10438 - The Late Formation of Satellite Galaxies

Cycle: 13, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Dr. Mary E. Putman (PI)	**University of Michigan**	**mputman@colorado.edu**
Ms. Emma Ryan-Weber (CoI)	University of Cambridge	eryan@physics.unimelb.edu.au
Dr. Gerhardt R. Meurer (CoI)	The Johns Hopkins University	meurer@pha.jhu.edu
Dr. Kenneth C. Freeman (CoI)	Australian National University	kcf@msokcf.anu.edu.au
Dr. Robert C. Kennicutt Jr. (CoI)	University of Arizona	robk@as.arizona.edu
Dr. Rachel Webster (CoI)	University of Melbourne	rwebster@physics.unimelb.edu.au
Dr. Sally Oey (CoI)	University of Michigan	oey@lowell.edu
Dr. Michael Drinkwater (CoI)	University of Queensland	mjdrin@unimelb.edu.au

VISITS

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) NGC1533-HII1+2	ACS/HRC	4	19-Sep-2005 21:00:54.0	yes
02	(2) NGC1533-HII5	ACS/HRC	4	31-Aug-2005 16:01:53.0	yes
03	(3) ESO149-G003-HII1	ACS/HRC	4	19-Sep-2005 21:01:12.0	yes
04	(4) NGC4388-HII1	ACS/HRC	4	19-Sep-2005 21:01:24.0	yes

16 Total Orbits Used

ABSTRACT

Tiny isolated HII regions have been discovered up to 30 kpc from the closest galaxy in the NOAO Survey for Ionization in Neutral Gas Galaxies (SINGG). These halo HII regions can be ionized by only a few OB stars and seem to be most commonly found in interacting systems. They may represent the beginning of the formation of satellite galaxies at low redshift and/or are the source of the numerous intracluster planetary nebula. The halo HII regions are a unique mode of star formation in a low density and low metallicity environment and high resolution HST images are required to identify their underlying stellar populations. Determining the stellar populations of these HII regions will establish whether in-situ star formation is a significant contributor to the stellar content and enrichment of galactic halos and intergalactic space. In particular, ACS/HRC observations are required for their resolution, UV sensitivity, and wide wavelength coverage, allowing young and intermediate age populations to be identified. Parallel ACS/WFC observations will explore the possibility of a further stellar population in the interactive debris. The results of this project have implications on the formation of satellite galaxies, the origin of Galactic halo B stars, IGM ionization and enrichment, and star formation principles.

OBSERVING DESCRIPTION

The HRC will be used to observe the stellar populations of halo HII regions with UV (F250W), V (F555W), and I (F814W) filters. Parallel ACS/WFC observations in V and I will also be completed, either centered on the associated galaxy and/or the galaxy's halo. Each orbit will be split approximately as follows with small dithers between exposures: 5400s in the UV (6 exposures), 2700s in V (4 exposures), and 2700s in I (4 exposures).

Visit

Proposal 10438, Visit 01 Tue Sep 20 01:01:28 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 30%; ORIENT 328.7D TO 350.8 D

Comments: Orientation chosen to observe region of HI debris and halo HII regions 4 and 5

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.198 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.3 Angle Between Sides= Center Pattern=false		(1), (2), (3)

