	120135	038000	676	V
HA181	R71	23	1111	0502429	-712359	L	3	27129	L	85111718	000000	000000	182642	002000	500	V
OD81K	HD 32656	21	0680	0502474	+262147	H	1	06946	L	85101908	000000	000000	080300	003500		G C=4X,B=153
OD81K	HD 32656	21	0680	0502474	+262147	H	1	06944	L	85101905	000000	000000	053400	003500		G C=3X,B=60
OD81K	HD 32656	21	0680	0502474	+262147	H	3	26951	L	85101906	000000	000000	061500	003200		G C=185,B=43
OD81K	HD 32656	21	0680	0502474	+262147	H	1	06945	L	85101906	000000	000000	065300	001100		G C=160,B=45
OD81K	HD 32656	21	0680	0502474	+262147	H	3	26952	L	85101907	000000	000000	072300	003200		G C=201,B=65
PHCAL	HD 32630	21	0320	0503001	+411007	L	1	07014	L	85102910	000000	000000	102600	000001		G C=2X,B=32
PHCAL	HD 32630	21	0320	0503002	+411008	L	1	07034	L	85110310	000000	000000	100800	000002		G C=1.5X,B=35
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	27020	L	85110309	000000	000000	090300	000001		G C=185,B=17
PHCAL	HD 32630	21	0320	0503002	+411008	L	1	07033	L	85110308	000000	000000	084700	000002		G C=2X,B=50
PHCAL	HD 32630	21	0320	0503002	+411008	L	1	06862	L	85100704	000000	000000	043600	000001		G C=1.2X,B=35
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	27021	L	85110310	000000	000000	101900	000001		G C=192,B=15
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	26972	L	85102412	000000	000000	123700	000002		G C=2X,B=21
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	26876	L	85100609	000000	000000	094300	000001		G C=225,B=18
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	26884	L	85100703	000000	000000	032500	000001		G C=170,B=16
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	26885	L	85100704	000000	000000	040700	000002		G C=2X,B=28
PHCAL	HD 32630	21	0320	0503002	+411008	L	1	06861	L	85100702	000000	000000	024500	000001		G C=230,B=32
PHCAL	HD 32630	21	0320	0503002	+411008	L	1	07013	L	85102909	000000	000000	091700	000001		G C=255,B=32
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	26879	L	85100611	000000	000000	110700	000001		G C=2X,B=22
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	26880	L	85100611	000000	000000	113800	000001		G C=220,B=35
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	26998	L	85102910	000000	000000	101800	000002		G C=2X,B=15
PHCAL	HD 32630	21	0320	0503002	+411008	L	1	07012	L	85102908	000000	000000	083700	000002		G C=225,B=45
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	26877	L	85100610	000000	000000	101200	000001		G C=225,B=19
PHCAL	HD 32630	21	0320	0503002	+411008	L	3	26878	L	85100610	000000	000000	103900	000001		G C=2X,B=23
SCHPF	00 HALLEY	06	9999	0506015	+220239	L	3	27033	L	85110421	000000	000000	214100	018500		G B=72
SCHPF	00 HALLEY	06	9999	0506015	+220239	D	9	01714	L	85110502	000000	000000	025900	002000		G NO COMMENTS
SCHPF	00 HALLEY	06	9999	0506015	+220239	L	1	07046	L	85110503	000000	000000	034000	003000		G E=121,B=60
SCHPF	00 HALLEY	06	1210	0506019	+220239	L	1	07047	L	85110506	000000	000000	062600	001200		G E=112,C=90,B=70
SCHPF	00 HALLEY	06	1210	0506019	+220239	L	3	27034	L	85110506	000000	000000	062700	001200		G B=45
MLHCW	HD 33328	26	0430	0506449	-084859	H	3	26869	L	85100510	000000	000000	105900	000048		G C=205,B=39
MLHCW	HD 33328	26	0430	0506450	-084900	H	3	26828	L	85100208	000000	000000	081000	000148		G C=2X,B=60

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
MLHCW	HD 33328	26	0430	0506450	-084900	H	3	27425	L	85123102	000000	000000	021700	000048		G C=205,B=38
MLHCW	HD 33328	26	0430	0506450	-084900	H	3	26830	L	85100209	000000	000000	093100	000048		G C=205,B=40
MLHCW	HD 33328	26	0430	0506450	-084900	H	3	26848	L	85100409	000000	000000	090900	000048		G C=203,B=38
PTHTA	00 WAVCAL	98	9999	0512594	+455657	H	1	07114	S	85111608	081900	000016	000000	000000		G E=50X,B=110
PTHTA	HD 34029	41	0008	0512594	+455657	H	3	27121	S	85111603	030700	018000	000000	000000		G E=3X,C=3X,B=120
PTHTA	HD 34029	41	0008	0512594	+455657	H	1	07111	S	85111602	025600	000300	000000	000000		G E=173,C=225,B=35
PTHTA	HD 34029	41	0008	0512594	+455657	H	1	07110	S	85111601	012700	000230	000000	000000		G E=220,C=1.1X,B=40
PTHTA	HD 34029	41	0008	0512594	+455657	H	3	27120	L	85111523	000000	000000	232600	009000		G E=3X,C=3X,B=94
PTHTA	HD 34029	41	0008	0512594	+455657	H	1	07109	L	85111522	000000	000000	221000	000130		G E=3X,C=3X,B=48
PTHTA	HD 34029	41	0008	0512594	+455657	H	3	27119	L	85111520	000000	000000	203200	009000		G E=3X,C=3,B=72
PTHTA	HD 34029	41	0013	0512594	+455657	H	3	27124	L	85111608	000000	000000	085300	001500		G E=210,C=198,B=57
PTHTA	00 WAVCAL	98	9999	0512594	+455657	H	3	27123	S	85111608	081400	000018	000000	000000		G E=3X,B=112
PTHTA	HD 34029	41	0008	0512594	+455657	H	1	07108	L	85111520	000000	000000	202500	000130		G E=3X,C=3X,B=52
PTHTA	HD 34029	41	0008	0512594	+455657	H	3	27122	S	85111606	064200	003000	000000	000000		G E=207,C=185,B=105
PTHTA	HD 34029	41	0008	0512594	+455657	H	1	07112	S	85111604	041200	000300	000000	000000		G E=226,C=2X,B=41
PHCAL	HD 34816	20	0430	0517161	-131336	L	1	07019	L	85103009	000000	000000	094100	000002		G C=2X,B=37
PHCAL	HD 34816	20	0430	0517162	-131337	L	1	06949	L	85101912	000000	000000	122000	000001		G C=2X,B=35
PHCAL	HD 34816	20	0430	0517162	-131337	L	3	27003	L	85103009	000000	000000	095100	000001		G C=2X,B=15
PHCAL	HD 34816	20	0430	0517162	-131337	L	3	26955	L	85101912	000000	000000	122400	000001		G C=2X,B=18
PHCAL	HD 34816	20	0430	0517162	-131337	L	3	26954	L	85101911	000000	000000	111100	000001		G C=2X,B=18
PHCAL	HD 34816	20	0430	0517162	-131337	L	1	06948	L	85101911	000000	000000	110600	000001		G C=2X,B=33
PHCAL	HD 34816	20	0430	0517162	-131337	H	3	26953	L	85101910	000000	000000	100800	000022		G C=180,B=37
PHCAL	HD 34816	20	0430	0517162	-131337	H	1	06947	L	85101910	000000	000000	100200	000022		G C=203,B=45
PHCAL	HD 34816	20	0430	0517162	-131337	H	2	17800	L	85103108	000000	000000	085500	000035		G C=190,B=32
LDHDD	HD 35171	46	0800	0520430	+171642	L	1	06993	L	85102603	000000	000000	034600	001800		G E=177,C=100,B=41
CSHDB	HD 35620	47	0510	0524198	+342607	L	1	07027	L	85110205	000000	000000	052300	001800		G C=121,B=35
PMHGB	00 CO ORI	58	1060	0524513	+112312	H	1	06979	L	85102322	000000	000000	221700	027000		G E=161,B=122
PMHGB	00 GW ORI	58	0970	0526208	+114953	H	1	06962	L	85102122	000000	000000	220600	018500		G E=249,C=105,B=63
HI224	2A0526-328	59	1404	0527345	-325124	L	3	27110	L	85111412	000000	000000	122654	006800	331	V 12XABOUT 6M @ 3RPS.
HI224	2A0526-328	59	1380	0527345	-325124	L	3	27102	L	85111312	000000	000000	121506	007100	331	V 12XABOUT 6M@3RPS
HI224	2A0526-328	59	1402	0527345	-325124	L	3	27086	L	85111112	000000	000000	123955	006600	331	V 3 REF PNTS:(76,-85),
HI224	0526-328	59	1385	0527345	-325124	L	3	27133	L	85111812	000000	000000	122539	011845	340	V MULTIPLE
HA181	MWC112	13	1202	0528120	-690100	H	3	27125	L	85111612	000000	000000	123245	036200	343	V
HE201	NGC2004	83	1094	0530419	-671922	L	1	07307	L	85121415	000000	000000	154049	002000	401	V
HE201	NGC2004	83	1094	0530422	-671920	L	3	27269	L	85121415	000000	000000	150604	003000	300	V
HE201	NGC2004	83	1098	0530436	-671921	L	3	27246	L	85121014	000000	000000	143301	007000	702	V
HE201	NGC2004	83	1098	0530438	-671920	L	1	07281	L	85121013	000000	000000	135209	004000	702	V
HE201	NGC2004	83	1094	0530450	-671918	L	1	07306	L	85121414	000000	000000	144751	001300	501	V
HA199	NGC2004	83	1098	0530450	-671918	L	3	27244	L	85121011	000000	000000	110729	002500	501	V
HE201	NGC2004	83	1098	0530464	-671916	L	1	07280	L	85121011	000000	000000	114031	004500	702	V
HE201	NGC2004	83	1098	0530466	-671915	L	3	27245	L	85121012	000000	000000	123408	007000	501	V
HE201	NGC2004	83	1094	0530480	-671914	L	3	27270	L	85121416	000000	000000	161411	003300	401	V
DCHDM	HD 37350	53	0380	0533112	-623119	H	1	07050	L	85110606	000000	000000	062000	003800		G C=1.5X,B=90
HC141	HD37350	41	0438	0533113	-623120	H	1	06984	L	85102414	000000	000000	141610	005500	601	V
OD67K	HH IF	64	1550	0533545	-064657	L	3	26950	L	85101822	000000	000000	224000	028100		G E=111,C=133,B=90

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
HI151	H0538-577	59	1461	0534032	-580332	L	1	07134	L	85111817	000000	000000	171059	009500	502	V
HI151	H0538-577	59	1450	0534033	-580333	L	3	27103	L	85111317	000000	000000	170602	009500	451	V
HI224	H0538-577	59	1450	0534033	-580333	L	2	17818	L	85111117	000000	000000	175024	005100	302	V UVC=4.5 KV
HI151	H0538-577	59	1450	0534033	-580333	L	1	07090	L	85111315	000000	000000	155740	006000	303	V
HI151	H0538-577	59	1445	0534033	-580333	L	3	27134	L	85111815	000000	000000	153210	009000	451	V
HI224	H0538-577	59	1450	0534033	-580333	L	3	27087	L	85111116	000000	000000	161734	007700	441	V
CSHDB	HD 37160	47	0410	0534093	+091554	L	1	07028	L	85110206	000000	000000	065900	000240		G C=230,B=23
ISHPF	HD 37507	31	0480	0536278	-071421	H	3	27249	L	85121105	000000	000000	054200	002700		G C=203,B=48
ISHPF	HD 37507	31	0480	0536278	-071421	H	1	07285	L	85121105	000000	000000	050700	000900		G C=188,B=47
ISHPF	HD 37507	31	0480	0536278	-071421	H	1	07286	L	85121107	000000	000000	072200	000900		G C=170,B=47
ISHPF	HD 37507	31	0480	0536278	-071421	H	3	27255	L	85121303	000000	000000	031600	002700		G C=195,B=40
ISHPF	HD 37507	31	0480	0536278	-071421	H	1	07287	L	85121108	000000	000000	084500	000500		G C=161,B=40
ISHPF	HD 37507	31	0480	0536278	-071421	H	1	07292	L	85121305	000000	000000	050300	000900		G C=170,B=45
ISHPF	HD 37507	31	0480	0536278	-071421	H	1	07284	L	85121102	000000	000000	022400	000900		G C=181,B=44
ISHPF	HD 37507	31	0480	0536278	-071420	H	1	07301	L	85121404	000000	000000	041400	001000		G C=200,B=50
ISHPF	HD 37507	31	0480	0536278	-071421	H	3	27248	L	85121103	000000	000000	030700	002700		G C=200,B=42
ISHPF	HD 37507	31	0480	0536278	-071421	H	3	27256	L	85121305	000000	000000	053600	002700		G C=200,B=45
ISHPF	HD 37507	31	0480	0536278	-071421	H	1	07300	L	85121403	000000	000000	030300	001000		G C=190,B=42
ISHPF	HD 37507	31	0480	0536278	-071421	H	3	27263	L	85121401	000000	000000	012800	002700		G C=195,B=40
ISHPF	HD 37507	31	0480	0536278	-071421	H	1	07299	L	85121400	000000	000000	003100	001000		G C=193,B=50
ISHPF	HD 37507	31	0480	0536278	-071421	H	3	27262	L	85121323	000000	000000	232500	002700		G C=210,B=42
ISHPF	HD 37507	31	0480	0536278	-071421	H	1	07298	L	85121322	000000	000000	223500	001000		G C=192,B=46
ISHPF	HD 37507	31	0480	0536278	-071421	H	1	07291	L	85121302	000000	000000	024300	000900		G C=175,B=45
ISHPF	HD 37507	31	0480	0536278	-071421	H	3	27261	L	85121321	000000	000000	214800	002700		G C=206,B=42
MLHCW	HD 37490	26	0450	0536326	+040541	H	3	26831	L	85100210	000000	000000	101100	000210		G C=245,B=57
HCHBB	HD 37453	39	0820	0536442	+300336	L	1	07058	L	85110905	000000	000000	054800	000500		G C=180,B=32
HCHBB	HD 37453	39	0820	0536443	+300337	H	1	06836	L	85100107	000000	000000	073900	005600		G C=200,B=143
HCHBB	HD 37453	39	0820	0536443	+300337	L	3	26816	L	85100108	000000	000000	084000	001800		G C=192,B=65
HCHBB	HD 37453	39	0820	0536443	+300337	L	1	06837	L	85100109	000000	000000	091500	000450		G C=230,B=61
HCHBB	HD 37453	39	0820	0536443	+300337	L	3	27057	L	85110905	000000	000000	051000	002200		G C=197,B=18
HCHBB	HD 37453	39	0820	0536443	+300337	H	1	07057	L	85110903	000000	000000	035300	007000		G E=95,C=100,B=45
OD78K	004U541+60	59	1500	0538158	+605002	L	3	26900	L	85100904	000000	000000	040500	005000		G E=202,C=125,B=90
OD78K	004U541+60	59	1500	0538160	+605003	L	3	26899	L	85100902	000000	000000	020000	010000		G E=251,C=100,B=75
OD78K	004U541+60	59	1500	0538160	+605003	L	3	26898	L	85100900	000000	000000	002600	007000		G E=191,C=60,B=40
OBHJS	HD 247042	12	0950	0542000	+290817	L	3	26993	L	85102712	000000	000000	124700	000200		G C=70,B=15
HM188	HD38678	30	0385	0544413	-145020	H	1	07358	L	85122210	000000	000000	103701	000330	603	V
CSHDH	HD 39060	31	0384	0546050	-510501	L	1	07157	SL	85112123	230500	002000	230600	002000		G C=63,B=34
CSHDH	HD 39060	31	0384	0546050	-510501	L	3	27153	SL	85112123	233600	002000	232700	002000		G C=40,B=26
CSHDH	HD 39060	31	0384	0546054	-510508	L	3	27151	SL	85112120	203700	002000	203800	002000		G B=22
CSHDH	HD 39060	31	0384	0546054	-510508	L	1	07155	SL	85112120	201100	002000	201200	002000		G C=60,B=36
CSHDH	HD 39060	31	0384	0546054	-510455	L	1	07147	S	85112101	011100	004000	000000	000000		G C=140,B=45
CSHDH	HD 39060	31	0348	0546054	-510455	L	3	27146	S	85112101	015500	001700	000000	000000		G C=46,B=21
CSHDH	HD 39060	31	0384	0546055	-510506	L	3	27156	SL	85112203	033600	002000	033700	002000		G B=23
CSHDH	HD 39060	31	0384	0546055	-510506	L	1	07160	SL	85112202	025600	002000	025700	002000		G C=79,B=33
CSHDH	HD 39060	31	0384	0546058	-510501	L	3	27149	SL	85112106	061900	000006	062000	000006		G C=60,B=16

