STIS Cycle 17 Calibration Plan

		Orbits			
ID	Title	Ext.	Par.	Int.	Notes
	CCD Monitors				
11843	CCD Performance Monitor			24	orig. alloc. 27
11844 & 11845	CCD Dark Monitor			488x2	
11846 & 11847	CCD Bias Monitor			244x2	
11848	CCD Readnoise Monitor			18	orig. alloc. 20
11849	CCD Hot Pixel Annealing		85		orig. alloc. 204
11852	CCD Spectroscopic Flats			50	
11853	CCD Imaging Flats			12	
11858	CCD Spectroscopic Dispersion Monitor			7	
11850	CCD Sparse Field CTE – Internal			74	
11854	CCD Full-Field Sensitivity	1			
11851	Sit Wheel Repeatability		1		
11855	CCD Spectroscopic Sensitivity Monitor	10			
	MAMA Monitors				
11859	MAMA Dispersion Solutions			10	
11856	MAMA Full-Field Sensitivity	3			
11860	MAMA Sensitivity and Focus Monitor	11			orig. alloc. 12
11857	MAMA Dark Monitor			116	orig. alloc. 284
11863	MAMA Fold Distribution			4	
11861	MAMA FUV Flats			11	
11862	MAMA NUV Flats			11	
	Special Programs				
11864	MAMA Anomalous Recovery				
11865	COS Flux Standard	2			
11866	Echelle Grating Blaze Function Zero Points	24			
11999	JWST calibration	13			
	total	64	86	1801	
	Cycle 17 GO orbits	411			

STIS Cycle 17 Supplemental Calibration Plan

ID	Title	PI	External Orbits	Internal Orbits	Priority
12078	**Verification of Adjustment to two STIS MSM Positions**	**Proffitt**		**1**	**medium/high**
12079	**STIS PtCr/Ne Lamp Ratios**	**Pascucci**		**7**	**high**
11861+	**Supplemental STIS FUV MAMA Flats**	**Ake**		**3**	**high**
11857+	**Additional MAMA Dark Exposures**	**Zheng**		**4**	**medium/high**
11860+	**Additional Time-dependent Sensitivity Monitoring of the STIS echelle modes**	**Osten**	**4**		**high**
		total	**4**	**15**	

Related Calibration Program: ACS/STIS Red Leak joint proposal – one orbit STIS/FUV-MAMA, 2 orbits ACS/SBC. This will be presented by the ACS team.

Proposal ID 12078: Verification of Adjustment to two STIS MSM Positions

P.I. C. Proffitt

Purpose Verify TRANS changes needed to fix alignment of STIS G430M 5216 CENWAVE and G750M 6094 CENWAVE

Description The STIS CCD mirror projects the center of the standard aperture onto the CCD detector near row 517, and the SIAF file assumes that all CCD spectroscopic gratings will project the target at this same location, apart from small MSM non-repeatability. In practice the alignment of many of the CCD gratings deviates noticeably from this. Most of these offsets are sufficiently small that they have no operational consequences, but two settings deviate from the nominal position by an unusually large amount. The G430M 5216 centers the target near row 532, while the G750M 6094 is centered near row 490. When used with small sub-arrays, this can cause part of the target spectrum to fall outside the sub-array potentially ruining the science.

Available tools can translate the MSM cylinder positions into azimuthal and elevation angles. Comparison of the trend of azimuthal angle with CENWAVE settings show that the two errant modes deviate significantly from the smooth trend of the other better aligned settings. The MSM cylinder positions have been calculated that will adjust the azimuthal angle to be consistent with the trend for the other settings. These revised settings will be installed in TRANS.

One internal orbit will be used to take LINE lamp spectra using the 52x0.1 aperture at each of the two changed settings plus the adjacent unchanged settings for each gratings (G430M 5093, 5126, & 5471 10 second exposures each; G750M 5734, 6094, 0.5 s & 6252, 0.4 s). The location of the aperture bars can be used to check the revised centering, and the cross correlation with the template spectrum will allow any change in wavelength zeropoint to be measured.

Fraction GO/GTO Programs Supported 3% (estimate 1 program per cycle)

Resources Required: Observation 1 internal orbit

Resources Required: Analysis 1 week

Products Note in STAN that positions have been updated

Accuracy Goals 3 pixels (type MSM repeatability)

Scheduling & Special Requirements Must wait for installation of TRANS updates with revised MSM positions

Proposal ID 12079: STIS PtCr/Ne Lamp Ratios

P.I. I. Pascucci

Purpose	To provide improved information on the ratio of the STIS wavelength calibration lamps at all wavelengths. The shortest wavelengths of the LINE & HITM1 lamps have faded by a factor of several since launch, and the fading is enough to have significantly impacted the S/N of the wavecals. The FUV flux of the HITM2 lamp has not been checked since 1997, and so a detailed comparison of all three lamps is needed to support a proper wavelength calibration for GO proposals.
Description	Take a 500 s lamp G140L, narrow (52x0.1) aperture lamp exposure with each of the HITM1, HITM2, and the LINE lamps. Also take G230LB, G430L, and G750L with the same three lamps to get a full spectrum of the lamp brightness. After evaluating the lamp ratios in the G140L setting, take a 1000s E140H-1234 narrow (0.2x0.09) aperture lamp exposure with the three lamps.
Fraction GO/GTO Programs Supported	99% of STIS prime observations are dispersed light, 100% of snap observations are dispersed light, 20% of STIS prime observations are FUV dispersed light. Fractions are based on exposure times.
Resources Required: Observation	7 internal orbits
Resources Required: Analysis	4 weeks
Products	Revisions to TRANS tables for auto- and GO- wavecals
Accuracy Goals	5%; measure differences in fluxes between different lamp monitoring to the accuracy above to test the fading of the lamps at this level
Scheduling & Special Requirements	special commanding for non-standard grating/lamp combinations

Proposal ID 11861+: Supplemental STIS FUV MAMA Flats

P.I. T. Ake

Purpose This program will obtain additional STIS FUV MAMA flat field observations with the Kr lamp for combining with the Cycle 17 calibration data (program 11861) to construct a pixel-to-pixel flat with a S/N of 100 per low-res pixel.

