

## CHRONOLOGY OF MODIFICATIONS TO IUESIPS OUTPUT PRODUCTS

The following table lists those modifications to the IUESIPS data reduction system which have had an effect on the output products delivered to the Guest Observer (G.O.). The changes made are listed in strict chronological order for GSFC and approximate chronological order for VILSPA. The table covers the period 7th April 1978 to 5th November 1980 and gives the effective dates at GSFC and VILSPA of each modification, along with a brief explanation of its nature. Those modifications that are not applicable to, or were not made at, an installation are indicated by a dash in the date column. A date entry may be left blank for any of the following three reasons:

- (i) the change has not been made, but may be made in the future;
- (ii) the modification concerns reduction of calibration images, which are not processed by VILSPA;
- (iii) for some changes prior to January 1979 the effective implementation data at VILSPA is not known.

Modifications made only at VILSPA are grouped together at the end of the table.

This table replaces an earlier version published in ESA IUE Newsletter # 6 (April 1980). The ground stations have agreed that it will in future be updated at six month intervals with closing dates of March 31 and September 30 in each year. The updates will be published in the newsletters.

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Chronology of Modification to IUESIPS  
Output Produces (1 of 11).

GSFC	-	VILSPA	Modification
Date			
05 Apr 78	-	17 Apr 78	. Eliminate auto-scaling of net ripple-corrected Calcomp plot (set $F_{MAX}=10^5$ ).
-----	-	17 Apr 78	. LWR ripple parameters $K=231\ 075$ and $A=0.09$ used.
20 Apr 78	-	17 Apr 78	. Extend SWP low dispersion extraction to $\lambda=2000\ \text{\AA}$ .
25 Apr 78	-	17 Apr 78	. Change $F_{MAX}$ to $2 \times 10^5$ for net ripple-corrected plot.
04 May 78	-	14 Jun 78	. Add processing dates to Calcomp plots.
08 May 78	-	14 Jun 78	. Eliminate "CUTMERGE" step from high dispersion processing.
10 May 78	-	14 Jun 78	. Eliminate plot of unsmoothed background in high dispersion.
15 May 78	-	14 Jun 78	. Determine dispersion relations via new "WAVECAL2" (uses fractional pixel locations).
18 May 78	-	14 Jun 78	. Correct 1-pixel error in "OSCRIBE" overlay program.
22 May 78	-	14 Jun 78	. Use new averaged ITFs (contains SWP errors; see 7 July 1979).
22 May 78	-	14 Jun 78	. Use "EXTLOW" for low dispersion extraction instead of "COMPARE".

Chronology of Modification to IUESIPS  
Output Products (2 of 11).

GSFC - VILSPA Date	Modification
22 May 78 - 14 Jun 78	. Accomplish registration by shifting dispersion constants instead of image.
22 May 78 - 14 Jun 78	. Correct 2-pixel error in reseau flagging.
22 May 78 - 14 Jun 78	. Flag "saturated pixels" (DN=255) in plots, and change to plotting without lifting pen.
01 Jun 78 -	. Improve reseau flagging in smoothed spectra.
09 Jun 78 -	. Use reseaux measured on low dispersion image for both low and high dispersion wavelength calibrations (SWP).
16 Jun 78 - 25 Jan 79	. Delete 55-line image segment from photowrites (low dispersion).
20 Jun 78 - 25 Jan 79	. Produce one doubly-oscribed photowrite image for the double-aperture case, instead of 2 singly-oscribed images.
20 Jun 78 - 25 Jan 79	. Change LWR high dispersion oscribe overlay to pass through order 83 (Mq 2795, 2803).
01 Jul 78 -	. Use reseaux measured on low dispersion image for both low and high dispersion wavelength calibrations (LWR).
06 Jul 78 - 25 Jan 79	. Create all oscribes on "GEOM'D" images (not photometrically corrected images).

Chronology of Modification to IUESIPS  
Output Products (3 of 11).

GSFC - VILSPA

<u>Date</u>	<u>Modification</u>
06 Jul 78 - 14 Jun 78	. Change LWR ripple parameters to K=231,150 A=0.09 instead of K=231,300 A=0.08.
----- - 06 Jul 78	. Change high dispersion Calcomp from 2 Å/inch to 1 Å/cm.
01 Aug 78 - 17 Apr 78	. Create "extended source" reduction capability in low dispersion (HT=15, DIST=11).
04 Aug 78 -	. Change IUEPLOT to streamline x-axis and plot key to symbols used.
08 Aug 78 -	. Correct bug in "ETOEM" to transmit image number to extracted spectrum files.
09 Aug 78 - 07 Sep 78	. Begin using improved low dispersion wavelength calibration line libraries.
15 Aug 78 -	. Change standard LWR pixel offsets to transfer dispersion relations from small-to-large aperture as follows:  $\left. \begin{array}{l} \Delta S = -17.5 \text{ samples} \\ \Delta L = +19.5 \text{ lines} \end{array} \right\} \text{replaces} \left\{ \begin{array}{l} \Delta S = -21.1 \text{ samples} \\ \Delta L = +25.1 \text{ lines} \end{array} \right.$
17 Aug 78 - 01 Feb 79	. For "extended source" reduction, change min and max plotted fluxes for "log net" to 3.0 and 6.0 (replacing 2.0 and 5.0).

