Level 1A/1B File Versions

File Version	Software Version	Cal Table Version
0 Software Version 1.0 Calibration Table 1.0	**1.0** Contains only level 1A processing.	**1.0** Cartoon tables. **2.0** Cartoon tables that make no corrections to the data. **3.0**
1 Software Version 1.2 Calibration Version 4.0		**4.0** Version 4 contains responsivities based on actual lab measurements, rather than the "cartoon" estimates of earlier versions. It incorporates variations due to the non-uniform pixel size in the along-slit direction and the measured across-slit width, as determined from the calibration line profiles. Version 4 contains the best pre-launch estimates for responsivity in the 5 GUVI colors, using the new color tables uploaded on day 52. Variations in responsivity due to pixel size changes with wavelength, spatial position and slit size are also included. An additional table of information on GUVI across-track pointing angles versus scan time has been incorporated. The dark/background/scattering masks are still set to zero to avoid the problem with oversubtraction of the background in the cal algorithms. The relative scan mirror reflectivity is also set to 1.0 for the time being. This primarily impacts the Lyman-alpha responsivity on the limb.
2 Software Version 2.0 Calibration Version 4.0	**2.0** Contains first build with geolocation code and complete level 1A and 1B processing. **2.1** Correct count error for processing ratio.	**See Version 4 Above**
3 Software Version 2.2 or 2.3 Calibration Table 5.0	**2.2** Corrected tangent altitude for disk pixels close to the limb. Retrieve both SGI files from MDC so that the appropriate file can be determined by finding a date match. Zeroed out SGI data for level 1A products. Pixel geolocation is retried with second PVAT file upon an EOF condition with first PVAT file. Remove all files in FTP input directory before retrieving files. Get both SGI files to see which one contains the given date. Fixed revision # in filenames so that it is	**5.0** Version 5 incorporates scan mirror reflectivities for all wavelengths/colors and across-track scan positions in the disk and limb responsivity tables. It also includes revised pointing angles (across and along track) based on the results of the stellar calibration procedures of March 8, 2002. Note that the pointing angle tables have now been expanded to include values for each slit/detector combination; the previous version had only the detector 1/narrow slit data,

	set to zero if no other files are found that contain matching product types and the same version number as the latest. **2.3** Fixed out-of-sync orbit numbers and start times embedded in product files. Fixed detector number index into CAL data for static imaging mode. Corrected the index for access to the second PVAT file. When searching Kp data, choose last index if time > hour 22. Fixed writing of static imaging data for level 1A data.	appropriate for most of our imaging mode data to date. The disk integration time period has been changed to 0.062125 seconds; previously it was set to the nominal value of 0.060 seconds. The new value reflects the actual mean integration times observed on orbit. The limb integration time period is unchanged.
4 Software Version 2.4 Calibration Table 5.0	**2.4** Add S/C day to log file names. Removed shared memory data to prevent interference from other processes. Added options to process specific orbits. Create new message queue for each invocation of guvicontrol process. Added Fine Time variable to Static Imaging file. Fixed level 1B static imaging data generation.	**See Version 5 Above**
		5.1 Version 4.1 (Brian's version 525) represents the tables as they should be applied to data obtained prior to day 52, when the wrong color tables were being applied on orbit. They are identical to version 5 other than the fact that responsivities were multiplied with the wrong color tables in order to match the actual GUVI data. The issue of color confusion (1356 counts being recorded as 1304 counts) will have to be addressed in more detailed models, if it becomes necessary to do so.
5 Software Version 2.5 Calibration Version 7.0	**2.5** Added Packet and Housekeeping classes to make it easier to pass information between modules. Keep 2 PVAT files open simultaneously instead of one at a time. Added roll, pitch, and yaw values from PVAT file. Added checksum error to list of DQIs in level1A and level1B files. Fixed tangent altitude calculations to within 100 meters. Added ability to have different logging levels between log and debug files. The interpolation of the yaw angle in certain cases now takes into account the rollover from +- 180 degrees.	**7.0** Background subtraction is now supported for contributions from 1216, 1304, and long wavelength scattered light, on both limb and disk. The integration times of background pixels are different than the data integration times, and those values do not appear to be documented anywhere as of yet.
6	**2.6**	**See Version 7 Above**

Software Version 2.6 Calibration Version 7.0	Set radiance, cal error, and count error to -1 when counts are negative. Added DQIs for invalid or missing packets. Fixed pointing indices by decrementing by 1 and tangent altitude calculations have been improved to within 5 meters. Provide separate controls for debug files.	
7 Software Version 2.7 Calibration Version 7.0	**2.7** Fixed level 1B disk lat/lon problem - used geolocation altitude of 0 instead of 150 km. Count Error and Radiance values are handled for all positive, negative, or zero raw count values. Bug still existed in Count Error for negative and zero values.	**See Version 7 Above**
		8.0 Improved along slit flat fielding. This data was derived from in-flight data and supercedes the ground calibration results. This table was quickly upgraded to Version 9 and Version 8 was not used in production processing.
8 Software Version 2.8 Calibration Version 9.0	**2.8** Corrected errors in count errors for negative and zero radiance. Correctly sets DQI flag for geolocation errors and accounts for incorrect mirror / nadir position values so that tangent altitude calculations use the correct step angles. Added mirror start and mirror nadir positions in level 1A / 1B files. Set the radiance value to NaN and set the CAL and count error data to -1for all missing pixels. Handles Calibration files containing multiple data sets based on time. Added solar zenith angles in level 1B imaging data products. Removed DQIs from level 1A products. Supports new PVAT product version 12 files.	**9.0** Improved scattered light correction, particularly for pre-day 052 in 2002.
	2.9 Fixed computation of product revisions to adjust for .gz file extensions. Modified error handling in case of invalid position, velocity, or attitude (PVAT) data. Added more error checking to be picked up in post processing. Set DQIs for bad PVAT or altitude data. Record instrument mode changes. Fixed ability to process first day of year. New Ability to create L1C products.	**See Version 9 Above**
	3.0 Changes to improve L1C products	**See Version 9 Above**
9 Software Version 3.1 Calibration Version 9.0	**3.1** Writes orbit numbers as integers in all file headers instead of short integers. Fixed processing look-back date at year-	**See Version 9 Above**

	end rollover	
10 Software Version 4.0 Calibration Version 11.0	**4.0** Many addtions to imaging L1B: night and auroral reference altitude geolocations, subtracted backgrounds written to L1B files. Count decompression errors written in L1A Experimental version of Spectrographic L1B product. Code now ported to Linux	**12.0** Whole calibration redone and updated with better responsivities. Calibration went through a couple of iterations (versions 10 and 11 were development versions only) before we arrived at version 12.
11 Software Version 4.1 Calibration Version 12.0	**4.1** Fixed bug where Spectrographic L1B long backgrounds were not being properly reported,	**See Version 12 Above**
12 Software Version 5.0 Calibration Version 12.1	**5.0** Changed spectrograph code to read new Calibration format. Code base now supports both spectrograph and imaging products. New Color table makes Spectrograph and imaging L1B radiances	**12.1** Updated to include October 2004 color table upload. Smoothed problem with pixel 5 derived from stellar calibration. Reformatted Calibration file to include more information and be similar to SSUSI format.