Fixed Targets

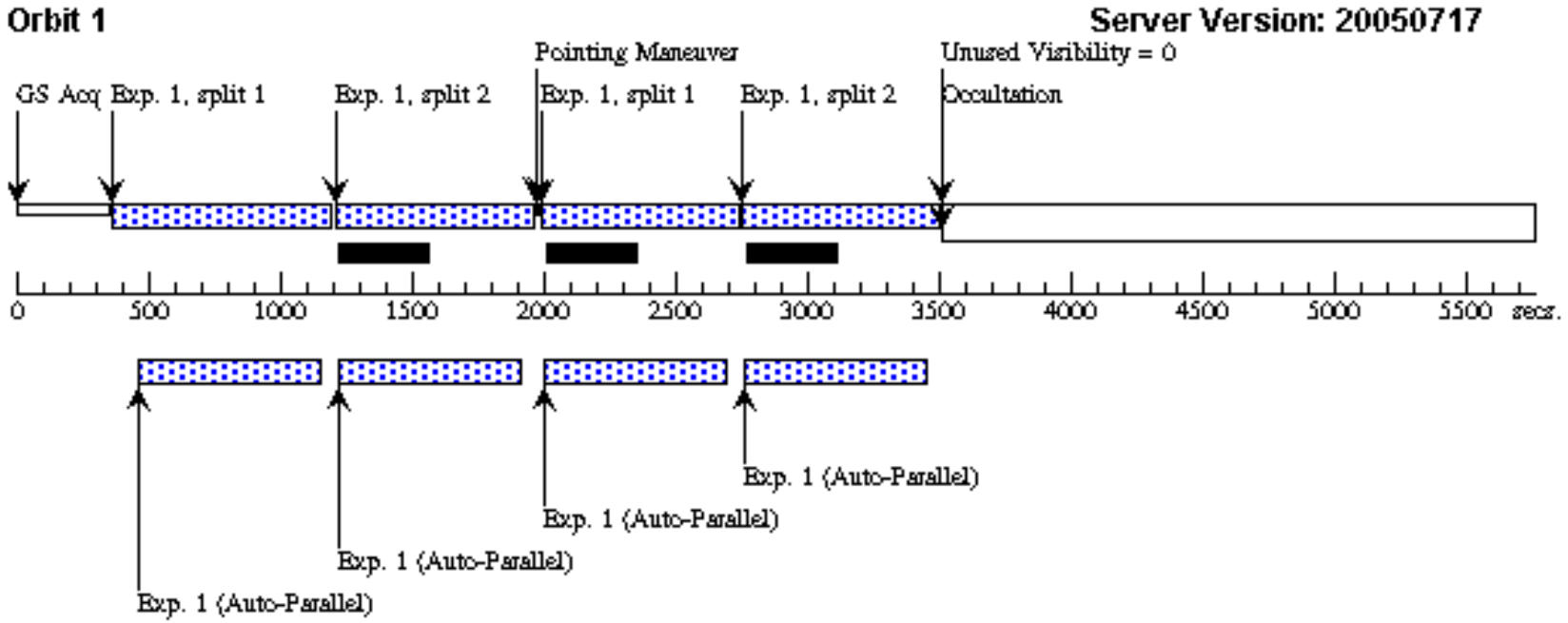
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC1533-HII1+2	RA: 04 10 14.0000 (62.5583333d) Dec: -56 11 36.00 (-56.19333d) Equinox: J2000 Plate Id: (?)	Radial Velocity: 846.0 km/sec	V=25.3 Halpha Flux = 1.1 x 10^{-15} (HII1) and 6.8 x 10^{-16} (HII2) erg s^{-1} cm^{-2}	Coordinate Source: Halpha images

Comments: 21 Mpc from Tonry et al. (2001)

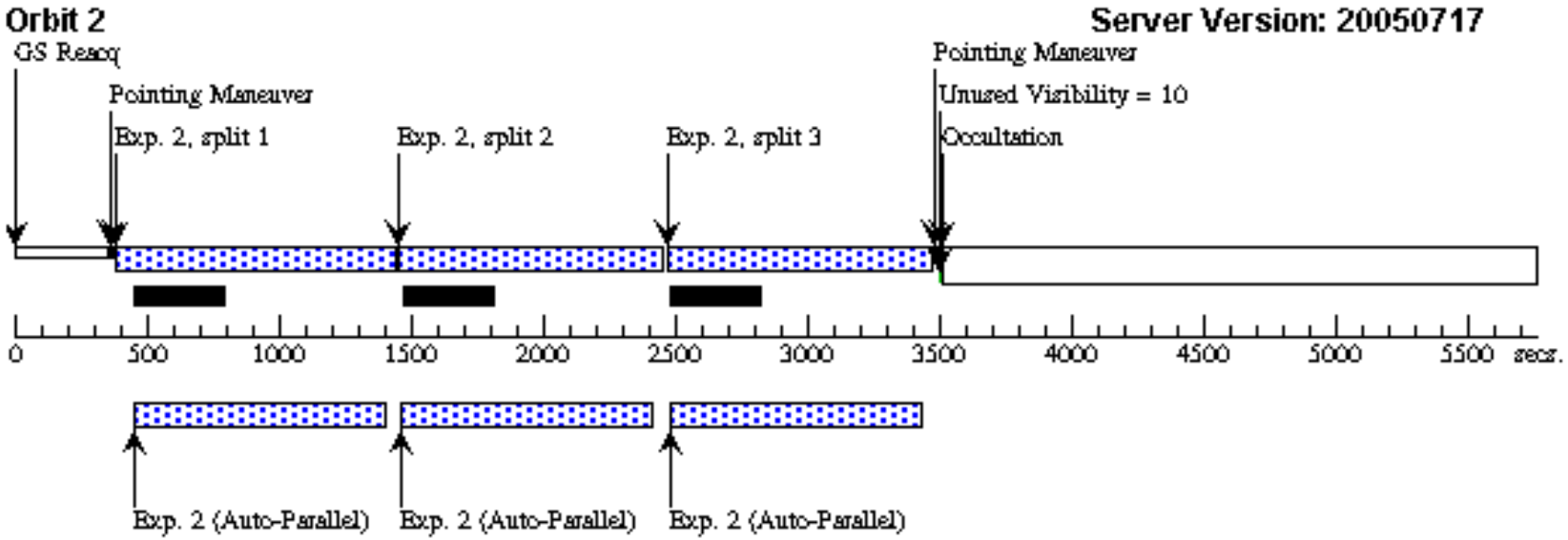
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) NGC1533-HII1+2	ACS/HRC, ACCUM, HRC	F555W	CR-SPLIT=2		Pattern 1-1 (1)	1430.0 Secs	
								[==>(Pattern 1, Split 1)]	***[1]***
								[==>(Pattern 1, Split 2)]	
								[==>(Pattern 2, Split 1)]	
								[==>(Pattern 2, Split 2)]	
2		(1) NGC1533-HII1+2	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=3		Pattern 2-2 (1)	2904.0 Secs	
								[==>(Pattern 1, Split 1)]	***[2]***
								[==>(Pattern 1, Split 2)]	
								[==>(Pattern 1, Split 3)]	
								[==>(Pattern 2, Split 1)]	***[3]***
								[==>(Pattern 2, Split 2)]	
								[==>(Pattern 2, Split 3)]	
3		(1) NGC1533-HII1+2	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2		Pattern 3-3 (1)	1446.0 Secs	
								[==>(Pattern 1, Split 1)]	***[4]***
								[==>(Pattern 1, Split 2)]	
								[==>(Pattern 2, Split 1)]	
								[==>(Pattern 2, Split 2)]	