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
CSHDH	HD 39060	31	0384	0546058	-510509	L	3	27155	SL	85112201	015600	002000	015700	002000		G C=42,B=20
CSHDH	HD 39060	31	0384	0546058	-510509	L	1	07159	SL	85112201	012700	002000	012800	002000		G C=70,B=38
CSHDH	HD 39060	31	0384	0546058	-510501	L	1	07153	SL	85112110	104700	000005	104800	000005		G C=198,B=30
CSHDH	HD 39060	31	0384	0546058	-510501	L	3	27144	S	85112021	214800	000640	000000	000000		G C=10X,B=30
CSHDH	HD 39060	31	0384	0546058	-510501	L	1	07150	SL	85112106	061200	000003	061300	000003		G C=125,B=30
CSHDH	HD 39060	31	0384	0546058	-510501	L	1	07145	S	85112021	213700	000320	000000	000000		G C=10X,B=42
CSHDH	HD 39060	31	0384	0546062	-510456	L	1	07161	SL	85112204	042500	002000	042600	002000		G C=228,B=36
CSHDH	HD 39060	31	0384	0546062	-510456	L	3	27157	SL	85112204	045800	002000	045800	002000		G C=1.5X,B=23
CSHDH	HD 39060	31	0384	0546062	-510455	L	3	27145	S	85112100	002400	001700	000000	000000		G C=47,B=22
CSHDH	HD 39060	31	0384	0546062	-510455	L	1	07146	S	85112023	233400	004000	000000	000000		G C=235,B=41
CSHDH	HD 39060	31	0384	0546062	-510508	L	1	07156	SL	85112121	212500	002000	212600	002000		G C=59,B=35
CSHDH	HD 39060	31	0384	0546062	-510508	L	3	27152	SL	85112122	220800	002000	220900	002000		G C=21
CSHDH	HD 39060	31	0384	0546062	-510455	L	1	07149	S	85112104	041900	004000	000000	000000		G C=184,B=50
CSHDH	HD 39060	31	0384	0546063	-510455	L	3	27154	SL	85112200	005000	002000	005000	002000		G C=56,B=24
CSHDH	HD 39060	31	0384	0546063	-510455	L	1	07158	SL	85112200	001900	002000	002000	002000		G C=120,B=38
CSHDH	HD 39060	31	0348	0546067	-510501	L	1	07148	S	85112102	023600	004000	000000	000000		G C=79,B=41
CSHDH	HD 39060	31	0384	0546067	-510501	L	3	27147	S	85112103	032900	001700	000000	000000		G C=43,B=21
OBHJS	HD 248894	12	0930	0550590	+205202	L	3	26992	L	85102711	000000	000000	112000	000400		G C=151,B=15
HQ111	MCG8-11-11	84	1400	0551097	462551	L	1	07035	L	85110317	000000	000000	170937	009800	003	V
HQ111	MCG8-11-11	84	1427	0551097	462551	L	3	26906	L	85100915	000000	000000	155738	028200	333	V
HQ111	MCG8-11-11	84	1415	0551097	462551	L	1	06880	L	85100914	000000	000000	140937	010000	343	V
HQ111	MCG8-11-11	84	1400	0551097	462551	L	3	27022	L	85110312	000000	000000	121533	028600	002	V
OBHJS	HD 39680	12	0799	0551544	+135047	H	1	07005	L	85102712	000000	000000	120200	002000		G C=220,B=46
LSHAD	HD 39801	49	0050	0552279	+072357	L	3	27169	L	85112408	000000	000000	084200	001000		G E=153,C=66,B=27
PHCAL	00 WAVCAL	98	0000	0552279	+072357	H	3	27108	S	85111408	084700	000200	000000	000000		G E=50X,B=125
PHCAL	00 WAVCAL	98	0000	0552279	+072357	L	3	27107	S	85111408	082200	000002	000000	000000		G E=10X,B=100
PHCAL	00 WAVCAL	98	0000	0552279	+072357	H	1	07095	L	85111408	000000	000000	081000	000016		G E=50X,B=108
PHCAL	00 WAVCAL	98	0000	0552279	+072357	L	1	07094	L	85111407	000000	000000	074000	000001		G E=10X,B=102
LSHAD	HD 39801	49	0050	0552280	+072358	L	1	07093	L	85111406	000000	000000	063900	000005		G E=202,C=67,B=32
LSHAD	HD 39801	49	0050	0552280	+072358	H	1	06981	S	85102406	063600	004000	000000	000000		G E=3X,C=115,B=77
LSHAD	HD 39801	49	0050	0552280	+072358	L	3	26970	L	85102405	000000	000000	053700	005000		G E=4X,C=63,B=37
LSHAD	HD 39801	49	0050	0552280	+072358	L	1	06983	SL	85102408	084000	000030	083400	000005		G E=162,C=67,B=38
LSHAD	HD 39801	49	0050	0552280	+072358	H	1	06890	L	85101110	000000	000000	100200	000210		G E=234,C=100,B=59
LSHAD	HD 39801	49	0050	0552280	+072358	L	3	26915	L	85101110	000000	000000	101500	000500		G E=137,C=96,B=60
LSHAD	HD 39801	49	0050	0552280	+072358	H	1	06892	S	85101112	121500	003300	000000	000000		G E=5.0X,C=80,B=42
LSHAD	HD 39801	49	0050	0552280	+072358	L	3	27106	L	85111406	000000	000000	060700	001000		G E=175,C=65,B=25
LSHAD	HD 39801	49	0050	0552280	+072358	H	1	07092	S	85111405	051500	004500	000000	000000		G E=10X,C=140,B=39
LSHAD	HD 39801	49	0050	0552280	+072358	L	3	27105	L	85111404	000000	000000	041600	005000		G E=4X,C=150,B=20
LSHAD	HD 39801	49	0050	0552280	+072358	H	1	06982	L	85102407	000000	000000	074900	000200		G E=170,C=65,B=42
LSHAD	HD 39801	49	0050	0552280	+072358	H	1	07178	L	85112406	000000	000000	063400	000215		G E=207,C=73,B=31
LSHAD	HD 39801	49	0050	0552280	+072358	L	3	26916	L	85101111	000000	000000	114200	002700		G E=2.5X,C=158,B=55
LSHAD	HD 39801	49	0050	0552280	+072358	L	1	06891	SL	85101111	111000	000035	110200	000005		G E=200,C=80,B=38
LSHAD	HD 39801	49	0050	0552280	+072358	L	3	27168	L	85112406	000000	000000	064700	005000		G E=4X,C=175,B=80
LSHAD	HD 39801	49	0050	0552280	+072358	H	1	07179	S	85112407	074700	004500	000000	000000		G E=10X,C=188,B=90
LSHAD	HD 39801	49	0050	0552280	+072358	L	1	07180	L	85112409	000000	000000	092000	000005		G E=190,C=63,B=33

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
LSHAD	HD 39801	49	0050	0552280	+072358	L	3	26971	L	85102407	000000	000000	075800	001000		G	E=184,C=90,B=50
LSHAD	HD 39801	49	0050	0552280	+072358	H	1	07091	L	85111404	000000	000000	040400	000215		G	E==214,C=68,B=33
SCHPF	OOP/HALLEY	06	1010	0553445	+205616	L	3	26958	L	85102002	000000	000000	024300	004500		G	E=150,B=46
SCHPF	OOP/HALLEY	06	1010	0553554	+205533	L	3	26957	L	85102000	000000	000000	004000	006000		G	E=110,B=42
SCHPF	OOP/HALLEY	06	1010	0553554	+205533	L	1	06952	L	85101921	000000	000000	212000	022500		G	E=150,C=140,B=92
SCHPF	OOP/HALLEY	06	1010	0554035	+205501	D	9	01705	L	85101923	000000	000000	231800	002000		G	NO COMMENTS
SCHPF	OOP/HALLEY	06	1010	0554035	+205501	L	3	26956	L	85101916	000000	000000	161800	024000		G	E=6X,B=60
SCHPF	OOP/HALLEY	06	1010	0554111	+205431	D	9	01704	L	85101921	000000	000000	211100	004000		G	NO COMMENTS
HS231	P/HALLEY	06	1316	0554438	205346	L	1	06951	L	85101917	000000	000000	171018	007808	134	V	SERENDIP:NUC IN SWLA
HS231	P/HALLEY	06	1329	0554438	205346	L	1	06950	L	85101914	000000	000000	142442	009000	244	V	
OD69K	00 K1-27	70	1540	0558495	-754030	L	3	27079	L	85111020	000000	000000	202400	014000		G	E=168,C=110,B=42
PHCAL	00 NULL	99	9999	0558495	-754030	L	1	07071	L	85111021	000000	000000	214500	000000		G	B=33
HA174	VLE29	72	1550	0600256	-723844	L	3	27331	L	85121910	000000	000000	100349	040300	114	V	
SCHPF	OOP/HALLEY	06	1010	0602183	+205402	L	3	26959	L	85102004	000000	000000	040500	004500		G	B=40
HM188	HD41695	30	0489	0603535	-145545	H	1	07359	L	85122211	000000	000000	113641	000730	503	V	
HM188	HD42301	30	0575	0606517	-222502	H	1	07360	L	85122212	000000	000000	125831	001230	503	V	
HCHBB	HD 43246	39	0050	0613117	+285212	L	3	27059	L	85110909	000000	000000	093000	000220		G	C=180,B=18
HCHBB	HD 43246	39	0050	0613117	+285212	H	1	07060	L	85110908	000000	000000	085200	003000		G	E=219,C=220,B=130
OBHJS	HD 45314	12	0664	0624243	+145514	H	3	26991	L	85102710	000000	000000	100700	001500		G	C=219,B=85
OBHJS	HD 45314	12	0664	0624243	+145514	H	1	07004	L	85102709	000000	000000	094100	000900		G	C=240,B=97
ISHJS	HD 46106	20	0790	0628588	+050348	H	1	07006	L	85102805	000000	000000	055200	003000		G	C=200,B=49
CVHPS	00 CW MON	54	1600	0634206	+000451	L	1	07100	L	85111423	000000	000000	234400	012000		G	E=119,C=100,B=59
CVHPS	00 CW MON	54	1600	0634206	+000451	L	3	27112	L	85111420	000000	000000	203700	018000		G	E=62,C=66,B=51
HM188	HD49048	30	0552	0643429	-144430	H	1	07361	L	85122214	000000	000000	140854	001630	503	V	
CVHPS	00 IR GEM	54	1600	0644258	+280943	L	1	07088	L	85111308	000000	000000	080300	003000		G	E=172,C=145,B=105
CVHPS	00 IR GEM	54	1600	0644258	+280943	L	3	27115	L	85111510	000000	000000	100200	004600		G	E=51,C=45,B=28
CVHPS	00 IR GEM	54	1600	0644258	+280943	L	1	07102	L	85111509	000000	000000	092600	003000		G	E=102,C=85,B=53
CVHPS	00 IR GEM	54	1600	0644258	+280943	L	3	27114	L	85111508	000000	000000	084700	003000		G	E=53,C=62,B=40
CVHPS	00 IR GEM	54	1600	0644258	+280943	L	3	27100	L	85111308	000000	000000	084000	003000		G	E=60,C=78,B=55
CVHPS	00 IR GEM	54	1600	0644258	+280943	L	3	27101	L	85111309	000000	000000	095400	005500		G	E=55,C=47,B=32
CVHPS	00 IR GEM	54	1600	0644258	+280943	L	3	27099	L	85111307	000000	000000	072400	003000		G	E=78,C=83,B=68
CVHPS	00 IR GEM	54	1600	0644258	+280943	L	1	07089	L	85111309	000000	000000	091700	003000		G	E=96,C=90,B=59
HCHDL	HD 49331	49	0510	0645138	-085633	L	3	27403	L	85122806	000000	000000	063800	013000		G	C=115,B=43
CSHDB	HD 51440	47	0600	0655384	+380722	L	1	07029	L	85110208	000000	000000	080300	004200		G	E=204,C=225,B=72
HM166	HD52382	23	0672	0658160	-090753	H	1	07398	L	85122809	000000	000000	093416	001300	501	V	
HM166	HD 52382	23	0671	0658160	-090753	H	3	27404	L	85122810	000000	000000	100647	004300	660	V	A FEW SATURATED
HC141	HD 52973	53	0399	0701087	203843	H	1	07237	L	85120410	000000	000000	101333	004700	503	V	
SCHMA	00 COMET	06	0000	0702220	-091423	L	3	26894	L	85100811	000000	000000	110900	000500		G	E=161,B=220
SCHMA	00 COMET	06	0000	0702220	-091423	L	1	06870	L	85100810	000000	000000	105500	000500		G	B=1.5X
SCHMA	00 COMET	06	0000	0702281	-092044	L	1	06871	L	85100812	000000	000000	121100	001000		G	E=183,B=162
OSHCG	HD 53975	12	0650	0704162	-121856	H	1	07003	L	85102708	000000	000000	083300	000400		G	C=239,B=69
OX30K	HD 56405	30	0550	0713584	-152943	H	1	07416	L	85123004	000000	000000	040200	001300		G	C=245,B=58
OBHJS	HD 58509	12	0850	0723024	-205527	H	3	26989	L	85102704	000000	000000	042800	007100		G	C=200,B=67
OBHJS	HD 58509	12	0850	0723024	-205527	H	1	07001	L	85102705	000000	000000	054800	004400		G	C=242,B=85
MLHCW	HD 58978	26	0550	0724521	-225902	H	3	26847	L	85100406	000000	000000	064000	000240		G	C=205,B=38

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
MLHCW	HD 58978	26	0550	0724521	-225902	H	3	26829	L	85100208	000000	000000	085500	000240		G C=210,B=45
MLHCW	HD 58978	26	0550	0724522	-225903	H	3	27426	L	85123103	000000	000000	031300	000240		G C=215,B=40
CCHJL	HD 59717	47	0330	0727386	-431157	H	1	07270	L	85120903	000000	000000	030600	003730		G E=1.2X,C=79,B=40
HCHBB	HD 59771	39	0910	0728370	-180808	L	3	26817	L	85100110	000000	000000	100700	001700		G C=169,B=130
HCHBB	HD 59771	39	0910	0728375	-180920	L	3	27060	L	85110910	000000	000000	101800	003000		G C=82,B=17
HC203	HD59643	50	9999	0728526	243638	E	9	01723	2	85112414	000000	000000	141000	016000		V FIELD FOR SWP27171
HC203	HD59643	50	0805	0728527	243638	D	9	01724	2	85112514	000000	000000	142500	016000		V FIELD FOR LWP7186
CSHHJ	HD 59643	50	0800	0728527	243638	H	3	27171	L	85112421	000000	000000	213400	074500		G E=5X,C=175,B=134
CSHHJ	HD 59643	50	0800	0728527	243638	H	1	07186	L	85112521	000000	000000	214400	074500		G E=6X,C=199,B=147
PHCAL	HD60753	21	0685	0732080	-502829	H	3	27200	L	85120116	000000	000000	162009	001300	400	V
PHCAL	HD 60753	21	0669	0732080	-502828	L	3	27035	L	85110510	000000	000000	103200	000021		G C=2X,B=15
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17811	L	85110102	000000	000000	025200	000031		G C=226,B=25
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27015	L	85110223	000000	000000	230900	000041		G C=197,B=18
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17810	L	85110102	000000	000000	021500	000019		G C=140,B=22
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27005	L	85110101	000000	000000	013800	020504		G C=118,B=40
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17801	SL	85103109	095300	000029	094700	000009		G C=155,B=23
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17808	L	85110101	000000	000000	010000	000031		G C=195,B=24
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27109	L	85111410	000000	000000	103200	000010		G C=183,B=16
PHCAL	HD 60753	21	0670	0732081	-502829	L	1	07096	L	85111410	000000	000000	102800	000006		G C=196,B=35
PHCAL	HD 60753	21	0670	0732081	-502829	L	1	07143	L	85112004	000000	000000	044200	000006		G C=162,B=33
PHCAL	HD60753	21	0692	0732081	-502829	L	3	27214	L	85120310	000000	000000	100533	000010	500	V
PHCAL	HD 60753	21	0670	0732081	-502829	L	1	07032	L	85110302	000000	000000	023300	000006		G C=185,B=32
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	26929	L	85101312	000000	000000	121900	000010		G C=187,B=16
PHCAL	HD 60753	21	0670	0732081	-502829	L	1	07142	L	85111920	000000	000000	204100	028502		G C=173,B=115
PHCAL	00 NULL	99	0670	0732081	-502829	L	3	27016	L	85110223	000000	000000	234000	000000		G B=17
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27019	L	85110301	000000	000000	012900	000041		G C=198,B=18
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17807	L	85110100	000000	000000	001500	000050		G C=255,B=24
PHCAL	HD 60753	21	0670	0732081	-502829	L	1	06904	L	85101312	000000	000000	121500	000006		G C=200,B=30
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27017	L	85110300	000000	000000	001200	000024		G C=140,B=17
PHCAL	HD60753	21	0692	0732081	-502829	H	1	07229	L	85120310	000000	000000	101240	000900	503	V
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27011	L	85110220	000000	000000	202000	000041		G C=195,B=18
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27012	L	85110221	000000	000000	211100	000016		G C=108,B=17
PHCAL	HD60753	21	0691	0732081	-502829	H	3	27215	L	85120310	000000	000000	104320	001500	501	V
PHCAL	HD 60753	21	0670	0732081	-502829	L	1	07020	SL	85103010	105400	000010	105000	000006		G C=160,B=32
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27018	L	85110300	000000	000000	005000	000008		G C=65,B=15
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27014	L	85110222	000000	000000	222900	000105		G C=1.3X,B=20
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17832	L	85112908	000000	000000	085500	000007		G C=175,B=23
PHCAL	HD 60753	21	0670	0732081	-502829	H	1	07031	L	85110300	000000	000000	001900	022500		G C=132,B=70
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17804	L	85103121	000000	000000	215400	000031		G C=190,B=25
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17805	L	85103122	000000	000000	224400	000013		G C=120,B=25
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17806	L	85103123	000000	000000	232600	000038		G C=220,B=24
PHCAL	HD 60753	21	0670	0732081	-502829	L	3	27013	L	85110221	000000	000000	215100	000049		G C=225,B=17
PHCAL	HD 60753	21	0670	0732081	-502829	L	2	17809	L	85110101	000000	000000	014000	000000		G B=20
HM133	HD 61421	41	0065	0736394	052040	L	3	26918	L	85101118	000000	000000	183003	000700	771	V
HM133	HD61421	41	0076	0736394	052040	H	3	26917	S	85101114	142205	020000	000000	000000	744	V LAP CLOSED

