# 16267 - Probing the Atmosphere of a Temperate Transiting Jovian Planet with an Orbital Period of 1.5 Years

Cycle: 28, 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) HIP41378 | WFC3/IR | 6 | 10-May-2021 16:01:21.0 | yes |
| 02 | (1) HIP41378 | WFC3/IR | 6 | 10-May-2021 16:02:19.0 | yes |
| 03 | (1) HIP41378 | WFC3/IR | 6 | 10-May-2021 16:02:46.0 | yes |

18 Total Orbits Used


**ABSTRACT**

We request 18 orbits of HST time to observe the transit of HIP 41378 f, a Jovian planet (9.2 Earth radii) in a long-period orbit (542 days = 1.5 years) in a multi-planet system. The host star HIP 41378 is bright (Ks = 7.7, V=8.9), Sun-like (1.2 solar masses, 1.3 solar radii), and known to host at least five transiting planets. Two transits of HIP 41378 f were observed by the NASA K2 mission during non-consecutive three-month observing campaigns in 2015 and 2018, restricting the set of possible periods to a set of harmonics with a maximum period of roughly 1000 days and a minimum period near 50 days. An intensive radial velocity campaign (464 observations spanning four years) has just ruled out the remaining possibilities, revealing that the HIP 41378 f has an orbital period of 542 days and an unexpectedly low mass of 12 Earth masses. HIP 41378 f is predicted to transit on 20 May 2021 and will not transit again until November 2022. We propose to observe the 2021 transit event with WFC3/G141 to accomplish three goals: (1) probe the atmospheric composition of a cool Jovian planet; (2) investigate the possible presence of rings; (3) place constraints on the presence of exomoons. HIP 41378 f occupies a poorly-probed region of parameter space and bridges the gap between the hotter planets previously studied via transmission spectroscopy and the cooler Jovian planets in our own solar system. HST transmission spectroscopy of HIP 41378 f would provide an opportunity to investigate the influence of stellar irradiation on giant planet atmospheres and inform efforts to detect Jupiter analogs with direct imaging surveys.

**OBSERVING DESCRIPTION**

The transit of HIP 41378 f will last 19 hours (roughly 12 orbits). We request 18 consecutive HST orbits to observe the transit of HIP 41378 f . These observations will provide high phase coverage during the transit event as well as the pre-transit and post-transit baselines necessary for precisely determining the transit depth and constraining atmospheric properties.

We will use WFC3 with the G141 (1.0 - 1.7 micron) grism. Our proposed observational design mimics that of numerous successful previous transmission spectroscopy observations with WFC/G141 (e.g., Knutson et al. 2014a,b; Kreidberg et al. 2014, 2015, 2018; Benneke et al. 2018, 2019). Specifically, we will perform time series spectroscopy just before, during, and just after transit. We will utilize the spatial scan observing mode to permit longer exposure times, thus reducing read noise without saturating the detector. In addition, we will use the 256 x 256 subarray to facilitate longer spatial scans and further improve observational efficiency for our bright target star.

We used the open-source PandExo_HST tool to identify the optimal sampling sequence and scan rate. PandExo maximizes observational efficiency while ensuring that the peak photon counts are roughly 30,000 photoelectrons per pixel. We will further increase the efficiency of our observations by alternating between forward and revere scanning along the detector. At the start of the visit, we will acquire a direct image of HIP 41378 for wavelength calibration. In consecutive orbits, we will use the Hydrogen Paschen line at 1.28 m as a wavelength reference.

Our PandExo simulations indicated that the ideal observation parameters are NSAMP = 8 and SAMP SEQ = SPARS10. We will scan at a rate of 0.418629 "/s using a scan size of 179 pixels and an exposure time of 51.7 seconds. These observations are predicted to result in a transit depth uncertainty of 23 ppm per channel when subdividing the spectrum into 30 wavelength channels.

## Visit

**Proposal 16267, transit (01), scheduling** Mon May 10 20:02:48 GMT 2021

**Diagnostic Status: No Diagnostics**

Scientific Instruments: WFC3/IR

Special Requirements: PCS MODE FINE; ORIENT 285D TO 302 D; ORIENT 86D TO 151 D; BETWEEN 19-MAY-2021:22:06:00 AND 20-MAY-2021:00:06:00

*Comments: First of three consecutive visits covering pre-transit baseline, the transit, and post-transit baseline.*

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | HIP41378 | RA: 08 26 27.8490 (126.6160375d)<br>Dec: +10 04 49.33 (10.08037d)<br>Equinox: J2000 | Proper Motion RA: -48.143 mas/yr<br>Proper Motion Dec: 0.059 mas/yr<br>Parallax: 0.0093799"<br>Epoch of Position: 2018<br>Radial Velocity: 50.42 km/sec | V=8.92+/-0.02<br>B = 9.42 +/- 0.02,<br>G = 8.81 +/- 0.0004,<br>J = 7.982 +/- 0.026,<br>H = 7.786 +/- 0.038,<br>K = 7.722 +/- 0.031 | Reference Frame: SIMBAD |

*Comments: ICRS coordinates, proper motions, parallax, and radial velocity are from Gaia DR2 and were retrieved from SIMBAD.*
*Category=STAR*
*Description=[EXTRA-SOLAR PLANETARY SYSTEM]*

**Exposures**

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | F126N | NSAMP=4; SAMP-SEQ=SPARS5 | GSPAIR N843000300F2N843000402F3 | Sequence 1-8 Non-Int in transit (01) | 7.32736 Secs (7.327 Secs)<br>*[==>]* | ***[1]*** |
| 2 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=6; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-8 Non-Int in transit (01) | 37.01025 Secs (74.02 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 3 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-8 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 4 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-8 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 5 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-8 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 6 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-8 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 7 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-8 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 8 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-8 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 9 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 9-17 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 10 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 9-17 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 11 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 9-17 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 12 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 9-17 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 13 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 9-17 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |

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|---|---|---|---|---|---|---|---|---|
| 14 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 9-17 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 15 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 9-17 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 16 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 9-17 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 17 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 9-17 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 18 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 19 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 20 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 21 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 22 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 23 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 24 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 25 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 26 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |

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|---|---|---|---|---|---|---|---|---|
| 27 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 28 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 18-28 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 29 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=7; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 44.356737 Secs (88.713 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 30 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 31 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 32 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 33 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 34 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 35 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 36 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 37 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 38 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 39 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |

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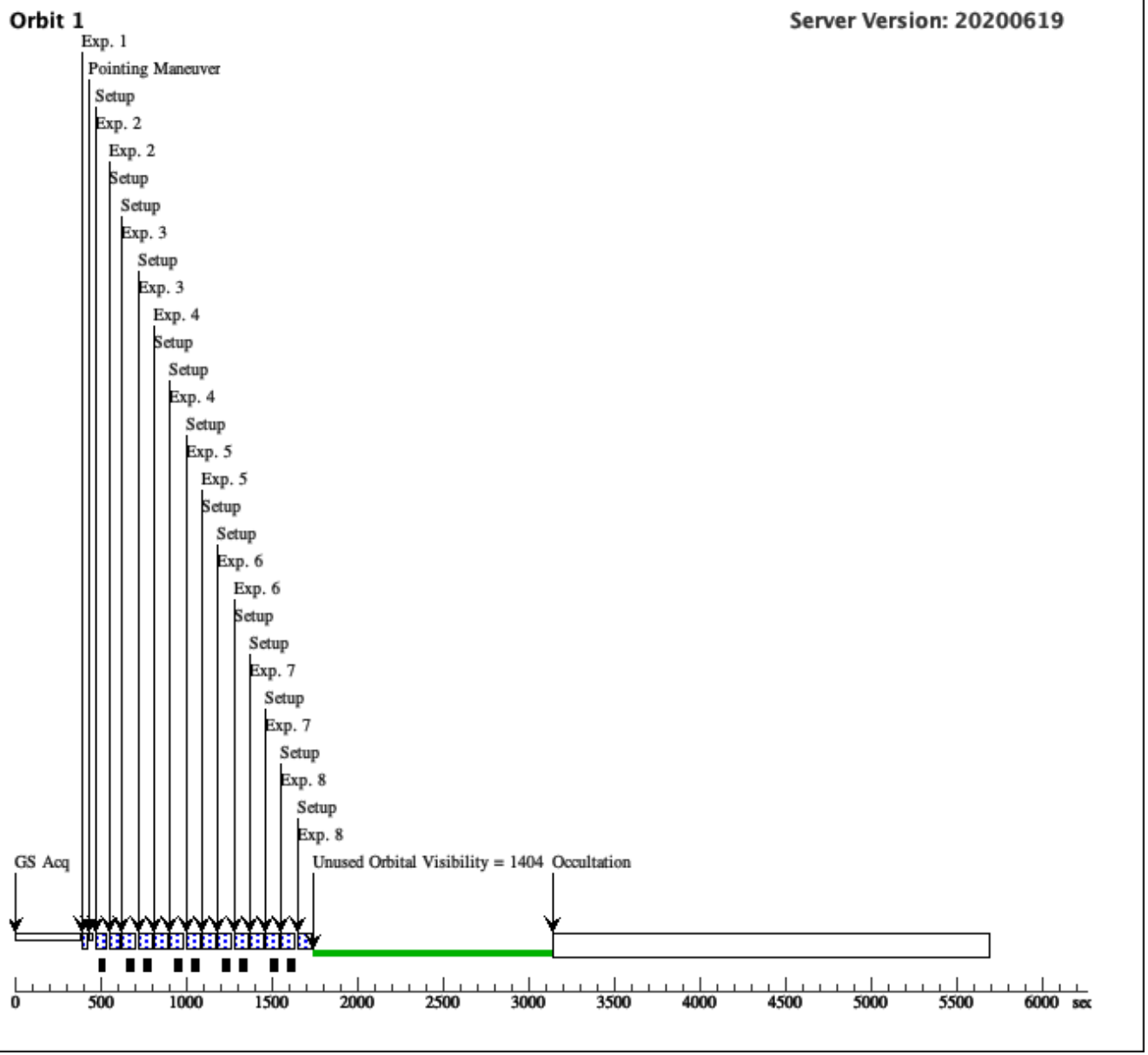
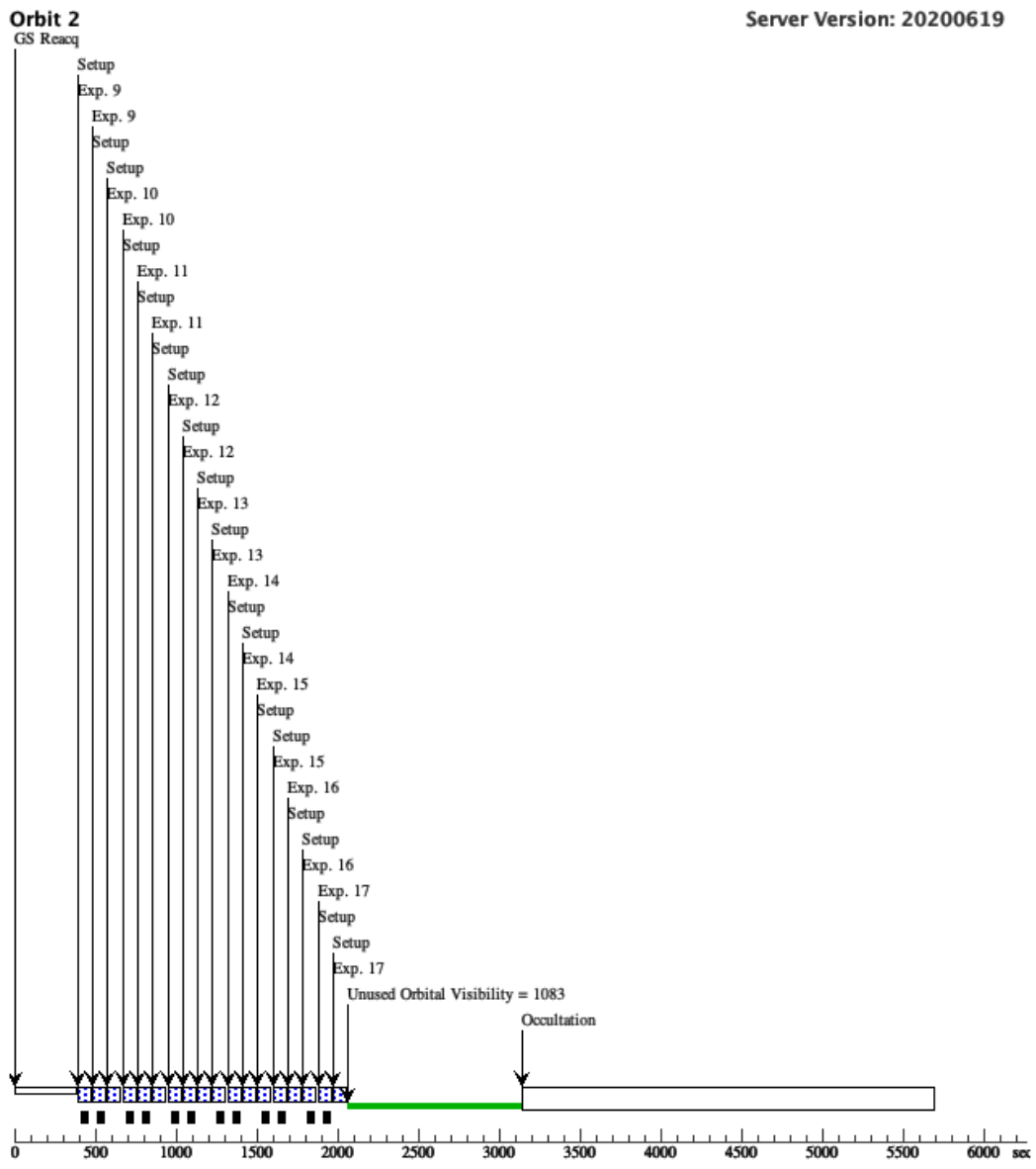
|---|---|---|---|---|---|---|---|---|
| 40 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 41 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 42 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 43 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=7; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 44.356737 Secs (88.713 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 44 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 45 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 46 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 47 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 48 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 49 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 50 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 51 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 52 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 53 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 54 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 55 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 56 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 57 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=7; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 44.356737 Secs (88.713 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 58 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 59 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 60 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 61 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 62 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 63 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 64 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 65 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 66 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| | 67 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| | 68 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| | 69 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| | 70 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-70 Non-Int in transit (01) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |

**Orbit Structure**

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Exp. 9
Setup
Setup
Exp. 10
Exp. 10
Setup
Exp. 11
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Exp. 12
Setup
Exp. 12
Setup
Exp. 13
Setup
Exp. 13
Exp. 14
Setup
Setup
Exp. 14
Exp. 15
Setup
Setup
Exp. 15
Exp. 16
Setup
Setup
Exp. 16
Exp. 17
Setup
Setup
Exp. 17
Unused Orbital Visibility = 1083
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1500
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3500
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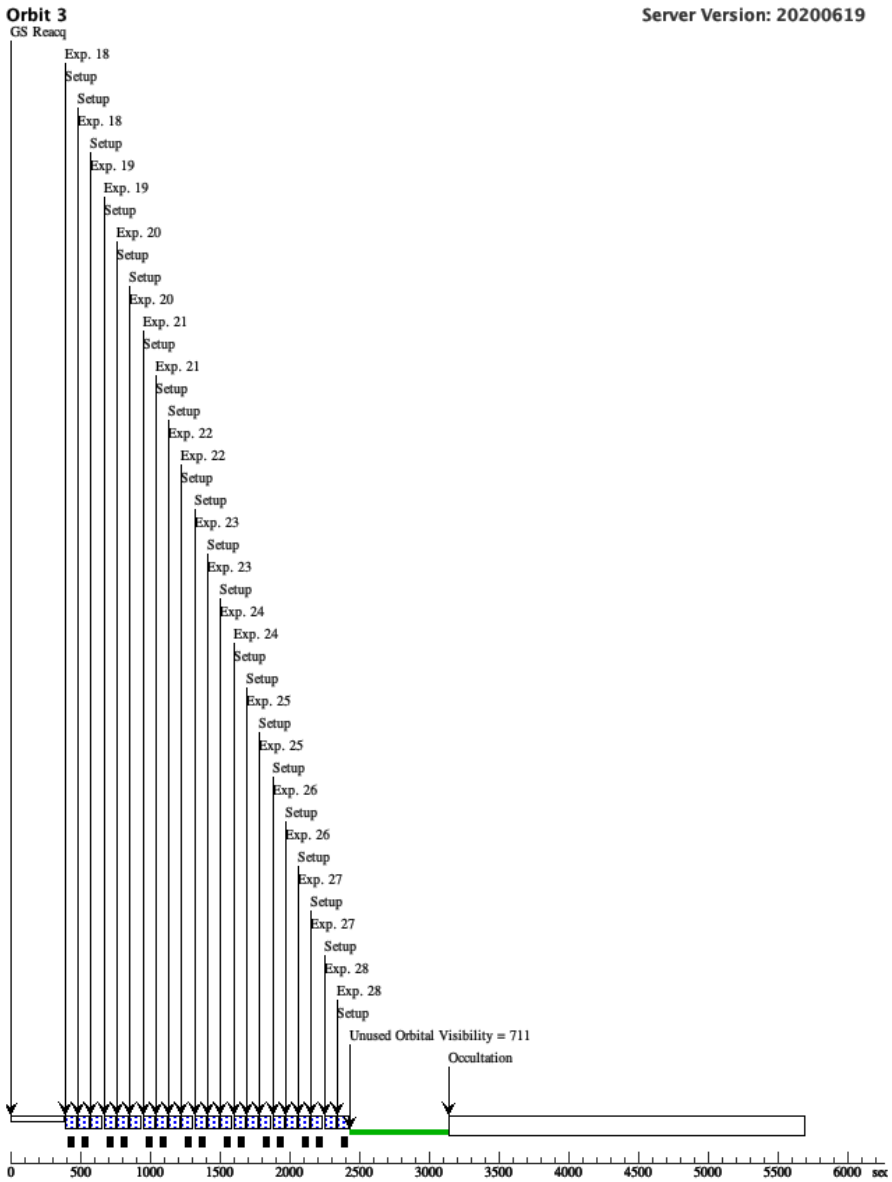
6000
sec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Exp. 20
Exp. 21
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Exp. 27
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Exp. 27
Setup
Exp. 28
Exp. 28
Setup
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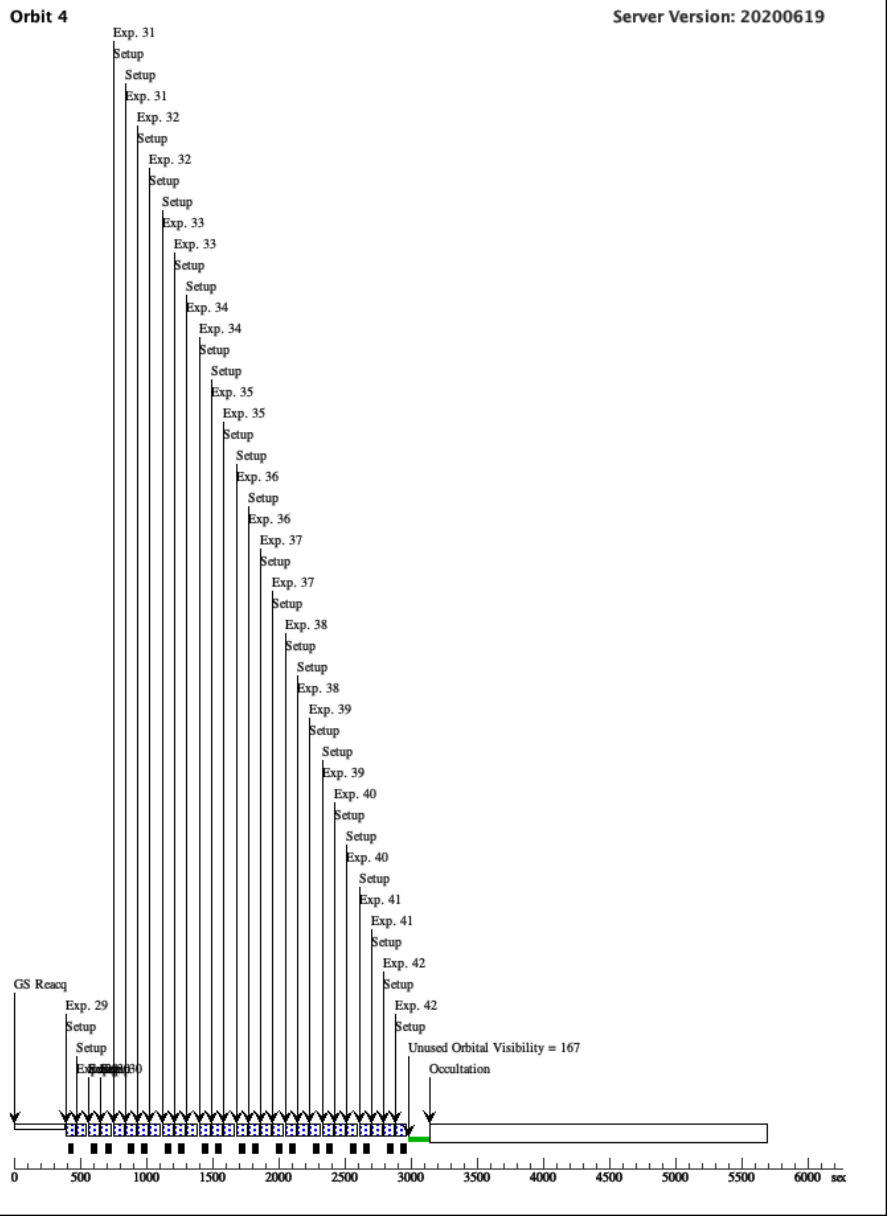
Orbit 4
Server Version: 20200619
GS Reacq
Exp. 29
Setup
Unused Orbital Visibility = 167
Occultation
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1000
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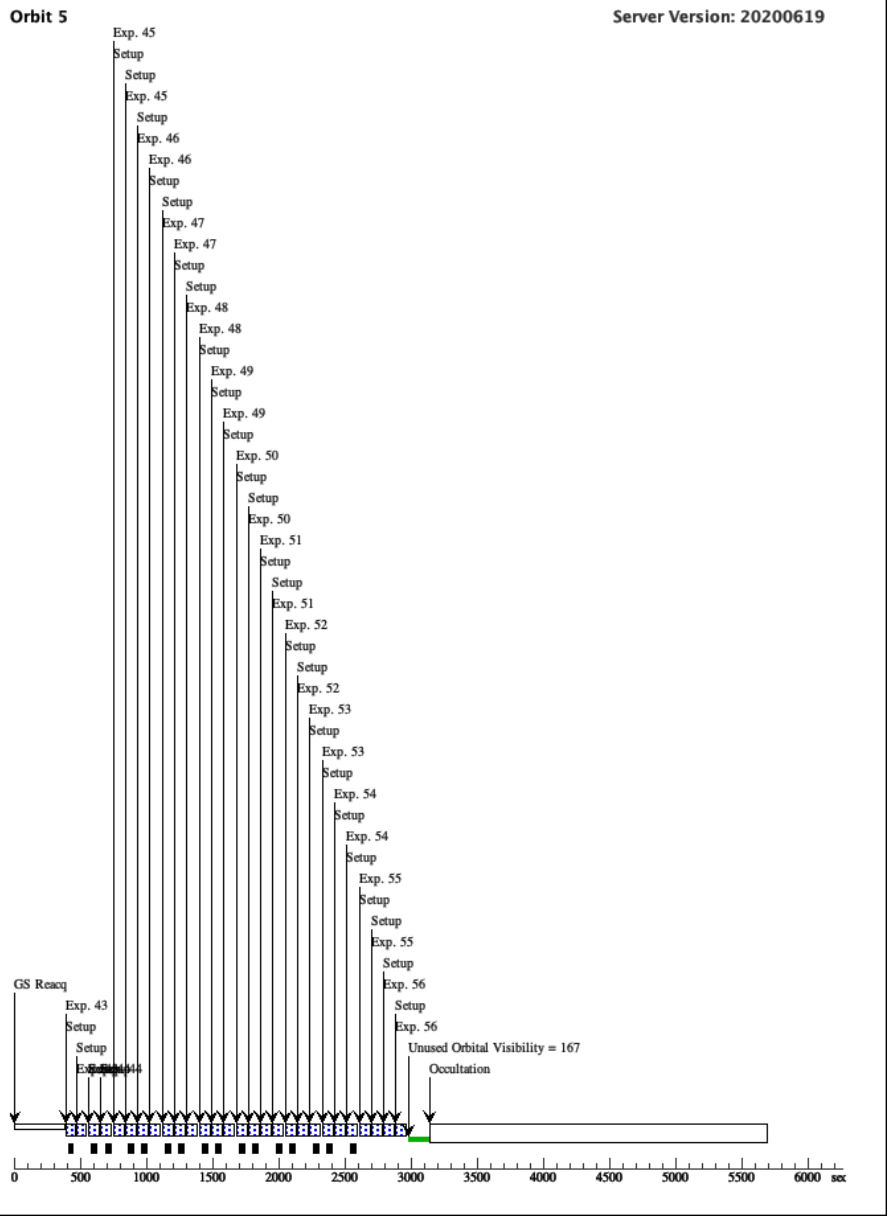
sec


