



# 16924 - Colors and Astrometry of Two New Horizons Target Scattered Disk Objects

Cycle: 29, Proposal Category: GO

(Availability Mode: SUPPORTED)

## INVESTIGATORS

| <i>Name</i>                                    | <i>Institution</i>                  | <i>E-Mail</i>                  |
|--|-------------------------------------|--------------------------------|
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## VISITS

| <i>Visit</i> | <i>Targets used in Visit</i> | <i>Configurations used in Visit</i> | <i>Orbits Used</i> | <i>Last Orbit Planner Run</i> | <i>OP Current with Visit?</i> |
|--------------|------------------------------|-------------------------------------|--------------------|-------------------------------|-------------------------------|
| 01           | (1) 2020KS11                 | WFC3/UVIS                           | 1                  | 12-Jul-2022 15:00:13.0        | yes                           |
| 02           | (1) 2020KS11                 | WFC3/UVIS                           | 1                  | 12-Jul-2022 15:00:13.0        | yes                           |
| 03           | (2) 2020KV11                 | WFC3/UVIS                           | 1                  | 12-Jul-2022 15:00:14.0        | yes                           |
| 04           | (2) 2020KV11                 | WFC3/UVIS                           | 1                  | 12-Jul-2022 15:00:15.0        | yes                           |
| 05           | (2) 2020KV11                 | WFC3/UVIS                           | 1                  | 12-Jul-2022 15:00:16.0        | yes                           |

5 Total Orbits Used

## ABSTRACT

## Proposal 16924 (STScI Edit Number: 5, Created: Tuesday, July 12, 2022 at 2:00:16 PM Eastern Standard Time) - Overview

This program would observe two low-inclination Scattered Disk Objects (SDOs) with five total orbits to measure their color and astrometry. These SDOs, 2020 KS11 and 2020 KV11, are both potential future targets for observation by NASA's New Horizons spacecraft. Their colors would be measured with WFC3/UVIS and two filters (F606W and F814W) to both compare their colors to other past New Horizons targets and to provide some of the first measurements of the colors of low-inclination SDOs. Low-inclination SDOs are relatively rare in the scattered disk population, and previous ground-based color investigations were only able to measure colors for an even smaller fraction of those. The proposed observations would measure the colors of fainter and smaller SDOs than are possible to measure from the ground, helping to understand this curious population. The proposed observations are critical to be performed in Cycle 29, as additional HST astrometry is required to improve their orbits sufficiently to allow New Horizons them, and the sooner that astrometry is available, the sooner that the New Horizons project can plan those observations. The proposed observations would improve the orbit of 2020 KS11 more than is possible with ground-based telescopes before it would be observed by New Horizons in 2024, and would provide as much improvement in the orbit of 2020 KV11 as eight semesters of ground-based data. These targets were not previously proposed to be observed in Cycle 29, as the Cycle 28 observations of them were required first to know that they were good targets for New Horizons, and to know what quantity of additional HST astrometry would be required.

### **OBSERVING DESCRIPTION**

Two targets are to be observed in this program: 2020 KS11 with two orbits and 2020 KV11 with three orbits, both using two filters, for a total request of five orbits.

All of the observations for this program would follow the model established by prior successful HST astrometric observations of KBOs in support of New Horizons, GO-12535, GO-12887, GO-14092, GO-15108, and GO-16183. Each orbit consists of five >350 second observations with WFPC3. The "No Gyro Bias Update on Moving Target" special requirement is selected to maximize observation time, as all our observations are single orbits. This provides sufficiently deep observations to be able to recover the target KBOs in individual images, while also providing sufficient redundancy to cosmic rays. Please note that we used the auto-adjust in Orbit Planner to maximize the exposure times, which reduced the observation windows in Visit Planner. If those windows are too small, we would be fine with reducing the exposure times to 350 seconds to increase schedulability.

The five exposures would use the full UVIS1 and UVIS2 chips, with the target nominally centered on UVIS2, and a five-point line dither over the course of the orbit to minimize per-pixel effects. The first two observations would be with the F606W filter, and the second three with the F814W, following the example of GO-14092.

## Proposal 16924 (STScI Edit Number: 5, Created: Tuesday, July 12, 2022 at 2:00:16 PM Eastern Standard Time) - Overview

The proposed targets must be observed between mid-April 2022 and the start of September 2022 to ensure that their apparent sky motion is high enough for them to be reliably recovered. Preferably, the two 2020 KS11 orbits and the first two 2020 KV11 orbits would be in June 2022, and the remaining 2020 KV11 orbit in August 2022. This strategy provides time enough that if the June observations are unsuccessful due to the guide star failing to lock or any other issue, they could be repeated via HOPR in the second half of the observation window. If both the June and August observations are successful, then the parallax between them would provide a better constrain than observations that were all in one month. This parallax effect is particularly useful for 2020 KV11, and would increase the probability that it is in the New Horizons LORRI planning window from 79% to 98%. Observations before June would have lower SNR due to their higher Sun-Target-Observer phase angle, which would reduce the quality of the color measurements.

The observations in this proposal therefore assume a 50% failure rate in executing observations due to guide star acquisition failures to reach our minimum success for astrometric improvement, and the observations are front-loaded towards the start of the observing window, to provide maximum time to repeat any observations with a HOPR. At least two orbits are preferable to measure color, to minimize any rotational lightcurve effects.