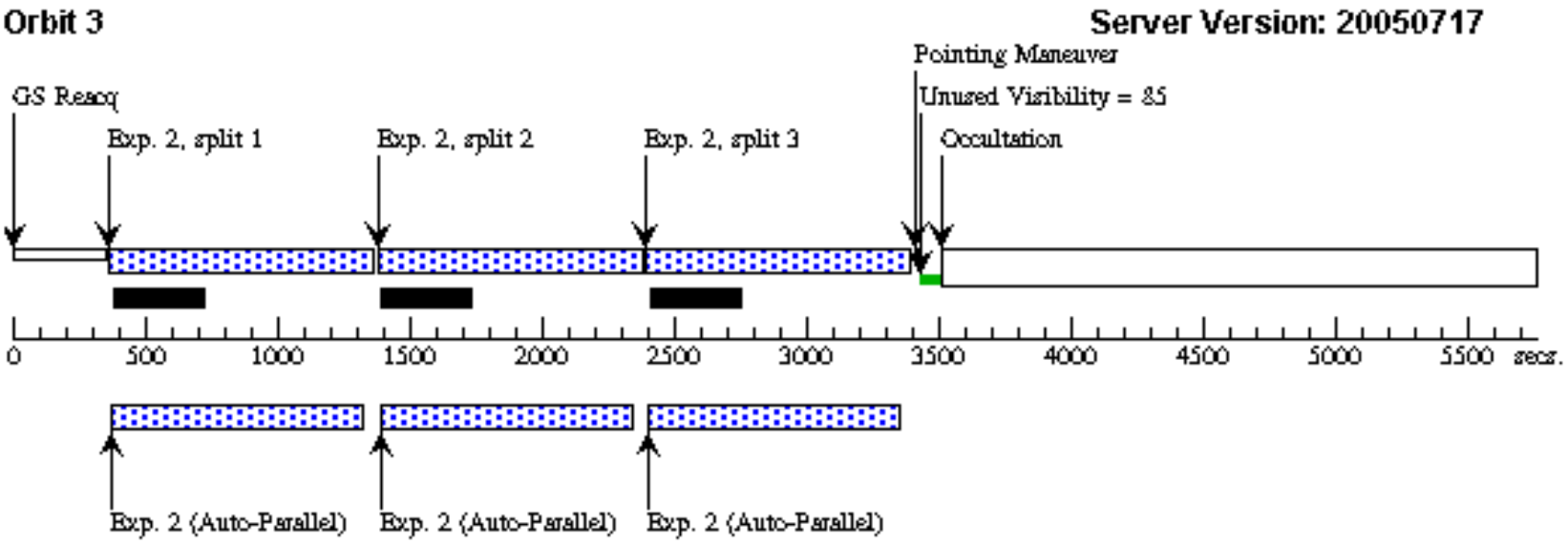
Orbit Structure

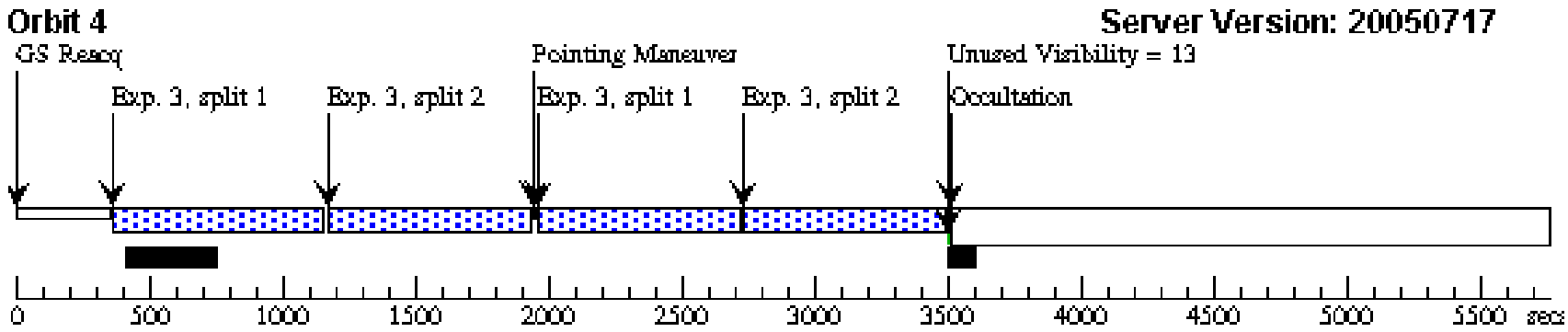


Orbit Structure (continued)



Orbit Structure (continued)





Visit

Proposal 10438, Visit 02 Tue Sep 20 01:01:30 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 30%; ORIENT 250.0D TO 290.0 D

Comments: Orientation chosen to observe the center of NGC 1533

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.198 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.3 Angle Between Sides= Center Pattern=false		(1), (2), (3)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	NGC1533-HII5	RA: 04 10 15.5000 (62.5645833d) Dec: -56 06 15.00 (-56.10417d) Equinox: J2000 Plate Id: (?)	Radial Velocity: 901.0 km/sec	V=25.9 Halpha Flux = 5.0 x 10^{-16} erg s^{-1} cm^{-2}	Coordinate Source: Halpha images

Comments: 21 Mpc from Tonry et al. (2001)

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(2) NGC1533-HII5	ACS/HRC, ACCUM, HRC	F555W	CR-SPLIT=2		Pattern 1-1 (1)	1430.0 Secs	
								[==>(Pattern 1, Split 1)]	***[1]***
								[==>(Pattern 1, Split 2)]	
								[==>(Pattern 2, Split 1)]	
								[==>(Pattern 2, Split 2)]	
2		(2) NGC1533-HII5	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=3		Pattern 2-2 (1)	2904.0 Secs	
								[==>(Pattern 1, Split 1)]	***[2]***
								[==>(Pattern 1, Split 2)]	
								[==>(Pattern 1, Split 3)]	
								[==>(Pattern 2, Split 1)]	***[3]***
								[==>(Pattern 2, Split 2)]	
								[==>(Pattern 2, Split 3)]	
3		(2) NGC1533-HII5	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2		Pattern 3-3 (1)	1446.0 Secs	
								[==>(Pattern 1, Split 1)]	***[4]***
								[==>(Pattern 1, Split 2)]	
								[==>(Pattern 2, Split 1)]	
								[==>(Pattern 2, Split 2)]	

Visit

Proposal 10438, Visit 03 Tue Sep 20 01:01:31 GMT 2005

Diagnostic Status: Warning

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 30%

Diagnostics

(Visit 03) Warning: VISIBILITY OVERRUN

(Visit 03) Warning: VISIBILITY OVERRUN

(Visit 03) Warning: VISIBILITY OVERRUN

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.198 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.3 Angle Between Sides= Center Pattern=false		(1), (2), (3)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	ESO149-G003-HII1	RA: 23 51 51.3900 (357.9641250d) Dec: -52 34 34.20 (-52.57617d) Equinox: J2000 Plate Id: (?)	Radial Velocity: 949.0 km/sec	V=25.8 Halpha Flux = 6.9 x 10^{-16} erg s^{-1} cm^{-2}	Coordinate Source: Halpha images

