



13874 - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

Cycle: 22, Proposal Category: GO

(UV Initiative)

(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) COMET-LOVEJOY | STIS/CCD STIS/FUV-MAMA | 1 | 20-Jan-2015 16:00:02.0 | yes |
| 02 | (1) COMET-LOVEJOY | STIS/CCD STIS/NUV-MAMA | 1 | 20-Jan-2015 16:00:03.0 | yes |
| 03 | (1) COMET-LOVEJOY | COS/FUV COS/NUV | 1 | 20-Jan-2015 16:00:05.0 | yes |
| 04 | (1) COMET-LOVEJOY | STIS/CCD STIS/FUV-MAMA | 1 | 20-Jan-2015 16:00:06.0 | yes |

| <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> |
|--------------|------------------------------|-------------------------------------|--------------------|-------------------------------|-------------------------------|
| 05 | (1) COMET-LOVEJOY | STIS/CCD STIS/NUV-MAMA | 1 | 20-Jan-2015 16:00:07.0 | yes |
| 06 | (1) COMET-LOVEJOY | COS/FUV COS/NUV | 1 | 20-Jan-2015 16:00:08.0 | yes |
| 07 | (1) COMET-LOVEJOY | STIS/CCD STIS/FUV-MAMA | 1 | 20-Jan-2015 16:00:09.0 | yes |
| 08 | (1) COMET-LOVEJOY | STIS/CCD STIS/NUV-MAMA | 1 | 20-Jan-2015 16:00:10.0 | yes |
| 09 | (1) COMET-LOVEJOY | COS/FUV COS/NUV | 1 | 20-Jan-2015 16:00:11.0 | yes |
| 10 | (2) COMET-LOVEJOY-OFFSET | STIS/FUV-MAMA | 1 | 20-Jan-2015 16:00:12.0 | yes |

10 Total Orbits Used

ABSTRACT

We propose a 10-orbit program to observe any newly discovered bright comet as a non-disruptive Target of Opportunity during cycle 22.

For a comet whose water production rate meets our basic ToO selection criterion, Hubble observations can be used to measure abundances of three highly volatile species (CO, CO₂, and S₂), providing critical information on the origin and evolution of the comet's nucleus. If the comet additionally has geocentric and heliocentric radial velocities in a favorable range, our Hubble observations will measure atomic deuterium emission, from which we can derive the D/H ratio for comparison to the values measured in other comets and Earth's water. The D/H ratio in cometary water is a key indicator of the role played by comets in the delivery of volatiles to the terrestrial planets. This is a non-disruptive ToO program because we anticipate that execution of the proposed observations need not be scheduled until at least 1 month after the triggering event. We have already identified four potential targets (C/2013 V5 (Oukaimeden), C/2012 K1 (PanSTARRS),

C/2013 A1 (Siding Spring), C/2014 E2 (Jacques)), but it is still too early to tell if any of these will meet our ToO selection criteria.

OBSERVING DESCRIPTION

We request 3 orbits using STIS/G230L with the 0.2 slit to measure CO Cameron, CS, S2, and OH emissions at 13 Å resolution. Although the CO Cameron bands should be detectable with $\text{SNR} > 6$ in 1 orbit for our minimal comet and a nominal CO₂ abundance (~5%), 3 orbits would permit a more robust detection ($\text{SNR} > 10$). Furthermore, if the comet is bright enough, measurements of CO Cameron emission in multiple orbits will determine whether the CO₂ abundance varies with time, as it did rather dramatically (by a factor of ~2) during the EPOXI flyby of 103P/Hartley.

For the observations of D (assuming the comet satisfies the requirements discussed in the proposal), we will use STIS/E140H with the 0.2 x 6 arcsec slit. This slit was used successfully to detect D in C/NEAT and provides a five-fold improvement in sensitivity compared to the standard 0.2 x 0.2 arcsec slit. We request 3 orbits to obtain a secure D/H detection, even for our minimal comet.

We request a 1 orbit observation using E140H offset by a large distance from the nucleus, so that we can measure the H Ly-alpha emission in a region of the coma where it is optically thin. From these data we can derive a highly reliable H production rate, which is needed for the D/H ratio. We can also compare QH₂O derived from this offset measurement to the values derived from the other orbits using OH emission.

COS/NUV ACQ/SEARCH and ACQ/IMAGE will be employed in each COS orbit to accurately place the nucleus in the aperture (PSA). Similarly, a STIS/CCD ACQ will be employed in each STIS orbit. We also plan to take at least a couple STIS/CCD F28x50LP full-frame images during the course of our program to provide context for our spectroscopic

Proposal 13874 (STScI Edit Number: 0, Created: Tuesday, January 20, 2015 4:00:13 PM EST) - Overview
program (e.g., to provide information on jets and other coma asymmetries).

All the above orbits should be grouped within a 1-3 day period, so the comet's observing circumstances won't change significantly during that time. As always, we'll work closely with the program's PC to optimize the observing plan for our scientific objectives.

Proposal 13874 - E140H orbit (01) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

