



12261 - Resolving the Pictor A Jet

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) PICTOR-A-JET	WFC3/IR WFC3/UVIS	2	17-Nov-2010 21:07:45.0	yes

2 Total Orbits Used

ABSTRACT

We are proposing to obtain new images of the Pictor A jet in order to measure the spatial scale of clumping and to search for variability. X-ray images show a jet that has an opening angle of less than 1 degree that is about 2' (84 kpc, projected) long, unresolved for the first 30-40", and marginally detectable out to the terminal hotspot that is 4.2' from the core. The brightest portions of the inner jet are also marginally detectable in

radio images. Based on a synchrotron model of the X-ray emission, we estimate that the bright parts of the inner jet should be detectable in the optical and IR in short HST observations with the WFC3. Three bandpasses will provide sufficient information on each knot to determine the synchrotron cutoffs, if it is in the optical band.

OBSERVING DESCRIPTION

We plan to use two orbits of HST time using the WFC3. One orbit would be used for one filter (F160W) with the IR channel and the second orbit would be used for two filters of the UV channel: F475W and 814W. For the IR channel, filter F160W, a 3000 s exposure yields a 34σ detection for the brightest part of the jet and 3.5σ for point sources $\times 10$ fainter than the peak, even with our conservative flux estimates. Using the WFC3 UV channel exposure time calculator for filter F475W, we find a SNR of 19 for the peak of the jet in 1100 s and a similar SNR for filter 814W. Point sources $\times 8$ fainter than the peak will be detectable at 3σ and again, our conservative estimates indicate that many of the jet knots and diffuse emission should be at least this bright.

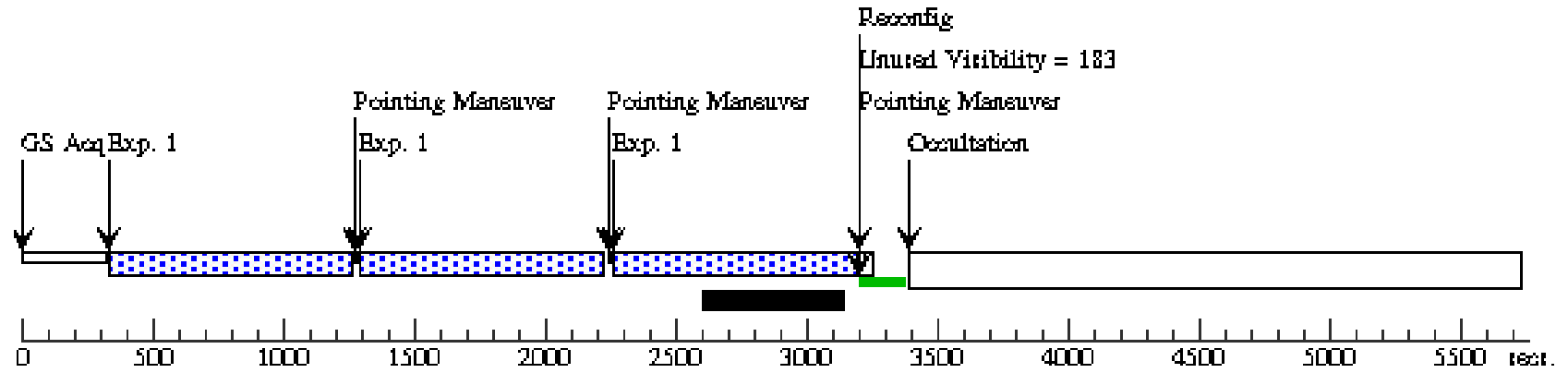
Proposal 12261 - Visit 01 Resolving the Pictor A Jet

Thu Nov 18 02:07:52 GMT 2010

Visit	Proposal 12261, Visit 01, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: ORIENT 65D TO 120 D; ORIENT 0.0D TO 45 D; ORIENT 347D TO 359.9 D; ORIENT 150D TO 220 D; ORIENT 240D TO 310 D									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(3)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.605 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)						
	(5)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(2), (3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	PICTOR-A-JET	RA: 05 19 44.6260 (79.9359417d) Dec: -45 46 32.00 (-45.77556d) Equinox: J2000	Proper Motion RA: null Proper Motion Dec: null Epoch of Position:	V=18.8+/-0.1 Core is 19th magnitude. Knot fluxes in the range 50-1000 nJy at 1.6 microns, 0.2-4.0 microJy at 475 Angstroms	Reference Frame: ICRS				
<i>Comments: The pointing position is 1arcmin from the position of Pictor A along a position angle of -78.8deg, where 0deg is due north and positive is to the east.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) PICTOR-A-JET		WFC3/IR, MULTIACCUM, IR-UVIS-FIX	F160W	NSAMP=10; SAMP-SEQ=SPAR S100		Pattern 3, Exps 1-1 in Visit 01 (3)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	2	(1) PICTOR-A-JET		WFC3/UVIS, ACCUM, UVIS-IR-FIX	F475W			Pattern 5, Exps 2-2 in Visit 01 (5)	433 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[2]
	3	(1) PICTOR-A-JET		WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W			Pattern 5, Exps 3-3 in Visit 01 (5)	400 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[2]

Orbit 1

Server Version: 20100902



Orbit Structure

