IUE esa

NEWSLETTER

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IUE ESA Newsletter

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OBSERVATORY CONTROLLER MESSAGE

A new year of IUE observations, the fifth, has just started: 162 accepted programmes (see page 42) have been successfully scheduled up to mid-April 1983. A change in this year's schedule that you may notice, is the disappearance of the alternation of SERC and ESA programmes, this change results from the new agreement between the two Agencies (see ESA IUE Newsletter # 12). Also the SERC Resident Astronomer is now fully integrated in the Observatory team. Hence, SERC astronomers might be trained from now on by ESA R.A.s and Users might be assisted by the SERC R.A. during their observing run.

As previously announced, a new version of the Image Processing Software has been installed recently (March 11, 1982) at VILSPA. The major change concerns the extraction of high dispersion spectra which is described in detail in this Newsletter. On the same subject, a completely revised version of the IUE + VILSPA Users' Guide - Vol. II, Image Processing, has just appeared. It will be distributed to all IUE Users and later will be available on request.

Recent visitors will have noticed a new antenna being build at the Station: it is the EXOSAT dish which is now almost ready, as is its control centre in ESOC, Darmstadt. With the planned launch window for EXOSAT of October-November 1982, we have already been able to schedule some simultaneous or coordinated IUE-EXOSAT observations. At the moment these proposals have been scheduled in a block during March-April 1983. but later they will have to be rearranged since the EXOSAT constraints are more stringent than those of IUE.

By the time you read this the 3rd IUE Conference will already have taken place in Madrid: I hope it has been an excellent opportunity to learn interesting and new results and to spend a pleasant time with old and new friends.

P. Benvenuti

A New Task for the Villafranca Station: The MARECS Programme

The MARECS programme covers the development, launch and in-orbit operation of communication satellites to be integrated in a global maritime communication system.

ESA's involvement with Maritime Satellite development dates from 1973. The satellite whose development was agreed at that time was MAROTS. It was based on re-using the satellite bus of the OTS satellite together with an L-band payload being developed.

Discussions concerning the use of MAROTS as an operational satellite first took place during 1976. At about the same time, ESA decided to develop the operational European communication Satellite (ECS) system, for launch by an Ariane launch vehicle. It was decided to redirect the maritime satellite development to take advantage of the greater capacity of the ECS bus. This resulted in the change in the name of the satellite from MAROTS to MARECS. During 1977 ESA took another major technical and financial decision to change the frequencies to 4/6 GHz to achieve compatibility between MARISAT and MARECS communications systems. After further discussions a final proposal to INMARSAT was made in May 1980, offering the lease of the communications capability of two MARECS satellites (MARECS A& B) in orbit, together with associated spacecraft control facilities and operation for a 5 year period. A contract to that effect was signed between INMARSAT and ESA on 27 November, 1980.

OBJECTIVES AND MISSIONS

The MARECS satellites are to be used in a global communication system, which is configured to provide high quality full duplex, reliable real-time voice, data and teleprinter services between ship earth stations and coast-earth stations with automatic connections to the terrestrial network.

Satellites services will be provided by INTELSAT and COMSAT GENERAL which are complementary to the MARECS space segment and constitute a global Maritime communications system.

The services to be provided are:

a) A telephone service with access to the international public telephone network.

b) A telex service.

c) A provision for priority messages for maritime distress safety.

d) Relaying low bit-rate distress messages.

e) Broadcasting of weather forecasts and news summaries.

Further communication services may be introduced at a later stage.

GROUND SUPPORT FACILITIES

The space segment ground support facilities consist of:

- An Operations Control Centre (OCC) at ESOC,
- ESA VHF network,

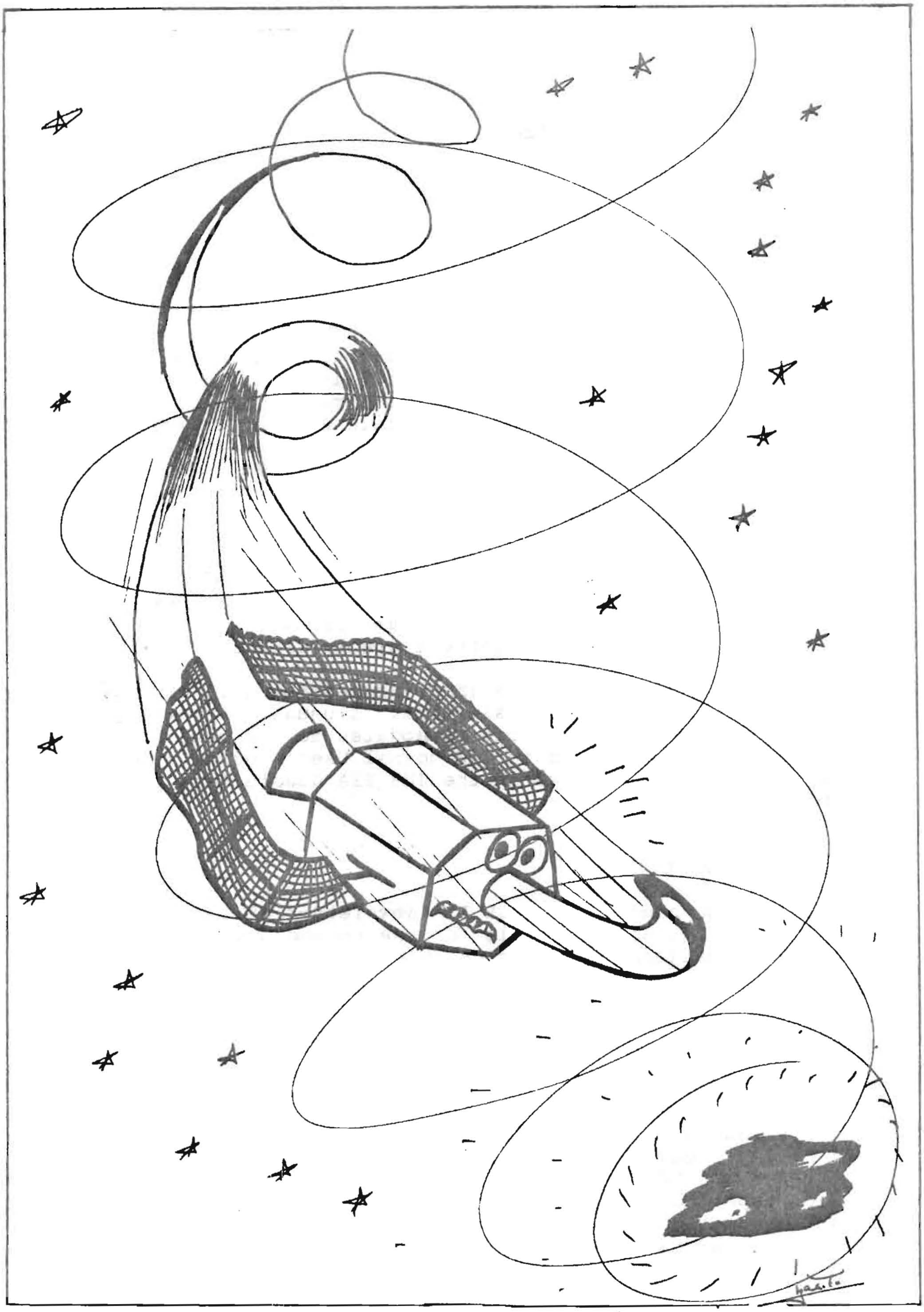
On-station network operated on a 24-hour basis:

- One C-band/L-band terminal, located at Villafranca (Spain) capable of handling one MARECS satellite.
- One C-band/L-band terminal, located at Ibaraki (Japan) capable of handling up two MARECS satellites.
- A facility at Redu (Belgium) to back up the Villafranca station.
- A communications network connecting these facilities to the OCC.

The facilities perform the following functions:

- collection and processing of angular and ranging data,
- monitor the performance of the system,
- control the satellites
- payload monitoring.

Adventures of AIYOUEEE at apogee



I told you guys that all this black hole observing would put me out of sight!!!

IUE Image Processing News

1. USER'S GUIDE

The second volume of the IUE + VILSPA User's guide, entirely dedicated to the project image processing (IUESIPS) is ready.

Detailed descriptions of all significant steps in the reduction procedures for spectra obtained with the IUE spectrographs are included. Extensive information is also supplied on the nature of the output formats. All modofications made to IUESIPS affecting either the output format or the scientific content of the output products, are described and implementation dates are given.

The format is the same as the 1st edition of the IUE+VILSPA User's guide. Since the image processing changes and improvements have been always documented in the Newsletters, the User's guide will not be sent to all recipients IUE ESA Newsletter. It will be sent to all the European IUE G.O.'s of the past two years. Anybody else can request a copy from L. Bianchi.

Further updates of the image processing will continue to be documented in the IUE Newsletters, as usual. However when major changes to IUESIPS will occur, updates to the User's guide will be made to be inserted in the normal User's guide binder. Updates will be announced in the IUE ESA Newsletter, and will be available upon request.

2. LWP CAMERA

As announced in the IUE ESA Newsletter N° 11, p. 12, the LWP camera is now available for use to the Guest Observers. The circumstances under which this camera can be operated, i.e., the camera management policy and the relative comparison with the LWR camera performance are summarized in the quoted Newsletter, and described in detail in the "User's guide for the LWP camera".

As from March 11, 1982, LWP high and low dispersion images are processed at VILSPA and a full process output package is delivered to the G.O., similar to that for the two other cameras normally used. However, no absolute calibration is available yet for the LWP low resolution spectra, so the 6th record of the G.O. tape 4th file (extracted spectrum file) is provisionally set equal to the previous record (5th record or un-calibrated net), as a dummy calibration of $S_\lambda^{-1} \equiv 1$ is applied.

The absolute energy calibration for this camera is being prepared.

As pointed out in the quoted "User's guide for LWP camera" the LWP camera has a better signal to noise ratio than the LWR for $\lambda > 2400$ Å, and it is more efficient than LWR in the region around 2800 Å. The fact that the FN values of the extracted spectrum in the LWP camera are lower than those of LWR spectrum with comparable exposure time is only due to the choice of an internal scaling factor in the IUESIPS. The user should also be aware that background and the spectrum might have negative values in a portion of the wavelength range. These negative values are of course eliminated by the background subtraction. The linearity, with the present ITF's, seems to be at least as good as for the other camera.

3. OTHER CHANGES

a) As an option for the Guest Observer, a bright spot detection program can be passed over the raw image. The standard threshold used for detection (after median+mean filtering) is 90.0. The result will be a flagging of the bright spot pixels on the spectral files ($\varepsilon = -300$) and on the plots (sign " < 1 > "). This option is valid for all cameras and dispersion modes.

b) For both low and high dispersion images, temperature and time correction of the reseau marks and dispersion constants, as described in "IUE data Reduction XXI", (Thompson et al., 1982) have been installed in the Standard Image Processing at Vilspa since March 11, 1982.

c) For the LWR camera (both low and high dispersion) a microphonic noise detection is applied since March 11, 1982. The affected points are marked with a * in the plots and they are assigned a quality factor of -220 in the G.O. tape. When microphonic noise is detected, the following message appears in the image label:

PING; MICROPHONIC, AFFECTED LINES: ....

and the lines affected are indicated.

The method for detecting microphonic noise is the one described by K. Northover in the ESA IUE Newsletters N° 11. However, since the frequency of the interference is varying along the line, only flagging of the affected points is performed but no correction is applied.

The threschold adopted allows the flagging of the lines containing an interference with peak to peak amplitude greater than 8 DN.

L. Bianchi

REFERENCES: Thompson, R.W., Turnrose, B.E., Bohlin, R.C.: 1982, Astronomy Astrophysics, 107, 11.

XXIV. Implementation of New High Dispersion Software: Summary of Output Format Changes

Memo XVIII of the IUE DATA REDUCTION series (ESA IUE Newsletter 10 & 12, January 1981), described the introduction of the new low dispersion IUESIPS software. The present memo announces the implementation of the corresponding new high dispersion IUESIPS software (PHOTOM, SPECHI, SORTHI, and POSTHI) on November 10, 1981 at GSFC and March 11, 1982 at VILSPA and summarizes the changes in the output products associated with the new software. Particular attention should be paid to the increased record lengths of extracted-spectrum files on Guest Observer tapes (item 6 below). This expanded record size (equal to that of the new low dispersion software) accomodates the increased number of spectrum samples produced by the new sofware in order to realize the full resolution capabilities of the instrument. Details of the evaluation of the new high dispersion software and a comparison with the relevant characteristics of the old software are given in memo XXV of this series (see page 12).

1. There is no geometrically corrected image produced with the new software. Instead, a photometrically corrected is produced in the original distorted readout frame of reference. The geometric distortion in the detectors is accounted for implicitly by using the reseau grid to locate the position in the raw (distorted) image for photometric correction or extration. This procedure avoids the smoothing of the non-linear raw images in the GEOM step of the old software. The second frame of the reduced Photowrite film sheets showing the superposed dispersion overlay after spectral registration is a raw image, and the third frame is the photometrically corrected image with no geometric correction.

2. The photometric correction is performed on a pixel in the raw image by spatially interpolating within the existing Intensity Transfer Function (ITF) at the appropriate point. Pixels outside of a circular region encompassing the useful spectral data are left unchanged as raw DN values. This region is precisely circular in the geometrically corrected frame of reference, and only approximately circular in the raw-image frame of reference.

3. The coding of the halfword pixel values in the photometrically corrected image file (PI) has been changed to accomodate the more extensive flagging system for exceptional pixels, which is also used in the new low dispersion software.

The coding system is such that the value of each halfword pixel F_{image} in the PI file is used to flag the special cases of extrapolation, saturation, and no photometric correction. Table 1 of memo XVIII contains (FN) and coded values F_{image}, see ESA Newsletter N° 10, page 22.

4. Gross spectra are extracted from the photometrically corrected image using a slit with a length which depends on order number for the point-source reduction mode. Details are given in memo XXV (page 12 of this newsletter).

5. Background spectra are extracted excluding reseaux, microphonic noise in LWR, or saturated pixels, as is now done in the new low dispersion software. Also, the order overlap problem is reduced as discussed in memo XXV.

6. The extracted spectrum file (referred to as MEHI) has an increased data record length of 2048 bytes, accomodating up to a total of 1022 points per order. Otherwise, the spectral data records are in the same format as before.

7. The scale-factor record ("record zero") in the MEHI file has an expanded format defined by Table 1. Note that this scale-factor record contains significantly more entries than that generated by the old software, although neither the location nor the meaning of any previously-existing quantity has been changed. Note also that several items have been either added or more completely explained since the implementation of the expanded scale-factor record in low dispersion described in memo XVIII. Table 1 should therefore be considered to reflect the current content of the scale-factor record under the new software for both high and low dispersion; entries which are dispersion-dependent are so marked.

8. New data quality flags (epsilons) consistent with those used in the low dispersion software are defined in Table 2. Note that the epsilon value is no longer the sum of a positive term, and a negative term for special conditions, as in the old software. Also, note that if more than one of the negative epsilon conditions occurs, the most negative flag is used. Since reseaux, microphonic noise in LWR, and saturated pixels are not used in the background determination, they are not flagged in the background on Calcomp plots nor in the MEHI tape file if the gross spectrum itself is not affected.

9. Assigned wavelengths differ in two ways from those produced by the old software:

a) Wavelengths are first reduced to a heliocentric frame of reference on the basis of the target coordinates and time of observation. The time of the midpoint of observation used for this reduction is listed in halfwords 9-12 of record zero (see Table 1) and in the processing history portion of the alphanumeric header label of the MEHI file; likewise, the target coordinates used are listed in halfwords 45-50 of record zero and also in the image label. The software which uses these data to calculate the velocity components of the earth and IUE in a righthanded rectangular equatorial coordinate system (+x is toward vernal equinox, +z is toward the north celestial pole) was described in memo XVI of the IUE DATA REDUCTION series in NASA IUE Newsletter N° 10, June, 1980. These computed X, Y, Z velocity coordinates are given in both record zero (halfwords 51-56) and the image label. Finally, the actual net radial velocity correction, which is added to the extracted wavelengths to obtain the heliocentric wavelength scale, is given in halfword 57 of record zero and in the image label. A positive net radial velocity correction indicates a net approach of the IUE detector toward the target.

In the case of spectra extracted from WAVECAL images, no heliocentric correction is applied.

b) The vacuum-to-air wavelength correction is then applied consistently in all cameras for λ (heliocentric) > 2000 Å. Previously, only data from the long wavelength spectrograph (cameras LWR and LWP) were so converted.

10. Net ripple-corrected fluxes in the MEHI file and as plotted have been filtered using the 7-point "optimal" filters discussed in memo XXV to condition the noise inherent in the raw IUE images. Furthermore, the net ripple-corrected fluxes are now set to zero at the ends of each order, i.e., when:

$$|\lambda-\lambda_c| > (2.6 \cdot K)/\pi m^2$$

where:

K = ripple constant
m = order number
λ_c = blaze wavelength (=K/m) in Å
λ = wavelength in Å

11. The Calcomp plot of the gross and smoothed background spectra at 10 Å/inch incorporates a 2-point box filtering of adjacent extracted points to reduce plotting time and avoid paper tearing.

The information contained herein, along with that pertinent to the new low dispersion software, will be incorporated into a version 2.0 of the IUE Image Processing Information Manual. The present summary is designed simply to identify changes in the format and significant content of output products.

B. Turnrose
R. Thompson
R. Bohlin

- TABLE 1 -

FORMAT OF RECORD ZERO

(scale factor record)

ITEM	(16-bit halfword)	QUANTITY
1	*	Zero (For Record #0)
2	*	Number of points in record (now 1022)
3	*	Minimum Wavelength (truncated to nearest Å)
4	*	Maximum Wavelength (rounded to nearest Å)
5	*	Number of orders present
6	*	Camera Number
7	*	Image Number
8	*	Number of records per group (i.e. per order)
9		Year } of Midpoint of Observation (GMT)
10		Day Number } of Midpoint of Observation (GMT)
11		Hour } of Midpoint of Observation (GMT)
12		Min } of Midpoint of Observation (GMT)
13-16		Date as above for Time of Image Processing (GMT)
17		Target Aperture (1-large, 2-small)
18		Total line shift (pixels x 1000)
19		Total sample shift (pixels x 1000)
20	***	THDA X10 (°C) used for reseau correction (normally at the time of read)
21	*	Minimum FN for Gross
22	*	Maximum FN for Gross
23	*	J for Gross } Where actual FN = data on Tape x J x 2^{-K}
24	*	K for Gross } Where actual FN = data on Tape x J x 2^{-K}
25-28	*	as in 21-24 for Background
29-32	*	as in 21-24 for Net
33-36	*	as in 21-24 for Absolute Net
37-41	*	Spares
42-44		Min, sec, ms of exp in Target Aperture (not implemented)
45		Hours } Right Ascension of Target
46		Minutes } Right Ascension of Target
47		Seconds x 10 } Right Ascension of Target
48		Degrees } Declination of Target
49		Arc Minute } Declination of Target
50		Arc Second } Declination of Target
51-53	**	VX_{earth}, VY_{earth}, VZ_{earth} - Velocity of earth in celestial coordinates (km/s x 10)
54-56	**	VX_{sat}, VY_{sat}, VX_{sat} - same as 51-53 for IUE at Midpoint of Exposure
57	**	Net velocity correction applied (km/s x 10)

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* Existing Quantity under old software

** High Dispersion Only

*** Not used to correct reseau positions for the LWR or LWP cameras

FORMAT OF RECORD ZERO

(continued)

ITEM		QUANTITY
58		Omega angle (degrees x 10) - (zero in High Dispersion)
59		Wavelength Scaling Factor (= 5 for Low Dispersion, = 500 for High Dispersion) where actual $\lambda = (\lambda$ on tape$)/$(Scale Factor) $+ \lambda_0$
60		Background Slit Height } Low Dispersion only (pixels * 100)
61		Background distance from dispersion line } Low Dispersion only (pixels * 100)
62		Dispersion Constant Shift (0 = no shift, 1 = auto shift, 2 = manual shift)
63		Bright Spot Removal Threshold DN for weak, long exposures (to be implemented)
64	****	THDA x 10 for dispersion constant correction (normally at the time of the end of exposure)
65-70	*	Spares
71-102		For use of IUE Regional Processing Centers
103-202	*	λ_0, offset wavelengths for each order
203-302	*	m, order number for each order
303-402	*	Number of extracted data points in each order
403-502		Slit height for each extracted order (pixels * 100)
503		Sign + First 4 digits after decimal dispersion constant A1
504		Sign + Second set of 4 digits after decimal of dispersion constant A1
505		Sign + Third 4 digits after decimal of dispersion constant A1
506		Exponent (including Sign) of dispersion constant A1 where: A1 = $\lvert$item (503) x 10^{-4} + item (504) x 10^{-8} + item (505) x $10^{-12}\rvert$ x 10 ** (item (506))
507-510		As above, for dispersion constant A2
511-538		As above, for dispersion constants A3 through A9
539-574		As above, for dispersion constants B1 through B9
575-1024		Spares

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* Existing Quantity

**** Currently not used to correct dispersion constant for the LWP camera

- TABLE 2 -

DATA QUALITY FLAGS (EPSILONS)

EPSILON	CONDITION
100	No special conditions
-200	Extrapolated ITF
-220	Microphonic noise
-250	Filtered bright spot *
-300	Unfiltered bright spot *
-800	Reseau in spectral extraction region
-1600	Saturated pixel or maximum ITF extrapolation
-3200	Pixel outside target ring (low dispersion line-by-line file (LBLS) only)

* Feature to be implemented in the future, to flag bright-pixel artifacts.

XXV. Implementation of Basic Improvements to Extraction of High Dispersion Spectra

Effective Date: Nov. 10, 1981, at GSFC
Mar. 11, 1982, at VILSPA

SUMMARY

The new software package for extraction of high-dispersion IUE spectra has been implemented in production data processing, effective dates given above. The photometric correction of IUE images in high dispersion is now done with the same technique used in the new low-dispersion software, which became operational on November 3, 1980 at NASA and on March 10, 1981 at VILSPA. As is the case in low dispersion, the single most important improvement in high dispersion is an increase in apparent resolution, achieved by doubling the number of points at which a spectrum is sampled. Numerous other benefits are found in the new software, which improve the quality of the extracted data and make its interpretation more straightforward. For example, a variable slit height is used for the data extraction to optimize the photometry and signal-to-noise at each order, wavelengths are corrected for the motion of the earth and the IUE satellite to a heliocentric reference frame with air wavelengths used consistently longward of 2000 Å, the essential documentation in the headers is expanded, and the flagging of anomalous data points is upgraded.

1. INTRODUCTION

The new software in low dispersion is described by Bohlin, lindler, and Turnrose (1981) and Turnrose, Bohlin, and Lindler (1981). The photometric correction in high dispersion is now done using an implicit geometric correction rather than the explicit techniques of the old software, just as is the case for low dispersion. The photometrically corrected image is in the original distorted frame of the raw image. The full resolution is still preserved and the noise can be treated uniformly rather than being suppressed non-uniformly by the old bi-linear interpolation used to resample the data onto the square grid of 13 x 13 reseaux. In order to extract the spectral information, the dispersion constants for the geometrically correct space are implicitly adjusted for the known distortion in the IUE cameras in order to associate the correct wavelengths with a spectrum in the distorted frame of reference. A measurement of the spectral flux is extracted for every diagonal row of pixels, which are all within 10° of the perpendicular to the dispersion direction. The old software sampled only half as often with an effective slit width double the 0.7 pixel (1 pixel = 37 μm) spacing of the new software. The old extraction had a non-uniform spacing, where about every fifth point was spaced only by one-half the normal amount and also resampled part of the same data represented in the previous point.

During the course of this revision to the IUE production software, it has been possible to incorporate several improvements into the old high dispersion extractions. Only the difference between the old software, as it now stands, and the new software will be discussed here. In order to make the old versus new comparisons, the old data has been reprocessed with all the improvements in that system, so that the reader should exercise caution in interpreting old data on the basis of the quality of reprocessed spectra. A detailed history of past changes to IUE production software is in Turnrose and Harvel (1981) and Turnrose, Harvel, and Mallama (1981). For some details of the new software not covered here see Lindler and Bohlin (1980). Section II contains the documentation of the improvements in apparent resolution; and Section III details the optimization of the new slit heights, which vary with order number. Section IV quantifies the increase in noise that has accompanied the removal of the artificial smoothings of the old extractions and explains the effects of two recommended filters. The verification of the photometric properties of new spectra relative to old spectra is in Section V. Finally, Section VI summarizes the other improvements realized with the new system.

II. IMPROVEMENTS IN VISIBILITY OF NARROW FEATURES

A major advantage of the new software is an increased visibility of narrow features, achieved by avoiding the geometric resampling, by using a narrower slit width, and by more frequently sampling the spectral image. Figure 1 illustrates the improvement seen in the case of closely spaced line pairs from a Pt-Ne spectrum of the IUE wavelength calibration lamp. Two emission lines are shown in each of three separate spectra for both cameras in order to demonstrate the basis consistency of the data. The improvement in resolvability is more marked in LWR; but in all cases, the peaks are higher and the valleys between the emission lines are lower in the new extractions.

A. Special Warning on Correlated Camera Noise

The point-to-point noise is increased somewhat by the new software as expected because of the omission of the filters applied in the old software (see Section IV). However, another problem arises occasionally that was effectively masked by the old reduction but can be seen clearly in the SWP 10253 spectrum in the 1493 Å region as a tremendous oscillation of the signal by about ± 100 percent. The original data images suggests the presence of an electronic instability, because a number of pixels along one diagonal are all heavily exposed (black). Along the adjacent diagonal lie lightly exposed pixels, and this pattern of light and black diagonals repeats. One can imagine the following explanation for this unfortunate situation, where the readout beam of the SEC vidicon has suffered a perturbation perpendicular to the scan path. The readout will be light on an upward swing and black on the downward. On the next scan line down in the readout, there will be excess charge where the previous scan oscillated up and a deficiency where the downward motion of the perturbation encroached on the normally undisturbed charge of the next line. Hence, the observed pattern in the image is created and is most evident in the adjacent diagonals of an extracted spectrum.

An astronomer will often be able to recognize the camera noise as a checker-board pattern on the photowrite image with a different spatial extent than the spectrum of the target object. Various filters can be used to improve the cosmetic appearance of the correlated camera noise at the expense of some resolving power in unaffected regions of the spectrum. Figure 2 shows the effect of two different filters on the correlated noise of SWP 10253 and the completely resolved line in LWR 8918. One filter is a two point average of every pair of points plotted at the average wavelength. This is equivalent to extracting the data with an artificial slit of twice the width and is similar to the old software, but with less smoothing and a higher sampling frequency. The other smoothing shown in Figure 2 is for the narrower "optimal" filter of Section IV. The optimal filter does not appreciably degrade the resolvability from that of Figure 1, but a filter as wide as two points is needed to significantly suppress the correlated camera noise.

III. OPTIMAL SLIT HEIGHTS

The old software extracts spectra from the IUE image with a fixed artificial slit of effective height of about 6.4 pixels for point sources and 9.2 pixels for extended sources, while the new slit heights are allowed to vary with order number to account for changes in the width, separation, and residual geometric distortion ("wiggles") or each order. For point sources, the slit height should never exceed the order separation, which reaches a minimum of 5.25 pixels in SWP (Turnrose and Bohlin 1979). Where the orders are well separated, the optimal slit height is determined by the trade-off between excessive noise and photometric precision. The considerations in determining the optimal slit heights for the new software are outlined below for the separate cases of point and extended sources.

A. Point Sources

The underlying principle guiding the determination of the slit height is that the shortest slit compatible with a reasonable photometric stability should be used. The use of short slits minimizes the contamination of the gross spectrum by background noise, a fact which is particularly singificant for long exposures and weak signal levels, where the effect of bright spots falling within the extraction slit is the worst. On the other hand, the use of slits which are too short exacerbates the sensitivity to irregularities in IUE iamges and compromises the photometric stability. Such irregularities include the variation in the width of the high dispersion orders. Schiffer (1980) shows the full width at half maximum (FWHM) of the echelle orders in SWP point source spectra to differ by at least a factor of 1.5, where the long wavelength (low) orders are the widest. A second irregularity is that the orders are not truly straight but possess "wiggles" even after the geometric correction with temperature effects removed (Thompson, Turnrose, and Bohlin 1982). The third irregularity is residual differential registration perpendicular to the dispersion direction; i.e. if the orders at one part of the tube are perfectly registered with the dispersion relations, the orders at distant parts of the tube may be misregistered by amounts as large as $\sim$ 0.5 pixel in a way which is systematic with order number but variable in sign and amplitude from image to image.

The approach taken in the new software is to register the images accurately in the short wavelength regions of the higher, more closely spaced orders, where slit heights are limited by the order separation and where the level of the extracted background signal is critically dependent on the registration. To compensate for the three limiting factors (order width, wiggles, and differential shifts) at the lower orders, the slit heights are increased.

To determine the proper slit heights, a series of tests was conducted on the image SWP 10306, a 6 second exposure through the large aperture of the star eta UMa. Extractions were made with a number of slit heights ranging between 5 and 8 pixels and with registered and misregistered ($\pm$ 0.4 px) extractions to simulate the effects of variable, differential registration. In analyzing the data, net spectra were binned into contiguous segments, typically 9 such bins per order. The shortest slits are identified consistent with the constraint of a maximum photometric error of 3 percent in any single bin betwwen registered and misregistered extractions. Figure 3 illustrates the observed bahavior of the 8 bins used for order 68 in SWP

10306. As can be seen, the effects of signal loss due to misregistration increase with decreasing slit height. At the high orders (∿ 100 and higher) the behavior (not illustrated) is different, with little change with slit height but drastic changes with registration due entirely to changes in the derived background level. Particular attention was paid to those low orders known to exhibit substantial wiggles. The final slit heights chosen increase linearly from a value of 5 pixels at order 125 to 7 pixels at order 68, and then linearly to a value of 10 pixels at order 66. These heights are sufficiently liberal to allow for the behavior of those orders not explicitly analyzed and to allow for unexpectedly severe differential registrations. Therefore, the photometric precision of extracted spectra should not be compromised by more than 3 percent by our choice of slit heights. These slit heights have been adopted for use in both the SWP or LSR cameras, point-source reduction mode, and supercede the unnecessarily long slits originally planned for the new software (Turnrose and Bohlin 1979). Note that for orders 86 to 125, the new slit height is less than that (6.4 pixels) used by the old software, and for orders 66 to 85, the new slit height is greater than the old.

B. Extended Sources

In the case of extended sources, similar considerations apply, although the width of the large aperture perpendicular to the dispersion (∿ 7 pixels) necessitates a different approach to the problem of choosing the slit heights at the closely spaced orders. The need to keep the slit height shorter than the order separation is outweighed by the need to measure substantially all of the slux, particularly since many extended objects are emission-line sources for which continuum contamination from adjacent orders is unimportant.

Analyses similar to those described in section III A were performed for a series of slit heights ranging from 6 to 11 pixels. The primary data were obtained from 100-minute exposures of the Orion Nebula, SWP 10744 and LWR 9427, for which nebular continuum is present. From these data, a constant slit height of 10 pixels for all orders was chosen This value is slightly larger than the 9.2-pixel slit used in the old software; extending the slit to 11 pixels increases the measured net signal by less than 1 percent. As a check, the net emission lines fluxes from the Lα sky background and the lines of the planetary nebula NGC 7662 were analyzed on SWP 6468 and LWR 5546 to corroborate the choice of a 10-pixel slit height. Note that this choice of a constant 10-pixel slit height for extended sources differs from the slit originally proposed in Turnrose and Bohlin (1979).

IV. NOISE CHARACTERISTICS

A. Comparison of New Software with Old Software

As mentioned in earlier sections, the old IUE reduction software performed an explicit geometric correction consisting of a bi-linear resampling to map the raw pixels onto a grid in which the reseau marks are corrected to the proper square grid. One problem with this technique is that pixel-to-pixel noise is smoothed, non-uniformly. In some protions of the image, the resampling falls between pixels. In the former locations, the raw sample values are unchanged, whereas in the latter regions the smoothing suppresses the high frequency noise. Because some regions, the smoothing suppresses the high frequency noise. Because some regions of the IUE detectors have little geometric distortion and because the image is resampled to the same nominal size, the phase of the bi-linear resampling changes slowly with respect to the pixel size, thus producing alternating bands of noisy and smoothed data in a geometrically corrected image. This non-uniform signal-to-noise is particularly objectionable, because very smooth spectral regions might mislead an investigator into falsely identifying noise in unsmoothed regions as a spectral feature, especially in the presence of the correlated camera noise discussed in section II A. Settle (1981 private communication) has estimated that the expected reduction in apparent signal-to-noise ratio due to the elimination of the explicit geometric correction is approximately a factor of 1.5 on the average.

In addition, the fact that the old software utilized an extraction slit wider than that of the new software leads to a further increase in the point-to-point noise in the new software compared to the old, with a drease in signel-to-noise of a factor of 1.6 as estimated by Settle. The combination of both effects leads to a total expected reduction in apparent signal-to-noise of $\sim$ 2.4 with the new software. Although this increase in noise might seem like a high price to pay for the increase in apparent resolution, the old software artificially inflated the apparent signal-to-noise ratio of the data in an obscure manner. Now, a spectrum can be smoothed straightforwardly by the use of a filter appropriate for any particular problem.

Actual numerical comparisons of the apparent signal-to-noise ratios obtained with the old and new software have been made by examination of the central portions of net ripple-corrected spectra of eta UMa. Noise-to-signal ratios (NSR), defined to be the percent scatter of the individual net ripple corrected flux points within a bin several angstroms wide, were calculated for representative orders between 83 and 118 with both the old and new software. The ripple corrected fluxes were used to avoid increasing the scatter due to a slope in the continuum, although the bins selected are very near the blaze peak. Bins affected by reseau marks or absorption lines are not considered, as they would tend to have an unusually large scatter in the fluxes. Table 1 summarizes the results for images SWP 10306 and LWR 3767. As expected, the signal-to-noise ratios typical of the new software are less than those of the old software by about a factor of 2.

TABLE 1

Comparison of Noise-to-Signal Ratios Obtained with New and Old Software

Image	Exposure Time	Aperture	NSR* (New) / NSR (Old)
SWP 10306	6	large	1.83
LWR 3767	9	small	2.04

* Noise-to-Signal Ratio (NSR) as defined in text

B. Noise-conditioning Filters

Whereas the old software artificially suppressed the point-to-point noise in extracted spectra, the new software does not. In particular, the correlated camera noise described in section II A is essentialy preserved in the new extraction procedure. Schiffer (1981 private communication) has demonstrated that this camera noise has a characteristic power spectrum which dominates the observed power spectrum of the extracted data at high spatial frequencies. This high-spatial frequency noise might be conditioned, in order to judge the true noise characteristics of the actual spectral data. Filtering the extracted data with a 2-point filter (see Figure 2) has the appeal of strongly suppressing the correlated camera noise. Such a broad filter significantly affects the resolving power but is still not as much smoothing as is inherent in the old software.

