17901 - The Energetics of the Oxygen Rich Supernova Remnant G292.0+1.8

Cycle: 32, 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?*
02	(1) SNR-G292.0+01.8-NE	ACS/WFC	2	31-Mar-2025 13:00:35.0	yes
03	(3) SNR-G292.0+01.8-CTR-E	ACS/WFC	2	31-Mar-2025 13:00:36.0	yes
04	(5) SNR-G292.0+01.8-SE	ACS/WFC	2	31-Mar-2025 13:00:37.0	yes
05	(6) SNR-G292.0+01.8-CTR-W	ACS/WFC	2	31-Mar-2025 13:00:37.0	yes

8 Total Orbits Used

ABSTRACT

The composition and dynamics of supernova remnants inform us on the explosion mechanism of the supernova and the evolution of the progenitor. The Galactic remnant G292.0+1.8 is an evolved remnant rich in emission from shocked ejecta and circumstellar material. It is also optically bright in [OIII] emission. Here we propose for a 500ks observation of G292. We will perform Doppler tomography on the ejecta in order to measure their 3D dynamics. Additionally, we request 100ks of Chandra ACIS-I time to measure the expansion of the forward shock and motion of the pulsar, and 8 orbits of HST/ACS time to measure the transverse motion of the bright optical knots. Our proposed program will be complemented by a ground based spectroscopic survey and approved XRISM observations.

OBSERVING DESCRIPTION

The goal is to obtain a set of ACS/WFC images in order to perform proper motion measurements of the O-rich and S-rich ejecta. We will use the ACS F475W and F625W filters in order to isolate [O III] and [S II] emission from high velocity ejecta.

There are 4 target regions which will be imaged, in order to cover the eastern region of the SNR, and a portion of bright emission in the center-west. To do this we have constructed an observing program of four (4) visits. Each of the visits target a region of the SNR with two ACS filters (F475W and F625W) using a 4x500 sec exposure dithered using a 2 point dither pattern ACS-WFC-DITHER-LINE spaced by 3 arcseconds, with a 2 point subpattern within each point. Due to visibility constraints, one orbit will be needed for each filter and region combination, resulting in a total of 8 orbits.

We initially were granted CVZ time through the joint XMM-Newton program, but there is no CVZ time for this target in the current cycle. We have therefore adjusted the pointings of 4 of our targets, and dropped two other regions which were listed in our phase 1 submission. We have listed roll requirements for each visit. Given these requirements, our target is schedulable for a two week period beginning June 6, and for approximately 3 weeks beginning on September 8 and again on November 22, 2025.

Visit

Proposal 17901, G292-NE (02), scheduling Mon Mar 31 17:00:38 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 350D TO 10 D; ORIENT 80D TO 100 D; ORIENT 170D TO 190 D; ORIENT 260D TO 280 D

Patterns

#	Primary Pattern		Secondary Pattern		Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.034 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false	(1), (2)

