



# 12174 - An HST/WFC3 mapping of optical emission lines from the nuclear spiral in M31

Cycle: 18, 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) M31-NUCLEAR-SPIRAL	ACS/WFC WFC3/UVIS	1	01-Oct-2010 21:24:59.0	yes
02	(1) M31-NUCLEAR-SPIRAL	ACS/WFC WFC3/UVIS	1	01-Oct-2010 21:25:07.0	yes
03	(1) M31-NUCLEAR-SPIRAL	ACS/WFC WFC3/UVIS	1	01-Oct-2010 21:25:12.0	yes
04	(1) M31-NUCLEAR-SPIRAL	ACS/WFC WFC3/UVIS	1	01-Oct-2010 21:25:16.0	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>
05	(1) M31-NUCLEAR-SPIRAL	ACS/WFC WFC3/UVIS	1	01-Oct-2010 21:25:20.0	yes
06	(1) M31-NUCLEAR-SPIRAL	ACS/WFC WFC3/UVIS	1	01-Oct-2010 21:25:25.0	yes
07	(1) M31-NUCLEAR-SPIRAL	ACS/WFC WFC3/UVIS	1	01-Oct-2010 21:25:29.0	yes
08	(1) M31-NUCLEAR-SPIRAL	ACS/WFC WFC3/UVIS	1	01-Oct-2010 21:25:32.0	yes

8 Total Orbits Used

### **ABSTRACT**

The nuclear spiral in M31, consisting of ionized and neutral dusty gas clouds of typically sub-parsec sizes, shows optical emission lines characteristic of LINERs. Yet the lack of UV radiation from either an active nucleus or massive young stars makes the ionizing source of this nearest LINER a longstanding puzzle. We propose a WFC/UVIS observation of the nuclear spiral, using appropriate narrow-band filters to map the H alpha, [N II] and [O III] lines. The resolving power of HST is essential to measuring the line intensities and their ratios from discrete gas clouds across the nuclear spiral, based on which we can derive the physical properties of gas such as density and ionization state. We will then assess the relative importance of ionization/excitation mechanisms, in particular UV radiation provided by evolved stars and heating by cosmic-rays, by confronting with theoretical models. This study advances our understanding of the regulation of galactic circumnuclear environments, which is in turn crucial to understanding the evolution of the central super-massive black hole and the host galaxy.

### **OBSERVING DESCRIPTION**

With the WFC3/UVIS and 8 allocated orbits, we will map four emission lines, [O II]3727, [O III]5007, H-alpha6563, and [N II]6583, from the central 150 arcsec X 150 arcsec region about the M31 nucleus. A total of seven filters will be used, including four on-line filters and three off-line filters for measuring the continuum.

Based on the expected line intensities and desired S/N, each of the three filters, F373N, F656N and F658N, will be utilized for one orbit, and the F502N filter will be utilized for two orbits. Each of the three off-line continuum filters, F390M, F547M and F665N, will be utilized for one orbit.

Each orbit will have the same exposure design. We intend to use a 3-point pattern which is similar to WFC3-UVIS-MOSAIC-LINE pattern, but with the dither offsets of 36.33 and 71.33 pixels in the x and y directions. This 1/3 subpixel offset is chosen to optimize the PSF sampling. This pattern could also help to remove cosmic-rays and the CCD gap of WFC3. The exposure time for each pointing is 900 second for WFC3.