Another approach is to treat the extracted data points with an "optimal" filter, constructed so as to flatten the power spectrum beyond the point at which the observed power spectrum reaches a minimum, i.e. for spatial frequencies greater than the maximum which is characteristic of the actual spectral data, about 0.25 cycles per pixel. Dr. F.H. Schiffer has derived such a filter from composite power spectra of 5 SWP and 5 LWR images for each camera separately. The optimal filters are to be applied in direct convolution with the extracted flux points. Table 2 lists the filter weights, from which it is seen that the filters are narrower than the two-point binning filter discussed above. In practice, the effect of the 7-point filters differs little from that of the renormalized central three points alone, because the four points in the wings have a weight well below that of the photometric precision. Presently, the optimal filter for the LWP camera has not been determined, so that data are unfiltered.

TABLE 2

Optimal Filter Weights

Element N°	Element Value		
	LWR	SWP	LWP
1	0.0016	-0.0021	0
2	0.0018	-0.0060	0
3	0.0602	0.1017	0
4	0.8728	0.8128	1
5	0.0602	0.1017	0
6	0.0018	-0.0060	0
7	0.0016	-0.0021	0

Table 3 summarizes the quantitative noise characteristics of spectra filtered with the optimal filters of Table 2, compared again to the results of the old software as in Table 1, but with two additional Eta UMa exposures. These data indicate that the optimal filtering reduces the high frequency noise in extracted net ripple corrected spectra by approximately a factor of 1.2, resulting in a noise-to-signal ratio near what would be expected by just reducing the old slit width by a factor of 2. Therefore, the net ripple corrected spectrum on magnetic tape and on Calcomp plots is filtered with the optimal filter. The gross and net spectra are left unfiltered, so that the astronomer can choose the best filter for any specific application.

TABLE 3

Comparison of Noise-to-Signal Ratios Obtained with New Software (Optimally Filtered) and Old Software

Image	Exposure Time (sec)	Aperture	NSR* (New) / NSR (Old)
SWP 10306	6	large	1.48
SWP 10522	6	large	1.38
LWR 3767	9	small	1.75
LWR 9210	6	large	1.50

* As in Table 1

V. PHOTOMETRY

Figure 4 compares the total net flux in IUE FN units as extracted by the new software to that extracted by the old system. The comparison spectra are processed with the same dispersion constants in both reductions. The mean flux in the same wavelength intervals is computed for every fifth order of the echelle spectrogram avoiding both edges of the cameras by about 10 percent of the free spectral range. The ratios of NEW/OLD net flux in Figure 4 show a scatter of up to 4 percent about unity for the long wavelength (low) orders. The new fluxes are systematically greater by $\sim$ 10 percent in the high orders, due to the lower background found between the close orders when the explicit geometric correction is omitted.

While Figure 4 shows the mean changes with order, Figure 5 addresses the question of changes within a given order. The observed free spectral range for the orders 108 and 88 is divided into 9 bins, and the ratio of extracted flux is plotted against the wavelength of each bin. Again the lower order (m = 88) shows a small scatter about unity for both cameras with no significant systematic trends. The ratios for the higher order (m = 108) are all greater than unity because of the lower backgrounds found by the new software. The small systematic slope to the flux ratios within m = 108 are again due to a systematically lower extracted background as a fraction of the net with the new software at the shorter wavelengths (upper left region of SWP). This effect could be caused by an intrinsic broadening of the orders near the tube edge, thus enhancing the additional degradation suffered in the geometric correction of the old software.

In summary, the only significant change in the photometry of the new high dispersion software is an increase in extracted flux for the closer orders. This increase has reduced the amount of order overlap caused by excessively high backgrounds in the old software and should result in a ripple correction that is closer to theoretical expectations.

VI. ADDITIONAL BENEFITS

In addition to the above improvements in apparent resolution, noise characteristics, and photometry, other advantages of the new software are itemized below.

1. All saturated pixels (DN = 255) are now flagged in the same way as in the new low dispersion software.

2. Reseau marks are narrower because there is no geometric correction to broaden them and because they do not grow in the process of subtracting the background, as was the case for the old processing.

3. All of the spectral data are sampled exactly once where each extracted data point is derived from independent pixels in the raw image.

4. The dynamic range of extrapolation in the ITF is expanded and this extrapolation is flagged in analogy with low dispersion.

5. Reseaux, microphonics noise in LWR, and saturated pixels are not used in the background computation and are, therefore, not flagged in the background.

6. The wavelengths are corrected to a heliocentric coordinate system and are converted to air wavelengths consistently for both cameras longward of 2000 Å.

7. More information such as the observing date, target coordinates, and dispersion constants are included in the data header (record zero), as is now the case in low dispersion.

The new high dispersion software was written by D.J. Lindler of Andrulis Research Corp. R.W. Thompson, and A.D. Mallama of Computer Sciences Corp. participated in the analysis of the data presented here. R. Thompson is responsible for the implementation and maintenance of all IUE production software.

R.C. Bohlin
B.E. Turnrose

REFERENCES

Bohlin, R.C., Lindler, D.J., and Turnrose, B.E.: 1981, "IUE Data Reduction XIX. Results of Basic Improvements to the Extraction of Spectra from IUE low Dispersion Images," NASA IUE Newsletter N° 12, p. 9, also in IUE Data Reduction, ed. W.W. Weiss, et al. (Vienna: Austrian Solar and Space Agency), p. 1 and in IUE ESA Newsletter N° 10, p. 10.

Lindler, D.J., and Bohlin, R.C.: 1980, in IUE Data Reduction, ed. W.W. Weiss, et al. (Vienna: Austrian Solar and Space Agency), p. 21.

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Turnrose, B.E., and Bohlin, R.C.: 1979, "IUE Data Reduction VIII. Planned Changes to the High Dispersion Extraction Slit Height", NASA IUE Newsletter, N°6, p. 195.

Turnrose, B.E., Bohlin, R.C., and Lindler, D.J.: 1981, "IUE Data Reduction XVIII. Implementation of New Low Dispersion Software: Summary of Output Format Changes" NASA IUE Newsletter N° 12, p. 2, ESA IUE Newsletter N° 10, page 22.

Turnrose, B.E., and Harvel, C.A.: 1981, "Techniques of Reduction of IUE Data: Time History of IUESIPS Configurations", NASA IUE Newsletter, in press.

FIGURE CAPTIONS

Figure 1 - Close pairs of emission lines from the IUE Pt-Ne lamp for (a) the SWP camera and (b) the LWR camera. The filled circles are extracted by the new software, while the open circles are from the old software. The few triangles are cases of extrapolation in the ITF that are now flagged by the new software.

Figure 2 - A comparison of a two point filter (open circles) and an optimum noise reduction filter (filled circles) for two of the line pairs of figure 1. Note that the two point filter effectively eliminates camera noise in the SWP data but does cause significant blending of the LWR line pair.

Figure 3 - Percentage changes in net signal as measured in 8 contiguous 2 Å bins in order 68, SWP 10306, as functions of both slit height and registration accuracy. The percent deviation is relative to a zero level for the net flux as measured with a centered, 7-pixel high slit. The slit height in pixels is noted near the ends of pairs of curves, where the continuous lines connect the filled circles derived for a centered extraction and broken lines connect the open circles derived from an extraction intentionally misregistered by 0.4 pixel. Note the color changes and local anomalies induced by a misregistration of 0.4 pixels when a short slit is used.

Figure 4 - Ratios of total flux extracted by the new to that of the old software as a function of echelle order number. Ratios for two spectra from each camera are shown.

Figure 5 - Ratios of new to old flux within echelle orders 108 and 88 for both cameras. The bandpass for each data point is 1.78 Å in 108 and 2.67 Å in 88 for SWP and 3.26 and 4.58 Å, respectively, for LWR

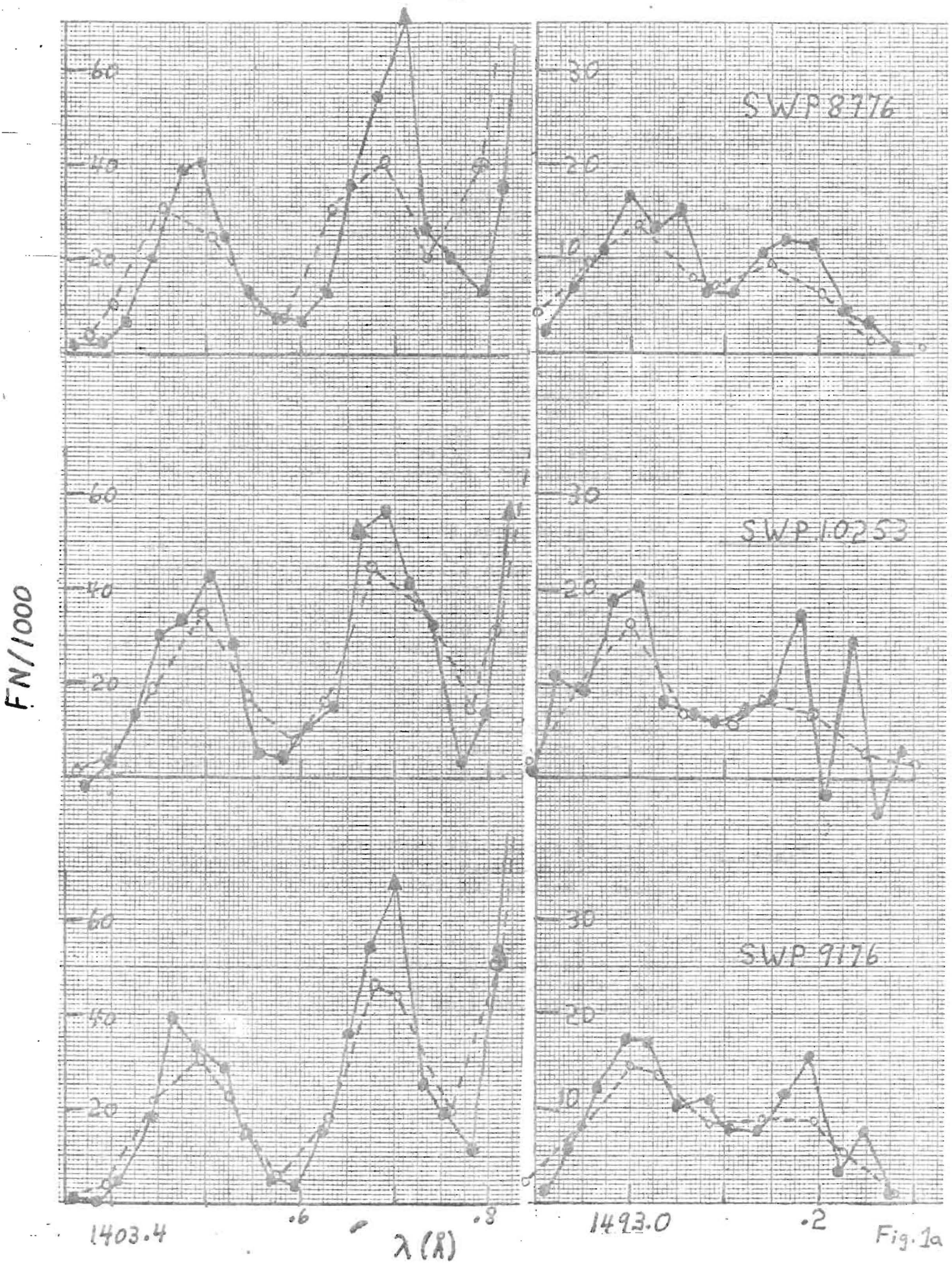

FN/1000
60
40
20
30
20
10
SWP 8776
SWP 10253
SWP 9176
1403.4
.6
.8
1493.0
.2
λ (Å)

Fig. 1a

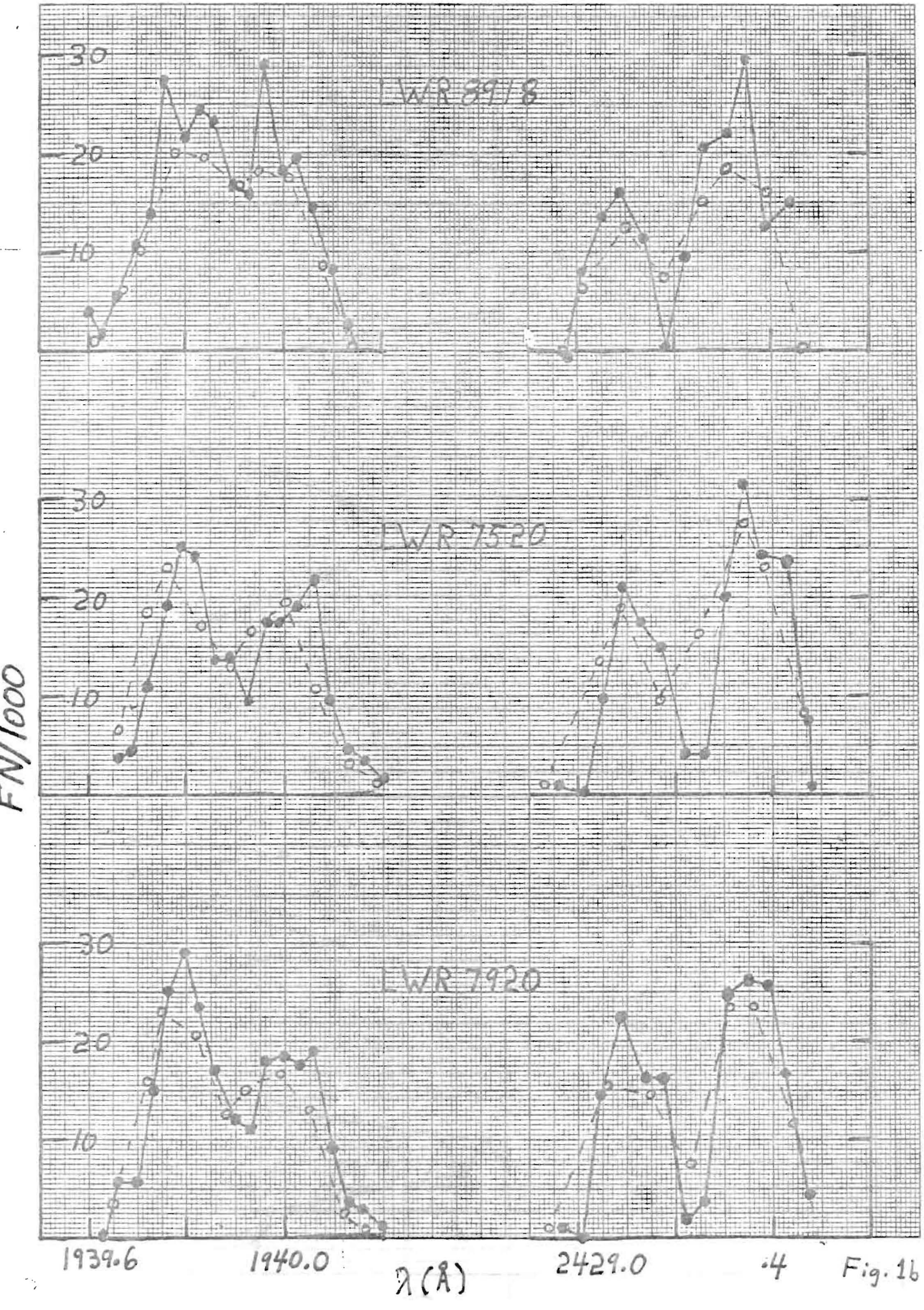

NO. 341-M DIETZGEN GRAPH PAPER
MILLIMETER
DIETZGEN CORPORATION
MADE IN U.S.A.
FN/1000
LWR 8918
LWR 7520
LWR 7920
30
20
10
1939.6
1940.0
2429.0
.4
λ (Å)

Fig. 1b

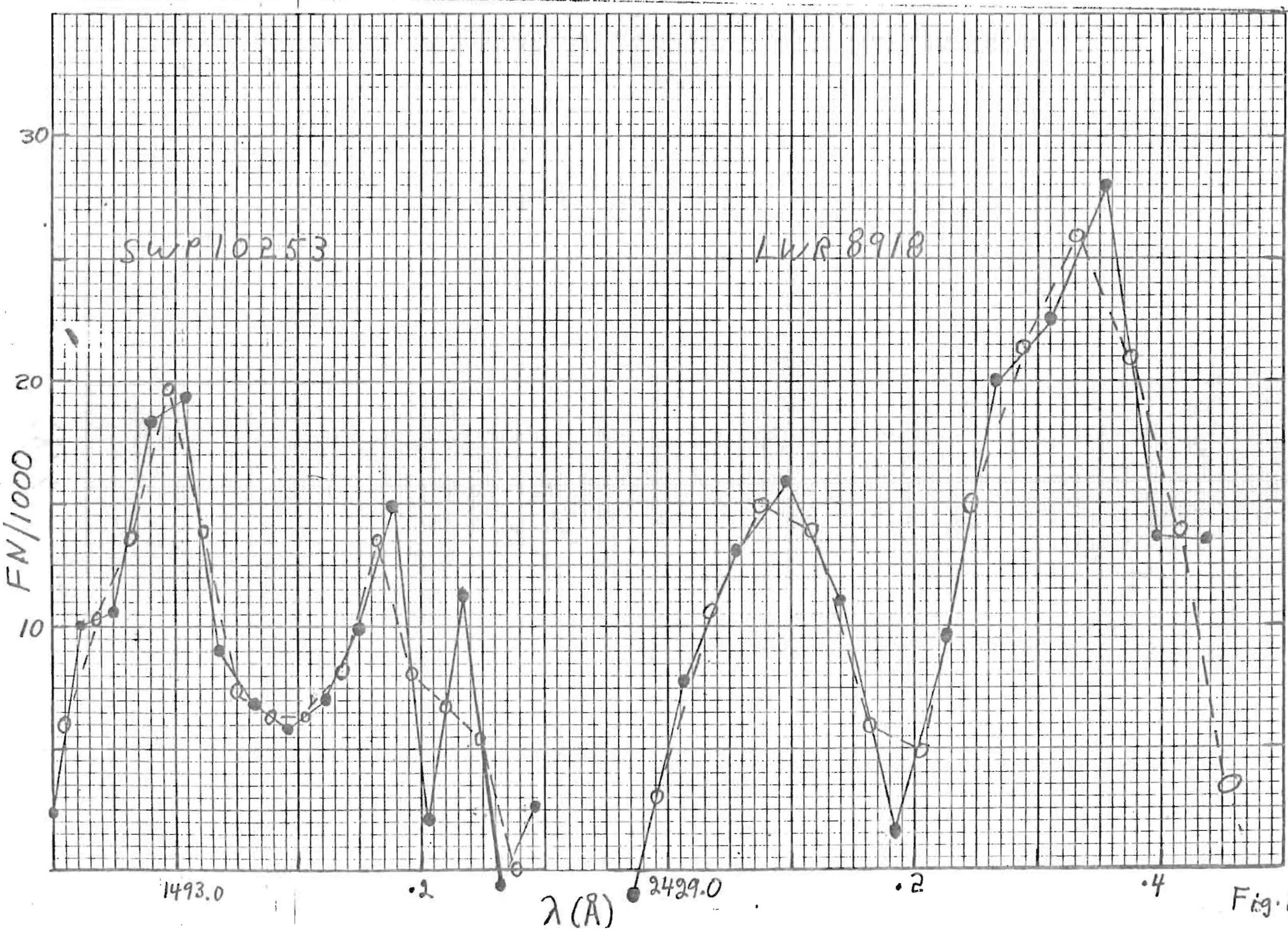
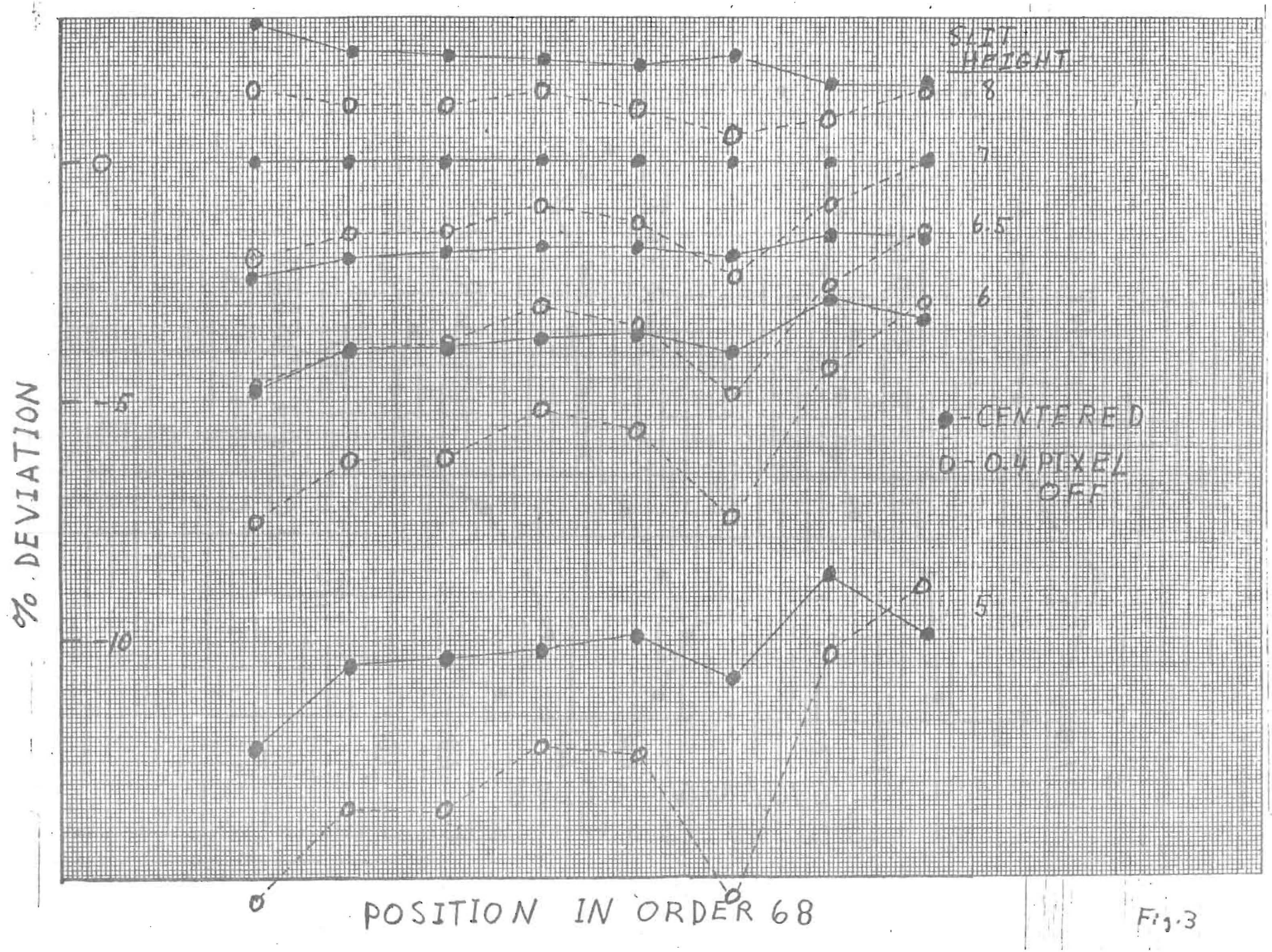


Fig.2



SLIT HEIGHT
8
7
6.5
6
5
● - CENTERED
O - 0.4 PIXEL OFF
0
-5
-10
% DEVIATION
POSITION IN ORDER 68

Fig. 3

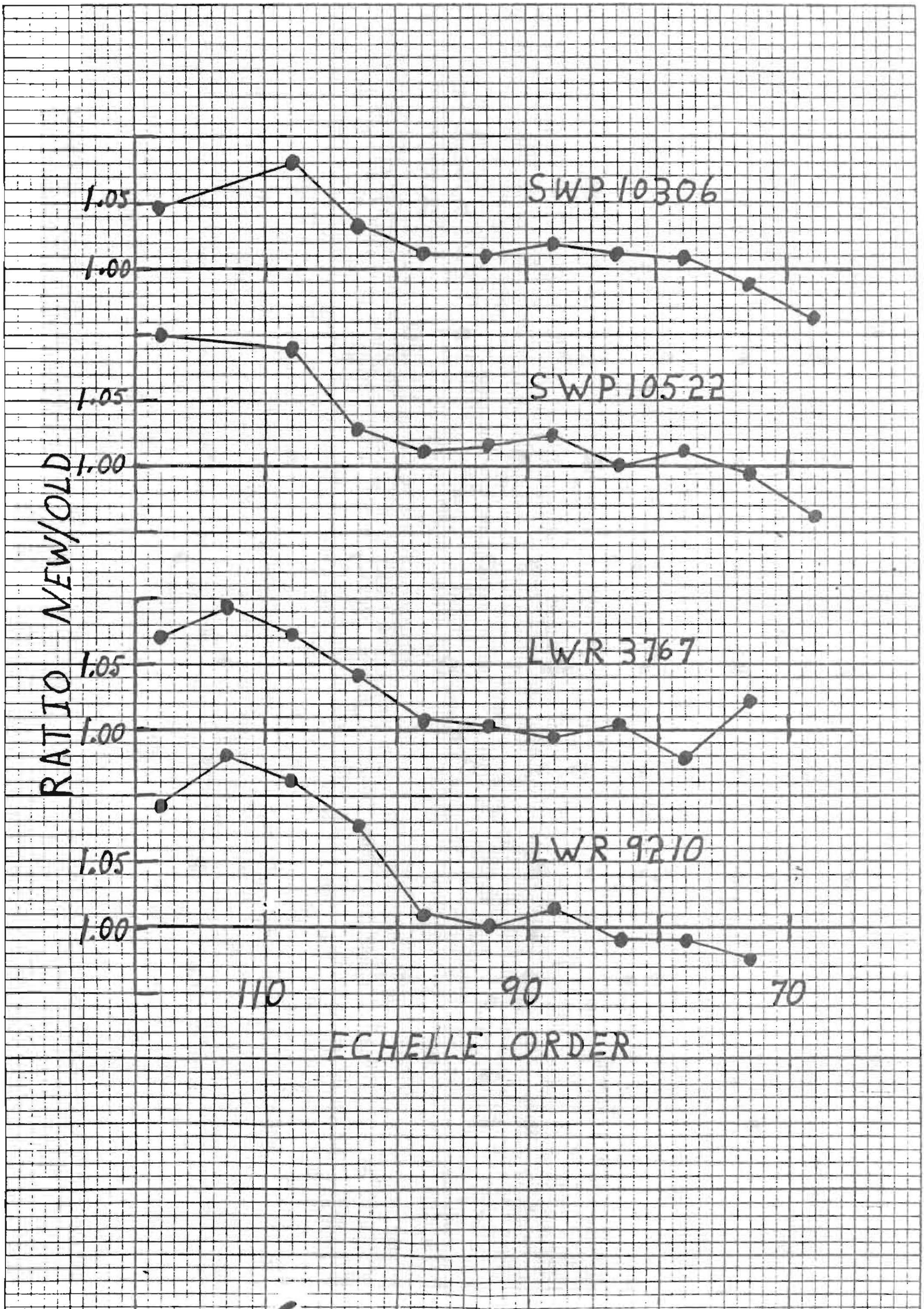

SWP 10306
SWP 10522
LWR 3767
LWR 9210
1.05
1.00
1.05
1.00
1.05
1.00
1.05
1.00
RATIO NEW/OLD
110
90
70
ECHELLE ORDER

Fig. 4

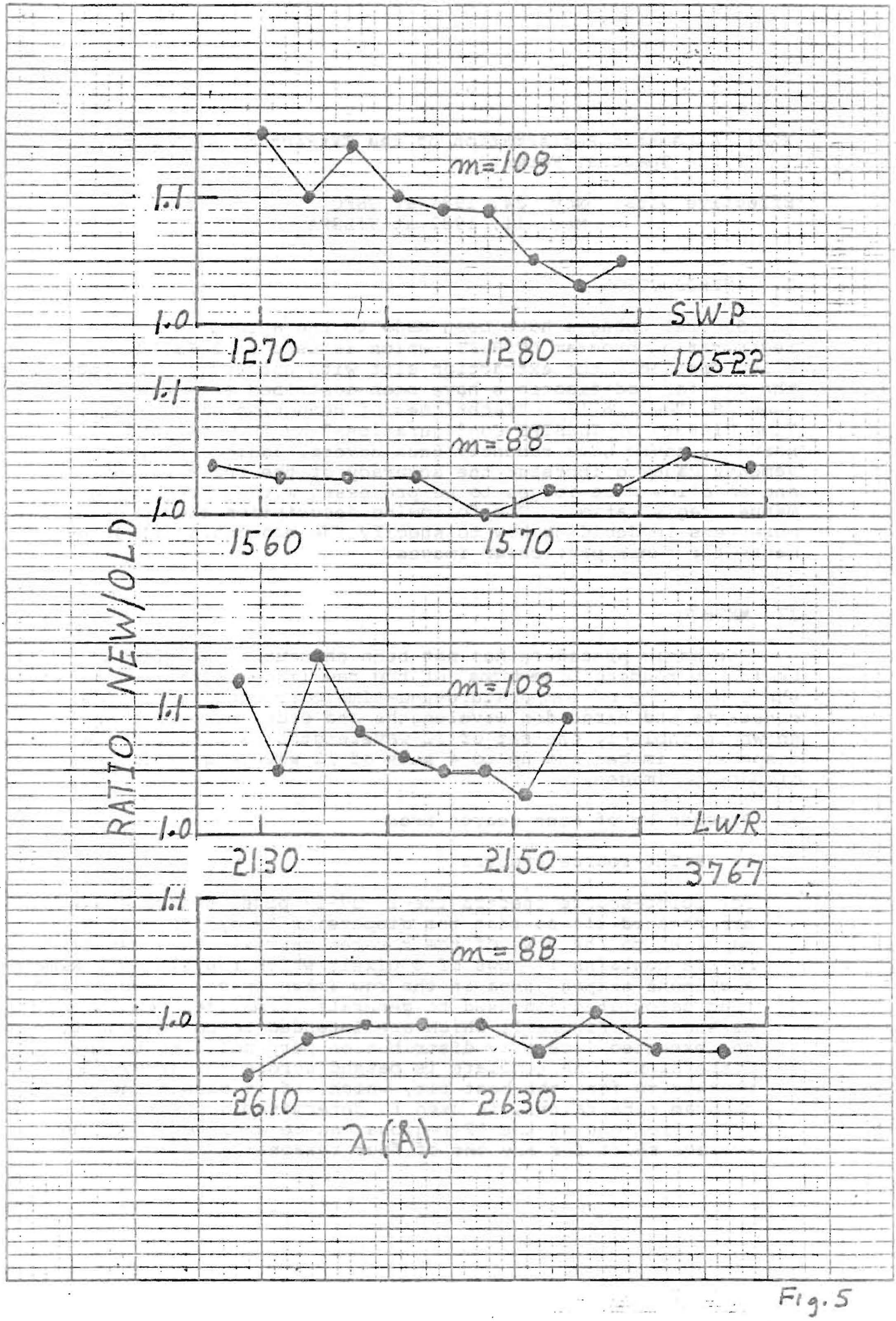

m=108
1.1
1.0
S-W-P
1270
1280
10522
1.1
m=88
1.0
1560
1570
RATIO NEW/OLD
m=108
1.1
1.0
LWR
2130
2150
3767
1.1
m=88
1.0
2610
2630
λ(Å)

Fig. 5

XXVI. Automatic Registration of the Extraction Slit with the Spectral Format

Effective Data: Nov. 24, 1981 at GSFC
Mar. 11, 1982 at VILSPA

I. INTRODUCTION

Several changes have been made to the automatic registration program DCSHIFT, which is used in IUESIPS to align precisely the extraction slit with spectrum. Although the earlier modifications have been described elesewhere (see CSC/TM-81/6117): "Techniques of Reduction of IUE Data: Time History of IUESIPS Configurations" by Turnrose and Harvel), there have recently been several additional improvements made to increase the accuracy of the registration and to allow more images to be processed without requiring manual registration. The following description should help observers in deciding how to specify the processing requirements for their particular images.

II. METHOD

The basic procedure has not been changed. The program begins by reading in sections of the raw image determined by the input file of temperature-and-time corrected dispersion constants and hardcoded wavelengths and order numbers. As shown in Table 1, one set of 12 wavelengths is used for low dispersion images and up to 4 sets of 12 wavelengths for high dispersion images.

a. Processing of each search area

i) Point-source spectra

For point-source spectra the 17-by-17 pixel search areas are rotated 45° so that the dispersion is approximately parallel to the rows of the rotated matrix. The resulting matrix contains 17 rows of 8 pixels which roughly approximate a diamond-shaped area in the raw image space. Rowsums are then calculated and used to generate normalized templates, as shown in Figure 1, which are intended to correspond to the expected intensity distribution perpendicular to the dispersion. The template is passed across the array of rowsums to find the best fit, which, if it passes the program constraints, is used to determined a shift. A shift from one of the 12 regions can be excluded from the average shift for any one of four reasons:

1) the second largest rowsum divided by the second smallest rowsum is less than or equal to 1.5 (i.e. low signal to noise (S/N))

2) the second largest rowsum is greater than 2000 DN (i.e. 8 x 250 which represents nearly saturated data)

3) the search area includes lines flagged as containing microphonic noise

4) the best fit was found with a rowsum at the edge of the search area where it is not possible to interpolate between rows (i.e. shifts greater than 3.5 pixels perpendicular to the dispersion).

The above process is repeated for each wavelength and corresponding search area.

ii) Trailed spectra (low dispersion only)

For trailed spectra a 3-line-by-line-by-40-sample search area is used which is not transformed to a rotated reference frame. Instead, 39 sums are calculated, each of which contains the 3 pixels from the diagonal in the search area, which is aligned approximately with the direction of dispersion. A normalized template (as described in Figure 1) is then applied as in the untrailed case. Shifts are excluded from the evaluation for the following reasons:

1) the average DN value for a pixel in the center 5 rows minus the average DN value for a pixel in the first 5 rows is less than or equal to 30 DN (i.e. low S/N)

2) the search area includes line(s) flagged as having microphonic noise

3) the best fit was found with a rowsum at the edge of the search area (i.e. a shift greater than 4.2 pixels perpendicular to the dispersion).

The above process is repeated for each of the 12 wavelength regions.

b. Calculation of average shift

Once all 12 search areas have been evaluated, an average shift is calculated from the shifts that pass the above tests and corrections are applied to compute the line and sample components for a shift <u>perpendicular to the dispersion</u>. The dispersion constants used for the spectral extraction are updated to reflect the perpendicular shift unless:

1) less than half of the 12 shifts were found acceptable as described above,

or

2) the RMS deviation of the acceptable shifts was greater than 1.0 pixel.

If either of the above conditions is true for a low dispersion image, the program will abort and the image must be processed using manual registration. If either of these conditions is true for a high dispersion image, the entire process described above will be repeated using the next set of 12 wavelengths (i.e., another order as specified in Table 1); the program will finally abort after 4 unsuccessful attempts to find a suitable shift.