Fixed Targets

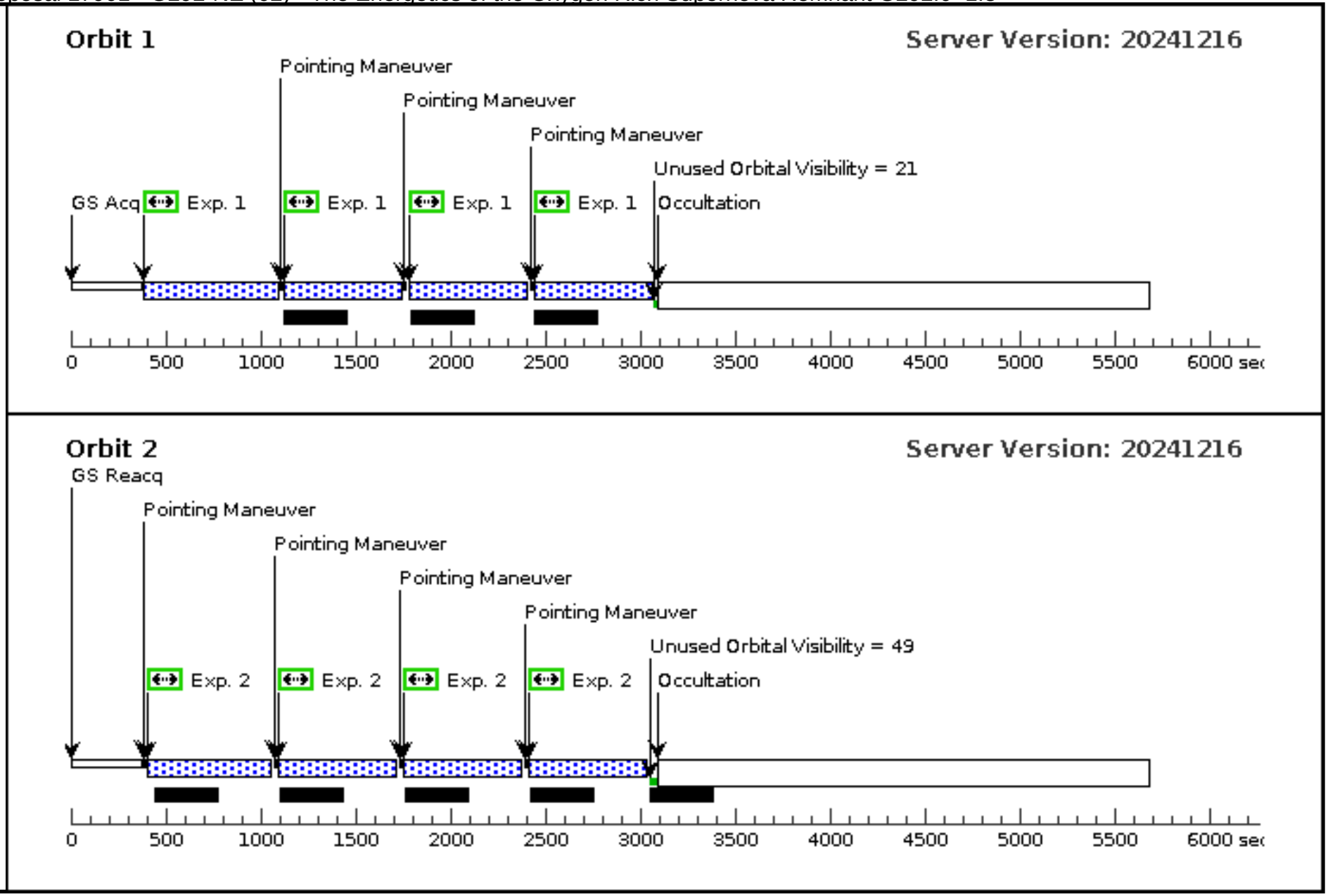
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SNR-G292.0+01.8-NE Alt Name1: MSH11-54	RA: 11 24 43.1566 (171.1798192d) Dec: -59 13 22.60 (-59.22294d) Equinox: J2000	Epoch of Position: 2000	V=12+/-1.0 1.5e-15 erg/cm2/s/arcsec2 in [O III] 5007	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=ISM
Description=[SNR]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G292-NE-F475W	(1) SNR-G292.0+01.8-NE	ACS/WFC, ACCUM, WFC	F475W			Pattern 1, Exps 1-1 in G292-NE (02) (1)	500 Secs (2000 Secs) *[==>(Pattern 1,1)]* *[==>(Pattern 1,2)]* *[==>(Pattern 2,1)]* *[==>(Pattern 2,2)]*	***[1]***
2	G292-NE-F550M	(1) SNR-G292.0+01.8-NE	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-2 in G292-NE (02) (1)	500 Secs (2000 Secs) *[==>(Pattern 1,1)]* *[==>(Pattern 1,2)]* *[==>(Pattern 2,1)]* *[==>(Pattern 2,2)]*	***[2]***

Orbit Structure



Visit

Proposal 17901, G292-CTR-E (03), scheduling Mon Mar 31 17:00:38 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 350D TO 10 D; ORIENT 80D TO 100 D; ORIENT 170D TO 190 D; ORIENT 260D TO 280 D

