10617 - HST / Chandra Monitoring of a Dramatic Flare in the M87 Jet

Cycle: 14, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
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VISITS

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
11	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:52:26.0	yes
13	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:52:33.0	yes
15	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:52:38.0	yes
21	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:52:43.0	yes
23	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:52:53.0	yes
25	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:52:58.0	yes
31	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:53:04.0	yes
32	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:53:10.0	yes

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
33	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:53:16.0	yes
34	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:53:25.0	yes
35	(1) M87-JET	ACS/HRC	1	20-Jun-2005 10:53:31.0	yes

11 Total Orbits Used

ABSTRACT

As the nearest galaxy with an optical jet, M87 affords an unparalleled opportunity to study extragalactic jet phenomena at the highest resolution. During 2002, HST and Chandra monitoring of the M87 jet detected a dramatic flare in knot HST-1 located ~1" from the nucleus. As of late 2004 its brightness has increased fifty-fold in the optical band, and continues to increase sharply; the X-rays show a similarly dramatic outburst. In both bands HST-1 now greatly exceeds the nucleus in brightness. To our knowledge this is the first incidence of an optical or X-ray outburst from a jet region which is spatially distinct from the core source -- this presents an unprecedented opportunity to study the processes responsible for non-thermal variability and the X-ray emission.

We propose seven epochs of HST/STIS monitoring during Cycle 14, as well as seven epochs of Chandra/ACIS observation (5ksec each). We also include a brief HRC/ACS observations that will be used to gather spectral information and map the magnetic field structure.

The results of this investigation are of key importance not only for understanding the nature of the X-ray emission of the M87 jet, but also for understanding flares in blazar jets, which are highly variable, but where we have never before been able to resolve the flaring region in the optical or X-rays. These observations will allow us to test synchrotron emission models for the X-ray outburst, constrain particle acceleration and loss timescales, and study the jet dynamics associated with this flaring component.

OBSERVING DESCRIPTION

Visits 31-35: Flux monitoring and proper motions of knots in the M87 Jet. We will obtain ACS/HRC F250W images of the jet using a setup which duplicates our recent Cycle 13 monitor observations. A single orbit is required. The superluminal knots in region HST-1 which have estimated fluxes 2 * 10^-18 erg cm^-2 s^-1 AA^-1 at 3000Angstrom\ (assuming a nu^-1 spectrum found in nearby knots) will have SNR=24 in 2400 sec. Sub-exposures will be dithered to improve PSF sampling by the 0.05" pixels and minimize detector artifacts; a large 3" dither is also used to remove the occulting finger. The observations are scheduled to be within 3 days of Chandra M87 observations (where possible); the Chandra observations are an important part of this program. Short polarization observations in either F330W or F606W are included to allow correction of instrumental polarization effects on the observed F250W fluxes (theses are needed since the target is expected to be highly polarized). Visits 11, 13, 15: ACS/HRC multi-band observations roughly 3 months apart. Images taken in F220W, F475W, and F814W for derivation of optical spectral indicies. Again a large dither is used to avoid data loss due to the occulting finger. Visit 21, 23, 25: ACS/HRC F606W polarimetry is performed so as to derive the magnetic field configuation of the jet, and especially region HST-1. Same large dithers are used to avoid the occulting finger.

Visit

Proposal 10617, Visit 11 Mon Jun 20 14:53:33 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

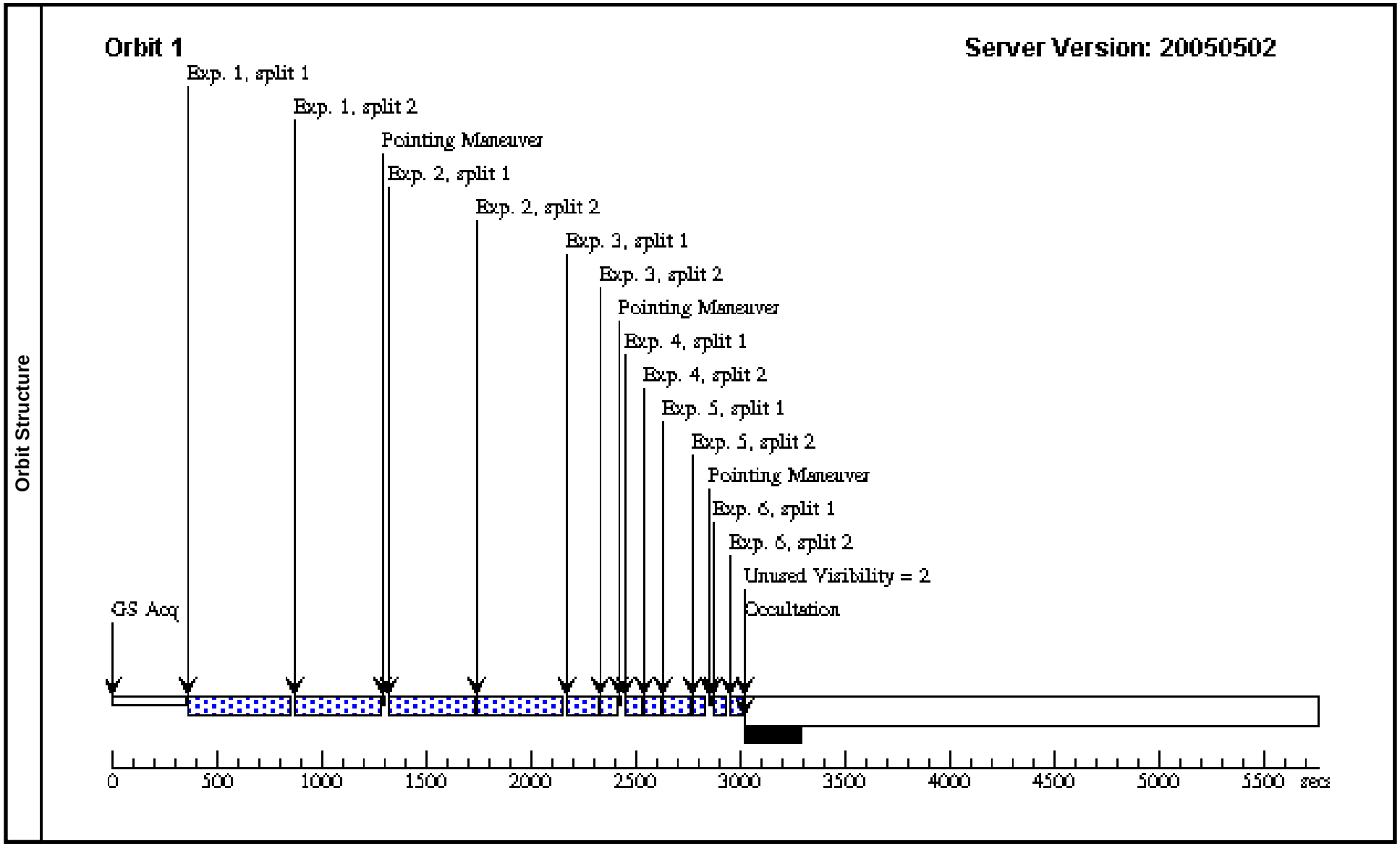
Special Requirements: PCS MODE FINE; SCHED 100%; SAME ORIENT AS 31; GROUP 11,31 WITHIN 1.0D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) M87-JET	ACS/HRC, ACCUM, HRC	F220W	CR-SPLIT=2	POS TARG 1,0	Sequence 1-6 Non-Int	755.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
2	2	(1) M87-JET	ACS/HRC, ACCUM, HRC	F220W	CR-SPLIT=2	POS TARG 4,0	Sequence 1-6 Non-Int	755.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
3	3	(1) M87-JET	ACS/HRC, ACCUM, HRC	F475W	CR-SPLIT=2	SAME POS AS 2	Sequence 1-6 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
4	4	(1) M87-JET	ACS/HRC, ACCUM, HRC	F475W	CR-SPLIT=2	SAME POS AS 1	Sequence 1-6 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
5	5	(1) M87-JET	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2	SAME POS AS 1	Sequence 1-6 Non-Int	48.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
6	6	(1) M87-JET	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2	SAME POS AS 2	Sequence 1-6 Non-Int	48.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20050502
Exp. 1, split 1
Exp. 1, split 2
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 3, split 1
Exp. 3, split 2
Pointing Maneuver
Exp. 4, split 1
Exp. 4, split 2
Exp. 5, split 1
Exp. 5, split 2
Pointing Maneuver
Exp. 6, split 1
Exp. 6, split 2
Unused Visibility = 2
Occultation
GS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 10617, Visit 13 Mon Jun 20 14:53:35 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