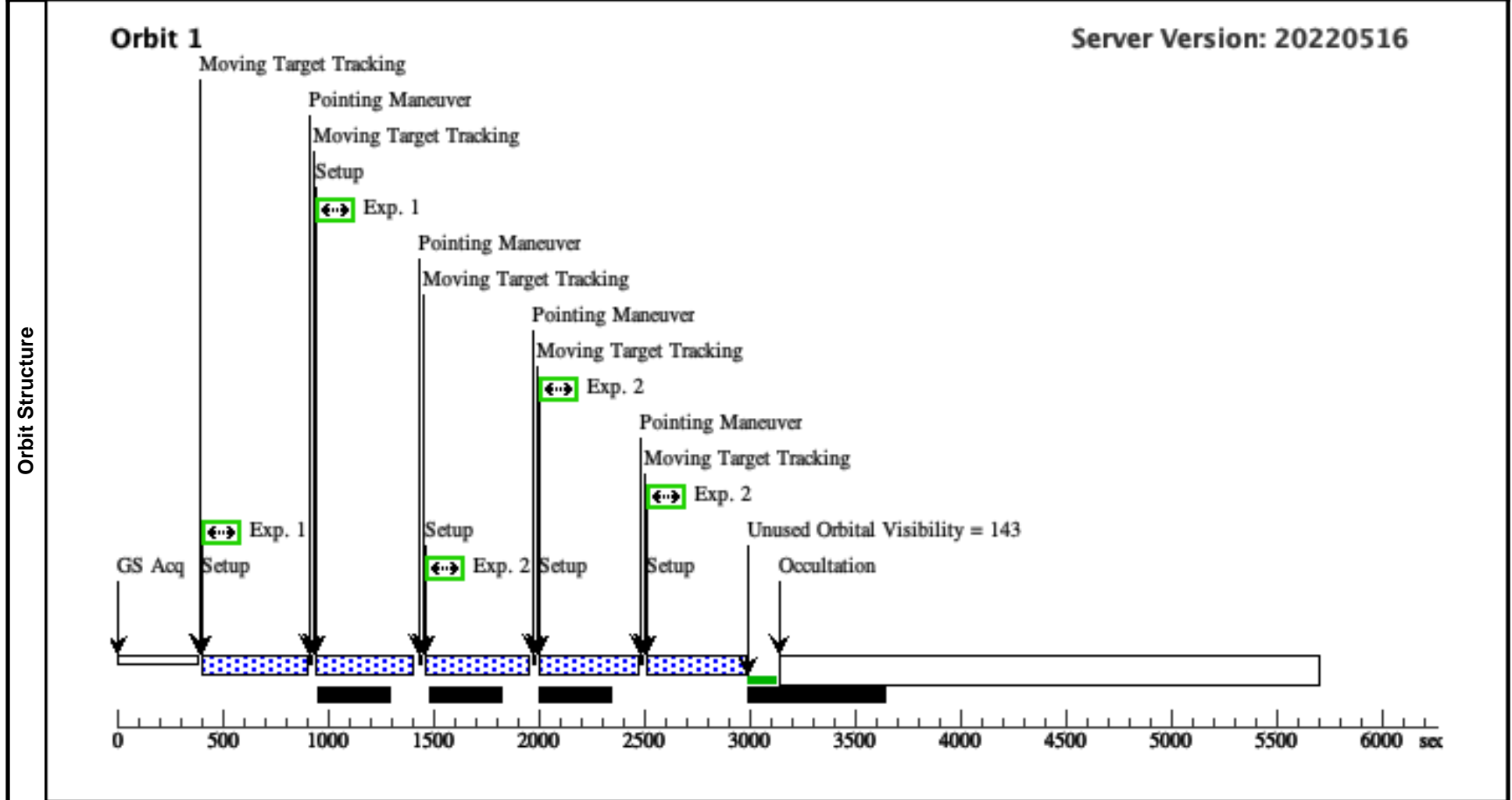
We request to check the background fields once scheduling windows for HST are chosen to ensure that there are no background stars which would compromise the observations.

Proposal 16924 - 2020KS11 1 (01) - Colors and Astrometry of Two New Horizons Target Scattered Disk Objects

|                             |  |   |  |                          |                |                  |                     |
|-----------------------------|--|---|--|--------------------------|----------------|------------------|---------------------|
| <b>Visit</b>                | <p><b>Proposal 16924, 2020KS11 1 (01), completed</b> <span style="float: right;">Tue Jul 12 19:00:16 GMT 2022</span></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: SCHED 30%; BETWEEN 31-MAY-2022:00:00:00 AND 31-MAY-2022:06:40:00; BETWEEN 31-MAY-2022:08:50:00 AND 01-JUN-2022:05:55:00; BETWEEN 01-JUN-2022:07:40:00 AND 01-JUN-2022:10:25:00; BETWEEN 01-JUN-2022:11:50:00 AND 04-JUN-2022:08:50:00; BETWEEN 04-JUN-2022:11:00:00 AND 05-JUN-2022:07:30:00; BETWEEN 05-JUN-2022:09:30:00 AND 06-JUN-2022:02:05:00; BETWEEN 06-JUN-2022:04:15:00 AND 06-JUN-2022:11:00:00; BETWEEN 06-JUN-2022:12:50:00 AND 07-JUN-2022:12:35:00; BETWEEN 07-JUN-2022:14:30:00 AND 08-JUN-2022:05:35:00; BETWEEN 08-JUN-2022:07:20:00 AND 08-JUN-2022:09:15:00; BETWEEN 08-JUN-2022:11:10:00 AND 10-JUN-2022:04:00:00; BETWEEN 10-JUN-2022:05:30:00 AND 12-JUN-2022:15:00:00; BETWEEN 12-JUN-2022:16:55:00 AND 12-JUN-2022:20:10:00; BETWEEN 12-JUN-2022:22:10:00 AND 13-JUN-2022:19:15:00; BETWEEN 13-JUN-2022:20:45:00 AND 14-JUN-2022:05:25:00; BETWEEN 14-JUN-2022:06:55:00 AND 15-JUN-2022:06:15:00; BETWEEN 15-JUN-2022:08:00:00 AND 16-JUN-2022:15:10:00; BETWEEN 16-JUN-2022:17:00:00 AND 17-JUN-2022:06:00:00; BETWEEN 17-JUN-2022:07:45:00 AND 18-JUN-2022:02:15:00; BETWEEN 18-JUN-2022:05:00:00 AND 18-JUN-2022:08:55:00; BETWEEN 18-JUN-2022:10:45:00 AND 18-JUN-2022:15:45:00; BETWEEN 18-JUN-2022:17:50:00 AND 20-JUN-2022:00:00:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET</p> <p><i>Comments: We request to check the background field once scheduling windows for HST are chosen to ensure that there are no background stars which would compromise the observation.</i></p> |   |  |                          |                |                  |                     |
|                             | <b>Diagnostics</b>   | <p>(Exposure 1 (Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KS11 1 (01))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(Exposure 2 (Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KS11 1 (01))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> |  |                          |                |                  |                     |
| <b>Patterns</b>             | <b>#</b>   | <b>Primary Pattern</b>  |  | <b>Secondary Pattern</b> |                | <b>Exposures</b> |                     |
|                             | (1)  | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=2<br>Point Spacing=0.75<br>Line Spacing=   | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true   |                          |                | (1)              |                     |
|                             | (2)  | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=3<br>Point Spacing=0.75<br>Line Spacing=   | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true   |                          |                | (2)              |                     |
| <b>Solar System Targets</b> | <b>#</b>   | <b>Name</b>   | <b>Level 1</b>   | <b>Level 2</b>           | <b>Level 3</b> | <b>Window</b>    | <b>Ephem Center</b> |
|                             | (1)  | 2020KS11  | TYPE=ASTEROID,A=99.8730788698<br>03,E=0.648998146332,I=2.663245886<br>817,O=169.007102043507,W=27.2197<br>44134456,M=21.856781947501,EQUI<br>NOX=J2000,EPOCH=15-JUL-<br>2022:00:00:00,EpochTimeScale=UTC |                          |                |                  | EARTH               |
|                             | <i>Comments: Description=2020 KS11</i>   |   |  |                          |                |                  |                     |