Chronology of Modification to IUESIPS  
Output Products (4 of 11).

GSFC - VILSPA Date	Modification
09 Sep 78 - 25 Jan 79	. Begin using automatic order-finding software (DSPCON), where possible, to determine thermal registration.
25 Sep 78 - 25 Jan 79	Move background location to "DIST=11" for low dispersion "point-source" reductions in large aperture (e.g., suppress geocoronal Ly $\alpha$ ).
09 Nov 78 - _____	. 2 Å/inch high dispersion Calcomp eliminated except by special authorization.
10 Dec 78 - 07 Mar 79	. Photometrically correct only a circular region of image ("FICOR5") in SWP high and low dispersion, LWR low dispersion.
13 Dec 78 - 25 Jan 79	. Change "EXTLOW" and DATEXTH2 to write line and sample shifts into label in auto registration case.
13 Dec 78 - 05 Jun 79	. Change "EXTLOW" to write "omega", "hback" and "distance" into the labels of extracted spectra.
19 Dec 78 - 14 Feb 79	. Eliminate processing of order 65 in SWP high dispersion.

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Output Products (5 of 11).

GSFC - VILSPA

<u>Date</u>	<u>Modification</u>
03 Jan 79 - 07 Mar 79	. Photometrically correct only a circular region of image ("FICOR5") in LWR high dispersion (FICOR5 now used throughout).
30 Mar 79 - _____	. 10 Å <sup>o</sup> /inch high dispersion Calcomp eliminated in cases where 2 Å/inch plot is authorized.
05 Apr 79 - 05 Jun 79	. Correctly enter line & sample shifts into label for the case of MANUAL registration.
05 Apr 79 - Sep 78	. Suppress excess label-plotting on Calcomp plots.
25 May 79 -	. Add plotter registration benchmark symbols at start and end of each plot.
02 Jun 79 - _____	. Add tape contents summary log at end of G.O. tape labelprints.
08 Jun 79 - 12 Jul 79	. Correct error in integer-scaling routine ("ITOE") for extracted-spectrum files, so that all negative fluxes are converted properly.
15 Jun 79 - 10 Jan 80	. Create "extended source" reduction capability in high dispersion (HT=7).
19 Jun 79 -	. Eliminate redundant tape files in the case of calibration-image reduction.

Chronology of Modification to IUESIPS  
Output Products (6 of 11).

GSFC - VILSPA

<u>Date</u>	<u>Modification</u>
30 Jun 79 - 01 Feb 80	. Begin plotting high dispersion net ripple-corrected spectra with "CUTMERGE" to suppress noise at ends of orders and allow auto-scaling of flux axis (applies ONLY to Calcomp plots; G.O. tapes unchanged).
02 Jul 79 - _____	. Begin writing identifying header file on G.O. tapes (for data management accounting purposes).
07 Jul 79 - 07 Aug 79	. Correct error in SWP ITF.
08 Jul 79 - _____	. Change $\Delta S$ and $\Delta L$ pixel offsets for large aperture dispersion relations to correspond to actual object placement point. (See NASA IUE NEWSLETTER No. 5).
27 Jul 79 - _____	. Begin use of new Calcomp plotter hardware. Plots are more precise and on wider paper, but still 10-inch full scale grid.
06 Aug 79 - _____	. Change $\Delta S$ and $\Delta L$ pixel offsets for large aperture dispersion relations to correspond to physical center of large aperture. (In coordination with telescope operations change, so that offsets still correspond to object placement. Change refers to all data acquired as of 1 August 1979. See NASA IUE NEWSLETTER No. 5).

Chronology of Modification to IUESIPS  
Output Products (7 of 11).