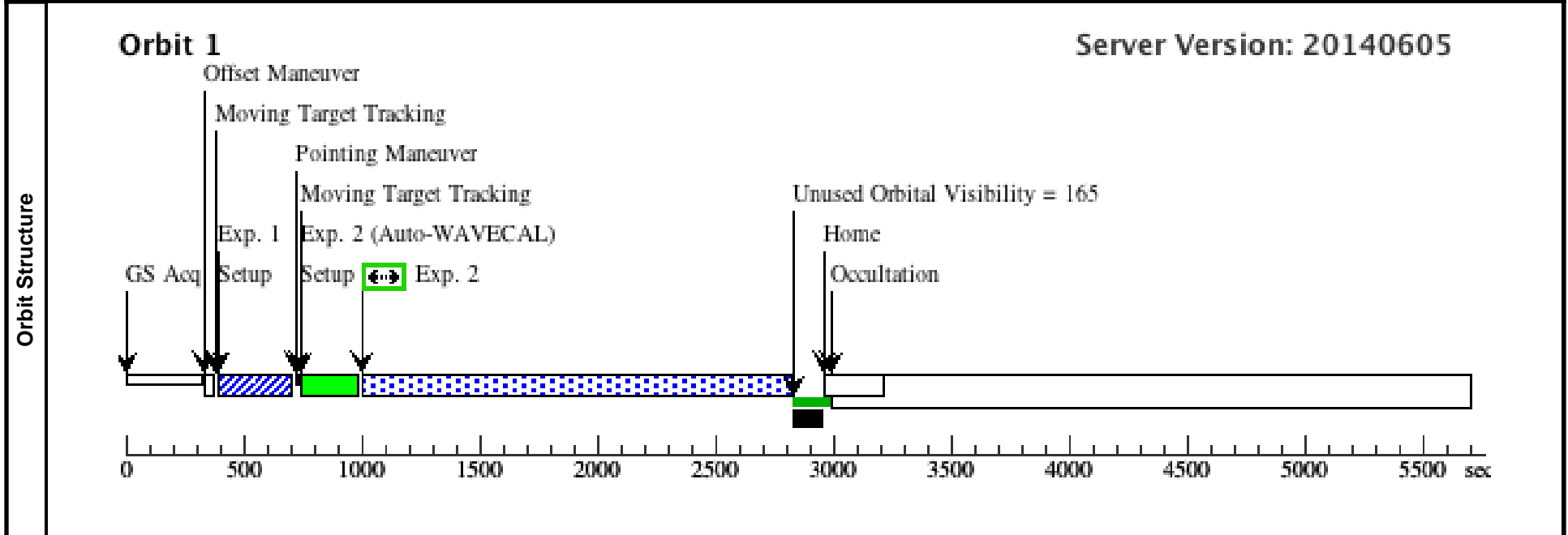
Tue Jan 20 21:00:13 GMT 2015

| | |
|--------------|--|
| Visit | Proposal 13874, E140H orbit (01), implementation Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: SCHED 100%; GROUP 01,02,03,04,05,06,07,08,09,10 WITHIN 3D |
| | (E140H spectrum (01.002)) Warning (Form): Sensitive exposures should have an ETC run number provided. |

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| Diagnostics | (E140H spectrum (01.002)) Warning (Form): Sensitive exposures should have an ETC run number provided. |
|--------------------|---|

| Solar System Targets | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center |
|----------------------|---|---------------|---|---------|---------|--------|--------------|
| | (1) | COMET-LOVEJOY | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN- 2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV- 2014,EpochTimeScale=TDB | | | | EARTH |
| | <i>Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target.</i> Acquisition Uncertainty: 10 Arcsec Ephemeris Uncertainty: 3700 Kilometers | | | | | | |

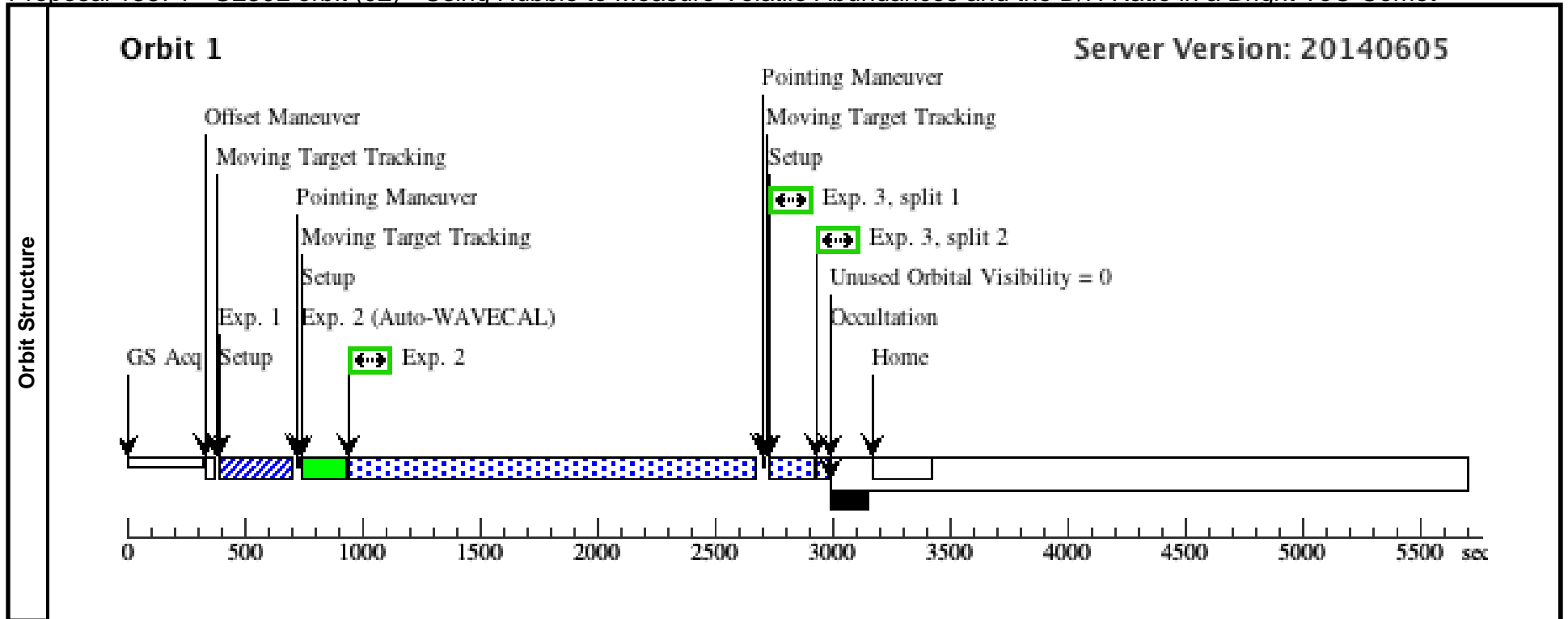
| Exposures | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|-----------|---|--------------------|-----------------------|--------------------------------|-----------------|--------------|--------------------------|--------|---------------------------------|-------|
| | 1 | STIS ACQ | (1) COMET-LOVEJ OY | STIS/CCD, ACQ, F28X50LP | MIRROR | | REQ EPHEM CORR COMV01 | | 10 Secs (10 Secs) [==>] | [1] |
| | 2 | E140H spect rum | (1) COMET-LOVEJ OY | STIS/FUV-MAMA, ACCUM, 6X0.2 | E140H 1234 A | | REQ EPHEM CORR COMV01 | | 1800 Secs (1800 Secs) [==>] | [1] |



Proposal 13874 - G230L orbit (02) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