Description STIS Cycle 17 calibration program 11861 will obtain a set of FUV-MAMA flat-field observations with sufficient counts to construct pixel-to-pixel flats (P-flats) for all modes. Initial estimates were that 11 visits would be sufficient to build a P-flat with S/N = 100 per low-resel pixel. After the first visit, the lamp output was found to be lower than expected and that 20-25% more exposure time would be needed to achieve the desired S/N. This program will generate the additional counts required.

Program 11861 requested obtaining flats with G140M at 5 SLIT-STEP positions to illuminate regions of the detector normally shadowed by the slit fiducial bars. Three exposures were to be made at the nominal position, and two at each of four offset positions. All exposures were 4740s long. Since the nominal position will have more counts than the others, this supplemental program will observe only the four offset positions, spaced over three orbits. Using a cenwave of 1470 A and the 52X0.1 slit, the initial exposure of 11861 achieved a count rate of 229,000 cps, compared to an expected rate of 284,000 cps and a desired rate of at least 275,000 cps. Although a small decline in lamp output (< 5%) is expected by end of the 11861 observing sequence, the rate of the initial observation is used for planning purposes.

Fraction GO/GTO Programs Supported 20% (by exposure time) of STIS observations use the FUV-MAMA.

Resources Required: Observation 3 internal orbits

Resources Required: Analysis 1 week on top of the resources required for the original program

Products P-flat reference file, ISR

Accuracy Goals 1.0% (0.5% if combined will all previous flats); accuracy is per low-resel pixel (2x2 high-res pixels)

Scheduling & Special Requirements

Proposal ID 11857+: Add back some MAMA dark exposures

P.I. W. Zheng

Purpose	Add back some MAMA dark exposures to program 11857.
Description	The initial allocation of MAMA dark exposures utilized a strategy of 2 exposures per week per detector, plus groups of visits over a single SAA-free period, to monitor the short-term changes in the dark current. Due to the plan changing the cycling of the MAMA LVPS, the strategy was changed. Starting Oct. 5, the regular weekly visits are only done during weeks in which the LRP has external MAMA observations planned. However, it seems we may have cut back too far, and we would like to add back 2 visits, each of 2 orbits in length, in the mid-April and early June timeframes, so that there is a separation of only about 20 days between MAMA dark exposures. This will ensure that we can catch any trend abnormality. This request includes both NUV and FUV MAMA dark exposures.
Fraction GO/GTO Programs Supported	52% of STIS prime programs and 77% of snap programs (by exposure time) use MAMA exposures.
Resources Required: Observation	4 internal orbits
Resources Required: Analysis	1 day in addition to the 3 FTE weeks already allocated for this program
Products	reference files, ISR
Accuracy Goals	
Scheduling & Special Requirements	one visit of 2 internal orbits in mid-April and another visit of 2 internal orbits in early June. Constrain a pair of observations such that each observation is done in a different part of an SAA-free period.

Proposal ID 11860+: Additional Time-Dependent Sensitivity Monitoring of the STIS echelle modes

P.I. R. Osten

Purpose	Obtain additional monitoring observations of the STIS echelle modes (program 11860) to follow the E140H throughput anomaly.
Description	Post-repair observations of the STIS echelle modes were made once during SMOV and are scheduled to occur twice during Cycle 17 as part of the MAMA Spectroscopic Sensitivity Monitoring Program (11860). The high-resolution echelle modes, particularly E140H, show a throughput anomaly. While the E140H data taken prior to the side-2 LVPS failure showed TDS behavior consistent with the low-resolution first order trends, the post-repair data are systematically lower by 15-20 %. E230H also shows more modest deviations from previous trends. There have been two observations of monitoring targets so far; one from SMOV and one from the first of two Cycle 17 monitoring observations. The next visit of the echelle monitoring observation is not scheduled to occur until June 2010, a gap of 9 months. We would like to insert two additional visits, each two orbits in length, in the March and October timeframes in order to investigate changes in the echelle throughput as a function of time. We will include the E140M and E230M to check for pointing and breathing effects that might confuse measurement of the anomaly seen in the high-resolution modes.
Fraction GO/GTO Programs Supported	E140H: 6.5% (prime), E140M: 6.4% (prime), E230M: 24% (prime), E230H: 1.6% (prime), 77% (snap) percentages calculated based on exposure time relative to total STIS exposure time in prime and snap programs
Resources Required: Observation	4 external orbits (2x 2 orbits)
Resources Required: Analysis	2 weeks in addition to analysis already allocated
Products	TDS reference file, ISR
Accuracy Goals	few percent
Scheduling & Special Requirements	additional visits in spring and late summer