Comments: 6.5 Mpc from velocity

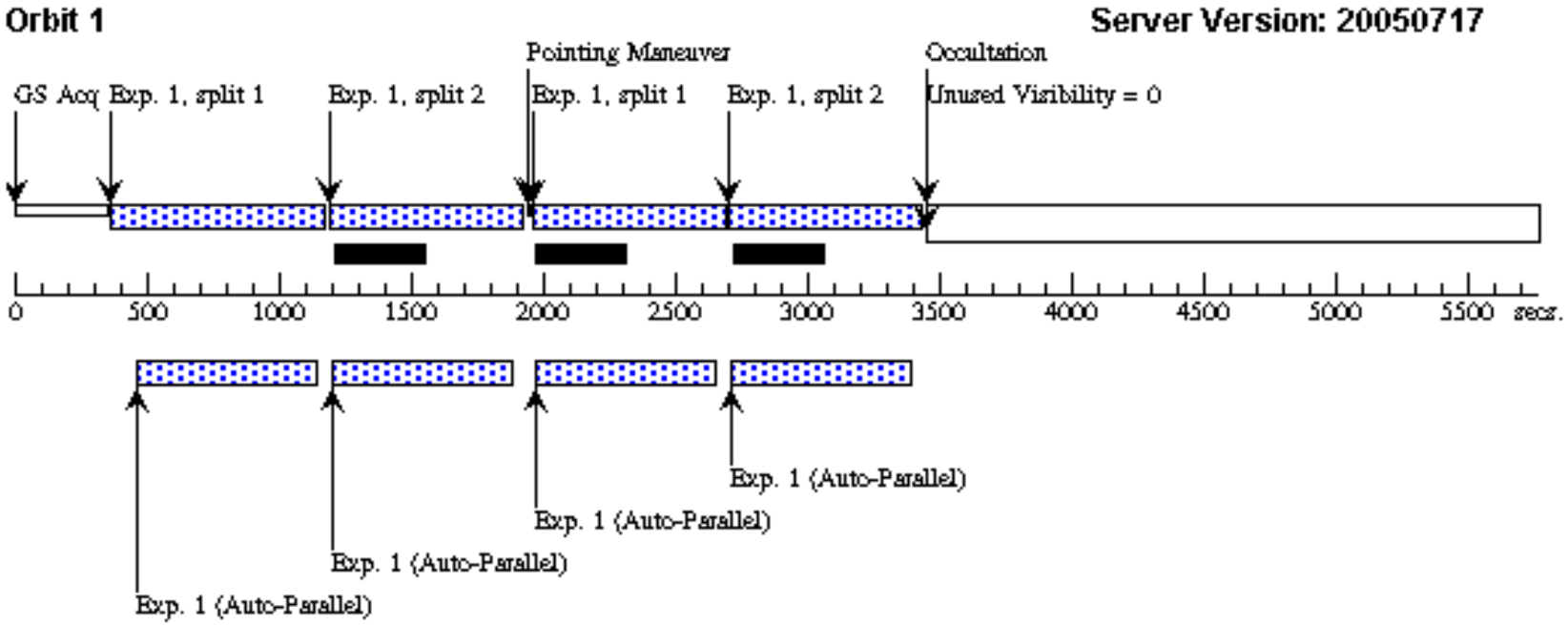
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(3) ESO149-G003-HII1	ACS/HRC, ACCUM, HRC	F555W	CR-SPLIT=2		Pattern 1-1 (1)	1398.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
2		(3) ESO149-G003-HII1	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=3		Pattern 2-2 (1)	2955.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 1, Split 3)]*	***[2]***
								[==>(Pattern 2, Split 1)] *[==>(Pattern 2, Split 2)]* *[==>(Pattern 2, Split 3)]*	***[3]***

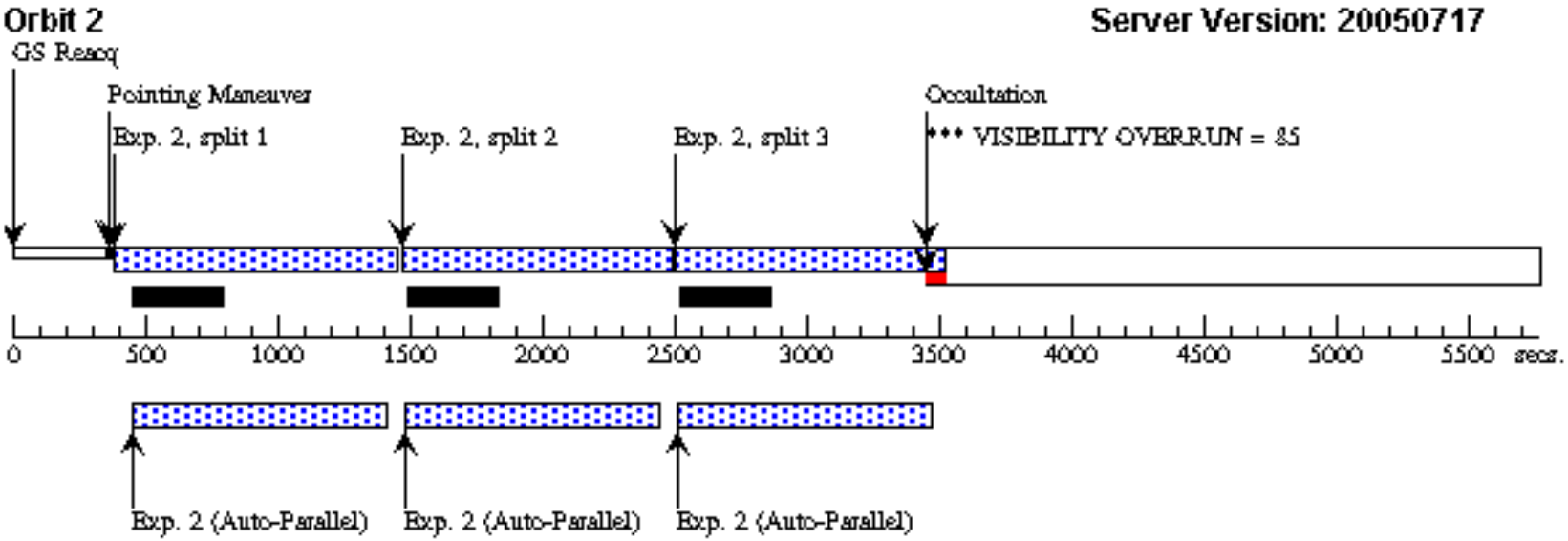
Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
3		(3) ESO149-G003-H II1	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2		Pattern 3-3 (1)	1454.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[4]***