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
LDHMG	00 YZ CMI	48	1120	0742030	+034030	L	1	07363	L	85122300	000000	000000	004200	003500		G E=202,C=80,B=45
LDHMG	00 YZ CMI	48	1120	0742040	+034030	L	1	07354	L	85122123	000000	000000	235200	007000		G E=1.5X,C=95,B=68
LDHMG	00 YZ CMI	48	1120	0742040	+034030	L	3	27359	L	85122222	000000	000000	222800	012000		G E=88,C=75,B=50
LDHMG	00 YZ CMI	48	1120	0742040	+034030	L	3	27353	L	85122120	000000	000000	204800	012000		G E=81,C=85,B=55
KGHJL	HD 63032	47	0360	0743283	-375047	H	1	07138	L	85111906	000000	000000	064000	003500		G E=2X,C=210,B=153
CVHPS	00 BV PUP	54	1500	0746580	-232624	L	3	27113	L	85111503	000000	000000	030800	018000		G E=147,C=110,B=63
CVHPS	00 BV PUP	54	1500	0746580	-232624	L	1	07101	L	85111506	000000	000000	061500	009000		G E=204,C=204,B=130
CVHJE	00 U GEM	54	1050	0752079	+220808	L	1	07065	L	85111005	000000	000000	054500	000300		G C=198,B=35
CVHJE	00 U GEM	54	1050	0752079	+220808	L	3	27068	L	85111006	000000	000000	063200	001000		G C=220,B=20
CVHJE	00 U GEM	54	1050	0752079	+220808	L	3	27067	L	85111005	000000	000000	051000	001400		G C=220,B=15
CVHJE	00 U GEM	54	1140	0752079	+220808	L	3	27090	L	85111206	000000	000000	063400	000700		G C=220,B=19
CVHJE	00 U GEM	54	1140	0752079	+220808	L	1	07079	L	85111123	000000	000000	235500	000900		G C=220,B=34
CVHJE	00 U GEM	54	1140	0752079	+220808	L	1	07078	L	85111122	000000	000000	223500	000430		G C=200,B=33
CVHJE	00 U GEM	54	1140	0752079	+220808	L	3	27088	L	85111121	000000	000000	215300	001200		G C=115,B=12
ISHPF	HD 65810	30	0460	0757375	-181539	H	1	07293	L	85121308	000000	000000	080300	000800		G C=190,B=45
ISHPF	HD 65810	30	0460	0757375	-181539	H	1	07302	L	85121406	000000	000000	060800	000800		G C=250,B=73
ISHPF	HD 65810	30	0460	0757375	-181539	H	1	07303	L	85121408	000000	000000	081400	000800		G C=190,B=45
ISHPF	HD 65810	30	0460	0757375	-181539	H	3	27264	L	85121406	000000	000000	064100	002200		G C=220,B=55
ISHPF	HD 65810	30	0460	0757375	-181539	H	3	27265	L	85121408	000000	000000	083200	000800		G C=128,B=30
PHCAL	HD 66811	13	0230	0801496	-395141	L	1	07039	L	85110406	000000	000000	060900	000001		G C=245,B=35
PHCAL	BD+75 325	16	0968	0804430	750648	L	1	06960	LS	85102117	173440	000100	173039	000020	503	V 503$
PHCAL	BD+75 325	16	0972	0804430	750648	L	3	27415	L	85122913	000000	000000	133835	000014	500	V
PHCAL	BD+75 325	16	0971	0804430	750648	H	3	26963	L	85102116	000000	000000	165122	003000	501	V
PHCAL	BD+75 325	16	0973	0804430	750648	L	1	07411	L	85122914	000000	000000	145325	000020	501	V
PHCAL	BD+75 325	16	0964	0804430	750648	H	3	27374	L	85122411	000000	000000	110931	002500	511	V
PHCAL	BD+75 325	16	0974	0804430	750648	L	3	27417	L	85122915	000000	000000	154546	000014	500	V
PHCAL	BD+75 325	16	0977	0804430	750648	L	1	07412	L	85122915	000000	000000	154914	000020	501	V
PHCAL	BD+75 325	16	0973	0804430	750648	L	3	26962	LS	85102115	160321	000112	155908	000014	501	V 601$
PHCAL	BD75 325	16	0975	0804430	750648	H	1	06959	L	85102116	000000	000000	160805	003500	503	V
PHCAL	BD+75 325	16	0967	0804430	750648	L	1	07375	L	85122411	000000	000000	114110	000020	512	V
PHCAL	BD+75 325	16	0958	0804430	750648	L	2	17837	LS	85122414	142359	000139	141940	000033	502	V 502$LWR 4.5 KV
PHCAL	BD+75 325	16	0971	0804430	750648	H	3	27416	L	85122914	000000	000000	142155	002500	501	V
PHCAL	BD+75 325	16	0972	0804430	750648	H	1	07410	L	85122913	000000	000000	134422	003000	502	V
PHCAL	BD+75 325	16	0966	0804430	750648	H	2	17836	L	85122412	000000	000000	125122	005500	503	V
PHCAL	BD+75 325	16	0976	0804430	750648	L	1	07413	L	85122916	000000	000000	163350	000100	801	V
PHCAL	BD+75 325	16	0970	0804430	750648	L	3	27373	L	85122410	000000	000000	103733	000014	510	V
PHCAL	BD+75 325	16	0951	0804430	750648	H	1	07374	L	85122409	000000	000000	095617	003000	513	V
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	2	17802	SL	85103111	111400	000138	110800	000033		G C=165,B=25
PHCAL	OOSAFTY RD	99	9999	0804432	+750648	H	2	17819	L	85112604	000000	000000	042800	000000		G B=17
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	07254	L	85120605	000000	000000	051300	000020		G C=195,B=35
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	07253	L	85120604	000000	000000	042300	000020		G C=197,B=34
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	07252	L	85120603	000000	000000	034500	000020		G C=187,B=33
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	3	27228	L	85120608	000000	000000	084000	000017		G C=190,B=18
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	3	27173	L	85112605	000000	000000	051600	000014		G
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	06918	L	85101512	000000	000000	123000	000114		G C=177,B=40

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	2	17830	SL	85112907	071200	000112	070700	000024		G C=168,B=25
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	06903	L	85101310	000000	000000	105600	000020		G C=198,B=37
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	3	26928	L	85101311	000000	000000	110200	000014		G C=175,B=17
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	2	17831	L	85112907	000000	000000	074500	000114		G C=150,B=25
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	3	27227	L	85120607	000000	000000	075600	000017		G C=190,B=17
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	3	27226	L	85120607	000000	000000	072700	000017		G C=200,B=17
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	07256	L	85120606	000000	000000	064600	000020		G C=210,B=34
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	2	17816	L	85110108	000000	000000	085100	000142		G C=160,B=25
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	07190	L	85112705	000000	000000	051500	000020		G C=185,B=32
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	07250	L	85120602	000000	000000	020500	000020		G C=190,B=33
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	07251	L	85120602	000000	000000	024300	000020		G C=200,B=35
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	2	17794	L	85101610	000000	000000	100900	000024		G C=160,B=22
PHCAL	BD+75 0325	16	0950	0804432	+750648	L	1	07255	L	85120605	000000	000000	055200	000020		G C=209,B=35
PLHNE	SA 198930	53	0790	0810299	-364729	L	3	26960	L	85102011	000000	000000	111300	007500		G E=136,C=135,B=93
PLHNE	SA 198930	53	0790	0810299	-364729	L	1	06958	L	85102011	000000	000000	114900	000830		G C=185,B=48
PLHNE	SA 198930	53	0790	0810299	-364729	L	1	06957	L	85102010	000000	000000	104100	000400		G C=137,B=62
OBHJS	HD 69106	12	0710	0812120	-364759	H	3	26990	L	85102707	000000	000000	071800	000700		G C=145,B=41
OBHJS	HD 69106	12	0710	0812120	-364759	H	1	07002	L	85102707	000000	000000	073200	000600		G C=200,B=61
CSHDB	HD 70272	47	0430	0819252	+432100	L	1	07030	L	85110209	000000	000000	094700	002830		G E=2X,C=180,B=50
CVHRP	00 Z CAM	54	1360	0819399	+731624	L	1	06865	L	85100710	000000	000000	101200	000536		G B=2X
CVHRP	00 Z CAM	54	1360	0819399	+731624	L	3	26889	L	85100710	000000	000000	104200	000536		G C=1.5X,B=220
CVHRP	00 Z CAM	54	1360	0819399	+731624	L	1	06835	L	85100106	000000	000000	063900	001500		G C=160,B=50
CVHRP	00 Z CAM	54	1360	0819399	+731624	L	3	26815	L	85100106	000000	000000	060900	002400		G C=130,B=25
CVHRP	00 Z CAM	54	1360	0819399	+731624	L	3	26888	L	85100710	000000	000000	100000	000536		G C=218,B=185
CSHDB	HD 72184	47	0590	0829403	+381122	L	1	07258	L	85120703	000000	000000	031000	000800		G C=225,B=35
CSHDB	HD 72184	47	0590	0829403	+381122	L	1	07257	L	85120701	000000	000000	013600	003900		G C=2X,B=47
CSHDB	HD 73593	44	0540	0837342	+460039	L	1	07259	L	85120704	000000	000000	041500	000300		G C=121,B=41
STHRP	00 ETA HYA	21	0430	0840366	+033445	L	1	07245	SL	85120507	070500	000001	071100	000004		G C=245,B=33
STHRP	00 ETA HYA	21	0430	0840367	+033446	L	1	07243	L	85120505	000000	000000	053900	000003		G C=2X,B=45
STHRP	00 ETA HYA	21	0430	0840367	+033446	L	1	07242	SL	85120504	045400	000001	044900	000001		G C=1.5X,B=35
STHRP	00 ETA HYA	21	0430	0840367	+033446	L	1	07244	SL	85120506	062100	000001	062800	000004		G C=236,B=31
STHRP	00 ETA HYA	21	0430	0840367	+033446	L	1	07240	L	85120502	000000	000000	021000	000001		G C=160,B=33
STHRP	00 ETA HYA	21	0430	0840367	+033446	L	1	07241	L	85120504	000000	000000	040500	000001		G C=160,B=32
OBHJS	HD 75222	13	0740	0845286	-363358	H	1	07000	L	85102702	000000	000000	024100	003500		G C=192,B=55
OBHJS	HD 75222	13	0740	0845286	-363358	H	3	26988	L	85102700	000000	000000	002700	010000		G C=182,B=50
BLHAG	Q 0851+202	87	1500	0851572	+201758	L	1	07274	L	85120917	000000	000000	173000	048500		G C=211,B=116
BLHAG	Q 0851+202	87	1500	0851572	+201758	L	3	27250	L	85121112	000000	000000	122100	033500		G C=95,B=65
BLHAG	Q 0851+202	87	1500	0851572	+201758	L	1	07288	L	85121118	000000	000000	182900	038000		G C=193,B=109
HQ092	OJ287	87	1600	0851573	201758	E	9	01730	2	85120911	000000	000000	113000	004000		U SWP27239
BLHAG	Q 0851+202	87	1500	0851573	+201759	L	3	27239	L	85120911	000000	000000	113100	032500		G C=95,B=55
HQ092	OJ287	87	9999	0851573	201758	E	9	01731	2	85121113	000000	000000	130000	004000		U SWP27250
HQ092	OJ287	87	1600	0851573	201758	L	3	27229	L	85120609	000000	000000	094137	042600	114	U
OBHJS	HD 76341	13	0720	0852114	-421742	H	1	06999	L	85102623	000000	000000	231600	002400		G C=218,B=45
OBHJS	HD 76341	13	0720	0852114	-421742	H	3	26987	L	85102622	000000	000000	220300	006600		G C=205,B=42
HA158	UV0904-02	16	1195	0904300	-025400	L	1	07167	L	85112212	000000	000000	124127	000440	501	U

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
MLHSS	HD 79158	27	0770	0910324	+432530	H	3	27091	L	85111207	000000	000000	074000	000500		G C=198,B=45
MLHSS	HD 79158	27	0770	0910325	+432531	H	3	27042	L	85110704	000000	000000	040700	000500		G C=200,B=35
MLHSS	HD 79158	27	0770	0910325	+432531	H	3	27038	L	85110608	000000	000000	085300	000500		G C=210,B=65
MLHSS	HD 79158	27	0770	0910325	+432531	H	1	07080	L	85111207	000000	000000	075100	000330		G C=225,B=55
MLHSS	HD 79158	27	0770	0910325	+432531	H	3	27052	L	85110807	000000	000000	075000	000500		G C=220,B=65
MLHSS	HD 21071	27	0610	0910330	+432531	H	3	27027	L	85110410	000000	000000	103500	000900		G C=185,B=42
MLHSS	HD 79158	27	0540	0910330	+432531	H	3	27026	L	85110409	000000	000000	090400	000500		G C=215,B=65
LDHDD	HD 79210	48	0760	0910590	+525406	L	1	06996	L	85102609	000000	000000	092300	001000		G E=208,C=167,B=142
LDHDD	HD 79211	48	0770	0911009	+525410	L	1	06997	L	85102610	000000	000000	101900	001000		G E=179,C=119,B=90
OD79K	PK0916+556	85	1610	0916186	+553420	L	3	26911	L	85101022	000000	000000	225400	030000		G E=200,C=103,B=58
KGHJL	HD 81797	47	0200	0925078	-082627	L	3	27055	L	85110812	000000	000000	122500	040000		G E=3X,C=151,B=85
KGHJL	HD 81797	47	0225	0925079	-082626	E	9	01717	2	85110812	000000	000000	122700	016000		V FIELD FOR SWP 27055,
CCHJL	HD 82668	47	0310	0929421	-564848	L	3	27237	L	85120904	000000	000000	041200	002500		G C=46,B=31
CCHJL	HD 82668	47	0310	0929421	-564848	H	1	07271	L	85120904	000000	000000	044400	003230		G E=1.1X,C=109,B=69
WDHGW	00 G116-52	37	1320	0943300	+440836	L	1	07176	L	85112323	000000	000000	235200	004000		G C=200,B=42
WDHGW	00 G116-52	37	1320	0943300	+440836	L	3	27167	L	85112400	000000	000000	004600	003500		G C=100,B=20
HC141	HD 84810	45	0406	0943520	-621637	H	1	06985	L	85102416	000000	000000	162945	006000	401	V
HC141	HD84810	45	0407	0943524	-621637	L	3	26973	L	85102415	000000	000000	155511	002500	120	V
DCHDM	HD 84810	53	0430	0943524	-621637	H	1	07049	L	85110604	000000	000000	044200	005500		G E=108,C=112,B=45
SRHLW	00 R LEO	51	0600	0944522	+113942	L	1	07204	L	85113010	000000	000000	101600	003300		G E=56,C=58,B=40
SRHLW	00 R LEO	51	0600	0944522	+113942	L	1	07203	L	85113009	000000	000000	091800	001000		G E=43,C=45,B=35
WDHGW	00 BPM6082	37	1350	0954360	-710200	L	1	07171	L	85112221	000000	000000	211900	005500		G C=220,B=45
WDHGW	00 BPM6082	37	1350	0958359	-710200	L	3	27161	L	85112220	000000	000000	201200	006000		G C=145,B=25
STHRP	00ALPH LEO	22	0134	1005426	+121245	L	1	07246	SL	85120508	080600	000001	081100	000001		G C=2X,B=31
HC230	HD88366	51	0794	1007462	-611814	L	1	07097	L	85111415	000000	000000	154137	004000	561	V
HC230	S CAR	51	0749	1007462	-611814	L	1	07279	L	85121009	000000	000000	094905	004000	342	V
HC230	S CAR	51	0762	1007462	-611814	L	1	07282	L	85121016	000000	000000	161440	003200	342	V
HC230	HD88366	51	0653	1007462	-611814	L	1	07389	L	85122612	000000	000000	124001	003000	333	V
HC230	S CAR	51	0639	1007462	-611814	H	1	06906	L	85101315	000000	000000	150322	012000	132	V
HC230	S CAR	51	0638	1007462	-611814	L	1	06905	L	85101313	000000	000000	135033	004000	572	V
XQHME	PG1012+008	85	1580	1012208	+004833	L	3	27189	L	85112820	000000	000000	201400	005000		G B=22
KGHJL	HD 89388	47	0340	1015246	-610455	L	3	27138	L	85111907	000000	000000	074600	002400		G E=112,C=120,B=92
KGHJL	HD 89388	47	0340	1015246	-610455	H	1	07139	L	85111908	000000	000000	082200	003000		G E=2X,C=196,B=145
KGHJL	HD 89388	47	0340	1015246	-610455	H	1	06907	L	85101321	000000	000000	215100	012000		G E=5X,C=180,B=55
LDHMG	00 AD LEO	48	0940	1016539	+200717	L	3	27368	L	85122323	000000	000000	234300	008000		G E=88,C=60,B=30
LDHMG	00 AD LEO	48	0940	1016540	+200718	L	3	27347	L	85122104	000000	000000	045000	009000		G E=191,B=141
LDHMG	00 AD LEO	48	0940	1016540	+200718	L	3	27352	L	85122117	000000	000000	172900	012000		G E=142,C=61,B=45
LDHMG	00 AD LEO	48	0940	1016540	+200718	L	1	07366	L	85122308	000000	000000	080400	001200		G E=159,C=70,B=35
LDHMG	00 AD LEO	48	0940	1016540	+200718	L	1	07353	L	85122119	000000	000000	193500	002000		G E=255,C=75,B=40
LDHMG	00 AD LEO	48	0940	1016540	+200718	L	1	07350	L	85122106	000000	000000	062900	001500		G E=182,C=75,B=56
LDHMG	00 AD LEO	48	0940	1016540	+200718	L	3	27362	L	85122308	000000	000000	083000	001500		G B=20
CVHFC	00 RW SEX	63	1060	1017272	-082652	H	3	27089	L	85111201	000000	000000	014500	024000		G E=245,C=212,B=105
WDHGW	00 LP550-5	37	1420	1022239	+050123	L	3	27163	L	85112304	000000	000000	044800	012000		G C=161,B=89
WDHGW	00 LP550-5	37	1420	1022239	+050123	L	1	07177	L	85112402	000000	000000	020800	004000		G C=109,B=41
CVHES	PG1026+001	37	1380	1026008	+001453	L	3	27393	L	85122622	000000	000000	224100	012300		G C=2X,B=44

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
CVHPS	00 PG1030	63	1500	1030376	+590222	L	3	27097	L	85111302	000000	000000	024400	007500		G E=100,C=73,B=37
CVHPS	00 PG1030	63	1500	1030376	+590222	L	1	07087	L	85111305	000000	000000	053700	004000		G E=108,C=95,B=52
CVHPS	00 PG1030	63	1500	1030376	+590222	L	3	27098	L	85111304	000000	000000	045300	003500		G E=79,C=55,B=20
CVHPS	00 PG1030	63	1500	1030376	+590222	L	1	07086	L	85111304	000000	000000	041000	003500		G E=86,C=75,B=40
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	3	27394	L	85122701	000000	000000	014400	000110		G C=210,B=12
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	3	27398	L	85122708	000000	000000	082000	000710		G C=1.5X,B=24
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	3	27395	L	85122702	000000	000000	025300	000157		G C=1.5X,B=21
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	1	07392	L	85122703	000000	000000	030000	000350		G C=2X,B=35
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	1	07393	SL	85122704	043400	000420	040600	000650		G C=220,B=60
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	3	27396	SL	85122704	051200	000354	045100	000420		G C=205,B=38
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	3	27397	SL	85122706	062100	000354	061400	000110		G C=195,B=18
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	1	07395	L	85122707	000000	000000	073800	001410		G C=2X,B=42
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	1	07394	SL	85122706	064000	000740	063100	000150		G C=210,B=39
OD80K	OOFEIGE 34	16	1120	1036411	+432150	L	1	07391	L	85122701	000000	000000	015200	000150		G C=235,B=35
WRHCG	HD 92740	11	0640	1039226	-592455	H	3	27313	L	85121805	000000	000000	050800	000630		G E=180,C=150,B=38
WRHCG	HD 92740	11	0640	1039226	-592455	H	3	27342	L	85122006	000000	000000	065100	000630		G E=179,C=141,B=31
WRHCG	HD 92740	11	0640	1039226	-592455	H	3	27284	L	85121605	000000	000000	055600	000620		G C=180,B=40
WRHCG	HD 92740	11	0640	1039226	-592455	H	3	27286	L	85121607	000000	000000	072600	000620		G C=170,B=32
WRHCG	HD 92740	11	0640	1039226	-592455	H	3	27315	L	85121806	000000	000000	063300	000630		G E=180,C=145,B=35
WRHCG	HD 92740	11	0640	1039226	-592455	H	3	27276	L	85121506	000000	000000	064800	000600		G C=175,B=35
WRHCG	HD 92740	11	0640	1039226	-592455	H	3	27294	L	85121706	000000	000000	061900	000630		G E=175,C=135,B=38
HA172	HD93131	11	0666	1041567	-595118	H	3	27321	L	85121813	000000	000000	134236	000440	451	V
HA172	HD93131	11	0668	1041567	-595118	H	3	27303	L	85121716	000000	000000	162135	000400	340	V
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27337	L	85122000	000000	000000	002700	000440		G E=185,C=138,B=30
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27277	L	85121507	000000	000000	072800	000410		G C=175,B=25
HA172	HD93131	11	0661	1041567	-595118	H	3	27319	L	85121811	000000	000000	112956	000440	451	V
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27335	L	85121922	000000	000000	220400	000440		G E=190,C=145,B=30
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27311	L	85121803	000000	000000	031300	000440		G E=190,C=145,B=30
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27293	L	85121705	000000	000000	054300	000440		G E=180,C=140,B=38
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27305	L	85121719	000000	000000	192600	000440		G E=190,C=142,B=30
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27312	L	85121804	000000	000000	042900	000440		G E=190,C=145,B=32
HA172	HD93131	11	0659	1041567	-595118	H	3	27317	L	85121809	000000	000000	091245	000400	450	V
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27339	L	85122003	000000	000000	033400	000440		G E=192,C=140,B=29
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27341	L	85122005	000000	000000	055100	000440		G E=196,C=131,B=34
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27295	L	85121707	000000	000000	070100	000440		G E=190,C=150,B=32
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27273	L	85121503	000000	000000	034200	000400		G C=165,B=25
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27314	L	85121805	000000	000000	054900	000440		G E=190,C=150,B=35
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27281	L	85121602	000000	000000	025200	000420		G C=180,B=30
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27327	L	85121903	000000	000000	035800	000440		G E=197,C=141,B=30
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27309	L	85121800	000000	000000	003000	000440		G E=180,C=140,B=30
HA172	HD93131	11	0665	1041567	-595118	H	3	27299	L	85121711	000000	000000	115515	000400	340	V
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27307	L	85121721	000000	000000	215700	000440		G E=190,C=145,B=28
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27333	L	85121919	000000	000000	194600	000440		G E=197,C=143,B=30
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27329	L	85121907	000000	000000	071300	000440		G E=217,C=140,B=29
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27283	L	85121605	000000	000000	051700	000430		G C=185,B=35

