# 18430 - Planetary Nebulae in Globular Clusters: Are They All Ejected by Binary Stars?

Cycle: 34, Proposal Category: GO

(Availability Mode: SUPPORTED)

**INVESTIGATORS**


| *Name* | *Institution* |
|---|---|
| **Howard Bond (PI) (Contact)** | **Eureka Scientific Inc.** |
| Dr. Andrea Bellini (CoI) | Space Telescope Science Institute |


**VISITS**

| *Visit* | *Targets used in Visit* | *Configurations used in Visit* | *Orbits Used* | *Last Orbit Planner Run* | *OP Current with Visit?* |
|---|---|---|---|---|---|
| 01 | (1) JAFU-2 | WFC3/UVIS | 3 | 26-Aug-2026 09:00:15.0 | yes |
| 04 | (1) JAFU-2 | WFC3/UVIS | 1 | 26-Aug-2026 09:00:16.0 | yes |
| 05 | (1) JAFU-2 | WFC3/UVIS | 1 | 26-Aug-2026 09:00:16.0 | yes |
| 06 | (1) JAFU-2 | WFC3/UVIS | 1 | 26-Aug-2026 09:00:17.0 | yes |
| 07 | (1) JAFU-2 | WFC3/UVIS | 1 | 26-Aug-2026 09:00:17.0 | yes |
| 08 | (1) JAFU-2 | WFC3/UVIS | 1 | 26-Aug-2026 09:00:18.0 | yes |
| 09 | (1) JAFU-2 | WFC3/UVIS | 1 | 26-Aug-2026 09:00:18.0 | yes |

9 Total Orbits Used

**ABSTRACT**

Stars now evolving in globular clusters (GCs) have initial masses of ~0.8 Msun. Theory predicts that single stars in such ancient populations likely cannot produce planetary nebulae (PNe)--because their post-AGB evolutionary timescales are so long that by the time the star is hot enough to ionise

the ejecta, the PN has already dissipated.

Nevertheless, there are 3 PNe known in Milky Way GCs. The existence of these PNe likely requires an origin from binary stars, which either merged early in their evolution, or recently underwent a common-envelope (CE) interaction. In the latter case, the central star of the PN would now be a close binary.

We propose an acid test of this hypothesis by obtaining photometry of the central star of the PN JaFu 2 in the Milky Way GC NGC 6441. An HST study shows it to have a relatively low mass, strongly suggesting that it has undergone a CE event. In such a binary containing the hot central star and a main-sequence companion, with an orbital period of a few hours to several days, there will be heating effects that produce periodic photometric variations. These would be detectable with high-S/N WFC3 imaging and an optimal scheduling sequence. Thus a stringent test of the prediction that it is a close binary is possible. Failure to demonstrate binarity would call into question theoretical timescales for post-AGB evolution. Success would strengthen the paradigm that binary interactions are a major formation channel for PNe, and the ONLY channel in the old populations of GCs. More broadly, CE interactions are important in a wide variety of astrophysical settings--e.g., SN Ia, CVs, and even LIGO events--so it is crucial to understand them.

**OBSERVING DESCRIPTION**

Photometric monitoring of the nucleus of the planetary nebula JaFu 2 in the Galactic globular cluster NGC 6441. Since its expected variations are due to a heated hemisphere on a cool, close companion of the hot nucleus, the photometric amplitude should be largest at longer wavelengths. The WFC3/UVIS channel I band (F814W) is ideal. A few broad-band observations will be taken at shorter optical wavelengths and in the NUV, to monitor colour variations as well as search for the anticipated two components in the SED of the central star. Exposure times are of order 125 sec; thus several dithered exposures in each filter can be obtained during each HST orbit, by using an appropriate small subarray.

Cadence. We will use an optimal spacing of the epochs that samples as many different binary periods as possible in the minimum number of HST orbits. Figure 3 plots the largest orbital phase gap, as a function of assumed binary orbital period, for an observing sequence that covers HST orbits 0, 1, 2, 4, 7, 12, 20, 31, and 47, counting from an arbitrary starting point. Thus our total request is 9 orbits, over an interval of about 3.1 days.

# Proposal 18430 - Visit 01 - Planetary Nebulae in Globular Clusters: Are They All Ejected by Binary Stars?

## Visit

**Proposal 18430, Visit 01, implementation** Wed Aug 26 13:00:18 GMT 2026

**Diagnostic Status: Warning**

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

## Diagnostics

(Exposure 2 (Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 4 (Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 7 (Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 9 (Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 13 (Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 15 (Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

