



13682 - Distances and stellar populations of seven low surface brightness galaxies in the field of M101

Cycle: 22, Proposal Category: GO

(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>
01	(1) DF1 ANY	ACS/WFC WFC3/UVIS	1	26-Aug-2015 21:05:06.0	yes
02	(2) DF2 ANY	ACS/WFC WFC3/UVIS	1	26-Aug-2015 21:05:08.0	yes
03	(3) DF3 ANY	ACS/WFC WFC3/UVIS	1	26-Aug-2015 21:05:10.0	yes
04	(4) DF4 ANY	ACS/WFC WFC3/UVIS	1	26-Aug-2015 21:05:12.0	yes
05	(5) DF5 ANY	ACS/WFC WFC3/UVIS	1	26-Aug-2015 21:05:13.0	yes
06	(6) DF6 ANY	ACS/WFC WFC3/UVIS	1	26-Aug-2015 21:05:15.0	yes

<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>
07	(7) DF7 ANY	ACS/WFC WFC3/UVIS	1	26-Aug-2015 21:05:17.0	yes

7 Total Orbits Used

ABSTRACT

We have recently discovered seven large, extremely low surface brightness galaxies in the field of the nearby massive spiral galaxy M101. The galaxies were found with Dragonfly, a telescope that is optimized for the detection of low surface brightness emission. If the galaxies are associated with M101, their properties are similar to those of faint dwarf galaxies around the Milky Way and M31, and this would be the first time that a population of "typical", low luminosity dwarfs has been identified around a galaxy outside of the Local Group. Available CFHT imaging does not resolve the galaxies into stars, which makes it difficult to determine their distances and to characterize their stellar populations. Here we propose to obtain ACS imaging of these seven low surface brightness galaxies, with the aim of resolving them into individual stars. The primary goal is to determine their distances using the tip of the red giant branch, and the secondary goal is to constrain their star formation histories from the distribution of stars in the color-magnitude diagram.

OBSERVING DESCRIPTION

This program aims to image 7 dwarf galaxies, discovered with the Dragonfly Telephoto Array, with ACS in F606W and F814W.

We have 1 orbit per galaxy, and 4 ACS exposures per orbit:

- F606W
- F814W at the same position
- F814W at a dithered position, ~3" away
- F606W at this position

The galaxies are placed on the center of WFC1. They are large objects but they all fit within 100". Therefore, for any ORIENT we will cover each galaxy comfortably on the WFC1 chip.

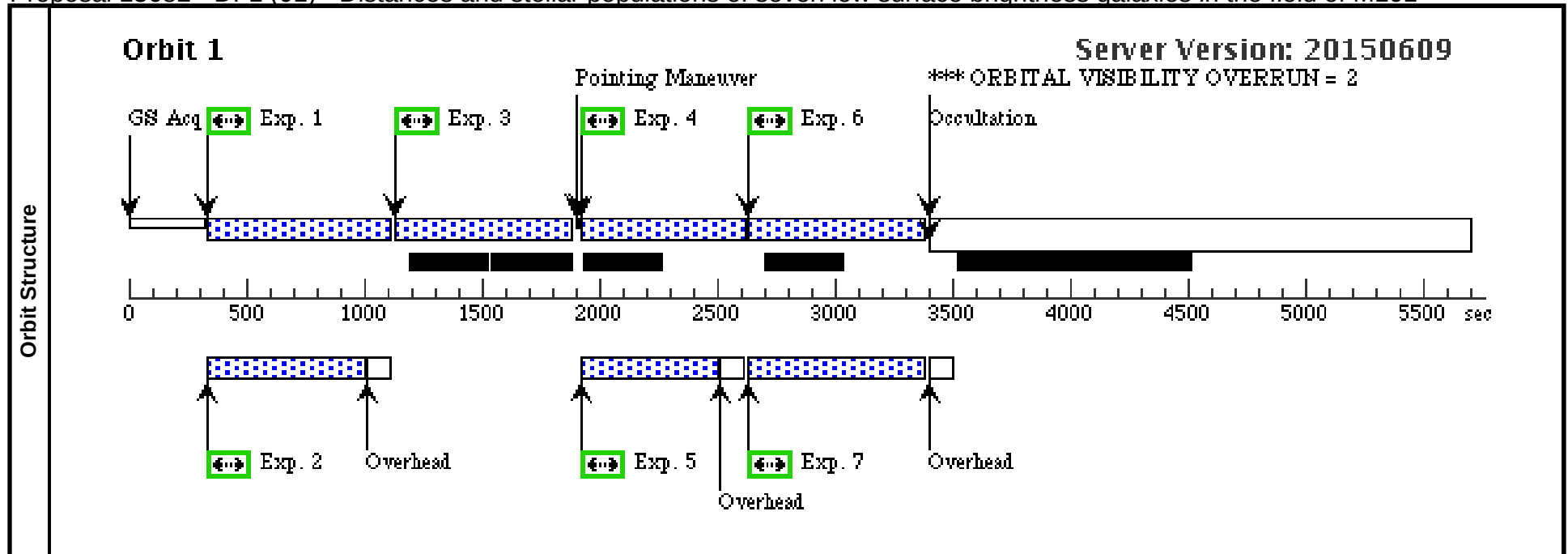
Proposal 13682 (STScI Edit Number: 1, Created: Wednesday, August 26, 2015 8:05:18 PM EST) - Overview