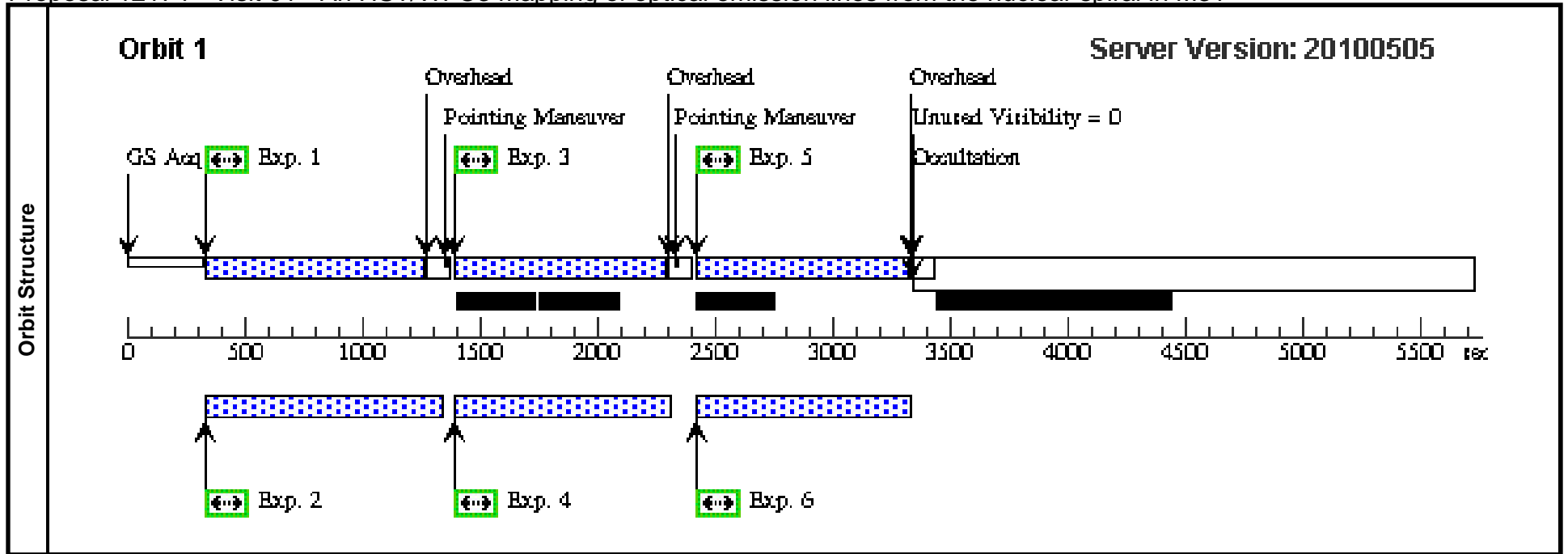
Therefore, the total exposure time for each orbit is 2700 second. The overhead incurred during each orbit is as follows: 1) 333 s for the guide-star acquisition and instrument setup, b) 2700 s science exposures, c) 232 s for UVIS overhead for preparing the second and third exposures. The total time used is 3265 s, which can be fixed into one orbit, according to the APT of the latest version.

With the ACS and 8 allocated parallel orbits, we will also sample the outer regions (about 6 arcminutes from the center) with narrow-band filters, F502N, F658N, F660N (2 orbit for each) and the corresponding continuum F550M and F625W (1 orbit for each). The effective exposure time for each orbit is 2382 s

Proposal 12174 (STScI Edit Number: 1, Created: Friday, October 1, 2010 8:25:36 PM EST) - Overview

Sat Oct 02 01:25:36 GMT 2010

<b>Visit</b>	<b>Proposal 12174, Visit 01, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC, WFC3/UVIS Special Requirements: ORIENT 85D TO 85 D <i>Comments: We prefer setting the orientation angle to be 120 +/- 10 degree, in which case the parallel ACS observations will have an optimal coverage of an outer spiral arm. If this range is inconvenient to schedule, a broader range of 80-160 degree will still be good for the ACS field of view, as we tentatively set here for the Visit Orientation Requirements. We emphasize that the exact orientation has little effect for the prime WFC3 field of view, but we prefer having the same (or nearly same) orientation for all visits.</i>																				
	<b>Fixed Targets</b> <table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>M31-NUCLEAR-SPIRAL</td> <td>RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000</td> <td>Radial Velocity: -300 km/sec</td> <td>V=3.44+/-0.03</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>										#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	M31-NUCLEAR-SPIRAL	RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000	Radial Velocity: -300 km/sec	V=3.44+/-0.03
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous																
(1)	M31-NUCLEAR-SPIRAL	RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000	Radial Velocity: -300 km/sec	V=3.44+/-0.03	Reference Frame: ICRS																
<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit											
	1	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F373N			Prime + Parallel Group 1-2	900 Secs [==>]	[1]											
	2	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F502N			Prime + Parallel Group 1-2	800 Secs [==>]	[1]											
	3	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F373N		POS TARG 1.43171, 2.91514	Prime + Parallel Group 3-4	900 Secs [==>]	[1]											
	4	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F502N			Prime + Parallel Group 3-4	800 Secs [==>]	[1]											
	5	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F373N		POS TARG 2.86342, 5.83028	Prime + Parallel Group 5-6	900 Secs [==>]	[1]											
	6	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F502N			Prime + Parallel Group 5-6	782 Secs [==>]	[1]											