## Fixed Targets

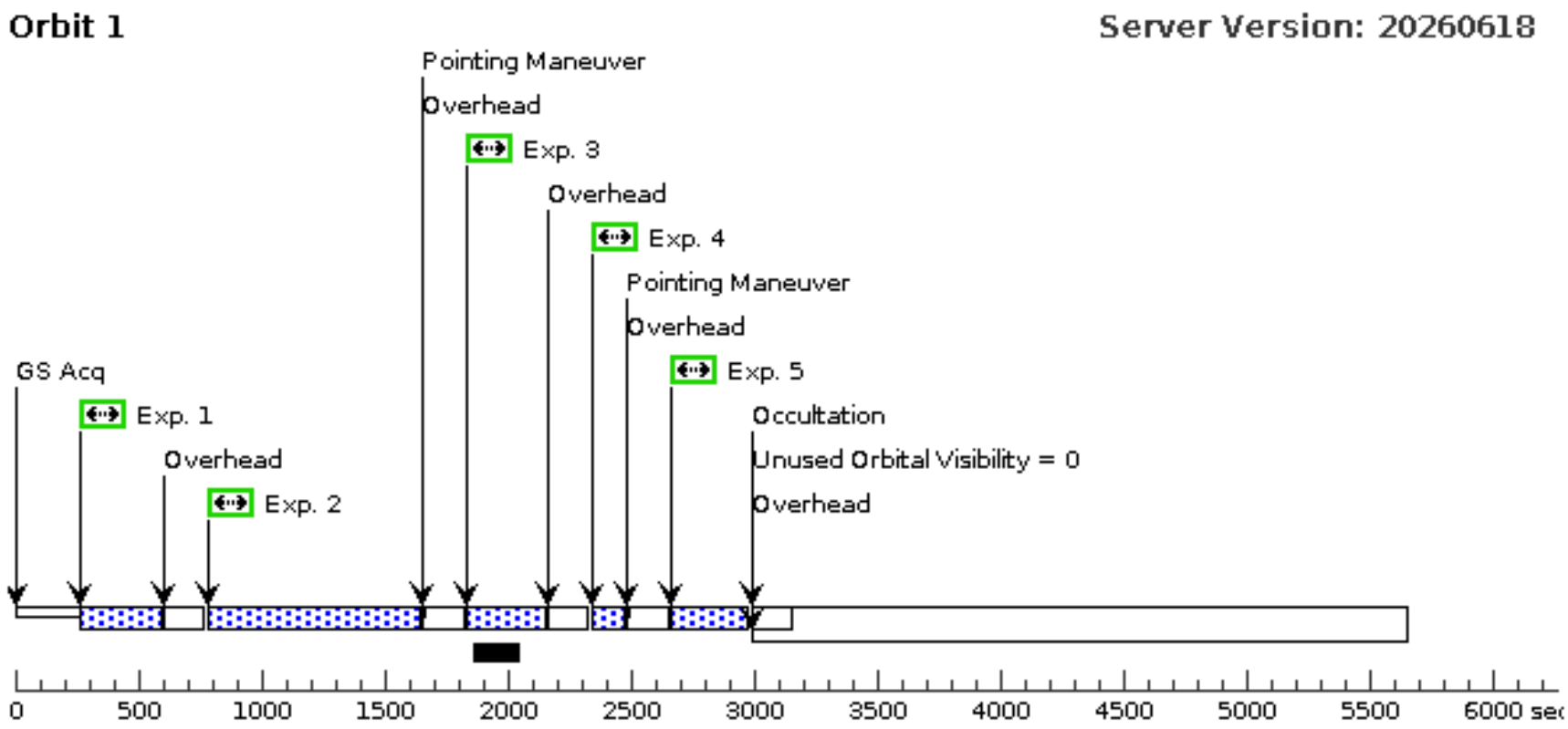
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | JAFU-2 | RA: 17 50 10.9280 (267.5455333d)<br>Dec: -37 03 27.52 (-37.05764d)<br>Equinox: J2000 | Proper Motion RA: -3.932 mas/yr<br>Proper Motion Dec: -4.045 mas/yr<br>Epoch of Position: 2000 | V=19.91+/-0.02 | Reference Frame: ICRS |

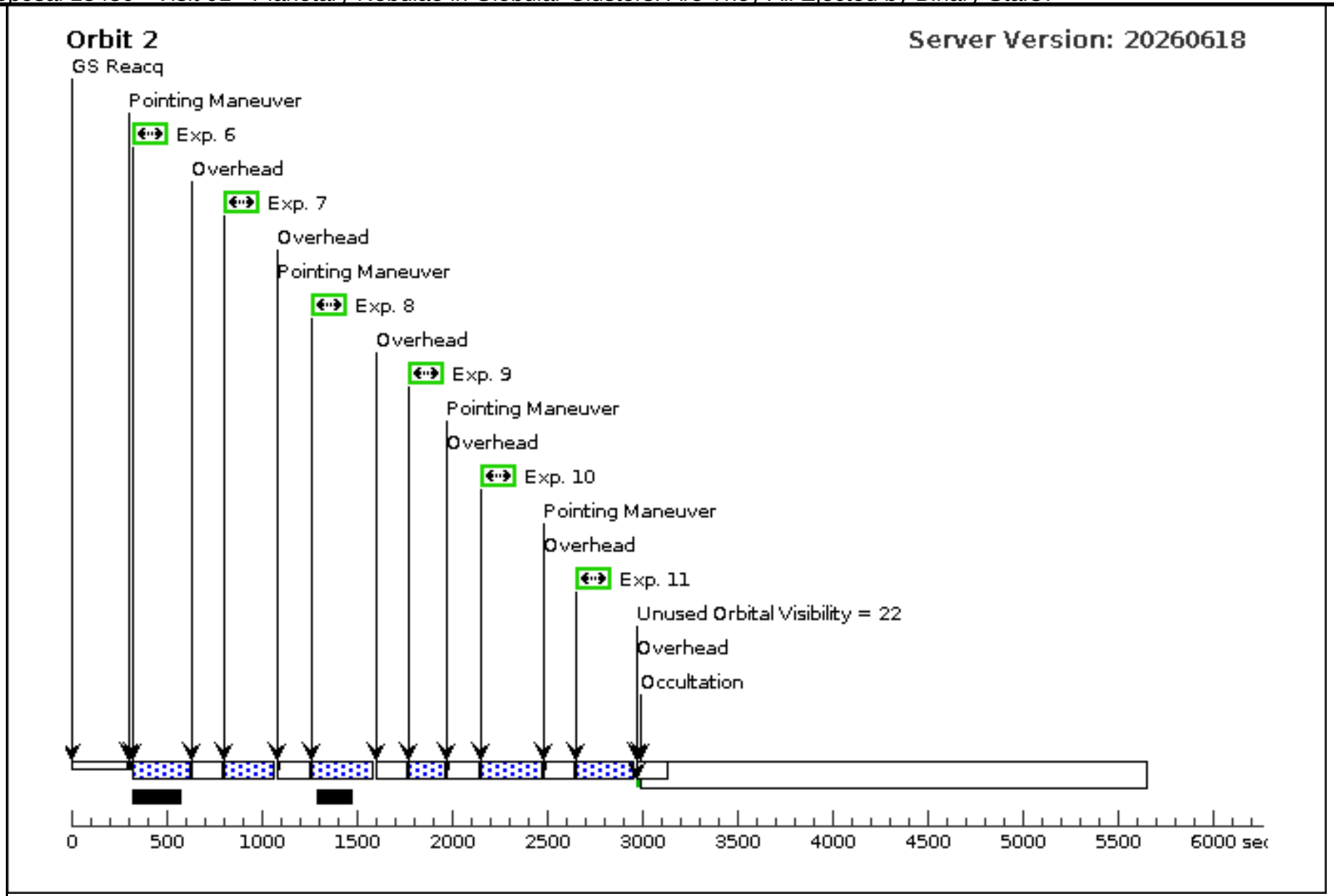
*Comments:*
*Category=STAR*
*Description=[INTERACTING BINARY, PLANETARY NEBULA CENTRAL STAR, POST-AGB STAR, SDO]*