Tue Jan 20 21:00:13 GMT 2015

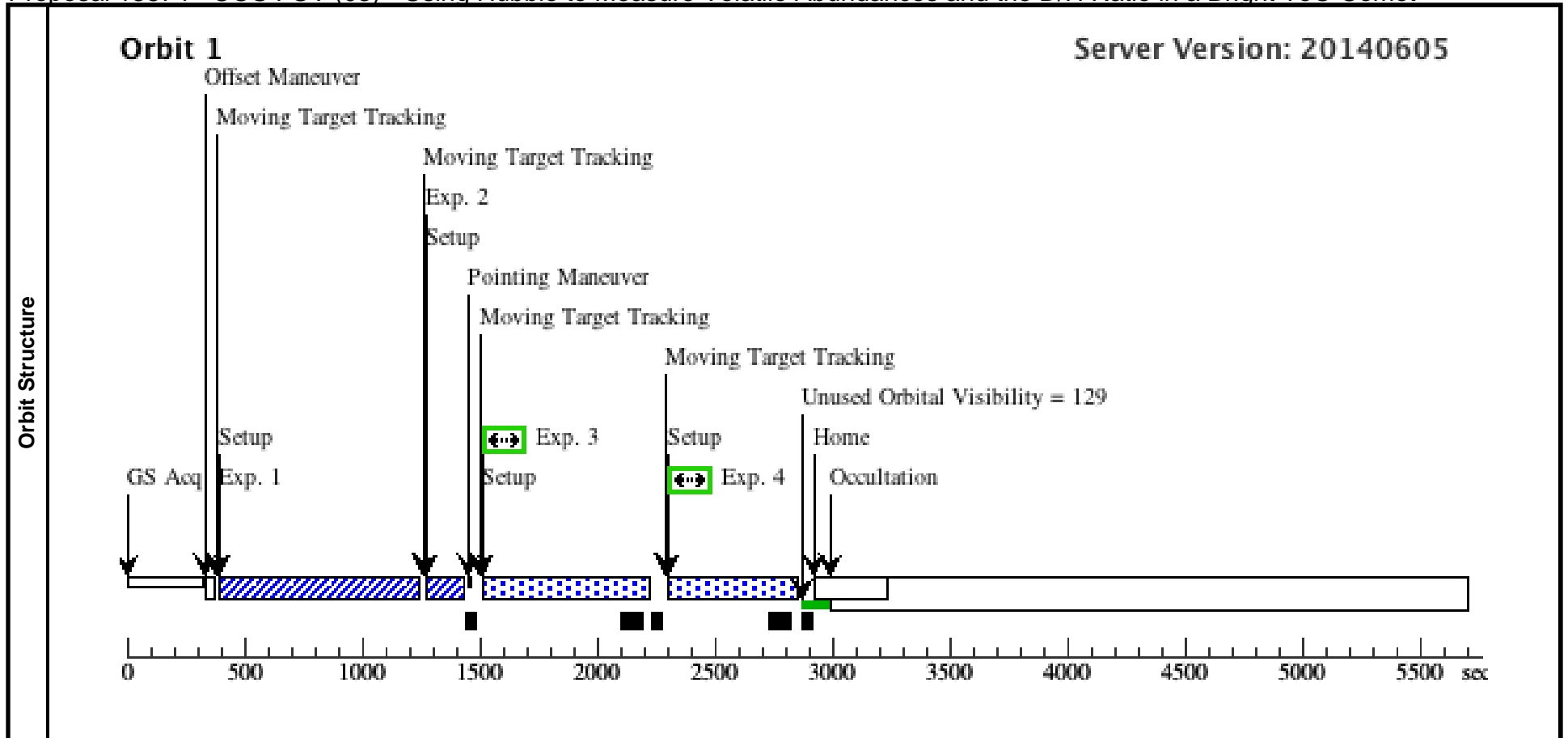
| | | | | | | | | | | |
|--|--|--------------------|---|---------------------------------|----------------------|---------------------|--------------------------|---------------|---|--------------|
| Visit | Proposal 13874, G230L orbit (02), implementation Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/NUV-MAMA Special Requirements: SCHED 100% | | | | | | | | | |
| | (G230L spectrum (02.002)) Warning (Form): Sensitive exposures should have an ETC run number provided. | | | | | | | | | |
| Diagnostics | | | | | | | | | | |
| | | | | | | | | | | |
| Solar System Targets | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center | | | |
| | (1) | COMET-LOVEJOY | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN- 2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV- 2014,EpochTimeScale=TDB | | | | | EARTH | | |
| Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target. Acquisition Uncertainty: 10 Arcsec Ephemeris Uncertainty: 3700 Kilometers | | | | | | | | | | |
| Exposures | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
| | 1 | STIS ACQ | (1) COMET-LOVEJ OY | STIS/CCD, ACQ, F28X50LP | MIRROR | | REQ EPHEM CORR COMV02 | | 10 Secs (10 Secs) [==>] | [1] |
| | 2 | G230L spect rum | (1) COMET-LOVEJ OY | STIS/NUV-MAMA, ACCUM, 52X0.2 | G230L 2376 A | | REQ EPHEM CORR COMV02 | | 1719 Secs (1719 Secs) [==>] | [1] |
| | 3 | STIS Image | (1) COMET-LOVEJ OY | STIS/CCD, ACCUM, F28X50LP | MIRROR | CR-SPLIT=2 | REQ EPHEM CORR COMV02 | | 20 Secs (20 Secs) [==>(Split 1)] [==>(Split 2)] | [1] |



Proposal 13874 - COS FUV (03) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

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|---|--|---------------|---|-----------------------------|----------------------|---|--------------------------|---------------|--|--------------|
| Visit | Proposal 13874, COS FUV (03), implementation Diagnostic Status: Warning Scientific Instruments: COS/NUV, COS/FUV Special Requirements: SCHED 100% | | | | | | | | | |
| | (COS FUV (03)) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting. (Exposure 1 (COS FUV (03))) Warning (Form): Sensitive exposures should have an ETC run number provided. (Exposure 2 (COS FUV (03))) Warning (Form): Sensitive exposures should have an ETC run number provided. (Exposure 3 (COS FUV (03))) Warning (Form): Sensitive exposures should have an ETC run number provided. (Exposure 4 (COS FUV (03))) Warning (Form): Sensitive exposures should have an ETC run number provided. | | | | | | | | | |
| Diagnostics | | | | | | | | | | |
| | | | | | | | | | | |
| Solar System Targets | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center | | | |
| | (1) | COMET-LOVEJOY | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN- 2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV- 2014,EpochTimeScale=TDB | | | | | EARTH | | |
| <i>Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target.</i> <i>Acquisition Uncertainty: 10 Arcsec</i> <i>Ephemeris Uncertainty: 3700 Kilometers</i> | | | | | | | | | | |
| Exposures | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
| | 1 | | (1) COMET-LOVEJ OY | COS/NUV, ACQ/SEARCH, PSA | MIRRORA | SCAN-SIZE=3 | REQ EPHEM CORR COMV03 | | 30 Secs (30 Secs) [==>] | [1] |
| | 2 | | (1) COMET-LOVEJ OY | COS/NUV, ACQ/IMAGE, PSA | MIRRORA | | REQ EPHEM CORR COMV03 | | 30 Secs (30 Secs) [==>] | [1] |
| | 3 | | (1) COMET-LOVEJ OY | COS/FUV, TIME-TAG, PSA | G160M 1589 A | FP-POS=2; BUFFER-TIME=40 0; EXTENDED=YES | REQ EPHEM CORR COMV03 | | 500 Secs (500 Secs) [==>] | [1] |
| | 4 | | (1) COMET-LOVEJ OY | COS/FUV, TIME-TAG, PSA | G160M 1589 A | FP-POS=3; BUFFER-TIME=40 0; EXTENDED=YES | REQ EPHEM CORR COMV03 | | 500 Secs (500 Secs) [==>] | [1] |



Proposal 13874 - E140H orbit (04) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

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| Visit | Proposal 13874, E140H orbit (04), implementation Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: SCHED 100% |
| | (E140H spectrum (04.002)) Warning (Form): Sensitive exposures should have an ETC run number provided. |