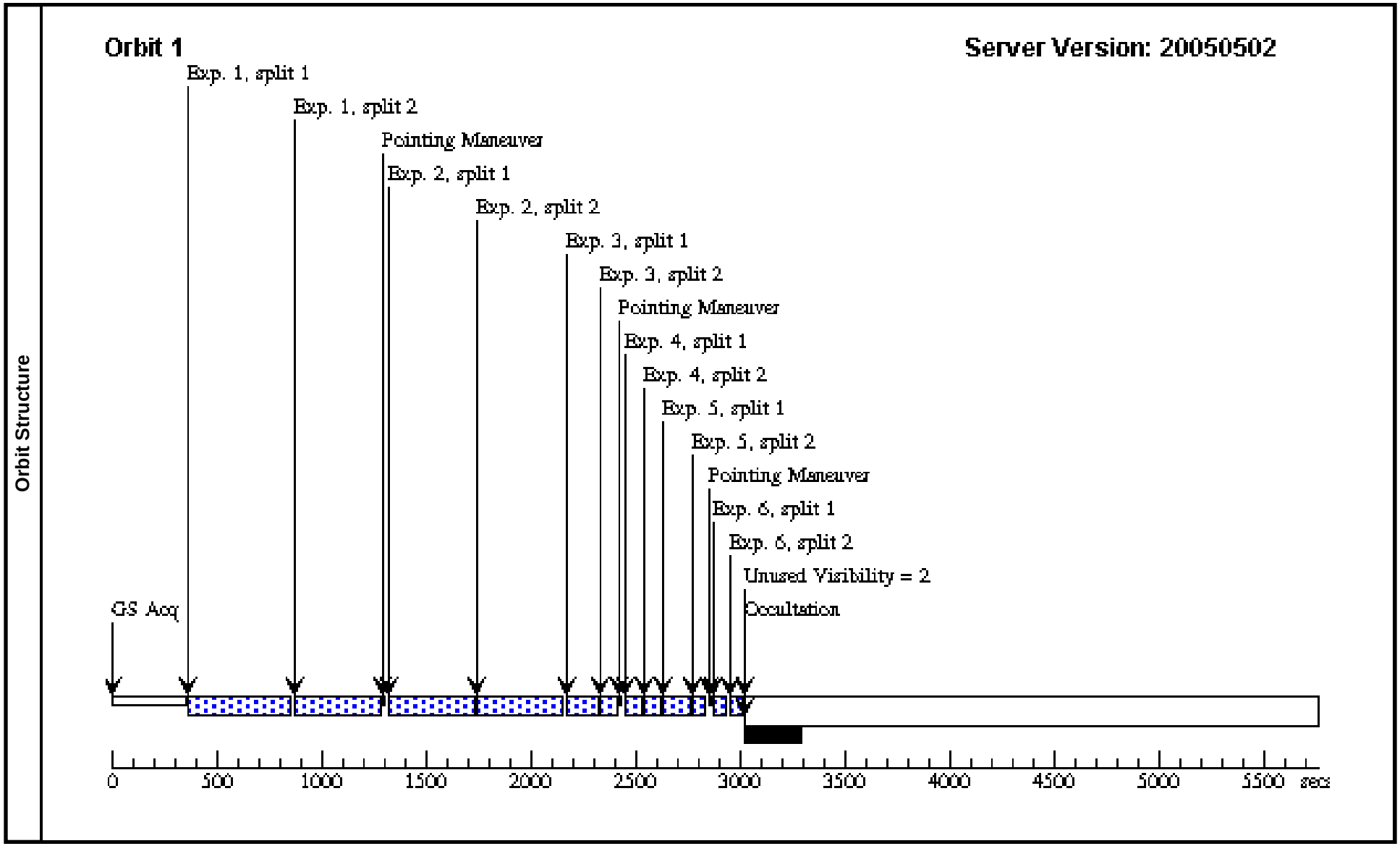
Special Requirements: PCS MODE FINE; SCHED 100%; SAME ORIENT AS 33; GROUP 13,33 WITHIN 1.0D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) M87-JET	ACS/HRC, ACCUM, HRC	F220W	CR-SPLIT=2	POS TARG 7,0	Sequence 1-6 Non-Int	755.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
2	2	(1) M87-JET	ACS/HRC, ACCUM, HRC	F220W	CR-SPLIT=2	POS TARG 4,0	Sequence 1-6 Non-Int	755.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
3	3	(1) M87-JET	ACS/HRC, ACCUM, HRC	F475W	CR-SPLIT=2	SAME POS AS 2	Sequence 1-6 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
4	4	(1) M87-JET	ACS/HRC, ACCUM, HRC	F475W	CR-SPLIT=2	SAME POS AS 1	Sequence 1-6 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
5	5	(1) M87-JET	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2	SAME POS AS 1	Sequence 1-6 Non-Int	48.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
6	6	(1) M87-JET	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2	SAME POS AS 2	Sequence 1-6 Non-Int	48.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20050502
Exp. 1, split 1
Exp. 1, split 2
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 3, split 1
Exp. 3, split 2
Pointing Maneuver
Exp. 4, split 1
Exp. 4, split 2
Exp. 5, split 1
Exp. 5, split 2
Pointing Maneuver
Exp. 6, split 1
Exp. 6, split 2
Unused Visibility = 2
Occultation
GS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 10617, Visit 15 Mon Jun 20 14:53:37 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

