



12666 - The WFC3 Galactic Bulge Treasury Program: Populations, Formation History, and Planets

Cycle: 19, Proposal Category: GO

(Treasury)

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
13	(2) BULGE-STANEK	WFC3/UVIS	1	06-Jul-2011 21:50:57.0	yes
23	(3) BULGE-OGLE29	WFC3/UVIS	1	06-Jul-2011 21:51:03.0	yes
33	(4) BULGE-BAADE	WFC3/UVIS	1	06-Jul-2011 21:51:08.0	yes

3 Total Orbits Used

ABSTRACT

Exploiting the full power of the Wide Field Camera 3 (WFC3), we propose deep panchromatic imaging of four fields in the Galactic bulge. These data will enable a sensitive dissection of its stellar populations, using a new set of reddening-free photometric indices we have constructed from broad-band filters across UV, optical, and near-IR wavelengths. These indices will provide accurate temperatures and metallicities for hundreds of thousands of individual bulge stars. Proper motions of these stars derived from multi-epoch observations will allow separation of pure bulge samples from foreground disk contamination. Our catalogs of proper motions and panchromatic photometry will support a wide range of bulge studies.

Using these photometric and astrometric tools, we will reconstruct the detailed star-formation history as a function of position within the bulge, and thus differentiate between rapid- and extended-formation scenarios. We will also measure the dependence of the stellar mass function on metallicity, revealing how the characteristic mass of star formation varies with chemistry. Our sample of bulge stars with accurate metallicities will include 12 candidate hosts of extrasolar planets. Planet frequency is correlated with metallicity in the solar neighborhood; our measurements will extend this knowledge to a remote environment with a very distinct chemistry.

Our proposal also includes observations of six well-studied globular and open star clusters; these observations will serve to calibrate our photometric indices, provide empirical population templates, and transform the theoretical isochrone libraries into the WFC3 filter system. Besides enabling our own program, these products will provide powerful new tools for a host of other stellar-population investigations with HST/WFC3. We will deliver all of the products from this Treasury Program to the community in a timely fashion.

OBSERVING DESCRIPTION

This program is simply repeating the GO-11664/F814W exposures in 3 of the bulge fields (STANEK, BAADE, OGLE29), using the same orientation that executed previously, with at least a 2-year baseline between the exposures here and those in GO-11664.