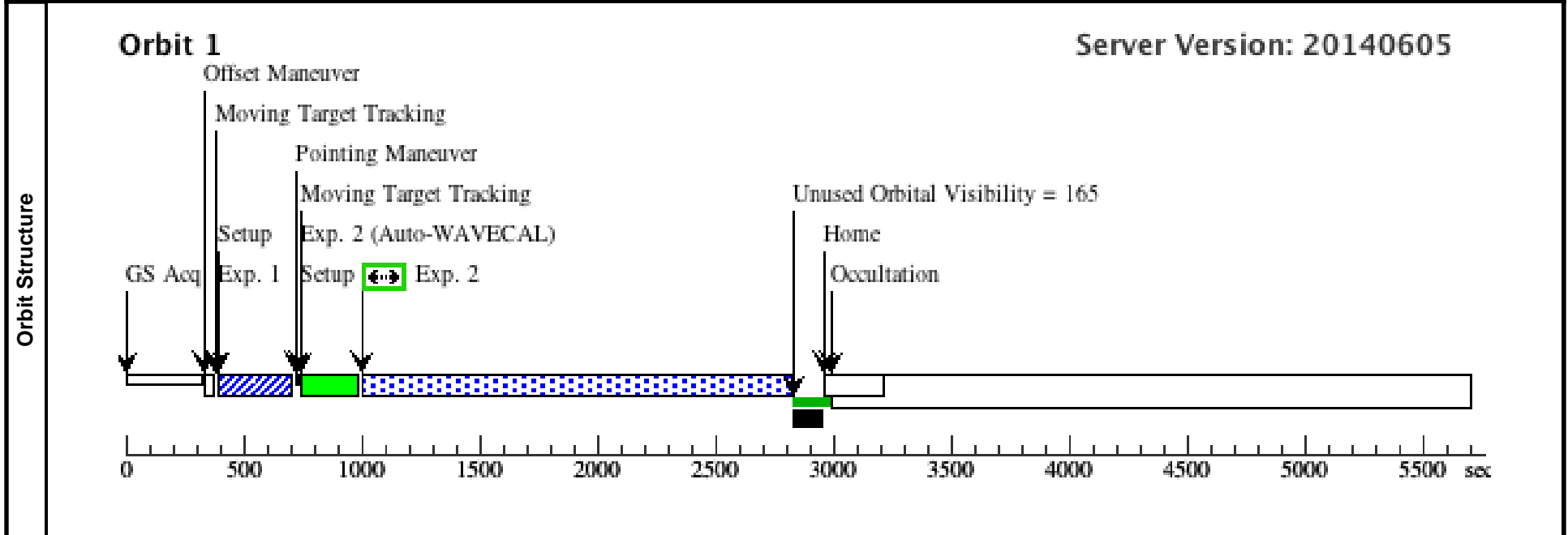
| | |
|--------------------|---|
| Diagnostics | (E140H spectrum (04.002)) Warning (Form): Sensitive exposures should have an ETC run number provided. |
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| Solar System Targets | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center |
|-----------------------------|-----|---------------|---|---------|---------|--------|--------------|
| | (1) | COMET-LOVEJOY | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN- 2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV- 2014,EpochTimeScale=TDB | | | | |

Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target.

Acquisition Uncertainty: 10 Arcsec
Ephemeris Uncertainty: 3700 Kilometers

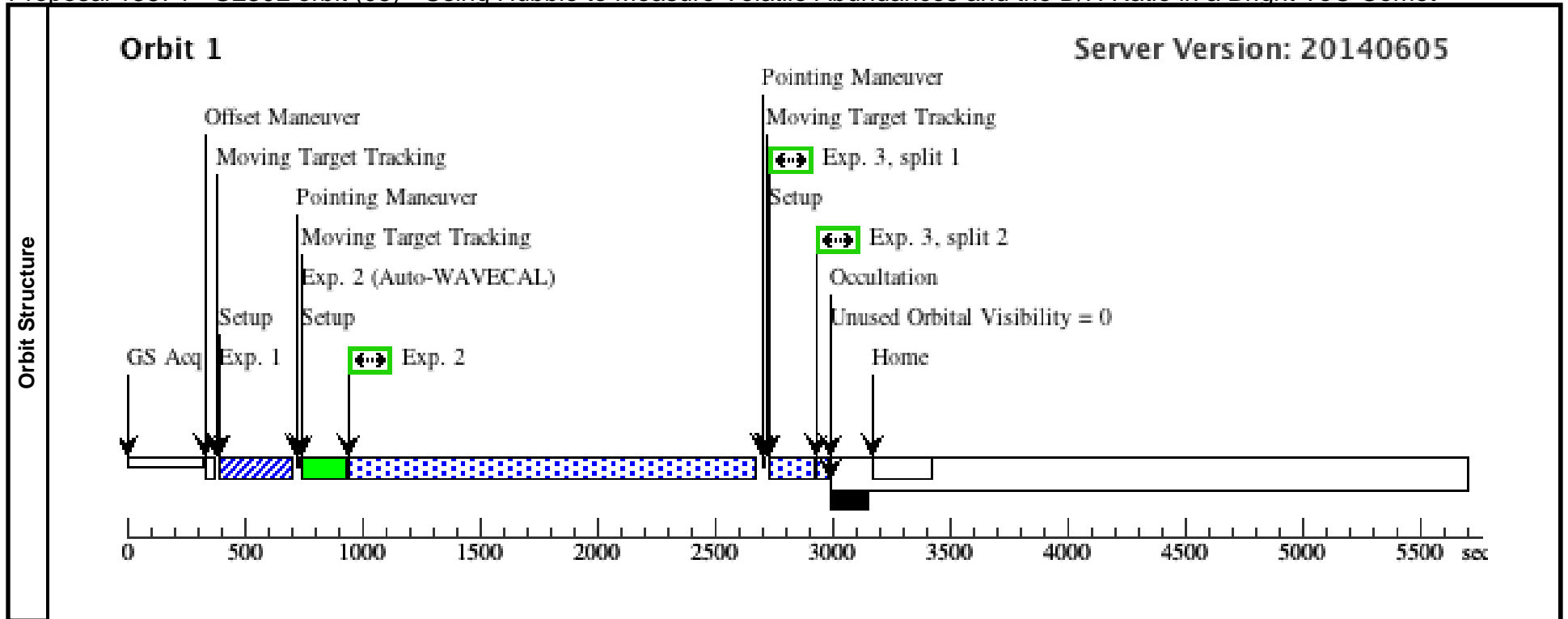
| Exposures | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|------------------|--------------------|-----------------------|--------------------------------|-------------------------|---------------|--------------|--------------------------|--------------------------|---------------------------------|----------------------------|
| | 1 | STIS ACQ | (1) COMET-LOVEJ OY | STIS/CCD, ACQ, F28X50LP | MIRROR | | | REQ EPHEM CORR COMV04 | | 10 Secs (10 Secs) [==>] |
| 2 | E140H spect rum | (1) COMET-LOVEJ OY | STIS/FUV-MAMA, ACCUM, 6X0.2 | E140H 1234 A | | | REQ EPHEM CORR COMV04 | | 1800 Secs (1800 Secs) [==>] | [1] |