III. COMMENTS

1) It should be apparent that the above procedure cannot be applied equally well to all IUE images. In particular, images with unusual profiles such as non-uniform extended source images or images with multiple exposures in the large aperture may cause the program to abort, or even worse, calculate erroneous shifts. Unless these images have symmetric and uniform profiles it is probably better to request manual shift. In this case it may be useful for the GO to comment on where the extraction line should be placed.

2) There are currently no production processing schemes for trailed high dispersion images which use automatic registration.

3) Spectral images containing saturated continua will probably run without aborting. This is especially true for trailed images for which no saturation constraints are imposed and high dispersion images for which several orders are tested before the program will abort. The program DCSHIFT will abort only for extreme saturation, and no harm is done in this case, because the image processing will then default to manual registration.

4) In high dispersion, the extracted background depends critically on the registration for the closely spaced orders For this reason, high dispersion images are registered using order 108. Progressively lower orders down to order 77, are used if order 108 is unsatisfactory. This method allows images of low-temperatures objects with little signal as short as order 108 to run without aborting.

R.W. Thompson
R.C. Bohlin

- TABLE 1 -

SEARCH AREA WAVELENGTHS

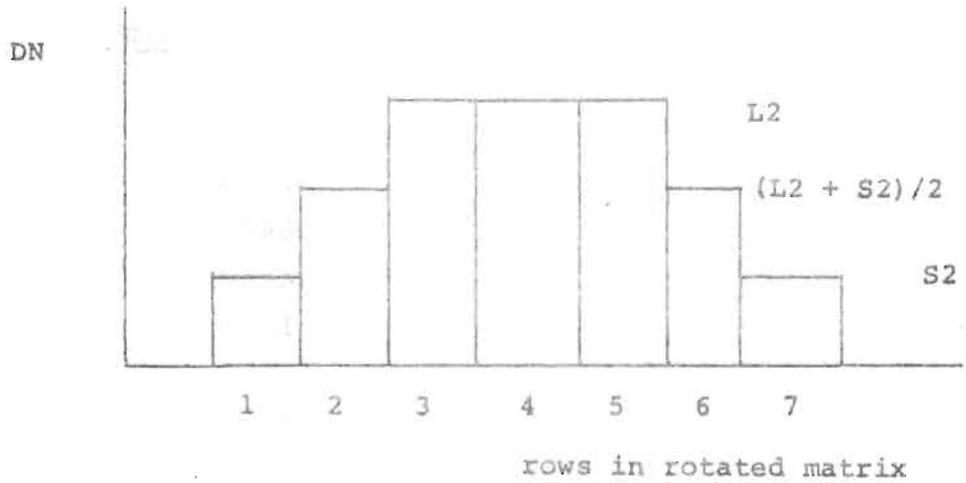
Low Dispersion Wavelengths (Å)

Long Wavelength	Short Wavelength
2100	1300
2200	1350
2300	1400
2400	1450
2500	1500
2600	1550
2700	1600
2800	1650
2900	1700
3000	1750
3100	1800
3200	1850

High Dispersion Wavelengths (Å)

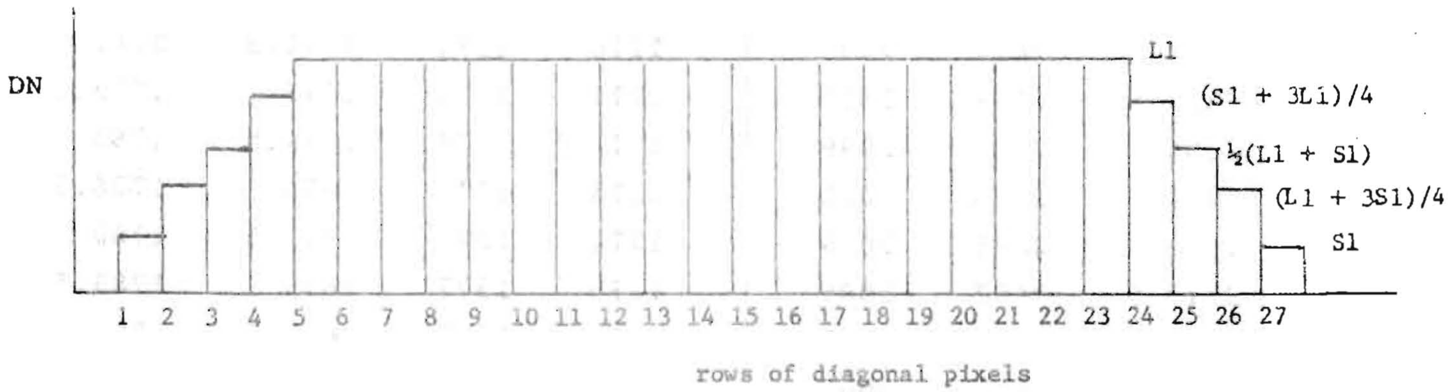
	Long Wavelength				Short Wavelength			
=	108	100	86	77	108	100	82	77
	2132	2303	2677	2995	1270	1372	1671.5	1782
	2133.5	2304.5	2679	2997	1271	1373	1673	1783.5
	2135	2306	2681	2999	1272	1374	1674.5	1785
	2136.5	2307.5	2683	3001	1273	1375	1676	1786.5
	2138	2309	2685	3003	1274	1376	1677.5	1788
	2139.5	2310.5	2687	3005	1275	1377	1679	1789.5
	2141	2312	2689	3007	1276	1378	1680.5	1791
	2142.5	2313.5	2691	3009	1277	1379	1682	1792.5
	2144	2315	2693	3011	1278	1380	1683.5	1794
	2145.5	2316.5	2695	3013	1279	1381	1685	1795.5
	2147	2318	2697	3015	1280	1382	1686.5	1797
	2148.5	2319.5	2699	3017	1281	1383	1688	1798.5

Point Source Template



L2 = second largest rowsum in search area
S2 = second smallest rowsum in search area
Note: The separation between rows in rotated matrix = 0.707 pixel in raw image.

Extended Source Template



L1 = largest sum of diagonal pixels in search area
S1 = smallest " " " " " " "
Note: 1 row = 1 pixel

Figure 1 - Normalized Templates

TAPE FORMAT OF THE IUE MERGED LOG, AS SUPPLIED BY VILSPA

On a periodical basis, VILSPA makes a tape containing the MERGED (NASA + ESA) IUE log of observations, starting on 1st April 1978 and ending three months before the current date (normally ending in April, July or November).

The records of the log are ordered by right ascension and are contained in a single file.

The log is provided on tape, either in 800 bpi or optionally at 1600 bpi:

a) 800 bpi:NRZ1, 9 tracks, odd parity

b) 1600 bpi: PE, 9 tracks, odd parity.

The record length is 80 bytes (1 byte = 8 bits, right justified).

One record per log entry (i.e., per observation).

The last record is followed by at least two consecutive end-of-file marks. The character code is EBCDIC.

Each record is subdivided as shown in table I.

Table II is an example of a copy of seven records of the tape.

Table III is an example of a dump of the same records.

Tapes with the annual merged log can be made available to interested persons. This will only be done on an annual basis (dates running 1st April 78 - 31 March of current year). Interested parties are requested to contact the resident astronomer in charge of the IUE Data base (Patrizio Patriarchi).

José-Ramón Muñoz

TABLE I

Bytes	Fortran Format	Description
1-8	2A4	Object Name
9-10	A2	Object Classification
11-13	3R1	Magnitude in Tenths
14-15	A2	Right Ascension (hours)
16-17	A2	Right Ascension (minutes)
18-19	A2	Right Ascension (seconds)
20	A1	Sign of declination
21-22	A2	Declination (degrees)
23-24	A2	Declination (minutes)
25	A1	Dispersion (H or L)
26	I1	Camera Number
27-31	R3,A2	Image Number
32	A1	Aperture (S or L) to which Right Ascension and Declination apply
33	A1	Large aperture status (O-Opened, C-Closed)
34-35	I2	Day of month
36-38	A3	Month
39-40	A2	Year
41-42	A2	Exposure Start Time (Hours/Since GMT Midnight)
43-44	A2	Exposure Start Time (Mins./Since GMT Midnight)
45-46	A2	Exposure Start Time (Secs.χIn Vilspa = '00')
47-49	A3	Exposure length (Mins.)
50-51	A2	Exposure length (Secs.)
52-56	A4,A1	Identifier for Observation Program
57-80	3X,A1,4A4,A3	Comments (Especially abnormal prepare, camera operations or image quality).

TABLE II

```
  18514446 47193227+6934L210265L0 2APR81012900000075CCDMG   GC=1.5X,B=25
DEL TR A45 38161052-6333L313640L0 2APR81031400120000R370    V451
DEL TR A45 38161052-6333H210266L0 2APR81051700 30000R370    V453
ETA GAR 47 18082129-5920H313641L0 2APR81062300000035DR370   V400
ETA GAR 47 18082129-5920H210267L0 2APR81062600000020DR370   V302
H 16377047 38175432 3715L313642L0 2APR81071700150000R370    V452
CHI1 ORI44 44055125+2016H210268L0 2APR81103500001500CCDTA   GE=198,C=1.2,B=32
```

TABLE III

```
RECORD    43   LENGTH =     80 (    50) BYTES

BYTE  (WORD)    0 (0/8)   4 (1/9)   8 (2/A)   C (3/B)    10 (4/C)  14 (5/D)  18 (6/E)  1C (7/F)   *0   4   8   C   10  14  18  1C  *
00000  00000    4040F1F8  F5F1F4F0  F4F640F4  F7F1F9F3   F2F2F74E  F6F9F3F4  D3F2F1F0  F2F6F5D3   *  18514446 47193227+6934L210265L*
00020  00008    D640F2C1  D7D9F8F1  F0F1F2F9  F0F0F0F0   F0F7F5C3  C3C4D4C7  404040C7  C37EF148   *0 2APR8101290000075CCDMG   GC=1.*
00040  00010    F5E768C2  7EF2F540  40404040  40404040                                            *5X,B=25                        *

RECORD    44   LENGTH =     80 (    50) BYTES

BYTE  (WORD)    0 (0/8)   4 (1/9)   8 (2/A)   C (3/B)    10 (4/C)  14 (5/D)  18 (6/E)  1C (7/F)   *0   4   8   C   10  14  18  1C  *
00000  00000    C4C5D340  F3D940C1  F4F540F3  F8F1F6F1   F0F5F260  F6F3F3F3  D3F3F1F3  F6F4F0D3   *DEL TR A45 38161052-6333L313640L*
00020  00008    D640F2C1  D7D9F8F1  F0F3F1F4  F0F0F1F2   F0F0F0C4  D9F3F7F0  404040E5  F4F5F140   *0 2APR8103140012000DR370    V451 *
00040  00010    40404040  40404040  40404040  40404040                                            *                                *

RECORD    45   LENGTH =     80 (    50) BYTES

BYTE  (WORD)    0 (0/8)   4 (1/9)   8 (2/A)   C (3/B)    10 (4/C)  14 (5/D)  18 (6/E)  1C (7/F)   *0   4   8   C   10  14  18  1C  *
00000  00000    C4C5D340  F3D940C1  F4F540F3  F8F1F6F1   F0F5F260  F6F3F3F3  C8F2F1F0  F2F6F6D3   *DEL TR A45 38161052-6333H210266L*
00020  00008    D640F2C1  D7D9F8F1  F0F5F1F7  F0F040F3   F0F0F0C4  D9F3F7F0  404040E5  F4F5F340   *0 2APR81051700 3000DR370    V453 *
00040  00010    40400040  40404040  40404040  40404040                                            *                                *

RECORD    46   LENGTH =     80 (    50) BYTES

BYTE  (WORD)    0 (0/8)   4 (1/9)   8 (2/A)   C (3/B)    10 (4/C)  14 (5/D)  18 (6/E)  1C (7/F)   *0   4   8   C   10  14  18  1C  *
00000  00000    C5E3C140  C7C1D940  F4F740F1  F8F0F8F2   F1F2F960  F5F9F2F0  C8F3F1F3  F6F4F1D3   *ETA GAR 47 18082129-5920H313641L*
00020  00008    D640F2C1  D7D9F8F1  F0F6F2F3  F0F0F0F0   F0F3F5C4  D9F3F7F0  404040E5  F4F0F040   *0 2APR8106230000035DR370    V400 *
00040  00010    40404040  40404040  40404040  40404040                                            *                                *

RECORD    47   LENGTH =     80 (    50) BYTES

BYTE  (WORD)    0 (0/8)   4 (1/9)   8 (2/A)   C (3/B)    10 (4/C)  14 (5/D)  18 (6/E)  1C (7/F)   *0   4   8   C   10  14  18  1C  *
00000  00000    C5E3C140  C7C1D940  F4F740F1  F8F0F8F2   F1F2F960  F5F9F2F0  C8F2F1F0  F2F6F7D3   *ETA GAR 47 18082129-5920H210267L*
00020  00008    D640F2C1  D7D9F8F1  F0F6F2F6  F0F0F0F0   F0F2F0C4  D9F3F7F0  404040E5  F3F0F240   *0 2APR8106260000020DR370    V302 *
00040  00010    40404040  40404040  40404040  40404040                                            *                                *

RECORD    48   LENGTH =     80 (    50) BYTES

BYTE  (WORD)    0 (0/8)   4 (1/9)   8 (2/A)   C (3/B)    10 (4/C)  14 (5/D)  18 (6/E)  1C (7/F)   *0   4   8   C   10  14  18  1C  *
00000  00000    C840F1F6  F3F7F7F0  F4F740F3  F8F1F7F5   F4F3F240  F3F7F1F5  D3F3F1F3  F6F4F2D3   *H 16377047 38175432 3715L313642L*
00020  00008    D640F2C1  D7D9F8F1  F0F7F1F7  F0F0F1F5   F0F0F0C4  D9F3F7F0  404040E5  F4F5F240   *0 2APR8107170015000DR370    V452 *
00040  00010    40404040  40404040  40404040  40404040                                            *                                *

RECORD    49   LENGTH =     80 (    50) BYTES

BYTE  (WORD)    0 (0/8)   4 (1/9)   8 (2/A)   C (3/B)    10 (4/C)  14 (5/D)  18 (6/E)  1C (7/F)   *0   4   8   C   10  14  18  1C  *
00000  00000    C3C8C9F1  40D6D9C9  F4F440F4  F4F0F5F5   F1F2F54E  F2F0F1F6  C8F2F1F0  F2F6F8D3   *CHI1 ORI44 44055125+2016H210268L*
00020  00008    D640F2C1  D7D9F8F1  F1F0F3F5  F0F0F0F1   F5F0F0C3  C3C4E3C1  404040C7  C57EF1F9   *0 2APR8110350001500CCDTA   GE=19*
00040  00010    F86BC37F  F14BF26B  C27EF3F2  40404040                                            *8,C=1.2,B=32                   *
```

Exposure Times for IUE Spectra

Special attention must be paid to the actual exposure time when using images from the IUE data base, mainly for very short exposures.

Three cases can be distinguished:

a) "Normal" spectra

The actual exposure time T_A of a spectrum resulting from the time T_R entered in the EXPOBCM procedure is obtained by the following formula:

$$T_A \text{ (sec)} = \left\{ \text{INT} \left[(T_R\text{(sec)} / 0.4096) \right] * 0.4096 \right\} - 0.12 \quad (1)$$

taking into account the discrete stepping and the camera deadtime. Discrepancies are as high as 50% for a 1 sec exposure and go down to less than 1% for a 30 sec exposure.

b) Trailed Spectra

The best way to derive the actual exposure time T_A is to start from the trail rate:

$$T_A\text{(sec)} = N * 20.5/R \quad \text{for LWLA}$$

$$= N * 21.4/R \quad \text{for SWLA}$$

where N is the number of passes and
R, the trail rate in "/sec.

The exposure time given by the TRAIL procedures is based on a theoretical length of 20". If the trail rate is not available, the following correction shoulc be applied to the procedure T_R:

$$T_A = T_R * 1.025 \quad \text{for LWLA}$$

$$= T_R * 1.070 \quad \text{for SWLA.}$$

c) Multiple Exposure

The total actual exposure time T_A is obtained by applying formula (1) to each of the individual T_{Ri} time and summing the results:

$$T_A = \sum_i \{INT\ T_{Ri}\ (sec)/.4096 * .4096\} - .12$$

André Heck
Patrizio Patriarchi

PROCEEDINGS OF VILSPA WORKSHOP ON UV CLASSIFICATION

The proceedings of the workshop on UV Stellar Classification held at VILSPA in October 1981 (refer to Newsletter N° 12, p. 11) have just been published as an ESA publication under the reference SP-182.

Copies are available at a price of US $22.- from:

Distribution Office
ESA SCIENTIFIC AND TECHNICAL
PUBLICATIONS BRANCH
ESTEC
Zwarteweg
2200 AG Noordwijk
Netherlands.

UPDATA ON MADRID TAXI FARES

A new increase in taxi fares for Madrid has been recently approved by the ad hoc Price Commission. The starting amount ("bajada de bandera") is now 50 Pts and each kilometer costs 26 Pts. The waiting time is rated at 700 Pts/hour. The doubling of the fare should be applied only to the part of the trip outside Madrid urban area.

Here are a few advices. Check that the starting amount is not higher than 50 Pts. You should always read the meter. Coming to the Station, the driver should catch as soon as possible the "Carretera de la Coruña" (N VI) and proceed to VILSPA as indicated in your Domestic Guide for Guest Observers. On the right-hand side of highway, more or less at the level of Aravaca, is a plate indicating the city limit of normal fare for taxis. Only from this point on, the fare should be doubled.

Example: amount at the city limit = 800 Pts; amount at VILSPA: 1500 Pts. You pay 800 + (1500 - 800) × 2 = 2200 Pts.

Add an airport supplement if you are coming from Barajas (∿ 100 Pts). For internal city trips, pay the meter amount only. If you go from the airport to your hotel or back, pay what the meter indicates, plus the airport supplement. There is also a small supplement per suitcase and other small supplements for nights, weekends, and holidays.

Now, do not be over-anxious. The majority of taxi drivers are honest.

Finally, there is an alternative: take the Airport bus until the Air Terminal at Plaza Colón (∿ 100 Pts) and from there, a taxi to VILSPA. That will come out much cheaper.

André Heck

- G.O. PROPOSALS APPROVED BY ESA-SERC -

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5C004	Fredga, K.	Stockholm Observatory, Sweden	Stellar activity cycle in Beta Hydri
5E006	Panagia, N.	Istituto di Radioastronomia, Bologna, Italy	UV Observations of Supernovae
5A007	D'Odorico, S.	European Southern Observatory, Garching bei Munchen, Germany	The brightest hot stars in the Local Group galaxies M 33 and M 31
5A008	Kudritzki, R.P.	Institut fur Theoretische Physik und Sternwaret, Kiel, Germany	Non-LTE Analysis of Central Stars of Planetary Nebulae
5S009	Fricke, K.H.	Physikalisches Institut, Bonn, Germany	The long-term variability of the Lyman alpha emission from Jupiter, Saturn, and Uranus
5E010	Bruzual, G.A.	Centro de Investigaciones de Astronomía, Mérida, Venezuela	Ultraviolet spectrum of spiral galaxies
5A011	Kudritzki, R.P.	Institut fur Theoretische Physik und Sternwarte, Kiel, Germany	Non-LTE Analysis of Subdwarf O-stars
5I012	Klare, G.	Landessternwarte Konigstuhl, Heidelberg, Germany	High Dispersion UV Spectroscopy of the Dwarf Nova TT Ari
5C013	Gustafsson, B.	Astronomiska Observatoriet, Uppsala, Sweden	SWP echelle mode observations of two late-type binaries with extensive circumstellar material

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5A014	Weidemann, V.	Theoretische Physik und Sternwarte, Kiel, Germany	Ultraviolet Spectroscopy of White Dwarfs
5A015	Schonberner, D.	Theoretische Physik und Sternwarte, Kiel, Germany	Pulsational Variability of Extreme Helium Stars
5I020	Ritter, H.	Max-Planck-Institut fur Physik und Astrophysik, Garching, Germany	Ultraviolet Spectroscopy of HZ Her near X-ray Eclipse
5A024	Nussbaumer, H.	Institute of Astronomy, Zurich, Switzerland	The protoplanetary nebula V 1016 Cyg
5A025	Wolf, B.	Landessternwarte, Konigstuhl, Heidelberg, Germany	The Brightest Star of the LMC
5A026	Wolf, B.	Landessternwarte, Konigstuhl, Heidelberg, Germany	High Resolution UV Spectrograms of the Hubble-Sandage Variable S Dor
5A027	Pottasch, S.R.	Kapteyn Astronomical Institute Groningen, Holland	Continuum radiation from hot central stars of planetary nebulae
5I029	Hammerschlag, G.	Astronomical Institute, Amsterdam, Holland	Simultaneous EXOSAT/IUE/Ground-based Observations of Low-Mass X-Ray Binaries: Her X-1, Sco X-1 and Cyg X-2
	Wilson, R.	University College, London, England	
5I030	Hammerschlag, G.	Astronomical Institute, Amsterdam, Holland	Simultaneous EXOSAT/IUE/Ground-based Observations of massive X-ray binaries to study the interaction between the X-rays and the stellar wind of the companion
	Willis, A.J.	U.C.L., London, England	
5A032	Stalio, R.	Osservatorio Astronomico, Trieste, Italy	Simultaneous X-Ray, UV, Optical, IR Observations of late-B and early-A-type stars
5A035	Hunger, K.	Theor. Physik und Sternwarte der Universitat Kiel, Germany	Effective temperatures of Subdwarf B-stars
5E037	Palumbo, G.G.C.	Istituto TE.S.R.E./C.N.R. Bologna, Italy	UV emission from normal bright spiral galaxies

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5I039	Hack, M.	Osservatorio Astronomico, Trieste, Italy	The Atmospheric Eclipsing Binary Epsilon Aurigae
5E044	Kunth, D.	Institut d'Astrophysique, Paris, France	Absorption systems in lower redshift quasars
5E045	Clavel, J.	Observatoire de Paris-Meudon, Meudon, France	Simultaneous UV, X-Ray, and optical observations of NGC 4593
5C048	Vilhu, O.	Observatory and Astrophysics Laboratory, Helsinki, Finland	Period-Activity Relationships in Contact and Related Binaries
5E049	Bergeron, J.	Institut d'Astrophysique, Paris, France	Intermediate redshift quasars with a "black-body" UV component
5A051	Freire, R.	Observatoire Astronomique, Strasbourg, France	Search for chromospheres in A type stars: 1) slow rotators A stars, 2) A stars in binary systems
5C052	Saxner, M.	Astronomiska Observatoriet, Uppsala, Sweden	Ionizing radiation in F dwarfs
5S058	Festou, C.	Service d'Aéronomie du CNRS, Verrieres-le-Buisson, France	Observations of comets
5I060	Bonnet-Bidaud, J.M.	Commissariat a l'Energie Atomique Gif-sur-Yvette, France	Ultraviolet Observations with IUE of newly discovered X-Ray sources
5M063	Fahr, H.J.	Institut fur Astrophysik, Bonn, Germany	High resolution spectroscopy of the ISW Lyman-Alpha emission
5M064	Stalio, R.	Astronomical Observatory, Trieste, Italy	Mapping the variable extinction in the extreme nuclei of the h and χ Persei clusters
5C067	Cacciari, C.	ESA Satellite Tracking Station, Madrid, Spain	IUE Observations of a grid of Population II standard stars
5A068	Caloi, V.	Istituto di Astrofisica Spaziale, Frascati, Italy	Evolved Globular Cluster Stars

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5A069	Tjin A Djie, H.R.E.	Astronomical Institute, Amsterdam, Holland	Ultraviolet Studies of the shells of Herbig Ae stars
5I073	Rahe, J.	Remeis-Observatory, Bamberg, Germany	Interacting Binary systems
5I075	Drechsel, H.	Remeis-Observatory, Bamberg, Germany	Orbital Phase Dependent and High Dispersion UV spectroscopy of Classical Novae
5E077	Brosch, N.	Laboratory Astrophysics, Leiden, Netherlands	Ultraviolet Spectrophotometry of Galactic Nuclei Under Neighbourhood Density Criteria
5A078	Baschek, B.	Institut fur Theoretische Astrophysik, Heidelberg, Germany	High Resolution Spectroscopy of Blue Halo Stars
5I079	Krautter, J.	European Southern Observatory, Garching, Germany	Observations of Cataclysmic Variables in Minimum and Maximum State
5A080	Doazan, V.	Observatoire de Paris, France	Simultaneous IUE/Ground-based/Exosat observations of Be Stars
	Willis, A.J.	University College, London, England	
5C081	Zwaan, C.	Observatory of the Astronomical Institute, Utrecht, Holland	Magnetic Structure of F, G, and K type stars, II
5E082	Tanzi, E.G.	Istituto di Fisica Cosmica del CNR, Milano, Italy	Coordinated UV, optical and X-ray studies of selected QSOs and BL Lac objects
5I083	Maraschi, L.	Istituto di Fisica Cosmica del CNR, Milano, Italy	Coordinated X-ray and UV observations of magnetic white dwarfs in binaries
5E085	Kunth, D.	Institut d'Astrophysique, Paris, France	Wolf Rayet Stars in Dwarf emission line galaxies
5A087	Henrichs, H.F.	Astronomical Institute, Amsterdam, Holland	Short time variations in the mass-loss rate of early type stars
	Willis, A.J.	University College, London, England	

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5A093	Van der Hucht, K.A.	Space Research Laboratory Utrecht, Holland	The Iron Curtain of WC9 Stars
5I094	Fabian, A.C.	Sterrekundig Institut Utrecht, Holland	Dwarf Novae in Outburst
5E097	Jorgensen, H.E.	Astronomical Observatory Copenhagen, Denmark	The Central Galaxy NGC 4696 in the Centaurus Cluster
5E098	Rocca-Volmerange, B.	Institut d'Astrophysique Paris, France	Star formation and gas in SO galaxies
5I099	Altamore, A.	Istituto Osservatorio Astronomico, Roma, Italy	IUE Observations of CI Cygni during the 1982 eclipse and of other symbiotic stars at minimum
5A100	Praderie, F.	Observatoire de Paris-Meudon France	Temporal changes in the chromosphere of the Herbig Ae star AB Aur
5E102	Caloi, V.	Istituto di Astrofisica Spaziale, Frascati, Italy	Integrated Spectra of Globular Clusters
5E104	Cacciari, C.	ESA Satellite Tracking Station, Madrid, Spain	UV Observations of halo-type globular clusters in the Magellanic Clouds
5I105	Wargau, W.	Remeis-Sternwarte Bamberg, Germany	Study of X-Ray Emitting Dwarf Novae and Novalike Objects
5A107	Praderie, F.	Observatoire de Paris-Meudon, France	Emission, mass loss and chromospheres in Herbig Ae Stars (III)
5I108	Pakull, M.W.	Max-Planck-Institut, Munchen, Germany	LMC X-1 and 1E 0501.8-7037 two recently identified massive X-ray binaries in the LMC
5I109	Giovannelli, F.	Institut of Space Astrophysics, Frascati, Italy	UV behaviour of SS Cygni during an outburst
5I110	Giovannelli, F.	Institut of Space Astrophysics, Frascati, Italy	UV spectra of Cygnus OB2: 8A star
5I113	Hubert-Delplace, A.M.	Observatoire de Paris-Meudon, France	Study of the interacting binary KX And

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5A115	Baschek, B.	Institut fur Theoretische Astro-Physik, Heidelberg, Germany	Lambda Bootis Stars
5C116	Reimers, D.	Hamburger Sternwarte, Hamburg, Germany	Winds and Coronae in Red Giants
5S117	Combes, M.	Observatoire de Paris-Meudon, France	UV Observations of Giant Planets and their Satellites
	Hunt, G.	University College, London, England	
5I121	Bignami, G.F.	Istituto di Fisica Cosmica, Milano, Italy	Investigation on the binary nature of the radio and X-ray star LSI+61°.303, associated with a Cos-B gamma-ray source
5M122	Eichendorf, W.	European Southern Observatory, Garching b. Munchen, Germany	Bright rims around elephant trunks
5C123	Reipurth, B.	Copenhagen University Observatory, Copenhagen, Denmark	The energetics of Herbig-Haro objects
5C124	Eichendorf, W.	European Southern Observatory, Garching b. Munchen, Germany	Classical cepheids
5C125	Reipurth, B.	Copenhagen University Observatory, Copenhagen, Denmark	Star Formation in a Bok Globule
5M126	Dennefeld, M.	Institut d'Astrophysique, Paris, France	High-Resolution observations of supernova-remnants
5I127	Kindl, C.	Institut of Astronomy, ETH-Zentrum, Zurich, Switzerland	The symbiotic star HM Sge
5M129	Prévot, L.	Observatoire de Marseille, France	A far UV study of interstellar matter in the Small Magellanic Cloud
5E130	Marano, B.	Istituto di Astronomia dell' Universita', Bologna, Italy	Ultraviolet Observations of galaxies with spiral structure in the nucleus

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5A137	Perinotto, M.	Osservatorio Astrofisico di Arcetri, Firenze, Italy	Nuclei of evolved planetaries
5A138	Casini, C.	Istituto di Fisica dell' Universita, Milano, Italy	Observations of the Interacting Galaxy System NGC 3991 - 3994 - 3995
5C140	Reimers, D.	Hamburger Sternwarte, Hamburg, Germany	Mass-loss from Red Giants with Hot Companions
5A143	De Loore, C.	Astrophysical Institute, Brussels, Belgium	Simultaneous EXOSAT/IUE/Ground-based studies of O and Worlf-Rayet stars
	Willis, A.J.	University College London, England	
5A144	Vauclair, G.	Observatoire de Toulouse, Toulouse, France	Chemical composition and diffusion in high gravity stars
5I145	Friedjung, M.	Institut d'Astrophysique, Paris, France	Time variations of PU Vulpeculae (Kuwano's object)
5C146	Engvold, O.	Institut of Theoretical Astrophysics, Oslo, Norway	Emission Measure Analysis of SWP-HI Spectra of Representative Yellow Giants and Red Giants and Supergiants
5M147	Fredga, K.	Stockholm Observatory, Stockholm, Sweden	The Interaction between Young Stars and the Surrounding Medium: Ultraviolet Molecular Emission Lines
5E148	Bergeron, J.	Institut d'Astrophysique, Paris, France	Spectroscopy of narrow line active nuclei with radiative Balmer decrement
5I151	West, R.M.	European Southern Observatory Garching b. Munchen, Germany	The very heavy, symbiotic star RY Scuti
5C152	Querci, F.	Observatoire du Pic-du-Midi, Toulouse, France	Carbon stars sequence: R to N stars

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5E159	Fricke, K.J.	Universitats-Sternwarte, Gottingen, Germany	Barred Spirals with X-Ray Nuclei
5E160	Biermann, P.	Max-Planck-Institut fur Radio-astronomie, Bonn, Germany	BL Lac Objects with Jet-like X-Ray Structure
5M162	Grewing, M.	Astronomisches Institut, Tubingen, Germany	Probing the H I holes in the direction of HZ 43 and HR 1099: A pilot study
5M163	Grewing, M.	Astronomisches Institut, Tubingen, Germany	Probing the Interstellar Medium with bright super-nova
	Pettini, M.	Royal Greenwich Observatory, Sussex, U.K.	
5I164	de Jager, C.	Astronomical Institut, Utrecht, Holland	Detection of hydrodynamical flow in and around Algol binaries
5A165	Grewing, M.	Astronomisches Institut, Tubingen, Germany	High Resolution Studies of Planetary Nebulae
5A166	Hubert-Delplace, A.M.	Observatoire de Paris-Meudon, France	Structure of the envelope of Be stars
5I167	Nussbaumer, H.	Institute of Astronomy, ETH-Zentrum, Zurich, Switzerland	The symbiotic star HBV 475
5E168	Ulrich, M.H.	European Southern Observatory, Garching b. Munchen, Germany	Observations of BL Lac Object
5E169	Alloin, D.	Observatoire de Paris-Meudon, France	Star forming activity in Mark 171 and Mark 325 (NGC 7673)
5A170	de Boer, K.S.	Astronomisches Institut, Tubingen, Germany	Supra BHB stars in Globular Clusters
5A173	Cassatella, A.	ESA Satellite Tracking Station, Madrid, Spain	UV Observations of three peculiar Be stars
5E174	Geyer, E.H.	Observatorium Hoher List, Bonn, Germany	High resolution observations of the young globular cluster NGC 2004 in the LMC

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5C175	Cassatella, A.	ESA Satellite Tracking Station, Madrid, Spain	Ascending giant branch to planetary nebula phase: UV observations of two candidates
5E176	Cassatella, A.	ESA Satellite Tracking Station, Madrid, Spain	UV Observations of young globular clusters in the LMC
5M181	Laurent, C.	Laboratoire de Physique, Verrieres-le-Buisson, France	The Extent of a Gaseous Galactic Halo
	Pettini, M.	Royal Greenwich Observatory, Sussex, U.K.	
5A182	Koppen, J.	Institut fur Theoretische Astrophysik, Heidelberg, Germany	High Dispersion Observations of Planetary Nebulae
5E183	Capaccioli, M.	Institute of Astronomy, Padova, Italy	UV continuum energy distribution of elliptical galaxies
5E184	Bertola, F.	Istituto di Astronomia, Padova, Italy	LW range UV excess in elliptical galaxies
5E185	Capaccioli, M.	Institute of Astronomy, Padova, Italy	UV Continuum in bulge dominated SO galaxies
5I189	Tielens, A.G.G.M.	Laboratory of Astrophysics, Leiden, Netherlands	The study of 2200 Å diffuse feature in h χ Per
5S190	Bertaux, J.L.	Service d'Aéronomie du CNRS, Verrieres-le-Buisson, France	Study of the Io Torus
5C201	Madore, B.F.	University of Toronto, Toronto, Canada	Search for Companions to Non-Pulsating Yellow Supergiants in or near the instability strip
5C202	Butler, C.J.	Queen's University of Belfast, North Ireland	Simultaneous IUE, EXOSAT and Optical Observations of Flare Stars
	Rodono, M.	Osservatorio Astrofisico, Catania, Italy	

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5I203	de Groot, M.	Armagh Observatory, North Ireland	UV Spectroscopy of selected Spectroscopic Binaries
5C206	Budding, E.	Manchester University, Manchester, England	Chromospheric activity in the Short period Subgroup of RS CVn Stars
5E207	Ninkov, Z.	University of British Columbia, Canada	Study of the Nuclear Region of NGC 2903
5E208	Ellis, R.S.	Durham University, England	Ultraviolet Studies of Late-type Spiral galaxies.
5C209	Beckman, J.E.	Queen Mary College, London, England	Magnetic Variability of Late-type Stars
5M210	Nandy, K.	Royal Observatory, Edinburgh, Scotland	Properties of dust in external galaxies
5E211	Nandy, K.	Royal Observatory, Edinburgh, Scotland	Studies of the nuclear regions of Sersic-Pastoriza galaxies
5A213	Nandy, K.	Royal Observatory, Edinburgh, Scotland	Effective temperature and radii of LMC giants and main sequence early type stars
5E214	Nandy, K.	Royal Observatory, Edinburgh, Scotland	Composition of dust and gas in the Perseus arm
5I215	Pringle, J.E.,	Institute of Astronomy, Cambridge, England	Dwarf Novae
5E216	Meaburn, J.	University of Manchester, Manchester, England	Nuclei of Hot Spot Galaxies
5E217	Coe, M.J.	Southampton University, U.K.	Simultaneous spectral studies of active galaxies
5I218	Osborne, J.	Mullard Space Science Laboratory, Surrey, U.K.	Three Possibly Magnetised Cataclysmic Variables
5I219	Osborne, J.	Mullard Space Science Laboratory, Surrey, U.K.	Co-ordinated X-ray and UV observations of magnetic white dwarfs in binaries