GSFC - VILSPA

Date	Modification
28 Sep 79 - 01 Feb 80	. Modify the program "OSCRIBE" to generate overlay more efficiently and suppress overlay entirely outside of tube face. (See 11 Nov 79 entry).
08 Oct 79 - _____	. Begin producing computer-generated GO data product receipts.
11 Oct 79 - _____	. Upgrade tape contents summary log at end of GO tape labelprints to include additional information.
30 Oct 79 - _____	. Begin use of mean dispersion constants for low dispersion spectra. (See NASA IUE NEWSLETTER No. 7).
11 Nov 79 - 01 Feb 80	. Correct problem in version of OSCRIIBE implemented 28 Sept 79 in order to place overlay over entire image for large aperture spectra.
23 Nov 79 - _____	. Begin using improved high dispersion wavelength calibration line libraries.
_____ - 12 Jul 79	. Begin producing absolutely calibrated net spectra in low dispersion (using original A & A calibration).
08 Jan 80 - 02 Apr 80	. Begin producing absolutely calibrated net spectra in low dispersion (see NASA IUE NEWSLETTER No. 8). Using LWR calibration revised at 1900 Å.
08 Jan 80 - 01 Sep 78	. Eliminate 10 Å/inch plot of net ripple corrected spectrum in high dispersion and make 2 Å/inch plot of same the standard.



Chronology of Modification to IUESIPS  
Output Product (8 of 11).

GSFC - VILSPA

Date	Modification
08 Jan 80 - 01 Feb 80	. Begin using FICOR6 photometric correction program which <u>extrapolates</u> the ITF at or near the upper limit. (See NASA IUE NEWSLETTER No. 8).
08 Jan 80 -	. Change symbol key on Calcomp plots to allow "+" to mean either "saturated, or limited extrapolation".
01 Mar 80 - 06 Mar 80	. Begin using EXTLOW2 to place background extraction further from center of order by a factor of $\sqrt{2}$ . (See NASA IUE NEWSLETTER No. 9).
05 Apr 80 -	. Begin using further improved high dispersion wavelength calibration line libraries.
18 Apr 80 -	. Begin using improved cross-correlation template for large reseau in FNDRES and add 2 more reseaux in LWR and 3 more reseaux in SWP.
31 May 80 -	. Begin finding reseaux on TFLOOD images instead of low dispersion platinum-plus-TFLOOD images.
18 Jul 80 -	. Begin use of mean reseau sets and mean high and low dispersion constants. (See NASA IUE NEWSLETTER No. 11).

Chronology of Modification to IUESIPS  
Output Products (9 of 11).

GSFC - VILSPA

Date	Modification
18 Aug 80 -	. Correct two minor errors in automatic registration programs DSPCON and DCSHIFT: properly convert integer pixel values to real values, and properly generate a perpendicular shift.
28 Aug 80 -	. Begin use of <u>mean</u> positions of lines to start preliminary wavelength solutions.
28 Aug 80 -	. Correct the OSCRIIBE problem for large aperture spectra (see 11 Nov. 79 entry) which inadvertantly infiltrated production system on 30 Jul 80 when program was recompiled for system reasons.
29 Aug 80 -	. Begin using final improved versions of high dispersion wavelength calibration line libraries.
18 Sep 80 - 30 Sep 80	. Change program ETOEM to correctly write 5-digit image sequence numbers in scale-factor record ("record zero") of extracted spectra.
03 Nov 80 -	. Begin use of new low dispersion software (See NASA IUE NEWSLETTER No. 12).

Chronology of Modification to IUESIPS  
Output Products (10 of 11).

GSFC	-	VILSPA	
Date			Modification
03 Nov 80	-		. Modify manual registration program REGISTER (new name = REG) to calculate shifts which are exactly perpendicular to the dispersion from operator inputs.
03 Nov 80	-		. Flag shifts as either "manual" or "auto" in image headers in new <u>low dispersion</u> software.
03 Nov 80	-	_____	. Change labelprinting program to use new low-dispersion file nomenclature; use "PI" instead of "GPI" even for <u>high dispersion</u> photometrically corrected image (still old software).
03 Nov 80	-		. Put scheme name in output file labels in high and low dispersion.
05 Nov 80	-		. Flag shifts as either "manual" or "auto" in image headers in current <u>high dispersion</u> software.
	-	12 Jul 79	. Begin plotting all spectra in histogram style.
	-	11 Oct 79	. Provide an option to ignore Geocoronal Lyman $\alpha$ in scaling SWP low dispersion net plots.

Chronology of Modification to IUESIPS  
Output Products (11 of 11).

GSFC - VILSPA

Date	Modification
- 16 Nov 79	. Correct error in printer output from "EXTLOW" so gross-background given with correct sign.
- 10 Jan 80	. Write camera, image and aperture identifier on all plots.
- 28 Feb 80	. Produce plots on narrow paper as standard, wide paper available by special request.
- 17 Apr 80	. Replace program 'CUTMERGE' by program 'CORTAME' which only cuts bad data from orders and leaves some order overlap on plots.
- 17 Apr 80	. Install restructured plot program 'NEWPLOT'. No change to plots but printer output messages now clearer and correct.