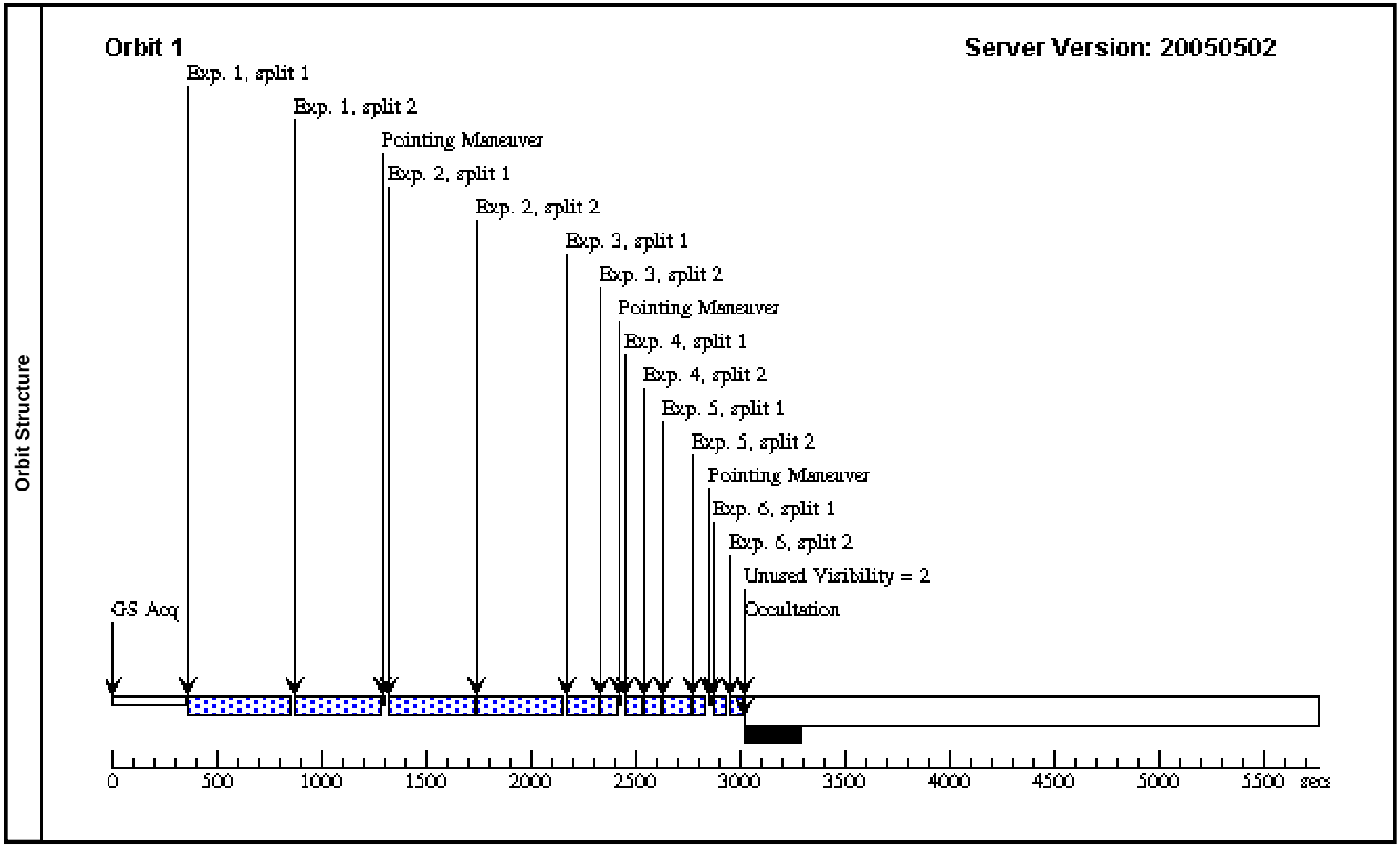
Special Requirements: PCS MODE FINE; SCHED 100%; SAME ORIENT AS 35; GROUP 15,35 WITHIN 1.0D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) M87-JET	ACS/HRC, ACCUM, HRC	F220W	CR-SPLIT=2	POS TARG 1,0	Sequence 1-6 Non-Int	755.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
2	2	(1) M87-JET	ACS/HRC, ACCUM, HRC	F220W	CR-SPLIT=2	POS TARG 4,0	Sequence 1-6 Non-Int	755.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
3	3	(1) M87-JET	ACS/HRC, ACCUM, HRC	F475W	CR-SPLIT=2	SAME POS AS 2	Sequence 1-6 Non-Int	80.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
4	4	(1) M87-JET	ACS/HRC, ACCUM, HRC	F475W	CR-SPLIT=2	SAME POS AS 1	Sequence 1-6 Non-Int	80.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
5	5	(1) M87-JET	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2	SAME POS AS 1	Sequence 1-6 Non-Int	48.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
6	6	(1) M87-JET	ACS/HRC, ACCUM, HRC	F814W	CR-SPLIT=2	SAME POS AS 2	Sequence 1-6 Non-Int	48.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20050502
Exp. 1, split 1
Exp. 1, split 2
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 3, split 1
Exp. 3, split 2
Pointing Maneuver
Exp. 4, split 1
Exp. 4, split 2
Exp. 5, split 1
Exp. 5, split 2
Pointing Maneuver
Exp. 6, split 1
Exp. 6, split 2
Unused Visibility = 2
Occultation
GS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 10617, Visit 21 Mon Jun 20 14:53:39 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 100%; SAME ORIENT AS 11; AFTER 11 BY 0.9 Orbits TO 1.1 Orbits