Parallel UVIS F606W and F814W exposures were added after consulting with other groups and obtaining permission from the TTRB. We did not manage to fill the entire orbit with parallel exposures as the required buffer dumps would cause ACS to pause in between exposures.

We believe that the current phase 2 is the optimum in terms of getting maximum parallel exposure time without jeopardizing the primary ACS program, but we're happy to be corrected!

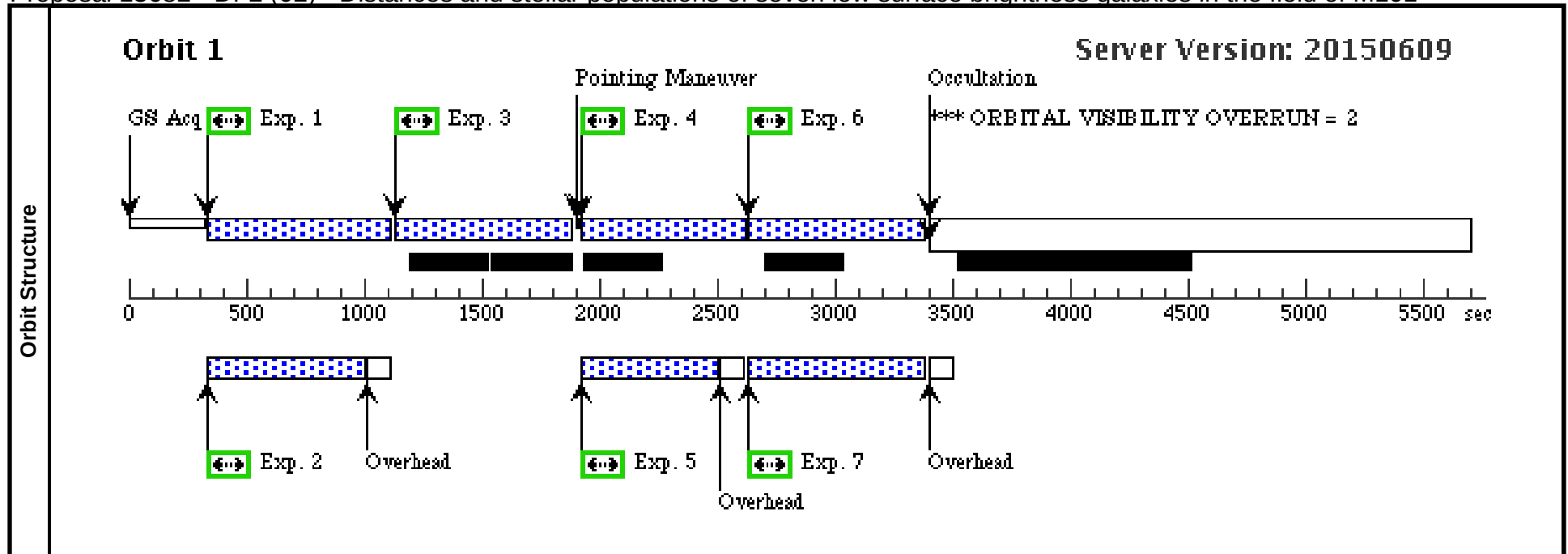
Proposal 13682 - DF1 (01) - Distances and stellar populations of seven low surface brightness galaxies in the field of M101