Proposal 13874 - G230L orbit (05) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

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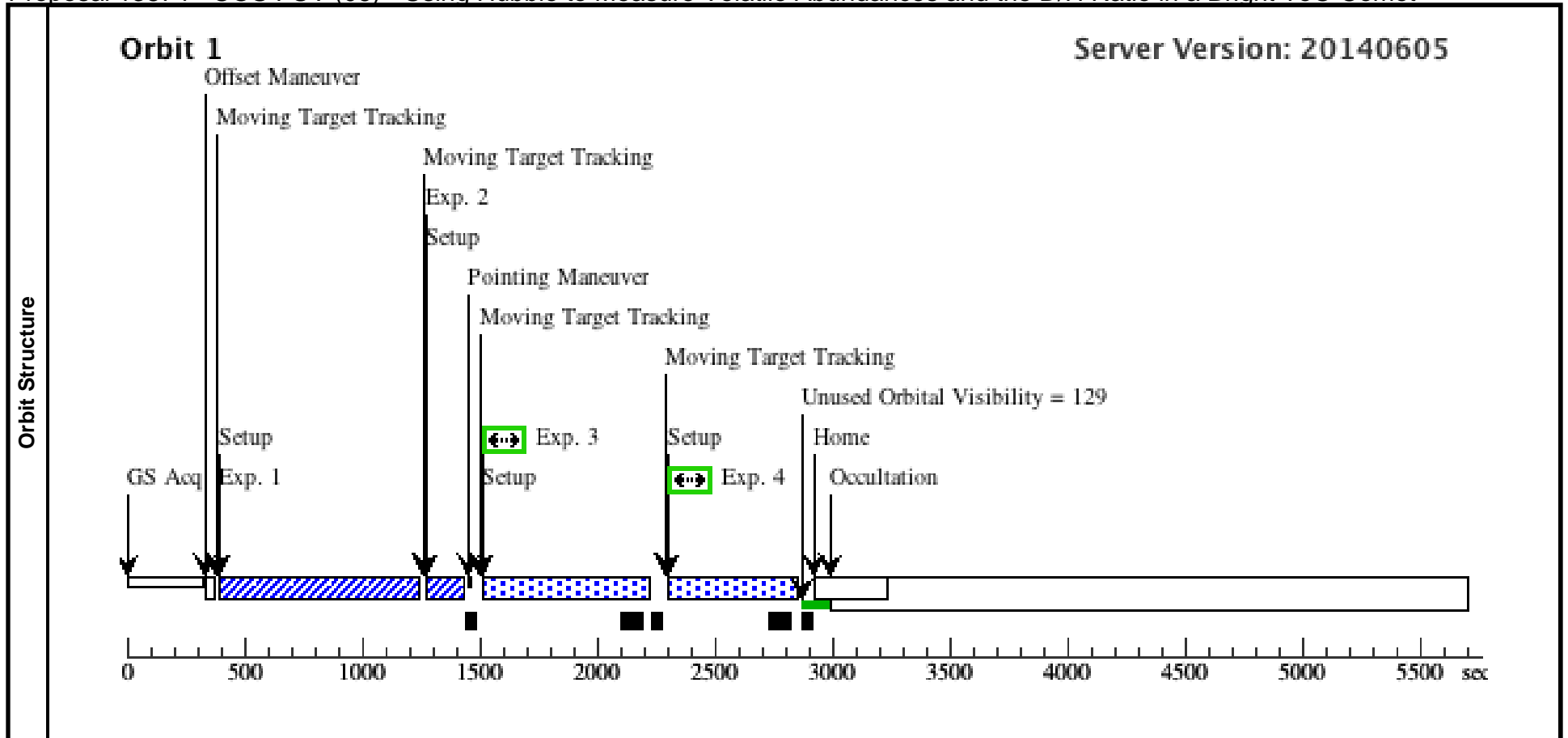
| | | | | | | | | | | |
|---|---|--------------------|---|---------------------------------|----------------------|---------------------|--------------------------|---------------|---|--------------|
| Visit | Proposal 13874, G230L orbit (05), implementation Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/NUV-MAMA Special Requirements: SCHED 100% | | | | | | | | | |
| | (G230L spectrum (05.002)) Warning (Form): Sensitive exposures should have an ETC run number provided. | | | | | | | | | |
| Diagnostics | | | | | | | | | | |
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| Solar System Targets | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center | | | |
| | (1) | COMET-LOVEJOY | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN- 2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV- 2014,EpochTimeScale=TDB | | | | | EARTH | | |
| <i>Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target.</i> <i>Acquisition Uncertainty: 10 Arcsec</i> <i>Ephemeris Uncertainty: 3700 Kilometers</i> | | | | | | | | | | |
| Exposures | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
| | 1 | STIS ACQ | (1) COMET-LOVEJ OY | STIS/CCD, ACQ, F28X50LP | MIRROR | | REQ EPHEM CORR COMV05 | | 10 Secs (10 Secs) [=>] | [1] |
| | 2 | G230L spect rum | (1) COMET-LOVEJ OY | STIS/NUV-MAMA, ACCUM, 52X0.2 | G230L 2376 A | | REQ EPHEM CORR COMV05 | | 1719 Secs (1719 Secs) [=>] | [1] |
| | 3 | STIS Image | (1) COMET-LOVEJ OY | STIS/CCD, ACCUM, F28X50LP | MIRROR | CR-SPLIT=2 | REQ EPHEM CORR COMV05 | | 20 Secs (20 Secs) [=>(Split 1)] [=>(Split 2)] | [1] |



Proposal 13874 - COS FUV (06) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