Proposal 16924 - 2020KS11 1 (01) - Colors and Astrometry of Two New Horizons Target Scattered Disk Objects

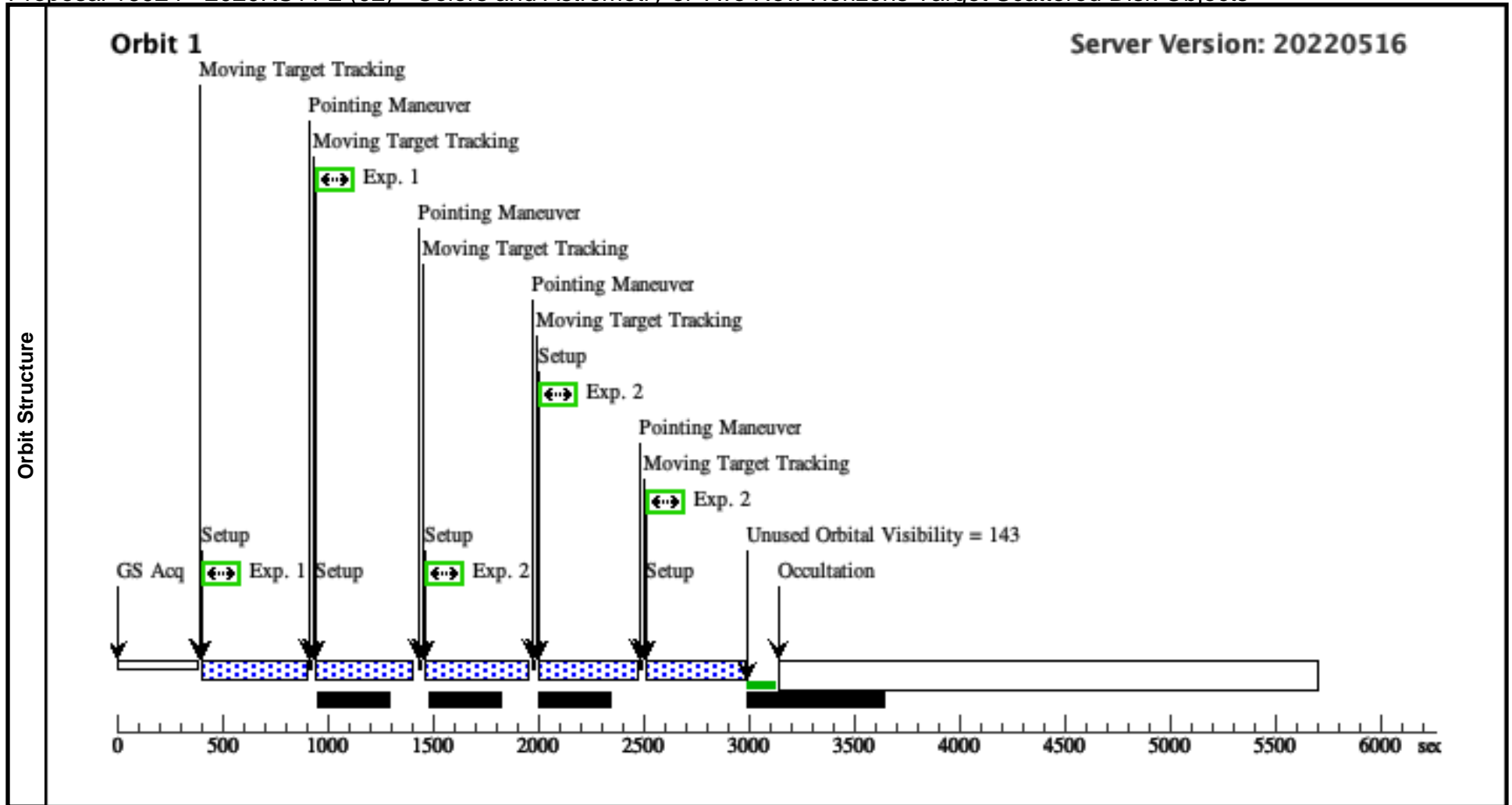
| # | Label | Target       | Config,Mode,Aperture    | Spectral Els. | Opt. Params. | Special Reqs. | Groups   | Exp. Time (Total)/[Actual Dur.]                          | Orbit |
|---|-------|--------------|-------------------------|---------------|--------------|---------------|--|--|-------|
| 1 |       | (1) 2020KS11 | WFC3/UVIS, ACCUM, UVIS2 | F606W         |              |               | Sequence 1-2 Non-Int in 2020KS11 1 (01)                            | 350 Secs (700 Secs)                                      | [1]   |
|   |       |              |                         |               |              |               | Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KS11 1 (01) (1) | [==>(Pattern 1)]<br>[==>(Pattern 2)]                     |       |
| 2 |       | (1) 2020KS11 | WFC3/UVIS, ACCUM, UVIS2 | F814W         | FLASH=4      |               | Sequence 1-2 Non-Int in 2020KS11 1 (01)                            | 350 Secs (1050 Secs)                                     | [1]   |
|   |       |              |                         |               |              |               | Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KS11 1 (01) (2) | [==>(Pattern 1)]<br>[==>(Pattern 2)]<br>[==>(Pattern 3)] |       |