Visit	Proposal 13682, DF1 (01), completed Thu Aug 27 01:05:18 GMT 2015									
	Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: (none)									
Diagnostics	(DF1 (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	DF1	RA: 14 03 45.1000 (210.9379167d) Dec: +53 56 36.00 (53.94333d) Equinox: J2000		V=25	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) DF1	ACS/WFC, ACCUM, WFC1-FIX	F606W			Prime + Parallel Group 1-2 in DF1 (01)	575 Secs (575 Secs)	
								[==>]		[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Prime + Parallel Group 1-2 in DF1 (01)	640 Secs (640 Secs)	
								[==>640.0 Secs]		[1]
	3		(1) DF1	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 0,0		575 Secs (575 Secs)	
								[==>]		[1]
	4		(1) DF1	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 2.695,0.245	Prime + Parallel Group 4-5 in DF1 (01)	575 Secs (575 Secs)	
								[==>]		[1]
	5		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 4-5 in DF1 (01)	560 Secs (560 Secs)	
								[==>]		[1]
	6		(1) DF1	ACS/WFC, ACCUM, WFC1-FIX	F606W		POS TARG 2.695,0.245	Prime + Parallel Group 6-7 in DF1 (01)	575 Secs (575 Secs)	
								[==>]		[1]
	7		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 6-7 in DF1 (01)	760 Secs (756 Secs)	
								[==>756.0 Secs]		[1]



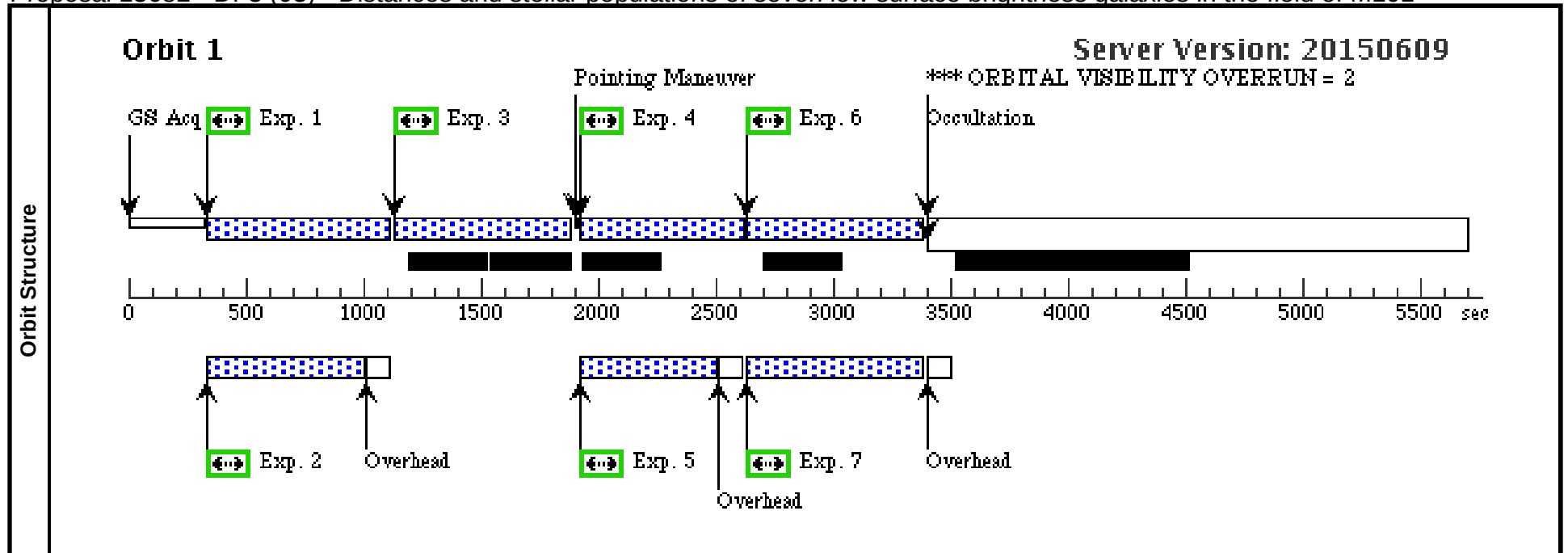
Proposal 13682 - DF2 (02) - Distances and stellar populations of seven low surface brightness galaxies in the field of M101