**Exposures**

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 10.4,9.0 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 2 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F218W | FLASH=40 | SAME POS AS 1 | | 800 Secs (834 Secs) | |
| | | | | | | | | *[==>834.0 Secs ]* | ***[1]*** |
| 3 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 14.35,9.0 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 4 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F555W | FLASH=25 | SAME POS AS 3 | | 120 Secs (120 Secs) | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 5 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 12.86,12.09 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 6 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 10.4,9.0 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[2]*** |
| 7 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F336W | FLASH=40 | SAME POS AS 6 | | 240 Secs (240 Secs) | |
| | | | | | | | | *[==>]* | ***[2]*** |
| 8 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 14.35,9.0 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[2]*** |
| 9 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F390W | FLASH=30 | SAME POS AS 8 | | 160 Secs (160 Secs) | |
| | | | | | | | | *[==>]* | ***[2]*** |
| 10 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 12.86,12.09 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[2]*** |
| 11 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 9.51,12.85 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[2]*** |
| 12 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 10.4,9.0 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[3]*** |
| 13 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F555W | FLASH=40 | SAME POS AS 12 | | 120 Secs (120 Secs) | |
| | | | | | | | | *[==>]* | ***[3]*** |
| 14 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 14.35,9.0 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[3]*** |
| 15 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F218W | FLASH=40 | SAME POS AS 14 | | 800 Secs (800 Secs) | |
| | | | | | | | | *[==>]* | ***[3]*** |
| 16 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 12.86,12.09 | | 300 Secs (300 Secs) | |
| | | | | | | | | *[==>]* | ***[3]*** |

Orbit Structure

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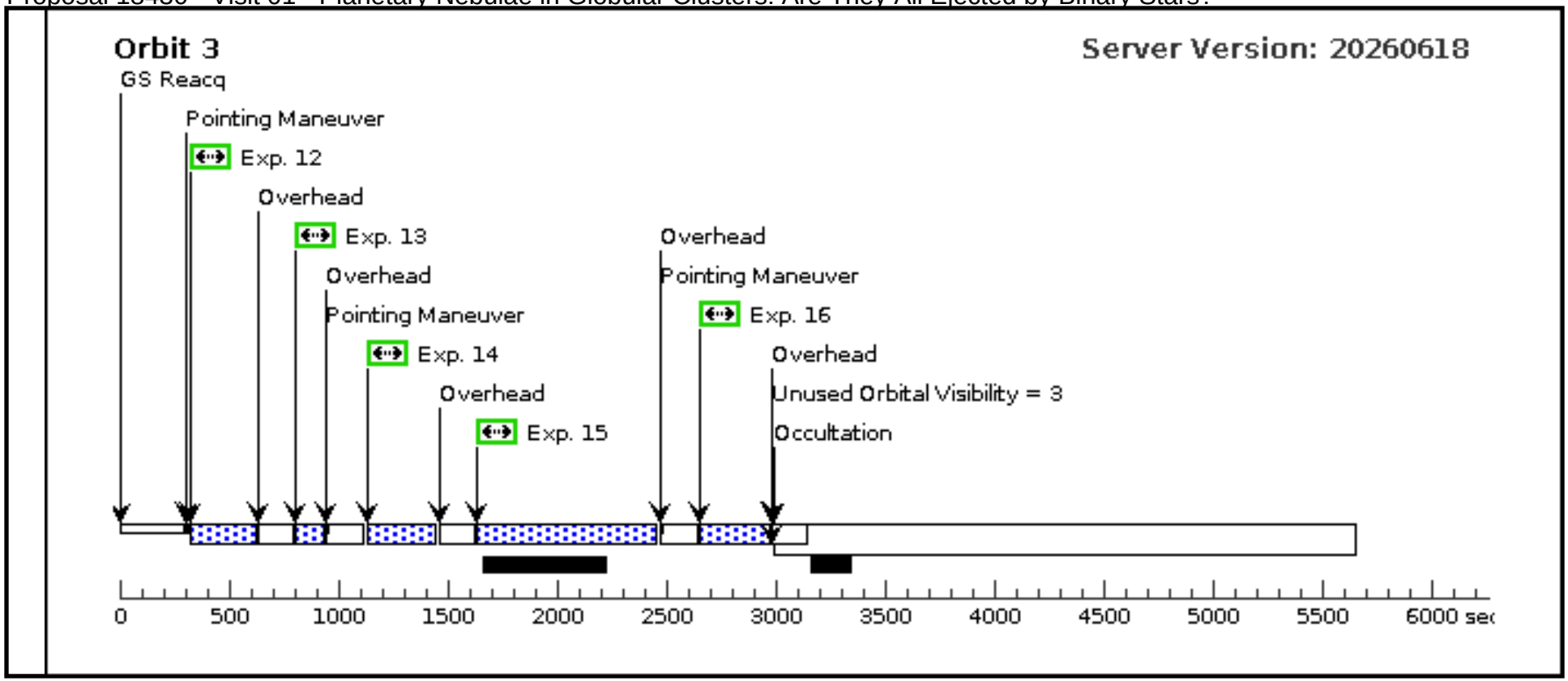
Server Version: 20260618
GS Reacq
Pointing Maneuver
Exp. 6
Overhead
Exp. 7
Overhead
Pointing Maneuver
Exp. 8
Overhead
Exp. 9
Pointing Maneuver
Overhead
Exp. 10
Pointing Maneuver
Overhead
Exp. 11
Unused Orbital Visibility = 22
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec


Orbit 3
Server Version: 20260618
GS Reacq
Pointing Maneuver
Exp. 12
Overhead
Exp. 13
Overhead
Pointing Maneuver
Exp. 14
Overhead
Exp. 15
Overhead
Pointing Maneuver
Exp. 16
Overhead
Unused Orbital Visibility = 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

## Visit

**Proposal 18430, Visit 04, implementation** Wed Aug 26 13:00:19 GMT 2026

**Diagnostic Status: Warning**

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 01 BY 3.9 Orbits TO 4.1 Orbits

## Diagnostics

(Exposure 2 (Visit 04)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 4 (Visit 04)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

## Fixed Targets

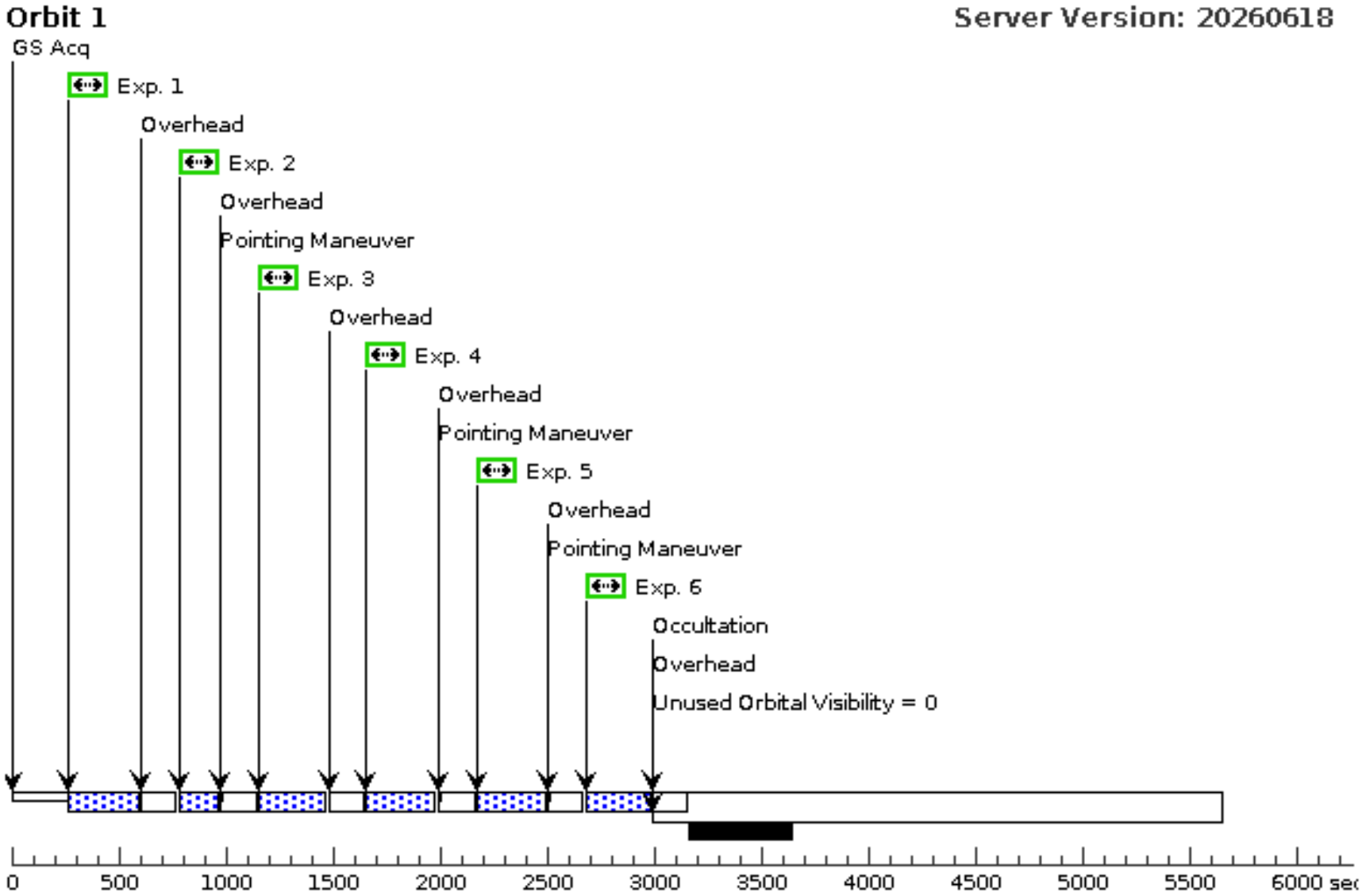
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | JAFU-2 | RA: 17 50 10.9280 (267.5455333d)<br>Dec: -37 03 27.52 (-37.05764d)<br>Equinox: J2000 | Proper Motion RA: -3.932 mas/yr<br>Proper Motion Dec: -4.045 mas/yr<br>Epoch of Position: 2000 | V=19.91+/-0.02 | Reference Frame: ICRS |