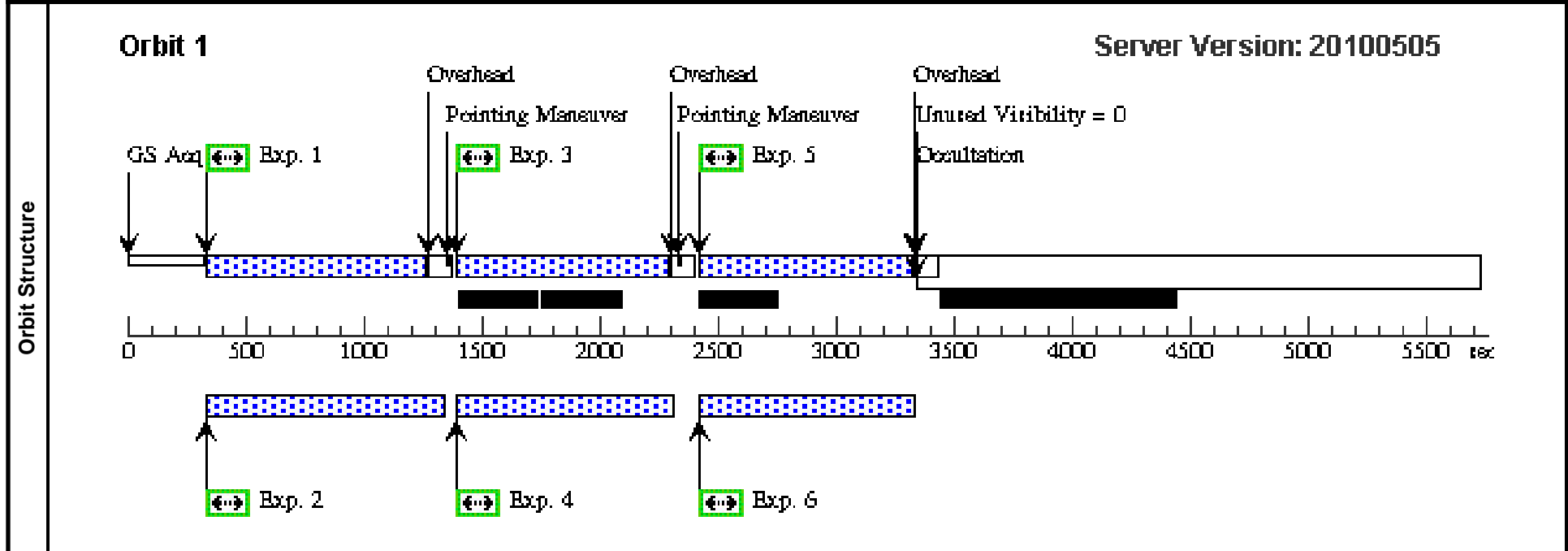
Proposal 12174 - Visit 01 - An HST/WFC3 mapping of optical emission lines from the nuclear spiral in M31

Sat Oct 02 01:25:38 GMT 2010

<b>Visit</b>	<b>Proposal 12174, Visit 02, implementation</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: ACS/WFC, WFC3/UVIS				
	Special Requirements: SAME ORIENT AS 01				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	M31-NUCLEAR-SPIRAL	RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000	Radial Velocity: -300 km/sec	V=3.44+/-0.03	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F656N			Prime + Parallel Group 1-2	900 Secs [==>]	[1]
	2		(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F502N			Prime + Parallel Group 1-2	800 Secs [==>]	[1]
	3		(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F656N		POS TARG 1.43171, 2.91514	Prime + Parallel Group 3-4	900 Secs [==>]	[1]
	4		(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F502N			Prime + Parallel Group 3-4	800 Secs [==>]	[1]
	5		(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F656N		POS TARG 2.86342, 5.83028	Prime + Parallel Group 5-6	900 Secs [==>]	[1]
	6		(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F502N			Prime + Parallel Group 5-6	782 Secs [==>]	[1]