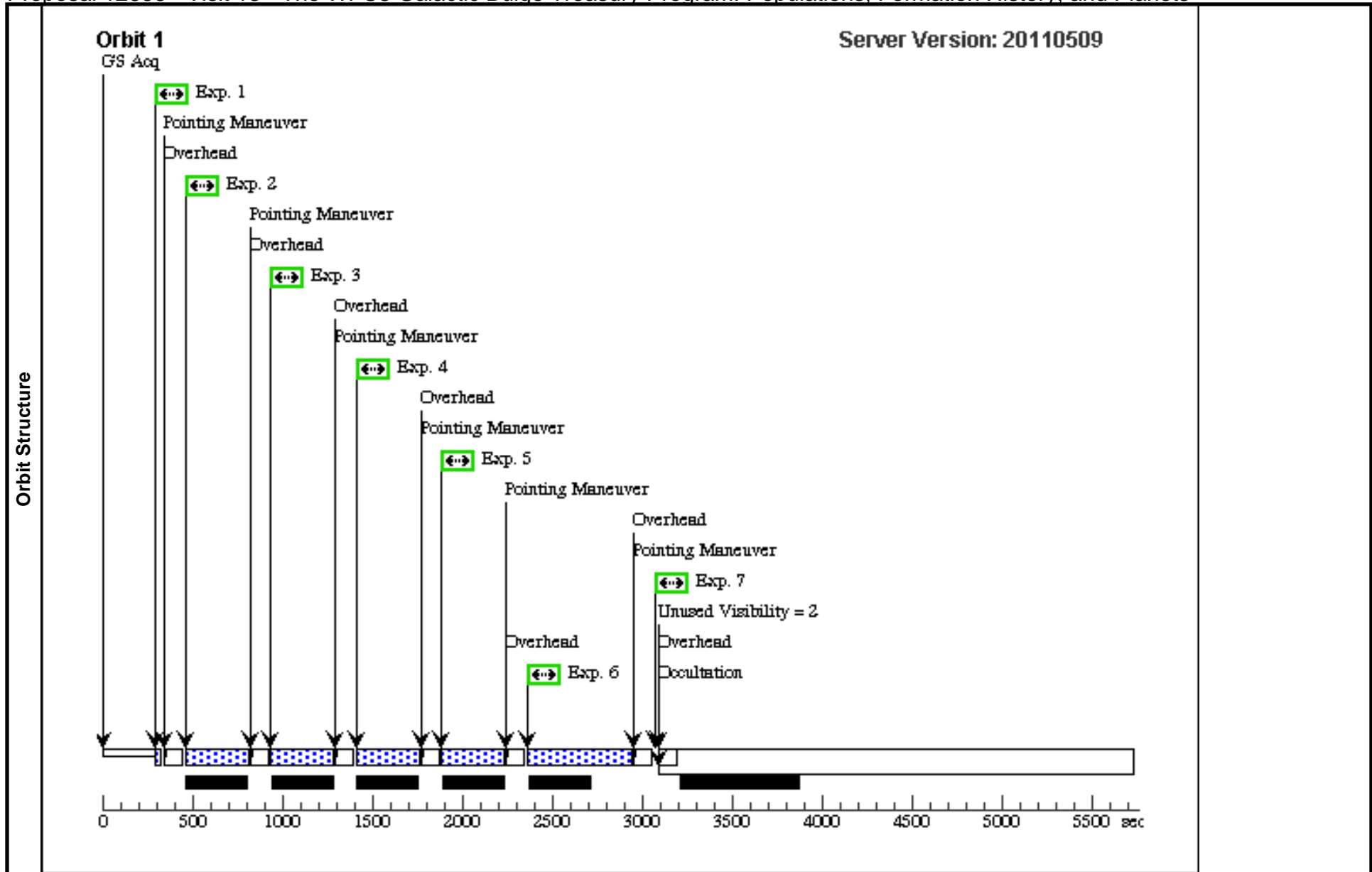
Proposal 12666 (STScI Edit Number: 2, Created: Wednesday, July 6, 2011 8:51:12 PM EST) - Overview

Unfortunately, Visit 13 (STANEK) is difficult to schedule at the same orientation that executed in Cycle 17, so it is using the 'SCHED 80" requirement and a shorter orbit.

Proposal 12666 - Visit 13 - The WFC3 Galactic Bulge Treasury Program: Populations, Formation History, and Planets