*Comments:*
*Category=STAR*
*Description=[INTERACTING BINARY, PLANETARY NEBULA CENTRAL STAR, POST-AGB STAR, SDO]*

## Exposures

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 10.4,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 2 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F555W | FLASH=25 | SAME POS AS 1 | | 120 Secs (175 Secs)<br>*[==>175.0 Secs ]* | <br>***[1]*** |
| 3 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 14.35,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 4 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F336W | FLASH=40 | SAME POS AS 3 | | 240 Secs (295 Secs)<br>*[==>295.0 Secs ]* | <br>***[1]*** |
| 5 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 12.86,12.09 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 6 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 9.51,12.85 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |

Orbit Structure



## Visit

**Proposal 18430, Visit 05, implementation** Wed Aug 26 13:00:19 GMT 2026

**Diagnostic Status: Warning**

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER_01 BY 6.9_Orbits TO 7.1_Orbits

## Diagnostics

(Exposure 2 (Visit 05)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 4 (Visit 05)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

## Fixed Targets

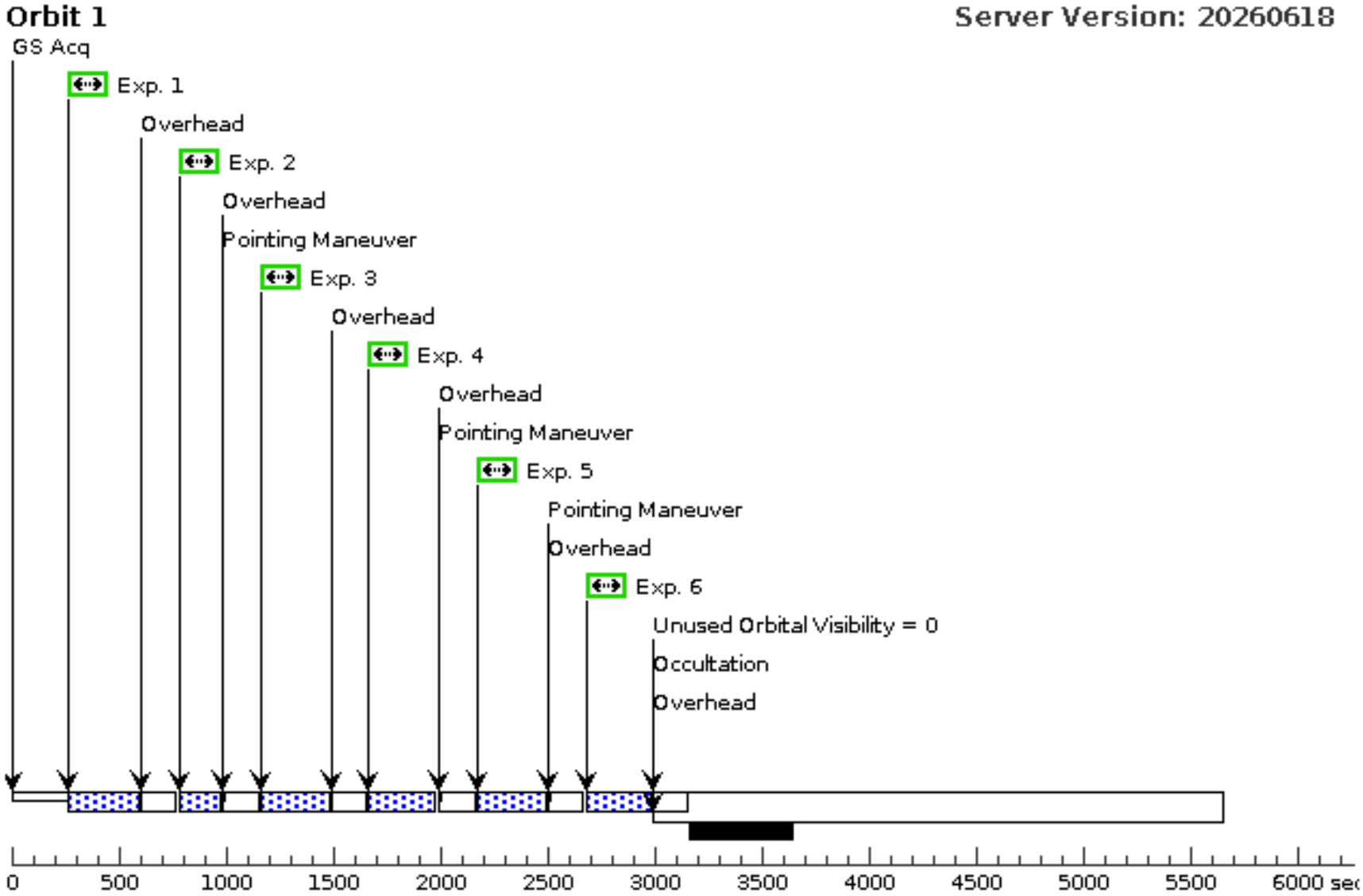
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | JAFU-2 | RA: 17 50 10.9280 (267.5455333d)<br>Dec: -37 03 27.52 (-37.05764d)<br>Equinox: J2000 | Proper Motion RA: -3.932 mas/yr<br>Proper Motion Dec: -4.045 mas/yr<br>Epoch of Position: 2000 | V=19.91+/-0.02 | Reference Frame: ICRS |

*Comments:*
*Category=STAR*
*Description=[INTERACTING BINARY, PLANETARY NEBULA CENTRAL STAR, POST-AGB STAR, SDO]*