# Proposal 16924 - 2020KS11 2 (02) - Colors and Astrometry of Two New Horizons Target Scattered Disk Objects

Tue Jul 12 19:00:16 GMT 2022

|  |   |  |  |                             |                      |                     |   |   |   |              |
|--|---|--|--|-----------------------------|----------------------|---------------------|---|---|---|--------------|
| <b>Visit</b>                           | <b>Proposal 16924, 2020KS11 2 (02), implementation</b><br><b>Diagnostic Status: Warning</b><br>Scientific Instruments: WFC3/UVIS<br>Special Requirements: SCHED 30%; BETWEEN 26-JUL-2022:00:00:00 AND 26-JUL-2022:08:35:00; BETWEEN 26-JUL-2022:10:05:00 AND 27-JUL-2022:05:55:00; BETWEEN 27-JUL-2022:07:50:00 AND 27-JUL-2022:17:20:00; BETWEEN 27-JUL-2022:19:05:00 AND 27-JUL-2022:20:20:00; BETWEEN 27-JUL-2022:23:40:00 AND 31-JUL-2022:00:35:00; BETWEEN 31-JUL-2022:02:10:00 AND 02-AUG-2022:23:20:00; BETWEEN 03-AUG-2022:01:00:00 AND 04-AUG-2022:16:40:00; BETWEEN 04-AUG-2022:18:45:00 AND 09-AUG-2022:02:15:00; BETWEEN 09-AUG-2022:03:35:00 AND 09-AUG-2022:06:05:00; BETWEEN 09-AUG-2022:07:55:00 AND 18-AUG-2022:07:15:00; BETWEEN 18-AUG-2022:09:25:00 AND 19-AUG-2022:00:25:00; BETWEEN 19-AUG-2022:01:50:00 AND 19-AUG-2022:23:20:00; BETWEEN 20-AUG-2022:01:35:00 AND 22-AUG-2022:00:00:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET<br><i>Comments: We request to check the background field once scheduling windows for HST are chosen to ensure that there are no background stars which would compromise the observation.</i> |  |  |                             |                      |                     |   |   |   |              |
|  | <b>Diagnosics</b><br>(Exposure 1 (Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KS11 2 (02))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser<br>(Exposure 2 (Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KS11 2 (02))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser   |  |  |                             |                      |                     |   |   |   |              |
| <b>Patterns</b>                        | <b>#</b>  | <b>Primary Pattern</b>   |  | <b>Secondary Pattern</b>    |                      | <b>Exposures</b>    |   |   |   |              |
|  | (1)   | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=2<br>Point Spacing=0.75<br>Line Spacing=    | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true   |                             |                      | (1)                 |   |   |   |              |
| (2)                                    | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=3<br>Point Spacing=0.75<br>Line Spacing=   | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true |  |                             | (2)                  |                     |   |   |   |              |
| <b>Solar System Targets</b>            | <b>#</b>  | <b>Name</b>  | <b>Level 1</b>   | <b>Level 2</b>              | <b>Level 3</b>       | <b>Window</b>       | <b>Ephem Center</b>   |   |   |              |
|  | (1)   | 2020KS11   | TYPE=ASTEROID,A=99.873078869803,E=0.648998146332,I=2.663245886817,O=169.007102043507,W=27.219744134456,M=21.856781947501,EQUI<br>NOX=J2000,EPOCH=15-JUL-2022:00:00:00,EpochTimeScale=UTC |                             |                      |                     | EARTH   |   |   |              |
| <i>Comments: Description=2020 KS11</i> |   |  |  |                             |                      |                     |   |   |   |              |
| <b>Exposures</b>                       | <b>#</b>  | <b>Label</b>   | <b>Target</b>  | <b>Config,Mode,Aperture</b> | <b>Spectral Els.</b> | <b>Opt. Params.</b> | <b>Special Reqs.</b>  | <b>Groups</b>   | <b>Exp. Time (Total)/[Actual Dur.]</b>                    | <b>Orbit</b> |
|  | 1   | (1) 2020KS11   |  | WFC3/UVIS, ACCUM, UVIS2     | F606W                |                     |   | Sequence 1-2 Non-Int in 2020KS11 2 (02)<br>Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KS11 2 (02) (1) | 350 Secs (700 Secs)<br>[=>(Pattern 1)]<br>[=>(Pattern 2)] | [1]          |
| 2                                      | (1) 2020KS11  |  | WFC3/UVIS, ACCUM, UVIS2  | F814W                       | FLASH=4              |                     | Sequence 1-2 Non-Int in 2020KS11 2 (02)<br>Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KS11 2 (02) (2) | 350 Secs (1050 Secs)<br>[=>(Pattern 1)]<br>[=>(Pattern 2)]<br>[=>(Pattern 3)]                                 | [1]   |              |

