13747 - Understanding the In-Situ Star Formation in a z=1.7 Cluster Core Galaxy

Cycle: 22, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) LOK4596	WFC3/IR WFC3/UVIS	1	07-May-2015 21:02:02.0	yes
02	(1) LOK4596	WFC3/IR WFC3/UVIS	1	07-May-2015 21:02:05.0	yes
03	(1) LOK4596	WFC3/IR WFC3/UVIS	1	07-May-2015 21:02:07.0	yes
04	(1) LOK4596	WFC3/IR WFC3/UVIS	1	07-May-2015 21:02:10.0	yes

4 Total Orbits Used

ABSTRACT

We have discovered a rare beast of a central galaxy within a z=1.7 rich galaxy cluster (estimated ~4x10^14 Msun), forming stars at a prodigious rate of 1200 Msun/yr. This system is infrared bright and its SED and the detection of PAHs at the cluster redshift, implies the IR luminosity is dominated by star formation. Such an extreme system has to date, only been confirmed in the z=0.6 Phoenix cluster (McDonald et al. 2012, 2013, 2014), whereas this object is observed at a much earlier and more active epoch of galaxy and cluster evolution. Here we propose deep HST imaging with WFC3 F160W/F105W to investigate the morphology of the BCG galaxy and its nearest neighbours. Our main goal is to understand the physical processes fuelling the intense starburst, be it a major merger or infalling gas from a cooling flow. We will also characterize the morphological properties (with color information) of the central BCG. These data will be the first of their kind at this redshift and will relate overall formation and evolution of the central galaxy massive parent halo at a cosmological epoch where these processes may begin to dominate.

Visit

Proposal 13747, First Visit (01), completed Fri May 08 01:02:11 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

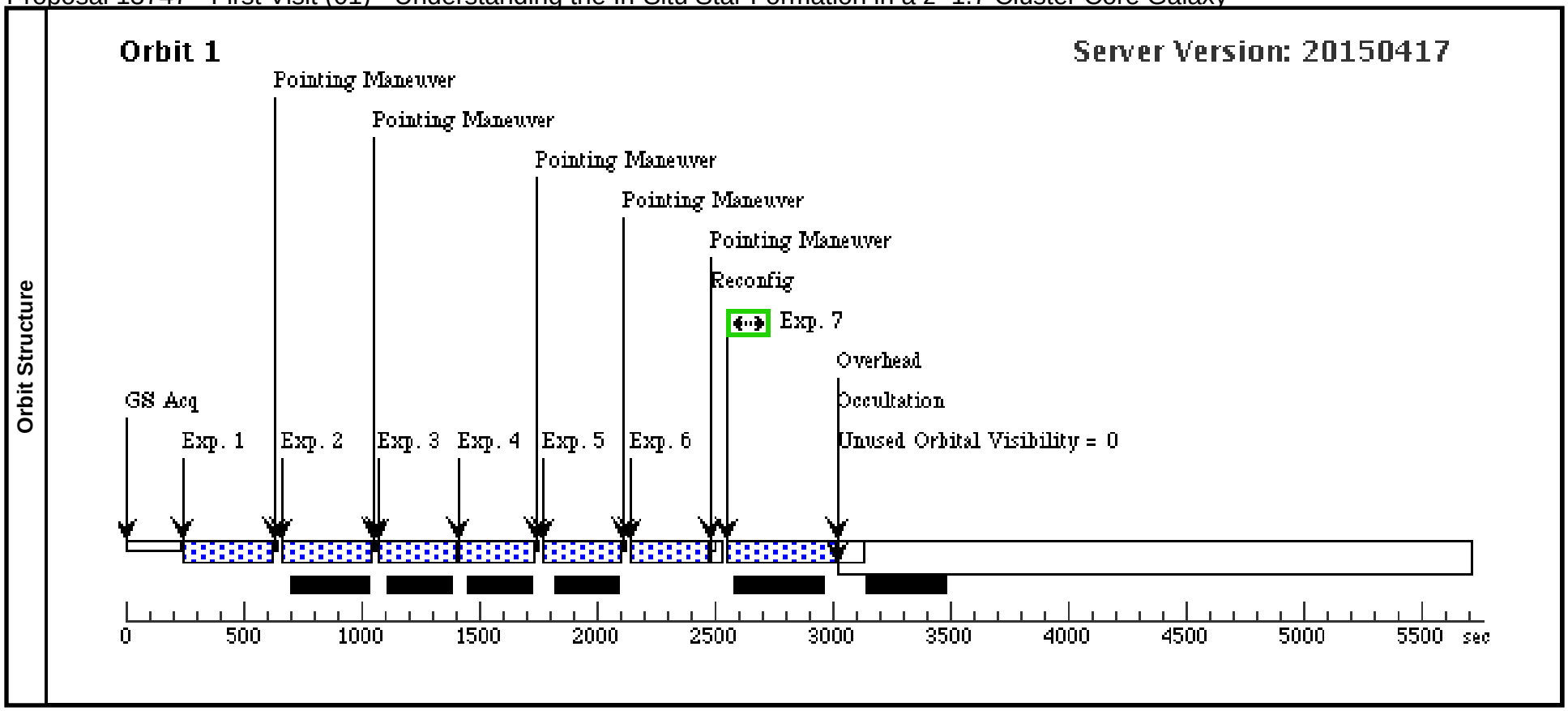
Special Requirements: SCHED 100%; BETWEEN 06-FEB-2015:23:37:22 AND 10-FEB-2015:23:37:22