## Exposures

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 10.4,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 2 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F390W | FLASH=30 | SAME POS AS 1 | | 160 Secs (160 Secs)<br>*[==>]* | <br>***[1]*** |
| 3 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 14.35,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 4 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F275W | FLASH=40 | SAME POS AS 3 | | 250 Secs (287 Secs)<br>*[==>287.0 Secs ]* | <br>***[1]*** |
| 5 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 12.86,12.09 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 6 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 9.51,12.85 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |

Orbit Structure



## Visit

**Proposal 18430, Visit 06, implementation** Wed Aug 26 13:00:19 GMT 2026

**Diagnostic Status: Warning**

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER_01 BY 11.9_Orbits TO 12.1_Orbits

## Diagnostics

(Exposure 2 (Visit 06)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 4 (Visit 06)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

## Fixed Targets

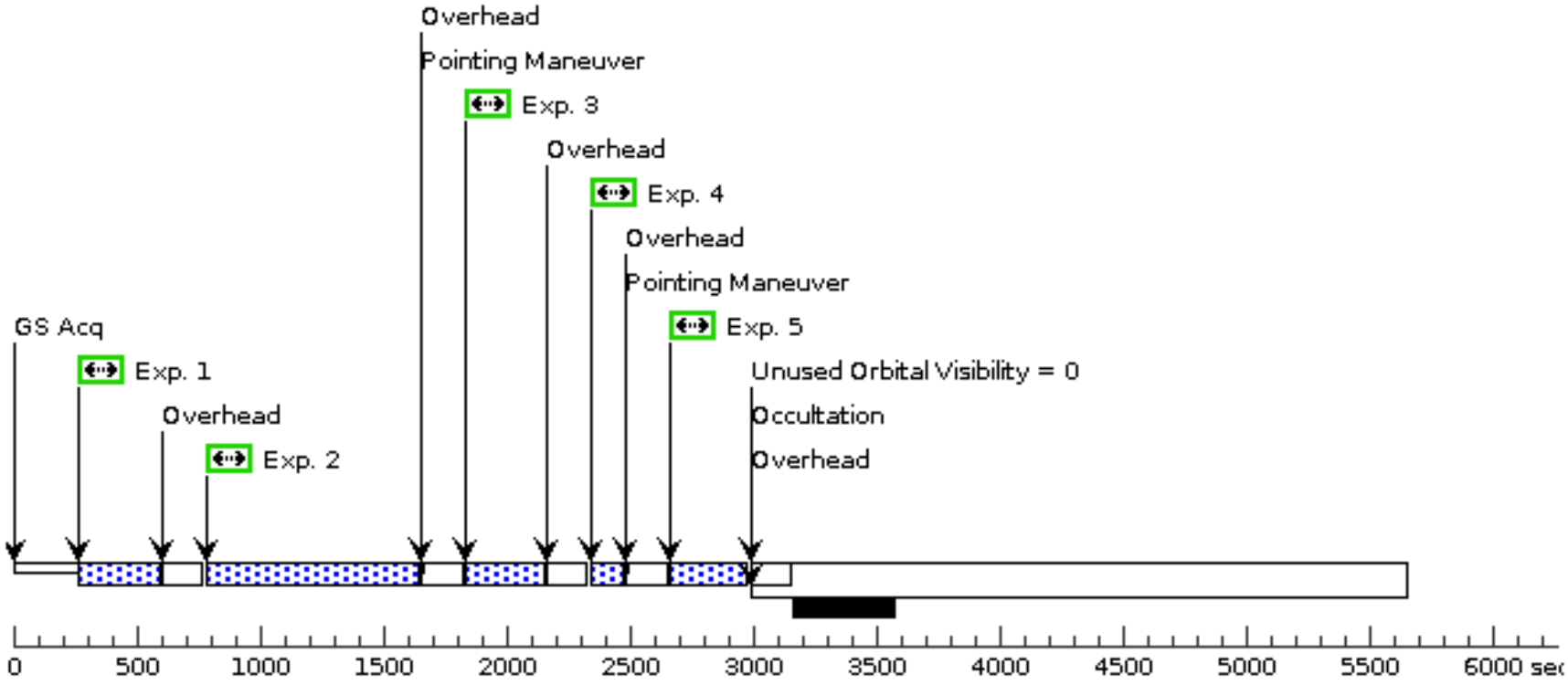
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | JAFU-2 | RA: 17 50 10.9280 (267.5455333d)<br>Dec: -37 03 27.52 (-37.05764d)<br>Equinox: J2000 | Proper Motion RA: -3.932 mas/yr<br>Proper Motion Dec: -4.045 mas/yr<br>Epoch of Position: 2000 | V=19.91+/-0.02 | Reference Frame: ICRS |

*Comments:*
*Category=STAR*
*Description=[INTERACTING BINARY, PLANETARY NEBULA CENTRAL STAR, POST-AGB STAR, SDO]*

## Exposures

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 10.4,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 2 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F218W | FLASH=40 | SAME POS AS 1 | | 800 Secs (834 Secs)<br>*[==>834.0 Secs ]* | <br>***[1]*** |
| 3 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 14.35,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 4 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F555W | FLASH=25 | SAME POS AS 3 | | 120 Secs (120 Secs)<br>*[==>]* | <br>***[1]*** |
| 5 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 12.86,12.09 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |

Orbit Structure



## Visit

**Proposal 18430, Visit 07, implementation** Wed Aug 26 13:00:19 GMT 2026

**Diagnostic Status: Warning**

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER_01 BY 19.9_Orbits TO 20.1_Orbits

## Diagnostics

(Exposure 2 (Visit 07)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 4 (Visit 07)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