Patterns

#	Primary Pattern		Secondary Pattern		Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.034 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false	(1), (2)

Fixed Targets

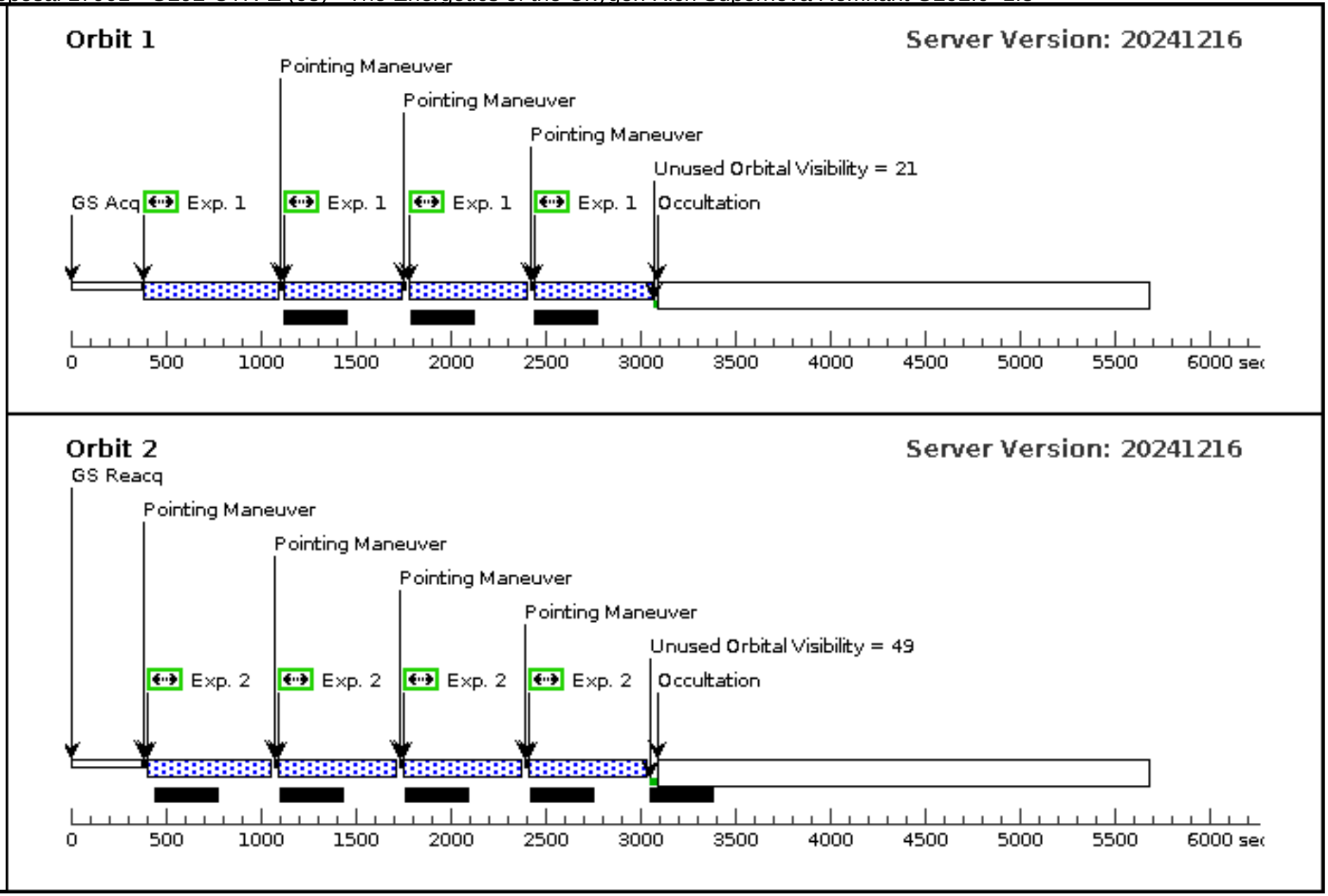
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	SNR-G292.0+01.8-CTR-E Alt Name1: MSH11-54	RA: 11 24 43.0025 (171.1791771d) Dec: -59 16 27.59 (-59.27433d) Equinox: J2000	Epoch of Position: 2000	V=11+/-1	Reference Frame: ICRS