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5I220	Kelly, B.D.	Royal Observatory of Edinburgh, Edinburgh, Scotland	The interacting binary RZ Gruis
5M221	Boksenberg, A.	Royal Greenwich Observatory, Sussex, U.K.	High velocity gas motions in the Carina Nebula
5M222	Boksenberg, A.	Royal Greenwich Observatory, Sussex, U.K.	The physical state of gas in galactic giant HII regions
5C223	Walsh, J.R.	University of Manchester, Manchester, England	The UV continuum in NGC 2261 and R Monoceros
5E225	Ward, M.J.	Institute of Astronomy, Cambridge, England	UV Observations of X-ray emitting 'Star Burst' Galactic Nuclei
5A226	Evans, A.	Preston Polytechnic, Preston, U.K.	Develepment of the 2200A extinction feature in post-eruptive novae
5C228	Evans, A.	Preston Polytechnic, Preston, U.K.	Ultraviolet observations of RCB Standard stars
5E231	Gaskell, C.M.	Institute of Astronomy, Cambridge, England	Narrow line strong Fe II Seyfert Galaxies
5C232	Jordan, C.	University of Oxford, England	The Structure, Energy Balance and Dynamics of Stellar Chromospheres and Coronae
5M233	Blades, J.C.	Rutherford Appleton Laboratory, Oxon, England	Absorption measures of gas in haloes of galaxies
5E234	Blades, J.C.	Rutherford Appleton Laboratory, Oxon, England	Observations of Interstellar HI in External Galaxies using QSOs as Background Sources
5E235	Gondhalekar, P.M.	Rutherford Appleton Laboratory Oxon, England	UV Spectrophotometry of non-Seyfert blue emission line galaxies

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5M236	Gondhalekar, P.M.	Rutherford Appleton Laboratory Oxon, England	Studies of energetic mechanisms to inject hot ionized gas into the Galactic halo
5I239	Lynas-Gray, A.E.	University College London, England	Helium and Metal Diffusion in the Sdo Primary of the Eclipsing Binary LB 3459
5I240	Whelan, J.A.J.	Institute of Astronomy, Cambridge, England	W UMa contact binary light curves
5M242	Willis, A.J.	University College London, England	High Resolution Studies of MC Interstellar Gas (OB Stars) and Galactic Halo
5E249	Wilson, R.	University College London, England	Ultraviolet Observations of Quasars
5E250	Wilson, R.	University College London, England	Observations of high redshift (z>3) Quasars with IUE
5E251	Wilson, R.	University College London, England	UV Observations of the Double Quasar 0957+561 A,B
5E252	Wilson, R.	University College London, England	Studies of UV Variability of selected Seyfert galaxies
5E253	Wilson, R.	University College London, England	An Investigation of the broad absorption-line quasar PG 1351+64
5A254	Seaton, M.J.	University College London, England	Planetary nebulae and their central stars
5E255	Boksenberg, A.	Royal Greenwich Observatory, Sussex, England	Ultraviolet observations of the Standard nucleus of NGC 1275
5E256	Boksenberg, A.	Royal Greenwich Observatory, Sussex, England	Ultraviolet Observations of NGC 1068
5E257	Boksenberg, A.	Royal Greenwich Observatory, Sussex, England	IUE Observations of QSOs, Seyfert I Galaxies & BL Lac Objects
5E258	Boksenberg, A.	Royal Greenwich Observatory, Sussex, England	Ultraviolet Observations of Seyfert 2 Galaxies

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5M261	McNally, D.	University College London, England	Interstellar Molecular lines
5C262	Andrews, A.D.	Armagh Observatory, Armagh, North Ireland	Studies of Spots and Plages in BY Draconis-Type Variables Stars
	Rodono, M.	Osservatorio Astrofisico, Catania, Italy	
5M264	Blades, J.C.	Rutherford Appleton Laboratory, Oxon, England	Study of interstellar gas adjacent to two spiral arms
5E266	Whittle, D.M.	Institute of Astronomy, Cambridge, England	Continued monitoring of MCG-2-58-22, a Seyfert nucleus with distinct resolved broad line components
5C267	Brown, A.	Queen Mary College, London, England	EUV Studies of Pre-main-Sequence Stars Coordinated with EXOSAT and Ground-based observations
	The, P.S.	Astronomical Institute, Amsterdam, Holland	
	Gahm, G.	Stockholm Observatory, Stockholm, Sweden	
5C268	Moe, O.K.	University of Oslo, Norway	UV centre-to-limb variations in solar type bright eclipsing binaries
5A269	Giaretta, D.	Rutherford Appleton Laboratory, Oxon, England	Mass loss from β Orion and similar stars
5E270	Penston, M.V.	Royal Greenwich Observatory, Sussex, England	Continued Monitoring of NGC 4151
	Ulrich, M.H.	European Southern Observatory, Garching b. Munchen, Germany	
5C271	Penston, M.V.	Royal Greenwich Observatory, Sussex, England	Mild T Tauri stars

CODE	PRINCIPAL APPLICANT	INSTITUTE	TITLE
5C272	Stickland, D.J.	Royal Greenwich Observatory, Sussex, England	R V Tauri Stars
5I273	Stickland, D.J.	Royal Greenwich Observatory, Sussex England	The sometimes elcipsing WH Star CV Serpentis
5I274	Stickland, D.J.	Royal Greenwich Observatory, Sussex, England	UV Observations of Epsilon Aurigae
5C275	Stickland, D.J.	Royal Greenwich Observatory, Sussex, England	Long Period Variable Stars
5E276	Pagel, B.E.	Royal Greenwich Observatory, Sussex, England	Abundances and excitation mechanisms in peculiar emission-line nuclei of galaxies
5E278	Penston, M.V.	Royal Greenwich Observatory, Sussex, England	Ultraviolet observations of variable Seyfert galaxies
	Ulrich, M.H.	European Southern Observatory, Garching b. Munchen, Germany	
5C279	Penston, M.V.	Royal Greenwich Observatory, Sussex, England	Lα and CIV line profiles in T Tauri Stars
5M282	Pettini, M.	Royal Greenwich Observatory, Sussex, England	A Large Scale Survey of Interstellar Absorption in the Galactic Halo
5C283	Bromage, G.E.	Rutherford Appleton Laboratory, London, England	Coordinated multi-waveband study of M-Dwarf Flares
5S284	Clark, D.H.	Rutherford Appleton Laboratory, London, England	Coma and tails of weaker comets
STAND	VILSPA Observatory	ESA Satellite Tracking Station Madrid, Spain	UV Stellar Classification
SEYFE	VILSPA Observatory	ESA Satellite Tracking Station	Multifrequency monitoring of Seyfert 1 Galaxies
GLOBC	VILSPA Observatory	ESA Satellite Tracking Station	UV Observations of Globular Clusters in galaxies members of the Local Group

NASA APPROVED IUE PROGRAMS FOR THE FIFTH YEAR

NAME		INSTITUTION	COUNTRY	PROG ID	TITLE
A'HEARN	MICHAEL F.	MARYLAND	U. S.	SCEMA	COMETS AS TARGETS OF OPPORTUNITY
A'HEARN	MICHAEL F.	MARYLAND	U. S.	SPEMA	DUSTY, DISTANT COMETS
AKE	THOMAS B.,III	CSC	U. S.	COETA	ULTRAVIOLET OBSERVATIONS OF S STARS
AKE	THOMAS B.,III	CSC	U. S.	HCETA	OBSERVATIONS OF COOL GIANTS & SUPERGIANTS WITH HOT COMPANIONS
ALLER	LAWRENCE H.	CAL LA	U. S.	NPELA	STRATIFICATION IN & CHEMICAL COMPOSITIONS OF PLANETARY NEBULAE
AYRES	THOMAS R.	COLORADO	U. S.	CCETA	THE WILSON-BAPPU EFFECT & BEYOND
AYRES	THOMAS R.	COLORADO	U. S.	RSETA	FAR-ULTRAVIOLET ECHELLE SPECTRA OF RS CVN GIANTS
AYRES	THOMAS R.	COLORADO	U. S.	FSETA	THE MANY FACES OF HR 1099
BAIRD	SCOTT R.	CLEMSON	U. S.	CDESB	RV TAURI STAR CIRCUMSTELLAR DUST
BALIUNAS	SALLIE L.	CFA - SAO	U. S.	FSESB	STELLAR FLARES
BALIUNAS	SALLIE L.	CFA - SAO	U. S.	RSESB	THE TWO COMPONENT ATMOSPHERE OF LAMBDA ANDROMEDAE
BALIUNAS	SALLIE L.	CFA - SAO	U. S.	LGESB	ACTIVITY IN THE HYADES GIANTS
BARKER	PAUL K.	W. ONTARIO	CANADA	MLEPB	SUPERIONIZED SPECIES & WINDS IN NORMAL B STARS
BARKER	TIMOTHY	WHEATON	U. S.	NPETB	THE IONIZATION STRUCTURE OF PLANETARY NEBULAE
BLAIR	WILLIAM P.	CFA - SAO	U. S.	NSEWB	CARBON ABUNDANCE IN M33 & M31 FROM SUPERNOVA REMNANTS

NASA APPROVED IUE PROGRAMS FOR THE FIFTH YEAR

NAME		INSTITUTION	COUNTRY	PROG ID	TITLE
A'HEARN	MICHAEL F.	MARYLAND	U. S.	SCEMA	COMETS AS TARGETS OF OPPORTUNITY
A'HEARN	MICHAEL F.	MARYLAND	U. S.	SPEMA	DUSTY, DISTANT COMETS
AKE	THOMAS B.,III	CSC	U. S.	COETA	ULTRAVIOLET OBSERVATIONS OF S STARS
AKE	THOMAS B.,III	CSC	U. S.	HCETA	OBSERVATIONS OF COOL GIANTS & SUPERGIANTS WITH HOT COMPANIONS
ALLER	LAWRENCE H.	CAL LA	U. S.	NPELA	STRATIFICATION IN & CHEMICAL COMPOSITIONS OF PLANETARY NEBULAE
AYRES	THOMAS R.	COLORADO	U. S.	CCETA	THE WILSON-BAPPU EFFECT & BEYOND
AYRES	THOMAS R.	COLORADO	U. S.	RSETA	FAR-ULTRAVIOLET ECHELLE SPECTRA OF RS CVN GIANTS
AYRES	THOMAS R.	COLORADO	U. S.	FSETA	THE MANY FACES OF HR 1099
BAIRD	SCOTT R.	CLEMSON	U. S.	CDESB	RV TAURI STAR CIRCUMSTELLAR DUST
BALIUNAS	SALLIE L.	CFA - SAO	U. S.	FSESB	STELLAR FLARES
BALIUNAS	SALLIE L.	CFA - SAO	U. S.	RSESB	THE TWO COMPONENT ATMOSPHERE OF LAMBDA ANDROMEDAE
BALIUNAS	SALLIE L.	CFA - SAO	U. S.	LGESB	ACTIVITY IN THE HYADES GIANTS
BARKER	PAUL K.	W. ONTARIO	CANADA	MLEPB	SUPERIONIZED SPECIES & WINDS IN NORMAL B STARS
BARKER	TIMOTHY	WHEATON	U. S.	NPETB	THE IONIZATION STRUCTURE OF PLANETARY NEBULAE
BLAIR	WILLIAM P.	CFA - SAO	U. S.	NSEWB	CARBON ABUNDANCE IN M33 & M31 FROM SUPERNOVA REMNANTS

NASA APPROVED IUE PROGRAMS FOR THE FIFTH YEAR

NAME / TITLE		INSTITUTION	COUNTRY	PROG ID
BRUZUAL	GUSTAVO A.	C.I.D.A.	VENEZUELA	EGEGB
ULTRAVIOLET SPECTRUM OF SPIRAL GALAXIES				
CALDWELL	JOHN	STONY BROOK	U. S.	SPEJC
SOLAR SYSTEM INVESTIGATIONS WITH THE IUE				
CHAPMAN	ROBERT D.	GSFC	U. S.	VVERC
PHYSICS OF THE CIRCUMSTELLAR ENVELOPE ACCRETION DISK & SECONDARY COMPANION IN EPS AUR				
CLAYTON	GEOFFREY C.	TORONTO	CANADA	IEEGC
THE NATURE OF DUST IN THE LMC				
COHEN	JUDITH G.	CAL TECH	U. S.	EGEJC
IUE OBSERVATIONS & SUPPORT OF RESEARCH ON THE CLUSTERS OF THE MAGELLANIC CLOUDS				
COHEN	JUDITH G.	CAL TECH	U. S.	EPEJC
RESEARCH ON THE STELLAR POPULATION OF NORMAL GALAXIES				
CONTI	PETER S.	COLORADO	U. S.	WREPC
CONTINUUM MEASURES OF WOLF-RAYET STARS				
CORDOVA	FRANCE ANNE	LOS ALAMOS	U. S.	CVEFC
DEGENERATE STARS IN ECLIPSING CLOSE BINARY SYS & SEARCH FOR CORONA				
COWLEY	ANNE P.	MICHIGAN	U. S.	CBEAC
UV OBSERVATIONS OF THE SYMBIOTIC STAR AR PAV IN ECLIPSE & TWO MASS-TRANSFER X-RAY BINARIES				
DAVIDSON	KRIS	MINNESOTA	U. S.	NDEKD
STUDIES OF MATERIAL EJECTED BY ETA CARINAE				
DRILLING	JOHN S.	LOUISIANA ST.	U. S.	HSEJD
UV SPECTROSCOPY OF SUBLUMINOUS O STARS				
DUFOUR	REGINALD J.	RICE	U. S.	NDERD
HIGH DISPERSION IUE OBSERVATIONS OF METAL-POOR H II REGIONS				
DUFOUR	REGINALD J.	RICE	U. S.	NAERD
ABUNDANCES OF C, SI, & MG IN GALACTIC H II REGIONS				
DUPREE	ANDREA K.	CFA - SAO	U. S.	QSEAD
VARIABILITY OF THE DOUBLE QUASAR 0957+561 A, B.				
DUPREE	ANDREA K.	CFA - SAO	U. S.	CBEAD
HIGH RESOLUTION STUDY OF EPSILON CORONAE AUSTRINAE				

NASA APPROVED IUE PROGRAMS FOR THE FIFTH YEAR

NAME		INSTITUTION	COUNTRY	PROG ID	TITLE
EATON	JOEL A.	VANDERBILT	U. S.	CBEJE	FOLLOW-ON OBS OF W URSAE MAJORIS STARS
FEIBELMAN	WALTER A.	GSFC	U. S.	NPEWF	OBSERVATIONS OF VARIABLE & PROTO-PLANETARY NEBULAE
FELDMAN	PAUL D.	JOHNS HOPKINS	U. S.	SCEPF	OBSERVATIONS OF COMETS WITH THE INTERNATIONAL ULTRAVIOLET EXPLORER
FERLAND	GARY J.	KENTUCKY	U. S.	NPEGF	CARBON IN PLANETARY NEBULAE
FESEN	ROBERT A.	GSFC	U. S.	NSERF	A RADIAL MAPPING OF THE CYGNUS LOOP'S UV EMISSION
GELLER	MARGARET J.	CFA - HARVARD	U. S.	QSEMG	IUE OBSERVATIONS OF SEYFERT GALAXY VARIABILITY
GIAMPAPA	MARK S.	CFA - SAO	U. S.	CSEMG	MAGNETIC & CHROMOSPHERIC SYNOPTIC OBSERVATIONS OF LATE-TYPE STARS
GLASSGOLD	A. E.	NEW YORK U.	U. S.	BLEAG	MULTIFREQUENCY OBSERVATIONS OFBL LAC OBJECTS, VIOLENTLY VARIABLE QUASARS
GLASSGOLD	A. E.	NEW YORK U.	U. S.	QSEAG	THE EFFECT OF X-RAY & UV IONIZING RADIATION ON QUASAR EMISSION LINES
GREEN	RICHARD F.	ARIZONA	U. S.	XQERG	BRIGHT OPTICALLY SELECTED QUASARS WITH HIGH X-RAY FLUX
GREEN	RICHARD F.	ARIZONA	U. S.	QSERG	QUASARS AT REDSHIFT 1
GREGORY	STEPHEN A.	BOWLING GREEN	U. S.	QSESG	TIME VARIATIONS OF EMISSION LINES IN SEYFERT 1 GALAXIES
HACKNEY	KAREN R. H.	W. KENTUCKY	U. S.	BLEKH	TEMPORAL VARIATIONS IN THE SPECTRA OF ACTIVE BL LAC OBJECTS
HALLAM	KENNETH L.	GSFC	U. S.	CCEKH	SOLAR-LIKE ACTIVITY CYCLES OF STELLAR CHROMOSPHERES
HALLAM	KENNETH L.	GSFC	U. S.	LDEKH	STELLAR DIFFERENTIAL ROTATION & CHROMOSPHERIC SURFACE DISTRIBUTION

NASA APPROVED IUE PROGRAMS FOR THE FIFTH YEAR

NAME / TITLE		INSTITUTION	COUNTRY	PROG ID
HARRINGTON	J. PATRICK	MARYLAND	U. S.	NPEJH
A STUDY OF THE PLANETARY NEBULA IC 2149				
HARTMANN	LEE W.	CFA - SAO	U. S.	CSELH
DYNAMICS OF HOT GAS SURROUNDING HYBRID STARS				
HIRATA	RYUKO	KYOTO	JAPAN	MLERH
FAR-ULTRAVIOLET STUDY OF ACTIVE SHELL STARS				
HOBBS	LOU M.	CHICAGO	U. S.	IGELH
IUE OBSERVATIONS OF INTERSTELLAR CARBON				
HOBBS	ROBERT W.	GSFC	U. S.	QSERH
UV EMISSION IN QUASAR Q0420-388 WITH Z = 3.12				
HODGE	PAUL W.	WASH.	U. S.	MLEPH
MASS LOSS EVOLUTION IN NGC 6530				
HODGE	PAUL W.	WASH.	U. S.	HSEPH
EVOLUTION OF MASS LOSS IN STARS OF MAGELLANIC CLOUD CLUSTERS				
HOLM	ALBERT V.	CSC	U. S.	RCEAH
EXTINCTION IN R CRB VARIABLES				
HOLM	ALBERT V.	CSC	U. S.	FBEAH
PHASE-RESOLVED SPECTROPHOTOMETRY OF THE ZZ CETI VARIABLE G29-38				
HOLM	ALBERT V.	CSC	U. S.	HEEAH
IUE OBSERVATIONS OF HIGH LUMINOSITY HELIUM PULSATIONAL VARIABLES				
HUCHRA	JOHN P.	CFA - SAO	U. S.	EGEJH
ULTRAVIOLET SPECTROPHOTOMETRY OF HOT GALAXIES WITH IUE				
IMHOFF	CATHERINE L.	CSC	U. S.	TTECI
THE DEVELOPMENT OF CHROMOSPHERES & CORONAE IN THE T TAURI STARS				
IMHOFF	CATHERINE L.	CSC	U. S.	PMECI
ULTRAVIOLET OBSERVATIONS OF THE PRE-MAIN SEQUENCE STAR FU ORIONIS				
JENKINS	E. B.	PRINCETON	U. S.	EHEEJ
LYMAN ALPHA HALOS OF GALAXIES				
JOHNSON	HOLLIS R.	INDIANA	U. S.	RNEHJ
STUDIES OF THE ULTRAVIOLET SPECTRA OF CARBON STARS				

NASA APPROVED IUE PROGRAMS FOR THE FIFTH YEAR

NAME		INSTITUTION	COUNTRY	PROG ID	TITLE
JUGAKU	JUN	TOKYO	JAPAN	BPEJJ	RELATIONSHIP BETWEEN HELIUM ANOMALOUS STARS OF POPULATIONS I AND II
KAFATOS	MINAS	GEORGE MASON	U. S.	ZAEMK	OBSERVATIONS OF SYMBIOTIC STARS IN THE MAGELLANIC CLOUDS
KALER	JAMES B.	ILLINOIS	U. S.	NPEJK	CENTRAL STARS OF LARGE PLANETARY NEBULAE
KIRSHNER	ROBERT P.	MICHIGAN	U. S.	SNERK	IUE SUPERNOVA SPECTROSCOPY
KONDO	YOJI	GSFC	U. S.	BLEYK	SYNOPTIC OBSERVATIONS OF BL LAC OBJECTS IN SEVERAL WAVELENGTH REGIONS
KUHI	LEONARD V.	CAL BERKELEY	U. S.	TTELK	THE ULTRAVIOLET EXCESS IN T TAURI STARS
LAMBERT	DAVID L.	TEXAS	U. S.	VVEDL	EPSILON AURIGAE IN ECLIPSE
LAMBERT	DAVID L.	TEXAS	U. S.	CBEDL	THE PRIMARY COMPONENT OF ALGOL SYSTEMS OF LOW MASS RATIO
LANE	ARTHUR L.	JPL	U. S.	SSEAL	UV SPECTROPHOTOMETRY OF THE SATURNIAN SATELLITES IAPETUS, RHEA & DIONE
LESTER	JOHN B.	TORONTO-ERNDL	CANADA	AAEJL	A TEST OF CONVECTIVE MODEL ATMOSPHERES
LESTER	JOHN B.	TORONTO-ERNDL	CANADA	AMEJL	THE ENERGY DISTRIBUTIONS OF AM STARS IN OPEN CLUSTERS
LIEBERT	JAMES W.	ARIZONA	U. S.	CVEJL	BRIGHT, OPTICALLY THICK ACCRETION DISKS
LINSKY	JEFFREY L.	COLORADO	U. S.	LDEJL	A CORRELATIVE STUDY OF THE VARIABILITY OF XI BOO A
LINSKY	JEFFREY L.	COLORADO	U. S.	PMEJL	POST T-TAURI STARS
LINSKY	JEFFREY L.	COLORADO	U. S.	FSEJL	COORDINATED OBSERVATIONS OF FLARES ON UV CETI- E STARS

NAME		INSTITUTION	COUNTRY	PROG ID	TITLE
LINSKY	JEFFREY L.	COLORADO	U. S.	DMEJL	HIGH DISPERSION SWP SPECTRA OF TWO DME STARS
LINSKY	JEFFREY L.	COLORADO	U. S.	BYEJL	STUDIES OF SPOTS & PLAGES IN BY DRACONIS-TYPE VARIABLE STARS
LINSKY	JEFFREY L.	COLORADO	U. S.	CCEJL	CHROMOSPHERIC DENSITIES AND GEOMETRICAL EXTENSIONS OF LATE-TYPE GIANTS
LINSKY	JEFFREY L.	COLORADO	U. S.	CSEJL	HIGH DISPERSION SWP SPECTRA OF YELLOW AND RED GIANTS
LINSKY	JEFFREY L.	COLORADO	U. S.	CBEJL	HIGH DISPERSION SWP OBSERVATIONS OF TWO LATE-TYPE BINARIES
MADORE	BARRY F.	TORONTO	CANADA	SGEBM	A SEARCH FOR COMPANIONS TO NON-PULSATING YELLOW SUPERGIANTS
MARAN	STEPHEN P.	GSFC	U. S.	NAESM	C ABUNDANCE IN PLANETARY NEBULA OF FORNAX GALAXY
MASSEY	PHILIP	DAO	CANADA	HLEPM	SUPER W-R STARS IN M33
MATSON	DENNIS L.	JPL	U. S.	SJEDM	ULTRAVIOLET SPECTROPHOTOMETRY OF THE GALILEAN SATELLITES OF JUPITER
MATSON	DENNIS L.	JPL	U. S.	SAEDM	ULTRAVIOLET REFLECTANCE SPECTROSCOPY OF SELECTED ASTEROIDS
MCCLUSKEY	GEORGE E.	LEHIGH	U. S.	IBEGM	IUE SPECTROSCOPY OF THE EXTRAORDINARY INTERACTING BINARY R ARAE
MILLER	H. RICHARD	GEORGIA	U. S.	BLEHM	IUE OBSERVATIONS OF BL LAC OBJECTS & OVV QUASARS
MOOS	H. WARREN	JOHNS HOPKINS	U. S.	SJEHM	STUDY OF THE JOVIAN AURORAL SPECTRAL & INTENSITY VARIATIONS
MOOS	H. WARREN	JOHNS HOPKINS	U. S.	SIEHM	STUDY OF THE TORUS OF IO USING IUE
MOOS	H. WARREN	JOHNS HOPKINS	U. S.	SPEHM	IUE STUDY OF EMISSIONS FROM SATURN & URA

NAME / TITLE		INSTITUTION	COUNTRY	PROG ID
MORRISON	NANCY D.	TOLEDO	U. S.	CBENM
STELLAR WINDS IN TWO MASSIVE BINARY STARS WITH KNOWN ORBITS				
NOYES	ROBERT W.	CFA - SAO	U. S.	LDERN
ACTIVE REGIONS ON SOLAR-TYPE DWARFS				
O'CONNELL	ROBERT W.	VIRGINIA	U. S.	RGERO
NONTHERMAL ULTRAVIOLET RADIATION IN NEARBY COMPACT RADIO SOURCES				
OKE	J. B.	CAL TECH	U. S.	QSEJO
IUE OBS OF VARIABLE TYPE 1 SEYFERT GALAXIES				
OLSON	EDWARD C.	ILLINOIS	U. S.	CBEEO
TARGET OF OPPORTUNITY OBSERVATIONS OF U CEPHEI IN ACTIVE MASS TRANSFER				
PANEK	ROBERT J.	CSC	U. S.	DSERP
UV VARIABILITY OF DELTA SCUTI STARS				
PARISE	RONALD A.	CSC	U. S.	RSERP
ROTATIONAL COUPLING OF CROMOSPHERIC ACTIVITY IN RS CVN BINARY STARS				
PARSONS	SIDNEY B.	GSFC	U. S.	CBESP
MASS RATIOS OF BINARIES WITH COOL PRIMARIES & HOT SECONDARIES				
PATTERSON	JOSEPH	CFA - SAO	U. S.	CVEJP
ULTRAVIOLET SPECTRA OF WHITE DWARF PULSARS				
PLAVEC	MIREK J.	CAL LA	U. S.	IBEMP
INTERACTING CLOSE BINARY STARS OF LONGER PERIOD				
PUETTER	RICHARD C.	CAL SAN DIEGO	U. S.	RGERP
FE II UV MULTIPLET OBSERVATIONS OF BROAD LINE RADIO GALAXIES				
PUETTER	RICHARD C.	CAL SAN DIEGO	U. S.	QSERP
UV/OPTICAL/INFRARED OBSERVATIONS OF BROAD LINE RADIO GALAXIES				
RAYMOND	JOHN C.	CFA - SAO	U. S.	NSEJR
ULTRAVIOLET SPECTRA OF NON-RADIATIVE SHOCK WAVES				
RAYMOND	JOHN C.	CFA - SAO	U. S.	IMEJR
GRAIN DESTRUCTION & ELEMENTAL ABUNDANCES IN INTERSTELLAR SHOCKS				
SARGENT	W. L. W.	CAL TECH	U. S.	QSEWS
COORDINATED ULTRAVIOLET, OPTICAL & INFRARED OBSERVATIONS OF HIGH-REDSHIFT QUASARS				

NASA APPROVED IUE PROGRAMS FOR THE FIFTH YEAR

NAME		INSTITUTION	COUNTRY	PROG ID
TITLE				
SAVAGE	BLAIR D.	WISCONSIN	U. S.	GHEBS
CONTINUED STUDIES OF MILKY WAY HALO GAS				
SAVAGE	BLAIR D.	WISCONSIN	U. S.	EHEBS
A STUDY OF MAGELLANIC CLOUD HALO GAS				
SAVAGE	BLAIR D.	WISCONSIN	U. S.	IEEBS
EXTINCTION & CONTINUA OF STARS IN H II REGIONS				
SCHMIDT	EDWARD G.	NEBRASKA	U. S.	DCEES
ULTRAVIOLET SPECTROSCOPY OF BRIGHT CEPHEIDS				
SCHWARTZ	RICHARD D.	MISSOURI	U. S.	HHERS
UV OBSERVATIONS OF LOW EXCITATION HH OBJECTS.				
SHAW	J. SCOTT	GEORGIA	U. S.	CBEJS
AN INITIAL ULTRAVIOLET INVESTIGATION OF RAPIDLY EVOLVING SHORT PERIOD ECLIPSING BINARIES				
SHORE	STEVEN N.	CASE W.R.	U. S.	HLESS
LUMINOUS, EXTENDED ATMOSPHERE STARS IN THE LOCAL GROUP				
SHORE	STEVEN N.	CASE W.R.	U. S.	HEESS
SPECTROSCOPY & ZEEMAN POLARIMETRY OF HELIUM RICH MAGNETOSPHERES & WINDS				
SHULL	J. MICHAEL	COLORADO	U. S.	HHEJS
IUE OBSERVATIONS OF THE BRIGHTEST HERBIG-HARO OBJECTS				
SHULL	J. MICHAEL	COLORADO	U. S.	IGEJS
IUE INTERSTELLAR OBSERVATIONS OF BRIGHT OB-STARS				
SIMON	THEODORE	HAWAII	U. S.	LGETS
ULTRAVIOLET OBSERVATIONS OF YOUNG GIANT STARS				
SIMON	THEODORE	HAWAII	U. S.	RSETS
A PERIOD-ACTIVITY RELATION FOR ACTIVE RS CVN STARS				
SIMON	THEODORE	HAWAII	U. S.	LDETS
SIMULTANEOUS ULTRAVIOLET & MAGNETIC OBSERVATIONS OF THREE LATE-TYPE STARS				
SIMON	THEODORE	HAWAII	U. S.	AEETS
TEMPORAL CHANGES IN THE ULTRAVIOLET SPECTRUM OF AB AUR				
SIMON	THEODORE	HAWAII	U. S.	VVETS
ECLIPSE OBSERVATIONS OF EPSILON AURIGAE				

NAME TITLE		INSTITUTION	COUNTRY	PROG ID
SION	EDWARD M.	VILLANOVA	U. S.	HEEES
HIGH RESOLUTION ULTRAVIOLET STUDIES OF HOT HELIUM RICH WHITE DWARFS				
SITKO	MICHAEL L.	MINNESOTA	U. S.	QSEMS
ULTRAVIOLET OBSERVATIONS OF AN OPTICALLY SELECTED SAMPLE OF LOW-REDSHIFT QSOS				
SITKO	MICHAEL L.	MINNESOTA	U. S.	XQEMS
ULTRAVIOLET OBSERVATIONS OF A SAMPLE OF X-RAY EMITTING QSOS				
SNOW	THEODORE P.	COLORADO	U. S.	BEETS
BE STAR VARIABILITY				
SNOW	THEODORE P.	COLORADO	U. S.	HSETS
UV & X-RAY VARIABILITY IN HOT STARS				
SNOW	THEODORE P.	COLORADO	U. S.	IEETS
OBSERVATIONS OF GRAINS IN THE INTERSTELLAR MEDIUM				
SODERBLOM	DAVID R.	CFA - SAO	U. S.	LDEDS
SPECTRA OF LATE-F DWARFS & THEIR RELATION TO ROTATION				
STARRFIELD	SUMNER	ARIZONA ST.	U. S.	CVESS
ULTRAVIOLET OBSERVATIONS OF GALACTIC NOVAE				
SZKODY	PAULA	WASH.	U. S.	CBEPS
A STUDY OF THE VARIABILITY OF 2A0526-328				
SZKODY	PAULA	WASH.	U. S.	CVEPS
SHORT OUTBURST PERIOD CATACLYSMIC VARIABLES				
THUAN	TRINH X.	VIRGINIA	U. S.	EGETT
UV STUDIES OF MINI-SEYFERT AND STARBURST GALACTIC NUCLEI				
TRAUGER	JOHN T.	CAL TECH	U. S.	SPEJT
HIGH SPATIAL RESOLUTION IUE OBSERVATIONS OF JUPITER & SATURN				
TREMAINE	SCOTT D.	MIT	U. S.	GHEST
THE EXTENT OF A HOT GASEOUS GALACTIC HALO				
TURNSHEK	DAVID A.	PITTSBURGH	U. S.	QSEDT
OBSERVATIONS OF EDGE ON SEYFERTS WITH IUE				
UNDERHILL	ANNE B.	GSFC	U. S.	SGEAU
LUMINOUS EARLY-TYPE STARS				

NAME / TITLE		INSTITUTION	COUNTRY	PROG ID
WEGNER	GARY A.	PENN ST.	U. S.	WDEGW
A STUDY OF THE ULTRAVIOLET SPECTRA OF WHITE DWARFS CONTAINING CARBON				
WEGNER	GARY A.	PENN ST.	U. S.	HEEGW
ULTRAVIOLET STUDY OF HELIUM (DB) WHITE DWARFS				
WEISS	WERNER W.	VIENNA	AUSTRIA	APEWW
UNSTABLE ELEMENTS IN NORMAL & PECULIAR STARS OF A-TYPE				
WILLS	BEVERLEY J.	TEXAS	U. S.	QCEBW
THE CONTINUUM ENERGY DISTRIBUTIONS OF QUASARS				
WILLS	BEVERLEY J.	TEXAS	U. S.	QFEBW
FE II ULTRAVIOLET LINES IN SEYFERT 1 NUCLEI & QUASARS				
WILLSON	LEE ANNE	IOWA STATE	U. S.	ZAELW
UV LINE VARIATIONS IN MIRA SYMBIOTICS				
WORRALL	DIANA M.	CAL SAN DIEGO	U. S.	BLEDW
MULTIFREQUENCY OBSERVATIONS OF ACTIVE GALACTIC NUCLEI				
WU	CHI-CHAO	CSC	U. S.	CVECW
TARGET OF OPPORTUNITY OBSERVATIONS OF NOVA & X-RAY NOVA				
WU	CHI-CHAO	CSC	U. S.	QSECW
UV OBSERVATIONS OF LOW REDSHIFT QUASARS				
WU	CHI-CHAO	CSC	U. S.	MLECW
SHORT TIME VARIATIONS IN THE MASS-LOSS RATE OF EARLY TYPE STARS				
WU	CHI-CHAO	CSC	U. S.	CBECW
ULTRAVIOLET OBSERVATIONS OF THE OLD NOVA RR PICTORIS				
YORK	DONALD G.	PRINCETON	U. S.	GHEDY
ABSORPTION MEASURES OF GAS IN GALACTIC HALOS				