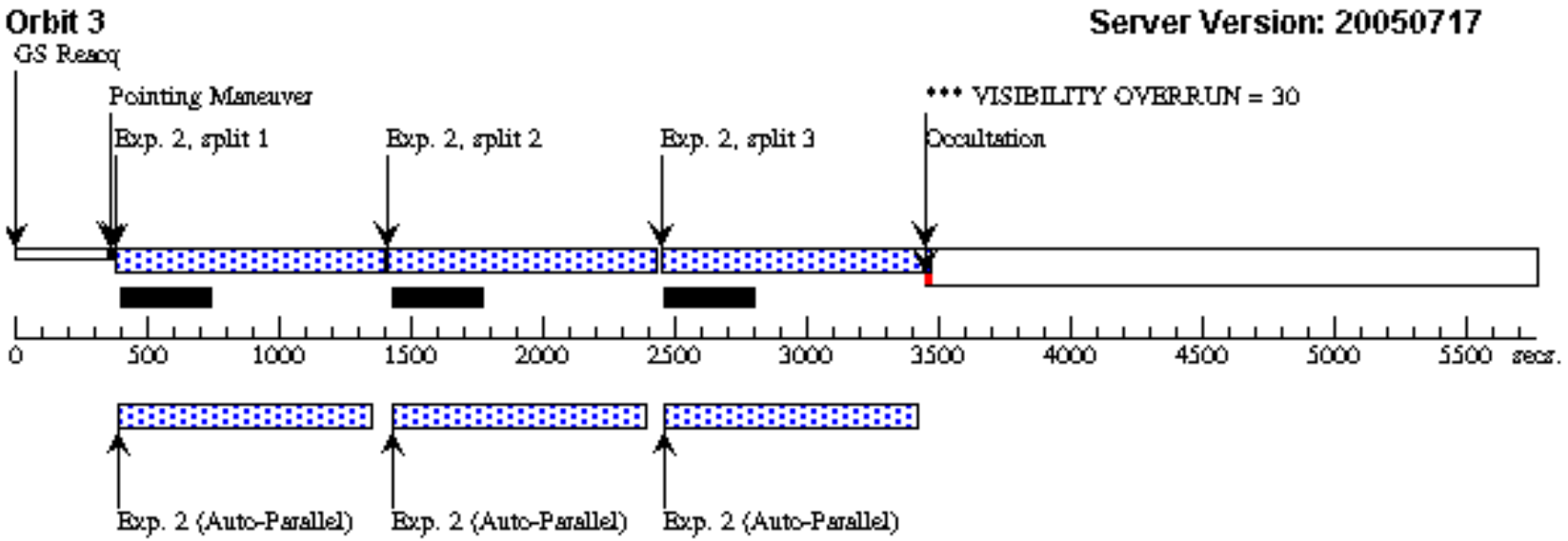
Orbit Structure

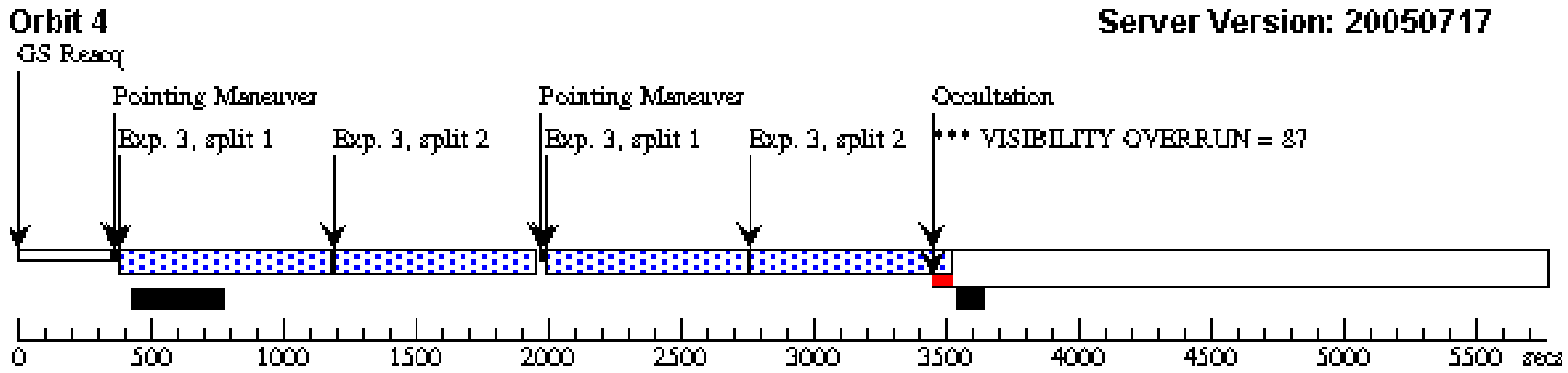


Orbit Structure (continued)



Orbit Structure (continued)





Visit

Proposal 10438, Visit 04 Tue Sep 20 01:01:32 GMT 2005

Diagnostic Status: Warning

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 30%; ORIENT 120.0D TO 220.0 D

Comments: Orientation chosen to observe the east half of the disk and halo of NGC 4388

Diagnostics

(Visit 04) Warning: VISIBILITY OVERRUN
(Visit 04) Warning: VISIBILITY OVERRUN
(Visit 04) Warning: VISIBILITY OVERRUN
(Visit 04) Warning: VISIBILITY OVERRUN

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.198 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.3 Angle Between Sides= Center Pattern=false		(1), (2), (3)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	