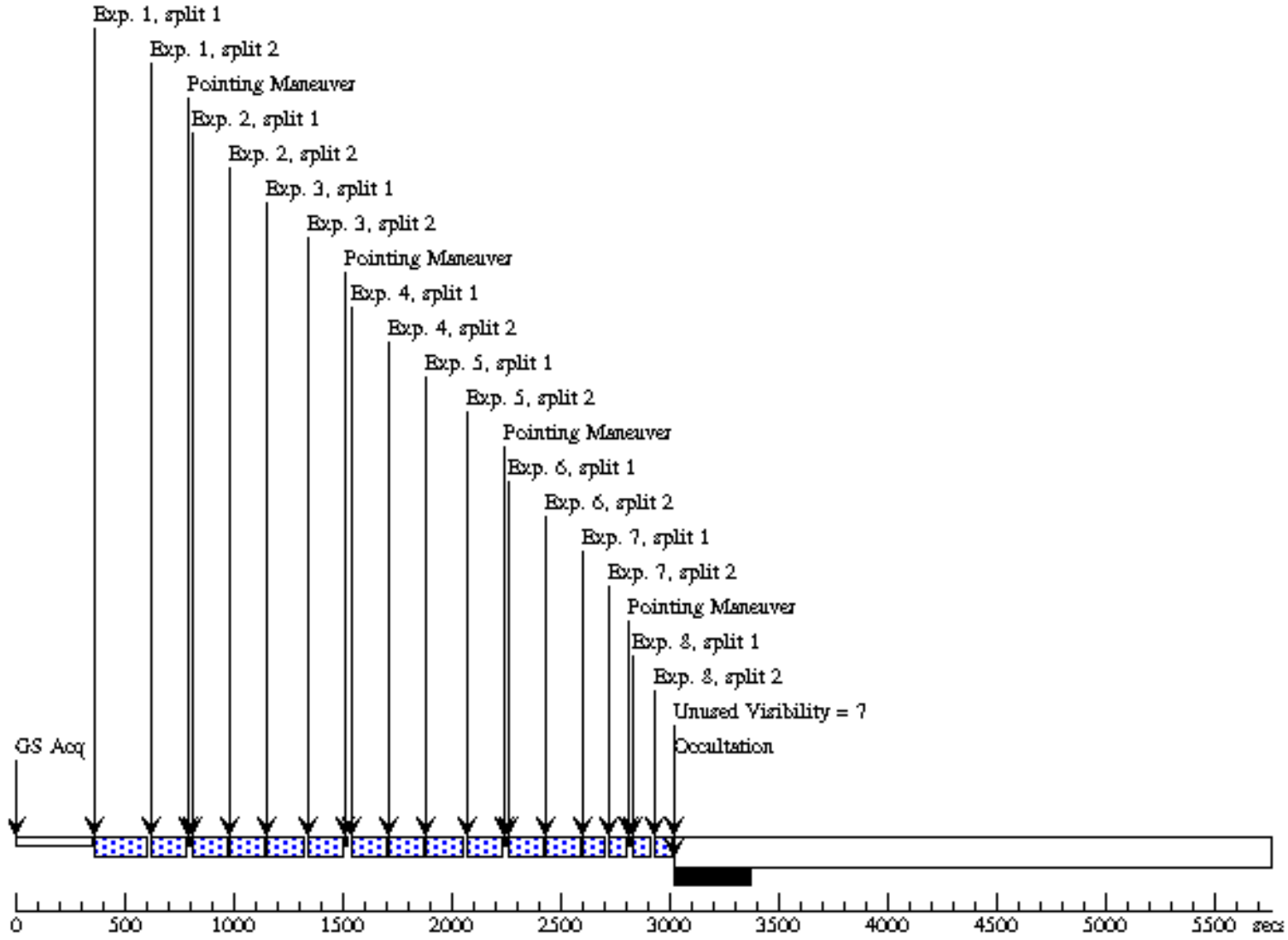
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL0V	CR-SPLIT=2	POS TARG 1,0	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
2	2	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL0V	CR-SPLIT=2	POS TARG 4,0	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
3	3	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL60V	CR-SPLIT=2	SAME POS AS 2	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
4	4	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL60V	CR-SPLIT=2	SAME POS AS 1	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
5	5	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL120V	CR-SPLIT=2	SAME POS AS 1	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
6	6	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL120V	CR-SPLIT=2	SAME POS AS 2	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
7	7	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W	CR-SPLIT=2	SAME POS AS 2	Sequence 1-8 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
8	8	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W	CR-SPLIT=2	SAME POS AS 1	Sequence 1-8 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Orbit Structure



Visit

Proposal 10617, Visit 23 Mon Jun 20 14:53:41 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 100%; SAME ORIENT AS 13; AFTER 13 BY 0.9 Orbits TO 1.1 Orbits

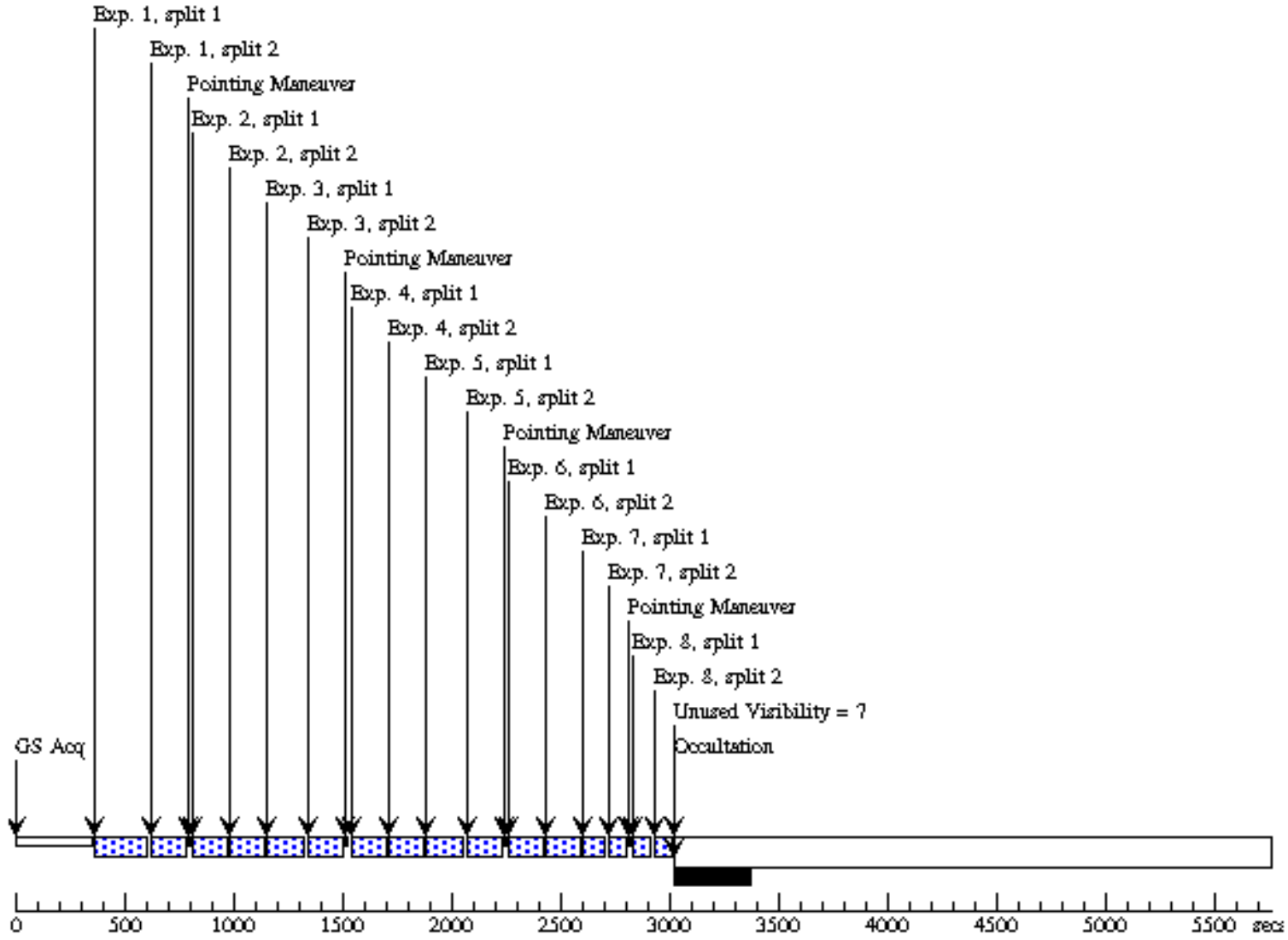
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL0V	CR-SPLIT=2	POS TARG 7,0	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
2	2	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL0V	CR-SPLIT=2	POS TARG 4,0	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
3	3	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL60V	CR-SPLIT=2	SAME POS AS 2	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
4	4	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL60V	CR-SPLIT=2	SAME POS AS 1	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
5	5	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL120V	CR-SPLIT=2	SAME POS AS 1	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
6	6	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL120V	CR-SPLIT=2	SAME POS AS 2	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
7	7	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W	CR-SPLIT=2	SAME POS AS 2	Sequence 1-8 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
8	8	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W	CR-SPLIT=2	SAME POS AS 1	Sequence 1-8 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Orbit Structure