INTERNATIONAL ULTRAVIOLET EXPLORER

ESA LOG OF IMAGES

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SORTED BY STELLAR COORDINATES

OBSERVING PROGRAMMES SUBMITTED THROUGH THE UK SCIENCE RESEARCH COUNCIL

UK401	M.COE/SOUTHAMPTON	PERIODICITIES IN X-RAY SOURCES
UK402	J.A.J.WHELAN/CAMBRIDGE	W UMA CONTACT BINARIES
UK404	J.E.PRINGLE/CAMBRIDGE	DWARF NOVAE
UK405	D.T.WICKRAMASHINGE/ROE	ULTRAVIOLET SPECTROSCOPY OF DB WHITE DWARFS, AND UV STUDIES OF HIGH FIELD MAGNETIC WHITE DWARFS
UK407	O.VILHU/HELSINKI	PERIOD-ACTIVITY RELATIONS IN SOLAR TYPE CLOSE BINARIES
UK409	S.P.TARAFDAR/BOMBAY	MOLECULES IN CELESTIAL OBJECTS
UK410	W.B.SOMERVILLE/UCL	ULTRAVIOLET EXTINCTION IN REDDENED GALACTIC CLUSTERS AND
UK411		OBSERVATION OF INTERSTELLAR MOLECULAR LINES
UK412	E.BUDDING/MANCHESTER	CHROMOSPHERIC/CORONAL ACTIVITY IN THE SHORT PERIOD SUBGROUP OF RS CVN STARS
UK413	M.M.PHILLIPS/AAO	REDDENING IN THE BROAD-LINE REGIONS OF SEYFERT 1 GALAXIES
UK414	M.V.PENSTON/RGO	CONTINUED MONITORING OF NGC 4151
UK417	M.V.PENSTON/RGO	HIGH DISPERSION OBSERVATIONS OF T TAURI STARS
UK418	M.V.PENSTON/RGO	LONG EXPOSURE OBSERVATIONS OF EXTRAGALACTIC OBJECTS
UK419	A.C.FABIAN/CAMBRIDGE	A STUDY OF FILAMENTATION SURROUNDING NGC 1275
UK420	A.J.MEADOWS/LEICESTER	ULTRAVIOLET STUDIES OF ASTEROIDS
UK422	P.M.GONDHALEKAR/S&AD	ULTRAVIOLET SPECTRO-PHOTOMETRY OF H II REGIONS IN NGC 4236, AND
UK423		H II REGION-LIKE GALAXIES
UK425	B.BATES/BELFAST	STUDIES OF CIRCUMSTELLAR AND INTERSTELLAR GAS HIGH VELOCITY COMPONENTS
UK426	C.M.GASKELL/CAMBRIDGE	LUMINOSITY CALIBRATION STANDARD OF LOW Z QUASARS
UK427	R.F.CARSWELL/CAMBRIDGE	STUDY OF LYA/HB RATIOS IN LOW REDSHITF QUASARS
UK428	E.F.MILONE/CALGARY	ULTRAVIOLET CENTRE-TO-LIMB VARIATION IN SOLAR-TYPE ECLIPSING BINARY COMPONENTS
UK431	D.J.STICKLAND/RGO	LONG PERIOD VARIABLE STARS
UK433	R.S.ELLIS/DURHAM	ULTRAVIOLET SPECTRA OF NORMAL SPIRAL GALAXIES, AND
UK434		SPATIAL MAPPING OF THE SM/IRR GALAXY NGC 4449
UK435	J.MEABURN/MANCHESTER	HIGH VELOCITY,LOW EXCITATION KNOTS IN HII REGIONS
UK436	G.E.HUNT/UCL	UV OBSERVATIONS OF THE MAJOR PLANETS
UK437	P.L.DUFTON/BELFAST	OBSERVATIONS OF EARLY-TYPE STARS WITH PECULIAR CNO LINE STRENGTHS
UK438	R.W.HILDITCH/ST ANDREWS	THE MASSIVE INTERACTING BINARY SYSTEMS DH CEP AND CC CAS
UK439	K.NANDY/ROE	EFFECTIVE TEMPERATURES,ANGULAR DIAMETER AND RADII OF LMC M-S STARS
UK440	K.NANDY/ROE	INTERSTELLAR EXTINCTION AND EARLY-TYPE SUPERGIANTS IN THE LMC
UK442	K.NANDY/ROE	MOTION OF GAS ABOVE PERSEUS ARM AND POSSIBLE GRAIN-LEAKAGE FROM THE GALACTIC PLANE
UK443	P.M.GONDHALEKAR/S&AD	STUDIES OF HIGH VELOCITY INTERSTELLAR GAS
UK446	J.C.BLADES/S&AD	NEAR ULTRAVIOLET OBSERVATIONS OF THE HIGH REDSHIFT BL LAC OBJECT 0215 + 015
UK447	D.C.MORTON/AAO	ABSORPTION MEASURES OF GAS IN GALACTIC HALOS

UK448	J.C.BLADES/S&AD	HIGH RESOLUTION STUDY OF DIFFUSE INTERSTELLAR CLOUDS
UK455	G.E.BROMAGE/S&AD	ACTIVE CHROMOSPHERE-CORONAE OF UV CETI FLARE STARS
UK457	G.E.BROMAGE/S&AD	EXTENDED SURVEY OF HOT AND COLD INTERSTELLAR GAS IN THE INNER HALO
UK458	G.E.BROMAGE/S&AD	HIGH-RESOLUTION STUDY OF THE MASIVE WOLF-RAYET BINARY CW CEPHEID
UK459	G.E.BROMAGE/S&AD	WOLF-RAYET STARS WITH LOW-MASS UNSEEN COMPANIONS
UK461	A.BOKSENBERG/UCL	THE EXTENT OF GASEOUS GALACTIC HALO
UK463	A.BOKSENBERG/UCL	THE PHISICAL STATE OF GAS IN GALACTIC GIANT H II REGIONS
UK464	A.BOKSENBERG/UCL	A LARGE SCALE SURVEY OF INTERSTELLAR ABSORPTION IN THE GALACTIC HALO
UK465	A.BOKSENBERG/UCL	ULTRAVIOLET OBSERVATIONS OF SEYFERT 2 GALAXIES
UK466	A.BOKSENBERG/UCL	IUE OBSERVATIONS OF QSOS, SEYFERT 1 GALAXIES & BL LAC OBJECTS
UK467	M.J.BARLOW/UCL	UV SPECTROPHOTOMETRY OF MAGELLANIC CLOUD PLANETARY NEBULAE
UK468	M.J.BARLOW/UCL	UV SPECTROPHOTOMETRY OF NUCLEI OF SOUTHERN PLANETARY NEBULAE
UK470	M.J.SEATON/UCL	PLANETARY NEBULAE ANT THEIR CENTRAL STARS
UK472	R.WILSON/UCL	OBSERVATION OF THE RESONANCE LINES OF NEUTRAL AND IONIZED HELIUM IN A HIGH REDSHITF QUASAR
UK473	R.WILSON/UCL	UV STUDIES OF X-RAY BINARY SOURCES
UK474	R.WILSON/UCL	A STUDY OF THE ULTRAVIOLET SPECTRA OF QUASARS
UK475	R.WILSON/UCL	STUDIES OF SEYFERT GALAXIES
UK477	R.WILSON/UCL	A STUDY OF THE TWIN QUASAR 0956+561 A, B FOR VARIABILITY AND COMPARISION WITH RADIO DATA
UK478	A.J.WILLIS/UCL	HIGH RESOLUTION STUDIES OF MC OB STARS/ INTERSTELLAR GAS AND GALACTIC HALO
UK479	A.J.WILLIS/UCL	THE STELLAR WINDS OF INTERMEDIATE OF/WN7 STARS
UK480	A.J.WILLIS/UCL	PROBES OF THE STELLAR WINDS IN WR SPECTROSCOPIC BINARIES (WR+O)
UK481	A.J.WILLIS/UCL	THREE-PHASE DIAGNOSTICS OF NONTHERMAL AND BINARY EFFECTS IN THE BE STARS
UK482	C.JORDAN/OXFORD	CHROMOSPHERES AND CORONAE OF STARS ON OR NEAR THE MAIN SEQUENCE
UK483	C.JORDAN/OXFORD	HIGH RESOLUTION STUDIES OF HYBRID GIANTS AND RELATED STARS
UK484	D.J.STICKLAND/RGO	UV OBSERVATIONS OF PECULIAR BINARIES
UK486	R.F.JAMESON/LEICESTER	UV SPECTRA OF CATACLYSMIC VARIABLES WITH VARIABLE ACCRETION RATES
UK487	A.D.ANDREWS/ARMAGH	STUDIES OF THE QUIET PLAGE COMPONENT OF THE ACTIVE STARS IN RS CVN BINARY SYSTEMS AND
UK488		STUDIES OF SPOTS, PLAGES AND FLARES IN BY DRACONIS-TYPE VARIABLE STARS
UK491	M.WARD/CAMBRIDGS	UV SPECTRA OF X-RAY SELECTED ACTIVE GALAXIES
UK493	C.J.BUTLER/ARMAGH	AN UV SURVEY WITH SIMULTANEOUS OPTICAL OBSERVATIONS OF SOLAR-NEIGHBOURHOOD DM STARS AND FLARE STARS
UK494	J.E.BECKMAN/LONDON	MAGNETIC VARIABILITY CYCLES OF LATE TYPE STARS

LIST OF ABBREVIATIONS USED

AAO	ANGLO-AUSTRALIAN OBSERVATORY
S&AD	SPACE & ASTROPHYSICS DIVISION OF RUTHERFORD AND APPLETON LABORATORY
RGO	ROYAL GREENWICH OBSERVATORY
ROE	ROYAL OBSERVATORY EDINBURGH
UCL	UNIVERSITY COLLEGE LONDON
AAO	ANGLO AUSTRALIAN OBSERVATORY
SAAO	SOUTH AFRICAN ASTRONOMICAL OBSERVATORY

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OBSERVING PROGRAMMES SUBMITTED THROUGH THE EUROPEAN SPACE AGENCY

MA501	M AUVERGNE/NICE	STUDY OF THE MG II LINE EMISSION IN THE SHORT PERIOD VARIABLE STAR ♦ PUPPIS
CZ502	C ZWAAN/UTRECHT	MAGNETIC STRUCTURE OF F,G AND K TYPE STARS
MR503	M ROSA/HEIDELBERG	THE EXCITING STARS OF EXTRAGALACTIC HII REGIONS
JH505	J HEIDMANN/PARIS	OBSERVATIONS OF CLUMPY IRREGULAR GALAXIES
GH506	G HAMMERSCHLAG/AMSTERDAM	SHORT TIME VARIATIONS IN THE MASS-LOSS RATE OF EARLY TYPE STARS: THE CASE OF ! CAS
MH507	M HACK/TRIESTE	BP AND HE-POOR STARS BELONGING TO THE GALACTIC DISK AND HALO
RW508	R WEINBERGER/INNSBRUCK	OBSERVATIONS OF THE CENTRAL STAR OF A HUGE NEW NEARBY PN
SD509	S D'ODORICO/GARCHING	CARBON ABUNDANCE IN THE GASEOUS PHASE OF M 33
AH510	A HECK/MADRID	SPECTRAL CLASSIFICATION IN THE ULTRAVIOLET
RK511	R.P. KUDRITZKI/KIEL	NON-LTE ANALYSIS OF SUBDWARF O-STARS
MD512	M DENNEFELD/PARIS	HYDROGEN LINE RATIOS IN INTERMEDIATE REDSHIFT QUASARS
JB513	J BERGERON/PARIS	SPECTROPHOTOMETRY OF INTERMEDIATE REDSHIFT QUASARS
JC514	J CLAVEL/PARIS	A STUDY OF THE VARIABILITY OF BRIGHT SEYFERT I GALAXIES BY MEANS OF SIMULTANEOUS OBSERVATIONS IN THE UV, VISIBLE AND X-RAY RANGE
CB515	C BERTOUT/HEIDELBERG	SPECTROSCOPY OF SELECTED T TAURI STARS
KF516	K FREDGA/STOCKHOLM	STELLAR MG II LINES
DK518	D KOESTER/KIEL	SPECTROSCOPY OF WHITE DWARFS WITH HELIUM-RICH ATMOSPHERES
WE519	W EICHENDORF/GARCHING	CLASSICAL CEPHEIDS
JF520	J.V FEITZINGER/BOCHUM	WARPING AND HALO OF THE LARGE MAGELLANIC CLOUD
KF521	K.H FRICKE/BONN	THE LONG-TERM VARIABILITY OF THE LYMAN ALPHA EMISSION FROM JUPITER, SATURN AND URANUS
RK522	R.P KUDRITZKI/KIEL	NON-LTE ANALYSIS OF CENTRAL STARS OF PLANETARY NEBULA
RK523	R.P.KUDRITZKI/KIEL	NON-LTE ANALYSIS OF NITROGEN-RICH MAIN SEQUENCE O-STARS
DS524	D SCHOENBERNER/KIEL	ULTRAVIOLET SPECTROSCOPY OF EXTREME HELIUM STARS
WE525	W EICHENDORF/GARCHING	SHELL STRUCTURES AROUND CLASSICAL CEPHEIDS
JB526	J BERGERON/PARIS	SPECTROPHOTOMETRY OF NARROW LINE ACTIVE NUCLEI WITH HIGH EXCITATION LINES AND/OR RADIO EMISSION
HD527	H DRECHSEL/BAMBERG	INTERACTING CONTACT BINARIES
JR528	J RAHE/BAMBERG	UV OBSERVATIONS OF COMETS BRIGHTER THAN 9TH MAGNITUDE AS TARGET OF OPPORTUNITY
LM529	L MARASCHI/MILANO	OBSERVATIONS OF X-RAY EMITTING QSOS AND BL LAC OBJECTS
HN530	H NUSSBAUMER/ZURICH	GALACTIC WOLF-RAYET STARS
CC533	C CACCIARI/MADRID	"BLUE" GLOBULAR CLUSTERS IN THE LARGE MAGELLANIC CLOUD
FP534	F PRADERIE/PARIS	EMISSION, MASS LOSS AND CHROMOSPHERES IN HERBIG AE STARS II
HT535	H.R TJIN A DJIE/AMSTERDAM	ULTRAVIOLET STUDIES OF THE SHELLS OF HERBIG AE AND BE STARS
FF536	F FUSI-PECCI/BOLOGNA	UV-BRIGHT STARS IN GLOBULAR CLUSTERS
SC537	S CATALANO/CATANIA	STELLAR CHROMOSPHERES
MG539	M GERBALDI/PARIS	ULTRAVIOLET OBSERVATIONS OF HIGH VELOCITY A TYPE STARS

MG540	M GERBALDI/PARIS	ULTRAVIOLET OBSERVATIONS OF CANDIDATE RUNAWAY B TYPE STARS
MG541	M GERBALDI/PARIS	ULTRAVIOLET OBSERVATIONS OF BLUE-STRAGGLERS IN OPEN CLUSTERS
JL542	J LEQUEUX/PARIS	EXTRAGALACTIC H II REGIONS
FP543	F PRADERIE/PIRIS	STUDY OF THE TRANSITION ZONE IN LATE A-TYPE STARS
BB544	B BASCHEK/HEIDELBERG	HIGH RESOLUTION SPECTROSCOPY OF BLUE HALO STARS
AA545	A ALTAMORE/ROME	IUE OBSERVATIONS OF SYMBIOTIC STARS DURING MINIMUM
EG546	E GEYER/BONN	UV OBSERVATIONS OF OLD AND YOUNG POPULOUS CLUSTERS IN THE MAGELLANIC CLOUDS
RV547	R VIOTTI/FRASCATI	COORDINATED ULTRAVIOLET (IUE), OPTICAL AND INFRARED OBSERVATIONS OF THE P CYGNI STAR AG CARINAE AND ITS RING NEBULA
VC548	V CALOI/FRASCATI	EVOLVED GLOBULAR CLUSTER STARS
VC549	V CALOI/FRASCATI	INTEGRATED SPECTRA OF GLOBULAR CLUSTERS
AH550	A HECK/MADRID	ULTRAVIOLET OBSERVATIONS OF WC 10 STARS
CE551	C EIROA/HEIDELBERG	UV OBSERVATIONS OF THE BIPOLAR NEBULA S106
DP552	D PONZ/MADRID	SYMBIOTIC STARS DURING ACTIVITY PHASES
AH553	A HECK/MADRID	AP STARS CLASSIFICATION CRITERIA
CC554	C CACCIARI/MADRID	UV OBSERVATIONS OF GLOBULAR CLUSTERS IN THE MAGELLANIC CLOUDS
GV555	G VAUCLAIR/PARIS	CHEMICAL COMPOSITION AND DIFFUSION IN HIGH GRAVITY STARS
AE556	A ELVIUS/STOCKHOLM	OBSERVATIONS OF SEYFERT 1 GALAXIES
IB557	I BUES/BAMBERG	INTERMEDIATE WHITE DWARFS
SP558	S.R.POTTASCH/GRONINGEN	EXTINCTION TO PLANETARY NEBULAE
JK559	J KOPPEN/HEIDELBERG	HIGH DISPERSION OBSERVATIONS OF PLANETARY NEBULAE
CC560	C CASINI/MILANO	OBSERVATIONS OF INTERACTING GALAXIES
FG561	F GIOVANELLI/FRASCATI	UV SPECTRA OF HDE 245770/A 0535+26
JC562	J CLAVEL/PARIS	INVESTIGATION OF THE STELAR CONTENT OF THE DWARFS BLUE EMISSION LINE GALAXIES
PP563	P PATRIARCHI/MADRID	THE ORION NEBULA
RS564	R STALIO/TRIESTE	MONITORING UV-VARIABILITY IN FOUR O-STARS
LA565	L ANGELETTI/ROMS	ULTRAVIOLET SPECTROPHOTOMETRY OF GALACTIC GLOBULAR CLUSTERS II
DG566	D.P. GILRA/GRONONGEN	STUDY OF PECULIAR BE STARS
DG567	D.P. GILRA/GRONINGEN	UV OBSERVATIONS OF STARS IN DUSTY HII REGIONS AND REFLECTION NEBULAE
HN568	NOORGAARD-NIELSEN/COPENHAGEN	UV SPECTRA OF ELLIPTICAL GALAXIES
WK569	W KOLLATSCHNY/GOTTINGEN	L/H/P ALPHA/H BETA RATIOS IN ACTIVE GALAXIES
GK570	G KLARE/HEIDELBERG	ORBITAL PHASE DEPENDENT UV SPECTROSCOPY OF CATACLYSMIC VARIABLES
LP572	L PREVOT/MARSEILLE	A FAR UV STUDY OF INTERSTELLAR MATTER IN THE SMALL MAGELLANIC CLOUD
SP573	S.R.POTTASCH/GRONINGEN	MASS-LOSS OF WOLF-RAYET-TYPE CENTRAL STARS OF PLANETARY NEBULAE
MG574	M GREWING/TUBINGEN	K-CORRECTION FOR BRIGHTEST GALAXIES IN CLUSTERS
JK575	J KRAUTTER/HEIDELBERG	STRUCTURE AND EVOLUTIONARY STATUS OF CATACLYSMIC VARIABLES
PS576	P.L.SELVELLI/TRIESTE	CONTINOUS MONITORING OF NOVAE AT MINIMUM DURING ONE COMPLETE ORBITAL CYCLE
PS577	P.L.SELVELLI/TRIESTE	LOW AND HIGH RESOLUTION OBSERVATIONS OF NOVA AGL 1918 IN THE LWR REGION
DR578	D REIMERS/HAMBURG	WINDS AND CORONAE IN RED GIANTS WITH VARIABLE CIRCUMSTELLAR LINES
HR579	H RITTER/GARCHING	ULTRAVIOLET SPECTROSCOPY OF HZ HER NEAR X-RAY ECLIPSE
DR580	D REIMERS/HAMBURG	MASS-LOSS OF RED GIANTS WITH HOT COMPANIONS AND MASS LOSS FROM CARBON STARS

JP581	J PAUL/GIF-SUR-YVETTE	CO COLUM DENSITIES AND ELEMENTAL DEPLETIONS IN NEARBY INTERSTELLAR CLOUDS
FB582	F BERTOLA/PADOVA	UV CONTINUUM ENERGY DISTRIBUTION IN THE NUCLEI OF ELLIPTICAL GALAXIES
MC583	M CAPACCIOLI/PADOVA	CONTINUUM ENERGY DISTRIBUTION IN SO GALAXIES
HM585	H MAITZEN/WIEN	SILICON AUTOIONIZATION FEATURES AND SPECTRAL VARIABILITY IN AP-STARS
NP586	N PANAGIA/BOLOGNA	UV OBSERVATIONS OF SUPERNOVAE
NP587	N PANAGIA/BOLOGNA	UV MAPPING OF THE NUCLEAR REGION OF M 100
AB588	A BIANCHINI/PADOVA	UV OBSERVATIONS OF THE OLD-NOVA GK PER = A0327+43
DR590	D REIMERS/HAMBURG	ACCRETION DISKS AROUND WHITE DWARFS IN NON-CLOSE BINARY SYSTEMS
GG591	G.GAHM/STOCKHOLM	EXPLORATION OF ULTRAVIOLET SPECTRUM OF YOUNG STARS
FS592	F SPITE/PARIS	CHECK OF STRUCTURE AND EVOLUTION OF POPULATION II STARS
HL593	H LAMERS/UTRECHT	THE NATURE AND ORIGIN OF OBN AND OBC STARS
GB594	G.F. BIGNAMI/MILANO	INVESTIGATION ON THE BINARY NATURE OF THE RADIO AND X-RAY STAR LSI+61 303,ASSOCIATED WITH A COS-B GAMMA RAY SOURCE
MU595	M.H. ULRICH/GARCHING	UV AND OPTICAL OBSERVATIONS OF ACTIVE NUCLEI: A STUDY OF NON-STELLAR CONTINOUS RADIATION
CD596	C DE LOORE/BRUSSEL	MASS LOSS AND ANALYSIS OF THE SPECTRUM OF THE HOT BE COMPONENT OF THE PULSATING X-RAY NOVA A0535+262
HS599	H.J.STAUDE/HEIDELBERG	HD 190073 AND OTHER PECULIAR SHELL STARS
HN600	N NUSSBAUMER/ZURICH	PROTO PLANETARY NEBULAE
JB601	J.M.BONNET-BIDAUD/YVETTE	ULTRAVIOLET OBSERVATIONS OF X-RAY SOURCES WITH IUE
DK602	D KUNTH/PARIS	OBSERVATIONS OF LOW-REDSHIFT RADIO QUIET QSOS
MG604	M GREWING/TUBINGEN	DYNAMICAL PROPERTIES OF NEARBY INTERSTELLAR GAS
MG605	M GREWING/TUBINGEN	STUDY OF TWO EARLY-TYPE STARS IN THE LARGE MAGELLANIC CLOUD (LMC) EMBEDDED IN THE NEBULOSITY N 144
FQ606	F QUERCI/PARIS	CARBON STARS SEQUENCE: R TO N STARS
BW607	B WOLF/HEIDELBERG	HIGH DISPERSION SPECTROSCOPY OF THE P CYG STAR R 81 OF THE LMC
PB608	P BRUSTON/BUISSON	THE NEARBY INTERSTELLAR MADIUM
CL609	C LAURENT/BUISSON	INVESTIGATION OF HIGH-VELOCITY COMPONENTS IN THE GREAT CARINA NEBULA
MD610	M.A. DOPITA/SIDING	UV SPECTROSCOPY OF AN EXTREMELY METAL.POOR EXTRAGALACTIC SUPERNOVA REMNANT
SD611	S D'ODORICO/GARCHING	ACTIVE AND QUIESCENT NUCLEI OF SPIRAL GALAXIES
PB612	P BENVENUTI/ASIAGO	MEASUREMENT OF THE DUST ALBEDO IN THE 2200 A REGION
GP613	G PALUMBO/BOLOGNA	UV EMISSION FROM NORMAL BRIGHT SPIRAL GALAXIES
PS614	P SHAVER/GARCHING	JETS IN ACTIVE GALACTIC NUCLEI
PS615	P SELVELLI/TRIESTE	OBSERVATIONS OF THE PECULIAR EMISSION LINE STAR 45667

G.O. PROGRAMMES IN COLLABORATION WITH NASA AND/OR SRC
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GH504	G.HAMMERSCHLAG/AMSTERDAM	IUE OBSERVATIONS OF X-RAY BINARIES: HIGH RESOLUTION OBSERVATIONS OF SMC X-1
DD517	D.DRAVINS/LUND	CORONAL TRANSITION REGION IN THE SOLAR-TYPE STAR BETA HYDRI
MR531	M.RODONO/CATANIA	STUDIES OF THE QUIET AND PLAGE COMPONENT OF THE ACTIVE STARS IN RS CVN BINARY SYSTEMS
VB538	V.DOAZAN/PARIS	THREE-PHASE DIAGNOSTICS OF NONTHERMAL AND BINARY EFFECTS IN BE STARS
CL571	C.LAURENT/VERRIERES-LE-BUISSON	THE EXTEND OF A GASEOUS GALACTIC HALO
FB584	F.BERTOLA/PADOVA	UV ENERGY DISTRIBUTION OF CD GALAXIES
OE589	O.ENGVOLD/OSLO	AN EMISSION MEASURE ANALYSIS OF THE K GIANT BETA CETI (SOLAR-TYPE) AND THE M SUPERGIANT ALPHA ORI (NON-SOLAR-TYPE) BASED ON IUE FAR-UV HIGH RESOLUTION SPECTRA
MU597	M.H.ULRICH/MUNICH	CONTINUATION OF THE MONITORING OF THE CONTINUUM AND LINE STRENGTHS OF THE SEYFERT GALAOY NGC 4151
OV598	O.VILHU/HELSINKI	PERIOD-ACTIVITY RELATIONS IN SOLAR TYPE CLOSE BINARIES
MC603	M.COMBES/PARIS	UV OBSERVATIONS OF GIANT PLANETS AND THEIR SATELLITES

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

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

EXPOSURE CLASSIFICATION CODES
****

SINCE 1 AUG 78 A TWO-DIGIT CODE HAS BEEN USED TO DESCRIBE EXPOSURE LEVELS. THIS CODE OCCUPIES THE FIRST TWO CHARACTER POSITIONS OF THE COMMENT FIELD.

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

THE CLASSIFICATIONS BELOW APPLY TO BOTH:

0: NOT APPLICABLE
1: NO SPECTRUM VISIBLE
2: FAINT SPECTRUM; MAX DN < 20 ABOVE BACKGROUND
3: UNDEREXPOSED: MAX DN < 100 ABOVE BACKGROUND
4: WEAK: MAX DN BETWEEN 100 AND 150 ABOVE BACKGROUND
5: GOOD: NO SATURATION BUT MAX DN OVER 150 ABOVE 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

ON 1 SEP 79 A FURTHER DIGIT WAS ADDED TO DESCRIBE THE LEVEL OF THE BACKGROUND. THE MEAN DN GIVEN BY A SUBSET HISTOGRAM OF WIDTH 2 PIXELS BETWEEN:

SWP 550,130 AND 685,310
AND LWR 160,195 AND 90,300

HAS BEEN CODED AS FOLLOWS: (LIMITS INCLUSIVE)

0 DN<20
1 21<DN<30
2 31<DN<40
3 41<DN<50
4 50<DN<60
5 60<DN70
6 71<DN<80
7 80<DN<90
8 91<DN<100
9 DN>101
X SATURATED

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP +CAM	IMAGE	APERT OB LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
NGC 40	71	10.8	00 10 14	+72 15	L 3	15445	L 0	07NOV81	12 34 07	180 00	UK470	342
NGC 40	71	10.7	00 10 17	+72 15	L 2	11923	L 0	05NOV81	16 00 35	020 00	UK470	312 4-MIN HTR W-UP
NGC 40	71	10.7	00 10 17	+72 15	L 2	11924	L 0	05NOV81	17 47 27	120 00	UK470	333 4-MIN HTR W-UP
NGC 40	71	10.7	00 10 17	+72 15	L 3	15412	L 0	05NOV81	16 31 53	070 00	UK470	231
HD 1581	44	4.2	00 17 28	-65 10	H 2	12915	L 0	31MAR82	03 57 06	020 00	UK494	702 4-MIN-HTR-WM-UP
HD 2151	44	2.8	00 23 09	-77 32	H 2	11943	L 0	08NOV81	17 00 41	015 00	KF516	702
HD 2151	44	2.8	00 23 09	-77 32	H 2	11944	L 0	08NOV81	17 43 00	015 00	KF516	702 MICROPHONICS
HD 2151	44	2.8	00 23 09	-77 32	H 2	11945	L 0	08NOV81	18 22 10	015 00	KF516	702 MICROPHONICS
HD 2151	44	2.8	00 23 09	-77 32	H 2	11946	L 0	08NOV81	19 02 29	015 00	KF516	702 MICROPHONICS
HD 2151	44	02.9	00 23 09	-77 32	H 2	12552	L 0	11FEB82	06 42 16	015 00	KF516	742 MICROPHONICS
HD 2151	44	02.9	00 23 09	-77 32	H 2	12553	L 0	11FEB82	07 32 27	015 00	KF516	743 MICROPHONICS
HD 2151	44	02.9	00 23 09	-77 32	H 2	12554	L 0	11FEB82	08 19 38	015 00	KF516	743 MICROPHONICS
HD 2151	44	02.9	00 23 09	-77 32	H 2	12555	L 0	11FEB82	09 00 07	015 00	KF516	743 MICROPHONICS
HD 2151	44	02.9	00 23 09	-77 32	H 2	12556	L 0	11FEB82	09 41 57	015 00	KF516	743 MICROPHONICS
HD 2151	44	02.9	00 23 09	-77 32	H 2	12557	L 0	11FEB82	10 28 18	015 00	KF516	743 MICROPHONICS
HD 2151	44	02.9	00 23 09	-77 32	H 2	12558	L 0	11FEB82	11 08 37	015 00	KF516	743 MICROPHONICS
HD 2151	44	02.9	00 23 09	-77 32	H 2	12559	L 0	11FEB82	11 50 29	015 00	KF516	743 MICROPHONICS
HD 2151	44	2.8	00 23 09	-77 32	H 2	12916	L 0	31MAR82	05 01 45	006 30	UK494	702 4-MIN-HTR-WM-UP
HD 2151	44	02.8	00 23 09	-77 32	H 3	16324	L 0	13FEB82	05 29 45	938 00	DD517	709 READ AT GAFC
ZETA CAS	20	03.7	00 34 10	+53 37	H 1	1442	L 0	14JAN82	15 23 20	000 18	PHCAL	501
HD 3360	20	03.7	00 34 10	+53 37	L 1	1458	L 0	21JAN82	13 42 53	000 01	UKCAL	502 TRAILED R=20.83
HD 3360	20	03.7	00 34 10	+53 37	L 1	1459	L 0	21JAN82	14 17 12	000 01	UKCAL	502 TRAILED R=20.83
ZETA CAS	21	03.7	00 34 10	+53 37	L 1	1463	S 0	25JAN82	00 00 00	000 01	PHCAL	303
ZETA CAS	21	03.7	00 34 10	+53 37	L 1	1463	L 0	25JAN82	12 12 09	000 01	PHCAL	403 TRAILED R=38.33
HD 3360	20	3.7	00 34 10	+53 37	H 2	12211	L 0	24DEC81	17 23 58	000 21	PHCAL	502
HD 3360	20	3.7	00 34 10	+53 37	H 3	15874	L 0	24DEC81	17 26 52	000 24	PHCAL	501
HD 4539	26	10.3	00 44 54	+09 42	H 3	16265	L 0	05FEB82	11 50 06	110 00	BB544	501
BBB 280	12	14.5	00 46 17	-73 28	L 2	12507	L 0	04FEB82	11 56 06	107 00	UK442	404 4-MIN-HTR-WM-UP
0046-73	20	15.0	00 46 17	-73 28	L 3	16651	L 0	28MAR82	08 17 06	120 00	UK440	401
SK 72-32	20	13.7	00 48 13	-72 28	L 2	12493	L 0	02FEB82	10 22 19	040 00	UK442	603 4-MIN-HTR-WM-UP
SK 72-32	12	13.7	00 48 13	-72 28	L 3	16253	L 0	04FEB82	07 35 58	045 00	UK442	700
HD 4974	25	11.0	00 48 23	-73 25	L 2	12492	L 0	02FEB82	08 22 26	015 00	UK442	603 4-MIN-HTR-WM-UP
HD 4974	25	11.0	00 48 23	-73 25	L 3	16243	S 0	02FEB82	09 01 55	030 00	UK442	300
HD 4974	25	11.0	00 48 23	-73 25	L 3	16243	L 0	02FEB82	09 36 33	016 00	UK442	300
SK 72-36	12	13.6	00 48 38	-72 29	L 2	12506	L 0	04FEB82	08 33 58	070 00	UK442	603 4-MIN-HTR-WM-UP
SK 72-36	12	13.6	00 48 38	-72 29	L 3	16254	L 0	04FEB82	09 54 52	090 00	UK442	700
HD 5291	25	10.8	00 51 22	-72 55	L 2	12491	L 0	02FEB82	06 39 35	015 00	UK442	702 4-MIN-HTR-WM-UP
HD 5291	25	10.8	00 51 22	-72 55	L 3	16242	S 0	02FEB82	06 58 49	030 00	UK442	401
HD 5291	25	10.8	00 51 22	-72 55	L 3	16242	L 0	02FEB82	07 41 17	016 00	UK442	401
HD 5394	20	02.4	00 53 40	+60 27	H 3	13165	S 0	28JAN82	13 32 41	000 11	UK481	501
HD 5394	26	2.6	00 53 40	+60 27	H 3	15466	L 0	09NOV81	13 59 10	000 06	UK481	551
HD 5394	26	2.6	00 53 40	+60 27	H 3	15702	L 0	10DEC81	15 59 46	000 08	UK475	501 MICROPHONICS
HD 5394	20	02.4	00 53 40	+60 27	H 3	16127	S 0	27JAN82	08 41 14	000 10	VD538	501
HD 5394	20	02.4	00 53 40	+60 27	H 3	16131	S 0	27JAN82	12 05 20	000 12	VD538	501
HD 5394	20	02.4	00 53 40	+60 27	H 3	16133	S 0	27JAN82	13 35 14	000 12	VD538	501
HD 5394	20	02.4	00 53 40	+60 27	H 3	16135	L 0	27JAN82	14 59 54	000 12	UD538	501
HD 5394	20	02.4	00 53 40	+60 27	H 3	16157	S 0	28JAN82	08 11 02	000 11	UK481	501
HD 5394	20	02.4	00 53 40	+60 27	H 3	16159	S 0	28JAN82	09 46 20	000 11	UK481	501