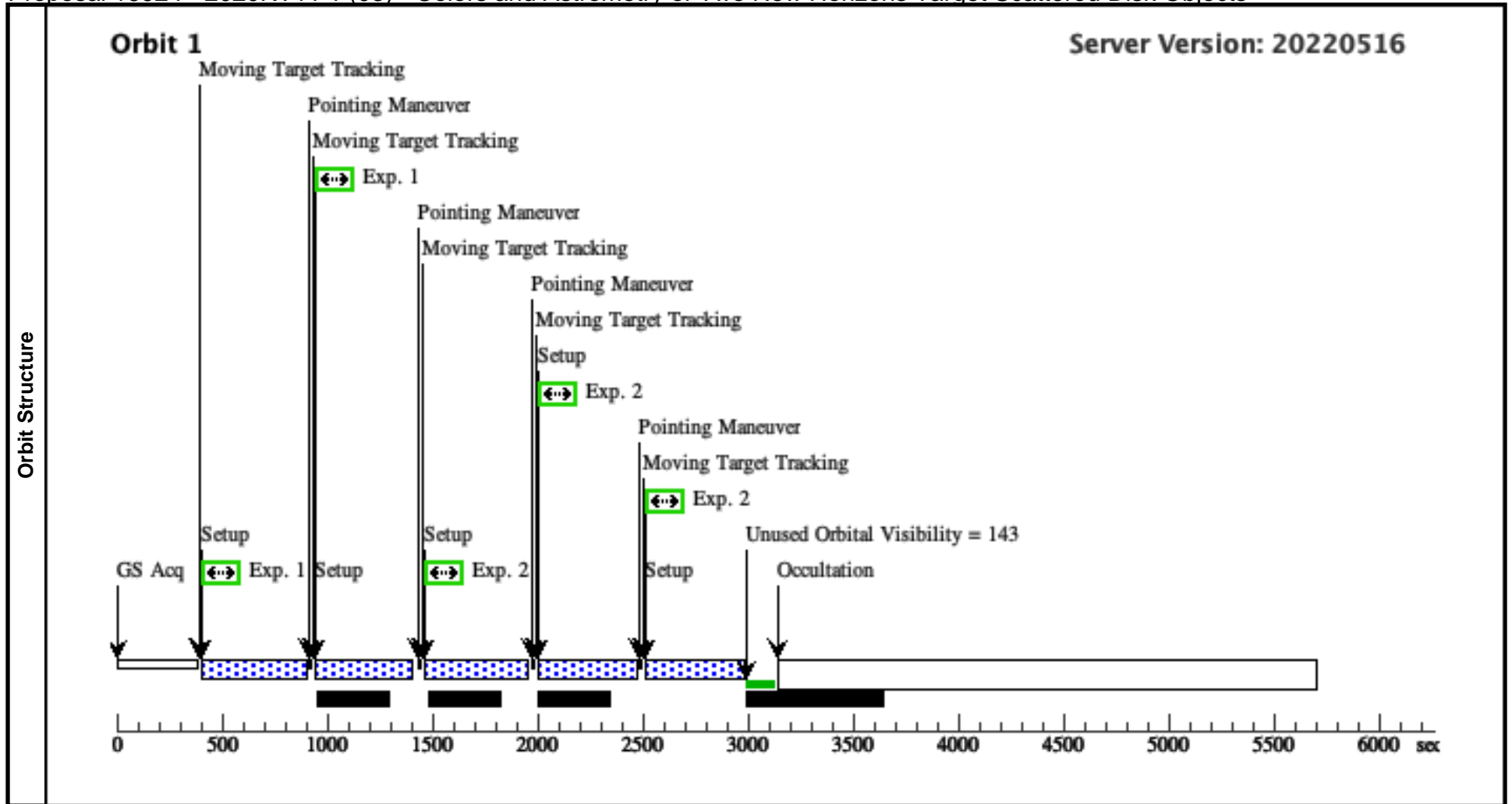


# Proposal 16924 - 2020KV11 1 (03) - Colors and Astrometry of Two New Horizons Target Scattered Disk Objects

Tue Jul 12 19:00:16 GMT 2022

|                                 |  |  |  |                             |                      |                     |                      |  |  |              |
|---------------------------------|--|--|--|-----------------------------|----------------------|---------------------|----------------------|--|--|--------------|
| <b>Visit</b>                    | <b>Proposal 16924, 2020KV11 1 (03), completed</b><br><b>Diagnostic Status: Warning</b><br>Scientific Instruments: WFC3/UVIS<br>Special Requirements: SCHED 30%; BETWEEN 01-JUN-2022:00:00:00 AND 01-JUN-2022:01:10:00; BETWEEN 01-JUN-2022:03:05:00 AND 01-JUN-2022:07:20:00; BETWEEN 01-JUN-2022:09:15:00 AND 02-JUN-2022:06:15:00; BETWEEN 02-JUN-2022:08:55:00 AND 03-JUN-2022:22:55:00; BETWEEN 04-JUN-2022:00:20:00 AND 04-JUN-2022:12:05:00; BETWEEN 04-JUN-2022:14:15:00 AND 05-JUN-2022:05:30:00; BETWEEN 05-JUN-2022:07:35:00 AND 05-JUN-2022:09:35:00; BETWEEN 05-JUN-2022:11:25:00 AND 08-JUN-2022:00:00:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET<br>Comments: We request to check the background field once scheduling windows for HST are chosen to ensure that there are no background stars which would compromise the observation. |  |  |                             |                      |                     |                      |  |  |              |
|                                 | <b>Diagnosics</b><br>(Exposure 1 (Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KV11 1 (03))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser<br>(Exposure 2 (Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KV11 1 (03))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser  |  |  |                             |                      |                     |                      |  |  |              |
| <b>Patterns</b>                 | <b>#</b>   | <b>Primary Pattern</b>   |  | <b>Secondary Pattern</b>    |                      | <b>Exposures</b>    |                      |  |  |              |
|                                 | (1)  | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=2<br>Point Spacing=0.75<br>Line Spacing=    | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true   |                             |                      | (1)                 |                      |  |  |              |