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27291	L	85121703	000000	000000	034600	000440		G	E=185,C=195,B=30
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27285	L	85121606	000000	000000	064700	000430		G	C=190,B=35
WRHCG	HD 93131	11	0650	1041567	-595118	H	3	27275	L	85121506	000000	000000	060300	000410		G	C=175,B=35
HA172	HD93131	11	0669	1041567	-595118	H	3	27297	L	85121709	000000	000000	094209	000400	340	V	
HA172	HD93131	11	0675	1041567	-595118	H	3	27301	L	85121714	000000	000000	141637	000400	340	V	
HC005	BPM6502	37	1269	1042361	-690229	L	3	27351	L	85122115	000000	000000	154846	001500	501	V	
HC005	BPM6502	37	1269	1042361	-690229	L	1	07352	L	85122116	000000	000000	160828	002000	503	V	
HA196	HD93308	61	0604	1043070	-592500	H	1	07388	L	85122610	000000	000000	105621	002500	713	V	
HA196	HD93308	61	0605	1043070	-592500	H	1	07062	L	85110914	000000	000000	141340	001200		V	
HA196	HD93308	61	0605	1043070	-592500	H	3	27062	L	85110913	000000	000000	130433	006000	471	V	
HA196	HD93308	61	0605	1043070	-592500	H	1	07061	L	85110912	000000	000000	121905	002500	774	V	
HA196	HD93308	61	0603	1043070	-592500	H	3	27386	L	85122610	000000	000000	101731	003000	471	V	
HA196	HD93308	61	0604	1043070	-592500	H	1	07387	L	85122609	000000	000000	095501	001200	612	V	
HA196	HD93308	61	0600	1043070	-592500	H	3	27061	L	85110911	000000	000000	114253	003000	361	V	
HA196	HD93308	61	0603	1043070	-592500	H	3	27387	L	85122611	000000	000000	113355	004500	471	V	
PHCAL	HD 93521	12	0700	1045330	+375004	L	2	17815	L	85110107	000000	000000	074100	000016		G	C=192,B=25
PHCAL	00 WAVECAL	98	9999	1045335	+375003	H	2	17821	L	85112606	000000	000000	062300	000007		G	
PHCAL	00 WAVECAL	98	0000	1045335	+375003	H	2	17840	S	85122605	051400	000001	000000	000000		G	E=50X,B=138
PHCAL	00 WAVECAL	98	0000	1045335	+375003	L	2	17839	S	85122604	043900	000001	000000	000000		G	E=10X,B=82
PHCAL	00 WAVCAL	98	9999	1045335	+375003	H	2	17821	L	85112606	000000	000000	062500	000016		G	
PHCAL	00 WAVCAL	98	9999	1045335	+375003	L	2	17820	L	85112605	000000	000000	055700	000001		G	
PHCAL	00 WAVECAL	98	9999	1045335	+375003	L	2	17820	L	85112605	000000	000000	055600	000007		G	
PHCAL	HD 93521	12	0700	1045336	+375004	L	2	17843	L	85123107	000000	000000	073900	000016		G	C=170,B=20
PHCAL	HD 93521	12	0700	1045336	+375004	L	2	17833	L	85112909	000000	000000	095100	000003		G	C=148,B=23
PHCAL	HD 93521	12	0700	1045336	+375004	L	3	27384	SL	85122604	041500	000007	041000	000008		G	C=2X,B=20
PHCAL	HD 93521	12	0700	1045336	+375004	L	2	17803	SL	85103112	120500	000012	120000	000004		G	C=150,B=25
PHCAL	HD 93521	12	0700	1045336	+375004	L	1	07191	L	85112706	000000	000000	060200	000003		G	C=178,B=35
PHCAL	HD 93521	12	0700	1045336	+375004	L	2	17812	L	85110105	000000	000000	051900	000005		G	C=192,B=22
PHCAL	HD 93521	12	0700	1045336	+375004	L	2	17813	L	85110105	000000	000000	055600	000008		G	C=180,B=23
PHCAL	HD 93521	12	0700	1045336	+375004	L	2	17814	L	85110107	000000	000000	070200	000005		G	C=192,B=22
PHCAL	HD 93521	12	0700	1045336	+375004	L	3	27170	L	85112410	000000	000000	104500	000003		G	C=144,B=15
PHCAL	HD 93521	12	0700	1045336	+375004	L	3	27372	L	85122408	000000	000000	083500	000025		G	C=2X,B=15
PHCAL	HD 93521	12	0724	1045340	370004	L	3	27375	L	85122416	000000	000000	161327	000003	500	V	
PHCAL	HD93521	12	0722	1045340	375004	L	2	17838	LS	85122416	160832	000012	160456	000004	402	V	502$4.5 KV
HA053	HD94910	23	0923	1054106	-601111	L	3	27111	L	85111417	000000	000000	171403	000300	501	V	
HA053	HD94910	23	0805	1054106	-601111	H	1	07099	L	85111418	000000	000000	181531	003000	402	V	
HA053	HD94910	23	0813	1054106	-601111	L	1	07098	LS	85111417	173620	000500	173138	000040	503	V	703$
HQ067	NGC3516	84	1313	1103228	725002	L	1	06858	L	85100514	000000	000000	141423	012000	351	V	
HQ067	NGC3516	84	1314	1103228	725002	L	3	26872	L	85100516	000000	000000	162026	026500	342	V	
HQ067	NGC3516	84	1314	1103228	725024	L	1	06897	L	85101214	000000	000000	140154	012000	454	V	
HQ067	NGC3516	84	1309	1103228	725024	L	3	26923	L	85101216	000000	000000	161720	047000	343	V	
WRHCG	HD 96548	11	0780	1104179	-651420	H	3	27282	L	85121603	000000	000000	032800	003800		G	C=235,B=55
WRHCG	HD 96548	11	0780	1104180	-651421	H	1	07330	L	85121720	000000	000000	205700	002800		G	E=199,C=205,B=50
HA172	HD96548	11	0792	1104180	-651421	H	3	27302	L	85121714	000000	000000	145606	003500	450	V	
WRHCG	HD 96548	11	0780	1104180	-651421	H	1	07332	L	85121802	000000	000000	020700	002800		G	E=200,C=210,B=50

PRO	OBJECT		CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27306	L	85121720	000000	000000	201200	003800		G	E=220,C=136,B=38
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07333	L	85121803	000000	000000	033300	002800		G	E=215,C=220,B=65
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07329	L	85121718	000000	000000	183000	002800		G	E=199,C=200,B=47
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27304	L	85121717	000000	000000	174400	003800		G	E=220,C=133,B=38
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27296	L	85121708	000000	000000	080500	003800		G	E=220,C=200,B=40
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07324	L	85121707	000000	000000	073100	002800		G	C=195,B=52
HA172	HD96548		11	0788	1104180	-651421	H	1	07325	L	85121709	000000	000000	090152	002000	402	V	
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27316	L	85121807	000000	000000	072200	003800		G	E=225,C=150,B=45
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07334	L	85121808	000000	000000	081000	002800		G	E=200,C=205,B=50
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07338	L	85121901	000000	000000	015700	002800		G	C=198,B=43
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27326	L	85121902	000000	000000	024200	003800		G	E=223,C=136,B=34
HA172	HD96548		11	0793	1104180	-651421	H	1	07326	L	85121711	000000	000000	110903	002000	402	V	
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07339	L	85121904	000000	000000	042600	002800		G	C=215,B=53
HA172	HD96548		11	0799	1104180	-651421	H	1	07327	L	85121713	000000	000000	132915	002000	402	V	
HA172	HD96548		11	0794	1104180	-651421	H	1	07328	L	85121715	000000	000000	154105	002000	402	V	
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27292	L	85121704	000000	000000	042800	003800		G	E=230,C=190,B=70
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27328	L	85121905	000000	000000	050100	003800		G	E=237,C=158,B=50
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07323	L	85121702	000000	000000	024000	002800		G	C=185,B=50
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27290	L	85121701	000000	000000	015700	003800		G	E=205,C=265,B=36
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07316	L	85121604	000000	000000	041200	002800		G	C=230,B=85
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07340	L	85121907	000000	000000	074500	002800		G	C=200,B=45
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27330	L	85121908	000000	000000	081800	003000		G	E=199,C=142,B=33
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07341	L	85121917	000000	000000	173000	002800		G	E=198,C=205,B=49
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27332	L	85121918	000000	000000	180500	003800		G	E=245,C=152,B=38
HA172	HD96548		11	0781	1104180	-651421	H	3	27298	L	85121710	000000	000000	102641	003500	450	V	
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27310	L	85121801	000000	000000	012300	003800		G	E=220,C=140,B=40
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07342	L	85121920	000000	000000	201500	002800		G	E=203,C=217,B=50
HA172	HD96548		11	0793	1104180	-651421	H	1	07335	L	85121810	000000	000000	104227	002000	413	V	
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27334	L	85121920	000000	000000	204800	003800		G	E=229,C=153,B=37
HA172	HD96548		11	0793	1104180	-651421	H	1	07336	L	85121812	000000	000000	125650	002800	512	V	
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27308	L	85121722	000000	000000	225400	003800		G	E=228,C=138,B=40
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07315	L	85121601	000000	000000	014000	002500		G	C=195,B=52
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27280	L	85121600	000000	000000	005100	004000		G	C=230,B=45
HA172	HD96548		11	0797	1104180	-651421	H	1	07337	L	85121815	000000	000000	151751	002800	512	V	
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27278	L	85121508	000000	000000	080900	004000		G	C=230,B=42
HA172	HD96548		11	0795	1104180	-651421	H	3	27318	L	85121809	000000	000000	095855	003500	551	V	
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07343	L	85121922	000000	000000	222700	002800		G	E=201,C=217,B=50
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27336	L	85121923	000000	000000	230300	003800		G	E=230,C=149,B=38
HA172	HD96548		11	0798	1104180	-651421	H	3	27320	L	85121812	000000	000000	121247	003800	551	V	
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27274	L	85121504	000000	000000	044700	004000		G	C=255,B=80
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07331	L	85121723	000000	000000	233800	002800		G	E=200,C=210,B=50
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07344	L	85122000	000000	000000	005300	002800		G	C=212,B=48
WRHCG	HD	96548	11	0780	1104180	-651421	H	3	27338	L	85122002	000000	000000	020900	003800		G	E=225,C=146,B=37
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07347	L	85122008	000000	000000	083500	001200		G	C=131,B=42
WRHCG	HD	96548	11	0780	1104180	-651421	H	1	07345	L	85122004	000000	000000	040000	002800		G	C=215,B=53

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
WRHCG	HD 96548	11	0780	1104180	-651421	H	3	27340	L	85122004	000000	000000	043500	003800		G E=245,C=178,B=68
HA172	HD96548	11	0798	1104180	-651421	H	3	27300	L	85121712	000000	000000	124728	003500	450	V
HA172	HD96548	11	0796	1104180	-651421	H	3	27322	L	85121814	000000	000000	143051	003800	551	V
HA172	HD96548	11	0787	1104180	-651421	H	3	27323	L	85121815	000000	000000	155130	003800	551	V
WRHCG	HD 96548	11	0780	1104180	-651421	H	3	27272	L	85121501	000000	000000	013600	003500		G C=210,B=35
WRHCG	HD 96548	11	0780	1104180	-651421	H	1	07346	L	85122007	000000	000000	071600	002800		G C=216,B=51
WRHCG	HD 96548	11	0780	1104180	-651421	H	3	27343	L	85122007	000000	000000	075300	003800		G E=232,C=154,B=39
WRHCG	HD 96548	11	0780	1104180	-651421	H	1	07309	L	85121502	000000	000000	021800	002000		G C=165,B=45
PLHNE	00 AZCEN	53	0860	1122580	-610539	L	1	07377	L	85122418	000000	000000	181100	001100		G C=203,B=33
PLHNE	00 AZCEN	53	0860	1122580	-610539	L	3	27376	L	85122418	000000	000000	183800	009500		G C=70,B=40
ISHFB	HD 102647	30	0210	1146306	+145106	H	1	07414	S	85123001	014000	000120	000000	000000		G C=240,B=41
XQHMS	Q 1202+281	85	0000	1202089	+281053	L	3	27166	L	85112320	000000	000000	204000	014000		G E=150,C=65,B=45
HCHDL	HD 106198	49	0650	1210369	-335050	L	3	27402	L	85122802	000000	000000	022000	018000		G B=67
XQHME	PG1211+143	85	1410	1211447	+141951	L	3	27210	L	85120220	000000	000000	200600	012000		G C=110,B=47
XQHME	PG1211+143	85	1410	1211448	+141953	L	1	07223	L	85120218	000000	000000	184100	008000		G C=150,B=47
CCHJL	HD 107446	47	0360	1218388	-600730	L	3	27238	L	85120906	000000	000000	064700	002500		G B=50
CCHJL	HD 107446	47	0360	1218388	-600730	H	1	07272	L	85120906	000000	000000	061000	003000		G E=1.1X,C=155,B=111
MLHCW	HD 109387	26	0389	1231214	+700347	H	3	26832	L	85100210	000000	000000	105600	000125		G C=210,B=50
MLHCW	HD 109387	26	0390	1231215	+700348	H	3	27427	L	85123104	000000	000000	041800	000125		G C=220,B=43
HM188	HD111597	30	0502	1247579	-334337	H	3	27357	L	85122215	000000	000000	154725	002300	701	V
ISHDY	00 HZ 43	16	1300	1313599	+292148	H	3	27225	S	85120518	182000	036000	000000	000000		G C=163,B=98
HM166	HD115842	23	0631	1317414	-553219	H	1	07399	L	85122812	000000	000000	120406	001030	501	V
HM166	HD 115842	23	0633	1317414	-553219	H	3	27405	L	85122812	000000	000000	123031	004200	660	V A FEW SATURATED
OD80K	00 HZ44	16	1170	1321191	+362338	L	1	07277	L	85121006	000000	000000	065600	001107		G C=200,B=57
OD80K	00 HZ44	16	1170	1321191	+362338	L	3	27243	L	85121008	000000	000000	082000	000236		G C=198,B=15
OD80K	00 HZ44	16	1170	1321191	+362338	L	1	07278	L	85121008	000000	000000	083100	000320		G C=229,B=33
OD80K	00 HZ44	16	1170	1321191	+362338	L	3	27240	L	85121003	000000	000000	034400	000155		G C=162,B=15
OD80K	00 HZ44	16	1170	1321191	+362338	L	1	07275	L	85121003	000000	000000	035300	000240		G C=179,B=33
OD80K	00 HZ44	16	1170	1321191	+362338	L	3	27241	L	85121004	000000	000000	045700	000350		G C=1.5X,B=16
OD80K	00 HZ44	16	1170	1321191	+362338	L	1	07276	L	85121005	000000	000000	051100	000550		G C=2X,B=36
OD80K	00 HZ44	16	1170	1321191	+362338	L	3	27242	L	85121006	000000	000000	062300	000820		G C=185,B=27
PHCAL	00 WAVECAL	98	0000	1345342	+493343	L	1	07404	S	85122906	062400	000001	000000	000000		G E=10X,B=98
PHCAL	00 WAVECAL	98	0000	1345342	+493343	H	1	07405	S	85122906	065600	000016	000000	000000		G E=60X,B=100
PHCAL	00 WAVECAL	98	0000	1345342	+493343	L	3	27411	S	85122907	072500	000002	000000	000000		G E=10X,B=103
PHCAL	00 WAVECAL	98	0000	1345342	+493343	H	3	27412	S	85122907	075000	000200	000000	000000		G E=60X,B=120
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07198	L	85112710	000000	000000	103600	000005		G C=225,B=45
PHCAL	HD 120315	21	0180	1345343	+493344	H	2	17834	L	85112910	000000	000000	102500	000006		G C=200,B=32
PHCAL	HD 120315	21	0180	1345343	+493344	H	2	17841	L	85123106	000000	000000	060500	000008		G C=210,B=31
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07197	L	85112709	000000	000000	095200	000005		G C=227,B=47
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07196	L	85112709	000000	000000	092200	000005		G C=223,B=45
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07195	L	85112708	000000	000000	083800	000005		G C=220,B=45
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07194	L	85112708	000000	000000	080600	000005		G C=219,B=45
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07193	L	85112707	000000	000000	072000	000005		G C=218,B=45
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07192	L	85112706	000000	000000	064800	000005		G C=215,B=45
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07233	L	85120404	000000	000000	043100	000001		G C=2X,B=42