OBJECT	CL	MAG	RT ASCN	DECLN	DISP	IMAGE	APERT	DATE	START	LENGTH	PROG	COMMENT
			HR MN SC	DEG MN	+CAM		OS LG		HR MN SC	MIN SC		
HD 5394	20	02.4	00 53 40	+60 27	H 3	16161	S 0	28JAN82	11 04 37	000 11	UK481	501
HD 5394	20	02.4	00 53 40	+60 27	H 3	16163	S 0	28JAN82	12 15 21	000 11	UK481	501
HD 5394	20	02.4	00 53 40	+60 27	H 3	16167	S 0	28JAN82	14 57 41	000 11	UK481	501
HD 5394	20	02.6	00 53 40	+60 27	H 3	16284	S 0	08FEB82	06 44 54	000 11	VD538	501
HD 5394	26	2.0	00 53 40	+60 27	H 3	16518	L 0	12MAR82	07 15 15	000 08	UK473	500
HD 5394	26	2.6	00 53 40	+60 27	H 3	16528	L 0	14MAR82	06 13 51	000 08	UK473	501
L302	70	16.0	00 54 35	-72 23	L 3	16210	L 0	30JAN82	09 05 44	180 00	UK467	332
HD 5980	11	11.6	00 57 46	-72 26	H 2	12407	L 0	23JAN82	09 35 59	180 00	UK478	306 4-MIN-HTR-WM-UP
SK 94	20	12.4	00 59 29	-72 16	L 2	12349	L 0	16JAN82	15 29 42	015 00	LP572	502
SK103	23	12.4	01 00 23	-72 52	L 2	12345	L 0	16JAN82	08 50 10	011 00	LP572	502 MICROPHONICS
SK103	23	12.4	01 00 23	-72 52	L 3	16049	L 0	16JAN82	08 04 35	022 00	LP572	501
NGC 362	83	7.0	01 00 36	-71 07	H 1	1391	L 0	27NOV81	12 09 11	850 00	UK464	309 READ AT GSFC
NGC 362	83	7.0	01 00 36	-71 07	H 1	1394	L 0	28NOV81	12 48 06	775 00	CL571	309 READ AT GSFC
NGC 362	83	7.0	01 00 36	-71 07	H 3	15572	L 0	27NOV81	12 14 34	825 00	UK464	109 READ AT GSFC
NGC 362	83	7.0	01 00 36	-71 07	L 3	15581	L 0	28NOV81	13 21 20	740 00	CL571	109 READ AT GSFC
RX AND	54	11.8	01 01 45	+41 02	L 2	11942	L 0	08NOV81	14 33 17	015 00	JK575	602 MICROPHONICS
RX AND	54	11.8	01 01 45	+41 02	L 3	15454	L 0	08NOV81	14 05 58	020 00	JK575	551
SK 108	13	12.4	01 01 48	-72 23	H 3	15908	L 0	31DEC81	10 48 41	322 00	UKCAL	402
IC 1613	75	16.0	01 02 28	+01 53	L 3	16076	L 0	19JAN82	10 02 00	345 00	MD	202
SK119	20	12.2	01 03 24	-72 56	L 2	12346	L 0	16JAN82	09 48 07	014 00	LP572	502 MICROPHONICS
SK119	20	12.2	01 03 24	-72 56	L 3	16050	L 0	16JAN82	10 15 39	027 00	LP572	501
NGC 416	83	11.4	01 06 36	-72 37	L 2	12222	L 0	26DEC81	10 51 57	415 00	VILSE	308
SK143	20	12.9	01 09 27	-72 59	L 2	12347	L 0	16JAN82	10 59 30	060 00	LP572	603 4-M-HTR-WM-UP MN=831
SK143	20	12.9	01 09 27	-72 59	L 3	16051	L 0	16JAN82	12 02 40	110 00	LP572	501
G33-49	43	13.8	01 15 19	+15 54	L 2	12134	L 0	12DEC81	15 29 30	095 00	DK518	501
SMC X-1	59	13.2	01 15 45	-73 42	H 3	16045	L 0	15JAN82	08 50 41	898 00	GH509	309 READ AT GSFC
SMC X-1	59	13.2	01 15 45	-73 42	H 3	16062	L 0	17JAN82	08 43 42	890 00	UK473	309 READ DOWN AT GSFC
F9	84	13.0	01 21 51	-59 04	L 2	12166	L 0	18DEC81	16 13 13	040 00	UK475	433
F9	84	13.0	01 21 51	-59 04	L 2	12167	L 0	18DEC81	17 29 12	017 00	UK475	233 MICROPHONICS
F9	84	13.5	01 21 51	-59 04	L 2	12226	L 0	27DEC81	14 24 42	040 00	VILSE	402 MICROPHONICS
0122-590	65	13.5	01 21 51	-59 04	L 2	12560	L 0	11FEB82	13 15 58	033 00	SEYFE	113 WRONG TARGET
ESO 45	84	13.2	01 21 51	-59 04	L 2	12662	L 0	22FEB82	08 14 16	040 00	UK466	354 4-MIN-HTR-WM-UP
F9	84	13.0	01 21 51	-59 04	L 3	15794	L 0	18DEC81	15 24 56	045 00	UK475	370
F9	84	13.0	01 21 51	-59 04	L 3	15795	L 0	18DEC81	16 57 18	020 00	UK475	250
F9	84	13.5	01 21 51	-59 04	L 3	15889	L 0	27DEC81	13 45 15	025 00	VILSE	001 WRONG TARGET
F9	84	13.5	01 21 51	-59 04	L 3	15890	L 0	27DEC81	15 08 15	025 00	VILSE	531
0122-590	65	13.5	01 21 51	-59 04	L 3	16311	L 0	11FEB82	12 36 00	035 00	SEYFE	112 WRONG TARGET
ESO 45	84	13.2	01 21 51	-59 04	L 3	16410	L 0	22FEB82	07 30 15	040 00	UK466	351
NGC 604	72	00.0	01 31 44	+30 32	L 3	16034	L 0	13JAN82	08 55 14	180 00	JL542	301
NGC 604	72	00.0	01 31 44	+30 32	L 3	16035	L 0	13JAN82	12 37 52	188 00	JL542	601 OFFSET FROM SWP16034
SK191	20	11.9	01 40 45	-74 07	L 2	12348	L 0	16JAN82	14 16 48	012 00	LP572	502 MICROPHONICS
SK191	20	11.9	01 40 45	-74 07	L 3	16052	L 0	16JAN82	14 44 27	028 00	LP572	500
AR AND	54	13.1	01 42 05	+37 42	L 3	15455	L 0	08NOV81	15 22 05	035 00	JK575	501
F9	84	12.0	01 51 51	-59 04	L 3	15703	L 0	10DEC81	17 36 53	012 00	UK475	240
HD 12311	40	2.9	01 57 12	-61 49	H 2	12914	L 0	31MAR82	02 59 36	004 30	UK494	602 4-MIN-HTR-WM-UP
HD 12323	12	08.5	01 59 07	+55 23	H 2	12495	L 0	02FEB82	13 16 25	027 00	UK442	303 4-MIN-HTR-WM-UP
TT ARI	54	11.8	02 04 10	+15 03	L 2	12313	L 0	09JAN82	08 32 06	015 00	UK486	502 MICROPHONICS
TT ARI	54	11.8	02 04 10	+15 03	L 2	12314	L 0	09JAN82	09 29 31	015 00	UK486	502 4-M-HTR-WM-UP MN=879

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP +CAM	IMAGE	APERT OB	APERT LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
TT ARI	54	11.8	02 04 10	+15 03	L 2	12315	L	0	09JAN82	10 31 31	015 00	UK486	503 4-M-HTR-WM-UP MN=879
TT ARI	54	11.8	02 04 10	+15 03	L 2	12316	L	0	09JAN82	11 29 12	012 00	UK486	503 4-M-HTR-WM-UP MN=879
TT ARI	54	11.8	02 04 10	+15 03	L 3	15996	L	0	09JAN82	08 53 16	015 00	UK486	401 1 LINE MISSING
TT ARI	54	11.8	02 04 10	+15 03	L 3	15997	L	0	09JAN82	09 57 11	020 00	UK486	501
TT ARI	54	11.8	02 04 10	+15 03	L 3	15998	L	0	09JAN82	10 58 24	020 00	UK486	601
TT ARI	54	11.8	02 04 10	+15 03	L 3	15999	L	0	09JAN82	11 58 39	017 00	UK486	501
635-29	43	13.2	02 05 56	+25 00	L 3	15718	L	0	12DEC81	17 29 23	018 00	DK518	401
HD 13268	12	07.9	02 08 03	+55 55	H 2	12494	L	0	02FEB82	11 49 36	030 00	UK442	403 4-MIN-HTR-WM-UP
WX HYD	54	14.2	02 08 28	-63 31	L 2	12253	L	0	01JAN82	12 13 42	080 00	UK404	354
WX HYD	54	14.2	02 08 28	-63 31	L 3	15918	L	0	01JAN82	13 37 43	130 00	UK404	341
TZ PER	63	13.5	02 10 19	+58 09	L 2	11917	L	0	04NOV81	19 04 51	041 00	JK575	301
TZ PER	63	13.5	02 10 19	+58 09	L 3	15386	L	0	04NOV81	17 59 47	060 00	JK575	331
0215+015	87	16.0	02 15 14	+01 31	L 1	1490	L	0	15FEB82	07 50 35	322 00	UK446	303
0215+015	87	16.0	02 15 14	+01 31	L 1	1493	L	0	23FEB82	08 07 31	305 00	UK446	302
L+61 303	26	10.8	02 36 41	+61 01	L 3	15467	L	0	09NOV81	14 38 29	030 00	UK481	200
0234-525	84	16.0	02 36 41	-52 24	H 1	1410	L	0	04DEC81	13 39 40	080 00	UK491	000
0234-525	84	16.0	02 36 41	-52 24	L 3	15648	L	0	04DEC81	15 10 24	153 00	UK491	331
NGC 1068	84	11.0	02 40 08	-00 13	L 3	15856	L	0	23DEC81	15 20 42	147 00	UK465	331 OFFSET FROM NUCL.
HD 18100	26	08.5	02 51 30	-26 22	L 2	12465	S	0	29JAN82	13 52 41	000 35	MG540	502
HD 18100	26	08.5	02 51 30	-26 22	L 2	12465	L	0	29JAN82	13 49 01	000 20	MG540	502
HD 18100	26	08.5	02 51 30	-26 22	H 2	12466	L	0	29JAN82	14 52 02	028 00	MG540	603
HD 18100	26	08.5	02 51 30	-26 22	L 3	16199	S	0	29JAN82	13 45 07	000 23	MG540	501
HD 18100	26	08.5	02 51 30	-26 22	L 3	16199	L	0	29JAN82	13 41 47	000 20	MG540	601
HD 18100	26	08.5	02 51 30	-26 22	H 3	16200	L	0	29JAN82	14 20 41	020 00	MG540	501
HD 18100	26	08.5	02 51 30	-26 22	H 3	16201	L	0	29JAN82	15 23 14	024 00	MG540	501
+60 594	12	9.0	02 53 06	+61 13	H 3	16644	L	0	27MAR82	03 42 33	300 00	UK439	503
HD 18352	20	07.0	02 55 49	+61 05	H 2	12879	L	0	27MAR82	09 00 27	025 00	UK439	603 4-MIN-HTR-WM-UP,MN
HD 18352	20	07.0	02 55 49	+61 05	L 3	16645	S	0	27MAR82	09 39 23	002 00	UK439	701
TW HOR	50	5.6	03 11 17	-57 31	L 2	12834	L	0	22MAR82	05 19 51	200 00	FQ606	566 REF POS=-30,-204
TW HOR	50	5.6	03 11 17	-57 31	L 2	12834	L	0	22MAR82	03 55 27	080 00	FQ606	356 REF POR=-2,-212
TW HOR	50	5.6	03 11 17	-57 31	L 2	12835	L	0	22MAR82	09 18 28	055 00	FQ606	332 REF POS=-2,-212
TW HOR	50	5.6	03 11 17	-57 31	L 2	12842	L	0	23MAR82	03 39 43	080 00	FQ606	343
0312-770	85	15.9	03 12 57	-77 03	L 3	16423	L	0	25FEB82	09 50 33	237 00	UK569	332
HD 20630	44	04.8	03 16 44	+03 11	H 2	12650	L	0	21FEB82	09 46 36	053 00	MG574	763 MICROPHONICS
NGC 1313	80	12.0	03 17 39	-66 41	L 2	12236	L	0	30DEC81	11 04 05	385 00	UK433	206 SERENDIPITY
NGC 1313	80	12.0	03 17 39	-66 41	L 3	15907	L	0	30DEC81	11 01 56	406 00	UK433	303
NGC 1360	70	11.2	03 31 12	-26 01	H 3	16467	L	0	03MAR82	03 56 26	102 00	RK522	501
HD 22484	41	04.3	03 34 19	+00 15	H 2	12651	L	0	21FEB82	11 17 19	020 00	MG574	602 4-MIN-HTR-WM-UP
HD 24760	23	03.0	03 54 29	+39 52	L 1	1460	L	0	21JAN82	15 06 25	000 01	UKCAL	502 TRAILED R=51.28
HD 24760	23	03.0	03 54 29	+39 52	H 1	1466	L	0	25JAN82	15 35 59	000 07	PHCAL	502
VW HYI	54	10.8	04 09 32	-71 25	L 2	12283	L	0	04JAN82	13 57 07	008 00	UK404	302
VW HYI	54	10.8	04 09 32	-71 25	L 2	12284	S	0	04JAN82	15 31 51	012 00	UK404	303
VW HYI	54	10.8	04 09 32	-71 25	L 2	12284	L	0	04JAN82	15 05 04	016 00	UK404	503
VW HYI	54	10.8	04 09 32	-71 25	L 2	12287	L	0	05JAN82	09 13 04	008 00	UK404	802
VW HYI	54	10.8	04 09 32	-71 25	L 2	12288	L	0	05JAN82	10 19 29	002 40	UK404	502 MICROPHONICS
VW HYI	54	13.0	04 09 32	-71 25	L 2	12294	L	0	06JAN82	11 18 09	007 00	UK404	502
VW HYI	54	13.8	04 09 32	-71 25	L 2	12307	L	0	08JAN82	11 25 13	045 00	UK404	403 4-MIN-HTR-WM-UP
VW HYI	54	14.0	04 09 32	-71 25	L 2	12317	L	0	09JAN82	14 10 25	020 00	UK486	303 4-M-HTR-WM-UP MN=879

OBJECT	CL	MAG	RT ASCN HR	RT ASCN MN	RT ASCN SC	DECLN DEG	DECLN MN	DISP	+CAM	IMAGE	APERT OB	APERT LG	DATE	START HR	START MN	START SC	LENGTH MIN	LENGTH SC	PROG	COMMENT
VW HYI	54	14.0	04	09	32	-71	25	L	2	12318	L	0	09JAN82	15	18	17	025	00	UK486	303 4-M-HTR-WM-UP MN=879
VW HYI	54	10.8	04	09	32	-71	25	L	3	15952	L	0	04JAN82	14	30	29	010	00	UK404	300
VW HYI	54	10.8	04	09	32	-71	25	L	3	15965	L	0	05JAN82	08	47	16	020	00	UK404	901
VW HYI	54	10.8	04	09	32	-71	25	L	3	15966	L	0	05JAN82	10	13	37	003	00	UK404	601
VW HYI	54	10.8	04	09	32	-71	25	H	3	15967	L	0	05JAN82	10	52	28	187	00	UK404	502
VW HYI	54	13.0	04	09	32	-71	25	L	3	15984	L	0	06JAN82	11	48	11	010	00	UK404	501
VW HYI	54	13.8	04	09	32	-71	25	L	3	15988	L	0	08JAN82	12	14	25	090	00	UK404	501
VW HYI	54	14.0	04	09	32	-71	25	L	3	16000	L	0	09JAN82	13	25	49	040	00	UK486	301
VW HYI	54	14.0	04	09	32	-71	25	L	3	16001	L	0	09JAN82	14	40	54	033	00	UK486	301
HD284419	58	10.0	04	19	04	+19	25	H	2	12724	L	0	06MAR82	03	53	55	409	00	UK482	253
HD284419	58	10.4	04	19	06	+19	25	H	3	15475	L	0	11NOV81	11	03	27	890	00	UK482	009 START/READ AT GSFC
NGC 1569	82	11.9	04	26	03	+64	45	L	3	15763	L	0	15DEC81	15	17	15	150	00	BF329	311
HD 29094	21	4.3	04	33	13	+41	10	L	2	12851	S	0	24MAR82	07	08	34	000	25	UK479	302
HD 29094	21	4.3	04	33	13	+41	10	L	2	12851	L	0	24MAR82	07	04	16	001	15	UK479	702
HD 29094	21	4.3	04	33	13	+41	10	L	3	16612	S	0	24MAR82	07	16	24	000	40	UK479	301
HD 29274	21	4.3	04	33	13	+41	10	L	3	16612	L	0	24MAR82	07	11	52	001	30	UK479	501
HD 30739	30	4.4	04	47	53	+08	49	H	2	12017	L	0	21NOV81	13	30	29	004	20	PB608	603 MOD R P. OBJ=-115,54
HD 30739	30	4.4	04	47	53	+08	49	H	2	12017	L	0	21NOV81	13	21	25	004	20	PB608	603 MOD R P. OBJ= -95,46
HD 30739	30	4.4	04	47	53	+08	49	H	2	12018	L	0	21NOV81	14	27	00	004	20	PB608	503MOD R P.OBJ 4M HTR,MN
HD 30739	30	4.4	04	47	53	+08	49	H	2	12019	L	0	21NOV81	15	42	59	006	00	PB608	500 MOD R P. OBJ=-115,54
HD 30739	30	4.4	04	47	53	+08	49	H	3	15539	L	0	21NOV81	14	06	39	006	00	PB608	400 MOD R P. OBJ= 84,-85
HD 30739	30	4.4	04	47	53	+08	49	H	3	15540	L	0	21NOV81	15	06	10	010	00	PB608	500 MOD R P. OBJ= 99,-93
HD 31398	47	2.7	04	53	44	+33	05	H	3	15503	L	0	15NOV81	12	54	14	887	00	UK482	039 READ AT GSFC
HD 31964	33	03.0	04	58	23	+43	45	L	2	12864	S	0	26MAR82	07	07	17	000	30	UK479	602 4-MIN-HTR-WM-UP
HD 31964	33	03.0	04	58	23	+43	45	L	2	12864	L	0	26MAR82	07	01	33	002	00	UK479	702
HD 31964	33	03.0	04	58	23	+43	45	H	2	12865	L	0	26MAR82	07	59	37	050	00	UK479	704 4-MIN-HTR-WM-UP
HD 31964	33	03.0	04	58	23	+43	45	H	2	12866	L	0	26MAR82	09	56	43	008	00	UK479	602
HD 31964	33	03.0	04	58	23	+43	45	L	3	16628	L	0	26MAR82	07	33	03	020	00	UK479	701 4-MIN-HTR-WM-UP
HD 31964	33	03.0	04	58	23	+43	45	L	3	16628	S	0	26MAR82	07	12	52	007	00	UK479	601
HD 31964	33	03.0	04	58	23	+43	45	H	3	16629	L	0	26MAR82	08	53	21	060	00	UK479	601
NGC 1783	83	10.9	04	58	42	-66	03	L	2	12503	L	0	03FEB82	06	33	20	430	00	GLOBC	309 4-MIN-HTR-WM-UP
NGC 1783	80	10.9	04	58	42	-66	03	L	3	16620	L	0	25MAR82	03	34	07	403	00	GLOBC	203
HD269006	23	10.9	05	02	50	-71	24	H	3	15986	L	0	07JAN82	08	39	23	428	00	JF520	403
HD 32887	47	3.2	05	03	21	-22	26	H	2	12728	L	0	07MAR82	06	01	26	035	00	DR578	251
HD 32887	47	3.2	05	03	21	-22	26	L	3	16485	L	0	07MAR82	03	56	56	120	00	DR578	241
R61	23	10.5	05	10	37	-68	50	H	2	12612	L	0	17FEB82	06	53	39	410	00	BW607	709
N28	70	16.0	05	11	09	-67	52	L	2	12474	L	0	30JAN82	12	52	53	080	00	UK467	113
HD 34085	25	0.2	05	12	08	-08	15	H	2	12002	S	0	20NOV81	12	07	48	000	07	UK425	602 MICROPHONICS
HD 34085	25	0.2	05	12	08	-08	16	H	2	12031	S	0	22NOV81	13	58	25	000	07	UK425	601 4-7 HTR W-UP
HD 34085	25	0.2	05	12	08	-08	15	H	3	15530	S	0	20NOV81	13	00	21	000	15	UK425	701
HD 34085	25	0.2	05	12	08	-08	16	H	3	15550	S	0	22NOV81	14	00	58	000	15	UK425	701
HD 34078	12	6.0	05	13	00	+34	15	L	3	16650	S	0	28MAR82	06	10	20	000	30	UK440	601
AKN 120	84	13.6	05	13	36	-00	12	L	2	12782	L	0	14MAR82	04	23	34	029	00	UK473	333
AKN 120	84	13.6	05	13	36	-00	12	L	3	16527	L	0	14MAR82	04	56	39	050	00	UK473	340
AKN 120	84	14.0	05	13	38	-00	12	L	2	12225	L	0	27DEC81	12	27	19	040	00	VILSE	402 MICROPHONICS
AKN 120	84	14.0	05	13	38	-00	12	L	3	15888	L	0	27DEC81	11	20	22	060	00	VILSE	341
HD 34816	20	4.3	5	17	16	-13	14	L	1	1396	L	0	30NOV81	14	29	41	000	01	VILSE	500 TRAILED,TIME=0.74SEC
HD 34816	20	4.3	5	17	16	-13	14	H	1	1397	L	0	30NOV81	15	02	09	000	22	VILSE	500

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP +CAM	IMAGE	APERT OB LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
HD 34816	20	4.3	5 17 16	-13 14	L 2	12060	L 0	30NOV81	13 11 49	000 01	VILSE	500 TRAILED,TIME=0.87SEC
HD 34816	20	4.3	5 17 16	-13 14	H 3	15604	L 0	30NOV81	13 17 46	000 22	VILSE	500
HD 34816	20	4.3	5 17 16	-13 14	H 3	15605	S 0	30NOV81	15 56 50	000 50	VILSE	500
HD 34656	13	6.8	05 17 19	+37 23	H 2	12004	L 0	20NOV81	15 46 49	008 30	UK425	403
HD 34656	13	6.8	05 17 19	+37 23	H 3	15532	L 0	20NOV81	14 58 46	019 00	UK425	601
0523-67	20	14.7	05 23 16	-67 27	L 2	12888	L 0	28MAR82	03 47 27	100 00	UK440	504 4-MIN-HTR-WM-UP,MN
HD269546	10	12.3	05 26 48	-68 53	L 2	12652	L 0	21FEB82	13 00 03	025 00	MG574	603
HD269546	10	12.3	05 26 48	-68 53	L 3	16400	L 0	21FEB82	12 24 08	025 00	MG574	701
HD269546	10	12.3	05 26 48	-68 53	L 3	16401	L 0	21FEB82	13 29 19	015 00	MG574	561
HD269660	23	11.0	05 31 24	-71 06	H 2	12785	L 0	15MAR82	04 01 24	190 00	UK478	305 4 MIN HTR WARM-UP
HD269676	12	11.7	05 31 54	-71 06	H 2	12786	L 0	15MAR82	07 53 52	170 00	UK478	305 4 MIN HTR WARM-UP
HD269700	23	10.6	05 32 06	-68 36	H 2	12408	L 0	23JAN82	13 35 13	130 00	UK478	305 4-M-HTR-WM-UP MN=486
NGC 2019	83	10.9	05 32 12	-70 12	L 2	12780	L 0	13MAR82	05 12 28	332 00	GLOBC	407
HD 36861	13	3.6	05 32 23	+09 54	H 2	12003	L 0	20NOV81	13 40 43	000 55	UK425	702
HD 36861	15	3.6	5 32 23	+09 54	H 2	12030	S 0	22NOV81	12 45 16	000 55	UK425	601 4-M HTW W-UP
HD 36861	13	3.6	05 32 23	+09 54	H 3	15531	L 0	20NOV81	13 44 33	001 10	UK425	901
HD 36861	15	3.6	5 32 23	+09 54	H 3	15549	S 0	22NOV81	12 49 24	001 10	UK425	701
M 42	72	00.0	05 32 47	-05 26	L 3	16230	L 0	01FEB82	08 27 01	015 00	PP563	750
M 42	72	00.0	05 32 48	-05 25	L 3	16228	L 0	01FEB82	07 21 02	004 00	PP563	500
M 42	72	00.0	05 32 48	-05 25	L 3	16229	L 0	01FEB82	07 55 39	006 00	PP563	500
HD 37022	12	5.1	05 32 49	-05 25	H 2	12489	L 0	01FEB82	07 02 41	003 00	PP563	702 4-MIN-HTR-WM-UP
HD 37022	12	05.1	05 32 49	-05 25	L 3	16231	L 0	01FEB82	09 21 00	000 01	PP563	500
HD 37022	12	05.1	05 32 49	-05 25	H 3	16232	L 0	01FEB82	09 56 52	045 00	PP563	400
A0538-66	59	13.0	05 35 42	-66 54	L 2	12758	L 0	10MAR82	05 00 11	090 00	UK473	342 MN=809
A0538-66	59	13.0	05 35 42	-66 54	L 2	12775	L 0	12MAR82	08 21 47	060 00	UK473	334
A0538-66	59	13.0	05 35 42	-66 54	L 2	12783	S 0	14MAR82	07 09 37	045 00	UK473	213 ACCIDENTAL SA IMAGE
A0538-66	59	13.0	05 35 42	-66 54	L 2	12783	L 0	14MAR82	07 09 37	045 00	UK473	513
A0538-66	59	13.0	05 35 42	-66 54	L 3	16494	L 0	10MAR82	06 43 25	120 00	UK473	342
A0538-66	59	13.0	05 35 42	-66 54	L 3	16519	L 0	12MAR82	09 26 01	080 00	UK473	340
A0538-66	59	13.0	05 35 42	-66 54	L 3	16529	L 0	14MAR82	07 59 33	060 00	UK473	230
A0538-66	59	12.5	05 35 43	-66 54	L 2	12165	L 0	18DEC81	14 16 38	030 00	UK475	333
A0538-66	59	13.0	05 35 43	-66 54	L 2	12850	L 0	24MAR82	04 13 34	060 00	UK479	332
0538-66	59	13.0	05 35 43	-66 54	L 2	12863	L 0	26MAR82	05 03 36	070 00	UK479	334 4-M-HTR-WM-UP,MN
A0538-66	59	12.5	05 35 43	-66 54	L 3	15793	L 0	18DEC81	13 34 16	040 00	UK475	340
A0538-66	59	13.0	05 35 43	-66 54	L 3	16611	L 0	24MAR82	05 17 36	060 00	UK479	331
0538-66	59	13.0	05 35 43	-66 54	L 3	16627	L 0	26MAR82	03 39 50	080 00	UK479	331
HE245770	12	9.1	05 35 48	+26 17	L 2	11880	L 0	01NOV81	13 02 58	002 40	CD596	452 4-M HTR W-UP MN=819
HE245770	26	9.0	05 35 48	+26 17	L 2	11890	L 0	02NOV81	12 55 30	003 20	FG561	502 4-M HTR W-UP MN=789
HE245770	12	9.1	05 35 48	+26 17	H 3	15358	L 0	01NOV81	13 08 48	385 00	CD596	443
HE245770	26	9.0	05 35 48	+26 17	L 3	15364	L 0	02NOV81	12 34 01	016 00	FG561	501
HE245770	26	9.0	05 35 48	+26 17	H 3	15365	L 0	02NOV81	13 20 55	375 00	FG561	403
N66	70	16.0	05 36 22	-67 20	L 3	16211	L 0	30JAN82	14 34 33	075 00	UK467	231
NGC 2022	70	13.0	05 39 24	+09 04	H 3	16263	L 0	05FEB82	06 38 48	210 00	BB544	252
CN ORI	54	12.9	05 49 40	-05 26	L 2	12281	L 0	04JAN82	09 20 16	030 00	UK404	503 MICROPHONICS
CN ORI	54	13.0	05 49 40	-05 26	L 2	12293	L 0	06JAN82	08 55 37	030 00	UK404	402 4-M-HTR-WM-UP MN=695
CN ORI	54	12.9	05 49 40	-05 26	L 3	15950	L 0	04JAN82	08 36 01	040 00	UK404	501
CN ORI	54	13.0	05 49 40	-05 26	L 3	15983	L 0	06JAN82	09 36 07	050 00	UK404	501
HD250550	34	09.7	05 59 06	-16 31	H 2	12395	L 0	22JAN82	09 08 59	395 00	FP534	369

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP +CAM	IMAGE	APERT OB LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
HD40932	35	4.1	05 59 38	+09 39	L 3	16029	S 0	12JAN82	08 54 20	000 31	STAN	300
HD40932	35	4.1	05 59 38	+09 39	L 3	16029	L 0	12JAN82	08 49 48	000 20	STAN	500
HD 41335	26	5.2	06 01 48	-06 42	H 3	16526	L 0	14MAR82	03 51 00	001 50	UK473	400
HD 42477	22	05.9	06 08 38	+13 39	H 2	12542	L 0	10FEB82	06 46 50	025 00	PB608	502 4-MIN-HTR-WM-UP
HD 42477	22	05.9	06 08 38	+13 39	H 2	12543	L 0	10FEB82	08 00 52	028 00	PB608	503 MOD REF POS
HD 42477	22	05.9	06 08 38	+13 39	H 3	16303	L 0	10FEB82	07 15 06	040 00	PB608	501 MOD REF POS
HD 42477	22	05.9	06 08 38	+13 39	H 3	16304	L 0	10FEB82	08 32 20	048 00	PB608	501 MOD REF POS
PW-1	70	15.3	06 15 23	+55 38	L 2	12231	L 0	28DEC81	10 55 10	150 00	RW508	505 4-MIN-HTR-WM-UP
PW-1	70	15.3	06 15 23	+55 38	L 2	12232	L 0	28DEC81	14 14 26	150 00	RW508	505 4-MIN-HTR-WM-UP
PW-1	70	15.3	06 15 23	+55 38	L 3	15894	L 0	28DEC81	13 27 43	045 00	RW508	401
PW-1	70	15.3	06 15 23	+55 38	L 3	15895	L 0	28DEC81	16 47 02	055 00	RW508	501
HD 45166	10	10.0	06 23 30	+08 01	H 2	12852	L 0	24MAR82	09 21 46	056 00	UK479	302
HD 45166	10	10.0	06 23 30	+08 01	H 3	16613	L 0	24MAR82	08 03 19	075 00	UK479	401
HD 47105	30	1.9	06 34 49	+16 27	H 2	12020	L 0	21NOV81	16 55 51	000 30	PB608	402 MOD R P. OBJ=-95,46
HD 47105	30	1.9	06 34 49	+16 27	H 2	12021	L 0	21NOV81	17 49 49	000 40	PB608	502 MOD R P. OBJ=-115,54
HD 47105	30	1.9	06 34 49	+16 27	H 3	15541	L 0	21NOV81	16 25 05	000 45	PB608	400 MOD R P. OBJ= 84,-85
HD 47105	30	1.9	06 34 49	+16 27	H 3	15542	L 0	21NOV81	17 45 27	001 15	PB608	600
RR PIC	55	12.0	06 35 10	-62 36	L 2	12071	L 0	03DEC81	10 20 39	014 00	PS576	501 MICROPHONICS
RR PIC	55	12.0	06 35 10	-62 36	L 2	12072	L 0	03DEC81	11 13 02	018 00	PS576	501 MICROPHONICS
RR PIC	55	12.0	06 35 10	-62 36	L 2	12073	L 0	03DEC81	12 12 28	018 00	PS576	502 MICROPHONICS
RR PIC	55	12.0	06 35 10	-62 36	L 2	12074	L 0	03DEC81	13 07 08	018 00	PS576	503 MICROPHONICS
RR PIC	55	12.0	06 35 10	-62 36	L 2	12075	L 0	03DEC81	14 01 03	018 00	PS576	502 MICROPHONICS
RR PIC	55	12.0	06 35 10	-62 36	L 2	12076	L 0	03DEC81	15 09 17	018 00	PS576	502 MICROPHONICS
RR PIC	55	12.0	06 35 10	-62 36	L 3	15632	L 0	03DEC81	10 46 47	016 00	PS576	550
RR PIC	55	12.0	06 35 10	-62 36	L 3	15633	L 0	03DEC81	11 43 02	018 00	PS576	551
RR PIC	55	12.0	06 35 10	-62 36	L 3	15634	L 0	03DEC81	12 39 34	018 00	PS576	551
RR PIC	55	12.0	06 35 10	-62 36	L 3	15635	L 0	03DEC81	13 33 36	018 00	PS576	561
RR PIC	55	12.0	06 35 10	-62 36	L 3	15636	L 0	03DEC81	14 40 08	018 00	PS576	551
RR PIC	55	12.0	06 35 10	-62 36	L 3	15637	L 0	03DEC81	15 37 25	018 00	PS576	551
HD48097	30	5.1	06 39 30	+17 42	L 2	12327	S 0	12JAN82	09 42 23	000 17	STAN	501
HD48097	30	5.1	06 39 30	+17 42	L 2	12327	L 0	12JAN82	09 38 46	000 11	STAN	501
HD48097	30	5.1	06 39 30	+17 42	H 2	12328	L 0	12JAN82	10 22 38	013 00	STAN	501
HD48097	30	5.1	06 39 30	+17 42	H 3	16030	L 0	12JAN82	09 47 42	020 00	STAN	500
HD48097	30	5.1	06 39 30	+17 42	L 3	16031	S 0	12JAN82	10 56 28	000 40	STAN	500 TELEMETRY LOSSES
HD48097	30	5.1	06 39 30	+17 42	L 3	16031	L 0	12JAN82	10 53 29	000 25	STAN	500 TELEMETRY LOSSES
HD 52266	20	7.2	06 57 54	-05 45	L 2	12798	S 0	17MAR82	06 47 38	000 40	STAND	502 4-MIN-HTR-WM-UP
HD 52266	20	7.2	06 57 54	-05 45	L 2	12798	L 0	17MAR82	06 41 11	000 32	STAND	502 TRAILED R=0.63
HD 52266	20	7.2	06 57 54	-05 45	L 3	16553	S 0	17MAR82	06 36 07	001 00	STAND	800
HD 52266	20	7.2	06 57 54	-05 45	L 3	16553	L 0	17MAR82	06 29 18	001 00	STAND	500 TRAILED R=0.33
SN N2268	56	14.0	07 00 48	+84 28	L 2	12619	L 0	18FEB82	07 29 23	120 00	NP586	303
SN N2268	56	14.0	07 00 48	+84 28	L 3	16363	L 0	18FEB82	09 34 15	044 00	NP586	001
SN N2268	56	14.0	07 00 48	+48 28	L 2	12620	L 0	18FEB82	10 21 54	175 00	NP586	306
HD 58343	26	05.2	07 22 25	-16 06	H 2	12515	L 0	05FEB82	10 57 52	003 00	BB544	502 4-MIN-HTR-WM-UP
HD 58343	26	05.2	07 22 25	-16 06	H 3	16264	L 0	05FEB82	11 04 13	002 00	BB544	301
HD 58946	40	4.5	07 25 54	+31 53	L 2	12797	S 0	17MAR82	04 56 49	000 25	STAND	702 4-MIN-HTR-WM-UP
HD 58946	40	4.5	07 25 54	+31 53	L 2	12797	L 0	17MAR82	04 49 20	000 19	STAND	502 TRAILED R=1.04
HD 58946	40	4.5	07 25 54	+31 53	L 3	16552	S 0	17MAR82	04 45 06	000 02	STAND	101 NO SPECTRUM
HD 58946	40	4.5	07 25 54	+31 53	L 3	16552	L 0	17MAR82	04 33 53	002 05	STAND	701 TRAILED R=0.16