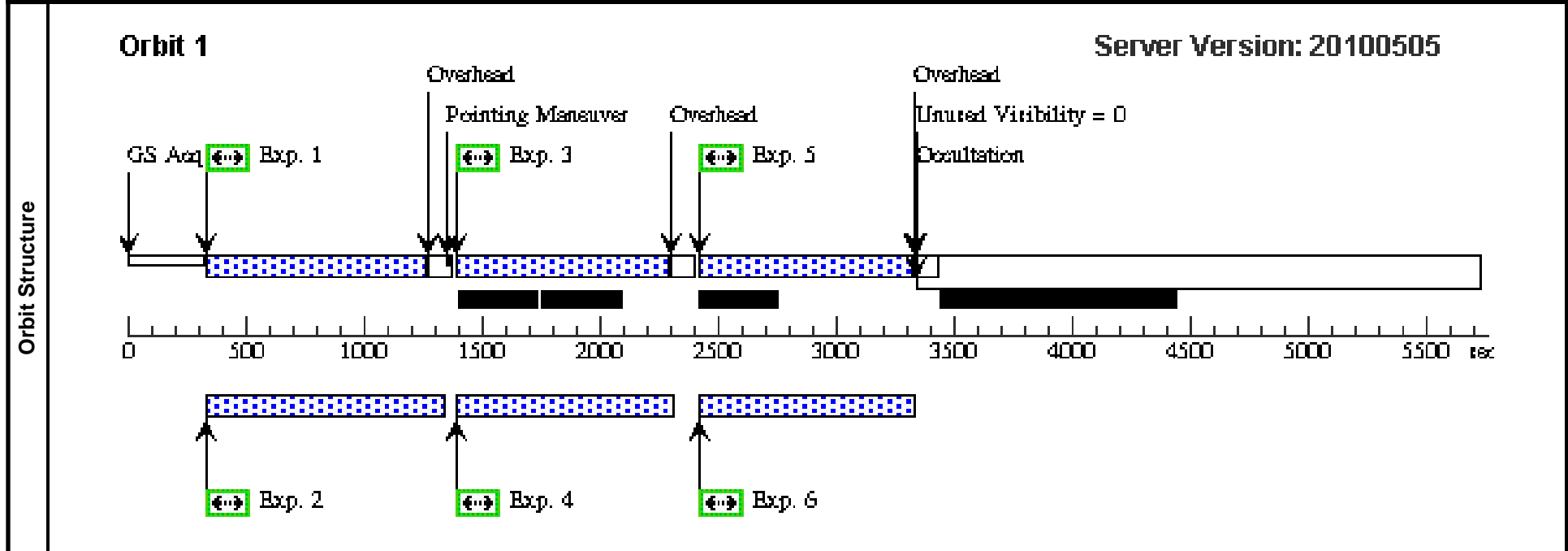
Proposal 12174 - Visit 02 - An HST/WFC3 mapping of optical emission lines from the nuclear spiral in M31

Sat Oct 02 01:25:38 GMT 2010

<b>Visit</b>	<b>Proposal 12174, Visit 03, implementation</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: ACS/WFC, WFC3/UVIS				
	Special Requirements: SAME ORIENT AS 01				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	M31-NUCLEAR-SPIRAL	RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000	Radial Velocity: -300 km/sec	V=3.44+/-0.03	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F658N			Prime + Parallel Group 1-2	900 Secs [==>]	[1]
	2	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F660N			Prime + Parallel Group 1-2	800 Secs [==>]	[1]
	3	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F658N		POS TARG 2.86342, 5.83028	Prime + Parallel Group 3-4	900 Secs [==>]	[1]
	4	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F660N			Prime + Parallel Group 3-4	800 Secs [==>]	[1]
	5	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F658N		POS TARG 2.86342, 5.83028	Prime + Parallel Group 5-6	900 Secs [==>]	[1]
	6	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F660N			Prime + Parallel Group 5-6	782 Secs [==>]	[1]