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	LOK4596	RA: 10 49 22.5600 (162.3440000d) Dec: +56 40 33.80 (56.67606d) Equinox: J2000		V=19.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=12; SAMP-SEQ=STEP50	POS TARG 2.799,-2.462; GS ACQ SCENARIO SINGLE	Sequence 1-7 Non-Int in First Visit (01)	349.232932 Secs (349.233 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
2		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=12; SAMP-SEQ=STEP50	POS TARG -2.799,2.462	Sequence 1-7 Non-Int in First Visit (01)	349.232932 Secs (349.233 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
3		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 0,0	Sequence 1-7 Non-Int in First Visit (01)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
4		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 0,0	Sequence 1-7 Non-Int in First Visit (01)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
5		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 2.754,-2.462	Sequence 1-7 Non-Int in First Visit (01)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
6		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG -2.754,2.462	Sequence 1-7 Non-Int in First Visit (01)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
7		(1) LOK4596	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W	FLASH=8	POS TARG null,15	Sequence 1-7 Non-Int in First Visit (01)	150 Secs (430 Secs) *[==>430.0 Secs]*	***[1]***
	Comments: To move the inter-chip gap in the UV off of the center of the IR FOV, we would like a large y-offset with a maximum value such that the IR has full UVIS coverage. In order to find guide stars, however, we are free to move the x-offset.								


Orbit Structure
Orbit 1
Server Version: 20150417
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Reconfig
Exp. 7
Overhead
Occultation
Unused Orbital Visibility = 0
GS Acq
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13747, Second Visit (02), completed Fri May 08 01:02:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