| (2)                             | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=3<br>Point Spacing=0.75<br>Line Spacing=  | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true |  |                             | (2)                  |                     |                      |  |  |              |
| <b>Solar System Targets</b>     | <b>#</b>   | <b>Name</b>  | <b>Level 1</b>   | <b>Level 2</b>              | <b>Level 3</b>       | <b>Window</b>       | <b>Ephem Center</b>  |  |  |              |
|                                 | (2)  | 2020KV11   | TYPE=ASTEROID,A=95.4930512181<br>05,E=0.621225667767,I=4.624574479<br>235,O=135.155110306248,W=50.2677<br>00440368,M=29.708118547190,EQUI<br>NOX=J2000,EPOCH=15-JUL-<br>2022:00:00:00,EpochTimeScale=UTC |                             |                      |                     | EARTH                |  |  |              |
| Comments: Description=2020 KV11 |  |  |  |                             |                      |                     |                      |  |  |              |
| <b>Exposures</b>                | <b>#</b>   | <b>Label</b>   | <b>Target</b>  | <b>Config,Mode,Aperture</b> | <b>Spectral Els.</b> | <b>Opt. Params.</b> | <b>Special Reqs.</b> | <b>Groups</b>  | <b>Exp. Time (Total)/[Actual Dur.]</b> | <b>Orbit</b> |
|                                 | 1  | (2) 2020KV11   | WFC3/UVIS, ACCUM, UVIS2  | F606W                       |                      |                     |                      | Sequence 1-2 Non-Int in 2020KV11 1 (03)<br>[=>(Pattern 1)]<br>Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KV11 1 (03) (1)<br>[=>(Pattern 2)]                    | 350 Secs (700 Secs)                    | [1]          |
| 2                               | (2) 2020KV11   | WFC3/UVIS, ACCUM, UVIS2  | F814W  | FLASH=4                     |                      |                     |                      | Sequence 1-2 Non-Int in 2020KV11 1 (03)<br>[=>(Pattern 1)]<br>Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KV11 1 (03) (2)<br>[=>(Pattern 2)]<br>[=>(Pattern 3)] | 350 Secs (1050 Secs)                   | [1]          |

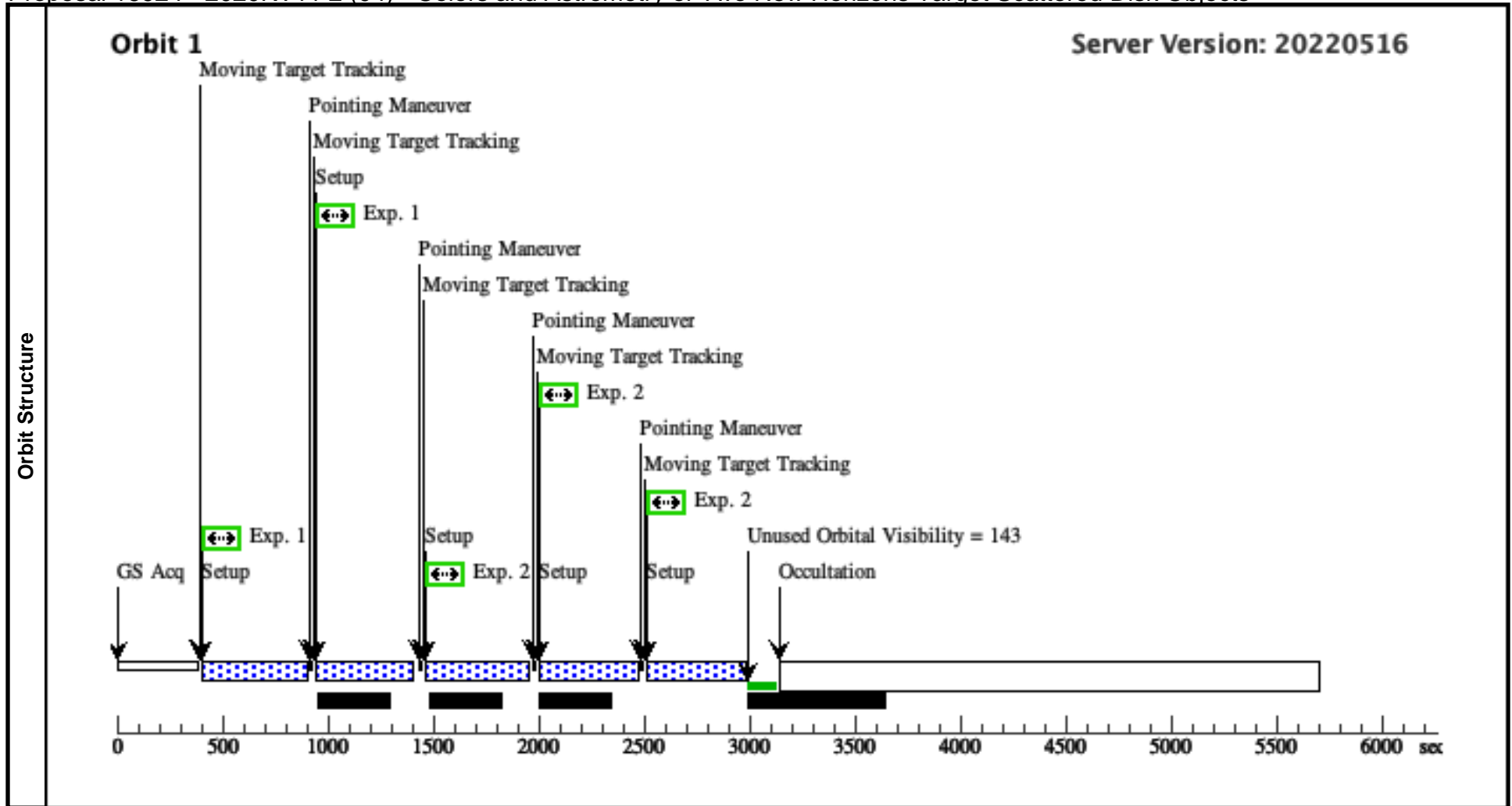




Proposal 16924 - 2020KV11 2 (04) - Colors and Astrometry of Two New Horizons Target Scattered Disk Objects