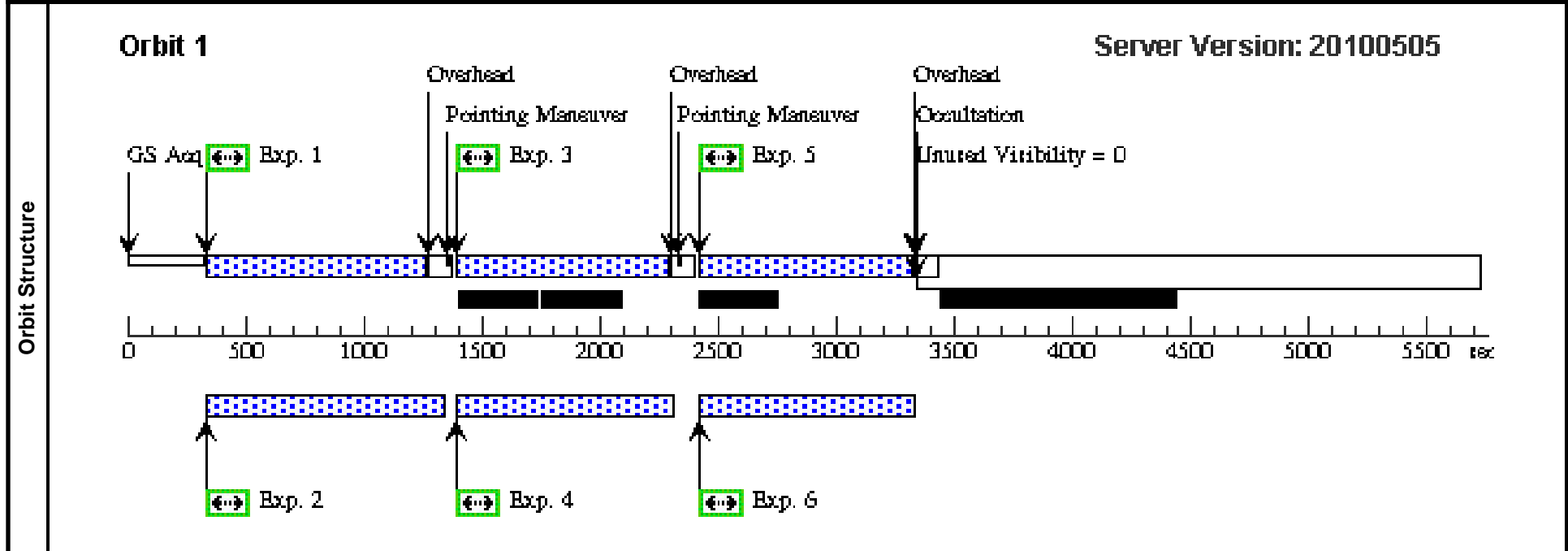
Proposal 12174 - Visit 03 - An HST/WFC3 mapping of optical emission lines from the nuclear spiral in M31

Sat Oct 02 01:25:39 GMT 2010

<b>Visit</b>	<b>Proposal 12174, Visit 04, implementation</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: ACS/WFC, WFC3/UVIS				
	Special Requirements: SAME ORIENT AS 01				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	M31-NUCLEAR-SPIRAL	RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000	Radial Velocity: -300 km/sec	V=3.44+/-0.03	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F502N			Prime + Parallel Group 1-2	900 Secs [==>]	[1]
	2	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F660N			Prime + Parallel Group 1-2	800 Secs [==>]	[1]
	3	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F502N		POS TARG 1.43171, 2.91514	Prime + Parallel Group 3-4	900 Secs [==>]	[1]
	4	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F660N			Prime + Parallel Group 3-4	800 Secs [==>]	[1]
	5	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F502N		POS TARG 2.86342, 5.83028	Prime + Parallel Group 5-6	900 Secs [==>]	[1]
	6	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F660N			Prime + Parallel Group 5-6	782 Secs [==>]	[1]