Orbit 5
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Setup
Setup
Exp. 45
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Exp. 46
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Exp. 54
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Exp. 54
Setup
Exp. 55
Setup
Setup
Exp. 55
Setup
Exp. 56
Setup
Exp. 56
GS Reacq
Exp. 43
Setup
Setup
Unused Orbital Visibility = 167
Occultation
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1000
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3500
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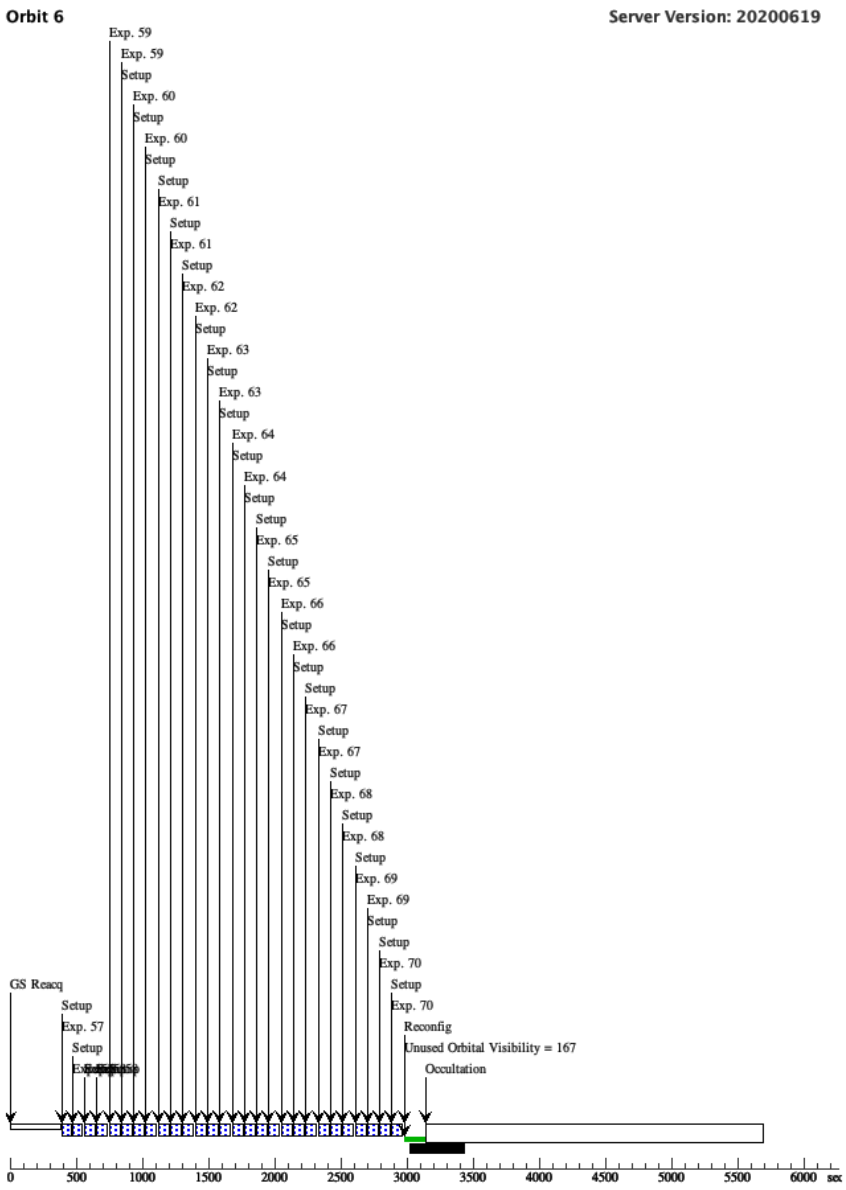
4500
5000
5500
6000
sec


Orbit 6
Server Version: 20200619
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Exp. 59
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Exp. 60
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Exp. 60
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Exp. 67
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Exp. 67
Setup
Exp. 68
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Exp. 68
Setup
Exp. 69
Exp. 69
Setup
Setup
Exp. 70
Setup
Exp. 70
Reconfig
Unused Orbital Visibility = 167
Occultation
GS Reacq
Setup
Exp. 57
Setup
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

## Visit

**Proposal 16267, transit (02), implementation** Mon May 10 20:02:49 GMT 2021

**Diagnostic Status: No Diagnostics**

Scientific Instruments: WFC3/IR

Special Requirements: PCS MODE FINE; ORIENT 285D TO 302 D; ORIENT 86D TO 151 D; BETWEEN 20-MAY-2021:07:36:00 AND 20-MAY-2021:09:36:00

*Comments: Second of three consecutive visits covering pre-transit baseline, the transit, and post-transit baseline.*

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | HIP41378 | RA: 08 26 27.8490 (126.6160375d) | Proper Motion RA: -48.143 mas/yr | V=8.92+/-0.02 | Reference Frame: SIMBAD |
| | | Dec: +10 04 49.33 (10.08037d) | Proper Motion Dec: 0.059 mas/yr | B = 9.42 +/- 0.02, | |
| | | Equinox: J2000 | Parallax: 0.0093799" | G = 8.81 +/- 0.0004, | |
| | | | Epoch of Position: 2018 | J = 7.982 +/- 0.026, | |
| | | | Radial Velocity: 50.42 km/sec | H = 7.786 +/- 0.038, | |
| | | | | K = 7.722 +/- 0.031 | |

*Comments: ICRS coordinates, proper motions, parallax, and radial velocity are from Gaia DR2 and were retrieved from SIMBAD.*
*Category=STAR*
*Description=[EXTRA-SOLAR PLANETARY SYSTEM]*