Thu Jul 07 01:51:13 GMT 2011

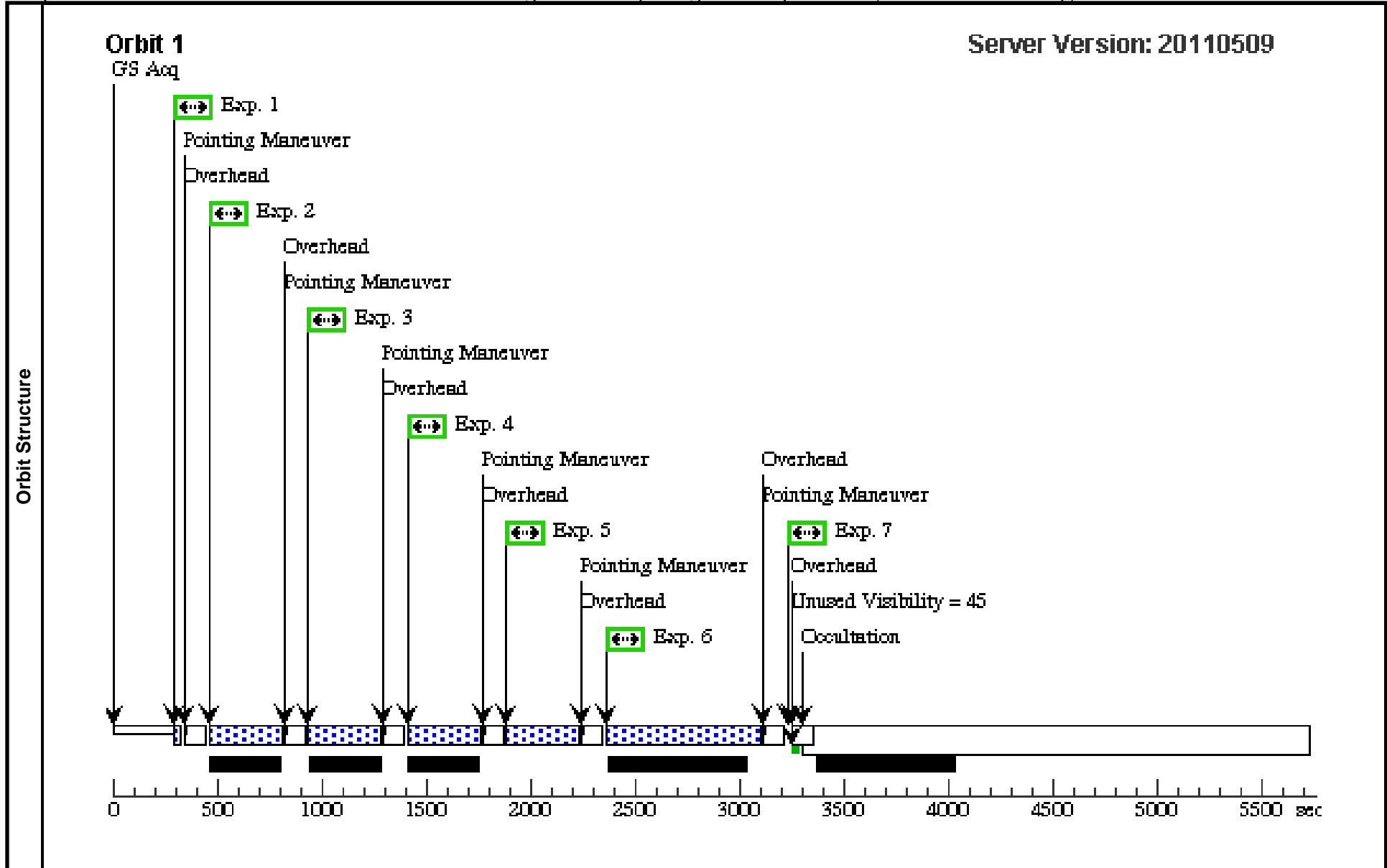
Visit	Proposal 12666, Visit 13, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 80%; ORIENT 31D TO 31 D; AFTER 27-JUN-2012:00:00:00 Comments: F814W (1; orbit 1). 7 exposures per orbit. 2 short exposures at (+0.75,-20) and (-0.75,+20), with exposure times of 1 sec and 10 sec, respectively. 4 medium exposures (348 sec each) in a 4-point dither pattern to resample the PSF, but with the first two offset by (0,-40) and the second two offset by (0,0). 1 long exposure (740 sec in orbit 1) offset by (0,+40).									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	BULGE-STANEK	RA: 17 54 41.7100 (268.6737917d) Dec: -29 49 30.00 (-29.82500d) Equinox: J2000		V=25+/-0.1	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	short1i	(2) BULGE-STANE K	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0297,- 0.7886		1 Secs [==>]	[1]
	2	medium1i	(2) BULGE-STANE K	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0000,- 1.5812		348 Secs [==>]	[1]
	3	medium2i	(2) BULGE-STANE K	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.1585,- 1.5110		348 Secs [==>]	[1]
	4	medium3i	(2) BULGE-STANE K	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0991,0 .1649		348 Secs [==>]	[1]
	5	medium4i	(2) BULGE-STANE K	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG -0.0594, 0.0947		348 Secs [==>]	[1]
	6	long1i	(2) BULGE-STANE K	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0000,1 .5812		580 Secs [==>]	[1]
	7	short2i	(2) BULGE-STANE K	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG -0.0297, 0.7886		10 Secs [==>]	[1]