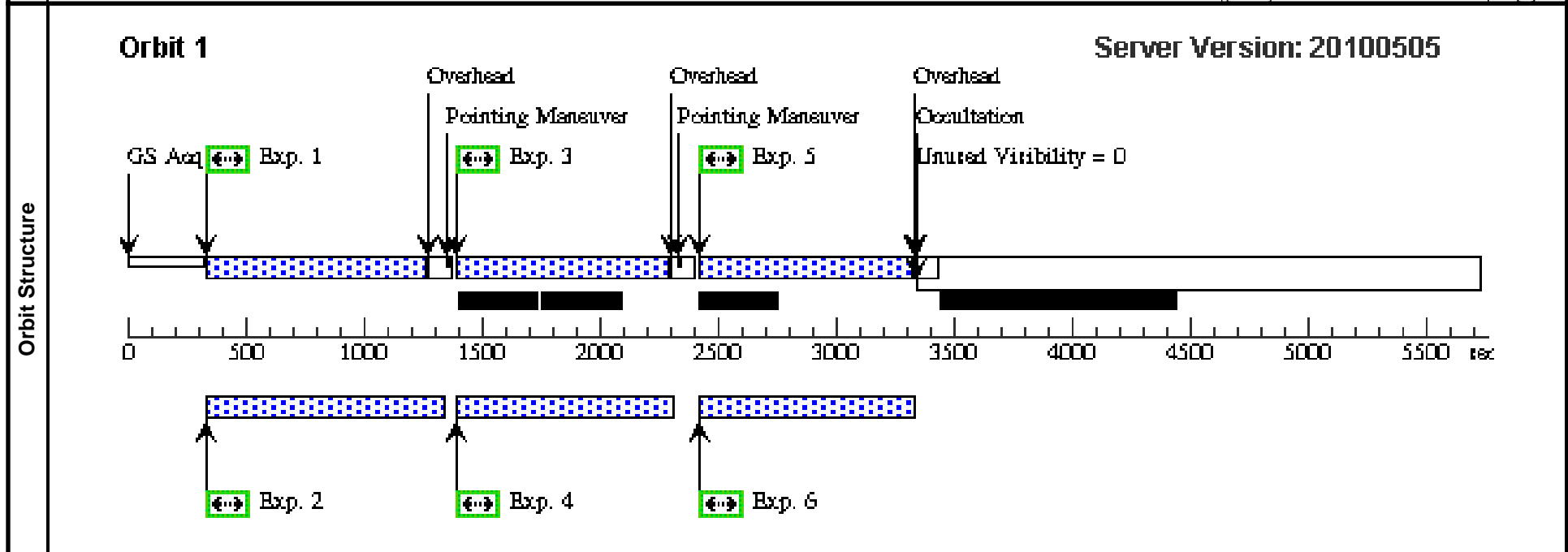
Proposal 12174 - Visit 04 - An HST/WFC3 mapping of optical emission lines from the nuclear spiral in M31

Sat Oct 02 01:25:39 GMT 2010

<b>Visit</b>	<b>Proposal 12174, Visit 05, implementation</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: ACS/WFC, WFC3/UVIS				
	Special Requirements: SAME ORIENT AS 01				

<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(1)	M31-NUCLEAR-SPIRAL	RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000	Radial Velocity: -300 km/sec	V=3.44+/-0.03	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F502N			Prime + Parallel Group 1-2	900 Secs [==>]	[1]
	2	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F658N			Prime + Parallel Group 1-2	800 Secs [==>]	[1]
	3	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F502N		POS TARG 1.43171, 2.91514	Prime + Parallel Group 3-4	900 Secs [==>]	[1]
	4	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F658N			Prime + Parallel Group 3-4	800 Secs [==>]	[1]
	5	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F502N		POS TARG 2.86342, 5.83028	Prime + Parallel Group 5-6	900 Secs [==>]	[1]
	6	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F658N			Prime + Parallel Group 5-6	782 Secs [==>]	[1]