Tue Jul 12 19:00:17 GMT 2022

|                                 |  |  |  |                             |                      |                          |   |   |   |     |              |
|---------------------------------|--|--|--|-----------------------------|----------------------|--------------------------|---|---|---|-----|--------------|
| <b>Visit</b>                    | <b>Proposal 16924, 2020KV11 2 (04), completed</b><br><b>Diagnostic Status: Warning</b><br>Scientific Instruments: WFC3/UVIS<br>Special Requirements: SCHED 30%; AFTER 03 BY 7 D TO 1000000000 D; BETWEEN 08-JUN-2022:00:00:00 AND 08-JUN-2022:08:10:00; BETWEEN 08-JUN-2022:10:05:00 AND 09-JUN-2022:00:00:00; BETWEEN 12-JUN-2022:01:50:00 AND 15-JUN-2022:07:00:00; BETWEEN 15-JUN-2022:08:50:00 AND 15-JUN-2022:23:50:00; BETWEEN 16-JUN-2022:01:35:00 AND 16-JUN-2022:05:10:00; BETWEEN 16-JUN-2022:07:20:00 AND 17-JUN-2022:11:55:00; BETWEEN 17-JUN-2022:13:35:00 AND 18-JUN-2022:06:45:00; BETWEEN 18-JUN-2022:08:35:00 AND 18-JUN-2022:12:10:00; BETWEEN 18-JUN-2022:13:50:00 AND 19-JUN-2022:03:35:00; BETWEEN 19-JUN-2022:05:20:00 AND 20-JUN-2022:00:00:00; BETWEEN 09-JUN-2022:13:00:00 AND 12-JUN-2022:00:15:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET<br>Comments: We request to check the background field once scheduling windows for HST are chosen to ensure that there are no background stars which would compromise the observation. |  |  |                             |                      |                          |   |   |   |     |              |
|                                 | <b>Diagnostics</b>   | (Exposure 1 (Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KV11 2 (04))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser<br>(Exposure 2 (Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KV11 2 (04))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser |  |                             |                      |                          |   |   |   |     |              |
| <b>Patterns</b>                 |  | <b>#</b>   | <b>Primary Pattern</b>   |                             |                      | <b>Secondary Pattern</b> |   |   | <b>Exposures</b>  |     |              |
|                                 | (1)  | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=2<br>Point Spacing=0.75<br>Line Spacing=  | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true   |                             |                      |                          |   | (1)   |   |     |              |
| (2)                             | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=3<br>Point Spacing=0.75<br>Line Spacing=  | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true   |  |                             |                      |                          | (2)   |   |   |     |              |
| <b>Solar System Targets</b>     | <b>#</b>   | <b>Name</b>  | <b>Level 1</b>   | <b>Level 2</b>              | <b>Level 3</b>       | <b>Window</b>            | <b>Ephem Center</b>   |   |   |     |              |
|                                 | (2)  | 2020KV11   | TYPE=ASTEROID,A=95.493051218105,E=0.621225667767,I=4.624574479235,O=135.155110306248,W=50.267700440368,M=29.708118547190,EQUI<br>NOX=J2000,EPOCH=15-JUL-2022:00:00:00,EpochTimeScale=UTC |                             |                      |                          |   | EARTH   |   |     |              |
| Comments: Description=2020 KV11 |  |  |  |                             |                      |                          |   |   |   |     |              |
| <b>Exposures</b>                | <b>#</b>   | <b>Label</b>   | <b>Target</b>  | <b>Config,Mode,Aperture</b> | <b>Spectral Els.</b> | <b>Opt. Params.</b>      | <b>Special Reqs.</b>  | <b>Groups</b>   | <b>Exp. Time (Total)/[Actual Dur.]</b>                    |     | <b>Orbit</b> |
|                                 | 1  | (2) 2020KV11   |  | WFC3/UVIS, ACCUM, UVIS2     | F606W                |                          |   | Sequence 1-2 Non-Int in 2020KV11 2 (04)<br>Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KV11 2 (04) (1) | 350 Secs (700 Secs)<br>[=>(Pattern 1)]<br>[=>(Pattern 2)] |     | [1]          |
| 2                               | (2) 2020KV11   |  | WFC3/UVIS, ACCUM, UVIS2  | F814W                       | FLASH=4              |                          | Sequence 1-2 Non-Int in 2020KV11 2 (04)<br>Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KV11 2 (04) (2) | 350 Secs (1050 Secs)<br>[=>(Pattern 1)]<br>[=>(Pattern 2)]<br>[=>(Pattern 3)]                                 |   | [1] |              |



Proposal 16924 - 2020KV11 3 (05) - Colors and Astrometry of Two New Horizons Target Scattered Disk Objects