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP	+CAM	IMAGE	APERT OB	APERT LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
HD 59643	50	7.8	07 28 53	+24 37	L	2	12845	L	0	23MAR82	09 08 19	025 00	FQ606	342
HD 59643	50	7.8	07 28 53	+24 37	L	3	16603	L	0	23MAR82	09 36 56	040 00	FQ606	221
KQ MON	63	13.0	07 28 58	-10 15	L	2	11915	L	0	04NOV81	13 35 24	030 00	JK575	501
KQ MON	63	13.0	07 28 58	-10 15	L	3	15384	L	0	04NOV81	12 41 30	050 00	JK575	501
HD 60179	30	1.6	07 31 25	+32 00	H	2	12022	L	0	21NOV81	19 02 47	000 40	PB608	603 MOD R P. OBJ=-95,46
HD 60179	30	1.6	07 31 25	+32 00	H	3	15543	L	0	21NOV81	18 58 34	001 00	PB608	600 MOD R P. OBJ= 84,-85
HD 60179	30	1.6	07 31 25	+32 00	H	3	15544	L	0	21NOV81	19 26 57	000 55	PB608	600 MOD R P. OBJ= 99,-93
SERENDIP	00	00.0	07 32 03	+65 43	L	2	12519	L	0	06FEB82	06 57 00	400 00	UK433	306 MICROPHONICS
NGC 2403	80	09.5	07 32 03	+65 43	L	2	12523	L	0	07FEB82	06 57 49	405 00	UK422	307
NGC 2403	80	09.5	07 32 03	+65 43	L	3	16274	L	0	06FEB82	06 55 00	412 00	UK433	303
SERENDIP	00	00.0	07 32 03	+65 43	L	3	16278	L	0	07FEB82	07 16 40	375 00	UK422	103
HD 60753	21	6.7	07 32 08	-50 28	L	2	12139	S	0	13DEC81	10 52 10	000 21	PHCAL	501
HD 60753	21	6.7	07 32 08	-50 28	L	2	12139	L	0	13DEC81	10 46 10	000 07	PHCAL	501
HD 60753	21	6.7	07 32 08	-50 28	L	2	12140	L	0	13DEC81	11 50 25	000 31	PHCAL	501 TRAILED
HD 60753	21	6.7	07 32 08	-50 28	L	2	12919	S	0	31MAR82	08 38 38	000 21	UKCAL	602 MN=393
HD 60753	21	6.7	07 32 08	-50 28	L	2	12919	L	0	31MAR82	08 34 57	000 07	UKCAL	502 MN=393
HD 60753	21	6.7	07 32 08	-50 28	L	3	15734	S	0	13DEC81	10 42 47	000 30	PHCAL	500
HD 60753	21	6.7	07 32 08	-50 28	L	3	15734	L	0	13DEC81	10 39 30	000 10	PHCAL	500
HD 60753	21	6.7	07 32 08	-50 28	L	3	15735	L	0	13DEC81	11 45 26	000 41	PHCAL	500 TRAILED
HD 60753	21	6.7	07 32 08	-50 28	L	3	16670	S	0	31MAR82	08 31 36	000 30	UKCAL	500
HD 60753	21	6.7	07 32 08	-50 28	L	3	16670	L	0	31MAR82	08 24 58	000 10	UKCAL	500
0736+017	85	16.5	07 36 43	+01 44	L	3	15773	L	0	16DEC81	10 55 14	883 00	UK427	339 READ AT GSFC
0736+017	85	16.5	07 36 43	+01 44	L	3	15822	L	0	21DEC81	10 40 27	427 00	UK427	333
L745-46A	43	13.0	07 38 00	-17 17	L	2	12132	L	0	12DEC81	11 13 41	030 00	DK518	220 IDENT UNCERTAIN
L745-46A	37	13.0	07 38 00	-17 17	L	3	15747	L	0	14DEC81	11 02 54	260 00	DK518	302
HD 62509	47	1.1	07 42 16	+28 09	H	3	16488	L	0	08MAR82	04 33 31	374 00	UK482	*53
0742+318	85	16.0	07 42 31	+31 50	L	2	12177	L	0	19DEC81	10 40 56	500 00	UK427	448 READ AT GSFC
0743-672	85	16.4	07 43 22	-67 19	L	1	1414	L	0	08DEC81	11 05 45	364 00	JB526	243
HD 63032	47	3.6	07 43 29	-37 51	L	3	16486	L	0	07MAR82	07 03 15	170 00	DR578	902 COMPLETELY SAT
NGC 2452	70	12.6	07 45 25	-27 13	L	2	12325	L	0	11JAN82	08 40 35	180 00	SP558	331
0754+395	84	16.0	07 54 38	+39 29	L	1	1408	L	0	02DEC81	13 57 52	090 00	UK491	041
0754+395	84	16.0	07 54 38	+39 29	L	3	15620	L	0	02DEC81	10 53 38	180 00	UK491	351
+75 325	16	09.0	08 04 43	+75 07	H	1	1464	L	0	25JAN82	13 24 42	032 00	PHCAL	502
+75 325	16	09.0	08 04 43	+75 07	L	1	1465	S	0	25JAN82	14 39 00	001 05	PHCAL	602
+75 325	16	09.0	08 04 43	+75 07	L	1	1465	L	0	25JAN82	14 35 13	000 21	PHCAL	402
+75 325	16	9.5	08 04 43	+75 07	L	2	12918	S	0	31MAR82	07 11 32	001 12	UKCAL	602 MN=577
+75 325	16	9.5	08 04 43	+75 07	L	2	12918	L	0	31MAR82	07 08 34	000 24	UKCAL	502 MN=577
+75 325	16	9.5	08 04 43	+75 07	L	3	16669	S	0	31MAR82	07 05 02	000 42	UKCAL	600
+75 325	16	9.5	08 04 43	+75 07	L	3	16669	L	0	31MAR82	07 02 02	000 14	UKCAL	500
HD 67523	53	2.9	08 05 25	-24 10	H	2	12438	L	0	26JAN82	08 53 20	007 00	MA501	772
HD 67523	53	2.9	08 05 25	-24 10	H	2	12439	L	0	26JAN82	09 32 58	005 00	MA501	662
HD 67523	53	2.9	08 05 25	-24 10	H	2	12440	L	0	26JAN82	10 06 44	010 00	MA501	772
HD 67523	53	2.9	08 05 25	-24 10	H	2	12441	L	0	26JAN82	10 46 37	010 00	MA501	772
HD 67523	53	2.9	08 05 25	-24 10	H	2	12442	L	0	26JAN82	11 25 59	010 00	MA501	772
HD 67523	53	2.9	08 05 25	-24 10	H	2	12443	L	0	26JAN82	12 05 51	010 00	MA501	772
HD 67523	53	2.9	08 05 25	-24 10	H	2	12444	L	0	26JAN82	12 45 05	010 00	MA501	772
HD 67523	53	2.9	08 05 25	-24 10	H	2	12445	L	0	26JAN82	13 25 07	010 00	MA501	772
HD 67523	53	2.9	08 05 25	-24 10	H	2	12446	L	0	26JAN82	14 05 40	010 00	MA501	772

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP +CAM	IMAGE	APERT OB LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
L97-3	43	13.9	08 06 28	-66 10	L 2	12133	L 0	12DEC81	12 37 31	130 00	DK518	501
Z CHA	54	13.5	08 08 50	-76 23	L 2	12263	L 0	02JAN82	12 46 47	060 00	UK404	503
Z CHA	54	13.5	08 08 50	-76 23	L 3	15928	L 0	02JAN82	13 49 50	118 00	UK404	671
Z CAM	54	11.8	08 19 43	+73 17	L 2	11941	L 0	08NOV81	13 03 46	010 00	JK575	502
Z CAM	54	11.8	08 19 43	+73 17	L 3	15453	L 0	08NOV81	12 38 10	018 00	JK575	501
HD 71129	47	2.0	08 21 29	-59 20	H 2	12729	L 0	07MAR82	10 43 31	001 00	DR578	501
HD 71129	47	2.0	08 21 29	-59 20	H 3	16487	L 0	07MAR82	10 39 33	002 00	DR578	601
HH 46	76	18.0	08 24 17	-50 51	L 3	15472	L 0	10NOV81	13 29 53	377 00	WE525	203
M3-6	70	12.7	08 38 39	-32 12	L 2	12565	L 0	12FEB82	10 11 03	020 00	UK470	403
M3-6	70	12.6	08 38 39	-32 12	L 2	12595	L 0	16FEB82	06 21 55	040 00	UK470	503
M3-6	70	12.7	08 38 39	-32 12	L 3	16318	L 0	12FEB82	09 45 24	020 00	UK470	300
M3-6	70	12.6	08 38 39	-32 12	L 3	16346	L 0	16FEB82	07 09 33	045 00	UK470	551
HD 78647	47	2.1	09 06 09	-43 14	H 3	16476	L 0	04MAR82	04 03 10	404 00	UK482	143
NGC 2792	70	13.5	09 10 34	-42 13	L 2	12326	L 0	11JAN82	13 45 26	114 00	SP558	341
NGC 2792	70	13.5	09 10 34	-42 13	L 3	16018	L 0	11JAN82	12 15 40	090 00	SP558	341
NGC 2782	70	13.5	09 10 34	-42 13	L 3	16032	L 0	12JAN82	13 00 16	167 00	SP558	350
ABELL 33	70	14.0	09 36 39	-02 35	L 2	12564	L 0	12FEB82	08 37 04	022 48	UK470	112 NEG-HI-DIS-REMMANT
ABELL 33	70	14.0	09 36 39	-02 35	L 3	16317	L 0	12FEB82	07 01 01	090 00	UK470	111
IC 2501	70	10.5	09 37 21	-59 52	L 2	12566	L 0	12FEB82	11 37 42	055 00	UK470	574
IC 2501	70	10.5	09 37 21	-59 52	L 2	12567	L 0	12FEB82	13 16 53	027 00	UK470	343
IC 2501	70	10.5	09 37 21	-59 52	L 3	16319	L 0	12FEB82	11 02 29	025 00	UK470	360
IC 2501	70	10.5	09 37 21	-59 52	L 3	16320	L 0	12FEB82	12 36 11	015 00	UK470	250
X LEO	54	12.8	09 48 20	+12 07	L 2	12282	L 0	04JAN82	11 15 10	035 00	UK404	503
X LEO	54	12.8	09 48 20	+12 07	L 2	12289	L 0	05JAN82	14 57 57	015 00	UK404	302 MICROPHONICS
X LEO	54	14.0	09 48 20	+12 07	L 2	12295	L 0	06JAN82	12 58 13	060 00	UK404	403 MICROPHONICS
X LEO	54	12.8	09 48 20	+12 07	L 3	15951	L 0	04JAN82	11 53 49	040 00	UK404	501
X LEO	54	12.8	09 48 20	+12 07	L 3	15968	L 0	05JAN82	15 18 26	030 00	UK404	401
X LEO	54	14.0	09 48 20	+12 07	L 3	15985	L 0	06JAN82	14 03 12	104 00	UK404	501
X LEO	54	14.5	09 48 20	+12 07	L 3	15989	L 0	08JAN82	14 28 24	080 00	UK404	201
HD237844	21	9.4	09 48 31	+55 58	L 1	1403	L 0	01DEC81	10 48 46	1 30	UK477	503
HD 86590	46	7.9	09 57 13	+24 48	L 2	12191	L 0	22DEC81	13 23 27	005 00	OV598	343 4-M-HTR-W-UP,MN=674
HD 86590	46	7.9	09 57 13	+24 48	L 3	15832	L 0	22DEC81	10 40 14	150 00	OV598	331
0957+561	85	16.0	09 57 57	+56 08	L 1	1404	L 0	01DEC81	11 41 41	577 00	UK477	349 READ AT GSFC
MK 132	85	16.0	09 58 08	+55 00	L 2	12640	L 0	20FEB82	09 11 44	270 00	UK466	307
NGC 3242	70	10.0	10 22 24	-18 23	H 2	12705	L 0	03MAR82	06 28 16	250 00	RK522	375 4 MIN HTR WARM-UP
HD 90772	53	4.9	10 25 32	-57 23	L 3	15489	L 0	12NOV81	19 22 50	024 00	WE519	700
HD 91039	53	8.2	10 27 16	-57 21	L 2	11968	L 0	12NOV81	16 54 59	030 00	WE519	603 4-MIN HTR W-UP
HD 91039	53	8.2	10 27 16	-57 21	L 3	15488	L 0	12NOV81	17 28 20	040 00	WE519	110
HD 92809	10	9.1	10 39 42	-58 31	H 2	12043	L 0	23NOV81	12 37 12	120 00	CL609	455 MICROPHONICS
HD 92809	10	9.1	10 39 42	-58 31	H 3	15558	L 0	23NOV81	14 44 24	302 00	CL609	566
HD 93521	12	7.1	10 45 34	+37 50	H 1	1398	L 0	30NOV81	16 49 10	003 50	VILSE	500
HD 93521	12	7.1	10 45 34	+37 50	L 1	1399	S 0	30NOV81	17 27 25	000 06	VILSE	500
HD 93521	12	7.1	10 45 34	+37 50	L 1	1399	L 0	30NOV81	17 23 24	000 02	VILSE	500
HD 93521	12	6.9	10 45 34	+37 50	L 1	1436	S 0	14JAN82	09 09 11	000 08	PHCAL	501
HD 93521	12	6.9	10 45 34	+37 50	L 1	1436	L 0	14JAN82	09 05 09	000 03	PHCAL	501
HD 93521	12	6.9	10 45 34	+37 50	L 1	1437	L 0	14JAN82	09 43 03	000 07	PHCAL	402 TRAILED
HD 93521	12	6.9	10 45 34	+37 50	L 1	1501	S 0	19MAR82	04 47 35	000 04	PHCAL	402
HD 93521	12	6.9	10 45 34	+37 50	L 1	1501	L 0	19MAR82	04 42 19	000 02	PHCAL	402

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP +CAM	IMAGE	APERT OB LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
HD 93521	12	6.9	10 45 34	+37 50	L 1	1502	L 0	19MAR82	05 40 35	000 06	PHCAL	401 TRAIL R=3,33
HD 93521	12	6.9	10 45 34	+37 50	L 1	1503	L 0	19MAR82	06 14 31	000 04	PHCAL	501
HD 93521	12	7.1	10 45 34	+37 50	L 2	12061	S 0	30NOV81	18 02 10	000 06	VILSE	500
HD 93521	12	7.1	10 45 34	+37 50	L 2	12061	L 0	30NOV81	17 58 37	000 03	VILSE	500
HD 93521	12	7.1	10 45 34	+37 50	L 2	12062	S 0	30NOV81	18 36 25	000 06	VILSE	400
HD 93521	12	7.1	10 45 34	+37 50	L 2	12062	L 0	30NOV81	18 33 34	000 03	VILSE	500
HD 93521	12	6.9	10 45 34	+37 50	L 2	12209	S 0	24DEC81	12 28 03	000 09	PHCAL	502
HD 93521	12	6.9	10 45 34	+37 50	L 2	12209	L 0	24DEC81	12 23 08	000 03	PHCAL	502
HD 93521	12	6.9	10 45 34	+37 50	L 2	12806	S 0	19MAR82	07 12 26	000 09	PHCAL	502
HD 93521	12	6.9	10 45 34	+37 50	L 2	12806	L 0	19MAR82	07 09 04	000 03	PHCAL	402
HD 93521	12	7.1	10 45 34	+37 50	L 3	15606	S 0	30NOV81	19 01 25	000 06	VILSE	550
HD 93521	12	7.1	10 45 34	+37 50	L 3	15606	L 0	30NOV81	18 57 59	000 03	VILSE	440
HD 93521	12	7.1	10 45 34	+37 50	H 3	15606	L 0	30NOV81	18 55 31	000 03	VILSE	000 WRONG DISPERSION
HD 93521	12	6.9	10 45 34	+37 50	L 3	15872	S 0	24DEC81	12 34 32	000 09	PHCAL	500
HD 93521	12	6.9	10 45 34	+37 50	L 3	15872	L 0	24DEC81	12 31 22	000 03	PHCAL	400
HD 93521	12	6.9	10 45 34	+37 50	L 3	16573	S 0	19MAR82	04 39 04	000 09	PHCAL	600
HD 93521	12	6.9	10 45 34	+37 50	L 3	16573	L 0	19MAR82	04 34 23	000 03	PHCAL	500
NGC 3393	84	13.0	10 46 00	-24 54	L 2	12153	L 0	15DEC81	10 23 10	040 00	BF329	112
NGC 3393	84	13.0	10 46 00	-24 54	L 3	15761	L 0	15DEC81	11 08 09	016 08	BF329	120
HD 95109	53	6.4	10 55 46	-59 28	L 2	11967	L 0	12NOV81	15 40 11	020 00	WE519	703 4-MIN HTR W-UP
HD 95109	53	6.4	10 55 46	-59 28	L 2	11969	S 0	12NOV81	18 50 04	008 00	WE519	503
HD 95109	53	6.4	10 55 46	-59 28	L 2	11969	L 0	12NOV81	18 38 00	008 00	WE519	703 4-MIN HTR W-UP
HD 95109	53	6.4	10 55 46	-59 28	L 3	15486	L 0	12NOV81	15 18 26	010 00	WE519	200
HD 95109	53	6.4	10 55 46	-59 28	L 3	15487	L 0	12NOV81	16 07 19	030 00	WE519	200
HD 96088	24	06.2	11 01 53	-57 41	L 2	12447	S 0	26JAN82	15 24 14	000 06	STAN	502 REMNANTS PRESENT
HD 96088	24	06.2	11 01 53	-57 41	L 2	12447	L 0	26JAN82	15 18 35	000 13	STAN	502 TRAIL R=1,56
HD 96088	24	06.2	11 01 53	-57 41	L 3	16119	L 0	26JAN82	15 35 08	000 22	STAN	601 TRAIL R=0,89
NGC 3587	70	00.0	11 11 55	+55 17	L 2	12578	L 0	14FEB82	07 34 02	025 00	UK470	303 4-MIN-HTR-WM-UP
NGC 3587	70	00.0	11 11 55	+55 17	L 2	12579	L 0	14FEB82	09 15 11	060 00	UK470	403 4-MIN-HTP-WM-UP
NGC 3587	70	00.0	11 11 55	+55 17	L 3	16327	L 0	14FEB82	08 10 01	060 00	UK470	551
NGC 3660	80	12.5	11 21 05	-08 23	L 3	16422	L 0	25FEB82	07 23 31	080 00	UK569	000
HD100213	66	8.5	11 28 56	-65 28	L 2	12251	L 0	01JAN82	08 40 27	001 05	HD527	702
HD100213	66	8.5	11 28 56	-65 28	L 3	15915	L 0	01JAN82	08 36 25	001 00	HD527	500
HD100213	66	8.5	11 28 56	-65 28	H 3	15916	L 0	01JAN82	09 29 49	060 00	HD527	501
HD100340	20	10.2	11 30 15	+05 33	L 2	12463	S 0	29JAN82	08 39 53	001 50	MG540	402 4-M-HTR-WM-UP MN=775
HD100340	20	10.2	11 30 15	+05 33	L 2	12463	L 0	29JAN82	08 35 19	001 20	MG540	502 4-M-HTR-WM-UP MN=775
HD100340	20	10.2	11 30 15	+05 33	H 2	12464	L 0	29JAN82	10 51 39	125 00	MG540	605 4-MIN-HTR-WM-UP
HD100340	20	10.2	11 30 15	+05 33	L 3	16197	S 0	29JAN82	08 29 49	002 30	MG540	601
HD100340	20	10.2	11 30 15	+05 33	L 3	16197	L 0	29JAN82	08 22 51	002 00	MG540	707
HD100340	20	10.2	11 30 15	+05 33	H 3	16198	L 0	29JAN82	09 08 23	100 00	MG540	502
NGC 3783	84	13.0	11 36 30	-37 28	L 2	12227	L 0	27DEC81	16 21 16	030 00	VILSE	453 4-MIN-HTR-WM-UP
NGC 3783	84	13.5	11 36 30	-37 28	L 2	12420	L 0	24JAN82	14 39 04	040 00	VILSP	353 4-MIN-HTR-WM-UP
NGC 3783	84	13.0	11 36 30	-37 28	L 3	15891	L 0	27DEC81	16 54 54	052 00	VILSE	351
NGC 3783	84	13.5	11 36 30	-37 28	L 3	16103	L 0	24JAN82	12 55 16	100 00	VILSP	360
NGC 3783	84	13.5	11 36 30	-37 28	L 3	16104	L 0	24JAN82	15 24 28	023 00	VILSP	230
NGC 3783	84	13.0	11 36 33	-37 28	H 2	12691	L 0	28FEB82	07 00 17	714 00	UK418	209 READ AT GSFC
NGC 3783	84	13.5	11 36 33	-37 28	L 2	12784	L 0	14MAR82	09 38 24	030 00	UK473	333
NGC 3783	84	13.2	11 36 33	-37 28	L 3	15469	L 0	09NOV81	19 01 07	045 00	UK481	341

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP +CAM	IMAGE	APERT OB LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
SERENDIP	00	00.0	11 36 33	-37 28	H 3	16449	L 0	28FEB82	07 18 35	440 00	UK418	009 READ AT GSFC
NGC 3783	84	13.5	11 36 33	-37 28	L 3	16495	L 0	10MAR82	09 55 01	053 00	UK473	341
NGC 3783	84	13.5	11 36 33	-37 28	L 3	16530	L 0	14MAR82	10 12 16	035 00	UK473	230
1136-135	85	16.2	11 36 39	-13 35	L 1	1412	L 0	06DEC81	11 26 24	343 00	DK602	455
1136-135	85	16.1	11 36 39	-13 35	L 3	15657	L 0	05DEC81	11 18 43	388 00	DK360	363
BH CEN	66	10.5	11 36 49	-63 09	L 2	12271	L 0	03JAN82	15 07 32	013 00	HD527	702 MICROPHONICS
BH CEN	66	10.5	11 36 49	-63 09	L 3	15941	L 0	03JAN82	14 34 49	015 00	HD527	601
BH CEN	66	10.5	11 36 49	-63 09	L 3	15942	L 0	03JAN82	15 35 04	008 00	HD527	501
HD102552	66	09.0	11 45 30	-60 17	L 2	12252	L 0	01JAN82	11 09 29	001 30	HD527	602
HD102552	66	08.9	11 45 30	-60 17	L 2	12269	L 0	03JAN82	08 44 01	001 15	HD527	502
HD102552	66	08.9	11 45 30	-60 17	L 2	12270	L 0	03JAN82	13 42 12	002 15	HD527	502
HD102552	66	09.0	11 45 30	-60 17	L 3	15917	L 0	01JAN82	11 14 51	002 30	HD527	501
HD102552	66	08.9	11 45 30	-60 17	L 3	15938	L 0	03JAN82	08 38 57	002 00	HD527	500
HD102552	66	08.9	11 45 30	-60 17	H 3	15939	L 0	03JAN82	09 16 38	225 00	HD527	603
HD102552	66	08.9	11 45 30	-60 17	L 3	15940	L 0	03JAN82	13 28 29	003 00	HD527	501
1146-037	85	16.5	11 46 22	-03 47	L 2	12158	L 0	17DEC81	11 38 28	645 00	UK427	335 READ AT GSFC
1148+387	85	16.2	11 48 53	+38 42	L 3	16411	L 0	22FEB82	10 02 01	225 00	UK466	202
NGC 3995	80	12.0	11 55 10	+32 34	L 2	12534	L 0	09FEB82	06 57 11	406 00	UK433	307
SERENDIP	00	00.0	11 55 10	+32 34	L 3	16295	L 0	09FEB82	07 00 56	392 00	UK433	103
NGC 4111	80	11.5	12 04 32	+43 21	L 3	16659	L 0	29MAR82	03 32 58	404 00	SE185	203
NGC 4151	84	12.3	12 08 00	+39 41	L 2	12639	L 0	20FEB82	06 15 01	060 00	UK466	464 MICROPHONICS
NGC 4151	84	13.0	12 08 00	+39 41	L 2	12681	L 0	26FEB82	06 32 18	030 00	UK418	353 4-MIN-HTR-WM-UP
NGC 4151	84	12.3	12 08 00	+39 41	L 3	16390	L 0	20FEB82	07 18 39	050 00	UK466	351
NGC 4151	84	13.0	12 08 00	+39 41	L 3	16430	L 0	26FEB82	07 06 33	045 00	UK418	351
HD106111	53	6.7	12 10 04	-69 52	L 2	11965	S 0	12NOV81	13 12 58	008 00	WE519	703 4-MIN HTR W-UP
HD106111	53	6.7	12 10 04	-69 52	L 2	11965	L 0	12NOV81	12 39 49	020 00	WE519	803 4-MIN HTR W-UP
HD106111	53	6.7	12 10 04	-69 52	L 2	11966	S 0	12NOV81	14 21 32	003 00	WE519	503 4-MIN HTR W-UP
HD106111	53	6.7	12 10 04	-69 52	L 2	11966	L 0	12NOV81	14 05 50	008 00	WE519	703 4-MIN HTR W-UP
HD106111	53	6.7	12 10 04	-69 52	L 3	15484	L 0	12NOV81	12 21 41	010 00	WE519	801
HD106111	53	6.7	12 10 04	-69 52	L 3	15485	S 0	12NOV81	13 32 04	004 00	WE519	401
HD106111	53	6.7	12 10 04	-69 52	L 3	15485	L 0	12NOV81	13 24 47	003 00	WE519	501
HD107832	25	05.3	12 20 57	-35 08	L 2	12366	S 0	19JAN82	08 59 04	000 09	STAN	501
HD107832	25	05.3	12 20 57	-35 08	L 2	12366	L 0	19JAN82	08 55 47	000 06	STAN	501
HD107832	25	05.3	12 20 57	-35 08	L 3	16075	L 0	19JAN82	09 02 06	000 10	STAN	500
NGC 4449	82	00.0	12 25 43	+44 22	L 2	12233	L 0	29DEC81	10 55 54	210 00	UK433	504 4-MIN-HTR-WM-UP
NGC 4449	82	00.0	12 25 43	+44 22	L 3	15902	L 0	29DEC81	10 57 48	230 00	UK433	302 SERENDIPITY
NGC 4449	82	00.0	12 25 47	+44 22	L 2	12234	L 0	29DEC81	15 09 17	140 00	UK433	304 4-MIN-HTR-WM-UP
NGC 4449	82	00.0	12 25 47	+44 22	L 3	15903	L 0	29DEC81	15 32 31	135 00	UK433	201 SERENDIPITY
3C 273	85	12.8	12 26 33	+02 20	H 2	12682	L 0	26FEB82	08 46 31	530 00	UK418	307 READ AT GSFC
3C 273	85	12.8	12 26 33	+02 20	H 2	12686	L 0	27FEB82	07 03 45	603 00	UK418	309 READ AT GSFC
SERENDIP	00	00.0	12 26 33	+02 20	L 3	16431	L 0	26FEB82	09 30 37	440 00	UK418	*** READ AT GSFC
SERENDIP	00	00.0	12 26 33	+02 20	L 3	16440	L 0	27FEB82	07 07 26	440 00	UK418	*** READ AT GSFC
EX HYA	54	13.5	12 49 43	-28 59	L 2	12261	L 0	02JAN82	08 38 00	045 00	UK404	563
EX HYA	54	13.5	12 49 43	-28 59	L 3	15926	L 0	02JAN82	09 26 30	055 00	UK404	451
1317+277	85	15.3	13 17 34	+27 44	L 1	1374	L 0	18NOV81	13 15 32	358 00	UK474	445
HD116538	20	7.9	13 22 08	-51 35	H 1	1500	L 0	18MAR82	08 45 05	018 00	UK457	501
HD116538	20	7.9	13 22 08	-51 35	H 3	16563	L 0	18MAR82	08 01 42	040 00	UK457	501
A36	70	11.6	13 27 58	-19 38	L 2	12596	S 0	16FEB82	09 09 06	008 00	UK470	502

OBJECT	CL	MAG	RT ASCN HR	MN	SC	DECLN DEG	MN	DISP	+CAM	IMAGE	APERT OB	LG	DATE	START HR	MN	SC	LENGTH MIN	SC	PROG	COMMENT
A36	70	11.6	13	27	58	-19	38	L	2	12596	L	0	16FEB82	09	00	26	004	00	UK470	502
BV CEN	54	13.4	13	28	10	-54	43	L	2	12262	L	0	02JAN82	10	56	35	035	00	UK404	333
BV CEN	54	13.4	13	28	10	-54	43	L	3	15927	L	0	02JAN82	11	37	07	030	00	UK404	220
+30 2431	21	10.0	13	36	06	+29	37	H	3	15592	L	0	29NOV81	14	54	58	293	00	MH507	503
ABELL 36	70	11.5	13	37	57	-19	38	H	2	12711	L	0	05MAR82	06	47	43	236	00	RK522	417
ABELL 36	70	11.5	13	37	57	-19	38	H	3	16478	L	0	05MAR82	04	00	47	160	00	RK522	611
A36	70	11.4	13	37	58	-19	38	L	2	12581	L	0	14FEB82	13	38	20	005	00	UK470	501 MICROPHONICS
A36	70	11.4	13	37	58	-19	38	L	3	16330	L	0	14FEB82	13	31	56	003	00	UK470	501
A36	70	11.4	13	37	58	-19	38	L	3	16330	L	0	14FEB82	13	28	04	001	30	UK470	501
HD119078	10	10.1	13	39	34	-67	09	H	3	16564	L	0	18MAR82	09	49	08	026	00	UK457	331
HD119078	10	10.1	13	39	34	-67	09	H	3	16581	L	0	20MAR82	06	16	50	240	00	UK457	572
ETA UMA	21	1.9	13	45	34	+49	34	H	2	12807	L	0	19MAR82	08	30	41	000	06	PHCAL	502 MICROPHONICS=565
ETA UMA	21	1.9	13	45	34	+49	34	H	3	16574	L	0	19MAR82	08	25	40	000	06	PHCAL	500
IC 4329A	84	14.4	13	46	28	-30	04	L	3	15883	L	0	25DEC81	10	41	09	420	00	UK405	204
1355-416	85	16.0	13	55	57	-41	38	L	3	16031	L	0	10JAN82	08	42	12	427	00	HD512	454
HD124979	12	7.7	14	14	51	-51	16	H	1	1499	L	0	18MAR82	07	16	48	018	00	UK457	301
HD124979	12	7.7	14	14	51	-51	16	H	3	16562	L	0	18MAR82	06	38	53	035	00	UK457	301
HD124979	12	8.7	14	14	51	-51	16	H	3	16580	L	0	20MAR82	04	10	56	080	00	UK457	501
NGC 5548	84	13.6	14	15	43	+25	22	L	2	12490	L	0	01FEB82	11	06	38	070	00	SEYFE	443 4-MIN-HTR-WM-UP
NGC 5548	84	12.9	14	15	43	+25	22	L	2	12904	L	0	30MAR82	07	49	23	060	00	SEYFE	503
NGC 5548	84	13.6	14	15	43	+25	22	L	3	16233	L	0	01FEB82	12	21	00	086	00	SEYFE	430
NGC 5548	84	12.9	14	15	43	+25	22	L	3	16667	L	0	30MAR82	08	54	56	083	00	SEYFE	351
NGC 5548	84	13.5	14	15	44	+25	22	L	2	12160	L	0	18DEC81	11	41	38	060	00	UK475	343
NGC 5548	84	13.5	14	15	44	+25	22	L	2	12193	L	0	23DEC81	12	21	25	080	00	UK465	353
NGC 5548	84	13.5	14	15	44	+25	22	L	3	15701	L	0	10DEC81	14	20	59	060	00	UK475	341
NGC 5548	84	13.5	14	15	44	+25	22	L	3	15792	L	0	18DEC81	10	36	32	060	00	UK475	340
NGC 5548	84	13.5	14	15	44	+25	22	L	3	15855	L	0	23DEC81	10	46	19	090	00	UK465	351
HD125248	36	5.9	14	15	52	-18	29	H	2	12794	L	0	16MAR82	04	56	05	017	00	HM585	502 4 MIN HTR WARM-UP
HD125248	36	5.9	14	15	52	-18	29	L	2	12795	L	0	16MAR82	06	33	52	000	12	HM585	502 MN=635
HD125248	36	05.9	14	15	52	-18	29	H	2	12800	L	0	17MAR82	08	32	01	017	00	HM585	503 4-MIN-HTR-WM-UP
HD125248	36	05.9	14	15	52	-18	29	L	2	12801	L	0	17MAR82	10	10	56	000	12	HM585	502 4-MIN-HTR-WM-UP
HD125248	36	5.9	14	15	52	-18	29	H	3	16540	L	0	16MAR82	04	22	32	030	00	HM585	500
HD125248	36	5.9	14	15	52	-18	29	H	3	16541	L	0	16MAR82	05	26	19	060	00	HM585	701
HD125248	36	5.9	14	15	52	-18	29	L	3	16542	S	0	16MAR82	07	21	30	001	15	HM585	700
HD125248	36	5.9	14	15	52	-18	29	L	3	16542	L	0	16MAR82	07	17	26	000	30	HM585	500
HD125248	36	05.9	14	15	52	-18	29	H	3	16554	L	0	17MAR82	09	02	10	037	00	HM585	700
HD125248	36	05.9	14	15	52	-18	29	L	3	16555	L	0	17MAR82	10	14	37	000	30	HM585	500
HD129708	53	07.9	14	42	48	-61	15	L	2	12626	L	0	19FEB82	06	51	03	020	00	WE519	703 4-MIN-HTR-WM-UP
HD129708	53	07.9	14	42	48	-61	15	L	2	12627	L	0	19FEB82	07	55	27	010	00	WE519	703 4-MIN-HTR-WM-UP
HD129708	53	07.9	14	42	48	-61	15	L	3	16374	S	0	19FEB82	06	32	25	005	00	WE519	201
HD129708	53	07.9	14	42	48	-61	15	L	3	16374	L	0	19FEB82	06	19	04	010	00	WE519	401
HD129708	53	07.9	14	42	48	-61	15	L	3	16375	L	0	19FEB82	07	14	14	016	00	WE519	500
HD135345	45	5.2	15	12	46	-41	18	H	3	16666	L	0	30MAR82	06	26	03	015	00	DR578	401
NGC 5882	70	13.0	15	13	25	-45	28	L	2	12599	L	0	16FEB82	13	11	53	031	00	UK470	532
NGC 5882	70	13.0	15	13	25	-45	28	L	3	16349	L	0	16FEB82	12	26	31	030	00	UK470	341
-75 1197	20	10.2	15	28	53	-75	30	H	3	15563	L	0	24NOV81	18	02	36	104	00	UK464	401 MOD REF POS -40,-202
HD138749	21	04.2	15	30	55	+31	32	H	2	12531	S	0	08FEB82	11	07	48	003	10	VD538	502
HD138749	26	4.2	15	30	55	+31	32	H	3	15464	L	0	09NOV81	12	30	43	002	00	UK481	551