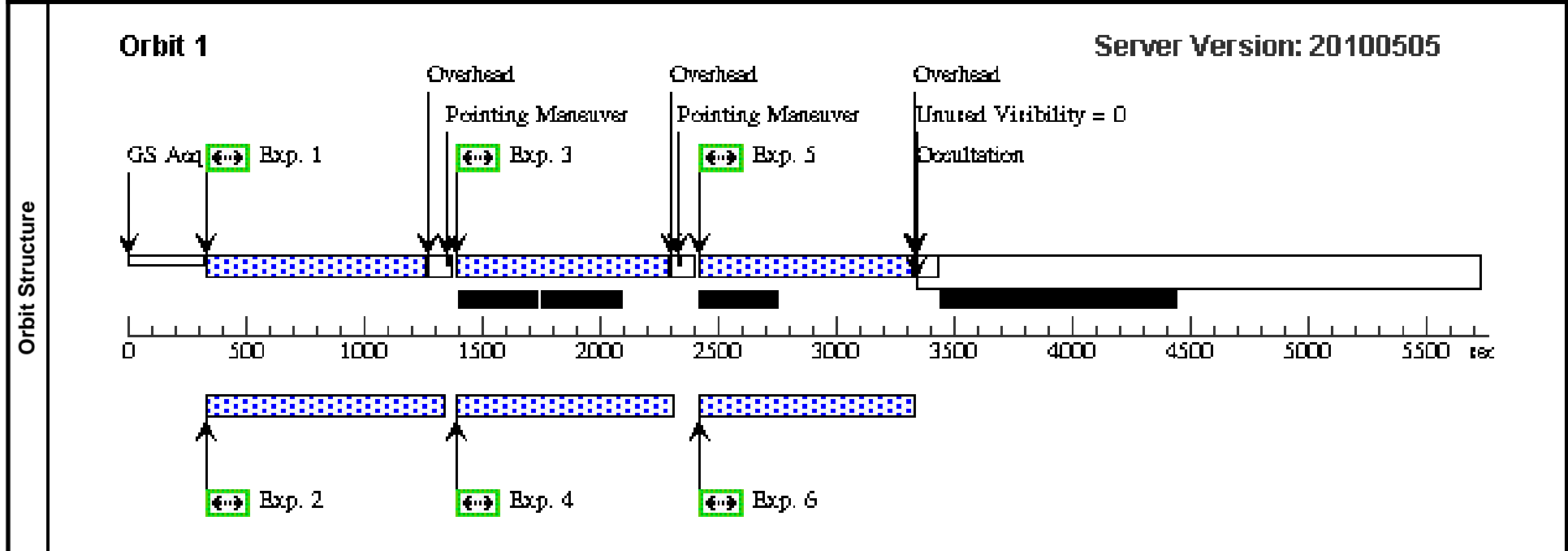
Proposal 12174 - Visit 05 - An HST/WFC3 mapping of optical emission lines from the nuclear spiral in M31

Sat Oct 02 01:25:40 GMT 2010

<b>Visit</b>	<b>Proposal 12174, Visit 06, implementation</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: ACS/WFC, WFC3/UVIS				
	Special Requirements: SAME ORIENT AS 01				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	M31-NUCLEAR-SPIRAL	RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000	Radial Velocity: -300 km/sec	V=3.44+/-0.03	Reference Frame: ICRS
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F390M			Prime + Parallel Group 1-2	900 Secs [==>]	[1]
	2		(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F658N			Prime + Parallel Group 1-2	800 Secs [==>]	[1]
	3		(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F390M		POS TARG 1.43171, 2.91514	Prime + Parallel Group 3-4	900 Secs [==>]	[1]
	4		(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F658N			Prime + Parallel Group 3-4	800 Secs [==>]	[1]
	5		(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F390M		POS TARG 2.86342, 5.83028	Prime + Parallel Group 5-6	900 Secs [==>]	[1]
	6		(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F658N			Prime + Parallel Group 5-6	782 Secs [==>]	[1]