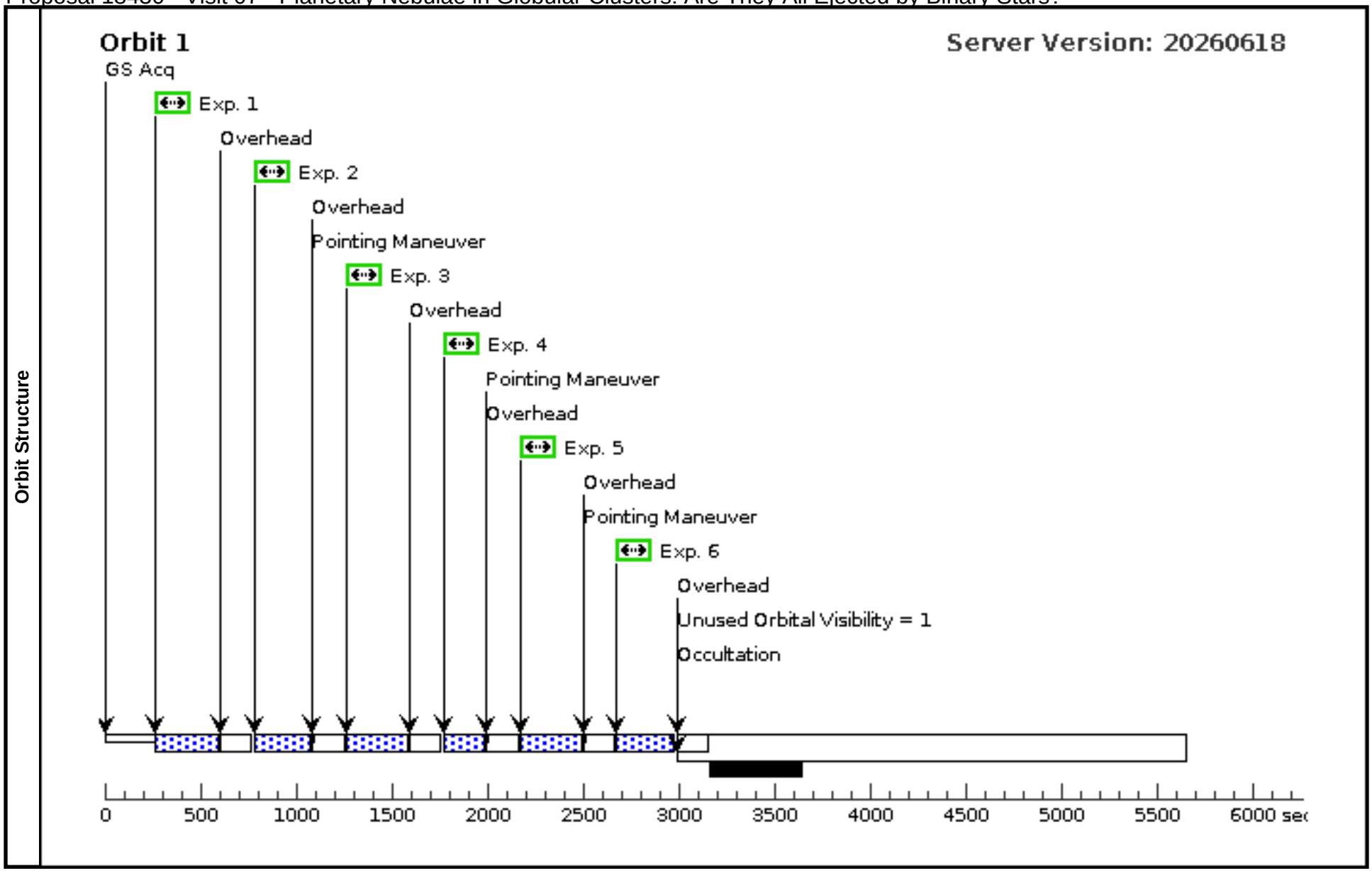
## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | JAFU-2 | RA: 17 50 10.9280 (267.5455333d)<br>Dec: -37 03 27.52 (-37.05764d)<br>Equinox: J2000 | Proper Motion RA: -3.932 mas/yr<br>Proper Motion Dec: -4.045 mas/yr<br>Epoch of Position: 2000 | V=19.91+/-0.02 | Reference Frame: ICRS |

*Comments:*
*Category=STAR*
*Description=[INTERACTING BINARY, PLANETARY NEBULA CENTRAL STAR, POST-AGB STAR, SDO]*

## Exposures

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 10.4,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 2 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F336W | FLASH=40 | SAME POS AS 1 | | 240 Secs (263 Secs)<br>*[==>263.0 Secs ]* | <br>***[1]*** |
| 3 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 14.35,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 4 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F390W | FLASH=30 | SAME POS AS 3 | | 160 Secs (183 Secs)<br>*[==>183.0 Secs ]* | <br>***[1]*** |
| 5 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 12.86,12.09 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 6 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 9.51,12.85 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |


Orbit Structure
Orbit 1
Server Version: 20260618
GS Acq
Exp. 1
Overhead
Exp. 2
Overhead
Pointing Maneuver
Exp. 3
Overhead
Exp. 4
Pointing Maneuver
Overhead
Exp. 5
Overhead
Pointing Maneuver
Exp. 6
Overhead
Unused Orbital Visibility = 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

## Visit

**Proposal 18430, Visit 08, implementation** Wed Aug 26 13:00:19 GMT 2026

**Diagnostic Status: Warning**

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 01 BY 30.9 Orbits TO 31.1 Orbits

## Diagnostics

(Exposure 2 (Visit 08)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 4 (Visit 08)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

