

Chronology of Modifications to IUESIPS Output Products: 1985 - 1993

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The IUE Spectral Image Processing System (IUESIPS) has continued to evolve, though it has been in use since 1978. This short report documents the changes to the processing system since the beginning of 1985. Previous reports list earlier modifications (Turnrose, Thompson, and Gass, 1984; Gass and Thompson, 1985).

The following table lists all changes to IUESIPS made since the beginning of 1985 which can affect the output data files. These changes affect the "new" (implicit geometric correction, higher sampling frequency) IUESIPS software implemented in 1981-1982. The software is described in the IUE Image Processing Information Manual (Turnrose and Thompson, 1984). The most significant enhancements since 1984 are the following; the noted articles describe the changes in detail and item numbers in the table are given.

- The extended line-by-line file in low dispersion (Munoz Peiro 1985) provides a higher sampling frequency in the spatial direction (*item 129*).
- The new and improved (1984) LWP ITF and absolute calibration (Cassatella, Lloyd, and Riestra 1988; Cassatella *et al.* 1992) were implemented (*item 141*).
- The absolutely calibrated record was added to the high dispersion extracted spectrum file (Martin 1990) (*item 152*).

In addition, there have been several other enhancements and calibration updates of note.

- The Julian Date of the observation was added to Record Zero (Gass 1986) (*item 125*).
- The heliocentric time correction was added to Record Zero (Gass 1986) (*item 134*).
- The wavelength calibration was updated (Thompson 1988) (*item 138*).
- The SWP ripple correction was improved (Grady and Garhart 1989) (*item 150*).

In 1988 the NASA IUESIPS system was moved to the VAX VMS environment from the Sigma-9 operations computer (*item 142*). The output data are compatible with

data processed by VILSPA on their Telefile (a Sigma-9 clone) computer, within narrow tolerances (Nichols-Bohlin 1988). The most notable difference is that the program names in the processing history of the image header are changed. As a result of the software effort, a few bugs in the original IUESIPS software were uncovered (*items 132, 136, 139, 140, 146, 153*; see also Nichols-Bohlin 1987). In addition, a few small bugs in the VAX IUESIPS software were found and fixed (*items 148, 149, 151, 155*). We note that VILSPA is currently moving their IUESIPS processing to a VAX VMS system as well.

If you have any questions about these changes or would like a copy of the IUE Image Processing Information Manual, please let us know. You can contact Cathy Imhoff at IUEGTC::IMHOFF (imhoff@iuegtc.dnet.nasa.gov) or call (301) 794-1470.

References

Cassatella, A., Gonzalez-Riestra, R., Imhoff, C., Oliverson, N., and Lloyd, C. 1992, *Astron. Ap.* **256**, 309.

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Grady, C. A., and Garhart, M. 1989, *NASA IUE Newsletter*, No. 37, pg. 102.

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Munoz Peiro, J. R. 1985, *NASA IUE Newsletter*, No. 27, pg. 27.

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Thompson, R. W. 1988, *NASA IUE Newsletter*, No. 35, pg. 108.

Turnrose, B. E., and Thompson, R. W. 1984, *International Ultraviolet Explorer Image Processing Information Manual - Version 2.0*, CSC/TM-84/6058.

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Jan. 1, 1985 - Jan. 15, 1993

<u>No.</u>	<u>Date</u>	<u>Modification</u>
125	10 Jan 1985 (GSFC-low) 04 Apr 1985 (GSFC-high) 10 Jun 1985 (VILSPA)	• Include Julian Date in header label and in record zero (entries 38 and 39).
126	24 Apr 1985 (GSFC) N/A (VILSPA)	• Fix label appendage to show original exposure time value if that value was zero (exposure time not originally recorded).
127	29 Aug 1985 (GSFC) 24 Apr 1986 (VILSPA)	• Correct truncated LWP high dispersion ripple constant in image header label.
128	01 Oct 1985 (GSFC-low) 29 Aug 1985 (GSFC-high) 10 Jun 1985 (VILSPA)	• Correct POSTHI and ESPECL to include the negative sign for targets with declinations in the range of -1 to 0.
129	01 Oct 1985 (GSFC) 01 Oct 1985 (VILSPA)	• Replace program SPECLO by a derivative program called ESPECL. The new program retains all 110 pseudo-orders for output to a file referred to as the "extended line-by-line" (ELBL).
130	01 Oct 1985 (GSFC) 01 Oct 1985 (VILSPA)	• Correct units of record zero slit height and background distance to pixels times 100, as documented in IUE Image Processing Information Manual 2.0.
131	15 Nov 1985 (GSFC) 24 Apr 1986 (VILSPA)	• Expand bright spot flagging for low dispersion images to permit more than 192 bright spots to be flagged.
132	30 Jan 1986 (GSFC) 24 Apr 1986 (VILSPA)	• Modify PHOTOM to extrapolate ITF values only when required.