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
PHCAL	HD 120315	21	0180	1345343	+493344	L	3	27220	L	85120404	000000	000000	044900	000001		G C=1.2X,B=20
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07120	L	85111710	000000	000000	100900	000005		G C=233,B=45
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07119	L	85111709	000000	000000	092300	000005		G C=237,B=45
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07118	L	85111708	000000	000000	084000	000006		G C=243,B=45
PHCAL	HD 120315	21	0180	1345343	+493344	L	3	27385	L	85122606	000000	000000	065800	000001		G C=215,B=12
PHCAL	HD 120315	21	0180	1345343	+493344	L	2	17824	L	85112609	000000	000000	090800	000000		G
ISHFB	HD 120315	21	0190	1345343	+493344	H	1	07419	S	85123008	082500	000010	000000	000000		G C=170,B=40
ISHFB	HD 120315	21	0190	1345343	+493344	H	3	27421	S	85123008	081800	000012	000000	000000		G E=185,B=38
PHCAL	HD 120315	21	0180	1345343	+493344	L	2	17823	L	85112608	000000	000000	082000	000001		G C=200,B=25
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07385	L	85122607	000000	000000	073700	000001		G C=172,B=35
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07386	L	85122608	000000	000000	082700	000001		G C=169,B=35
ISHFB	HD 120315	21	0190	1345343	+493344	H	1	07415	S	85123002	023800	000010	000000	000000		G C=230,B=41
ISHFB	HD 120315	21	0190	1345343	+493344	H	3	27420	S	85123002	023200	000012	000000	000000		G C=205,B=38
PHCAL	HD 120315	21	0180	1345343	+493344	L	2	17825	L	85112609	000000	000000	095400	000001		G C=2X,B=26
PHCAL	HD 120315	21	0180	1345343	+493344	L	2	17826	L	85112610	000000	000000	103400	000001		G C=2X,B=26
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07208	L	85120106	000000	000000	063900	000001		G C=208,B=55
PHCAL	HD 120315	21	0180	1345343	+493344	L	3	27196	L	85120107	000000	000000	070100	000001		G C=198,B=26
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07209	L	85120108	000000	000000	082000	000001		G C=197,B=40
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07218	L	85120206	000000	000000	061000	000001		G C=208,B=53
PHCAL	HD 120315	21	0180	1345343	+493344	L	3	27204	L	85120206	000000	000000	063100	000001		G C=205,B=27
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07219	L	85120207	000000	000000	074300	000001		G C=3X,B=48
PHCAL	HD 120315	21	0180	1345343	+493344	H	1	07053	L	85110710	000000	000000	100800	000005		G C=190,B=40
PHCAL	HD 120315	21	0180	1345343	+493344	L	3	27205	L	85120207	000000	000000	075800	000001		G C=255,B=22
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07236	L	85120408	000000	000000	082800	000001		G C=165,B=42
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07235	L	85120407	000000	000000	073700	000001		G C=154,B=55
PHCAL	HD 120315	21	0180	1345343	+493344	L	3	27221	L	85120406	000000	000000	062800	000001		G C=1.5X,B=29
PHCAL	HD 120315	21	0180	1345343	+493344	L	1	07234	L	85120406	000000	000000	060700	000001		G C=2X,B=60
PHCAL	HD 120315	21	0180	1345343	+493344	L	2	17822	L	85112607	000000	000000	073100	000001		G C=159,B=25
PHCAL	HD 120315	21	0180	1345343	+493344	H	3	27046	L	85110710	000000	000000	101600	000006		G C=170,B=62
ISHDY	PG1348+369	37	1350	1348421	+365650	H	3	27230	S	85120618	180000	040000	000000	000000		G C=180,B=112
ISHDY	PG1348+369	37	1350	1348421	+365650	H	3	27224	S	85120418	182600	038000	000000	000000		G E=171,C=166,B=105
PHCAL	00 WAVECAL	98	0000	1352181	+183850	L	1	07372	L	85122406	000000	000000	065100	000001		G E=20X,B=100
PHCAL	00 WAVECAL	98	0000	1352181	+183850	H	1	07373	L	85122407	000000	000000	072300	000016		G E=50X,B=110
ZAHNO	00 AG DRA	57	0950	1352181	+183850	L	1	07371	L	85122405	000000	000000	054900	000600		G E=184,C=115,B=38
WDHFB	00 1406+59	37	1330	1406539	+595459	H	3	27104	L	85111320	000000	000000	203600	035500		G C=158,B=87
CSHDB	HD 125560	47	0490	1417231	+163206	L	1	07260	L	85120705	000000	000000	054900	001000		G C=2X,B=84
CSHDB	HD 125560	47	0490	1417231	+163206	L	1	07262	L	85120708	000000	000000	080200	000600		G C=212,B=41
CCHJL	HD 127665	47	0360	1429404	+303524	H	1	07273	L	85120907	000000	000000	075500	005500		G E=1.3X,C=115,B=44
CCHMG	HD 131156	44	0468	1449047	+191826	H	1	07357	L	85122207	000000	000000	074200	001000		G E=186,C=140,B=40
CCHMG	HD 131156	44	0468	1449047	+191826	L	3	27356	L	85122208	000000	000000	081200	003700		G E=78,C=90,B=30
CCHMG	HD 131156	44	0470	1449047	+191826	L	3	27361	L	85122306	000000	000000	061800	006000		G E=170,C=160,B=70
CCHMG	HD 131156	44	0470	1449048	+191827	H	1	07368	L	85122319	000000	000000	194300	001100		G C=168,B=40
CCHMG	HD 131156	44	0470	1449048	+191827	L	3	27366	L	85122318	000000	000000	180700	009000		G E=195,C=175,B=47
CCHMG	HD 131156	44	0470	1449048	+191827	H	1	07365	L	85122305	000000	000000	055400	001000		G E=184,C=160,B=62
HA048	HD138749	22	0436	1530547	313136	H	3	27388	L	85122614	000000	000000	140950	000145	510	V

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
HA048	HD138749	22	0436	1530547	313136	H	3	26820	L	85100114	000000	000000	140638	000045	400	U	
CSHDB	HD 142091	46	0480	1549208	+354841	L	1	07261	L	85120706	000000	000000	065400	000300		G	C=196,B=45
PHCAL	BD+33 2642	20	1080	1550019	+330528	L	2	17842	L	85123106	000000	000000	065200	000420		G	C=160,B=23
ZAHNO	00 AG DRA	57	0950	1601230	+665625	L	3	27371	SL	85122405	053700	000500	051500	001500		G	E=3X,C=80,B=38
HI185	AG DRA	57	1007	1601240	665630	L	3	27031	L	85110416	000000	000000	161919	002500	361	U	
HI185	AG DRA	57	1007	1601240	665630	L	1	07043	L	85110416	000000	000000	165430	001000	351	U	
HI185	AG DRA	57	1005	1601240	665630	H	3	27032	L	85110417	000000	000000	172618	003000	151	U	
CSHDB	HD 145328	46	0476	1607084	+363700	L	1	07263	L	85120708	000000	000000	084900	000110		G	C=205,B=33
LGHJL	HD 145544	45	0380	1610521	-633337	H	1	06886	L	85101012	000000	000000	122700	001300		G	E=196,C=205,B=122
LDHDD	BD+55 1823	48	1000	1615590	+552348	L	1	06998	L	85102611	000000	000000	112500	002500		G	E=218,B=48
GCHRB	M13	83	0000	1639539	+363259	L	3	26891	L	85100801	000000	000000	011500	018000		G	C=190,B=132
GCHRB	NG M13	83	0000	1639540	+363300	L	1	06867	L	85100722	000000	000000	220700	018000		G	C=190,B=65
LGHJL	HD 150798	47	0190	1643211	-685620	H	1	06884	L	85101010	000000	000000	103100	000230		G	E=251,B=195
EGHJH	0000MK 499	88	1460	1647027	+484743	L	3	26961	L	85102022	000000	000000	221300	072600		G	C=230,B=150
HE171	MK 499	88	1490	1647028	484743	E	9	01706	2	85102015	000000	000000	155500	004000		U	FOR SWP26961
HS212	URANUS	03	0611	1651136	-223250	L	1	06845	L	85100216	000000	000000	164244	000500	701	U	
HS212	URANUS	03	0615	1651136	-223250	L	3	26834	L	85100215	000000	000000	152923	011600	401	U	4 EXP/15:29:23:28M/
HS212	URANUS	03	0614	1651136	-223250	L	1	06844	L	85100216	000000	000000	160237	000230	701	U	
HS212	URANUS	03	0614	1651136	-223250	L	1	06843	L	85100215	000000	000000	152517	000030	501	U	
HS212	URANUS	03	0605	1651136	-223250	L	1	06842	L	85100214	000000	000000	144402	000100	601	U	
HS212	URANUS	03	0606	1651136	-223250	L	1	06846	L	85100217	000000	000000	173423	001500	801	U	
HS212	URANUS	03	0607	1651136	-223250	L	1	06847	L	85100218	000000	000000	182936	002700	801	U	
SNHJC	00 URANUS	03	0550	1651158	-223257	L	1	06848	L	85100219	000000	000000	194000	009000		G	C=100X,B=100
KGHJL	HD 156283	47	0320	1713183	+365156	L	3	26924	L	85101300	000000	000000	002200	003000		G	E=46,C=46,B=29
KGHJL	HD 156283	47	0320	1713183	+365156	H	1	06898	L	85101221	000000	000000	214500	015000		G	E=6X,C=228,B=57
HC106	HD156633	20	0514	1715286	330910	L	1	06913	L	85101416	000000	000000	164558	000001	701	U	
HC106	HD156633	20	0508	1715286	330910	L	3	26936	L	85101416	000000	000000	164143	000001	501	U	PARTIAL READ
KGHJL	HD 157244	47	0280	1721083	-552906	H	1	06909	L	85101403	000000	000000	031500	009000		G	E=3.0X,C=240,B=65
KGHJL	HD 157999	47	0430	1724019	+041056	H	1	06899	L	85101301	000000	000000	013100	019500		G	E=3.0X,C=190,B=98
PEHGW	HD 159870	42	0617	1732422	+573528	H	1	07174	L	85112308	000000	000000	085000	006500		G	C=229,B=67
PEHGW	HD 159870	42	0617	1732422	+573528	L	3	27164	L	85112308	000000	000000	081000	003000		G	C=10X,B=27
PEHGW	HD 159870	42	0617	1732422	+573528	L	1	07173	SL	85112307	075700	000057	074900	000057		G	C=210,B=26
PEHGW	HD 159870	42	0617	1732422	+573528	L	3	27165	S	85112310	101800	000400	000000	000000		G	C=74,B=18
KGHJL	HD 160635	47	0360	1740492	-644210	L	3	26931	L	85101402	000000	000000	071100	003000		G	E=56,C=45,B=27
KGHJL	HD 160635	47	0360	1740492	-644210	H	1	06908	L	85101401	000000	000000	010300	006000		G	E=213,C=175,B=42
HITOO	RS OPH	55	1171	1747315	-064148	L	3	26883	L	85100618	000000	000000	181934	007000	131	U	
HITOO	RSOPH	55	1175	1747315	-064148	L	1	06860	L	85100617	000000	000000	171237	006000	342	U	
HITOO	RS OPH	55	1174	1747315	-064148	L	3	26882	L	85100616	000000	000000	160438	006000	131	U	
HA048	HD162732	26	0679	1748447	482425	L	3	27267	LS	85121411	120627	000032	115419	000018	510	U	310$
HA048	HD162732	26	0680	1748447	482425	H	3	27266	L	85121410	000000	000000	105130	002000	511	U	
HA048	HD162732	26	0680	1748447	482425	H	1	07305	L	85121411	000000	000000	112426	001200	513	U	
HA048	HD162732	26	0679	1748447	482425	L	1	07304	LS	85121410	104341	000020	103549	000011	512	U	312$
LGHJL	HD 163770	47	0386	1754319	+371521	H	1	07140	L	85111910	000000	000000	103200	001700		G	E=150,C=83,B=35
LGHJL	HD 163770	47	0386	1754319	+371521	L	3	27139	L	85111909	000000	000000	095800	002600		G	E=66,C=52,B=30
LGHJL	HD 163770	47	0390	1754320	+371522	H	1	06935	L	85101804	000000	000000	040600	005000		G	E=241,C=120,B=45

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP LARGE		ECC		COMMENT
HCHDL	HD 163990	49	0600	1755223	+452122	L	3	27401	L	85122718	000000	000000	180900	040000		G	C=120,B=84
MLHCW	HD 164284	26	0480	1757480	+042130	H	3	26861	L	85100504	000000	000000	042900	000210		G	C=240,B=38
MLHCW	HD 164284	26	0480	1757480	+042130	H	3	26850	L	85100410	000000	000000	105500	000210		G	C=220,B=40
MLHCW	HD 164284	26	0480	1757480	+042130	H	3	26824	L	85100205	000000	000000	051900	000210		G	C=215,B=41
MLHCW	HD 164284	26	0480	1757480	+042130	H	3	26841	L	85100401	000000	000000	012600	000210		G	C=230,B=40
MLHCW	HD 164284	26	0480	1757480	+042130	H	3	26845	L	85100404	000000	000000	044000	000210		G	C=220,B=40
MLHCW	HD 164284	26	0480	1757480	+042130	H	3	26865	L	85100507	000000	000000	072600	000210		G	C=220,B=40
MLHCW	HD 164284	26	0480	1757480	+042130	H	3	26836	L	85100321	000000	000000	214300	000210		G	C=220,B=40
MLHCW	HD 164284	26	0480	1757480	+042130	H	3	26870	L	85100512	000000	000000	120600	000210		G	C=220,B=40
SNHJC	00 NEPTUNE	03	0770	1802001	-222018	L	1	06851	L	85100300	000000	000000	002100	003000		G	C=8.0X,B=45
SNHJC	00 NEPTUNE	03	0770	1802001	-222018	L	1	06852	L	85100301	000000	000000	012400	009000		G	C=24X.B=65
SNHJC	00 NEPTUNE	03	0770	1802001	-222018	L	1	06849	L	85100223	000000	000000	230300	000330		G	C=210,B=37
SNHJC	00 NEPTUNE	03	0770	1802001	-222018	L	1	06850	L	85100223	000000	000000	233800	001000		G	C=3.0X,B=38
SNHJC	00 NEPTUNE	03	0770	1802015	-222019	L	1	06853	L	85100303	000000	000000	033400	022000		G	C=60X,B=98
HS212	NEPTUNE	03	0833	1802059	-222020	L	1	06857	L	85100414	000000	000000	142631	537000	903	U	2EXP.
HS212	SKY BKG	07	9999	1802059	-222020	L	3	26853	L	85100413	000000	000000	135606	010000	041	U	
HS212	SKY BKG	07	9999	1802059	-222020	L	3	26855	L	85100419	000000	000000	190716	008000	031	U	SKY CLOSE TO NEPTUNE
HS212	SKY BKG	07	9999	1802059	-222020	L	3	26854	L	85100416	000000	000000	161844	013000	041	U	SKY CLOSE TO NEPTUNE
HCHBB	HD 166612	39	0090	1809279	-281459	L	3	26818	L	85100111	000000	000000	111800	000055		G	C=205,B=20
GS227	HART.-GOOD	06	1192	1818248	112923	H	1	07107	L	85111518	000000	000000	180929	002500	132	U	NUCLEUS
GS227	HART.-GOOD	06	1191	1818579	112502	L	3	27118	LS	85111517	173733	001000	173733	001000	131	U	111$6 MIN FROM NUCLE
GS227	HART.-GOOD	06	1191	1818579	112502	L	3	27116	LS	85111514	140038	009000	140038	009000	171	U	161$
GS227	HART.-GOOD	06	1191	1818579	112502	L	3	27117	LS	85111516	163226	001000	163226	001000	130	U	110$LWLA 30" FR.TAIL
GS227	HART.-GOOD	06	1191	1818579	112502	L	1	07106	LS	85111517	170208	003000	170208	003000	133	U	123$30" TOWARDS SUN
GS227	HART.-GOOD	06	1191	1818579	112502	L	1	07105	LS	85111515	155854	003000	155854	003000	133	U	113$30" INTO TAIL
GS227	HART.-GOOD	06	1191	1819054	112405	E	9	01718	2	85111513	000000	000000	130000	004000		U	FOR LWP7103+SWP27116
GS227	HART.-GOOD	06	1191	1819054	112405	L	1	07104	LS	85111514	145101	002200	145101	002200	133	U	123$OFSET NUC IN SWL
GS227	HART.-GOOD	06	1191	1819054	112405	L	1	07103	LS	85111513	131809	003000	131809	003000	262	U	152$
DCHNE	HD 170764	53	0670	1828560	-190942	L	1	06956	L	85102009	000000	000000	093700	000700		G	C=186,B=117
HQTOO	3C 382	84	1424	1833120	323918	L	3	27010	L	85110217	000000	000000	170305	010400	341	U	
CSHDH	00 VEGA	30	0000	1835140	+384411	L	3	27158	SL	85112210	103200	000300	103300	000300		G	C=105,B=16
CSHDH	00 VEGA	30	0010	1835140	+384400	L	3	27130	S	85111720	202300	000800	000000	000000		G	C=205,B=21
CSHDH	00 VEGA	30	0000	1835140	+384411	L	1	07163	SL	85112207	075700	000200	075700	000200		G	C=227,B=33
CSHDH	00 VEGA	30	0010	1835141	+384403	L	1	07123	S	85111721	210600	000400	000000	000000		G	C=150,B=32
CSHDH	00 VEGA	30	0010	1835141	+384403	L	3	27132	S	85111802	022700	000800	000000	000000		G	C=155,B=19
CSHDH	00 VEGA	30	0000	1835142	+384404	L	1	07164	SL	85112208	084100	000200	084200	000200		G	C=152,B=32
CSHDH	00 VEGA	30	0000	1835144	+384416	L	1	07166	SL	85112210	100900	000100	101000	000100		G	C=84,B=30
CSHDH	00 VEGA	30	0010	1835145	+384418	L	3	27131	S	85111721	214100	000800	000000	000000		G	C=64,B=21
CSHDH	HD 172167	30	0010	1835145	+384418	L	3	27127	S	85111702	020600	000800	000000	000000		G	C=138,B=21
CSHDH	HD 172167	30	0010	1835145	+384418	H	1	07116	L	85111623	000000	000000	231000	014000		G	C=213,B=130
CSHDH	HD 172167	30	0010	1835145	+384418	L	3	27126	S	85111622	223200	000800	000000	000000		G	C=248,B=25
CSHDH	HD 172167	30	0010	1835145	+384418	L	1	07117	S	85111702	024200	000400	000000	000000		G	C=133,B=35
CSHDH	HD 172167	30	0010	1835145	+384418	L	1	07115	S	85111622	221800	000400	000000	000000		G	C=220,B=33
CSHDH	00 VEGA	30	0010	1835146	+384409	H	1	07124	S	85111722	222200	021000	000000	000000		G	C=200,B=95
CMHDH	HD 172167	30	0010	1835146	+384408	D	9	01719	L	85111620	000000	000000	200700	016000		G	NO COMMENTZ S