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP	CAM	IMAGE	APERT OB	LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
HD138749	26	4.2	15 30 55	+31 32	H	3	15700	L	0	10DEC81	13 08 53	002 00	UK475	601
HD138749	21	04.2	15 30 55	+31 32	H	3	16288	S	0	08FEB82	11 00 34	003 20	VD538	501
HD138749	26	4.2	15 30 55	+31 32	H	3	16517	L	0	12MAR82	06 36 16	002 00	UK473	600
HD139195	46	5.3	15 34 05	+10 11	L	2	12843	S	0	23MAR82	06 03 09	004 00	FQ606	502
HD139195	46	5.3	15 34 05	+10 11	L	2	12843	L	0	23MAR82	05 44 42	015 00	FQ606	702
+33 2642	20	10.8	15 50 01	+33 05	L	1	1438	S	0	14JAN82	10 40 13	008 00	PHCAL	502
+33 2642	20	10.8	15 50 01	+33 05	L	1	1438	L	0	14JAN82	10 34 08	002 40	PHCAL	502
+33 2642	20	10.8	15 50 01	+33 05	L	1	1439	L	0	14JAN82	11 20 33	006 07	PHCAL	502 TRAILED
+33 2642	20	10.8	15 50 02	+33 05	L	2	12808	L	0	19MAR82	10 03 36	003 10	PHCAL	502
+33 2642	20	10.8	15 50 02	+33 05	L	3	16575	L	0	19MAR82	09 52 50	004 00	PHCAL	500
HD141891	40	2.8	15 50 43	-63 17	H	2	12920	L	0	31MAR82	09 34 35	002 30	UK494	602 MN=890
T CRB	10	5.2	15 57 24	+26 04	L	2	12154	S	0	15DEC81	13 06 01	020 00	BF329	334
T CRB	10	5.2	15 57 24	+26 04	L	2	12154	L	0	15DEC81	12 05 08	055 00	BF329	674
T CRB	10	5.2	15 57 24	+26 04	L	3	15762	L	0	15DEC81	13 29 37	060 00	BF329	350
NGC 6026	70	13.0	15 58 07	-34 24	L	2	12597	L	0	16FEB82	10 16 10	030 00	UK470	403
NGC 6026	70	13.0	15 58 07	-34 24	L	2	12598	L	0	16FEB82	11 32 17	020 00	UK470	402
NGC 6026	70	13.0	15 58 07	-34 24	L	3	16347	L	0	16FEB82	09 44 55	025 00	UK470	301
NGC 6026	70	13.0	15 58 07	-34 24	L	3	16348	L	0	16FEB82	10 51 43	035 00	UK470	301
HD144284	41	4.0	16 00 57	+58 42	L	3	15834	L	0	22DEC81	17 30 42	010 00	OV598	520
AG DRA	57	8.8	16 01 24	+66 57	H	2	12124	L	0	11DEC81	10 34 50	040 00	DP552	351 4-MIN-HTR-WM-UP
AG DRA	57	8.8	16 01 24	+66 57	L	2	12125	L	0	11DEC81	13 26 37	005 00	DP552	771
AG DRA	57	8.8	16 01 24	+66 57	L	3	15709	S	0	11DEC81	10 26 18	005 00	DP552	461
AG DRA	57	8.8	16 01 24	+66 57	L	3	15709	L	0	11DEC81	10 07 41	015 00	DP552	771
AG DRA	57	8.8	16 01 24	+66 57	H	3	15710	L	0	11DEC81	11 22 00	120 00	DP552	472
AG DRA	57	8.8	16 01 24	+66 57	L	3	15711	S	0	11DEC81	14 11 15	002 00	DP552	351
AG DRA	57	8.8	16 01 24	+66 57	L	3	15711	L	0	11DEC81	14 04 53	003 00	DP552	571
AG DRA	57	8.8	16 01 24	+66 57	H	3	15712	L	0	11DEC81	14 41 01	020 00	DP552	151
HD145483	22	05.7	16 09 10	-28 17	H	2	12544	L	0	10FEB82	10 13 24	025 00	PB608	703 MOD REF POS
HD145483	22	05.7	16 09 10	-28 17	H	2	12545	L	0	10FEB82	11 26 44	020 00	PB608	703 MOD REF POS
HD145483	22	05.7	16 09 10	-28 17	H	2	12546	L	0	10FEB82	12 27 01	012 00	PB608	503
HD145483	22	05.7	16 09 10	-28 17	H	3	16305	L	0	10FEB82	10 53 00	030 00	PB608	701 MOD REF POS
HD145483	22	05.7	16 09 10	-28 17	H	3	16306	L	0	10FEB82	11 55 23	020 00	PB608	501 MOD REF POS
NGC 6166	81	12.0	16 26 54	+39 40	L	1	1372	L	0	17NOV81	13 26 27	792 00	FB584	209 READ AT GSFC
NGC 6166	81	12.0	16 26 54	+39 40	L	1	1375	L	0	19NOV81	13 47 49	766 00	FB584	009 READ AT GSFC
NGC 6166	81	12.0	16 26 54	+39 40	L	3	15520	L	0	19NOV81	13 02 07	816 00	FB584	206 READ AT GSFC
HD148743	31	6.9	16 27 48	-07 24	L	2	12796	S	0	16MAR82	09 25 15	002 00	STAND	302 MN=477
HD148743	31	6.9	16 27 48	-07 24	L	2	12796	L	0	16MAR82	09 14 58	002 05	STAND	302 TRAILED R=0.16
HD148743	31	6.9	16 27 48	-07 24	L	3	16543	S	0	16MAR82	09 06 04	003 30	STAND	200
HD148743	31	6.9	16 27 48	-07 24	L	3	16543	L	0	16MAR82	08 49 59	004 10	STAND	200 TRAILED R=0.16
HD149363	23	7.8	16 31 48	-06 02	H	2	12696	L	0	01MAR82	05 55 13	060 00	MG541	702 2550A-2800A SAT
HD149363	23	7.8	16 31 48	-06 02	H	2	12697	L	0	01MAR82	07 46 10	030 00	MG541	503
HD149363	23	7.8	16 31 48	-06 02	H	3	16455	L	0	01MAR82	04 52 10	060 00	MG541	601 SOME SAT AT 1800A
HD149363	23	7.8	16 31 48	-06 02	L	3	16456	S	0	01MAR82	07 05 19	002 00	MG541	***
HD149363	23	7.8	16 31 48	-06 02	L	3	16456	L	0	01MAR82	07 01 40	000 40	MG541	601 4 PIX SAT AT 1300A
HD149757	12	02.6	16 34 24	-10 28	H	2	12532	S	0	08FEB82	12 11 06	000 30	VD538	301
HD149757	12	02.6	16 34 24	-10 28	H	3	16289	S	0	08FEB82	12 08 22	000 46	VD538	401
HD149757	12	02.6	16 34 24	-10 28	H	3	16290	S	0	08FEB82	12 37 42	001 05	VD538	701
HD149757	12	2.6	16 34 24	-10 28	H	3	16493	L	0	10MAR82	03 53 37	000 23	UK473	501

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP +CAM	IMAGE	APERT OB LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
NGC 6210	70	12.5	16 42 24	+23 53	L 3	16329	L 0	14FEB82	12 09 55	006 00	UK470	451
HD150798	47	1.9	16 43 21	-68 56	H 3	15494	L 0	13NOV81	08 26 03	000 00	UK462	079 EXP=1135 MIN,RD GSFC
-74 1569	12	10.2	16 44 27	-74 27	H 2	12050	L 0	24NOV81	15 52 17	110 00	UK464	504 MOD REF POS -40,-202
-74 1569	12	10.2	16 44 27	-74 27	H 3	15562	L 0	24NOV81	13 20 12	145 00	UK464	504 MOD REF POS -40,-202
HD152742	21	09.1	16 53 31	-42 52	L 2	12547	L 0	10FEB82	13 33 17	014 00	PB608	802
HZ HER	66	14.5	16 56 02	+35 25	L 2	11930	L 0	06NOV81	16 05 31	165 00	HR579	304 MICROPHONICS
HZ HER	59	13.0	16 56 02	+35 25	L 2	12114	L 0	10DEC81	12 16 09	020 00	UK475	202 4-MIN-HTR-WM-UP
HZ HER	59	13.6	16 56 02	+35 25	L 2	12774	L 0	12MAR82	05 18 01	050 00	UK473	304
HZ HER	66	14.5	16 56 02	+35 25	L 3	15419	L 0	06NOV81	13 21 07	060 00	HR579	231
HZ HER	66	14.5	16 56 02	+35 25	L 3	15420	L 0	06NOV81	14 53 06	067 00	HR579	221
HZ HER	66	14.5	16 56 02	+35 25	L 3	15421	L 0	06NOV81	18 54 59	052 00	HR579	211
HZ HER	59	13.0	16 56 02	+35 25	L 3	15699	L 0	10DEC81	11 31 17	040 00	UK475	220
HZ HER	59	13.6	16 56 02	+35 25	L 3	16516	L 0	12MAR82	04 22 40	050 00	UK473	230
HD156074	50	7.6	17 11 57	+42 10	L 2	12844	S 0	23MAR82	07 44 24	035 00	FQ606	403 MICROPHONICS=512
HD156074	50	7.6	17 11 57	+42 10	L 2	12844	L 0	23MAR82	06 45 42	055 00	FQ606	703
HD 60753	21	6.7	17 32 08	-50 28	L 3	15871	S 0	24DEC81	10 59 12	000 30	PHCAL	501
HD 60753	21	6.7	17 32 08	-50 28	L 3	15871	L 0	24DEC81	10 55 27	000 10	PHCAL	501
HD159378	53	08.6	17 32 39	033 24	L 2	12628	L 0	19FEB82	09 33 42	020 00	WE519	102 MICROPHONICS
HD159378	53	08.6	17 32 39	033 24	L 3	16376	L 0	19FEB82	09 01 55	015 00	WE519	101
HD159378	53	08.6	17 32 39	033 24	L 3	16376	S 0	19FEB82	08 42 20	008 00	WE519	101
HD 60753	21	6.7	17 32 81	-50 28	L 2	12208	S 0	24DEC81	10 52 08	000 21	PHCAL	502
HD 60753	21	6.7	17 32 81	-50 28	L 2	12208	L 0	24DEC81	10 49 08	000 07	PHCAL	502
HD161471	41	03.5	17 44 05	-10 07	L 2	12799	S 0	17MAR82	07 40 09	000 50	STAND	502 4-MIN-HTR-WM-UP
HD161471	41	03.5	17 44 05	-10 07	L 2	12799	L 0	17MAR82	07 33 18	000 27	STAND	702 TRAILED R=0.73
HD161471	41	3.5	17 44 05	-40 07	L 3	16544	L 0	16MAR82	10 13 29	016 40	STAND	701 TRAILED R=0.16
HD162732	22	06.4	17 48 45	+48 24	H 2	12530	L 0	08FEB82	09 58 58	022 00	VD538	503
HD162732	22	06.4	17 48 45	+48 24	H 3	16287	L 0	08FEB82	09 28 43	025 00	VD538	501
HD162714	53	06.7	17 49 58	-06 08	L 2	12629	L 0	19FEB82	11 04 53	020 00	WE519	402 MICROPHONICS
HD162714	53	06.7	17 49 58	-06 08	L 3	16377	S 0	19FEB82	10 41 20	008 00	WE519	101
HD162714	53	06.7	17 49 58	-06 08	L 3	16377	L 0	19FEB82	10 19 38	015 00	WE519	101
HD164284	20	04.8	17 57 47	+04 22	H 3	16291	S 0	08FEB82	13 21 12	004 30	VD538	501
HD166181	44	7.7	18 06 20	+29 41	L 2	12192	L 0	22DEC81	16 50 33	005 00	DV598	503 4-MIN-HTR-WM-UP
HD166181	44	7.7	18 06 20	+29 41	L 3	15833	L 0	22DEC81	14 17 14	150 00	DV598	331
IC 4776	70	11.2	18 42 34	-33 24	L 2	12764	L 0	11MAR82	05 14 31	030 00	SP573	551 MN=851
IC 4776	70	11.2	18 42 34	-33 24	H 2	12765	L 0	11MAR82	07 10 31	213 00	SP573	254
IC 4776	70	11.2	18 42 34	-33 24	L 3	16504	L 0	11MAR82	04 39 46	030 00	SP573	351
IC 4776	70	11.2	18 42 34	-33 24	L 3	16505	L 0	11MAR82	06 06 05	060 00	SP573	561
E141-G55	84	13.5	19 16 57	-58 46	L 2	11952	L 0	09NOV81	17 08 27	060 00	UK481	553 4-M HTR W-UP
E141-G55	84	13.5	19 16 57	-58 46	L 3	15468	L 0	09NOV81	16 04 19	060 00	UK481	351
NGC 6790	70	10.0	19 20 25	+01 25	L 2	11922	L 0	05NOV81	12 37 43	060 00	UK470	334 4-MIN HTR W-UP
NGC 6790	70	10.0	19 20 25	+01 25	L 2	11935	L 0	07NOV81	19 17 27	026 00	UK470	202
NGC 6790	70	10.0	19 20 25	+01 25	L 3	15411	L 0	05NOV81	13 41 44	090 00	UK470	361
NGC 6790	70	10.0	19 20 25	+01 25	L 3	15446	L 0	07NOV81	18 35 01	035 00	UK470	151
NOVA AQU	63	11.0	19 20 50	+02 24	L 2	12675	S 0	24FEB82	08 01 30	010 00	UKNVA	303
NOVA AQU	63	11.0	19 20 50	+02 24	L 2	12675	L 0	24FEB82	07 32 52	025 00	UKNVA	603
NOVA AQU	63	11.0	19 20 50	+02 24	H 2	12676	L 0	24FEB82	09 44 02	135 00	UKNVA	204
NOVA AQU	63	11.0	19 20 50	+02 24	L 2	12677	L 0	24FEB82	12 45 08	060 00	UKNVA	701
NOV AQU	63	11.7	19 20 50	+02 24	L 2	12703	L 0	02MAR82	07 04 02	025 00	UK448	442

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP +CAM	IMAGE	APERT OB LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
NOV AQU	63	11.7	19 20 50	+02 24	L 2	12704	L 0	02MAR82	08 49 03	040 00	UK448	452
NOVA AQU	55	12.9	19 20 50	+02 24	L 2	12826	L 0	21MAR82	08 06 43	127 00	TOO	344
NOVA AQU	63	11.0	19 20 50	+02 24	L 3	16415	L 0	24FEB82	08 55 35	040 00	UKNVA	201
NOVA AQU	63	11.0	19 20 50	+02 24	L 3	16415	S 0	24FEB82	08 16 20	025 00	UKNVA	551
NOVA AQU	63	11.0	19 20 50	+02 24	L 3	16416	L 0	24FEB82	12 02 12	040 00	UKNVA	551
NOV AQU	63	11.7	19 20 50	+02 24	L 3	16459	L 0	02MAR82	07 44 49	060 00	UK448	341
NOV AQU	63	11.7	19 20 50	+02 24	L 3	16460	L 0	02MAR82	09 33 12	075 00	UK448	451
NOVA AQU	55	12.9	19 20 50	+02 24	L 3	16590	L 0	21MAR82	04 02 52	240 00	TOO	352
HD182917	39	7.0	19 23 13	+50 08	H 2	12057	L 0	29NOV81	12 18 05	012 00	MH507	461
HD182917	39	7.0	19 23 13	+50 08	H 2	12058	L 0	29NOV81	13 28 08	045 00	MH507	672
HD182917	39	7.0	19 23 13	+50 08	L 3	15590	S 0	29NOV81	12 52 50	003 00	MH507	661
HD182917	39	7.0	19 23 13	+50 08	L 3	15590	L 0	29NOV81	12 41 36	006 00	MH507	771
HD182917	39	7.0	19 23 13	+50 08	L 3	15591	L 0	29NOV81	14 15 41	000 30	MH507	441
HD182917	39	6.0	19 23 13	+50 08	H 3	15638	L 0	03DEC81	16 48 14	060 00	PS615	462
HD185059	53	07.2	19 34 27	+20 13	L 3	16379	S 0	19FEB82	13 35 08	008 00	WE519	100
HD185059	53	07.2	19 34 27	+20 13	L 3	16379	L 0	19FEB82	13 16 53	015 00	WE519	100
NGC 6826	70	10.3	19 43 27	+50 24	L 2	12580	S 0	14FEB82	11 20 46	002 30	UK470	402 4-MIN-HTR-WM-UP
NGC 6826	70	10.3	19 43 27	+50 24	L 2	12580	L 0	14FEB82	11 16 10	001 30	UK470	502
NGC 6826	70	10.3	19 43 27	+50 24	L 3	16328	S 0	14FEB82	11 10 31	002 30	UK470	551
NGC 6826	70	10.3	19 43 27	+50 24	L 3	16328	L 0	14FEB82	11 00 27	001 30	UK470	551
HD187076	49	3.5	19 45 09	+18 25	H 2	12903	L 0	30MAR82	04 13 37	040 00	DR578	703 MN=758
HD187076	49	3.5	19 45 09	+18 25	H 3	16664	L 0	30MAR82	03 05 15	065 00	DR578	701
CI CYG	57	10.5	19 48 21	+35 33	L 2	12127	L 0	11DEC81	17 29 51	017 00	DP552	351
CI CYG	57	10.5	19 48 21	+35 33	L 3	15713	L 0	11DEC81	16 35 22	050 00	DP552	252
HD187921	53	07.2	19 49 28	+27 20	L 3	16378	S 0	19FEB82	12 28 37	010 00	WE519	100
HD187921	53	07.2	19 49 28	+27 20	L 3	16378	L 0	19FEB82	12 02 58	020 00	WE519	100
HD190066	20	6.5	20 00 12	+22 01	H 2	12032	L 0	22NOV81	15 23 46	010 00	UK425	501 4-M HTR W-UP
HD190066	20	6.5	20 00 12	+22 01	H 3	15551	L 0	22NOV81	15 37 23	060 00	UK425	601
HD190073	30	7.8	20 00 34	+05 35	L 2	11976	L 0	14NOV81	13 10 29	001 30	HS559	452 MICROPHONICS
HD190073	30	7.8	20 00 34	+05 35	H 2	11977	L 0	14NOV81	13 51 32	090 00	HS559	365 4-MIN HTR W-UP
HD190073	30	7.8	20 00 34	+05 35	L 3	15498	L 0	14NOV81	13 15 55	006 00	HS559	451
HD190073	30	7.8	20 00 34	+05 35	H 3	15499	L 0	14NOV81	15 25 41	262 00	HS559	352
HD190248	44	3.6	20 03 50	-66 19	H 2	12917	L 0	31MAR82	05 32 07	022 00	UK494	603
HD192577	47	3.7	20 12 03	+46 35	H 3	16665	L 0	30MAR82	05 21 29	015 00	DR578	701
HD192273	20	8.3	20 14 05	-69 35	H 1	1498	L 0	18MAR82	04 41 48	020 00	UK457	402
HD192273	20	8.3	20 14 05	-69 35	H 3	16561	L 0	18MAR82	05 06 38	050 00	UK457	501
NOVA VUL	63	8.7	20 19 01	+21 25	L 2	12126	L 0	11DEC81	15 41 18	008 00	DP552	501
HD199478	25	5.7	20 54 08	+47 14	H 2	12033	L 0	22NOV81	16 58 53	020 00	UK425	501
HD199478	25	5.7	20 54 08	+47 14	H 3	15552	L 0	22NOV81	17 32 00	135 00	UK425	601
HD200120	26	4.2	20 58 07	+47 20	L 2	11951	L 0	09NOV81	13 08 53	000 01	UK481	552 4-M HTR W-UP
HD200120	20	04.7	20 58 07	+47 20	L 2	12457	S 0	27JAN82	09 30 02	000 02	VD538	502
HD200120	20	04.7	20 58 07	+47 20	L 2	12457	L 0	27JAN82	09 26 00	000 01	VD538	502
HD200120	20	04.7	20 58 07	+47 20	H 2	12458	L 0	27JAN82	11 02 51	001 20	VD538	502
HD200120	20	04.7	20 58 07	+47 20	L 2	12528	S 0	08FEB82	07 24 39	000 02	VD538	402
HD200120	20	04.7	20 58 07	+47 20	L 2	12528	L 0	08FEB82	07 21 47	000 01	VD538	402
HD200120	20	04.7	20 58 07	+47 20	H 2	12529	L 0	08FEB82	08 24 03	001 30	VD538	502
HD200120	20	04.7	20 58 07	+47 20	H 3	13162	L 0	28JAN82	11 41 55	001 10	UK481	501
HD200120	26	4.2	20 58 07	+47 20	H 3	15465	L 0	09NOV81	13 12 30	001 10	UK481	551

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP	+CAM	IMAGE	APERT OB	LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
HD200120	26	4.7	20 58 07	+47 20	H	3	15698	L	0	10DEC81	10 34 51	001 10	UK475	501
HD200120	20	04.7	20 58 07	+47 20	L	3	16128	S	0	27JAN82	09 37 57	000 02	VD538	609MISSED LAST READ=ERAS
HD200120	20	04.7	20 58 07	+47 20	L	3	16128	L	0	27JAN82	09 34 04	000 01	VD538	609MISSED LAST READ=ERAS
HD200120	20	04.7	20 58 07	+47 20	L	3	16129	S	0	27JAN82	10 37 17	000 02	VD538	501
HD200120	20	04.7	20 58 07	+47 20	L	3	16129	L	0	27JAN82	10 32 20	000 01	VD538	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16130	L	0	27JAN82	11 07 35	001 10	VD538	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16132	L	0	27JAN82	12 47 29	001 10	VD538	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16134	L	0	27JAN82	14 18 38	001 10	VD538	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16136	L	0	27JAN82	15 43 40	001 10	UD538	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16158	L	0	28JAN82	09 03 01	001 10	UK481	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16160	L	0	28JAN82	10 24 12	001 10	UK481	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16164	L	0	28JAN82	12 54 32	001 10	UK481	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16166	L	0	28JAN82	14 13 37	001 10	UK481	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16168	L	0	28JAN82	15 34 50	001 10	UK481	501
HD200120	20	04.7	20 58 07	+47 20	L	3	16285	S	0	08FEB82	07 31 29	000 02	VD538	401
HD200120	20	04.7	20 58 07	+47 20	L	3	16285	L	0	08FEB82	07 28 46	000 01	VD538	501
HD200120	20	04.7	20 58 07	+47 20	H	3	16286	L	0	08FEB82	08 28 13	001 30	VD538	501
NGC 7008	70	00.0	20 59 06	+54 21	L	2	11934	L	0	07NOV81	16 17 33	090 00	UK470	504 4=M HTR W=UP MN=594
HD202349	20	7.4	21 12 06	+37 34	H	2	12695	L	0	01MAR82	04 04 00	013 00	MG541	500
HD202349	20	7.4	21 12 06	+37 34	H	3	16454	L	0	01MAR82	03 45 36	014 00	MG541	500
HD202444	40	4.1	21 12 48	+37 50	L	2	12144	S	0	13DEC81	16 33 08	000 11	VILSP	501
HD202444	40	4.1	21 12 48	+37 50	L	2	12144	L	0	13DEC81	16 30 17	000 10	VILSP	601
HD202444	40	4.1	21 12 48	+37 50	L	3	15738	S	0	13DEC81	16 38 55	001 31	VILSP	500
HD202444	40	4.1	21 12 48	+37 50	L	3	15738	L	0	13DEC81	16 35 46	001 00	VILSP	500
HD202444	40	4.1	21 12 48	+37 50	L	3	15739	L	0	13DEC81	17 06 57	036 15	VILSP	731
HD203532	21	06.3	21 25 58	-82 54	H	2	12649	L	0	21FEB82	07 59 28	025 00	MG574	603 4=MIN=HTR=WM=UP
HD203532	21	06.3	21 25 58	-82 54	H	3	16398	L	0	21FEB82	06 44 14	070 00	MG574	701
HD203532	21	06.3	21 25 58	-82 54	H	3	16399	L	0	21FEB82	08 33 56	035 00	MG574	501
M 15	83	6.0	21 27 36	+11 57	H	1	1388	L	0	26NOV81	13 32 00	800 00	UK464	309 READ AT GSFC
M 15	83	6.0	21 27 36	+11 57	L	3	15571	L	0	26NOV81	13 34 03	795 00	UK464	308 READ AT GSFC
M 15	83	6.3	21 27 54	+11 57	H	1	1381	L	0	25NOV81	12 10 11	830 00	CL571	409 READ AT GSFC
M 15	83	6.3	21 27 54	+11 57	H	3	15570	L	0	25NOV81	12 32 34	830 00	CL571	309 READ AT GSFC
HD204862	25	6.0	21 28 44	+11 55	H	1	1387	L	0	26NOV81	12 02 41	013 20	UK464	402 TRAILED IN DISP DIRN
2235-148	85	15.5	21 35 01	-14 46	L	3	15673	L	0	07DEC81	11 01 26	406 00	JB513	343
2141+175	85	16.0	21 41 14	+17 30	L	3	15818	L	0	20DEC81	09 18 46	920 00	UK427	379 AQUIRED,READ AT GSFC
HD206901	41	4.1	21 42 23	+25 25	L	2	12142	S	0	13DEC81	14 31 58	000 17	VILSP	401
HD206901	41	4.1	21 42 23	+25 25	L	2	12142	L	0	13DEC81	14 28 30	000 12	VILSP	601
HD206901	41	4.1	21 42 23	+25 25	H	2	12143	L	0	13DEC81	15 16 14	013 30	VILSP	601
HD206901	41	4.1	21 42 23	+25 25	L	3	15737	S	0	13DEC81	14 40 11	002 10	VILSP	300
HD206901	41	4.1	21 42 23	+25 25	L	3	15737	L	0	13DEC81	14 35 10	002 00	VILSP	500
+28 4211	16	10.5	21 48 56	+28 38	L	1	1416	L	0	24DEC81	15 38 17	000 50	PHCAL	502
+28 4211	16	09.6	21 48 56	+28 38	L	1	1440	S	0	14JAN82	12 41 10	002 30	PHCAL	502
+28 4211	16	09.6	21 48 56	+28 38	L	1	1440	L	0	14JAN82	12 37 03	000 50	PHCAL	502
+28 4211	16	09.6	21 48 56	+28 38	H	1	1441	L	0	14JAN82	13 21 45	068 00	PHCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1443	S	0	18JAN82	09 32 25	002 30	UKCAL	602
+28 4211	16	10.5	21 48 56	+28 38	L	1	1443	L	0	18JAN82	09 29 06	000 50	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1444	L	0	18JAN82	10 17 30	000 10	UKCAL	302
+28 4211	16	10.5	21 48 56	+28 38	L	1	1445	L	0	18JAN82	10 54 30	000 25	UKCAL	302

OBJECT	CL	MAG	RT ASCN HR MN SC	DECLN DEG MN	DISP	+CAM	IMAGE	APERT OB	LG	DATE	START HR MN SC	LENGTH MIN SC	PROG	COMMENT
+28 4211	16	10.5	21 48 56	+28 38	L	1	1446	S	0	18JAN82	11 29 13	002 00	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1446	L	0	18JAN82	11 26 20	000 50	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1447	L	0	18JAN82	12 24 08	001 40	UKCAL	802
+28 4211	16	10.5	21 48 56	+28 38	L	1	1448	L	0	18JAN82	12 58 02	001 15	UKCAL	702
+28 4211	16	10.5	21 48 56	+28 38	L	1	1449	L	0	18JAN82	13 31 28	000 50	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1450	L	0	18JAN82	14 00 21	000 50	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1451	L	0	18JAN82	14 29 11	000 50	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1452	L	0	18JAN82	14 57 26	001 15	UKCAL	702
+28 4211	16	10.5	21 48 56	+28 38	L	1	1453	S	0	21JAN82	09 39 29	001 40	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1453	L	0	21JAN82	09 35 34	000 50	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1454	S	0	21JAN82	10 28 34	001 40	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1454	L	0	21JAN82	10 24 02	000 50	UKCAL	502 MOD REF POS
+28 4211	16	10.5	21 48 56	+28 38	L	1	1454	L	0	21JAN82	10 17 17	000 50	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1454	L	0	21JAN82	10 13 03	000 50	UKCAL	502 MOD REF POS
+28 4211	16	10.5	21 48 56	+28 38	L	1	1455	S	0	21JAN82	11 17 20	001 40	UKCAL	502
+28 4211	16	10.5	21 48 56	+28 38	L	1	1455	L	0	21JAN82	11 07 14	002 47	UKCAL	502 TRAILED R=0.12
+28 4211	16	10.5	21 48 56	+28 38	H	1	1461	L	0	25JAN82	09 11 29	075 00	PHCAL	503
+28 4211	16	10.5	21 48 56	+28 38	L	1	1462	S	0	25JAN82	11 07 52	002 30	PHCAL	603
+28 4211	16	10.5	21 48 56	+28 38	L	1	1462	L	0	25JAN82	10 58 20	000 50	PHCAL	503
+28 4211	16	10.5	21 48 56	+28 38	L	2	12141	L	0	13DEC81	13 24 45	001 00	PHCAL	500
+28 4211	16	10.5	21 48 56	+28 38	L	2	12141	S	0	13DEC81	13 18 30	003 00	PHCAL	500
+28 4211	16	10.5	21 48 56	+28 38	L	2	12210	L	0	24DEC81	14 13 39	001 00	PHCAL	402
+28 4211	16	10.5	21 48 56	+28 38	L	3	15736	L	0	13DEC81	13 16 28	000 26	PHCAL	501
+28 4211	16	10.5	21 48 56	+28 38	L	3	15736	S	0	13DEC81	13 13 18	001 00	PHCAL	501
+28 4211	16	10.5	21 48 56	+28 38	L	3	15873	L	0	24DEC81	14 17 41	000 26	PHCAL	500
+28 4211	16	10.5	21 48 56	+28 38	H	3	16068	L	0	18JAN82	09 41 18	046 00	UKCAL	500 WRONG PEDESTAL LEVEL
+46 3471	34	10.1	21 50 39	+46 59	H	2	12378	L	0	20JAN82	08 50 18	413 00	FP534	229
+46 3471	34	10.1	21 50 39	+46 59	L	2	12418	L	0	24JAN82	08 32 23	030 00	FP534	564 4-M-HTR-WM-UP MN=780
+46 3471	34	10.1	21 50 39	+46 59	L	2	12419	L	0	24JAN82	09 32 42	143 00	FP534	707 4-MIN-HTR-WM-UP
HD212593	25	4.6	22 22 29	+49 13	H	2	12005	L	0	20NOV81	17 18 13	005 00	UK425	502
HD212593	25	4.6	22 22 29	+49 13	H	3	15533	L	0	20NOV81	16 41 55	030 00	UK425	701
HD212666	25	8.5	22 22 54	+51 53	H	2	12007	L	0	20NOV81	19 11 16	036 00	UK425	303 MICROPHONICS
HD213558	32	3.8	22 29 13	+50 01	H	2	12006	L	0	20NOV81	18 25 17	004 00	UK425	603
HD213558	32	3.8	22 29 13	+50 01	H	3	15534	L	0	20NOV81	17 55 32	018 00	UK425	800
HD214680	13	04.9	22 37 01	+38 47	L	1	1456	L	0	21JAN82	12 07 07	000 02	UKCAL	502 TRAILED R=9.9
HD214680	13	04.9	22 37 01	+38 47	L	1	1457	L	0	21JAN82	12 49 58	000 02	UKCAL	502 TRAILED R=9.9
HD214539	32	7.4	22 37 18	-67 57	H	3	16457	L	0	01MAR82	08 53 53	113 00	MG541	501
RZ GRU	63	12.5	22 44 19	-43 01	L	2	11916	L	0	04NOV81	16 15 25	020 00	JK575	501
RZ GRU	63	12.5	22 44 19	-43 01	L	3	15385	L	0	04NOV81	15 41 24	030 00	JK575	501
2251-179	84	14.4	22 51 26	-17 51	L	2	12106	L	0	09DEC81	12 05 33	080 00	JB526	343
2251-179	84	14.4	22 51 26	-17 51	L	3	15690	L	0	09DEC81	11 23 36	040 00	JB526	250
2251-179	84	14.4	22 51 26	-17 51	L	3	15691	L	0	09DEC81	13 33 44	255 00	JB526	471
2302-089	84	14.0	23 02 07	-08 57	L	3	15621	L	0	02DEC81	17 23 20	060 00	UK491	341 READ AT GSFC
L791-40	37	13.8	23 17 06	-17 22	L	2	12151	L	0	14DEC81	16 24 15	079 00	DK518	403 4-MIN-HTR-WM-UP
2326-478	85	16.0	23 26 34	-47 47	L	1	1371	L	0	16NOV81	13 14 00	371 32	UK474	344
2337+123	63	13.5	23 37 51	+12 21	L	2	12306	L	0	08JAN82	09 06 22	030 00	UK404	303 4-MIN-HTR-WM-UP
2337+123	63	13.5	23 37 51	+12 21	L	3	15987	L	0	08JAN82	09 40 12	040 00	UK404	401

TAPE ARCHIVE RETRIEVAL

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☐ Images+extracted spectra
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- Low resolution
  - L. Aperture: 5 files/image
  - L+S Aperture: 8 files/image

☐ Extracted spectra only
- High resolution: 1 file/image (3rd)
- Low resolution
  - L. Aperture: 2 files/image (4th & 5th)
  - L+S Aperture: 4 files/image (4th,5th,7th 8th)

Requested images:

Camera #	Image #	VILSPA/ GSFC	Camera #	Image #	VILSPA/ GSFC	Camera #	Image #	VILSPA/ GSFC

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ERRATA:

ESA IUE Newsletter N° 9, page 11

The formula given to calculate the β angle of the S/C is erroneously given for coordinates of Anti Sun input.

The correct formula is:

$$\cos \beta = -\sin \delta \sin \delta_{\odot} - \cos \delta \cos \delta_{\odot} \cos (\alpha-\alpha_{\odot})$$

with:

α, δ : coordinates of target

and:

$\delta_{\odot}$ $\delta_{\odot}$: coordinates of the sun

Thanks to the users who, disturbed by their results, pointed this error out to us.

Errors in Foregoing VILSPA Log

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

Dr. Chris Blades
UK Resident Astronomer
Villafranca Satellite Tracking Station
Apartado 54065
Madrid, Spain

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