Visit	Proposal 13682, DF2 (02), implementation Thu Aug 27 01:05:18 GMT 2015									
	Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: (none)									
Diagnostics	(DF2 (02)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	DF2	RA: 14 08 37.5000 (212.1562500d) Dec: +54 19 32.00 (54.32556d) Equinox: J2000		V=25	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) DF2	ACS/WFC, ACCUM, WFC1-FIX	F606W		GS ACQ SCENARIO BASE1B3	Prime + Parallel Group 1-2 in DF2 (02)	575 Secs (575 Secs)	
									[==>]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Prime + Parallel Group 1-2 in DF2 (02)	640 Secs (640 Secs)	
									[==>640.0 Secs]	[1]
	3		(2) DF2	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 0,0		575 Secs (575 Secs)	
									[==>]	[1]
	4		(2) DF2	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 2.695,0.245	Prime + Parallel Group 4-5 in DF2 (02)	575 Secs (575 Secs)	
									[==>]	[1]
	5		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 4-5 in DF2 (02)	560 Secs (560 Secs)	
									[==>]	[1]
	6		(2) DF2	ACS/WFC, ACCUM, WFC1-FIX	F606W		POS TARG 2.695,0.245	Prime + Parallel Group 6-7 in DF2 (02)	575 Secs (575 Secs)	
									[==>]	[1]
	7		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 6-7 in DF2 (02)	760 Secs (756 Secs)	
									[==>756.0 Secs]	[1]



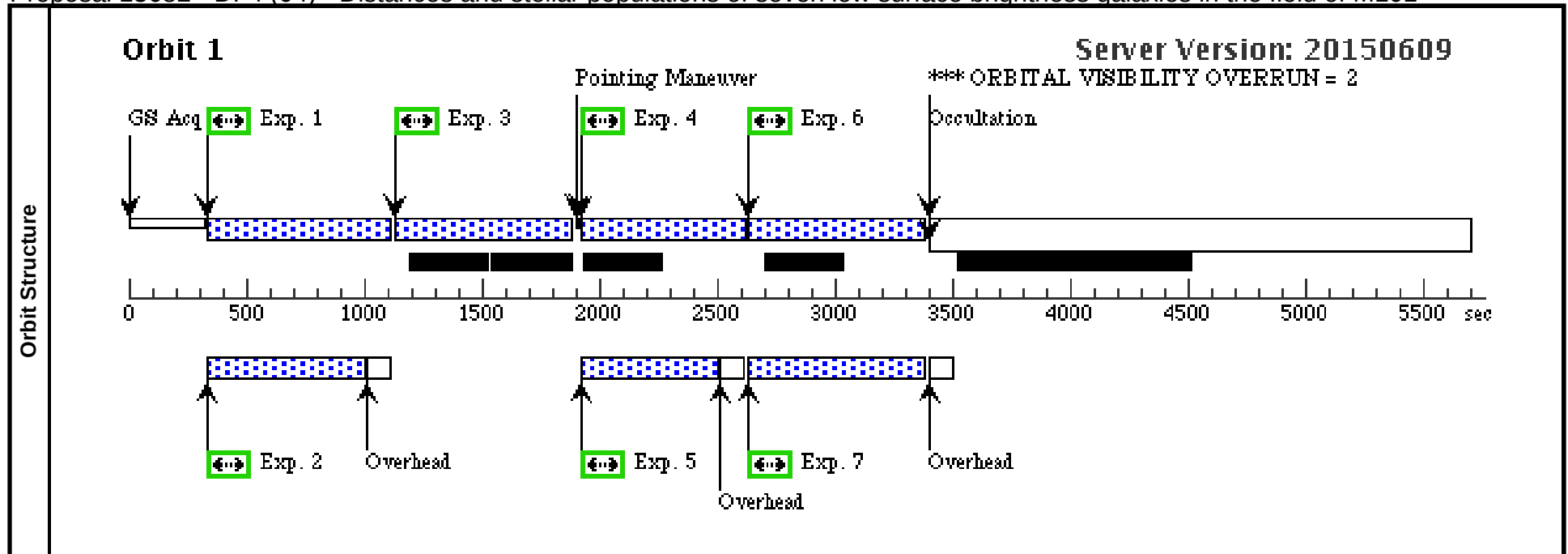
Proposal 13682 - DF3 (03) - Distances and stellar populations of seven low surface brightness galaxies in the field of M101