Tue Jan 20 21:00:14 GMT 2015

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|---|--|---------------|---|-----------------------------|----------------------|---|--------------------------|---------------|--|--------------|
| Visit | Proposal 13874, COS FUV (06), implementation Diagnostic Status: Warning Scientific Instruments: COS/NUV, COS/FUV Special Requirements: SCHED 100% | | | | | | | | | |
| | (COS FUV (06)) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting. (Exposure 1 (COS FUV (06))) Warning (Form): Sensitive exposures should have an ETC run number provided. (Exposure 2 (COS FUV (06))) Warning (Form): Sensitive exposures should have an ETC run number provided. (Exposure 3 (COS FUV (06))) Warning (Form): Sensitive exposures should have an ETC run number provided. (Exposure 4 (COS FUV (06))) Warning (Form): Sensitive exposures should have an ETC run number provided. | | | | | | | | | |
| Diagnostics | | | | | | | | | | |
| | | | | | | | | | | |
| Solar System Targets | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center | | | |
| | (1) | COMET-LOVEJOY | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN- 2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV- 2014,EpochTimeScale=TDB | | | | | EARTH | | |
| <i>Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target.</i> <i>Acquisition Uncertainty: 10 Arcsec</i> <i>Ephemeris Uncertainty: 3700 Kilometers</i> | | | | | | | | | | |
| Exposures | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
| | 1 | | (1) COMET-LOVEJ OY | COS/NUV, ACQ/SEARCH, PSA | MIRRORA | SCAN-SIZE=3 | REQ EPHEM CORR COMV06 | | 30 Secs (30 Secs) [==>] | [1] |
| | 2 | | (1) COMET-LOVEJ OY | COS/NUV, ACQ/IMAGE, PSA | MIRRORA | | REQ EPHEM CORR COMV06 | | 30 Secs (30 Secs) [==>] | [1] |
| | 3 | | (1) COMET-LOVEJ OY | COS/FUV, TIME-TAG, PSA | G160M 1589 A | FP-POS=2; BUFFER-TIME=40 0; EXTENDED=YES | REQ EPHEM CORR COMV06 | | 500 Secs (500 Secs) [==>] | [1] |
| | 4 | | (1) COMET-LOVEJ OY | COS/FUV, TIME-TAG, PSA | G160M 1589 A | FP-POS=3; BUFFER-TIME=40 0; EXTENDED=YES | REQ EPHEM CORR COMV06 | | 500 Secs (500 Secs) [==>] | [1] |



Proposal 13874 - E140H orbit (07) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

Tue Jan 20 21:00:14 GMT 2015

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|--------------|---|
| Visit | Proposal 13874, E140H orbit (07), implementation Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: SCHED 100% |
| | (E140H spectrum (07.002)) Warning (Form): Sensitive exposures should have an ETC run number provided. |

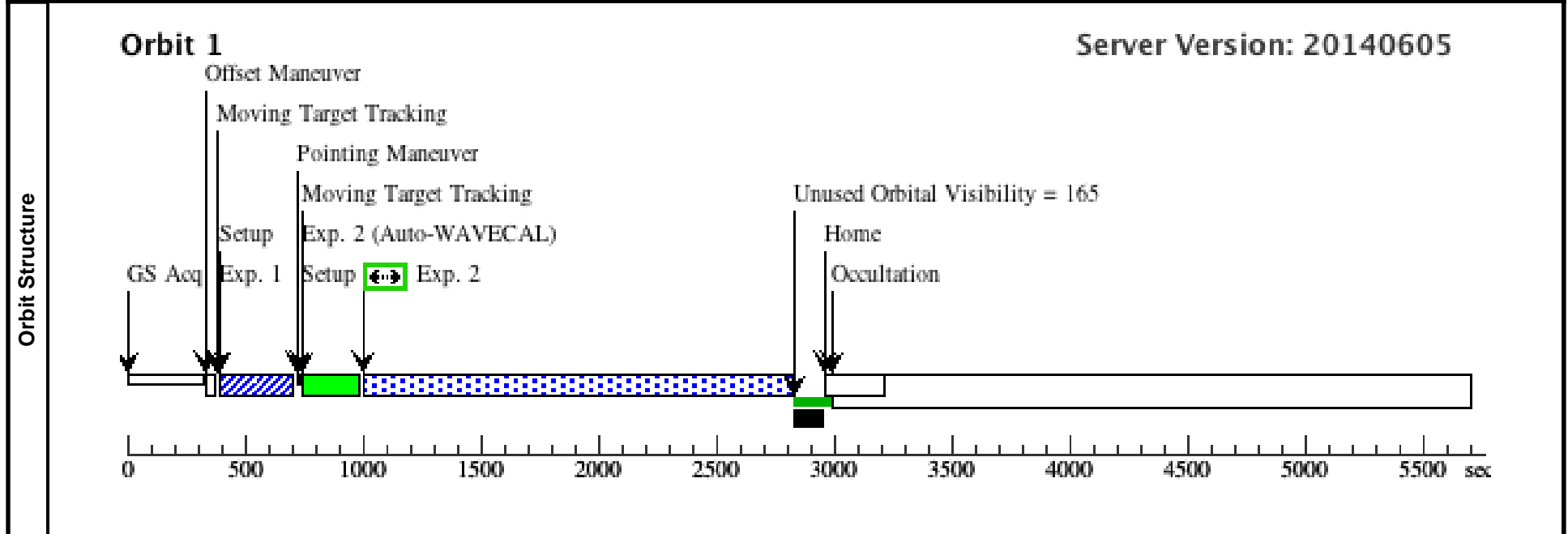
| | |
|--------------------|---|
| Diagnostics | (E140H spectrum (07.002)) Warning (Form): Sensitive exposures should have an ETC run number provided. |
|--------------------|---|

| Solar System Targets | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center |
|-----------------------------|-----|---------------|---|---------|---------|--------|--------------|
| | (1) | COMET-LOVEJOY | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN- 2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV- 2014,EpochTimeScale=TDB | | | | |

Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target.