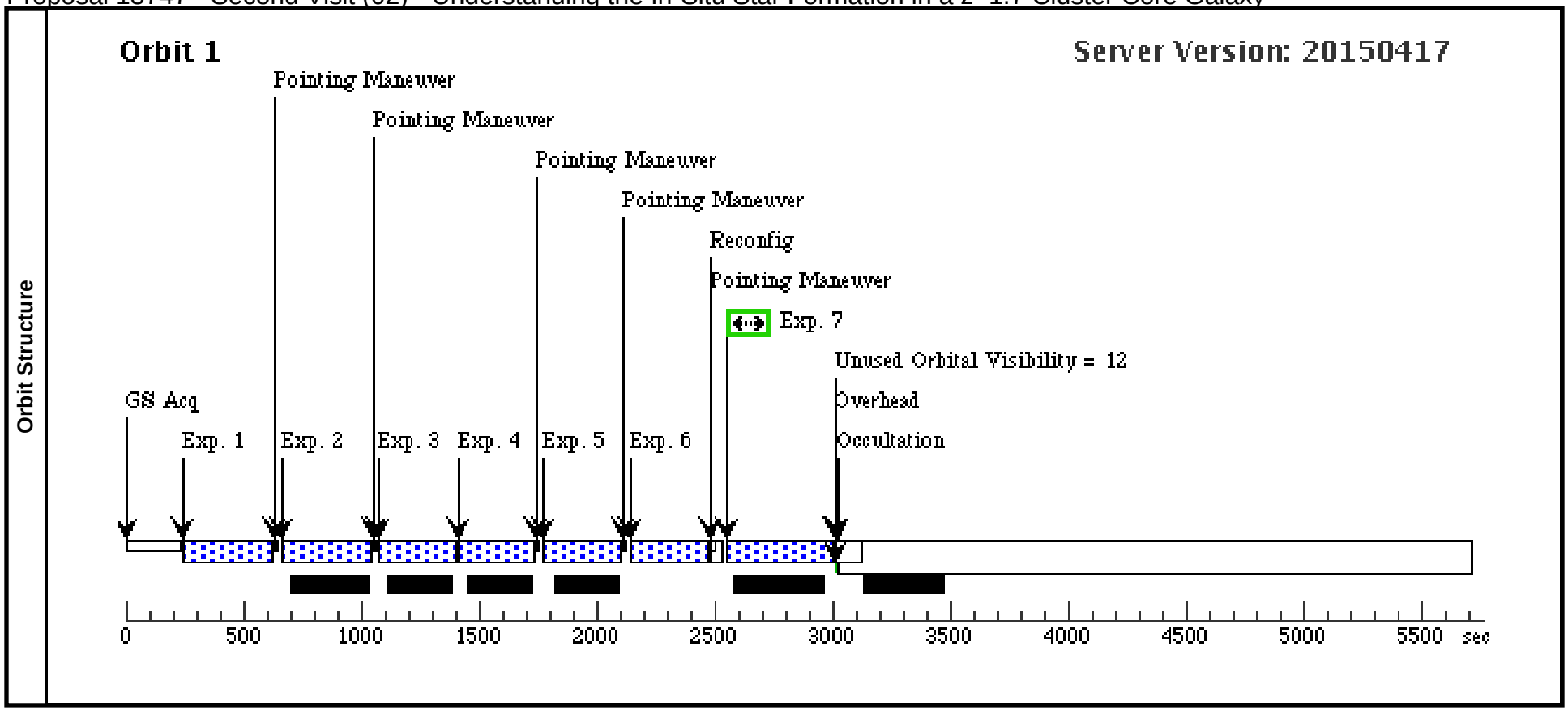
Special Requirements: SCHED 100%; AFTER 01 BY 35 D TO 39 D; BEFORE 01-JUL-2015:00:00:00

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	LOK4596	RA: 10 49 22.5600 (162.3440000d) Dec: +56 40 33.80 (56.67606d) Equinox: J2000		V=19.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=12; SAMP-SEQ=STEP50	POS TARG 2.799,-2.462; GS ACQ SCENARIO SINGLE	Sequence 1-7 Non-Int in Second Visit (02)	349.232932 Secs (349.233 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
2		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=12; SAMP-SEQ=STEP50	POS TARG -2.799,2.462	Sequence 1-7 Non-Int in Second Visit (02)	349.232932 Secs (349.233 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
3		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 0,0	Sequence 1-7 Non-Int in Second Visit (02)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
4		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 0,0	Sequence 1-7 Non-Int in Second Visit (02)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
5		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 2.754,-2.462	Sequence 1-7 Non-Int in Second Visit (02)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
6		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG -2.754,2.462	Sequence 1-7 Non-Int in Second Visit (02)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
7		(1) LOK4596	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W	FLASH=8	POS TARG null,15	Sequence 1-7 Non-Int in Second Visit (02)	150 Secs (418 Secs) *[==>418.0 Secs]*	***[1]***
	Comments: To move the inter-chip gap in the UV off of the center of the IR FOV, we would like a large y-offset with a maximum value such that the IR has full UVIS coverage. In order to find guide stars, however, we are free to move the x-offset.								