Proposal 12666 - Visit 23 - The WFC3 Galactic Bulge Treasury Program: Populations, Formation History, and Planets

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Visit	Proposal 12666, Visit 23, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 271D TO 271 D; AFTER 08-MAR-2012:00:00:00 Comments: F814W (1; orbit 1). 7 exposures per orbit. 2 short exposures at (+0.75,-20) and (-0.75,+20), with exposure times of 1 sec and 10 sec, respectively. 4 medium exposures (348 sec each) in a 4-point dither pattern to resample the PSF, but with the first two offset by (0,-40) and the second two offset by (0,0). 1 long exposure (740 sec in orbit 1) offset by (0,+40).									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(3)	BULGE-OGLE29	RA: 17 48 15.3000 (267.0637500d) Dec: -37 09 1.40 (-37.15039d) Equinox: J2000		V=25+/-0.1	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	short1i	(3) BULGE-OGLE29	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0297,-0.7886		1 Secs [==>]	[1]
	2	medium1i	(3) BULGE-OGLE29	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0000,-1.5812		348 Secs [==>]	[1]
	3	medium2i	(3) BULGE-OGLE29	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.1585,-1.5110		348 Secs [==>]	[1]
	4	medium3i	(3) BULGE-OGLE29	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0991,0.1649		348 Secs [==>]	[1]
	5	medium4i	(3) BULGE-OGLE29	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG -0.0594,0.0947		348 Secs [==>]	[1]
	6	long1i	(3) BULGE-OGLE29	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0000,1.5812		740 Secs [==>]	[1]
	7	short2i	(3) BULGE-OGLE29	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG -0.0297,0.7886		10 Secs [==>]	[1]



Proposal 12666 - Visit 33 - The WFC3 Galactic Bulge Treasury Program: Populations, Formation History, and Planets

Thu Jul 07 01:51:15 GMT 2011

Visit	Proposal 12666, Visit 33, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 269D TO 269 D; AFTER 06-MAR-2012:00:00:00 Comments: F814W (1; orbit 1). 7 exposures per orbit. 2 short exposures at (+0.75,-20) and (-0.75,+20), with exposure times of 1 sec and 10 sec, respectively. 4 medium exposures (348 sec each) in a 4-point dither pattern to resample the PSF, but with the first two offset by (0,-40) and the second two offset by (0,0). 1 long exposure (740 sec in orbit 1) offset by (0,+40).									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(4)	BULGE-BAADE	RA: 18 03 10.2300 (270.7926250d) Dec: -29 56 33.60 (-29.94267d) Equinox: J2000		V=25+/-0.1	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	short1i	(4) BULGE-BAADE	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0297,-0.7886; GS ACQ SCENARI O BASE1B3		1 Secs [==>]	[1]
	2	medium1i	(4) BULGE-BAADE	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0000,-1.5812		348 Secs [==>]	[1]
	3	medium2i	(4) BULGE-BAADE	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.1585,-1.5110		348 Secs [==>]	[1]
	4	medium3i	(4) BULGE-BAADE	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0991,0.1649		348 Secs [==>]	[1]
	5	medium4i	(4) BULGE-BAADE	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG -0.0594,0.0947		348 Secs [==>]	[1]
	6	long1i	(4) BULGE-BAADE	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG 0.0000,1.5812		740 Secs [==>]	[1]
	7	short2i	(4) BULGE-BAADE	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	CR-SPLIT=NO	POS TARG -0.0297,0.7886		10 Secs [==>]	[1]