Tue Jul 12 19:00:17 GMT 2022

|                             |   |  |  |                          |                |                  |                     |
|-----------------------------|---|--|--|--------------------------|----------------|------------------|---------------------|
| <b>Visit</b>                | <b>Proposal 16924, 2020KV11 3 (05), implementation</b><br><b>Diagnostic Status: Warning</b><br>Scientific Instruments: WFC3/UVIS<br>Special Requirements: SCHED 30%; BETWEEN 25-JUL-2022:00:00:00 AND 25-JUL-2022:10:40:00; BETWEEN 25-JUL-2022:12:40:00 AND 28-JUL-2022:17:40:00; BETWEEN 28-JUL-2022:19:10:00 AND 29-JUL-2022:00:35:00; BETWEEN 29-JUL-2022:02:25:00 AND 29-JUL-2022:08:40:00; BETWEEN 29-JUL-2022:10:00:00 AND 29-JUL-2022:14:15:00; BETWEEN 29-JUL-2022:16:20:00 AND 30-JUL-2022:04:30:00; BETWEEN 30-JUL-2022:06:15:00 AND 30-JUL-2022:10:30:00; BETWEEN 30-JUL-2022:12:00:00 AND 30-JUL-2022:21:40:00; BETWEEN 30-JUL-2022:23:10:00 AND 01-AUG-2022:06:50:00; BETWEEN 01-AUG-2022:08:25:00 AND 01-AUG-2022:13:15:00; BETWEEN 01-AUG-2022:15:00:00 AND 03-AUG-2022:01:30:00; BETWEEN 03-AUG-2022:03:25:00 AND 03-AUG-2022:15:00:00; BETWEEN 03-AUG-2022:17:00:00 AND 04-AUG-2022:04:35:00; BETWEEN 04-AUG-2022:06:30:00 AND 04-AUG-2022:18:05:00; BETWEEN 04-AUG-2022:19:35:00 AND 07-AUG-2022:11:30:00; BETWEEN 07-AUG-2022:13:25:00 AND 07-AUG-2022:17:35:00; BETWEEN 07-AUG-2022:19:40:00 AND 08-AUG-2022:14:10:00; BETWEEN 08-AUG-2022:16:25:00 AND 09-AUG-2022:18:20:00; BETWEEN 09-AUG-2022:20:25:00 AND 12-AUG-2022:21:00:00; BETWEEN 12-AUG-2022:22:40:00 AND 13-AUG-2022:07:20:00; BETWEEN 13-AUG-2022:09:25:00 AND 15-AUG-2022:13:00:00; BETWEEN 15-AUG-2022:15:10:00 AND 19-AUG-2022:21:10:00; BETWEEN 19-AUG-2022:22:50:00 AND 23-AUG-2022:03:35:00; BETWEEN 23-AUG-2022:05:55:00 AND 26-AUG-2022:02:35:00; BETWEEN 26-AUG-2022:06:45:00 AND 28-AUG-2022:17:55:00; BETWEEN 28-AUG-2022:20:30:00 AND 29-AUG-2022:10:00:00; BETWEEN 29-AUG-2022:12:20:00 AND 30-AUG-2022:14:40:00; BETWEEN 30-AUG-2022:16:45:00 AND 31-AUG-2022:01:15:00; BETWEEN 31-AUG-2022:03:50:00 AND 31-AUG-2022:09:05:00; BETWEEN 31-AUG-2022:11:05:00 AND 02-SEP-2022:00:00:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET<br>Comments: We request to check the background field once scheduling windows for HST are chosen to ensure that there are no background stars which would compromise the observation. |  |  |                          |                |                  |                     |
|                             | <b>Diagnostics</b>  | (Exposure 1 (Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KV11 3 (05))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser<br>(Exposure 2 (Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KV11 3 (05))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser |  |                          |                |                  |                     |
| <b>Patterns</b>             | <b>#</b>  | <b>Primary Pattern</b>   |  | <b>Secondary Pattern</b> |                | <b>Exposures</b> |                     |
|                             | (1)   | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=2<br>Point Spacing=0.75<br>Line Spacing=  | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true   |                          |                | (1)              |                     |
|                             | (2)   | Pattern Type=LINE<br>Purpose=OTHER<br>Number Of Points=3<br>Point Spacing=0.75<br>Line Spacing=  | Coordinate Frame=CELESTIAL<br>Pattern Orientation=0<br>Angle Between Sides=<br>Center Pattern=true   |                          |                | (2)              |                     |
| <b>Solar System Targets</b> | <b>#</b>  | <b>Name</b>  | <b>Level 1</b>   | <b>Level 2</b>           | <b>Level 3</b> | <b>Window</b>    | <b>Ephem Center</b> |
|                             | (2)   | 2020KV11   | TYPE=ASTEROID,A=95.4930512181<br>05,E=0.621225667767,I=4.624574479<br>235,O=135.155110306248,W=50.2677<br>00440368,M=29.708118547190,EQUI<br>NOX=J2000,EPOCH=15-JUL-<br>2022:00:00:00,EpochTimeScale=UTC |                          |                |                  | EARTH               |
|                             | Comments: Description=2020 KV11   |  |  |                          |                |                  |                     |

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| Exposures | #            | Label                   | Target                  | Config,Mode,Aperture | Spectral Els.   | Opt. Params.   | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|-----------|--------------|-------------------------|-------------------------|----------------------|---|--|---------------|--------|---------------------------------|-------|
|           | 1            | (2) 2020KV11            | WFC3/UVIS, ACCUM, UVIS2 | F606W                | Sequence 1-2 Non-Int in 2020KV11 3 (05)<br>Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in 2020KV11 3 (05) (1) | 350 Secs (700 Secs)<br>[==>(Pattern 1)]<br>[==>(Pattern 2)]                      | [1]           |        |                                 |       |
| 2         | (2) 2020KV11 | WFC3/UVIS, ACCUM, UVIS2 | F814W                   | FLASH=4              | Sequence 1-2 Non-Int in 2020KV11 3 (05)<br>Pattern 2, Exps 2-2 in Sequence 1-2 Non-Int in 2020KV11 3 (05) (2) | 350 Secs (1050 Secs)<br>[==>(Pattern 1)]<br>[==>(Pattern 2)]<br>[==>(Pattern 3)] | [1]           |        |                                 |       |