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| 133 | 31 Jan 1986 (GSFC)
N/A (VILSPA) | ● Restore "Data from Small Aperture" message to header labels. |
| 134 | 17 Mar 1986 (GSFC)
06 Jun 1986 (VILSPA) | ● Modify POSTHI and ESPECL to calculate heliocentric time corrections to the Julian Date of observation. Correction can be found in entry 40 of record zero. |
| 135 | 08 May 1986 (GSFC)
N/A (VILSPA) | ● Modify label appendage program to include exposure time properly. |
| 136 | 20 May 1987 (GSFC)
12 Aug 1987 (VILSPA) | ● Revise ripple correction. The ripple correction was incorrectly implemented and documented in Version 2.0. |
| 137 | 29 May 1987 (GSFC)
N/A (VILSPA) | ● Modify ESPECL to use correct Goddard image numbers for label information validity cutoff dates. |
| 138 | 13 Oct 1987 (GSFC)
N/A (VILSPA) | ● Modify TCCAL to apply a THDA and DN correction for reseau motion (later removed - see also #145). Also, implement new master reseau displacement file. |
| 139 | 13 Oct 1987 (GSFC)
21 Dec 1987 (VILSPA) | ● Correct bright spot flagging in high dispersion images. |
| 140 | 01 Dec 1987 (GSFC)
22 May 1990 (VILSPA) | ● Modify test for $x > 2.61$ in ripple correction routine. Test to be applied after "x" is multiplied by alpha. |
| 141 | 22 Dec 1987 (GSFC)
21 Dec 1987 (VILSPA) | ● Implement new LWP ITF and new LWP absolute calibration values into production processing. |
| 142 | 16 Feb 1988 (GSFC-low)
25 Feb 1988 (GSFC-high)
N/A (VILSPA) | ● Move IUESIPS production processing from the Sigma-9 to the VAX. |
| 143 | 01 Apr 1988 (GSFC)
14 Sep 1988 (VILSPA) | ● Update time and temperature corrections for dispersion constants. Also, install new dispersion constant files. |

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| 144 | 09 Nov 1988 (GSFC)
N/A (VILSPA) | • Implement new four line label appendage in VAX IUESIPS. |
| 145 | 22 Dec 1988 (GSFC)
N/A (VILSPA) | • Replace current production version of the time and temperature correction with the previous version described in the IUE Image Processing Information Manual, Version 2.0. |
| 146 | 31 Jan 1989 (GSFC)
22 May 1990 (VILSPA) | • Correct calculation of upper wavelength position for Sigma-9 IUESIPS. |
| 147 | 02 Feb 1989 (GSFC)
22 May 1990 (VILSPA) | • Correct wavelength limits for LWR high dispersion extraction for orders 101-103. |
| 148 | 24 Mar 1989 (GSFC)
N/A (VILSPA) | • Correct ping detection threshold for VAX IUESIPS. |
| 149 | 24 May 1989 (GSFC)
N/A (VILSPA) | • Correct numbering of records in MELO and ELBL files for VAX IUESIPS. |
| 150 | 08 Jun 1989 (GSFC)
22 May 1990 (VILSPA) | • Update ripple correction for the SWP camera to Grady and Garhart (1988) version. |
| 151 | 07 Nov 1989 (GSFC)
N/A (VILSPA) | • Correct problem of missing or corrupted processing appendages on VAX IUESIPS processed image labels. |
| 152 | 29 Aug 1990 (GSFC)
21 Dec 1987 (VILSPA) | • Provide high dispersion absolute calibration. New record added to MEHI file. |
| 153 | 09 Sep 1991 (GSFC)
22 May 1990 (VILSPA) | • Correct reversed background slit offsets in high dispersion extraction. |
| 154 | 14 Jan 1993 (GSFC)
N/A (VILSPA) | • Provide label check for missing THDA END and READ values. If one is missing, the existing one is to be used. |
| 155 | 14 Jan 1993 (GSFC)
N/A (VILSPA) | • Correct calculation of observation date in VAX IUESIPS. |