Visit

Proposal 10617, Visit 25 Mon Jun 20 14:53:43 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 100%; SAME ORIENT AS 15; AFTER 15 BY 0.9 Orbits TO 1.1 Orbits

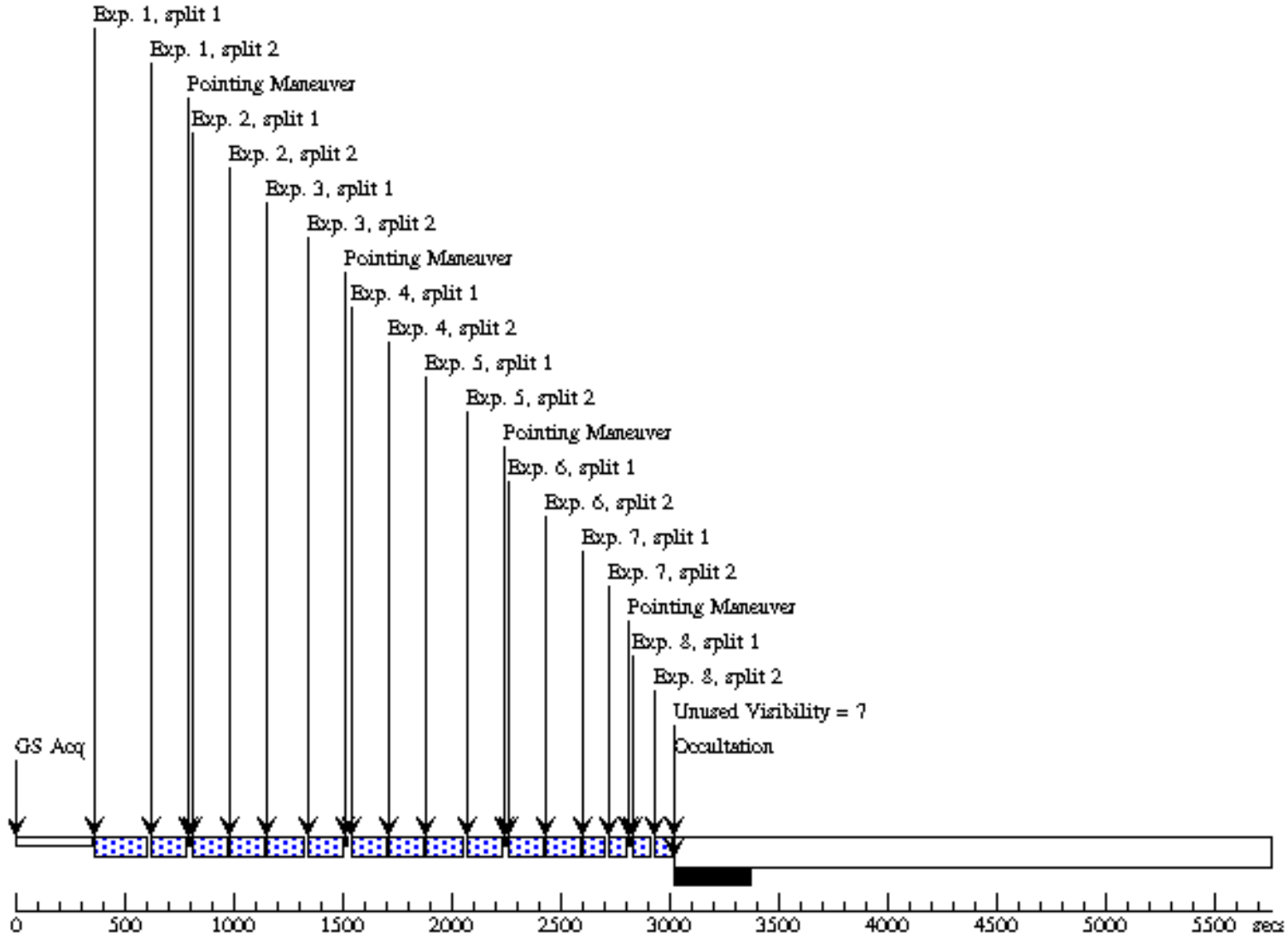
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL0V	CR-SPLIT=2	POS TARG 1,0	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***
2	2	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL0V	CR-SPLIT=2	POS TARG 4,0	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***
3	3	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL60V	CR-SPLIT=2	SAME POS AS 2	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***
4	4	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL60V	CR-SPLIT=2	SAME POS AS 1	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***
5	5	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL120V	CR-SPLIT=2	SAME POS AS 1	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***
6	6	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL120V	CR-SPLIT=2	SAME POS AS 2	Sequence 1-8 Non-Int	240.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***
7	7	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W	CR-SPLIT=2	SAME POS AS 2	Sequence 1-8 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***
8	8	(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W	CR-SPLIT=2	SAME POS AS 1	Sequence 1-8 Non-Int	80.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***

Orbit Structure



Visit

Proposal 10617, Visit 31 Mon Jun 20 14:53:45 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 100%; ORIENT 296.0D TO 311.0 D; BETWEEN 12-NOV-2005:00:00:00 AND 30-NOV-2005:00:00:00

Comments: Please schedule as close as possible to Chandra observation on 15 Nov 2005.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.084 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=32.1 Angle Between Sides= Center Pattern=false		(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