**Exposures**

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | F126N | NSAMP=4; SAMP-SEQ=SPARS5 | GSPAIR N843000300F2N843000402F3 | Sequence 1-14 Non-Int in transit (02) | 7.32736 Secs (7.327 Secs)<br>*[==>]* | ***[1]*** |
| 2 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 3 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 4 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 5 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 6 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 7 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 8 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 9 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 10 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 11 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 12 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 13 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 14 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-14 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 15 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=7; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 44.356737 Secs (88.713 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 16 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 17 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 18 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 19 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 20 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 21 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 22 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 23 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 24 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 25 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 26 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |

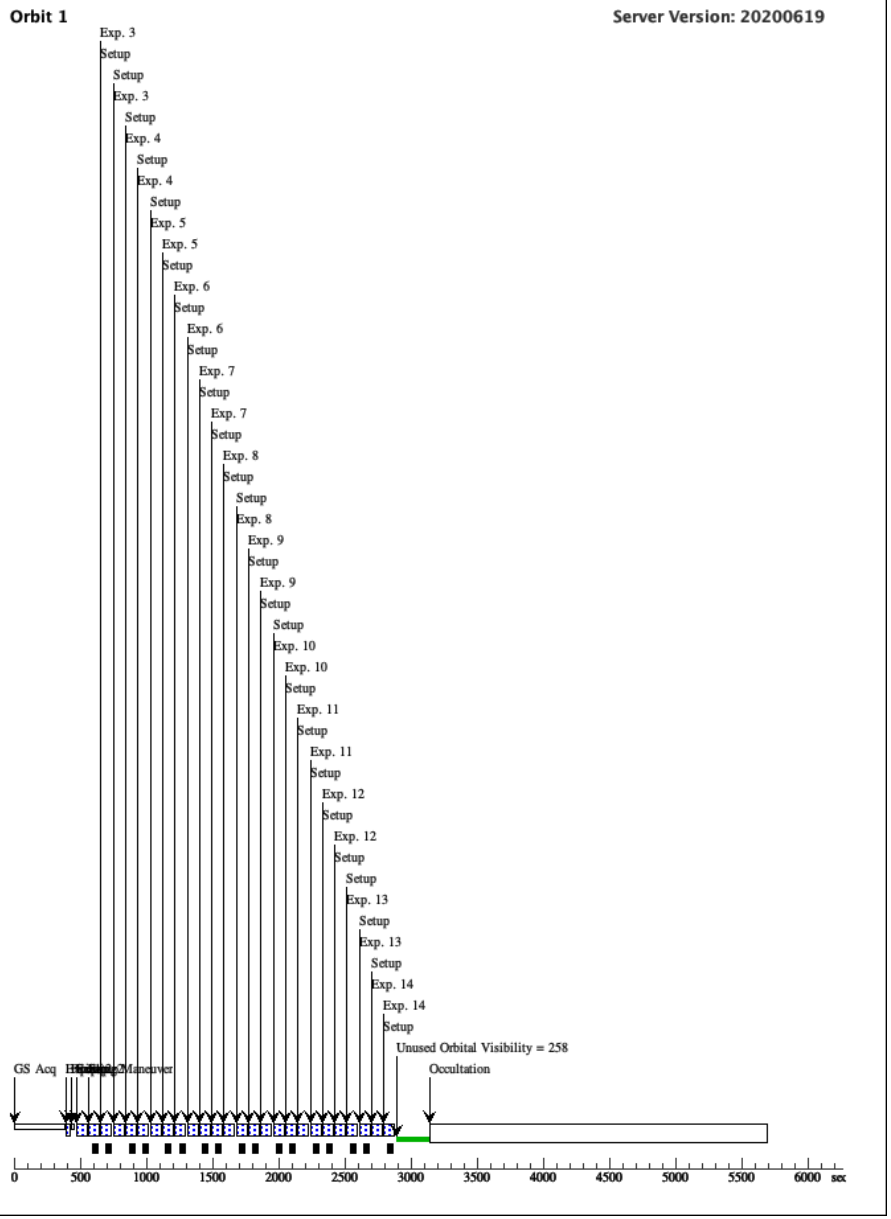
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 27 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 28 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 15-28 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 29 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=7; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 44.356737 Secs (88.713 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 30 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 31 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 32 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 33 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 34 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 35 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 36 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 37 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 38 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 39 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |

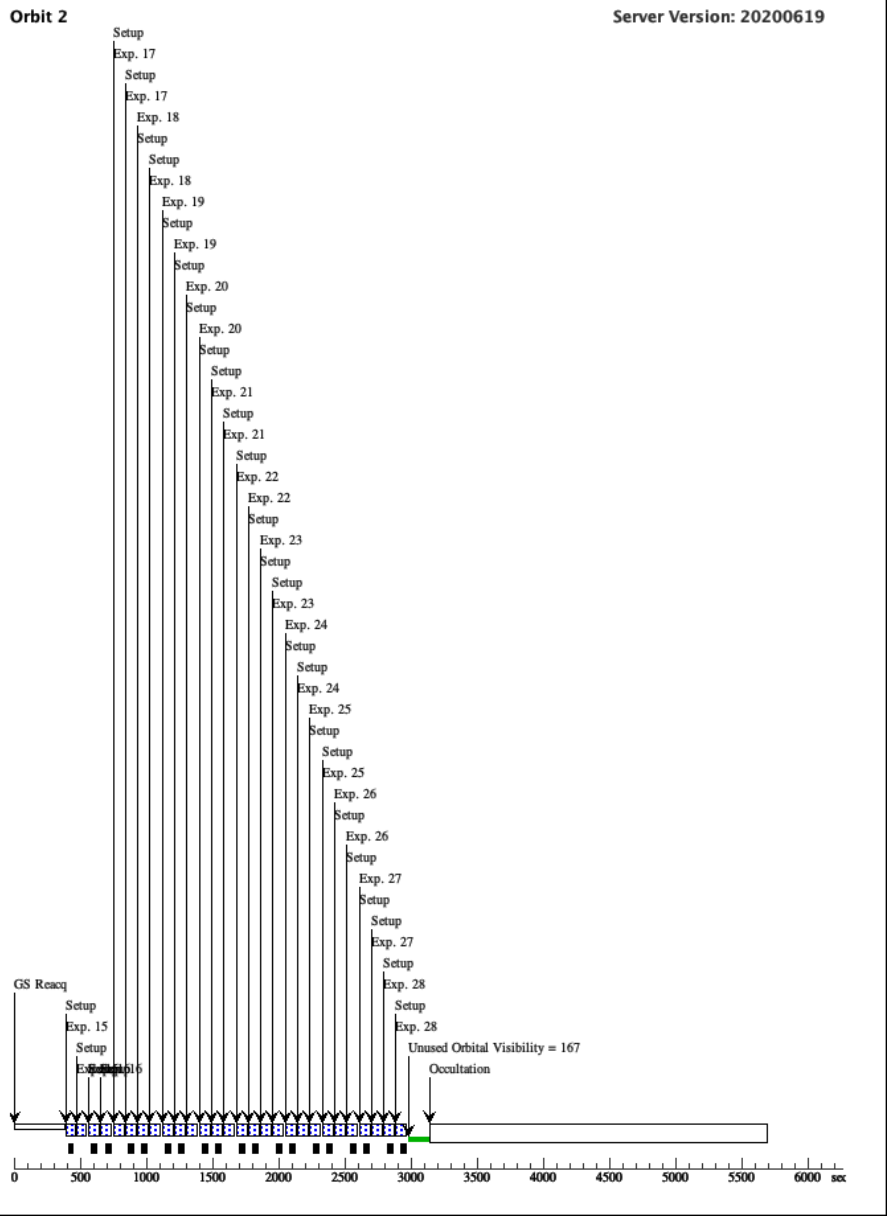
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 40 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 41 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 42 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-42 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 43 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=7; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 44.356737 Secs (88.713 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 44 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 45 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 46 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 47 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 48 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 49 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 50 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 51 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 52 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 53 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 54 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 55 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 56 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 43-56 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 57 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-65 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 58 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-65 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 59 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-65 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 60 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-65 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 61 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-65 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 62 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-65 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 63 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-65 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 64 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-65 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 65 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 57-65 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 66 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 66-66 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| | 67 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 67-70 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| | 68 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 67-70 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| | 69 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 67-70 Non-Int in transit (02) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| | 70 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Forward | Sequence 67-70 Non-Int in transit (02) | 51.703224 Secs (51.703 Secs)<br>*[==>]* | ***[6]*** |