NGC4388-HII1	RA: 12 25 31.9000 (186.3829167d) Dec: +12 43 47.70 (12.72992d) Equinox: J2000 Plate Id: (?)	Radial Velocity: 2670.0 km/sec	V=27.2 Halpha Flux = 3.9 x 10^{-16} erg s^{-1} cm^{-2}	Coordinate Source: Gerhard et al. 2002

Comments: 17 Mpc from Tonry et al. (2001)

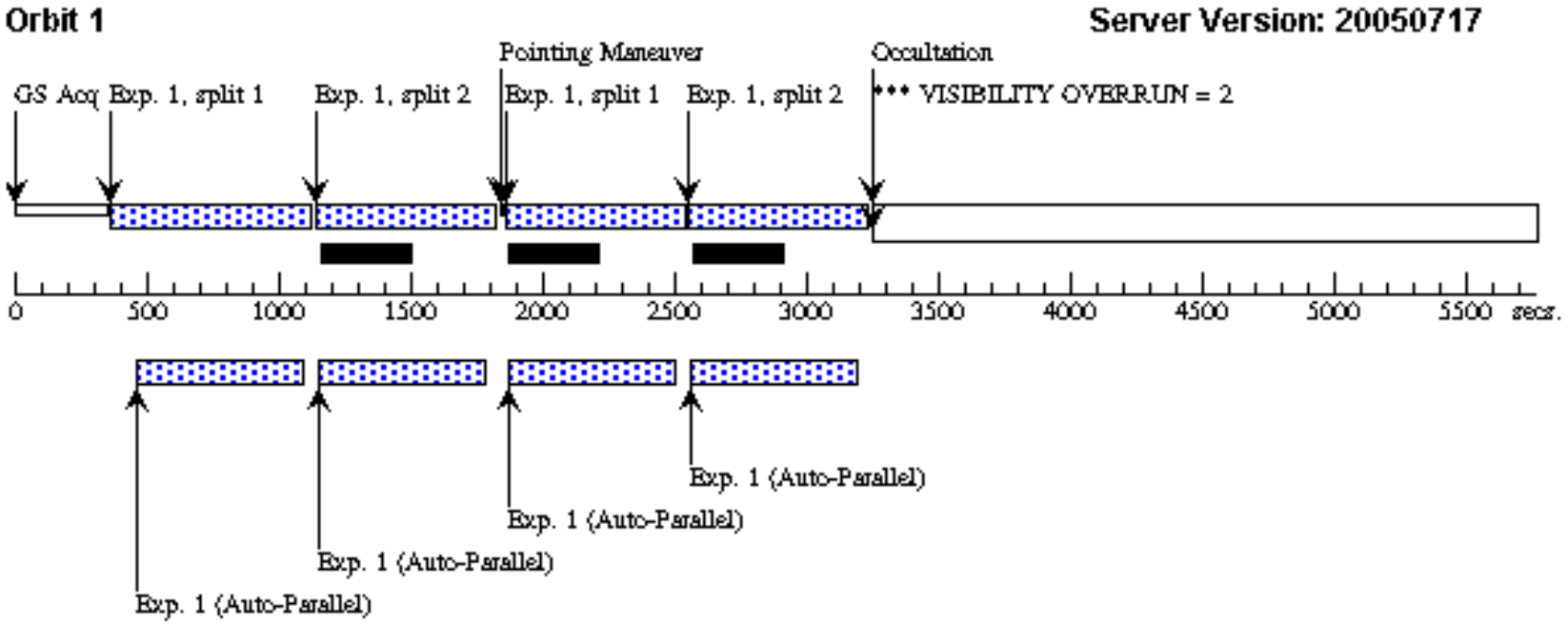
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(4) NGC4388-HII1	ACS/HRC, ACCUM, HRC	F555W	CR-SPLIT=2		Pattern 1-1 (1)	1298.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
2		(4) NGC4388-HII1	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=3		Pattern 2-2 (1)	2754.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 1, Split 3)]*	***[2]***
								[==>(Pattern 2, Split 1)] *[==>(Pattern 2, Split 2)]* *[==>(Pattern 2, Split 3)]*	***[3]***