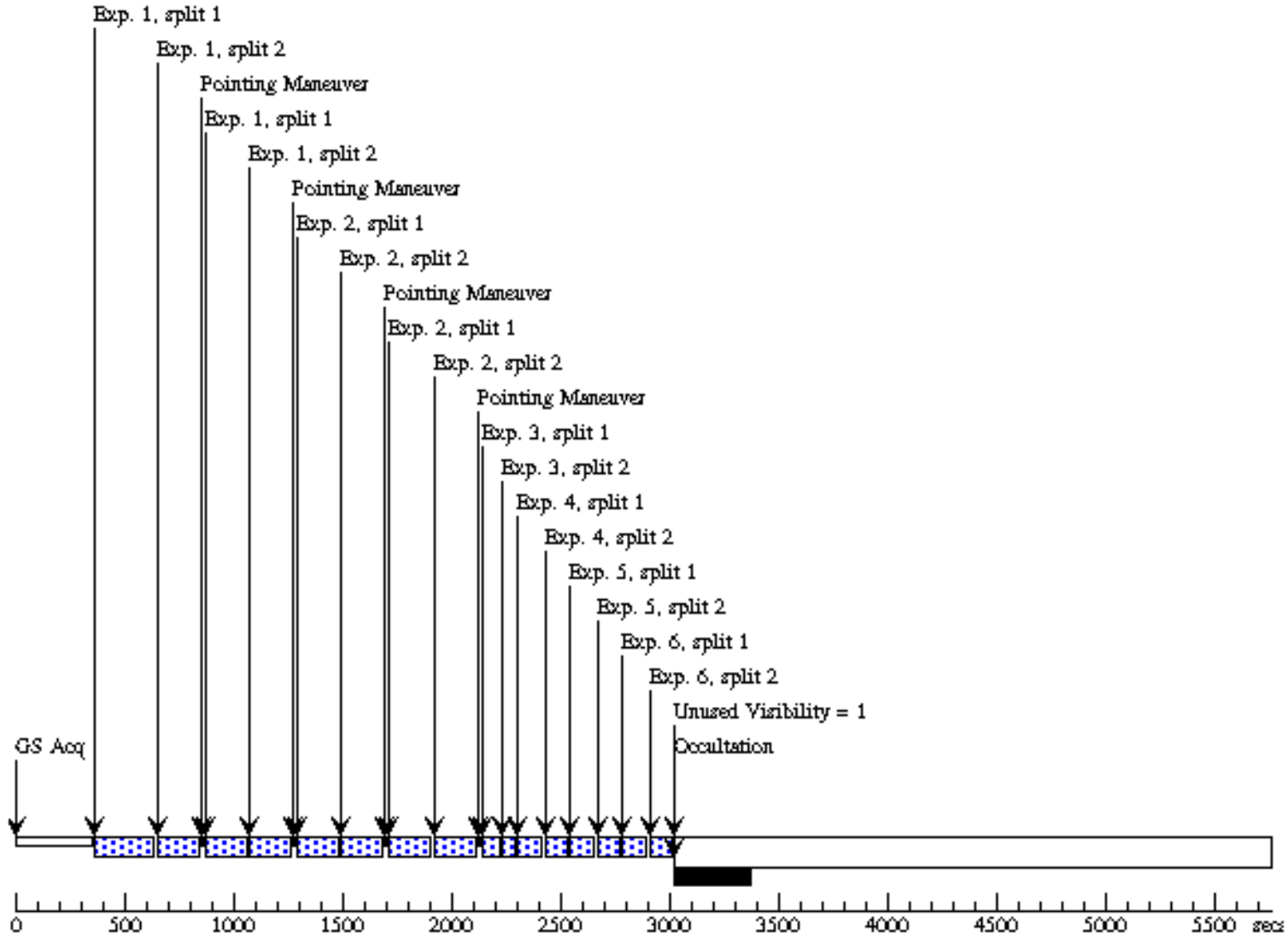
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG 4,0	Pattern 1-1 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
2		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG 1,0	Pattern 2-2 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
3		(1) M87-JET	ACS/HRC, ACCUM, HRC	F330W	CR-SPLIT=2	POS TARG 1,0		45.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
4		(1) M87-JET	ACS/HRC, ACCUM, HRC	F330W POL0UV	CR-SPLIT=2	SAME POS AS 3		120.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
5		(1) M87-JET	ACS/HRC, ACCUM, HRC	F330W POL60UV	CR-SPLIT=2	SAME POS AS 3		120.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
6		(1) M87-JET	ACS/HRC, ACCUM, HRC	F330W POL120UV	CR-SPLIT=2	SAME POS AS 3		120.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Orbit Structure



Visit

Proposal 10617, Visit 32 Mon Jun 20 14:53:47 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 100%; ORIENT 270.0D TO 297.0 D; BETWEEN 26-DEC-2005:00:00:00 AND 02-JAN-2006:00:00:00

Comments: Please schedule as close as possible to Chandra observation on 29 Dec 2005.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.084 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=32.1 Angle Between Sides= Center Pattern=false		(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