**Orbit Structure**




Orbit 2
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Setup
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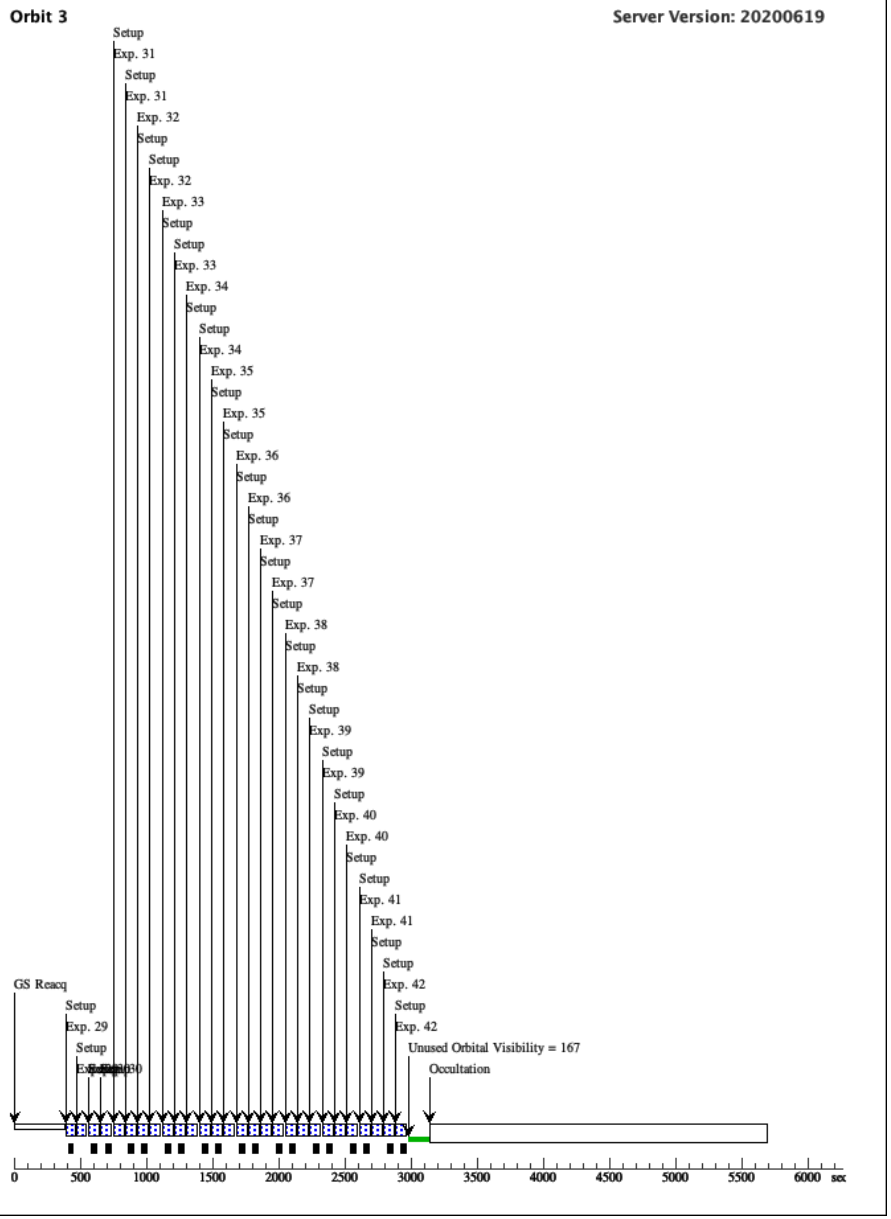
Setup
Exp. 17
Exp. 18
Setup
Setup
Exp. 18
Exp. 19
Setup
Exp. 19
Setup
Exp. 20
Setup
Exp. 20
Setup
Setup
Exp. 21
Setup
Exp. 21
Setup
Exp. 22
Exp. 22
Setup
Exp. 23
Setup
Setup
Exp. 23
Exp. 24
Setup
Setup
Exp. 24
Exp. 25
Setup
Setup
Exp. 25
Exp. 26
Setup
Exp. 26
Setup
Exp. 27
Setup
Setup
Exp. 27
Setup
Exp. 28
Setup
Exp. 28
GS Reacq
Setup
Exp. 15
Setup
Unused Orbital Visibility = 167
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec


Orbit 3
Server Version: 20200619
Setup
Exp. 31
Setup
Exp. 31
Exp. 32
Setup
Setup
Exp. 32
Exp. 33
Setup
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Exp. 38
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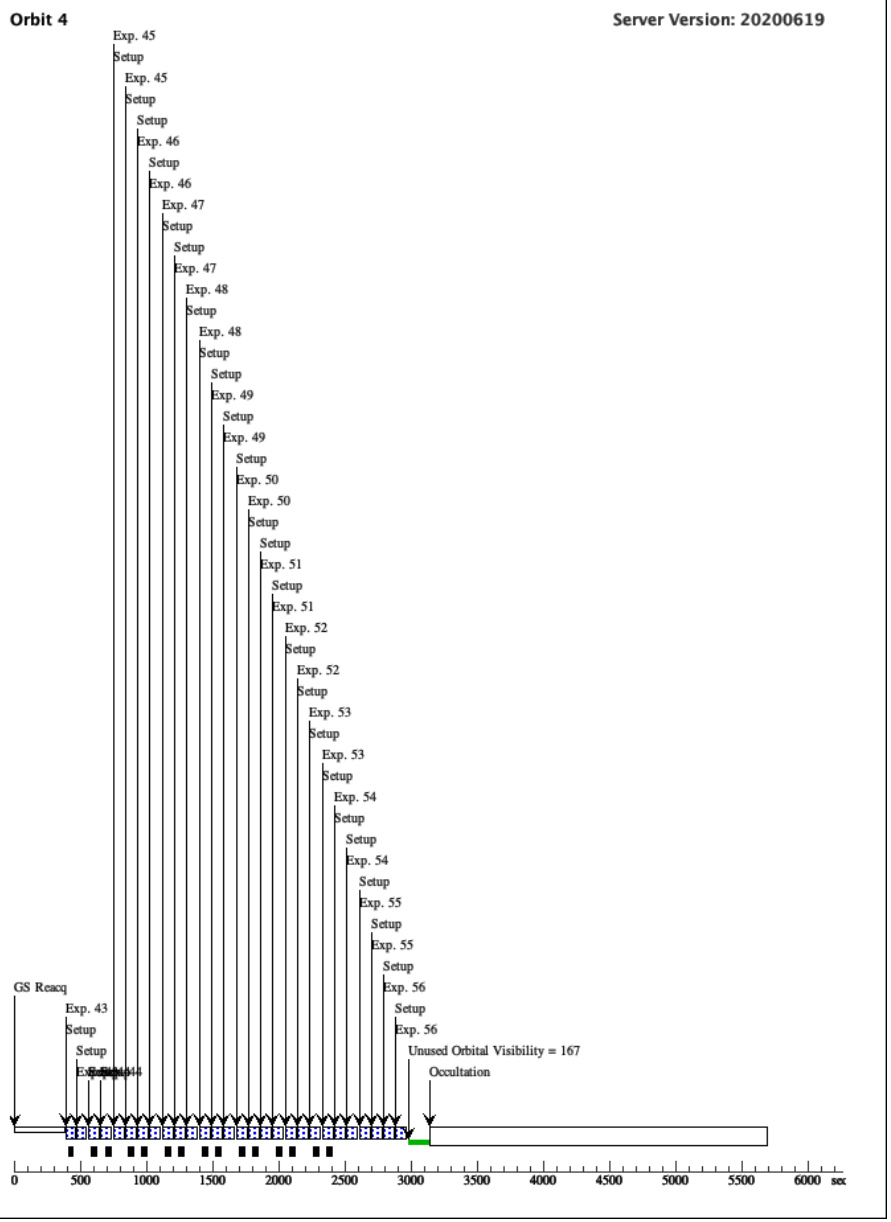
Setup
Exp. 40
Exp. 40
Setup
Setup
Exp. 41
Exp. 41
Setup
Setup
Exp. 42
Setup
Exp. 42
GS Reacq
Setup
Exp. 29
Setup
Unused Orbital Visibility = 167
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec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Exp. 48
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Exp. 48
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Exp. 50
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Exp. 54
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Exp. 54
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Exp. 55
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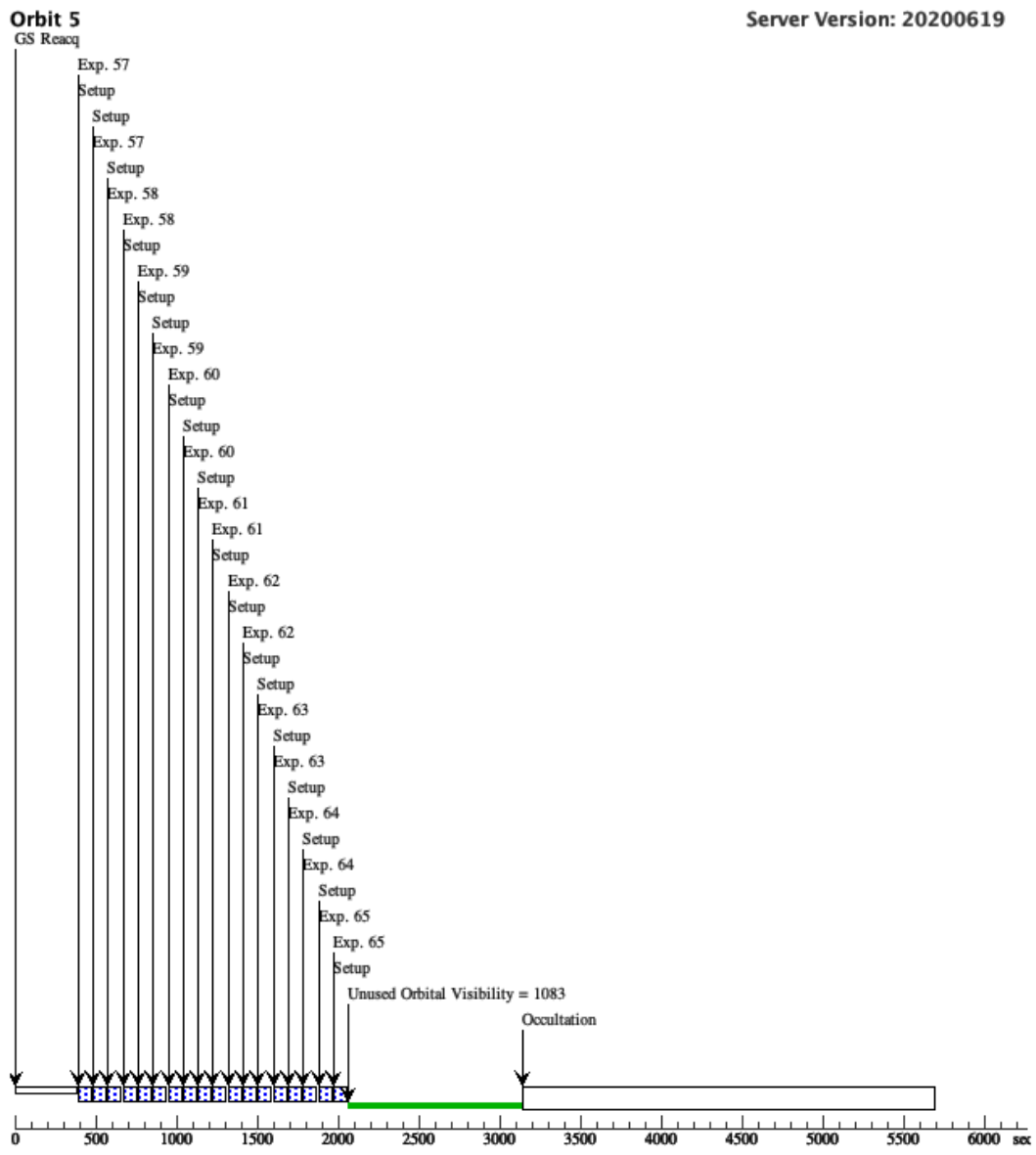
Exp. 55
Setup
Exp. 56
Setup
Exp. 56
GS Reacq
Exp. 43
Setup
Setup
Unused Orbital Visibility = 167
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec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GS Reacq
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Setup
Setup
Exp. 60
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Exp. 61
Exp. 61
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Exp. 62
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Exp. 62
Setup
Setup
Exp. 63
Setup
Exp. 63
Setup
Exp. 64
Setup
Exp. 64
Setup
Exp. 65
Exp. 65
Setup
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Occultation
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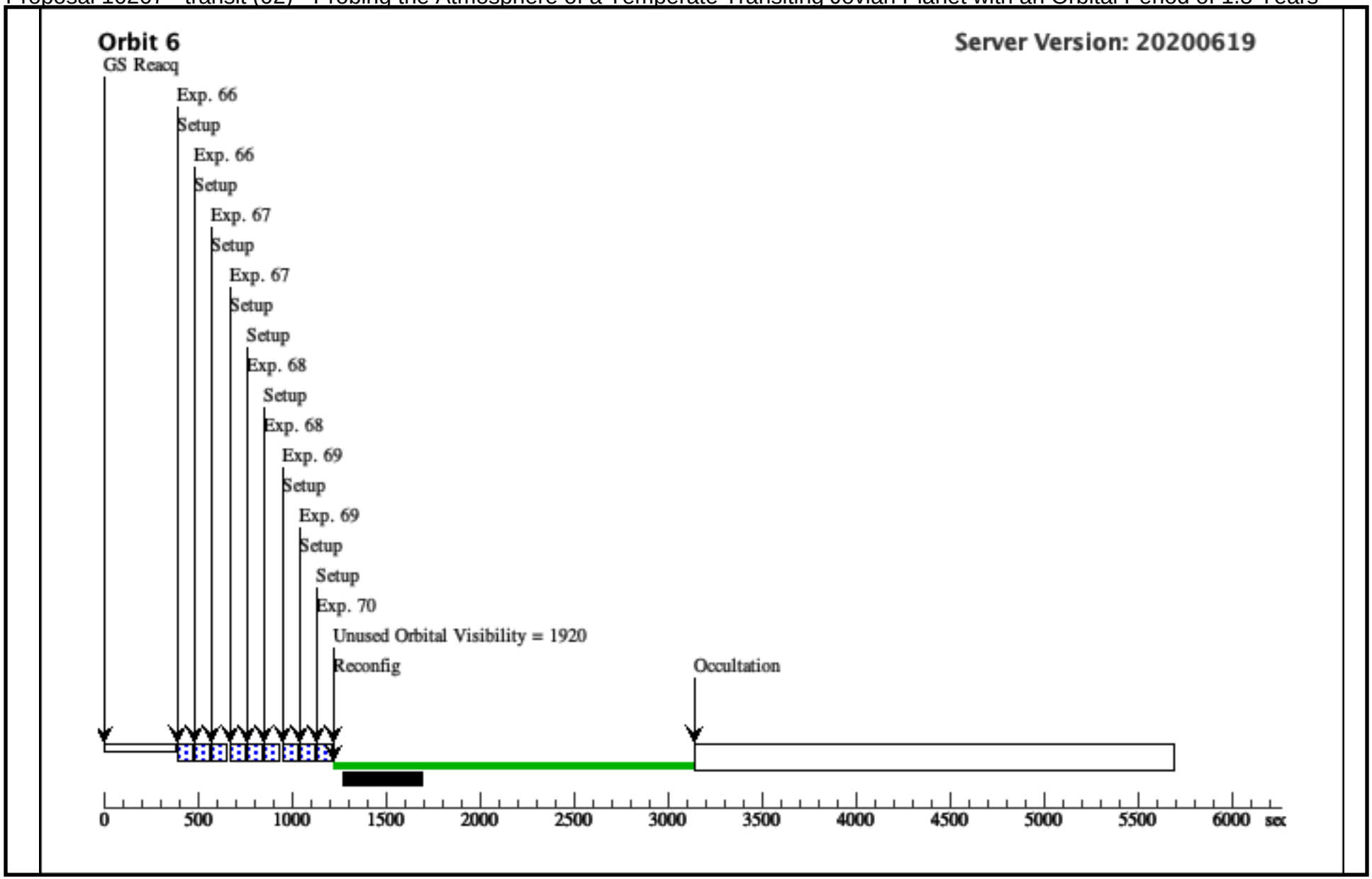
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec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Exp. 69
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Exp. 70
Unused Orbital Visibility = 1920
Reconfig
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