Visit	Proposal 13682, DF3 (03), completed Thu Aug 27 01:05:19 GMT 2015									
	Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: (none)									
Diagnostics	(DF3 (03)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(3)	DF3	RA: 14 03 5.8000 (210.7741667d) Dec: +53 36 52.00 (53.61444d) Equinox: J2000		V=25	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(3) DF3	ACS/WFC, ACCUM, WFC1-FIX	F606W			Prime + Parallel Group 1-2 in DF3 (03)	575 Secs (575 Secs)	
								[==>]		[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Prime + Parallel Group 1-2 in DF3 (03)	640 Secs (640 Secs)	
								[==>640.0 Secs]		[1]
	3		(3) DF3	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 0,0		575 Secs (575 Secs)	
								[==>]		[1]
	4		(3) DF3	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 2.695,0.245	Prime + Parallel Group 4-5 in DF3 (03)	575 Secs (575 Secs)	
								[==>]		[1]
	5		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 4-5 in DF3 (03)	560 Secs (560 Secs)	
								[==>]		[1]
	6		(3) DF3	ACS/WFC, ACCUM, WFC1-FIX	F606W		POS TARG 2.695,0.245	Prime + Parallel Group 6-7 in DF3 (03)	575 Secs (575 Secs)	
								[==>]		[1]
	7		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 6-7 in DF3 (03)	760 Secs (756 Secs)	
								[==>756.0 Secs]		[1]



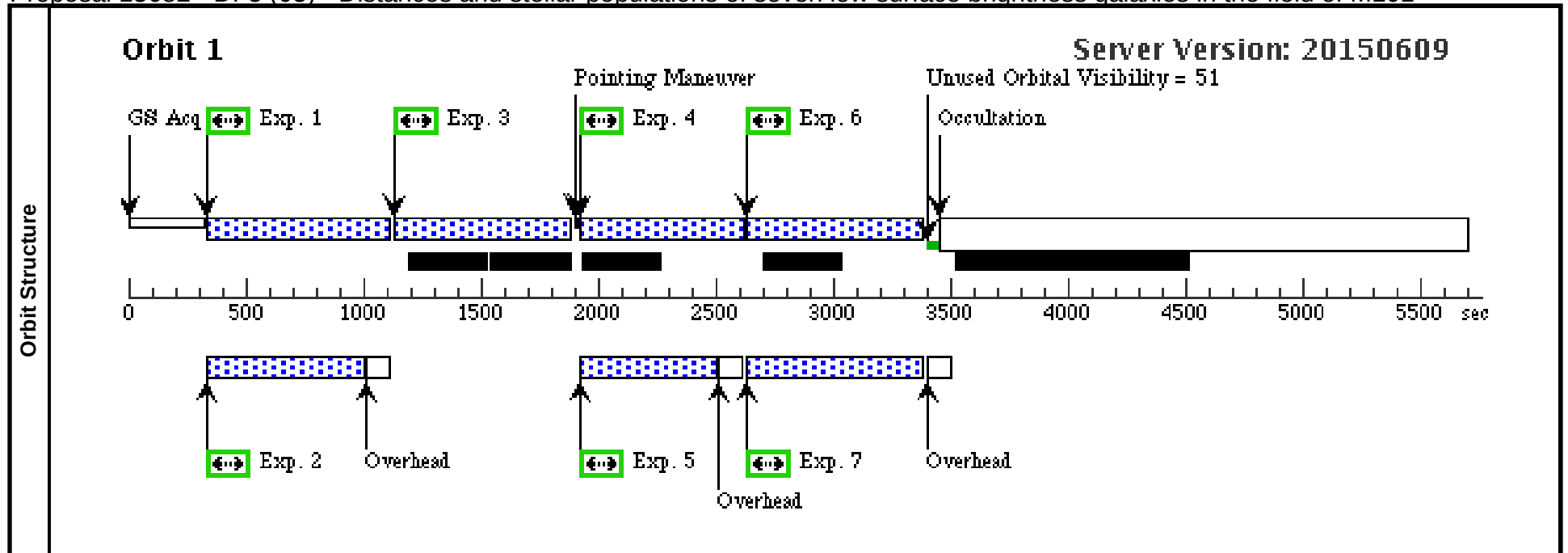
Proposal 13682 - DF4 (04) - Distances and stellar populations of seven low surface brightness galaxies in the field of M101