## Fixed Targets

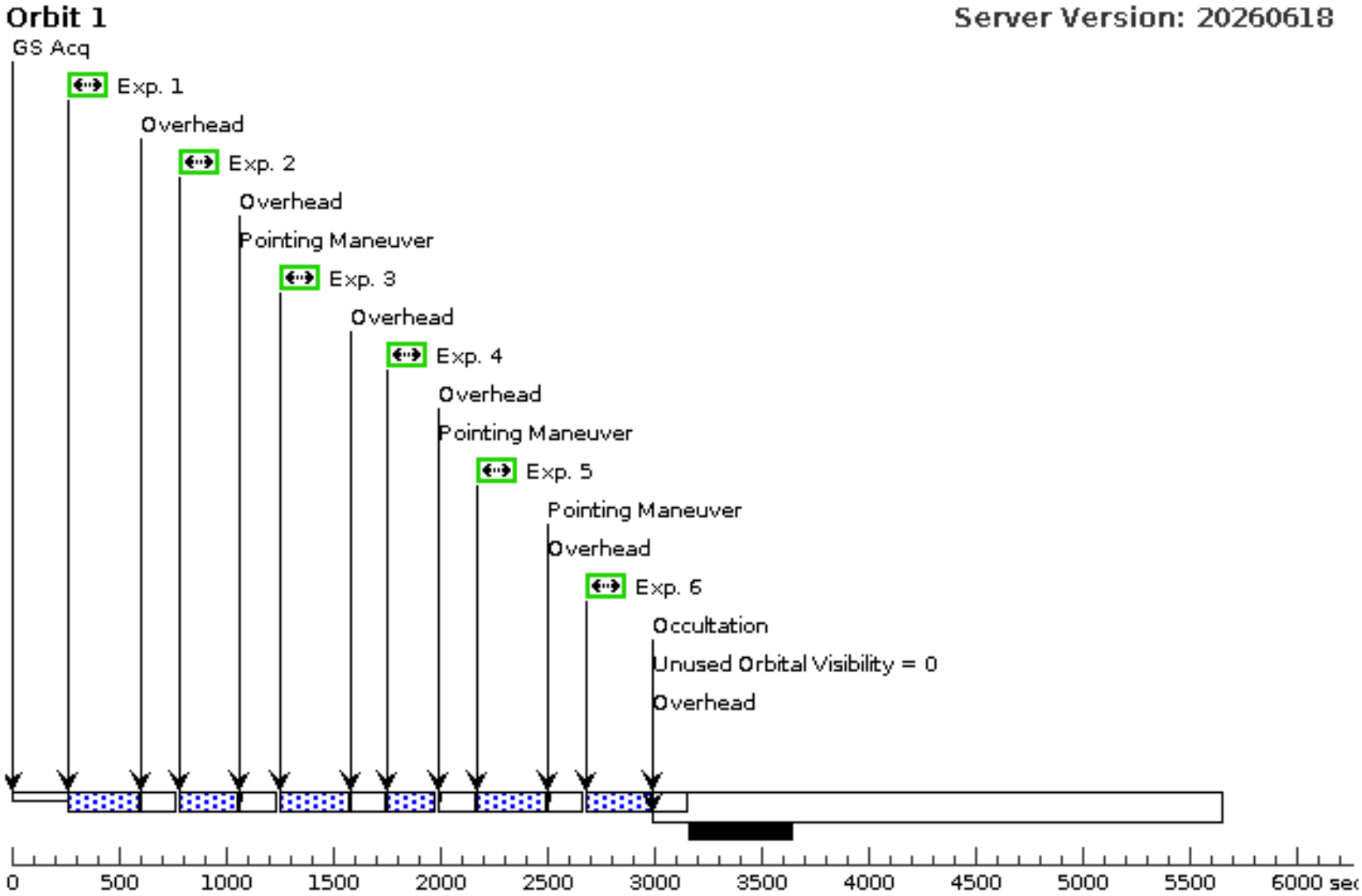
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | JAFU-2 | RA: 17 50 10.9280 (267.5455333d)<br>Dec: -37 03 27.52 (-37.05764d)<br>Equinox: J2000 | Proper Motion RA: -3.932 mas/yr<br>Proper Motion Dec: -4.045 mas/yr<br>Epoch of Position: 2000 | V=19.91+/-0.02 | Reference Frame: ICRS |

*Comments:*
*Category=STAR*
*Description=[INTERACTING BINARY, PLANETARY NEBULA CENTRAL STAR, POST-AGB STAR, SDO]*

## Exposures

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 10.4,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 2 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F275W | FLASH=40 | SAME POS AS 1 | | 250 Secs (250 Secs)<br>*[==>]* | <br>***[1]*** |
| 3 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 14.35,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 4 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F336W | FLASH=30 | SAME POS AS 3 | | 240 Secs (201 Secs)<br>*[==>201.0 Secs ]* | <br>***[1]*** |
| 5 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 12.86,12.09 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 6 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 9.51,12.85 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |

Orbit Structure



## Visit

**Proposal 18430, Visit 09, implementation** Wed Aug 26 13:00:19 GMT 2026

**Diagnostic Status: Warning**

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 01 BY 46.8 Orbits TO 47.2 Orbits

## Diagnostics

(Exposure 2 (Visit 09)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Exposure 4 (Visit 09)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
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*Comments:*
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*Description=[INTERACTING BINARY, PLANETARY NEBULA CENTRAL STAR, POST-AGB STAR, SDO]*

## Exposures

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 10.4,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 2 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F390W | FLASH=30 | SAME POS AS 1 | | 160 Secs (181 Secs)<br>*[==>181.0 Secs ]* | <br>***[1]*** |
| 3 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 14.35,9.0 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 4 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F275W | FLASH=25 | SAME POS AS 3 | | 250 Secs (271 Secs)<br>*[==>271.0 Secs ]* | <br>***[1]*** |
| 5 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 12.86,12.09 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |
| 6 | | (1) JAFU-2 | WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB | F814W | FLASH=10 | POS TARG 9.51,12.85 | | 300 Secs (300 Secs)<br>*[==>]* | <br>***[1]*** |

Orbit Structure