Acquisition Uncertainty: 10 Arcsec
Ephemeris Uncertainty: 3700 Kilometers

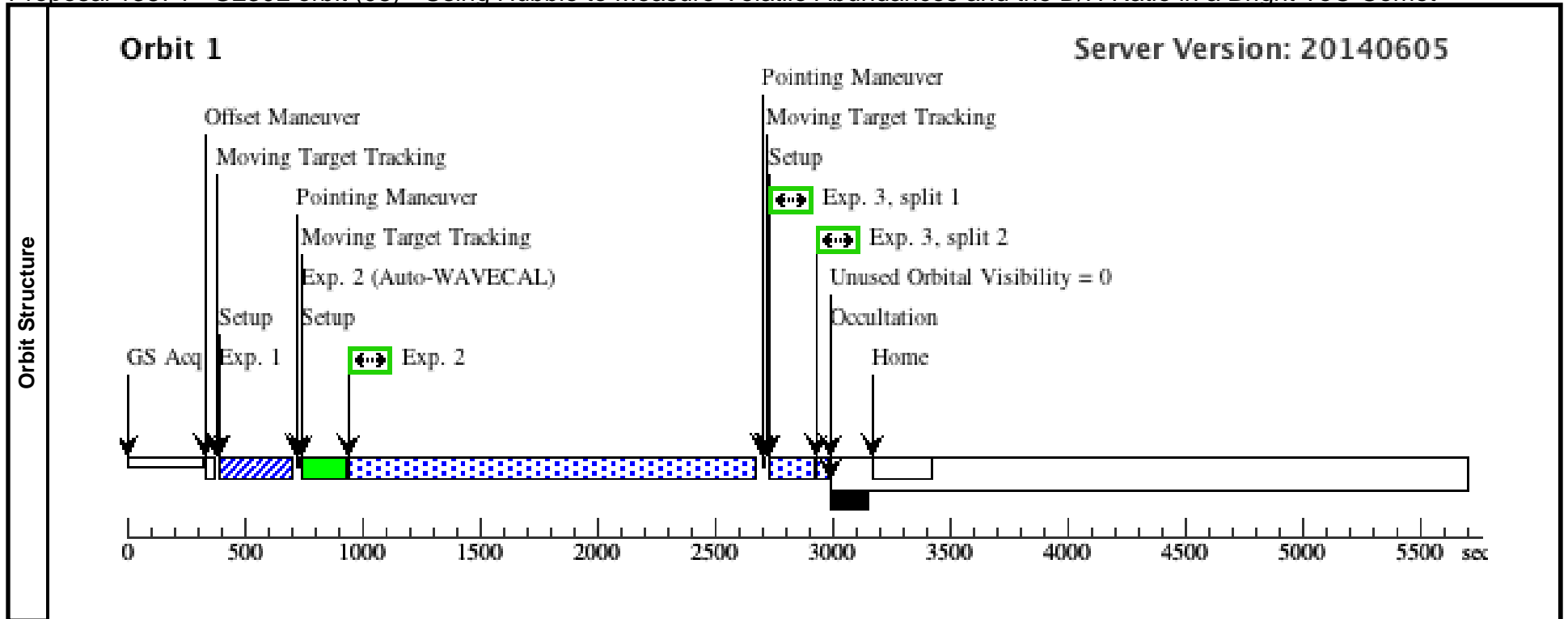
| Exposures | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|------------------|--------------------|-----------------------|--------------------------------|-------------------------|---------------|--------------|--------------------------|--------------------------|---------------------------------|---------------------------|
| | 1 | STIS ACQ | (1) COMET-LOVEJ OY | STIS/CCD, ACQ, F28X50LP | MIRROR | | | REQ EPHEM CORR COMV07 | | 10 Secs (10 Secs) [=>] |
| 2 | E140H spect rum | (1) COMET-LOVEJ OY | STIS/FUV-MAMA, ACCUM, 6X0.2 | E140H 1234 A | | | REQ EPHEM CORR COMV07 | | 1800 Secs (1800 Secs) [=>] | [1] |



Proposal 13874 - G230L orbit (08) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

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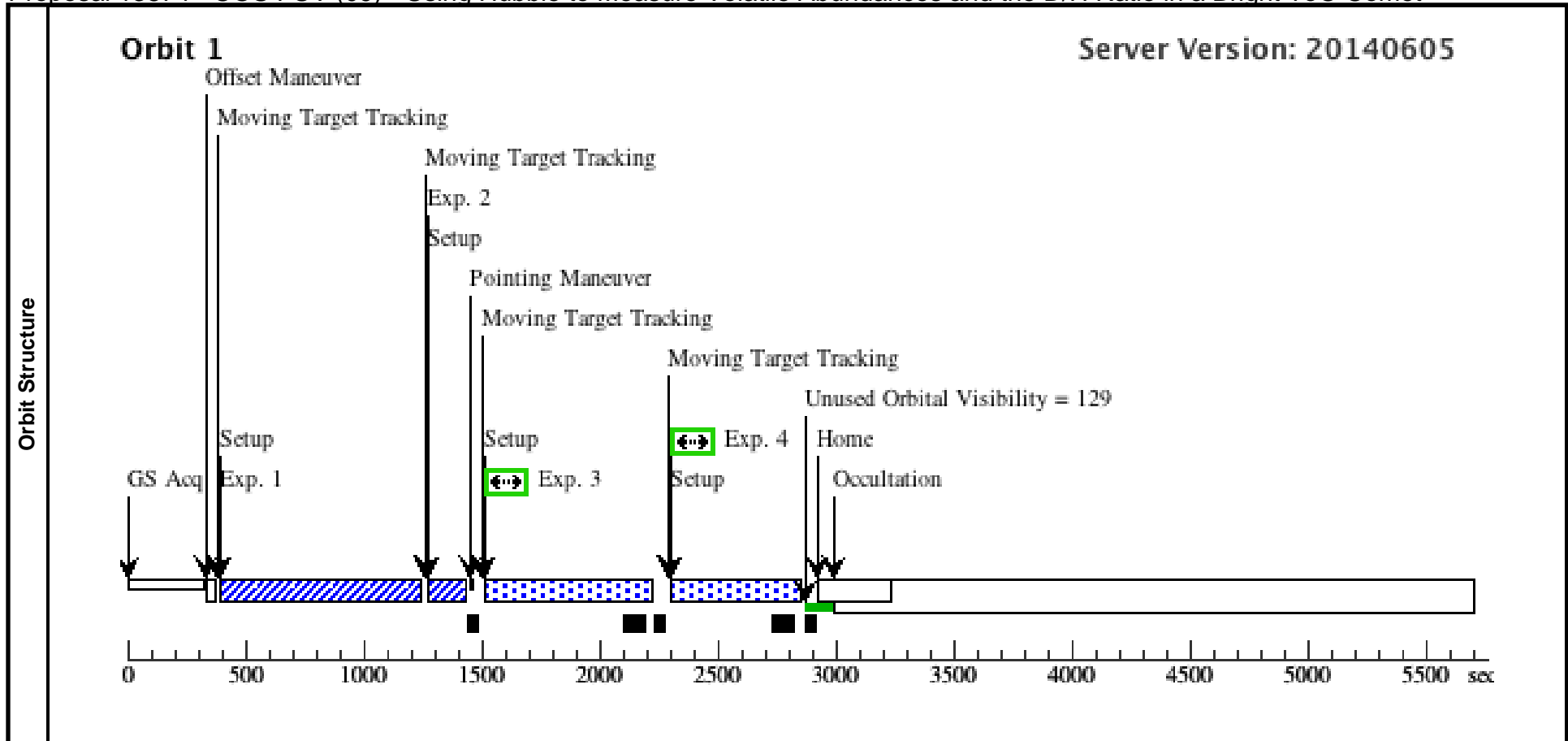
| | | | | | | | | | | |
|--|---|--------------------|---|---------------------------------|----------------------|---------------------|--------------------------|---------------|---|--------------|
| Visit | Proposal 13874, G230L orbit (08), implementation Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/NUV-MAMA Special Requirements: SCHED 100% | | | | | | | | | |
| | (G230L spectrum (08.002)) Warning (Form): Sensitive exposures should have an ETC run number provided. | | | | | | | | | |
| Diagnostics | | | | | | | | | | |
| | | | | | | | | | | |
| Solar System Targets | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center | | | |
| | (1) | COMET-LOVEJOY | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN- 2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV- 2014,EpochTimeScale=TDB | | | | | EARTH | | |
| Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target. Acquisition Uncertainty: 10 Arcsec Ephemeris Uncertainty: 3700 Kilometers | | | | | | | | | | |
| Exposures | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
| | 1 | STIS ACQ | (1) COMET-LOVEJ OY | STIS/CCD, ACQ, F28X50LP | MIRROR | | REQ EPHEM CORR COMV08 | | 10 Secs (10 Secs) [==>] | [1] |
| | 2 | G230L spect rum | (1) COMET-LOVEJ OY | STIS/NUV-MAMA, ACCUM, 52X0.2 | G230L 2376 A | | REQ EPHEM CORR COMV08 | | 1719 Secs (1719 Secs) [==>] | [1] |
| | 3 | STIS Image | (1) COMET-LOVEJ OY | STIS/CCD, ACCUM, F28X50LP | MIRROR | CR-SPLIT=2 | REQ EPHEM CORR COMV08 | | 20 Secs (20 Secs) [==>(Split 1)] [==>(Split 2)] | [1] |