Visit	Proposal 13682, DF4 (04), completed Thu Aug 27 01:05:19 GMT 2015									
	Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: (none)									
Diagnos	(DF4 (04)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(4)	DF4	RA: 14 07 34.0000 (211.8916667d) Dec: +54 42 52.00 (54.71444d) Equinox: J2000		V=25	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(4) DF4	ACS/WFC, ACCUM, WFC1-FIX	F606W			Prime + Parallel Group 1-2 in DF4 (04)	575 Secs (575 Secs)	
								[==>]		[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Prime + Parallel Group 1-2 in DF4 (04)	640 Secs (640 Secs)	
								[==>640.0 Secs]		[1]
	3		(4) DF4	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 0,0		575 Secs (575 Secs)	
								[==>]		[1]
	4		(4) DF4	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 2.695,0.245	Prime + Parallel Group 4-5 in DF4 (04)	575 Secs (575 Secs)	
								[==>]		[1]
	5		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 4-5 in DF4 (04)	560 Secs (560 Secs)	
								[==>]		[1]
	6		(4) DF4	ACS/WFC, ACCUM, WFC1-FIX	F606W		POS TARG 2.695,0.245	Prime + Parallel Group 6-7 in DF4 (04)	575 Secs (575 Secs)	
								[==>]		[1]
	7		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 6-7 in DF4 (04)	760 Secs (756 Secs)	
								[==>756.0 Secs]		[1]



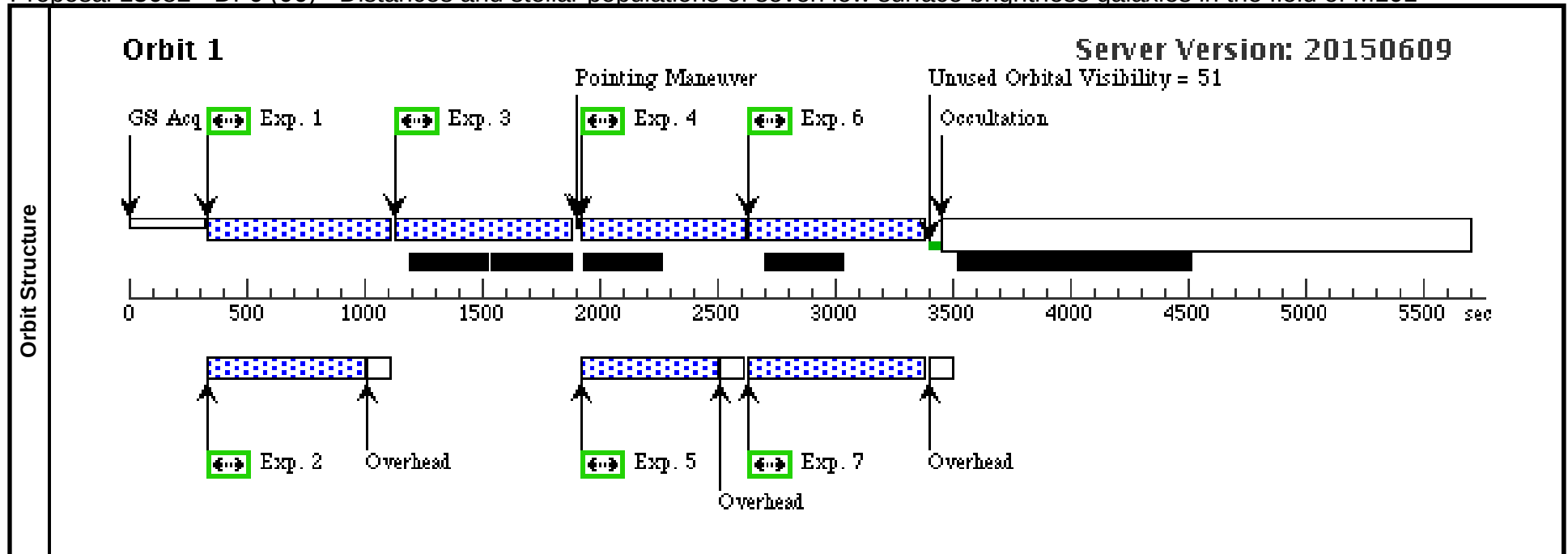
Proposal 13682 - DF5 (05) - Distances and stellar populations of seven low surface brightness galaxies in the field of M101