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
CMHDH	HD 172167	30	0010	1835146	+384408	D	9	01720	L	85111620	000000	000000	205400	002000		G	NO COMMENTS
PHCAL	HD 172167	30	0000	1835147	+384409	L	1	07038	L	85110404	000000	000000	043700	000001		G	C=180,B=35
PHCAL	HD 172167	30	0000	1835147	+384409	L	3	27024	L	85110403	000000	000000	035200	000001		G	C=150,B=15
STHRP	HD 172167	30	0000	1835147	+384409	L	1	07010	L	85102812	000000	000000	123100	000001		G	C=210,B=36
CSHDH	00 VEGA	30	0010	1835148	+384400	L	1	07122	S	85111720	201300	000400	000000	000000		G	C=144,B=32
CSHDH	00 VEGA	30	0000	1835151	+384408	L	1	07165	SL	85112209	092500	000030	092600	000030		G	C=165,B=30
CSHDH	00 VEGA	30	0000	1835153	+384408	L	1	07162	SL	85112207	071400	000100	071500	000100		G	C=155,B=33
EBHEG	HD 175227	21	0830	1851218	+241254	H	1	07135	L	85111821	000000	000000	214600	004500		G	C=190,B=50
EBHEG	HD 175227	21	0830	1851218	+241254	H	3	27135	L	85111819	000000	000000	195900	010000		G	C=180,B=45
SBHFF	HD 175492	39	0460	1852382	+223450	H	1	07185	L	85112510	000000	000000	100100	004500		G	C=2X,B=55
HA023	G207-9	37	1480	1855406	335311	L	1	07199	L	85112715	000000	000000	152602	020000	603	U	
HA023	G207-9	37	1480	1855407	335312	L	3	27178	L	85112711	000000	000000	112948	023000	401	U	
CMHDH	00 GAM LYR	22	0330	1857042	+323710	D	9	01721	L	85111621	000000	000000	212600	016000		G	NO COMMENTS
CMHDH	00 GAM LYR	22	0330	1857042	+323710	D	9	01722	L	85111621	000000	000000	214100	016000		G	NO COMMENTS
HM122	HD178487	23	0882	1906293	-101756	H	3	26985	L	85102613	000000	000000	135129	019000	501	U	RP -9,-210
HM122	HD178487	23	0878	1906293	-101756	H	3	26986	L	85102617	000000	000000	172943	019000	501	U	RP -23,-206
CVHPS	00 SVS 130	63	1450	1911345	+121250	L	3	27095	L	85111221	000000	000000	211900	004000		G	E=32,C=35,B=22
CVHPS	00 SVS 130	63	1450	1911345	+121250	L	1	07084	L	85111222	000000	000000	220500	005500		G	E=86,C=80,B=42
CVHPS	00 SVS 130	63	1450	1911345	+121250	L	3	27096	L	85111223	000000	000000	230800	008000		G	E=47,C=51,B=31
CVHPS	00 SVS 130	63	1450	1911345	+121250	L	1	07083	L	85111220	000000	000000	201200	005500		G	E=90,C=100,B=43
CVHPS	00 SVS 130	63	1450	1911345	+121250	L	1	07085	L	85111300	000000	000000	003600	004000		G	E=79,C=66,B=43
HHHKB	000000HH32	19	1600	1918078	+105620	L	3	26994	L	85102714	000000	000000	143200	008400		G	E=2X,B=142
HM247	HH32A	72	1800	1918079	105621	E	9	01708	2	85102714	000000	000000	140800	004000		U	FOR SWP 26994
HA191	HD181615	32	0474	1918520	-160330	H	1	06859	L	85100615	000000	000000	151012	000400	612	U	
HA191	HD181615	32	0471	1918520	-160330	H	3	26881	L	85100614	000000	000000	142530	004000	711	U	
DCHNE	HD 182296	45	0700	1921144	+083344	L	1	06954	L	85102007	000000	000000	074300	001500		G	C=200,B=82
HC096	HD182917	57	0672	1923140	500831	L	1	07230	LS	85120313	135052	000200	133950	000300	563	U	353$HI RES SUPERIMPO
HC096	HD182917	57	0680	1923140	500831	L	3	27217	L	85120314	000000	000000	140056	002000	371	U	
HC096	HD182917	57	0672	1923140	500831	H	1	07230	LS	85120313	135052	000200	133950	000300	563	U	353$HI RES SUPERIMPO
HC096	HD182917	57	0676	1923140	500831	L	1	07232	L	85120316	000000	000000	164245	000140	373	U	
HC096	HD182917	57	0677	1923140	500831	H	1	07231	L	85120314	000000	000000	143424	009000	373	U	
HC096	HD182917	57	0673	1923140	500831	L	3	27216	LS	85120312	125540	000730	124106	000730	351	U	231$
IBHSK	00 CH CYG	57	0700	1923141	+500830	L	3	27251	L	85121202	000000	000000	020300	001500		G	E=3X,C=125,B=19
IBHSK	00 CH CYG	57	0700	1923141	+500830	L	1	07289	L	85121202	000000	000000	022700	000500		G	E=2X,C=1.5X,B=34
IBHSK	00 CH CYG	57	0700	1923142	+500831	H	3	27252	L	85121204	000000	000000	041600	005500		G	E=160,C=76,B=45
HA191	HD182917	49	0671	1923142	500831	L	1	06840	L	85100119	000000	000000	193718	000100	361	U	
HA191	HD182917	49	0664	1923142	500831	L	3	26823	L	85100118	000000	000000	185738	000730	360	U	
CVHSS	00NOVACOL1	55	0000	1924034	+271554	L	3	26997	L	85102906	000000	000000	064300	001500		G	E=47,B=18
CVHSS	00NOVACOL1	55	0000	1924034	+271554	L	1	07011	L	85102906	000000	000000	061400	002000		G	E=68,C=55,B=35
HCHDL	HD 184786	49	0600	1932189	+490910	L	3	27419	L	85122923	000000	000000	230400	010500		G	B=52
HA184	HD185037	22	0621	1934004	364957	H	3	26897	L	85100820	000000	000000	204425	000500	410	U	
OD83K	HD 185510	47	0830	1936583	-061044	L	3	27006	L	85110104	000000	000000	041000	001500		G	C=78,B=25
SNHJC	BS 7503	44	0600	1940284	+502424	L	1	07133	L	85111810	000000	000000	101500	003000		G	C=36X,B=57
SNHJC	BS 7504	44	0650	1940290	+502429	L	1	06855	L	85100311	000000	000000	115400	002000		G	C=40X,B=66
SNHJC	BS 7503	44	0600	1940314	+502356	L	1	07128	L	85111805	000000	000000	055800	000230		G	C=3X,B=36

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
SNHJC	BS 7504	44	0650	1940314	+502356	L	1	07129	L	85111806	000000	000000	065400	000700		G C=6X.B=55
SNHJC	BS 7504	44	0650	1940314	+502356	L	1	07125	L	85111803	000000	000000	035500	000218		G C=1.5X,B=35
SNHJC	BS 7503	44	0600	1940314	+502356	L	1	07132	L	85111809	000000	000000	092000	001800		G C=25X,B=65
SNHJC	BS 7504	44	0650	1940314	+502356	L	1	07131	L	85111808	000000	000000	082700	001800		G C=15X,B=93
SNHJC	BS 7504	44	0650	1940314	+502356	L	1	07126	L	85111804	000000	000000	043600	000050		G C=255,B=35
SNHJC	BS 7503	44	0600	1940314	+502356	L	1	06854	L	85100309	000000	000000	092900	004000		G C=40X,B=141
SNHJC	BS 7503	44	0600	1940314	+502356	L	1	07130	L	85111807	000000	000000	073800	000730		G C=9X,B=65
SNHJC	BS 7504	44	0650	1940314	+502356	L	1	07127	L	85111805	000000	000000	051500	000100		G C=203,B=35
EBHEG	BD+30 3704	23	1040	1940320	+311215	L	1	07136	L	85111823	000000	000000	233600	001000		G C=225,B=38
EBHEG	BD+30 3704	23	1040	1940320	+311215	L	3	27136	L	85111822	000000	000000	225800	002500		G C=171,B=23
LGHJL	HD 186791	47	0272	1943528	+102923	H	1	07137	L	85111904	000000	000000	044200	003600		G E=2X,C=107,B=50
LGHJL	HD 186791	47	0270	1943529	+102924	H	1	06936	L	85101805	000000	000000	055000	003500		G E=1.5X,C=95,B=38
LGHJL	HD 186791	47	0270	1943529	+102924	H	1	06937	L	85101807	000000	000000	070000	001000		G E=161,C=68,B=35
LGHJL	HD 186791	47	0270	1943529	+102924	H	1	06885	L	85101011	000000	000000	112800	000300		G E=176,B=124
CVHFC	00V3885SGR	63	1040	1944125	-420754	H	3	27066	L	85110923	000000	000000	231200	026000		G C=220,B=85
HA184	HD187235	22	0602	1945412	381659	H	3	26896	L	85100819	000000	000000	194523	001500	511	V
HA184	HD188041	36	0590	1950416	-031444	H	1	06873	L	85100817	000000	000000	171820	002500	612	V
PHCAL	00 RR TEL	63	1100	2000199	-555159	H	3	27050	L	85110805	000000	000000	052200	002000		G E=5.0X,C=46,B=30
PHCAL	00 RR TEL	63	1100	2000199	-555159	H	3	27051	L	85110806	000000	000000	062500	002000		G E=5.0X,C=78,B=50
PHCAL	00 RR TEL	63	1100	2000199	-555159	H	3	27049	L	85110804	000000	000000	043100	002000		G E=5.0X,C=48,B=30
PHCAL	00 RR TEL	63	1030	2000199	-555159	H	3	27128	L	85111706	000000	000000	065800	002000		G E=5X B=172
HQ064	PK2005-489	87	1381	2005465	-485843	L	1	06856	L	85100314	000000	000000	142632	009000	502	V
HQ064	PK2005-489	87	1383	2005465	-485843	L	1	06925	L	85101615	000000	000000	150749	009000	502	V
HQ064	PK2005-489	87	1379	2005465	-485843	L	3	26946	L	85101616	000000	000000	165139	023500	402	V
HQ064	PK2005-489	87	1390	2005465	-485843	L	3	26835	L	85100316	000000	000000	160527	028000	402	V
HE109	NGC 6868	81	1288	2006165	-483137	L	3	26969	L	85102315	000000	000000	152030	032700	222	V
MLHCW	HD 192685	26	0480	2013087	+252517	H	3	26837	L	85100322	000000	000000	223500	000140		G C=200,B=35
MLHCW	HD 192685	26	0480	2013087	+252517	H	3	26844	L	85100403	000000	000000	034900	000140		G C=210,B=37
MLHCW	HD 192685	26	0480	2013087	+252517	H	3	26871	L	85100512	000000	000000	124800	000140		G C=210 B=39
MLHCW	HD 192685	26	0480	2013087	+252517	H	3	26851	L	85100411	000000	000000	113400	000140		G C=210,B=39
MLHCW	HD 192685	26	0480	2013087	+252517	H	3	26862	L	85100505	000000	000000	052100	000140		G C=205,B=39
MLHCW	HD 192685	26	0480	2013087	+252517	H	3	26858	L	85100502	000000	000000	021400	000140		G C=200,B=35
MLHCW	HD 192685	26	0480	2013087	+252517	H	3	26840	L	85100400	000000	000000	004200	000140		G C=205,B=37
MLHCW	HD 192685	26	0480	2013087	+252517	H	3	26825	L	85100206	000000	000000	060100	000140		G C=200,B=40
OD76K	HD 192713	39	0520	2013204	+232116	L	3	26819	L	85100112	000000	000000	120400	000230		G C=198,B=38
OD76K	HD 192713	39	0520	2013204	+232116	H	3	26833	L	85100212	000000	000000	120900	004000		G E=149,C=218,B=152
OD76K	HD 192713	39	0520	2013204	+232116	L	3	26890	L	85100711	000000	000000	115900	000224		G C=200,B=47
OD76K	HD 192713	39	0520	2013204	+232116	H	1	06838	L	85100112	000000	000000	121400	003600		G E=2X,C=2X,B=170
OD76K	HD 192713	39	0520	2013204	+232116	H	1	06866	L	85100712	000000	000000	122200	002400		G E=230,C=220,B=142
OD76K	HD 192713	39	0520	2013204	+232116	H	1	06841	L	85100211	000000	000000	114500	001500		G E=195,C=200,B=138
HA199	HD193237	23	0499	2015564	375235	H	3	27363	L	85122310	000000	000000	100645	003000	560	V
HA199	HD193237	23	0498	2015565	375236	H	1	07042	L	85110415	000000	000000	150953	000500	561	V
HA199	HD193237	23	0503	2015565	375236	H	1	07367	L	85122310	000000	000000	104506	000500	560	V
HA199	HD 193237	23	0500	2015565	375236	H	3	27030	L	85110414	000000	000000	143411	003000	561	V
WRHDB	00V444CYGN	11	0860	2017425	+383423	H	3	27080	L	85111102	000000	000000	020800	003500		G C=70,B=35

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
HAT00	HD193793	10	0714	2018467	434143	H	1	07064	L	85110918	000000	000000	181735	002400	454	V	ERROR IN TRACK
HAT00	HD193793	10	0700	2018467	434143	H	3	27064	L	85110917	000000	000000	170143	007000	551	V	
HA196	HD193793	10	0708	2018467	434143	L	1	07063	LS	85110916	162823	000300	160724	000020	553	V	773$
HAT00	HD193793	10	0703	2018467	434143	L	3	27063	LS	85110915	160122	000110	155445	000130	551	V	331$
HSHRD	002022+531	28	1610	2022367	+531657	L	3	27325	L	85121823	000000	000000	230000	011000		G	C=87,B=38
HSHRD	002023+523	19	1560	2023520	+523939	L	3	27324	L	85121818	000000	000000	181100	024000		G	E=255,C=155,B=62
CVHSS	00NOVACOL2	55	0000	2024404	+274048	L	1	07015	L	85102911	000000	000000	114700	000200		G	E=3X,C=60,B=32
CVHSS	00NOVACOL2	55	0000	2024404	+274048	L	3	27191	L	85113004	000000	000000	045400	001400		G	E=168,C=40,B=17
CVHSS	00NOVACOL2	55	0000	2024404	+274048	L	3	26999	L	85102911	000000	000000	115500	001140		G	E=165,C=45,B=25
CVHSS	00NOVACOL2	55	0000	2024404	+274048	L	3	27000	L	85102912	000000	000000	123500	001200		G	E=170,C=38,B=18
CVHSS	00NOVACOL2	55	0000	2024404	+274048	L	1	07200	L	85113005	000000	000000	051500	000210		G	E=2X,C=53,B=33
OD82K	00IO/EUROP	04	0550	2037519	-192407	L	1	06922	L	85101600	000000	000000	001800	000600		G	C=2X,B=36
OD82K	00 EUROPA	04	0550	2038031	-192323	L	1	06923	L	85101602	000000	000000	021600	000540		G	C=255,B=35
OD82K	00 EUROPA	04	0550	2038031	-192323	L	1	06924	L	85101603	000000	000000	032400	000300		G	C=255,B=33
WDHGW	00 G210-36	37	1300	2047100	+371654	L	1	07172	L	85112302	000000	000000	020700	004000		G	C=255,B=43
WDHGW	00 G210-36	37	1300	2047100	+371654	L	3	27162	L	85112301	000000	000000	011800	004000		G	C=150,B=20
HC005	G210-36	37	1333	2047111	371700	L	3	27348	L	85122109	000000	000000	094820	005000	501	V	
HI136	HBV 475	57	1256	2049026	352337	L	3	26945	L	85101519	000000	000000	191340	009300	261	V	
HI136	HBV 475	57	1256	2049026	352337	L	1	06921	L	85101518	000000	000000	184330	002500	451	V	
HI136	HBV 475	57	1250	2049026	352337	L	3	26942	L	85101513	000000	000000	135350	002500	141	V	
HI136	HBV 475	57	1252	2049026	352337	L	1	06920	L	85101515	000000	000000	154232	002500	451	V	
HI136	HBV 475	57	1250	2049026	352337	L	3	26943	L	85101515	000000	000000	150203	003500	251	V	
HI136	HBV 475	57	1271	2049026	352337	L	3	27222	L	85120413	000000	000000	133955	003500	251	V	
HI136	HBV 475	57	1270	2049026	352337	L	1	07239	L	85120414	000000	000000	142838	003000	452	V	
HI136	HBV 475	57	1271	2049026	352337	H	3	27223	L	85120415	000000	000000	150436	010200	131	V	
HI136	HBV 475	57	1249	2049026	352337	L	1	06919	L	85101514	000000	000000	142753	003000	451	V	
HI136	HBV 475	57	1252	2049026	352337	H	3	26944	L	85101516	000000	000000	161744	014500	412	V	
HC141	HD 198726	41	0624	2049207	280344	H	1	07238	L	85120412	000000	000000	122331	004000	402	V	
SIHHM	00 IO	04	0500	2056024	-181025	L	3	27179	L	85112720	000000	000000	201700	036000		G	E=112,B=70
SJHHM	00SKY BKGD	07	9999	2056024	-181025	L	3	27180	L	85112802	000000	000000	025100	001500		G	B=18
SJHHM	00 JUPITER	03	-0190	2056166	-180925	L	3	27184	L	85112807	000000	000000	075000	001500		G	E=193,C=3X,B=25
SJHHM	00SKY BKGD	07	9999	2056166	-180925	L	3	27185	L	85112808	000000	000000	084000	001500		G	E=112,B=20
SJHHM	00SKY BKGD	07	9999	2056166	-180925	L	3	27183	L	85112807	000000	000000	070000	001500		G	E=120,B=23
SJHHM	00 JUPITER	03	-0190	2056166	-180925	L	3	27186	L	85112809	000000	000000	093200	001500		G	E=146,C=3X,B=21
SJHHM	00SKY BKGD	07	9999	2056166	-180925	L	3	27182	L	85112804	000000	000000	045800	001500		G	E=49,B=19
SJHHM	00 JUPITER	03	-0190	2056166	-180925	L	3	27181	L	85112804	000000	000000	040900	001500		G	E=142,C=3X,B=22
SJHHM	00SKY BKGD	07	9999	2056274	-180840	L	3	27187	L	85112810	000000	000000	101800	001500		G	E=56,B=17
MLHCW	HD 200120	26	0450	2058074	+471930	H	3	26864	L	85100506	000000	000000	063900	000120		G	C=200,B=38
MLHCW	HD 200120	26	0450	2058074	+471930	H	3	26860	L	85100503	000000	000000	034000	000120		G	C=210,B=35
MLHCW	HD 200120	26	0450	2058074	+471930	H	3	26857	L	85100423	000000	000000	230500	000120		G	C=215,B=35
MLHCW	HD 200120	26	0450	2058074	+471930	H	3	26856	L	85100421	000000	000000	215800	000210		G	C=230,B=40
HA048	HD200120	20	0489	2058074	471930	H	3	26821	L	85100115	000000	000000	151509	000130	500	V	
MLHCW	HD 200120	26	0450	2058074	+471930	H	3	26826	L	85100206	000000	000000	063800	000120		G	C=190,B=40
MLHCW	HD 200120	26	0450	2058074	471930	H	3	26852	L	85100412	000000	000000	120900	000120		G	C=205,B=38
MLHCW	HD 200120	26	0450	2058074	+471930	H	3	26838	L	85100323	000000	000000	231300	000120		G	C=195,B=35