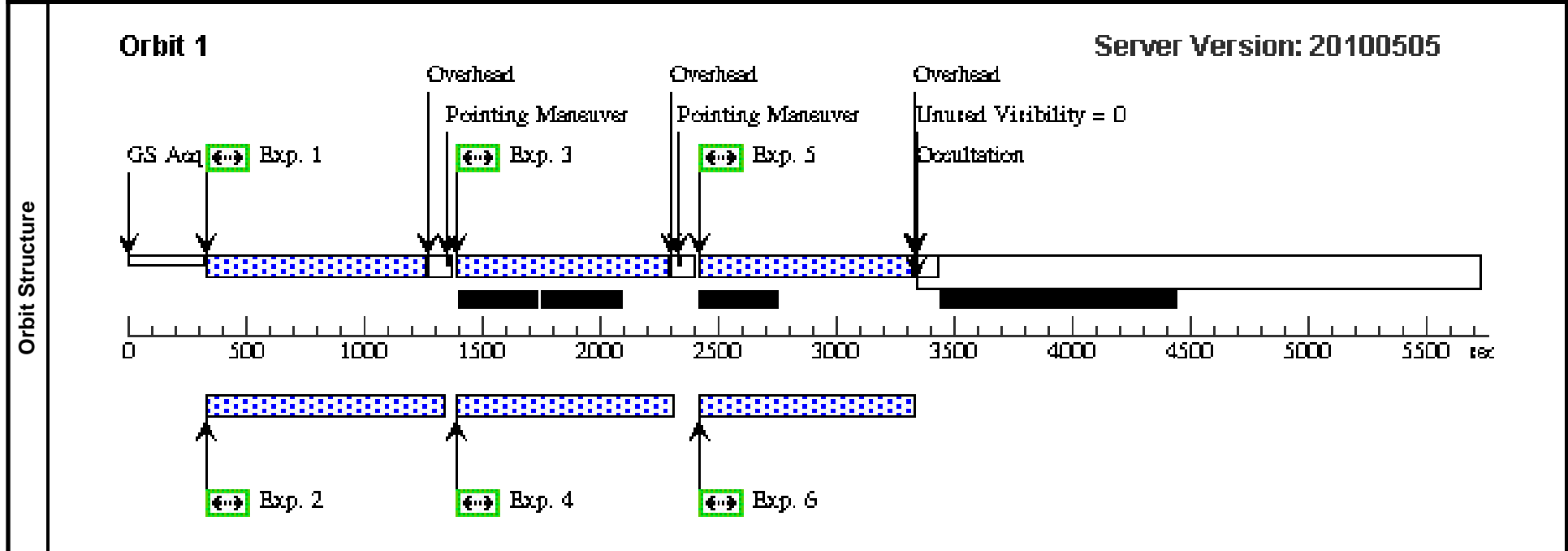
Proposal 12174 - Visit 06 - An HST/WFC3 mapping of optical emission lines from the nuclear spiral in M31

Sat Oct 02 01:25:40 GMT 2010

<b>Visit</b>	<b>Proposal 12174, Visit 07, implementation</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: ACS/WFC, WFC3/UVIS				
	Special Requirements: SAME ORIENT AS 01				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	M31-NUCLEAR-SPIRAL	RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000	Radial Velocity: -300 km/sec	V=3.44+/-0.03	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F547M			Prime + Parallel Group 1-2	900 Secs [==>]	[1]
	2	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F550M			Prime + Parallel Group 1-2	800 Secs [==>]	[1]
	3	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F547M		POS TARG 1.43171, 2.91514	Prime + Parallel Group 3-4	900 Secs [==>]	[1]
	4	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F550M			Prime + Parallel Group 3-4	800 Secs [==>]	[1]
	5	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F547M		POS TARG 2.86342, 5.83028	Prime + Parallel Group 5-6	900 Secs [==>]	[1]
	6	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F550M			Prime + Parallel Group 5-6	782 Secs [==>]	[1]



Proposal 12174 - Visit 07 - An HST/WFC3 mapping of optical emission lines from the nuclear spiral in M31

Sat Oct 02 01:25:41 GMT 2010

<b>Visit</b>	<b>Proposal 12174, Visit 08, implementation</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: ACS/WFC, WFC3/UVIS				
	Special Requirements: SAME ORIENT AS 01				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	M31-NUCLEAR-SPIRAL	RA: 00 42 44.3100 (10.6846250d) Dec: +41 16 9.40 (41.26928d) Equinox: J2000	Radial Velocity: -300 km/sec	V=3.44+/-0.03	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F665N			Prime + Parallel Group 1-2	900 Secs [==>]	[1]
	2	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F625W			Prime + Parallel Group 1-2	800 Secs [==>]	[1]
	3	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F665N		POS TARG 1.43171, 2.91514	Prime + Parallel Group 3-4	900 Secs [==>]	[1]
	4	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F625W			Prime + Parallel Group 3-4	800 Secs [==>]	[1]
	5	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	WFC3/UVIS, ACCUM, UVIS-FIX	F665N		POS TARG 2.86342, 5.83028	Prime + Parallel Group 5-6	900 Secs [==>]	[1]
	6	(1) M31-NUCLEAR-SPIRAL	(1) M31-NUCLEAR-SPIRAL	ACS/WFC, ACCUM, WFC-FIX	F625W			Prime + Parallel Group 5-6	782 Secs [==>]	[1]