**Visit**

**Proposal 16267, transit (03), scheduling** Mon May 10 20:02:50 GMT 2021

**Diagnostic Status: No Diagnostics**

Scientific Instruments: WFC3/IR

Special Requirements: PCS MODE FINE; ORIENT 285D TO 302 D; ORIENT 86D TO 151 D; BETWEEN 20-MAY-2021:17:06:00 AND 20-MAY-2021:19:06:00

*Comments: Third of three consecutive visits covering pre-transit baseline, the transit, and post-transit baseline.*

**Fixed Targets**

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | HIP41378 | RA: 08 26 27.8490 (126.6160375d)<br>Dec: +10 04 49.33 (10.08037d)<br>Equinox: J2000 | Proper Motion RA: -48.143 mas/yr<br>Proper Motion Dec: 0.059 mas/yr<br>Parallax: 0.0093799"<br>Epoch of Position: 2018<br>Radial Velocity: 50.42 km/sec | V=8.92+/-0.02<br>B = 9.42 +/- 0.02,<br>G = 8.81 +/- 0.0004,<br>J = 7.982 +/- 0.026,<br>H = 7.786 +/- 0.038,<br>K = 7.722 +/- 0.031 | Reference Frame: SIMBAD |

*Comments: ICRS coordinates, proper motions, parallax, and radial velocity are from Gaia DR2 and were retrieved from SIMBAD.*
*Category=STAR*
*Description=[EXTRA-SOLAR PLANETARY SYSTEM]*