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL	EXP.LARGE	ECC	COMMENT
MLHCW	HD 200120	26	0450	2058074	+471930	H	3	26842	L	85100402	000000 000000	021100 000120		G C=195,B=37
MLHCW	HD 200120	26	0450	2058074	+471930	H	3	26846	L	85100405	000000 000000	053500 000120		G C=200,B=38
HA048	HD200120	22	0441	2058074	471930	H	3	27389	L	85122614	000000 000000	145430 000130	410	V
HCHDL	HD 200527	49	0620	2100368	+443535	L	3	27418	L	85122917	000000 000000	172700 030000		G C=116,B=85
HA124	NGC7009	70	0950	2101276	-113354	H	1	07175	L	85112311	000000 000000	114820 041100	574	V
CCHMG	0061 CYG A	46	0522	2104399	+383000	L	1	07351	L	85122108	000000 000000	081300 001000		G E=255,C=198,B=35
HA184	HD201601	36	0507	2107546	095545	H	1	06874	L	85100818	000000 000000	185504 001000	512	V
SRHLW	00 T CEP	51	0700	2108529	+681712	L	1	07202	L	85113008	000000 000000	080500 001000		G E=136,C=68,B=40
SRHLW	00 T CEP	51	0700	2108529	+681712	L	1	07201	L	85113007	000000 000000	071400 000500		G E=88,B=40
OBHJS	HD 202124	13	0780	2110385	+441932	H	3	26977	L	85102504	000000 000000	044300 007000		G C=144,B=43
OBHJS	HD 202124	13	0780	2110385	+441932	H	1	06989	L	85102506	000000 000000	060100 003200		G C=192,B=57
HM166	HD202124	13	0806	2110385	441931	H	1	07401	L	85122815	000000 000000	155332 005000	501	V
SBHFF	HD 202447	39	0390	2113194	+050224	L	3	27172	L	85112504	000000 000000	042300 000030		G C=190,B=18
SBHFF	HD 202447	39	0390	2113194	+050224	H	1	07181	L	85112504	000000 000000	043000 001400		G C=2X,B=47
LDHDD	HD 202575	46	0790	2114050	+091106	L	1	06994	L	85102605	000000 000000	053100 001600		G E=161,C=94,B=39
HM166	HD 203374	20	0695	2117540	613846	H	3	27406	L	85122814	000000 000000	144120 004300	500	V
HM166	HD203374	20	0690	2117540	613846	H	1	07400	L	85122814	000000 000000	141417 001830	601	V
PHCAL	HD 203467	26	0540	2118201	+643934	D	9	01755	L	85123105	000000 000000	052600 016000		G NO COMMENTS
MLHCW	HD 203467	26	0540	2118201	+643934	H	3	26859	L	85100502	000000 000000	025900 000600		G C=210,B=40
MLHCW	HD 203467	26	0540	2118201	+643934	H	3	26849	L	85100410	000000 000000	101100 000600		G C=220,B=40
MLHCW	HD 203467	26	0540	2118201	+643934	H	3	27428	L	85123104	000000 000000	045700 000500		G C=210,B=62
MLHCW	HD 203467	26	0540	2118201	+643934	H	3	26839	L	85100323	000000 000000	235500 000600		G C=215,B=39
MLHCW	HD 203467	26	0540	2118201	+643934	H	3	26827	L	85100207	000000 000000	071400 000600		G C=205,B=40
MLHCW	HD 203467	26	0540	2118201	+643934	H	3	26863	L	85100505	000000 000000	055900 000600		G C=215,B=40
MLHCW	HD 203467	26	0540	2118201	+643934	H	3	26912	L	85101104	000000 000000	044500 000600		G C=215,B=40
MLHCW	HD 203467	26	0540	2118201	+643934	H	3	26843	L	85100402	000000 000000	025900 000600		G C=220,B=40
HQ076	IE2125-15	84	1468	2124475	-145952	L	3	27192	L	85113012	000000 000000	120951 035800	112	V
LGHJL	HD 204867	45	0290	2128557	-054732	H	1	06938	L	85101808	000000 000000	080000 001000		G E=144,C=1.2X,B=45
LGHJL	HD 204867	45	0290	2128557	-054732	H	1	06930	L	85101707	000000 000000	075400 003200		G E=3X,A=106
XQHME	00II ZW136	85	1490	2130013	+095459	L	3	27211	L	85120223	000000 000000	230500 010500		G E=233,C=1-3,B=60
XQHME	00II ZW136	85	1490	2130013	+095459	L	1	07205	L	85113018	000000 000000	185500 010000		G E=164,C=138,B=50
CVHFC	00 SS CYG	54	0960	2140444	+432122	H	3	27065	L	85110919	000000 000000	193400 015000		G E=234,C=1.5X,B=71
CCHJL	HD 206936	49	0410	2141585	+583301	H	1	07264	L	85120801	000000 000000	014500 007500		G B=55
DCHNE	9 PEG	45	0430	2142085	+170711	L	1	06955	L	85102008	000000 000000	085100 000051		G C=195,B=40
PHCAL	00 WAVECAL	98	0000	2145000	-060858	L	1	07206	S	85120104	040900 000001	000000 000000		G E=10X,B=103
PHCAL	00 WAVECAL	98	0000	2145000	-060858	H	3	27195	S	85120103	033800 000200	000000 000000		G E=60X,B=125
PHCAL	00 WAVECAL	98	0000	2145000	-060858	L	3	27194	S	85120103	031000 000002	000000 000000		G E=10X,B=100
PHCAL	00 WAVECAL	98	0000	2145000	-060858	H	1	07207	S	85120104	044900 000016	000000 000000		G E=60X,B=105
HCHBB	HD 207739	39	0010	2147597	+434353	L	3	27058	L	85110907	000000 000000	073900 001200		G C=158,B=32
HCHBB	HD 207739	39	0010	2147598	+434354	L	1	07059	L	85110907	000000 000000	072800 000330		G E=218,C=165,B=40
PHCAL	BD+284211	16	1067	2148560	283735	L	3	27071	LS	85111012	122125 000045	121724 000026	501	V 501$
PHCAL	BD+284211	16	1076	2148560	283735	L	1	07213	L	85120114	000000 000000	145344 000050	502	V
PHCAL	BD+28 4211	16	1072	2148560	283735	L	1	07068	LS	85111012	123134 000230	122612 000050	503	V 603$
PHCAL	BD+28 4211	16	1060	2148560	283735	L	1	07214	L	85120115	000000 000000	152424 000230	702	V
PHCAL	BD+28 4211	16	1076	2148560	283735	L	1	07408	L	85122911	000000 000000	113341 000050	501	V

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
PHCAL	BD+28 4211	16	1073	2148560	283735	L	1	07409	L	85122912	000000	000000	120543	000330	801	U	
PHCAL	BD+28 4211	16	1071	2148560	283735	L	3	27414	L	85122912	000000	000000	121237	000026	500	U	
PHCAL	BD+28 4211	16	1074	2148560	283735	L	1	07407	L	85122910	000000	000000	103409	000330	801	U	
PHCAL	BD+28 4211	16	1055	2148560	283735	H	3	26964	L	85102118	000000	000000	184025	004500	501	U	
PHCAL	BD+284211	16	1058	2148560	283735	L	3	27199	LS	85120114	144909	000120	144336	000026	500	U	600$
PHCAL	BD+28 4211	16	1065	2148560	283735	H	1	06961	L	85102119	000000	000000	193237	006500	504	U	
PHCAL	BD+28 4211	16	1072	2148560	283735	L	1	07406	L	85122909	000000	000000	095231	000050	501	U	
PHCAL	BD+284211	16	1070	2148560	283735	L	1	07069	L	85111013	000000	000000	133838	000230	704	U	
PHCAL	BD+28 4211	16	1070	2148560	283735	L	3	27072	LS	85111013	133444	000045	132654	000026	501	U	501$
PHCAL	BD+28 4211	16	1072	2148560	283735	L	3	27413	L	85122910	000000	000000	104153	000026	500	U	
PHCAL	BD+28 4211	16	1050	2148574	+283734	L	1	06902	L	85101309	000000	000000	093900	000050		G	C=200,B=38
PHCAL	BD+28 4211	16	1050	2148574	+283734	L	2	17828	L	85112905	000000	000000	052000	000100		G	C=179,B=23
PHCAL	BD+28 4211	16	1050	2148574	+283734	L	3	26927	L	85101309	000000	000000	094300	000026		G	C=200,B=17
PHCAL	BD+28 4211	16	1050	2148574	+283734	L	3	27369	L	85122402	000000	000000	021100	000118		G	C=175,C=15
PHCAL	BD+28 4211	16	1050	2148574	+283734	L	3	27383	L	85122602	000000	000000	023200	000236		G	C=2X,B=23
PHCAL	BD+28 4211	16	1050	2148574	+283734	L	3	27177	L	85112703	000000	000000	034500	000026		G	C=185,B=15
PHCAL	BD+28 4211	16	1050	2148574	+283734	L	2	17793	SL	85101607	075400	000300	074500	000100		G	C=180,B=21
PHCAL	BD+28 4211	16	1050	2148574	+283734	L	1	07189	L	85112703	000000	000000	035900	000050		G	C=190,B=35
PHCAL	OOMISIDENT	65	0942	2149419	+283759	L	2	17827	L	85112903	000000	000000	031500	000100		G	C=67,B=23
OBHJS	HD 235673	12	0910	2155490	+523454	H	3	26976	L	85102502	000000	000000	020400	006700		G	C=105,B=40
OBHJS	HD 235673	12	0910	2155490	+523454	H	1	06988	L	85102503	000000	000000	031800	005500		G	C=166,B=66
HQ226	PK2155-304	87	1381	2155583	-302753	L	1	07082	L	85111218	000000	000000	180231	003900	302	U	
HQ226	PK2155-304	87	1381	2155583	-302753	L	3	27094	L	85111216	000000	000000	162742	009000	300	U	
HQ226	PK2155-304	87	1360	2155584	-302754	L	3	26974	L	85102418	000000	000000	183102	009000	400	U	
HQ226	PK2155-304	87	1353	2155584	-302754	L	1	06986	L	85102420	000000	000000	200742	004000	401	U	
HC030	G26-41	37	1356	2157209	-005418	L	1	07187	L	85112612	000000	000000	122930	003000	202	U	
LGHJL	HD 209750	45	0300	2203129	-003349	H	1	06928	L	85101705	000000	000000	055200	003200		G	E=2X,C=3X,B=55
LGHJL	HD 209750	45	0300	2203129	-003349	H	1	06929	L	85101706	000000	000000	065800	001000		G	E=173,C=200,B=40
PHCAL	HD 209952	22	0170	2205054	-471215	L	3	26995	L	85102810	000000	000000	102500	000001		G	C=210,B=18
PHCAL	HD 209952	22	0170	2205054	-471215	L	1	07009	L	85102811	000000	000000	110700	000001		G	C=220,B=38
QSHMM	PG 2209+18	85	1550	2209302	+182659	L	3	27424	L	85123020	000000	000000	205400	023500		G	E=140,C=160,B=119
QSHMM	PG 2209+18	85	1550	2209302	+182701	L	1	07427	L	85123017	000000	000000	174700	018000		G	E=164,C=150,B=77
HC057	HD211388	47	0452	2213472	372957	L	3	27047	L	85110711	000000	000000	114826	041900	333	U	
HI115	H 2215-086	59	1397	2215171	-083606	L	1	06972	L	85102220	000000	000000	201904	002100	333	U	
HI115	H 2215-086	59	1385	2215171	-083606	L	3	26968	L	85102219	000000	000000	192907	004200	331	U	
HI115	H 2215-086	59	1402	2215171	-083606	L	1	06969	L	85102215	000000	000000	155043	002100	333	U	
HI115	H 2215-086	59	1397	2215171	-083606	L	3	26967	L	85102217	000000	000000	173842	004200	331	U	
HI115	H 2215-086	59	1355	2215171	-083606	L	1	06970	L	85102217	000000	000000	171144	002100	333	U	
HI115	H 2215-086	59	1387	2215171	-083606	L	1	06971	L	85102218	000000	000000	182942	004200	443	U	
HI115	H 2215-086	59	1392	2215171	-083606	L	3	26966	L	85102216	000000	000000	162032	004200	331	U	
HI115	H 2215-086	59	1367	2215171	-083606	L	3	26965	L	85102215	000000	000000	150212	004200	331	U	
HS231	P/HALLEY	06	0905	2216264	-022522	L	3	27429	L	85123110	000000	000000	105313	000300	140	U	
HS231	P/HALLEY	06	0904	2216264	-022522	L	1	07428	L	85123110	000000	000000	104657	000230	251	U	
HS231	P/HALLEY	06	0904	2216264	-022522	L	1	07429	L	85123111	000000	000000	113040	002500	471	U	
HS231	P/HALLEY	06	0904	2216264	-022522	E	9	01757	2	85123112	000000	000000	125500	004000		U	

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC		COMMENT
HS231	P/HALLEY	06	0904	2216264	-022522	E	9	01756	2	85123110	000000	000000	103500	016000		U	
HS231	P/HALLEY	06	0907	2216264	-022522	L	3	27430	L	85123112	000000	000000	120456	011500	231	U	5 SLOTS:30+15+35+30+
HS231	P/HALLEY	06	0907	2216264	-022522	L	1	07430	L	85123112	000000	000000	124003	006000	572	U	2 SLOTS OF 30 MIN EA
HS231	P/HALLEY	06	0913	2216264	-022522	L	1	07431	L	85123115	000000	000000	152422	000300	251	U	
HS231	P/HALLEY	06	0879	2218573	-021011	L	1	07426	L	85123015	000000	000000	153759	001600	472	U	
HS231	P/HALLEY	06	0918	2218573	-021011	L	3	27422	L	85123010	000000	000000	104237	019500	231	U	EXPOSED IN 6 SLOTS
HS231	P/HALLEY	06	0888	2218573	-021011	L	1	07424	L	85123014	000000	000000	140206	000900	361	U	
HS231	P/HALLEY	06	0877	2218573	-021011	L	3	27423	L	85123016	000000	000000	160328	000130	130	U	
HS231	P/HALLEY	06	0917	2218573	-021011	L	1	07420	L	85123010	000000	000000	103739	000200	241	U	
HS231	P/HALLEY	06	0886	2218573	-021011	L	1	07425	L	85123014	000000	000000	145202	000700	361	U	
HS231	P/HALLEY	06	9999	2218573	-021011	L	1	07423	L	85123013	000000	000000	131156	000700	361	U	
HS231	P/HALLEY	06	0888	2218573	-021011	E	9	01753	2	85123014	000000	000000	141300	004000		U	
HS231	P/HALLEY	06	0911	2218573	-021011	L	1	07421	L	85123011	000000	000000	112824	000500	361	U	
HS231	P/HALLEY	06	0903	2218573	-021011	L	1	07422	L	85123012	000000	000000	122617	000700	361	U	
HS231	P/HALLEY	06	0888	2218573	-021011	E	9	01754	2	85123016	000000	000000	161600	004000		U	
HS231	P/HALLEY	06	0917	2218573	-021011	E	9	01752	2	85123010	000000	000000	103000	012000		U	
SCHPF	OOP/HALLEY	06	0540	2222319	-014709	L	3	27410	L	85122903	000000	000000	035700	003000		G	E=4X,B=55
SCHPF	OOP/HALLEY	06	0540	2222319	-014709	L	1	07403	L	85122902	000000	000000	024600	006000		G	E=13X,C=182,B=81
SCHPF	OOP/HALLEY	06	0540	2222322	-014710	L	1	07402	L	85122901	000000	000000	015800	000300		G	E=160,B=38
SCHPF	OOP/HALLEY	06	0540	2222322	-014710	D	9	01751	L	85122901	000000	000000	015100	002000		G	NO COMMENTS
SCHPF	OOP/HALLEY	06	0540	2222322	-014710	L	3	27409	L	85122902	000000	000000	020700	000400		G	E=145,B=21
PHCAL	00 SAFE RD	99	0550	2228000	-105603	L	2	17790	L	85101605	000000	000000	051900	000000		G	B=23
PHCAL	00 WAVCAL	98	0000	2228000	-105603	L	2	17792	S	85101606	062300	000001	000000	000000		G	E=20X,B=87
PHCAL	00 WAVCAL	98	0000	2228000	-105603	H	2	17791	S	85101605	055000	000016	000000	000000		G	E=50X,B=140
HS231	P/HALLEY	06	0912	2232101	-004944	H	3	27380	L	85122508	000000	000000	084301	039000	113	U	5X30+4X60MIN IN LWLA
HS231	P/HALLEY	06	0937	2232101	-004944	E	9	01748	2	85122515	000000	000000	155700	016000		U	NUCLEUS IN LWLA
HS231	P/HALLEY	06	0923	2233219	-004225	E	9	01746	2	85122511	000000	000000	112300	016000		U	NUCLEUS IN LWLA
HS231	P/HALLEY	06	0919	2233219	-004225	E	9	01745	2	85122510	000000	000000	100000	016000		U	NUCLEUS AT R.P.
HS231	P/HALLEY	06	0912	2233219	-004225	E	9	01744	2	85122509	000000	000000	091000	016000		U	NUCLEUS IN LWLA
HS231	P/HALLEY	06	0931	2233219	-004225	E	9	01747	2	85122514	000000	000000	140900	016000		U	NUCLEUS IN LWLA
SCHPF	OOP/HALLEY	06	0580	2234169	-003540	L	1	07384	L	85122600	000000	000000	002400	000300		G	E=155,B=32
SCHPF	OOP/HALLEY	06	0580	2234169	-003540	L	3	27382	L	85122600	000000	000000	003500	000400		G	E=142,B=10
SCHPF	OOP/HALLEY	06	0580	2234169	-003516	S	9	01750	L	85122519	000000	000000	195400	002000		G	NO COMMENTS
SCHPF	OOP/HALLEY	06	0580	2234169	-003540	D	9	01749	L	85122518	000000	000000	181000	002000		G	NO COMMENTS
SCHPF	OOP/HALLEY	06	0580	2234169	-003540	H	1	07383	L	85122508	000000	000000	084100	072000		G	E=50X,C=219,B=159
SCHPF	OOP/HALLEY	06	0580	2234169	-003540	L	3	27381	L	85122518	000000	000000	180100	024000		G	E=10X,B=53
SCHPF	OOP/HALLEY	06	0580	2234173	-003540	L	1	07380	L	85122502	000000	000000	025900	004000		G	E=10X,C=230,B=50
SCHPF	OOP/HALLEY	06	0580	2234173	-003541	H	1	07381	L	85122504	000000	000000	044700	001000		G	E=160,B=50
SCHPF	OOP/HALLEY	06	0580	2234173	-003540	L	3	27378	L	85122502	000000	000000	025000	000200		G	E=92,B=20
SCHPF	OOP/HALLEY	06	0580	2234173	-003540	L	1	07379	L	85122502	000000	000000	021400	000200		G	E=149,B=32
SCHPF	OOP/HALLEY	06	0580	2234173	-003540	D	9	01742	L	85122501	000000	000000	015700	002000		G	NO COMMENTS
SCHPF	OOP/HALLEY	06	0580	2234173	-003541	D	9	01743	L	85122508	000000	000000	082900	016000		G	NO COMMENTS
HC161	HD214479	48	0922	2236010	-205248	L	3	26983	L	85102514	000000	000000	140629	005500	331	U	
HC161	HD214479	48	0926	2236010	-205249	L	1	06991	L	85102515	000000	000000	150815	000600	242	U	
PHCAL	HD214680	13	0504	2237010	384722	L	3	27075	L	85111016	000000	000000	160029	000000	501	U	