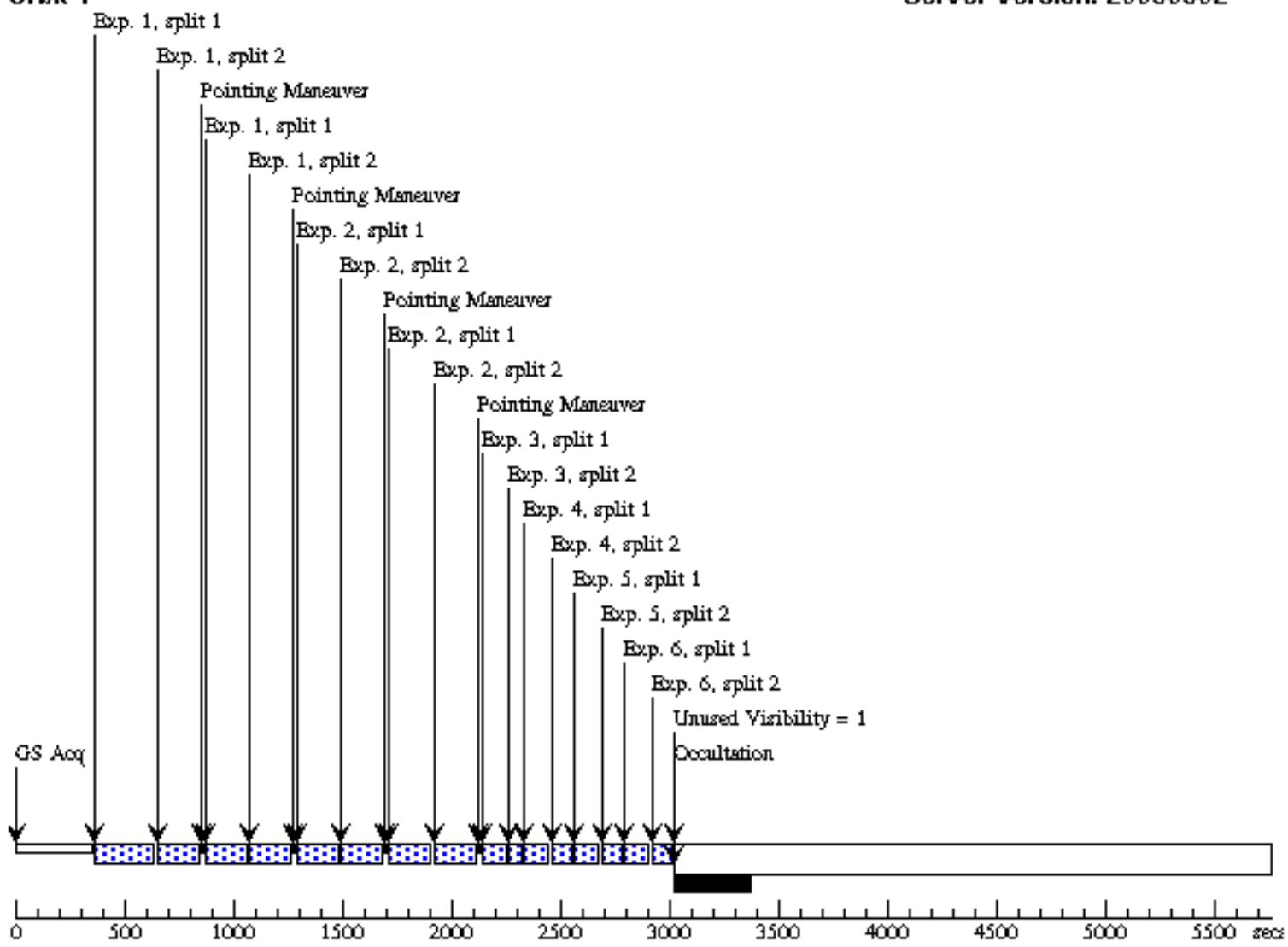
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG 7,0	Pattern 1-1 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
2		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG 4,0	Pattern 2-2 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
3		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W	CR-SPLIT=2	POS TARG 4,0		45.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
4		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL0V	CR-SPLIT=2	SAME POS AS 3		110.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
5		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL60V	CR-SPLIT=2	SAME POS AS 3		110.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
6		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL120V	CR-SPLIT=2	SAME POS AS 3		110.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Orbit Structure



Visit

Proposal 10617, Visit 33 Mon Jun 20 14:53:49 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 100%; ORIENT 270.0D TO 285.0 D; BETWEEN 08-FEB-2006:00:00:00 AND 15-FEB-2006:00:00:00

Comments: Please schedule as close as possible to Chandra observation on 11 Feb 2006.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.084 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=32.1 Angle Between Sides= Center Pattern=false		(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

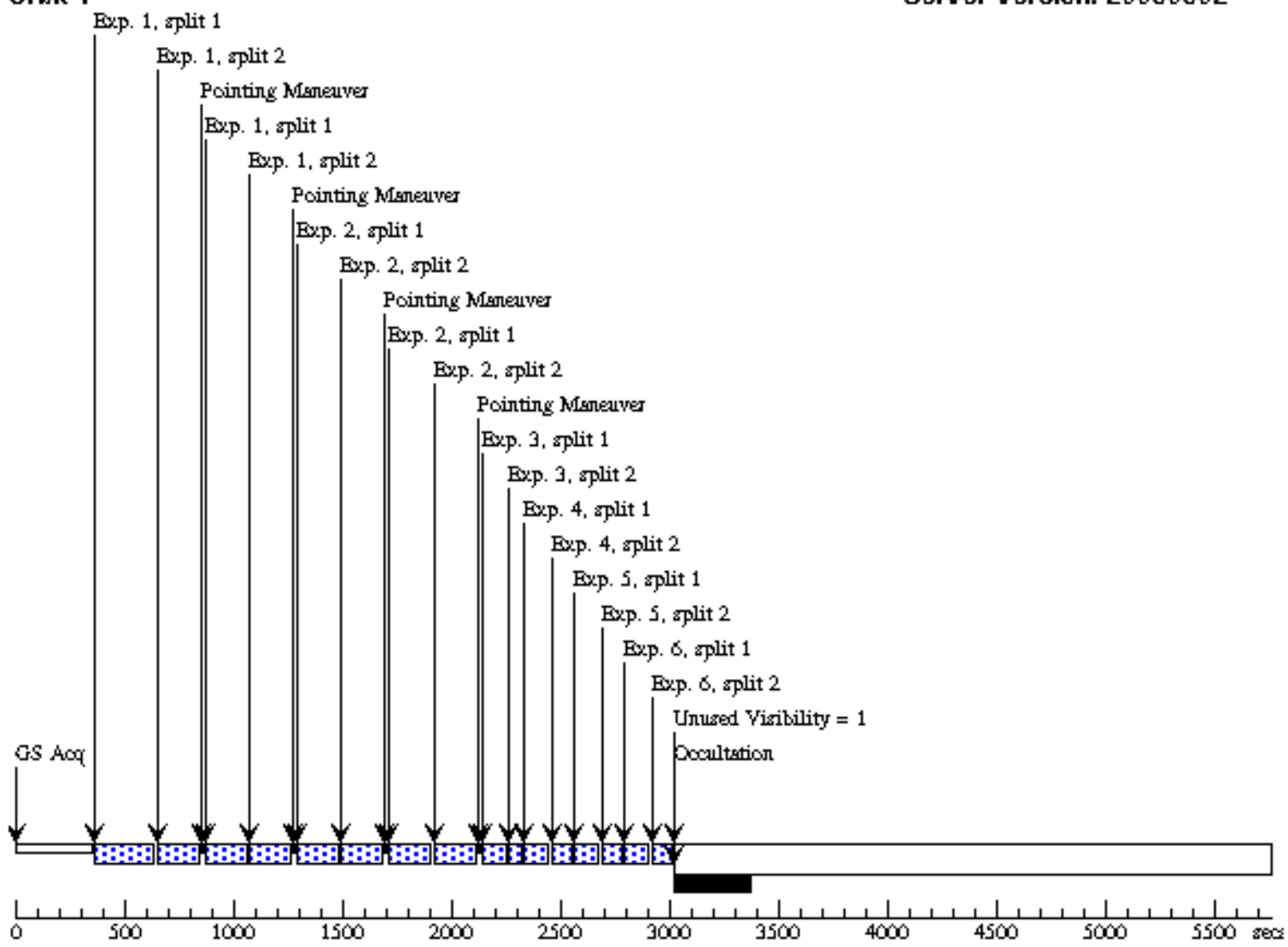
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG 7,0	Pattern 1-1 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
2		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG 4,0	Pattern 2-2 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
3		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W	CR-SPLIT=2	POS TARG 4,0		45.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
4		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL0V	CR-SPLIT=2	SAME POS AS 3		110.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
5		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL60V	CR-SPLIT=2	SAME POS AS 3		110.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
6		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL120V	CR-SPLIT=2	SAME POS AS 3		110.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Orbit Structure



Visit

Proposal 10617, Visit 34 Mon Jun 20 14:53:51 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 100%; ORIENT 160.0D TO 175.0 D; BETWEEN 24-MAR-2006:00:00:00 AND 31-MAR-2006:00:00:00

Comments: Please schedule as close as possible to Chandra observation on 27 Mar 2006.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.084 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=32.1 Angle Between Sides= Center Pattern=false		(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

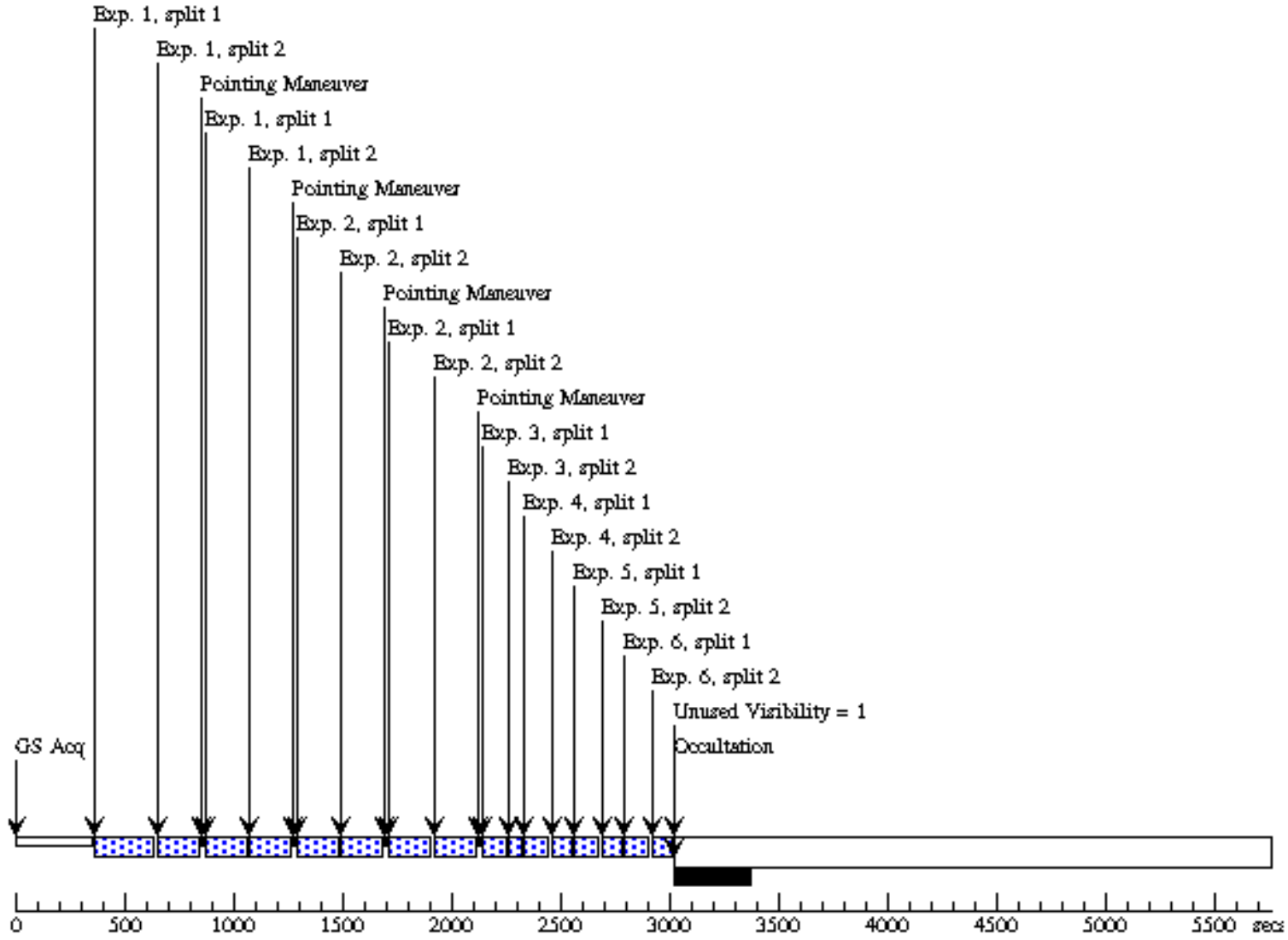
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG -2,0	Pattern 1-1 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
2		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG 1,0	Pattern 2-2 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
3		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W	CR-SPLIT=2	POS TARG 1,0		45.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
4		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL0V	CR-SPLIT=2	SAME POS AS 3		110.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
5		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL60V	CR-SPLIT=2	SAME POS AS 3		110.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
6		(1) M87-JET	ACS/HRC, ACCUM, HRC	F606W POL120V	CR-SPLIT=2	SAME POS AS 3		110.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Orbit Structure



Visit

Proposal 10617, Visit 35 Mon Jun 20 14:53:53 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 100%; ORIENT 127.0D TO 142.0 D; BETWEEN 07-MAY-2006:00:00:00 AND 27-MAY-2006:00:00:00

Comments: Please schedule as close as possible to Chandra observation on 10 May 2006.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.084 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=32.1 Angle Between Sides= Center Pattern=false		(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M87-JET	RA: 12 30 48.8200 (187.7034167d) Dec: +12 23 30.89 (12.39191d) Equinox: J2000 Plate Id: 00IY		V=16.7	Coordinate Source: GUIDE_STAR_CATALOG

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG 4,0	Pattern 1-1 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
2		(1) M87-JET	ACS/HRC, ACCUM, HRC	F250W	CR-SPLIT=2	POS TARG 1,0	Pattern 2-2 (1)	300.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
3		(1) M87-JET	ACS/HRC, ACCUM, HRC	F330W	CR-SPLIT=2	POS TARG 1,0		45.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
4		(1) M87-JET	ACS/HRC, ACCUM, HRC	F330W POL0UV	CR-SPLIT=2	SAME POS AS 3		120.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***
5		(1) M87-JET	ACS/HRC, ACCUM, HRC	F330W POL60UV	CR-SPLIT=2	SAME POS AS 3		120.0 Secs	
								[==>(Split 1)] *[==>(Split 2)]*	***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
6		(1) M87-JET	ACS/HRC, ACCUM, HRC	F330W POL120UV	CR-SPLIT=2	SAME POS AS 3		120.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Orbit Structure