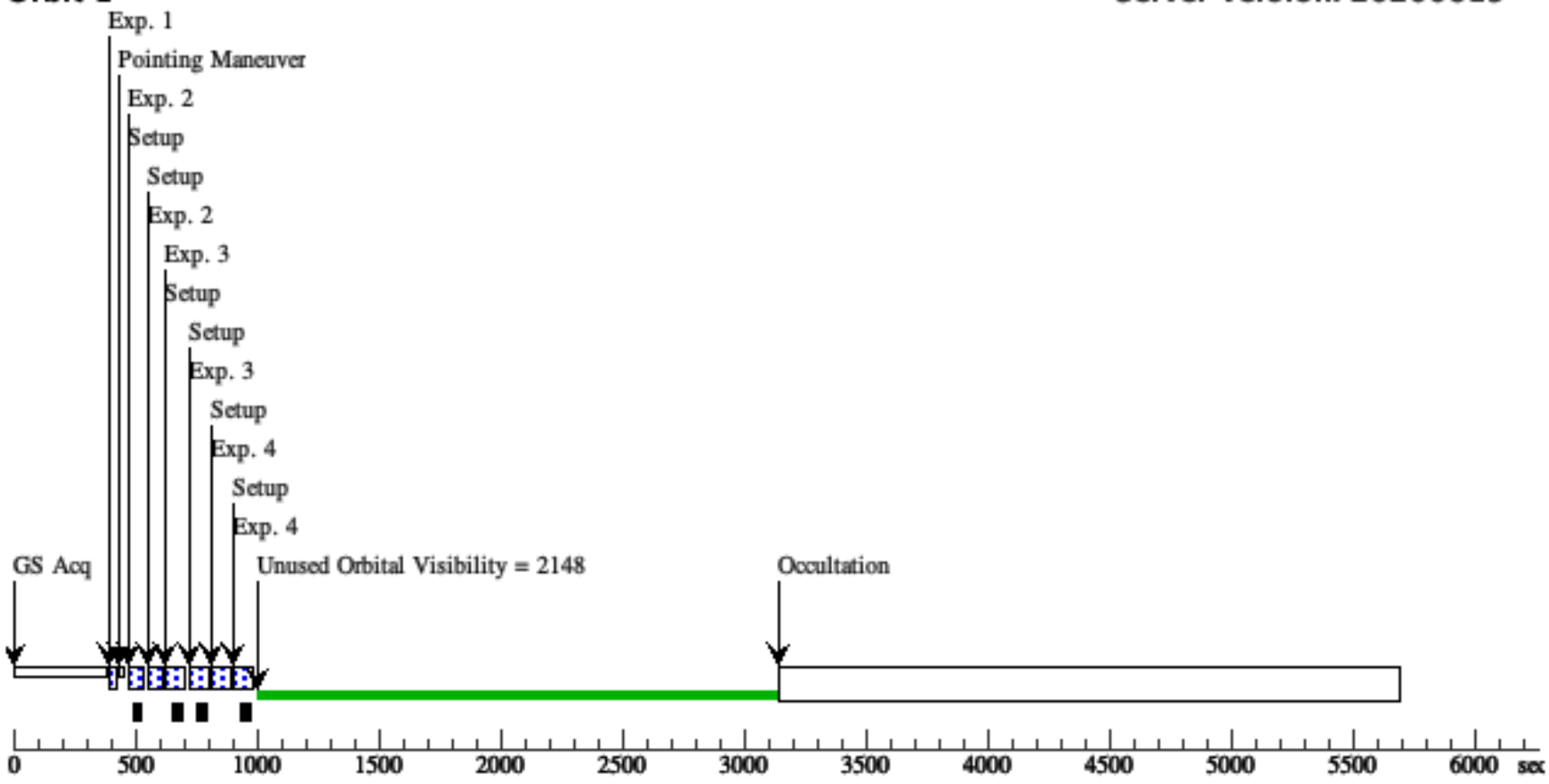
**Exposures**

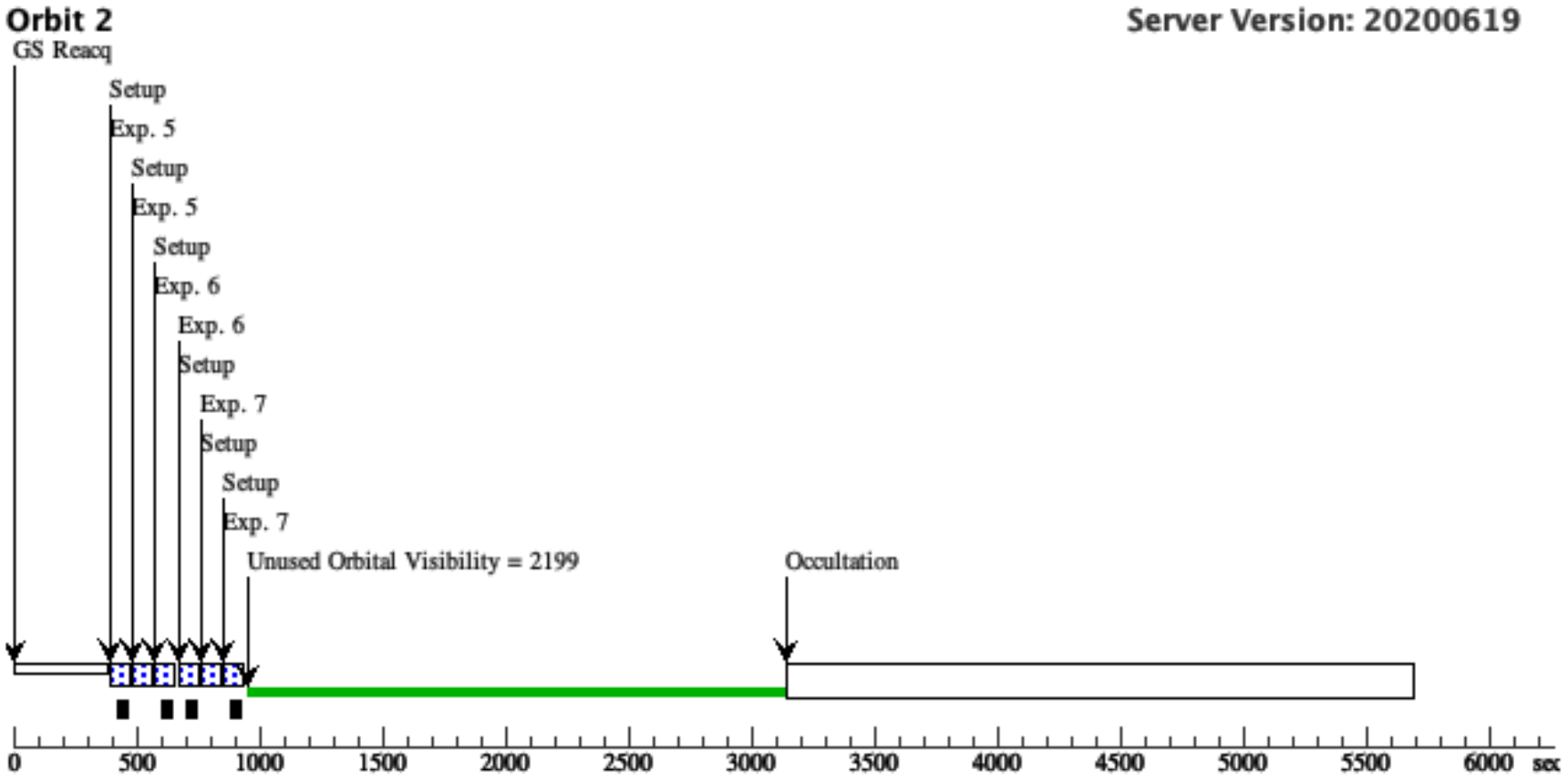
| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | F126N | NSAMP=4; SAMP-SEQ=SPARS5 | GSPAIR N843000300F2N843000402F3 | Sequence 1-4 Non-Int in transit (03) | 7.32736 Secs (7.327 Secs)<br>*[==>]* | ***[1]*** |
| 2 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=6; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-4 Non-Int in transit (03) | 37.01025 Secs (74.02 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 3 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-4 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 4 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 1-4 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[1]*** |
| 5 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 5-7 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 6 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 5-7 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 7 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 5-7 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[2]*** |
| 8 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 8-12 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 9 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 8-12 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 10 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 8-12 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 11 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 8-12 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 12 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 8-12 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[3]*** |
| 13 | | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 13-19 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 14 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 13-19 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 15 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 13-19 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 16 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 13-19 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 17 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 13-19 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 18 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 13-19 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 19 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 13-19 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[4]*** |
| 20 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=7; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 20-28 Non-Int in transit (03) | 44.356737 Secs (88.713 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 21 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 20-28 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 22 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 20-28 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 23 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 20-28 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 24 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 20-28 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 25 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 20-28 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 26 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 20-28 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 27 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 20-28 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 28 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 20-28 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[5]*** |
| 29 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 30 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 31 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 32 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 33 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 34 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 35 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 36 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 37 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 38 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |
| 39 | (1) HIP41378 | WFC3/IR, MULTIACCUM, GRISM256 | G141 | NSAMP=8; SAMP-SEQ=SPARS10 | POS TARG 0,-15; SPATIAL SCAN 0.4 18629,90.0 Degrees, Round trip | Sequence 29-39 Non-Int in transit (03) | 51.703224 Secs (103.406 Secs)<br>*[==>(Forward)]*<br>*[==>(Reverse)]* | ***[6]*** |