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL		EXP.LARGE		ECC	COMMENT
PHCAL	HD214680	13	0503	2237010	384722	L	3	27076	L	85111016	000000	000000	162950	000000	501	U
PHCAL	HD214680	13	0505	2237010	384722	L	3	27074	L	85111015	000000	000000	153433	000001	701	U
PHCAL	HD214680	13	0507	2237010	384722	L	3	27073	L	85111015	000000	000000	150707	000001	701	U
FSHJL	00000GL873	52	1020	2244398	+440332	L	1	06917	L	85101507	000000	000000	072700	003000		G E=212,C=70,B=52
FSHJL	00000GL873	52	1020	2244398	+440332	L	3	26940	L	85101506	000000	000000	063100	005000		G B=25
PHCAL	00 WAVCAL	98	0000	2244398	+440332	L	1	06877	S	85100909	091600	000001	000000	000000		G E=10.0X,B=120
PHCAL	00 WAVCAL	98	0000	2244398	+440332	H	1	06878	S	85100909	095100	000016	000000	000000		G E=60.0X,B=150
PHCAL	00 WAVCAL	98	0000	2244398	+440332	L	3	26903	S	85100910	103800	000002	000000	000000		G E=10.0X,B=110
PHCAL	00 WAVCAL	98	0000	2244398	+440332	H	3	26904	S	85100911	110800	000200	000000	000000		G E=60.0X,B=150
FSHJL	00000GL873	52	1020	2244398	+440332	L	3	26920	L	85101207	000000	000000	073200	005000		G E=166,B=32
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26908	L	85101005	000000	000000	054700	005000		G E=149,B=30
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06900	L	85101305	000000	000000	055700	003200		G E=255,C=65,B=40
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06894	L	85101208	000000	000000	083000	003000		G E=240,C=100,B=70
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06882	L	85101006	000000	000000	064500	003500		G E=234,C=90,B=50
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06893	L	85101206	000000	000000	065000	003500		G E=190,C=60,B=40
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06889	L	85101107	000000	000000	073100	003000		G E=231,C=70,B=45
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26932	L	85101406	000000	000000	063600	005000		G E=151,B=22
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06883	L	85101008	000000	000000	082500	002500		G B=1.5X
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06911	L	85101407	000000	000000	073200	003000		G E=255,C=86,B=63
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06910	L	85101405	000000	000000	055500	003500		G E=255,C=60,B=40
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26909	L	85101007	000000	000000	073200	004500		G E=196,B=138
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26925	L	85101306	000000	000000	063500	005000		G E=151,B=30
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26933	L	85101408	000000	000000	080900	005000		G E=198,B=78
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06916	L	85101505	000000	000000	055000	003500		G E=244,C=65,B=43
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26913	L	85101106	000000	000000	062400	005000		G E=138,B=19
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26893	L	85100807	000000	000000	075900	004000		G E=237,B=196
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06869	L	85100807	000000	000000	072500	002700		G E=236,C=155,B=125
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26892	L	85100806	000000	000000	063400	004500		G E=144,B=68
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26926	L	85101308	000000	000000	081100	004500		G E=162,B=50
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06868	L	85100805	000000	000000	055600	003000		G E=1.2X,C=120,B=90
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26902	L	85100908	000000	000000	080100	004000		G E=248,B=1.5X
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26914	L	85101108	000000	000000	081500	003800		G E=176,B=40
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06876	L	85100907	000000	000000	072700	002700		G E=1.2X,B=165
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26901	L	85100906	000000	000000	063600	004500		G E=166,B=75
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26886	L	85100705	000000	000000	055500	003000		G E=90,B=32
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06863	L	85100706	000000	000000	063100	003000		G E=241,C=75,B=48
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26887	L	85100707	000000	000000	070900	004500		G E=143,B=70
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06864	L	85100708	000000	000000	080000	003000		G E=255,B=145
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06901	L	85101307	000000	000000	073200	003200		G E=224,C=75,B=59
FSHJL	00000GL873	52	1020	2244399	+440333	L	3	26941	L	85101508	000000	000000	080200	005000		G B=70
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06875	L	85100905	000000	000000	055900	003000		G E=248,B=100
FSHJL	00000GL873	52	1020	2244399	+440333	L	1	06888	L	85101105	000000	000000	054200	003500		G E=255,C=65,B=40
EBHEG	00 DH CEP	12	0860	2244542	+574913	H	3	27137	L	85111900	000000	000000	002400	014500		G C=155,B=63
CCHJL	HD 216386	49	0370	2250004	-075046	H	1	07265	L	85120803	000000	000000	034800	005500		G E=1.5X,C=136,B=68
CCHJL	HD 216386	49	0370	2250004	-075046	L	3	27233	L	85120804	000000	000000	045100	002500		G C=83,B=41

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL	EXP.LARGE	ECC		COMMENT
HCHDL	HD 216672	50	0630	2252076	+164031	L	3	27407	L	85122817	000000 000000	172100 030000		G	E=87,C=105,B=75
CCHMG	00 GL 879	46	0649	2253369	-314947	L	3	27355	L	85122204	000000 000000	042400 006000		G	B=100
CCHMG	00 GL 879	46	0649	2253369	-314947	L	1	07356	L	85122205	000000 000000	053200 000500		G	E=178,C=130,B=45
OBHJS	HD 218195	12	0830	2303051	+575817	H	3	26975	L	85102422	000000 000000	221800 012500		G	C=170,B=50
OBHJS	HD 218195	12	0830	2303051	+575817	H	1	06987	L	85102500	000000 000000	003000 006700		G	C=212,B=58
XQHME	PG2304+042	84	1570	2304303	+041641	L	3	27193	L	85113021	000000 000000	215500 024000		G	B=128
HS231	P/HALLEY	06	1061	2308249	025111	L	3	27287	L	85121611	000000 000000	111855 001000	050	V	ON NUCLEUS
HS231	P/HALLEY	06	9999	2308249	025111	E	9	01739	2	85121611	000000 000000	110000 016000		V	
HS231	P/HALLEY	06	9999	2308249	025111	D	9	01741	2	85121615	000000 000000	153800 002000		V	
HS231	P/HALLEY	06	9999	2308249	025111	L	9	07322	L	85121616	000000 000000	161634 002000	142	V	
HS231	P/HALLEY	06	9999	2308249	025111	D	9	01740	2	85121614	000000 000000	141000 002000		V	NUCLEUS IN SWLA
HS231	P/HALLEY	06	1062	2308249	025111	L	1	07322	LS	85121616	000000 002000	161634 002000	142	V	$1 MIN E OF NUCLE
HS231	P/HALLEY	06	1063	2308249	025111	L	1	07319	L	85121611	000000 000000	115747 006000	382	V	ON NUCLEUS
HS231	P/HALLEY	06	1062	2308249	025111	L	3	27288	L	85121613	000000 000000	131322 018000	132	V	ON NUCLEUS
HS231	P/HALLEY	06	1062	2308249	025111	H	1	07321	L	85121614	000000 000000	144844 006000	132	V	
HS231	P/HALLEY	06	1062	2308249	025211	L	1	07320	L	85121613	000000 000000	134704 003000	152	V	NUCLEUS IN SWLA
HS231	SAO128018	30	0819	2308404	025253	L	1	07318	L	85121610	000000 000000	103927 001000		V	REF. FOR LWP7317
HS231	P/HALLEY	06	1066	2308404	025253	L	1	07317	L	85121609	000000 000000	095034 001000		V	OCCULT OF SAO128018
HS231	P/HALLEY	06	9999	2308404	025253	E	9	01738	2	85121609	000000 000000	093000 004000		V	OCCULT OF SAO128018
SCHPF	OOP/HALLEY	06	0600	2310471	+030701	H	1	07314	L	85121521	000000 000000	210700 014500		G	E=208,B=105
SCHPF	OOP/HALLEY	06	0600	2312147	+031432	D	9	01736	L	85121517	000000 000000	174900 002000		G	NO COMMENTS
SCHPF	OOP/HALLEY	06	0600	2312147	+031432	H	1	07312	L	85121517	000000 000000	173300 006000		G	E=1.5X,B=42
HS231	P/HALLEY	06	9999	2312155	032030	E	9	01733	2	85121512	000000 000000	122000 016000		V	
HS231	P/HALLEY	06	1070	2313155	032030	H	3	27279	L	85121512	000000 000000	123103 023000		V	SERENDIPITY
HS231	P/HALLEY	06	1070	2313155	032030	H	1	07311	L	85121513	000000 000000	132209 019000	142	V	3.5 MIN. WEST OF NUC
HS231	P/HALLEY	06	1070	2313155	032030	L	1	07310	L	85121512	000000 000000	123348 001000		V	ON NUCLEUS
HS231	P/HALLEY	06	1070	2313155	032030	D	9	01735	2	85121516	000000 000000	164500 002000		V	3.5 MIN. WEST OF NUC
HS231	P/HALLEY	06	1060	2313155	032030	D	9	01734	2	85121513	000000 000000	135800 002000		V	3.5 MIN. WEST OF NUC
AGHAB	NG 7674	84	1200	2325243	+083005	L	3	27271	L	85121417	000000 000000	175600 024000		G	E=171,C=103,B=68
AGHAB	NG 7674	84	1200	2325243	+083005	L	1	07308	L	85121422	000000 000000	221100 015500		G	E=204,C=150,B=105
HA158	PHL540	16	1335	2326360	-102200	L	1	07168	L	85112213	000000 000000	134936 001300	501	V	
HA158	PHL540	16	1342	2326360	-102200	L	3	27159	L	85112214	000000 000000	141301 000800	500	V	
HA158	PS147	16	1339	2330220	-281449	L	3	27160	L	85112217	000000 000000	173511 000700	210	V	
HA158	PS 147	16	1339	2330220	-281449	L	1	07170	L	85112217	000000 000000	174543 001200	301	V	
ZAHNO	00 Z AND	57	0950	2331147	+483233	L	3	27203	L	85120204	000000 000000	044000 000700		G	E=182,C=70,B=22
HI185	Z AND	57	0951	2331149	483230	L	1	07040	L	85110411	000000 000000	114404 001000	671	V	
HI185	Z AND	57	0949	2331149	483231	L	3	27029	L	85110413	000000 000000	133203 000600	151	V	
ZAHNO	00 Z AND	57	0950	2331150	+483232	L	1	07217	SL	85120203	041900 000800	035700 001500		G	C=3X,B=41
ZAHNO	00 Z AND	57	0950	2331150	+483232	H	1	07216	L	85120202	000000 000000	020600 004500		G	E=146,C=85,B=44
ZAHNO	00 Z AND	57	0950	2331150	+483232	L	1	07370	SL	85122403	031200 000500	030000 000500		G	C=190,B=35
HC106	Z AND	57	0953	2331150	483231	H	3	26938	L	85101420	000000 000000	202855 001800	131	V	
HI197	Z AND	57	0952	2331150	483231	L	3	26937	L	85101418	000000 000000	184140 006000	582	V	
HC106	Z AND	57	0957	2331150	483231	L	1	06914	L	85101419	000000 000000	194753 002000	701	V	
ZAHNO	00 Z AND	57	0950	2331150	+483232	L	3	27370	SL	85122403	035200 001000	041200 001500		G	E=255,C=50,B=25
HI185	Z AND	57	0943	2331150	483231	L	1	07044	L	85110418	000000 000000	184732 000400	451	V	

PRO	OBJECT	CL	MAG	R.A.	DEC	D	C	IMAGE	A	DATE	EXP.SMALL	EXP.LARGE	ECC		COMMENT
HI185	2 AND	57	0948	2331150	483231	L	3	27028	L	85110412	000000 000000	120409 003500	572	V	
ZAHNO	00 Z AND	57	0950	2331150	+483232	H	3	27201	L	85120201	000000 000000	013000 003000		G	E=106,B=26
HI185	Z AND	57	0946	2331150	483231	L	1	07041	LS	85110412	131752 000800	124524 002500	771	V	111$
ZAHNO	00 Z AND	57	0950	2331150	+483232	L	3	27202	SL	85120203	032500 000800	030100 001500		G	E=2X,C=112,B=23
FSHKL	00 LMB AND	44	0400	2335065	+461114	H	1	07072	L	85111104	000000 000000	042100 000500		G	E=218,C=90,B=32
FSHKL	00 LMB AND	44	0400	2335065	+461114	L	3	27082	L	85111104	000000 000000	045700 003000		G	E=91,C=60,B=37
FSHKL	00 LMB AND	44	0400	2335065	+461114	L	3	27083	L	85111106	000000 000000	063000 003000		G	E=118,C=85,B=50
FSHKL	00 LMB AND	44	0400	2335065	+461114	H	1	07076	L	85111110	000000 000000	103300 000500		G	E=233,C=90,B=33
FSHKL	00 LMB AND	44	0400	2335065	+461114	L	3	27085	L	85111109	000000 000000	093500 003000		G	E=84,C=70,B=42
FSHKL	00 LMB AND	44	0400	2335065	+461114	L	3	27081	L	85111103	000000 000000	033300 003000		G	E=137,C=50,B=32
FSHKL	00 LMB AND	44	0400	2335065	+461114	H	1	07074	L	85111107	000000 000000	073200 000500		G	E=221,C=100,B=45
FSHKL	00 LMB AND	44	0400	2335065	+461114	L	3	27084	L	85111108	000000 000000	080200 003000		G	E=122,C=110,B=80
FSHKL	00 LMB AND	44	0400	2335065	+461114	H	1	07075	L	85111109	000000 000000	090200 000500		G	E=232,C=100,B=50
FSHKL	00 LMB AND	44	0400	2335065	+461114	H	1	07073	L	85111106	000000 000000	060000 000500		G	E=219,C=85,B=32
DMHJL	00000GL905	48	1230	2339259	+435511	L	1	06881	L	85101004	000000 000000	041200 005000		G	E=138,B=90
DMHJL	00000GL905	48	1230	2339260	+435512	L	3	26907	L	85101003	000000 000000	031100 023200		G	B=100
HA185	R AQR JET	57	9999	2341142	-153344	L	3	27365	L	85122316	000000 000000	162109 002700	251	V	R AQR 1946 F/O
HA185	R AQR JET	57	9999	2341146	-153334	L	3	27364	L	85122312	000000 000000	120609 022000	372	V	
LDHDD	BD+01 4774	48	0900	2346360	+020812	L	1	06995	L	85102607	000000 000000	070500 000600		G	B=37
OBHJS	BD+62 2299	12	0960	2350214	+633942	L	3	26982	L	85102512	000000 000000	123100 002000		G	E=44,B=17

Errors in Foregoing VILSPA Log

Please inform us by post of all errors or omissions in the log reproduced in this issue. Detach this page, fold and staple it leaving the mailing address (verso) visible.

CAMERA & IMAGE	DISPERSION	APERTURE	TARGET	DATE OF OBSERVATION	WRONG FIELD CONTENTS	CORRECT INFORMATION

UK Resident Astronomer

Villafranca Satellite Tracking Station

Apartado 54065

Madrid, Spain

T A P E   A R C H I V E   R E T R I E V A L

DATA TAPE:

TAPE DENSITY ◯ 1600 bpi (default) ◯ 800 bpi

REQUESTED DATA ◯ Raw Data Only

◯ Complete: Raw image + Extracted Spectra

◯ Extracted Spectra Only

CAM #	IMAGE #	CAM #	IMAGE #	CAM #	IMAGE #	CAM #	IMAGE #
. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .
. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .
. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .
. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .
. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .
. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .
. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .	. . .	. . . . . .

CAMERA NUMBERS: 1 = LWP / 2 = LWR / 3 = SWP / 4 = SWR

REASON DATA IS ACCESSIBLE:

◯ Normal Release (6 month rule)

◯ Special Release ◯ data from my programme ....

◯ maintenance data

◯ others (give details) ....

....

REQUESTED BY: .... DATE OF REQUEST: ....

MAILING ADDRESS: ....

....

.... DATA BANK R.A.

....

Dr. A. Cassatella,
Data Bank Resident Astronomer,
Villafranca Satellite Tracking Station
Apartado 54065
Madrid,
SPAIN

QUESTIONNAIRE FOR NEWSLETTER CIRCULATION

☐ Please note my change of address as below. (I attach the current mailing label for cancellation.)

☐ Having become acquainted with the ESA IUE Newsletter through a colleague/library, I would like to be placed on the regular mailing list. My name and address, including the post code, are given below.

☐ Please delete my name and address (printed below) from the Newsletter distribution list.

NAME:

ADDRESS:

Now tear off this last page and return it to ESA, Paris, in the convenient posting format provided. Simply fold and staple leaving the mailing address (verso) visible.

Mrs. S. Babayan
European Space Agency
8-10 rue Mario Nikis
75738 Paris Cedex 15
France