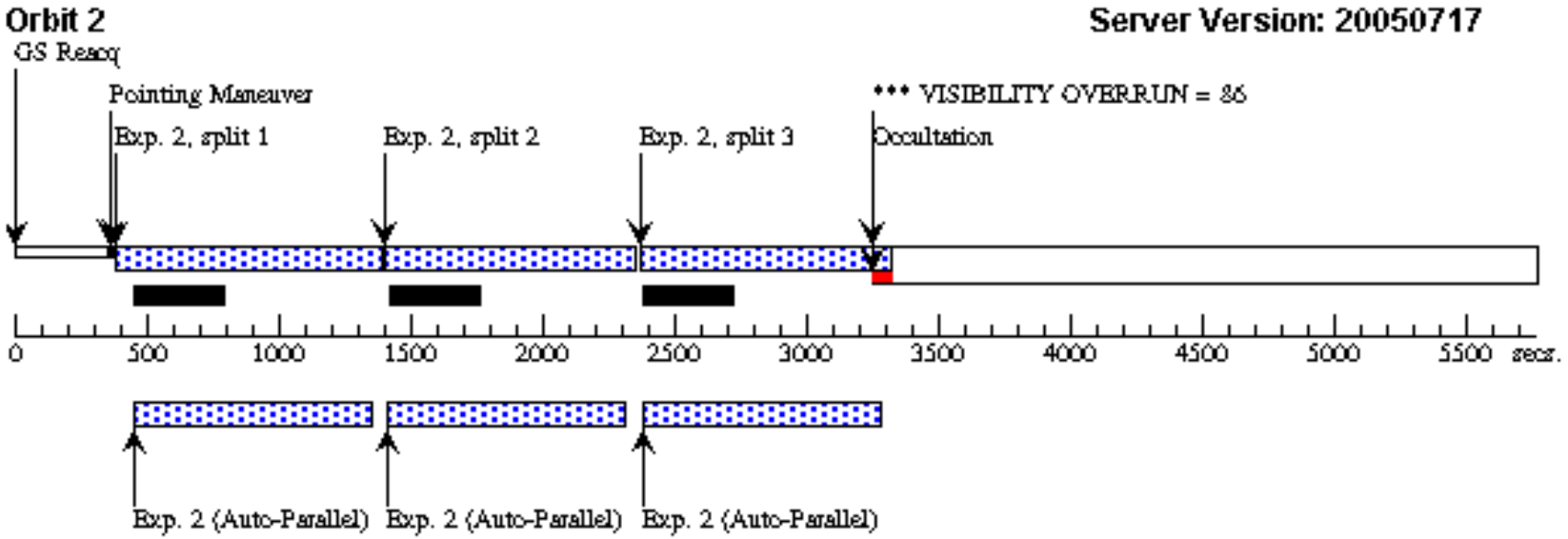
Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
3		(4) NGC4388-HII1	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2		Pattern 3-3 (1)	1352.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[4]***

Orbit Structure



Orbit Structure (continued)



Orbit Structure (continued)