Comments:
Category=ISM
Description=[SNR]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G292-CTR-E-F475W	(3) SNR-G292.0+01.8-CTR-E	ACS/WFC, ACCUM, WFC	F475W			Pattern 1, Exps 1-1 in G292-CTR-E (03) (1)	500 Secs (2000 Secs) *[==>(Pattern 1,1)]* *[==>(Pattern 1,2)]* *[==>(Pattern 2,1)]* *[==>(Pattern 2,2)]*	***[1]***
2	G292-CTR-E-F550M	(3) SNR-G292.0+01.8-CTR-E	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-2 in G292-CTR-E (03) (1)	500 Secs (2000 Secs) *[==>(Pattern 1,1)]* *[==>(Pattern 1,2)]* *[==>(Pattern 2,1)]* *[==>(Pattern 2,2)]*	***[2]***

Orbit Structure



Visit

Proposal 17901, G292-SE (04), scheduling Mon Mar 31 17:00:38 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 350D TO 10 D; ORIENT 80D TO 100 D; ORIENT 170D TO 190 D; ORIENT 260D TO 280 D

Patterns

#	Primary Pattern		Secondary Pattern		Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.034 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false	(1), (2)

Fixed Targets

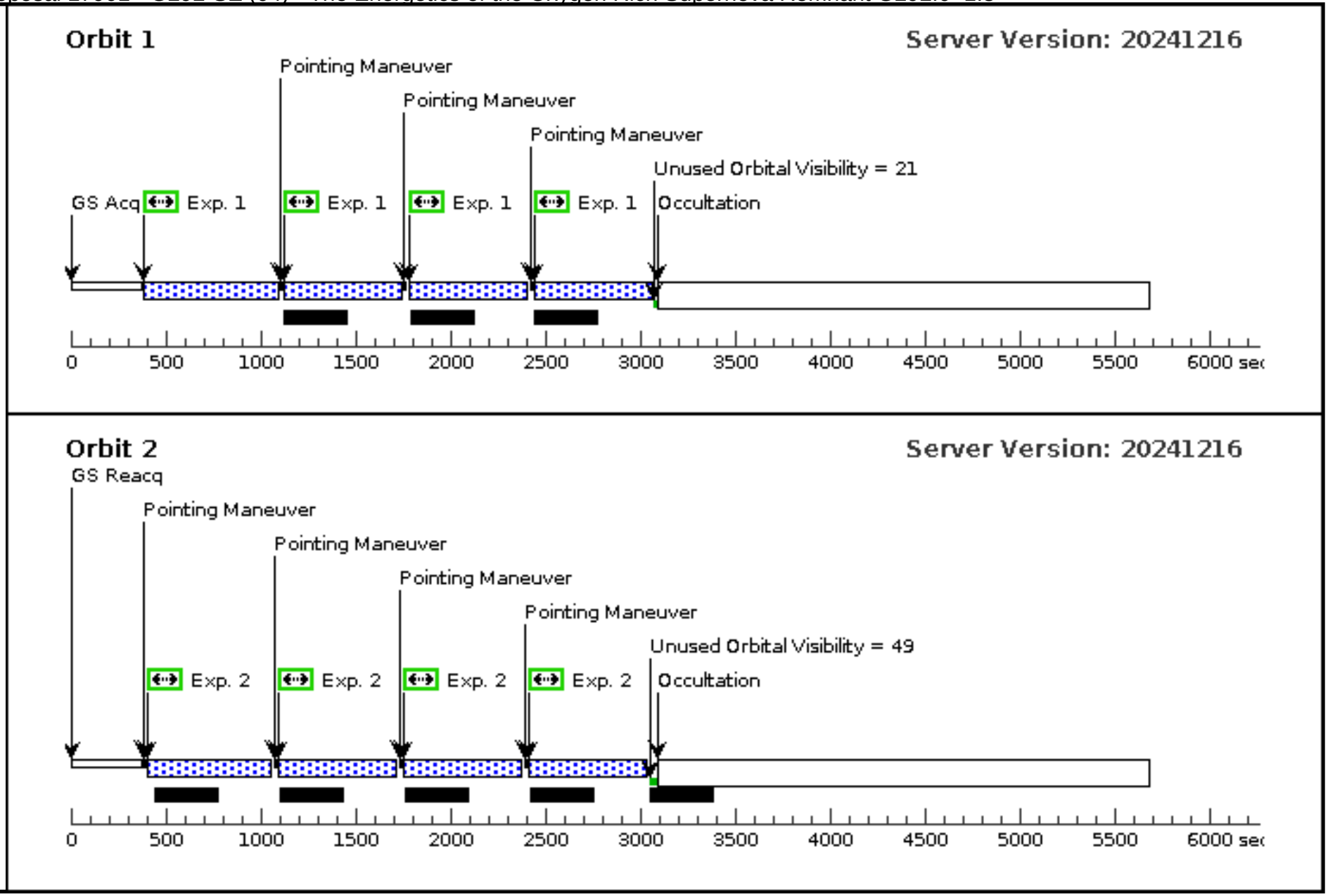
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	SNR-G292.0+01.8-SE Alt Name1: MSH11-54	RA: 11 24 35.2356 (171.1468150d) Dec: -59 19 31.62 (-59.32545d) Equinox: J2000	Epoch of Position: 2000	V=12+/-1	Reference Frame: ICRS