Visit	Proposal 13682, DF5 (05), completed Thu Aug 27 01:05:19 GMT 2015									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: (none)									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(5)	DF5	RA: 14 04 26.9000 (211.1120833d) Dec: +55 37 12.00 (55.62000d) Equinox: J2000			V=25		Reference Frame: ICRS		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(5) DF5	ACS/WFC, ACCUM, WFC1-FIX	F606W			Prime + Parallel Group 1-2 in DF5 (05)	575 Secs (575 Secs)	
									[==>]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Prime + Parallel Group 1-2 in DF5 (05)	640 Secs (640 Secs)	
									[==>640.0 Secs]	[1]
	3		(5) DF5	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 0,0		575 Secs (575 Secs)	
									[==>]	[1]
	4		(5) DF5	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 2.695,0.245	Prime + Parallel Group 4-5 in DF5 (05)	575 Secs (575 Secs)	
									[==>]	[1]
	5		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 4-5 in DF5 (05)	560 Secs (560 Secs)	
									[==>]	[1]
	6		(5) DF5	ACS/WFC, ACCUM, WFC1-FIX	F606W		POS TARG 2.695,0.245	Prime + Parallel Group 6-7 in DF5 (05)	575 Secs (575 Secs)	
									[==>]	[1]
	7		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 6-7 in DF5 (05)	760 Secs (756 Secs)	
									[==>756.0 Secs]	[1]



Proposal 13682 - DF6 (06) - Distances and stellar populations of seven low surface brightness galaxies in the field of M101

Visit	Proposal 13682, DF6 (06), completed Thu Aug 27 01:05:19 GMT 2015									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: (none)									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(6)	DF6	RA: 14 08 19.2000 (212.0800000d) Dec: +55 11 30.00 (55.19167d) Equinox: J2000			V=25		Reference Frame: ICRS		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(6) DF6	ACS/WFC, ACCUM, WFC1-FIX	F606W			Prime + Parallel Group 1-2 in DF6 (06)	575 Secs (575 Secs)	
									[==>]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Prime + Parallel Group 1-2 in DF6 (06)	640 Secs (640 Secs)	
									[==>640.0 Secs]	[1]
	3		(6) DF6	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 0,0		575 Secs (575 Secs)	
									[==>]	[1]
	4		(6) DF6	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 2.695,0.245	Prime + Parallel Group 4-5 in DF6 (06)	575 Secs (575 Secs)	
									[==>]	[1]
	5		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 4-5 in DF6 (06)	560 Secs (560 Secs)	
									[==>]	[1]
	6		(6) DF6	ACS/WFC, ACCUM, WFC1-FIX	F606W		POS TARG 2.695,0.245	Prime + Parallel Group 6-7 in DF6 (06)	575 Secs (575 Secs)	
									[==>]	[1]
	7		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 6-7 in DF6 (06)	760 Secs (756 Secs)	
									[==>756.0 Secs]	[1]



Proposal 13682 - DF7 (07) - Distances and stellar populations of seven low surface brightness galaxies in the field of M101

Visit	Proposal 13682, DF7 (07), completed Thu Aug 27 01:05:19 GMT 2015									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: (none)									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(7)	DF7	RA: 14 05 48.1000 (211.4504167d) Dec: +55 08 0.00 (55.13333d) Equinox: J2000			V=25		Reference Frame: ICRS		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(7) DF7	ACS/WFC, ACCUM, WFC1-FIX	F606W			Prime + Parallel Group 1-2 in DF7 (07)	575 Secs (575 Secs)	
									[==>]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Prime + Parallel Group 1-2 in DF7 (07)	640 Secs (640 Secs)	
									[==>640.0 Secs]	[1]
	3		(7) DF7	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 0,0		575 Secs (575 Secs)	
									[==>]	[1]
	4		(7) DF7	ACS/WFC, ACCUM, WFC1-FIX	F814W		POS TARG 2.695,0.245	Prime + Parallel Group 4-5 in DF7 (07)	575 Secs (575 Secs)	
									[==>]	[1]
	5		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 4-5 in DF7 (07)	560 Secs (560 Secs)	
									[==>]	[1]
	6		(7) DF7	ACS/WFC, ACCUM, WFC1-FIX	F606W		POS TARG 2.695,0.245	Prime + Parallel Group 6-7 in DF7 (07)	575 Secs (575 Secs)	
									[==>]	[1]
	7		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Prime + Parallel Group 6-7 in DF7 (07)	760 Secs (756 Secs)	
									[==>756.0 Secs]	[1]