Orbit Structure
Orbit 1
Server Version: 20150417
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Reconfig
Pointing Maneuver
Exp. 7
Unused Orbital Visibility = 12
GS Acq
Overhead
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
Occultation
0
500
1000
1500
2000
2500
3000
3500
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4500
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5500
sec

Visit

Proposal 13747, Third Visit (03), completed Fri May 08 01:02:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

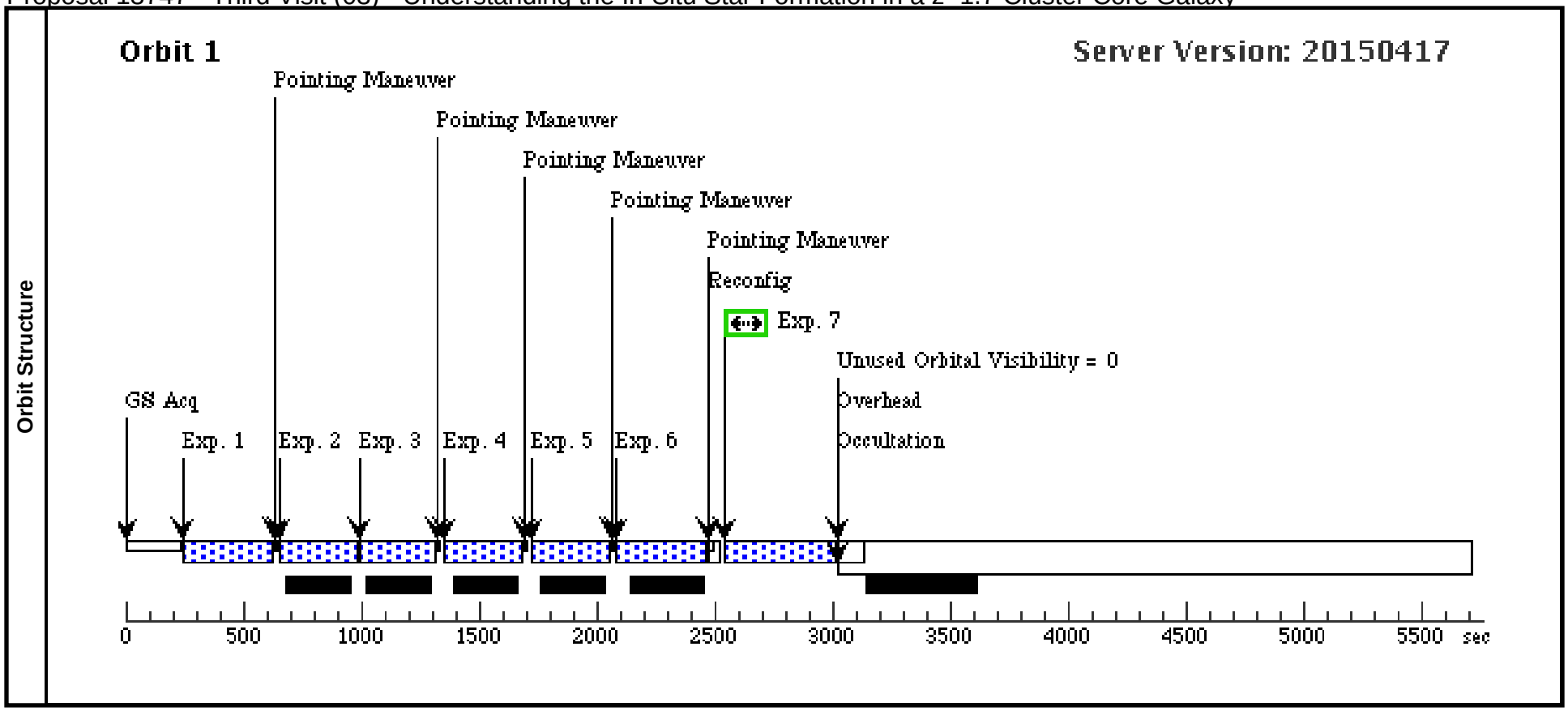
Special Requirements: SCHED 100%; AFTER 02 BY 35 D TO 39 D; BEFORE 01-JUL-2015:00:00:00

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	LOK4596	RA: 10 49 22.5600 (162.3440000d) Dec: +56 40 33.80 (56.67606d) Equinox: J2000		V=19.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=12; SAMP-SEQ=STEP50	POS TARG 2.799,-2.462; GS ACQ SCENARIO SINGLE	Sequence 1-7 Non-Int in Third Visit (03)	349.232932 Secs (349.233 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
2		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 0,0	Sequence 1-7 Non-Int in Third Visit (03)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
3		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 0,0	Sequence 1-7 Non-Int in Third Visit (03)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
4		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 2.754,-2.462	Sequence 1-7 Non-Int in Third Visit (03)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
5		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG -2.754,2.462	Sequence 1-7 Non-Int in Third Visit (03)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
6		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=12; SAMP-SEQ=STEP50	POS TARG -2.799,2.462	Sequence 1-7 Non-Int in Third Visit (03)	349.232932 Secs (349.233 Secs) *[==>]*	***[1]***
	Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.								
7		(1) LOK4596	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W	FLASH=8	POS TARG null,15	Sequence 1-7 Non-Int in Third Visit (03)	150 Secs (439 Secs) *[==>439.0 Secs]*	***[1]***
	Comments: To move the inter-chip gap in the UV off of the center of the IR FOV, we would like a large y-offset with a maximum value such that the IR has full UVIS coverage. In order to find guide stars, however, we are free to move the x-offset.								


Orbit Structure
Orbit 1
Server Version: 20150417
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Reconfig
Exp. 7
Unused Orbital Visibility = 0
Overhead
Occultation
GS Acq
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
0
500
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Visit

Proposal 13747, Fourth Visit (04), implementation Fri May 08 01:02:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

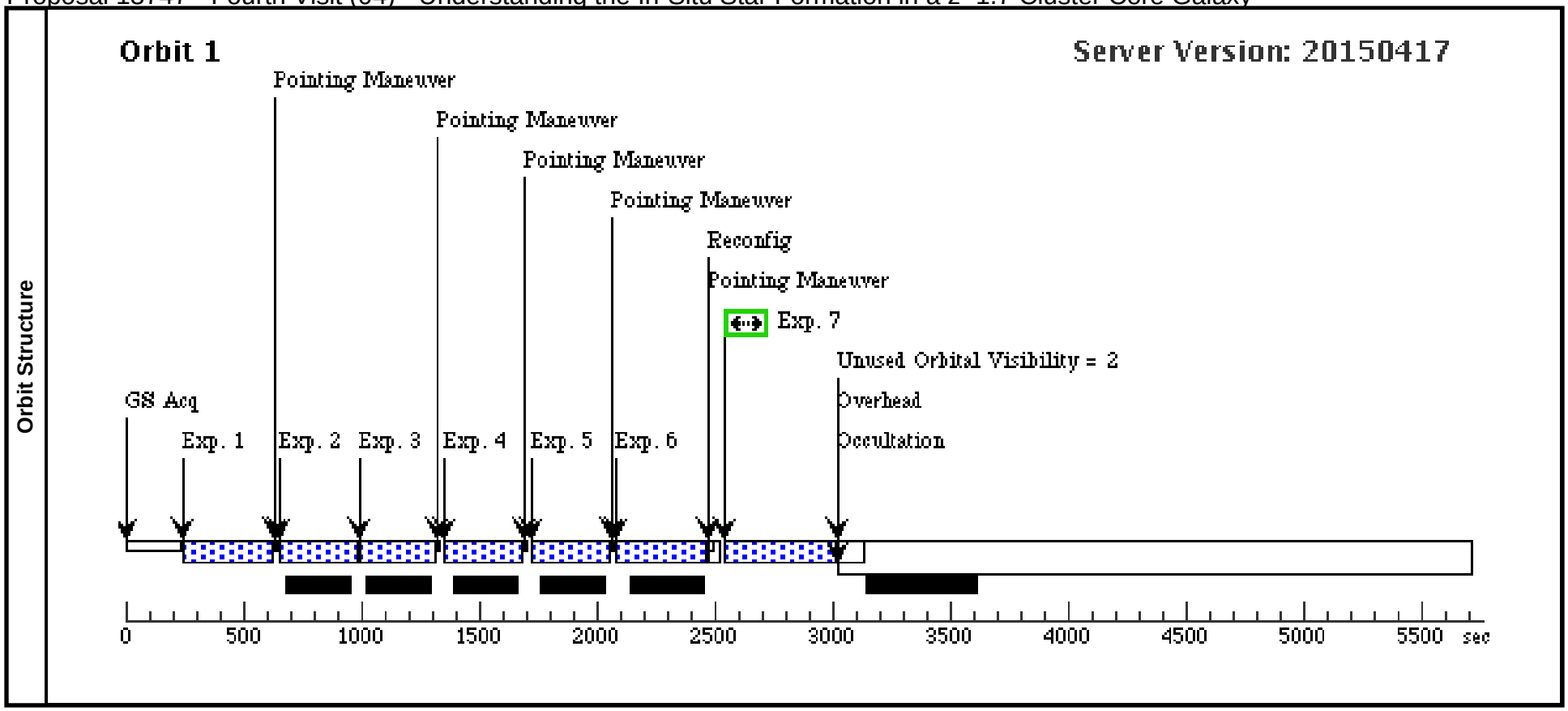
Special Requirements: SCHED 100%; AFTER 03 BY 35 D TO 39 D; BEFORE 01-JUL-2015:00:00:00

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	LOK4596	RA: 10 49 22.5600 (162.3440000d) Dec: +56 40 33.80 (56.67606d) Equinox: J2000		V=19.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=12; SAMP-SEQ=STEP50	POS TARG 2.799,-2.462; GS ACQ SCENARIO SINGLE	Sequence 1-7 Non-Int in Fourth Visit (04)	349.232932 Secs (349.233 Secs) *[==>]*	***[1]***
Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.									
2		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 0,0	Sequence 1-7 Non-Int in Fourth Visit (04)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.									
3		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 0,0	Sequence 1-7 Non-Int in Fourth Visit (04)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.									
4		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG 2.754,-2.462	Sequence 1-7 Non-Int in Fourth Visit (04)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.									
5		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=11; SAMP-SEQ=STEP50	POS TARG -2.754,2.462	Sequence 1-7 Non-Int in Fourth Visit (04)	299.232481 Secs (299.232 Secs) *[==>]*	***[1]***
Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.									
6		(1) LOK4596	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=12; SAMP-SEQ=STEP50	POS TARG -2.799,2.462	Sequence 1-7 Non-Int in Fourth Visit (04)	349.232932 Secs (349.233 Secs) *[==>]*	***[1]***
Comments: POS TARG set to minimize IR blob overlap, similar to the "E" patterns from the Dahlen 2010 dithering strategies ISR.									
7		(1) LOK4596	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W	FLASH=8	POS TARG null,15	Sequence 1-7 Non-Int in Fourth Visit (04)	150 Secs (437 Secs) *[==>437.0 Secs]*	***[1]***
Comments: To move the inter-chip gap in the UV off of the center of the IR FOV, we would like a large y-offset with a maximum value such that the IR has full UVIS coverage. In order to find guide stars, however, we are free to move the x-offset.									


Orbit Structure
Orbit 1
Server Version: 20150417
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Reconfig
Pointing Maneuver
Exp. 7
Unused Orbital Visibility = 2
Overhead
Occultation
GS Acq
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
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3500
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4500
5000
5500
sec