Comments:
Category=ISM
Description=[SNR]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G292-SE-F475W	(5) SNR-G292.0+01.8-SE	ACS/WFC, ACCUM, WFC	F475W			Pattern 1, Exps 1-1 in G292-SE (04) (1)	500 Secs (2000 Secs) *[==>(Pattern 1,1)]* *[==>(Pattern 1,2)]* *[==>(Pattern 2,1)]* *[==>(Pattern 2,2)]*	***[1]***
2	G292-SE-F550M	(5) SNR-G292.0+01.8-SE	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-2 in G292-SE (04) (1)	500 Secs (2000 Secs) *[==>(Pattern 1,1)]* *[==>(Pattern 1,2)]* *[==>(Pattern 2,1)]* *[==>(Pattern 2,2)]*	***[2]***

Orbit Structure



Visit

Proposal 17901, G292-CTR-W (05), scheduling Mon Mar 31 17:00:38 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 350D TO 10 D; ORIENT 80D TO 100 D; ORIENT 170D TO 190 D; ORIENT 260D TO 280 D

Patterns

#	Primary Pattern		Secondary Pattern		Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.034 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false	(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	SNR-G292.0+01.8-CTR-W Alt Name1: MSH11-54	RA: 11 24 18.8705 (171.0786271d) Dec: -59 16 13.79 (-59.27050d) Equinox: J2000	Epoch of Position: 2000	V=12+/-1	Reference Frame: ICRS

Comments:
Category=ISM
Description=[SNR]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G292-CTR-W-F475W	(6) SNR-G292.0+01.8-CTR-W	ACS/WFC, ACCUM, WFC	F475W			Pattern 1, Exps 1-1 in G292-CTR-W (05) (1)	500 Secs (2000 Secs) *[==>(Pattern 1,1)]* *[==>(Pattern 1,2)]* *[==>(Pattern 2,1)]* *[==>(Pattern 2,2)]*	***[1]***
2	G292-CTR-W-F550M	(6) SNR-G292.0+01.8-CTR-W	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-2 in G292-CTR-W (05) (1)	500 Secs (2000 Secs) *[==>(Pattern 1,1)]* *[==>(Pattern 1,2)]* *[==>(Pattern 2,1)]* *[==>(Pattern 2,2)]*	***[2]***

Orbit Structure