Proposal 13874 - COS FUV (09) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

Tue Jan 20 21:00:14 GMT 2015

| | | | | | | | | | | |
|--|--|---------------|---|-----------------------------|----------------------|---|--------------------------|---------------|--|--------------|
| Visit | Proposal 13874, COS FUV (09), implementation Diagnostic Status: Warning Scientific Instruments: COS/NUV, COS/FUV Special Requirements: SCHED 100% | | | | | | | | | |
| | (COS FUV (09)) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting. (Exposure 1 (COS FUV (09))) Warning (Form): Sensitive exposures should have an ETC run number provided. (Exposure 2 (COS FUV (09))) Warning (Form): Sensitive exposures should have an ETC run number provided. (Exposure 3 (COS FUV (09))) Warning (Form): Sensitive exposures should have an ETC run number provided. (Exposure 4 (COS FUV (09))) Warning (Form): Sensitive exposures should have an ETC run number provided. | | | | | | | | | |
| Diagnostics | | | | | | | | | | |
| | | | | | | | | | | |
| Solar System Targets | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center | | | |
| | (1) | COMET-LOVEJOY | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN- 2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV- 2014,EpochTimeScale=TDB | | | | | EARTH | | |
| Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target. Acquisition Uncertainty: 10 Arcsec Ephemeris Uncertainty: 3700 Kilometers | | | | | | | | | | |
| Exposures | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
| | 1 | | (1) COMET-LOVEJ OY | COS/NUV, ACQ/SEARCH, PSA | MIRRORA | SCAN-SIZE=3 | REQ EPHEM CORR COMV09 | | 30 Secs (30 Secs) [==>] | [1] |
| | 2 | | (1) COMET-LOVEJ OY | COS/NUV, ACQ/IMAGE, PSA | MIRRORA | | REQ EPHEM CORR COMV09 | | 30 Secs (30 Secs) [==>] | [1] |
| | 3 | | (1) COMET-LOVEJ OY | COS/FUV, TIME-TAG, PSA | G160M 1589 A | FP-POS=2; BUFFER-TIME=40 0; EXTENDED=YES | REQ EPHEM CORR COMV09 | | 500 Secs (500 Secs) [==>] | [1] |
| | 4 | | (1) COMET-LOVEJ OY | COS/FUV, TIME-TAG, PSA | G160M 1589 A | FP-POS=3; BUFFER-TIME=40 0; EXTENDED=YES | REQ EPHEM CORR COMV09 | | 500 Secs (500 Secs) [==>] | [1] |



Proposal 13874 - E140H OFFSET (10) - Using Hubble to Measure Volatile Abundances and the D/H Ratio in a Bright ToO Comet

Tue Jan 20 21:00:14 GMT 2015

| | |
|--------------|--|
| Visit | Proposal 13874, E140H OFFSET (10), implementation Diagnostic Status: Warning Scientific Instruments: STIS/FUV-MAMA Special Requirements: SCHED 100% |
|--------------|--|

| | |
|--------------------|---|
| Diagnostics | (E140H OFFSET (10)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronagraphy with STIS or COS. |
| | (E140H spectrum (10.001)) Warning (Form): Sensitive exposures should have an ETC run number provided. |

| Solar System Targets | <table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Level 1</th> <th>Level 2</th> <th>Level 3</th> <th>Window</th> <th>Ephem Center</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>COMET-LOVEJOY-OFFSET</td> <td>TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN-2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV-2014,EpochTimeScale=TDB</td> <td>TYPE=POS_ANGLE,RAD=1500,AN G=0,REF=SUN</td> <td></td> <td></td> <td></td> <td>EARTH</td> </tr> </tbody> </table> <p><i>Comments: Updated on 1/14/2015 to use Comet C/2014 Q2 (Lovejoy) as the target.</i></p> <p><i>Acquisition Uncertainty: 10 Arcsec</i> <i>Ephemeris Uncertainty: 3700 Kilometers</i></p> | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center | (2) | COMET-LOVEJOY-OFFSET | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN-2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV-2014,EpochTimeScale=TDB | TYPE=POS_ANGLE,RAD=1500,AN G=0,REF=SUN | | | | EARTH |
|-----------------------------|---|---|---|---------|---------|---------|--------------|--------------|-----|----------------------|---|---|--|--|--|-------|
| | # | Name | Level 1 | Level 2 | Level 3 | Window | Ephem Center | | | | | | | | | |
| (2) | COMET-LOVEJOY-OFFSET | TYPE=COMET,Q=1.2903546133493 46,E=0.9977694972445712,I=80.3030 1629940526,O=94.97534212651479, W=12.39562582691785,T=30-JAN-2015:01:41:08,TimeScale=TDB,EQ UINOX=J2000,EPOCH=20-NOV-2014,EpochTimeScale=TDB | TYPE=POS_ANGLE,RAD=1500,AN G=0,REF=SUN | | | | EARTH | | | | | | | | | |

| Exposures | <table border="1"> <thead> <tr> <th>#</th> <th>Label</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time (Total)/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>E140H spect rum</td> <td>(2) COMET-LOVEJOY-OFFSET</td> <td>STIS/FUV-MAMA, ACCUM, 6X0.2</td> <td>E140H 1234 A</td> <td></td> <td></td> <td></td> <td>2370 Secs (2370 Secs) [==>]</td> <td>[1]</td> </tr> </tbody> </table> | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit | 1 | E140H spect rum | (2) COMET-LOVEJOY-OFFSET | STIS/FUV-MAMA, ACCUM, 6X0.2 | E140H 1234 A | | | | 2370 Secs (2370 Secs) [==>] | [1] |
|------------------|---|--------------------------|-----------------------------|----------------------|----------------------|---------------|---------------|--------------------------------|---------------------------------|---------------------------------|-------|---|-----------------|--------------------------|-----------------------------|-----------------|--|--|--|--------------------------------|-----|
| | # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit | | | | | | | | | | | |
| 1 | E140H spect rum | (2) COMET-LOVEJOY-OFFSET | STIS/FUV-MAMA, ACCUM, 6X0.2 | E140H 1234 A | | | | 2370 Secs (2370 Secs) [==>] | [1] | | | | | | | | | | | | |