Orbit Structure

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GS Reacq
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Setup
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Setup
Exp. 6
Exp. 6
Setup
Exp. 7
Setup
Setup
Exp. 7
Unused Orbital Visibility = 2199
Occultation
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1500
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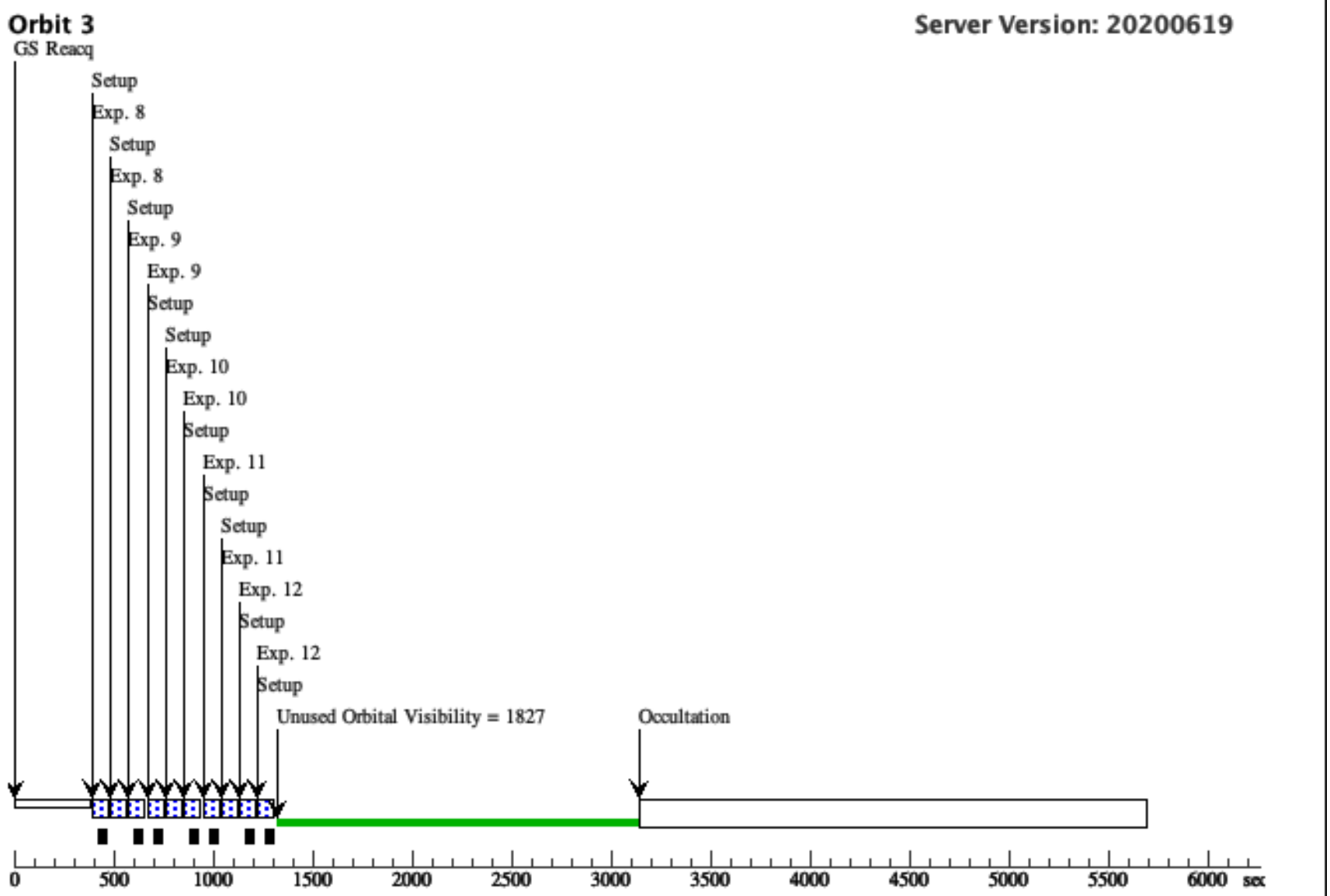
6000
sec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GS Reacq
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Setup
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Exp. 10
Setup
Exp. 11
Setup
Setup
Exp. 11
Exp. 12
Setup
Exp. 12
Setup
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Occultation
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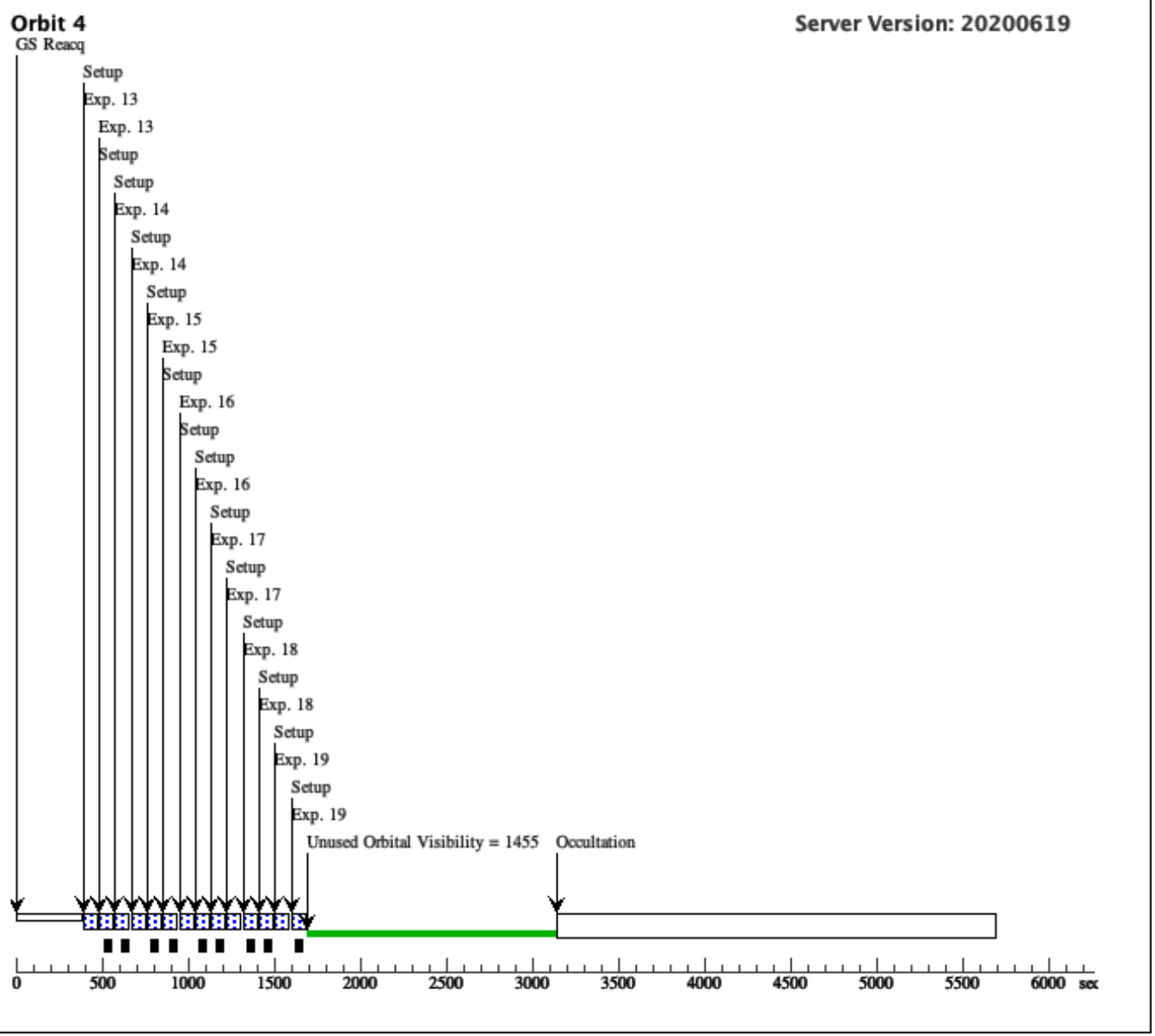
6000
sec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Exp. 16
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Exp. 16
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Exp. 17
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Exp. 18
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Exp. 18
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Exp. 19
Setup
Exp. 19
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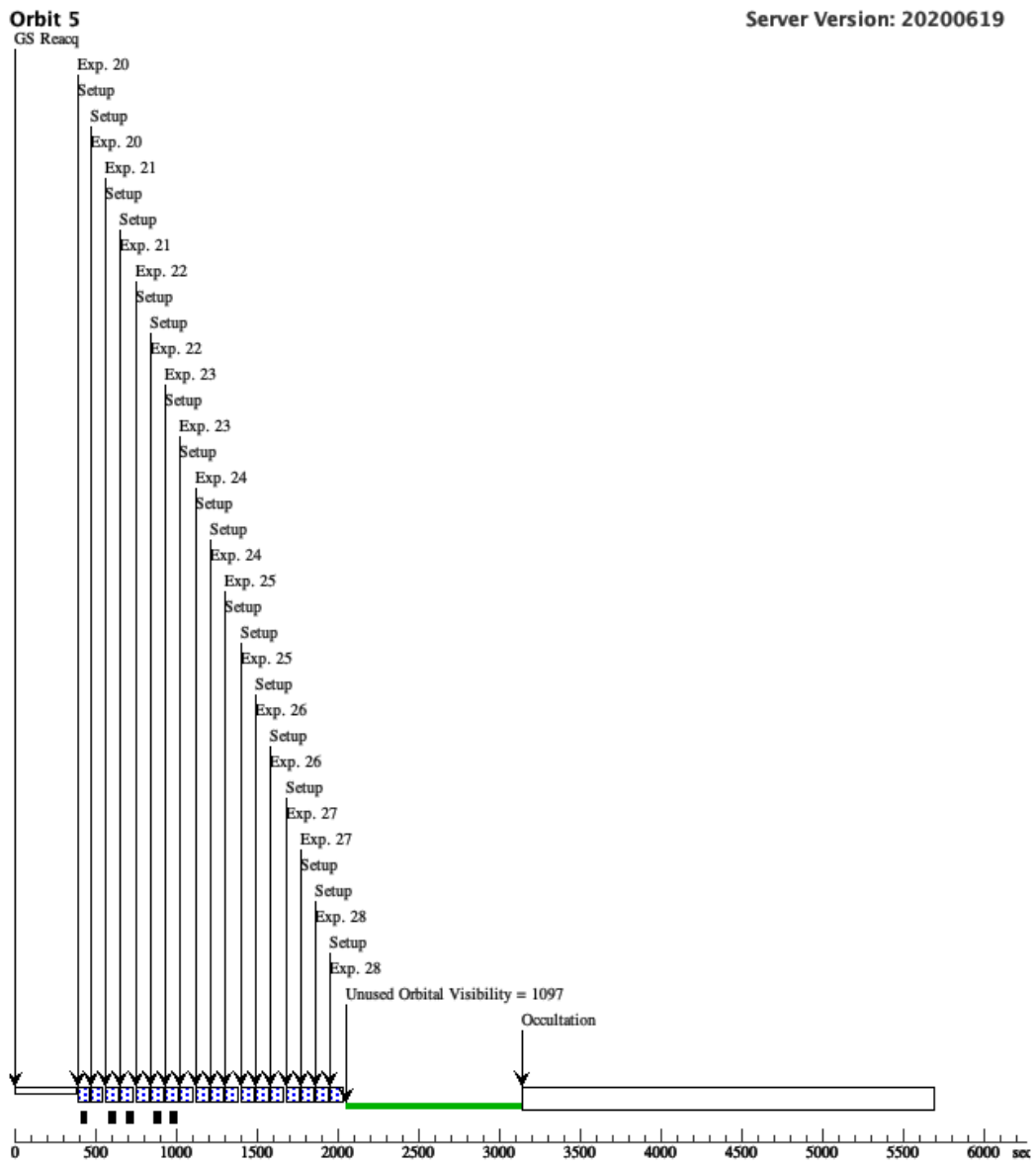
6000
sec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Server Version: 20200619
GS Reacq
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Exp. 25
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Exp. 26
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Exp. 27
Exp. 27
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Setup
Exp. 28
Setup
Exp. 28
Unused Orbital Visibility = 1097
Occultation
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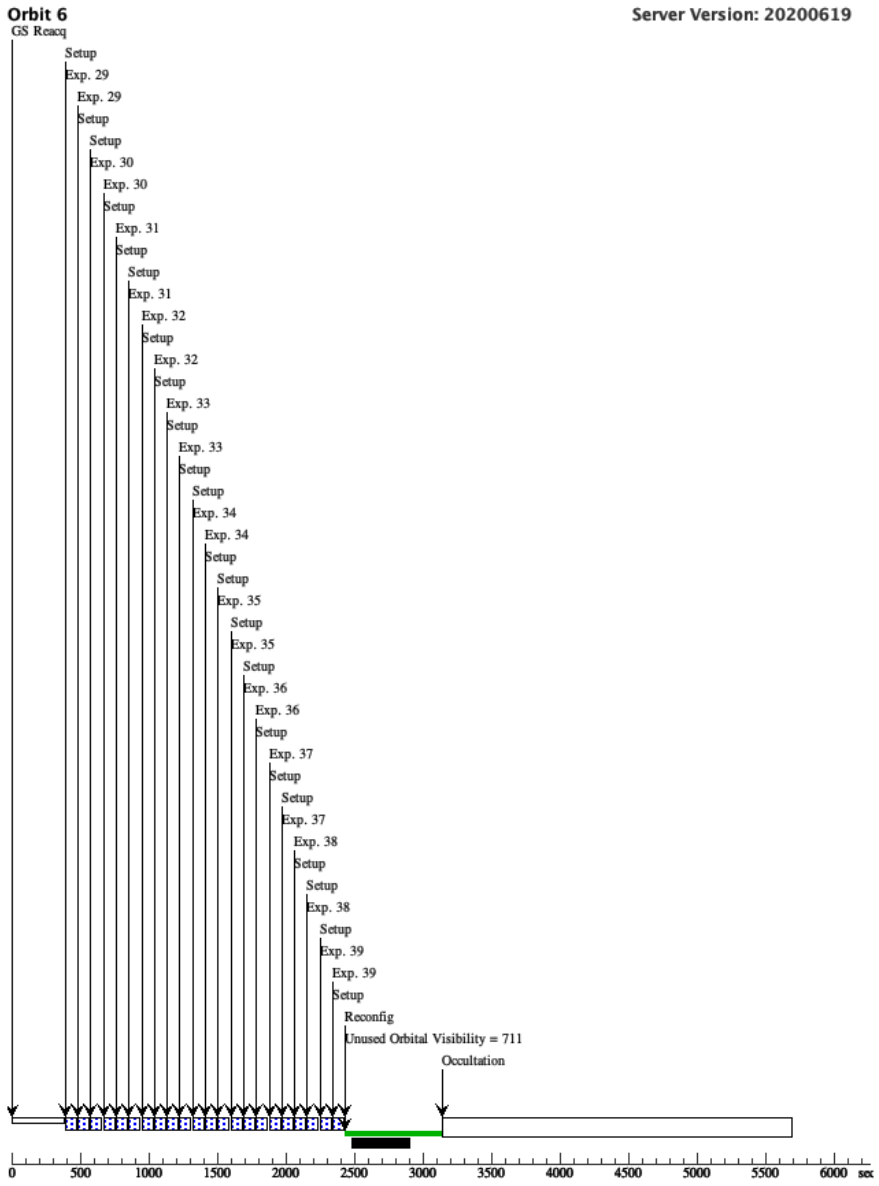
6000
sec


Orbit 6
Server Version: 20200619
GS Reacq
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Setup
Exp. 37
Exp. 38
Setup
Setup
Exp. 38
Setup
Exp. 39
Exp. 39
Setup
Reconfig
Unused Orbital Visibility = 711
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec