



## 11129 - The Star Formation History of the Fornax Dwarf Spheroidal Galaxy

Cycle: 16, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

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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) FORNAX-FIELD-1           | WFPC2                               | 5                  | 17-Jan-2008 21:39:06.0        | yes                           |
| 02           | (2) FORNAX-FIELD-2           | WFPC2                               | 5                  | 17-Jan-2008 21:39:16.0        | yes                           |
| 03           | (4) FORNAX-FIELD-3           | WFPC2                               | 5                  | 17-Jan-2008 21:39:26.0        | yes                           |
| 04           | (7) FORNAX-FIELD-4           | WFPC2                               | 5                  | 17-Jan-2008 21:39:34.0        | 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           | (3) FORNAX-FIELD-5           | WFPC2                               | 5                  | 17-Jan-2008 21:39:41.0        | yes                           |
| 06           | (5) FORNAX-FIELD-6           | WFPC2                               | 5                  | 17-Jan-2008 21:39:48.0        | yes                           |
| 07           | (6) FORNAX-FIELD-7           | WFPC2                               | 5                  | 17-Jan-2008 21:39:55.0        | yes                           |

35 Total Orbits Used

### **ABSTRACT**

The Fornax dwarf spheroidal galaxy is one of the most luminous dwarf satellites of the Milky Way. It is unusual in many ways: it hosts 5 globular clusters, shows some relatively young stars, and has faint sub-structures which have been interpreted as signs of recent interactions. It is thus of great interest to learn the complete star formation history (SFH) of Fornax to establish a link between its evolutionary path and the predictions from numerical simulations, as a test of our understanding of dwarf galaxy evolution. Yet many questions remain open. Is the old stellar population made up of stars formed in a very early burst, perhaps before the epoch of reionisation, or the result of a more continuous star formation between 13 and 9 Gyr ago? How quickly did Fornax increase its metallicity during its initial assembly and during subsequent episodes of star formation? Are accretion episodes required to explain the age-metallicity history of Fornax? However, there has never been a comprehensive study of the global SFH of the Fornax field based on data of sufficient depth to unambiguously measure the age mixture of the stellar populations and their spatial variation. We propose to use the WFPC2 to obtain very deep images in several fields across the central region of Fornax in order to reach the oldest main-sequence turnoffs. The number of fields is determined by the need to measure the SFH over different regions with distinct kinematics and metallicity. The resolution achievable with HST is crucial to answer these questions because, to derive the age distribution of the oldest stars, we are interested in I magnitude differences of the order 0.2 mag in crowded fields at  $V=24.5$ . We will directly measure the time variation in star-formation rate over the entire galaxy history, from first stars coeval with the Milky Way halo to the youngest populations 200 Myr ago. The combination of detailed CMD analysis with WFPC2 with our existing metallicity and kinematic information will allow us to trace out the early phases of its evolution.

## **OBSERVING DESCRIPTION**

Our observational strategy is designed to study the star-formation history of the Fornax dSph by allowing high-precision stellar photometry below the subgiant branch and the oldest main-sequence turn-off (MSTO). We will use the F555W and F814W filters of WFPC2 because this filter pair yields the optimum combination of throughput and age/metallicity sensitivity at the level of the main-sequence turnoff of the oldest populations, which is expected at  $m_{814} \sim 24.3$  and  $m_{555} \sim 24.8$ . In order to make reliable comparisons with theoretical CMD simulations, we require to achieve good signal-to-noise photometry to about a half mag below the oldest MSTO. The online WFPC2 exposure time calculator shows that, for PSF photometry,  $t_{\text{exp}} = 4400$  s (in F555W) and  $t_{\text{exp}} = 6000$  s (in F814W) yield  $S/N > 25$  for G dwarfs at the magnitude level ( $V=25.3$ ,  $I=24.7$ ). We have assumed that the exposures are split in a number of sub-exposures 1100 s each and taken into account the effects of CTE losses using CTE Tool #1.

The adopted observing strategy follows quite closely Phase 1: 7 fields are observed with 5 orbits each. The first 2 orbits on each field use the F555W filter, 4 x 1100s exposures with WFPC2-BOX standard dither, no CR-SPLIT. We dropped CR-splitting in favor of 4-point dithering to achieve good CR/Hot pixel rejection and allow at the same time some resampling of the PSF. This strategy maximizes the total integration time. The 3rd and 4th orbit are used to observe with the F814W filter, adopting the same strategy as for F555W. The last orbit includes a 1600s F814W CR-SPLIT exposure positioned in the middle of the WFPC2-BOX, as well as two very short exposures (2 min each in F814W and F555W) needed to obtain unsaturated photometry of red giant stars up to  $V=18$ .

As stated in the Phase I proposal, the precise coordinates of the target fields have been revised in Phase II to achieve the best sampling of the stellar mix at various locations in Fornax as well as an optimal match with the existing spectroscopy. The pointings have been carefully tuned to avoid bright stars in the WFPC2 field irrespective of the ORIENT (which is UNCONSTRAINED). In particular, our pointings will sample the youngest stars (field 5), young He-burning stars (fields 3, 4), the "inner clump" recently studied by Olszewski et al. (2006) and its surrounding population (fields 1 and 2, respectively). The outermost fields (targets 6 and 7), needed to study the old, metal-poor stellar population, are observed in pairs to compensate for decreasing stellar density.

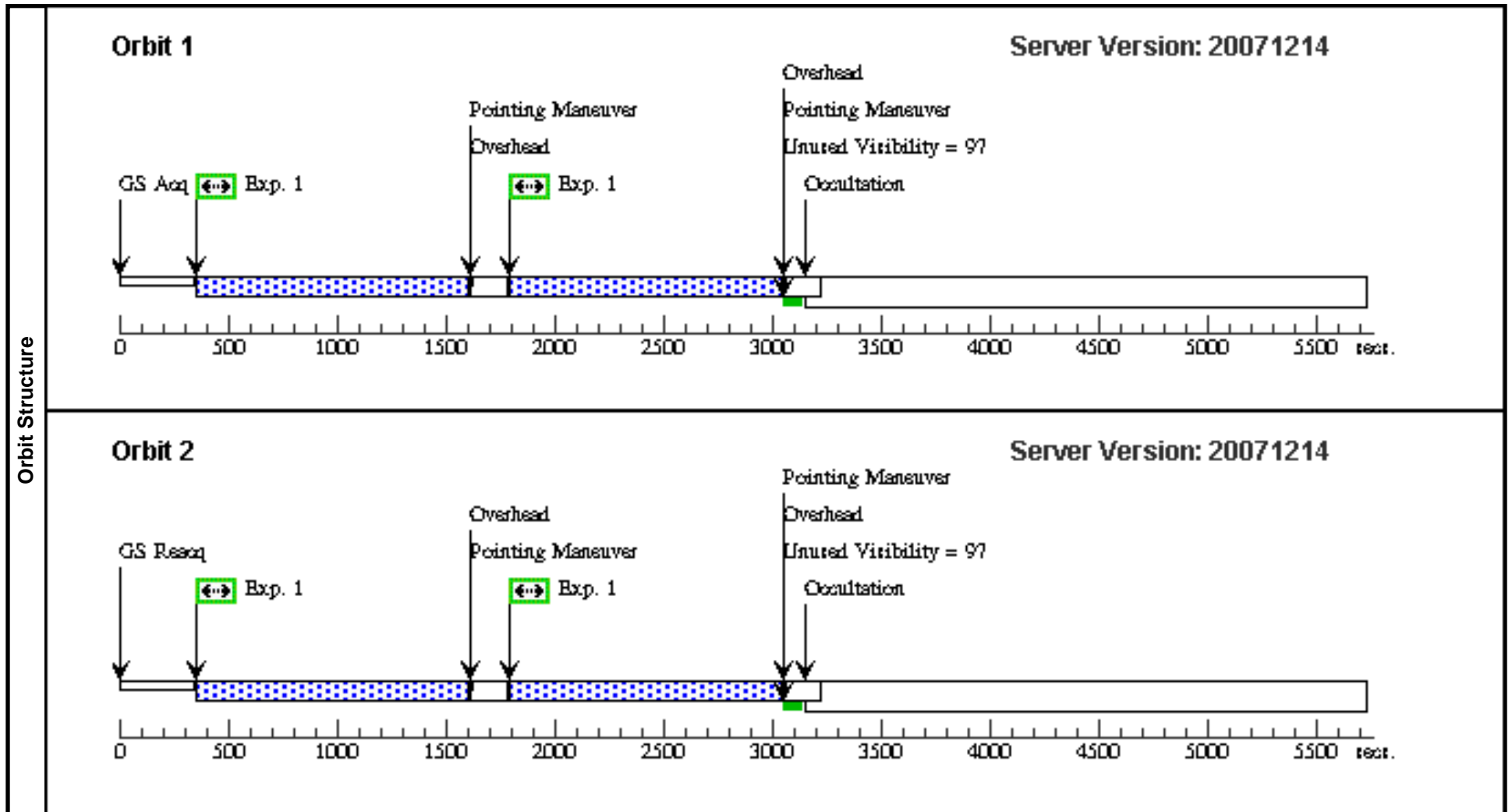
Note that Visits 03 and 04 have a large overlap (3/4 of WFPC2 FOV) and are linked by a SAME-ORIENT requirement. This has negligible impact on schedulability. Visit 04 achieves a 1/2 chip offset relative to Visit 03 by a POS-TARG offset in the x direction. This strategy allows us a direct check of the quality of CTE corrections (for which we mainly rely on the re-calibration plan foreseen at STScI), since the same stars are observed with the lower/upper halves of CCDs No. 2 and 4; at the same time, it provides very deep photometry and smaller errors for stars below the old main-

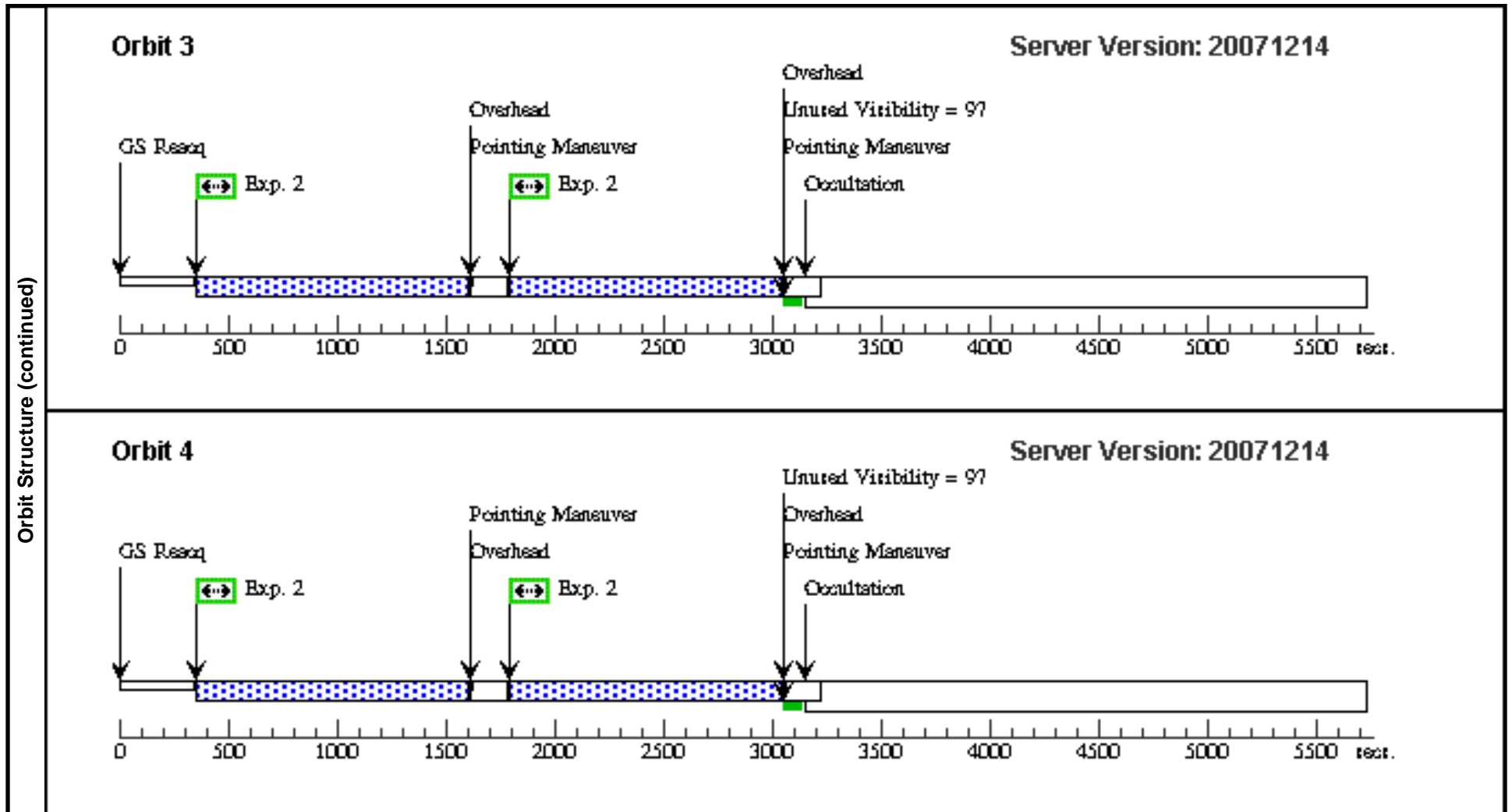
sequence turnoff for one (partial) template field, chosen at intermediate distance as the best compromise between crowding and statistics.

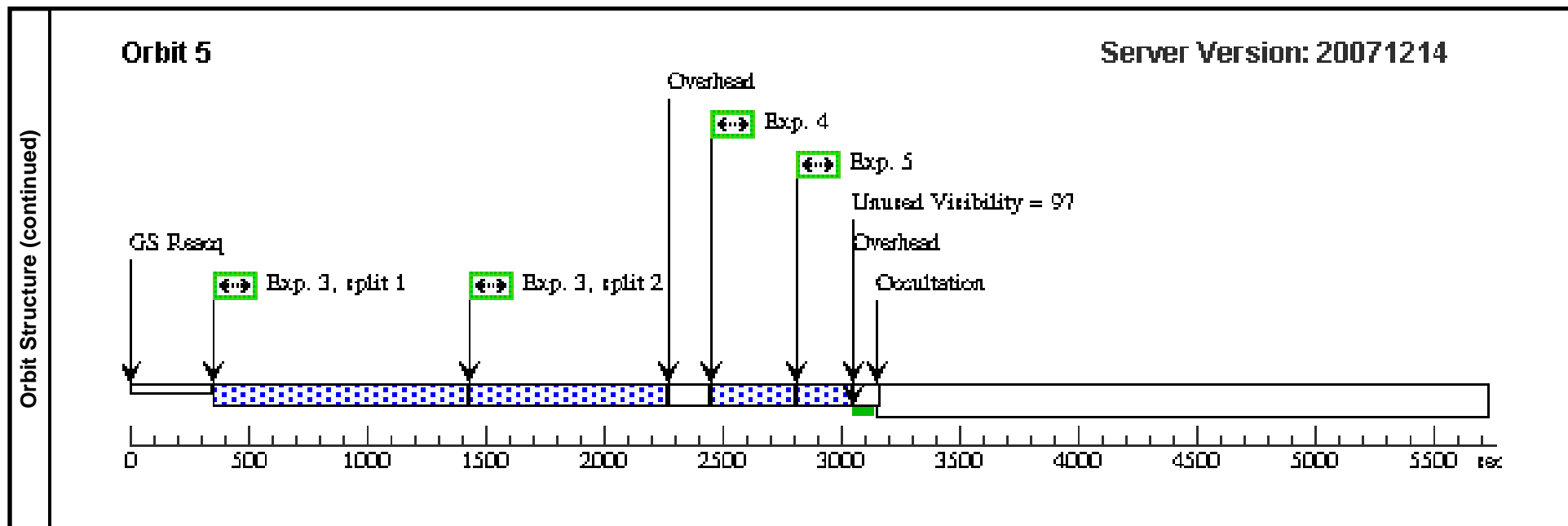
Proposal 11129 - Visit 01 - The Star Formation History of the Fornax Dwarf Spheroidal Galaxy

Fri Jan 18 02:39:59 GMT 2008

| Visit         | <b>Proposal 11129, Visit 01</b><br><b>Diagnostic Status: No Diagnostics</b><br>Scientific Instruments: WFPC2<br>Special Requirements: (none) |                    |   |   |                                 |                       |               |                 |                         |       |
|---------------|--|--------------------|---|---|---------------------------------|-----------------------|---------------|-----------------|-------------------------|-------|
|               | Patterns   | #                  | Primary Pattern   | Secondary Pattern   | Exposures                       |                       |               |                 |                         |       |
|               |  | (1)                | Pattern Type=WFPC2-BOX<br>Purpose=DITHER<br>Number Of Points=4<br>Point Spacing=0.559017<br>Line Spacing=0.559017 | Coordinate Frame=POS-TARG<br>Pattern Orientation=26.56505<br>Angle Between Sides=143.1301<br>Center Pattern=false |                                 | (1), (2)              |               |                 |                         |       |
| Fixed Targets | #  | Name               | Target Coordinates  | Targ. Coord. Corrections  | Fluxes                          | Miscellaneous         |               |                 |                         |       |
|               | (1)  | FORNAX-FIELD-1     | RA: 02 40 29.0185 (40.1209104d)<br>Dec: -34 42 19.03 (-34.70529d)<br>Equinox: J2000                               |   | V=25<br>stars fainter than V=18 | Reference Frame: ICRS |               |                 |                         |       |
| Exposures     | #  | Label              | Target  | Config,Mode,Aperture  | Spectral Els.                   | Opt. Params.          | Special Reqs. | Groups          | Exp. Time/[Actual Dur.] | Orbit |
|               | 1  |                    | (1) FORNAX-FIELD-1  | WFPC2, IMAGE, WFALL-FIX   | F555W                           | CR-SPLIT=NO           |               | Pattern 1-1 (1) | 1100.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               |                 | [=>(Pattern 1)]         | [1]   |
|               |  |                    |   |   |                                 |                       |               |                 | [=>(Pattern 2)]         | [2]   |
|               |  |                    |   |   |                                 |                       |               |                 | [=>(Pattern 3)]         |       |
|               |  |                    |   |   |                                 |                       |               |                 | [=>(Pattern 4)]         |       |
|               | 2  |                    | (1) FORNAX-FIELD-1  | WFPC2, IMAGE, WFALL-FIX   | F814W                           | CR-SPLIT=NO           |               | Pattern 2-2 (1) | 1100.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               |                 | [=>(Pattern 1)]         | [3]   |
|               |  |                    |   |   |                                 |                       |               |                 | [=>(Pattern 2)]         | [4]   |
|               |  |                    |   |   |                                 |                       |               |                 | [=>(Pattern 3)]         |       |
|               |  |                    |   |   |                                 |                       |               | [=>(Pattern 4)] |                         |       |
| 3             |  | (1) FORNAX-FIELD-1 | WFPC2, IMAGE, WFALL-FIX   | F814W   | CR-TOLERANCE=0.0                | POS TARG 0.375,0.375  |               |                 | 1600.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               | [=>(Split 1)]   | [5]                     |       |
|               |  |                    |   |   |                                 |                       |               | [=>(Split 2)]   |                         |       |
| 4             |  | (1) FORNAX-FIELD-1 | WFPC2, IMAGE, WFALL-FIX   | F814W   | CR-SPLIT=NO                     | SAME POS AS 3         |               |                 | 120.0 Secs              |       |
|               |  |                    |   |   |                                 |                       |               | [=>]            | [5]                     |       |
| 5             |  | (1) FORNAX-FIELD-1 | WFPC2, IMAGE, WFALL-FIX   | F555W   | CR-SPLIT=NO                     | SAME POS AS 4         |               |                 | 120.0 Secs              |       |
|               |  |                    |   |   |                                 |                       |               | [=>]            | [5]                     |       |



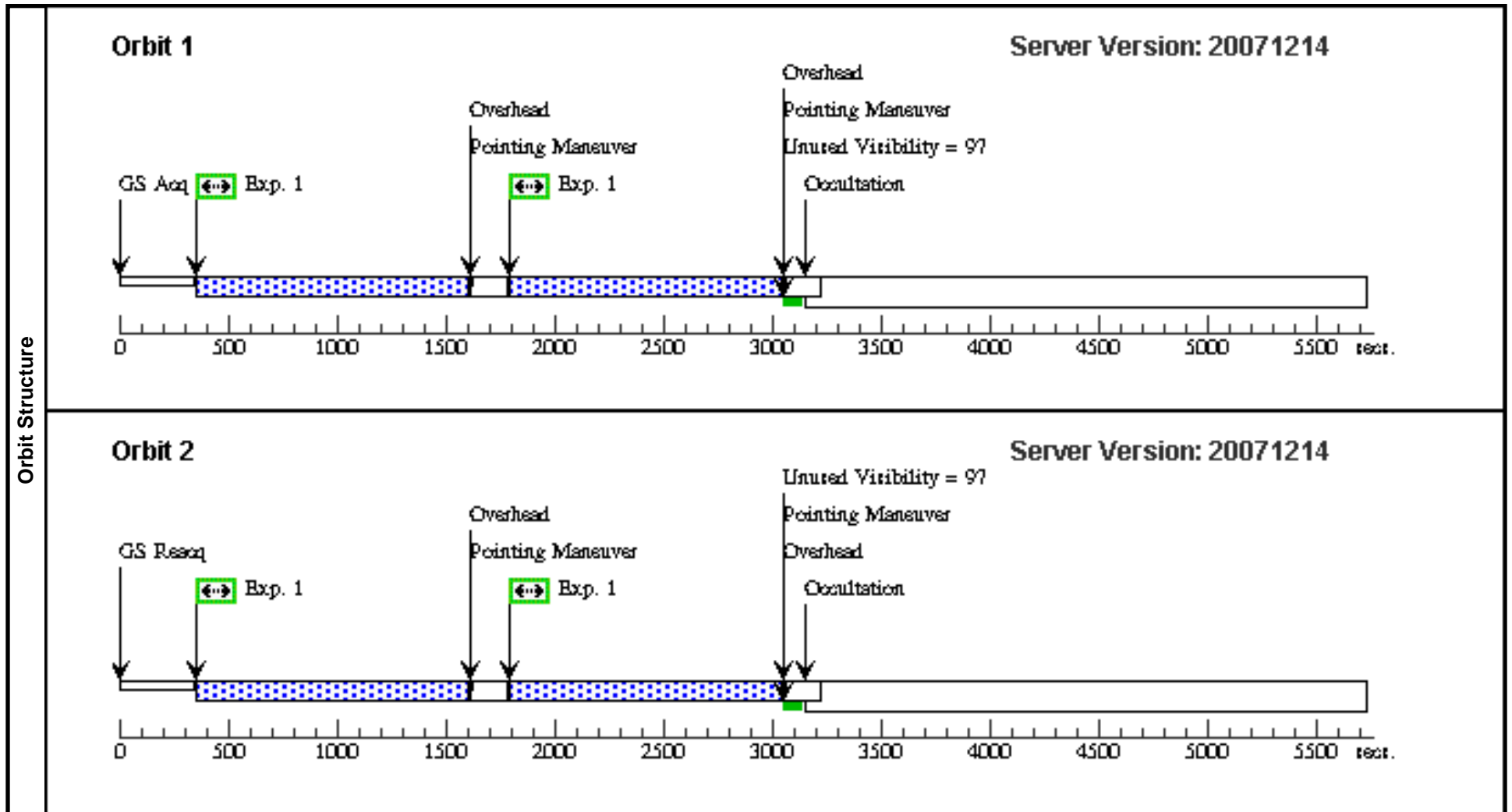


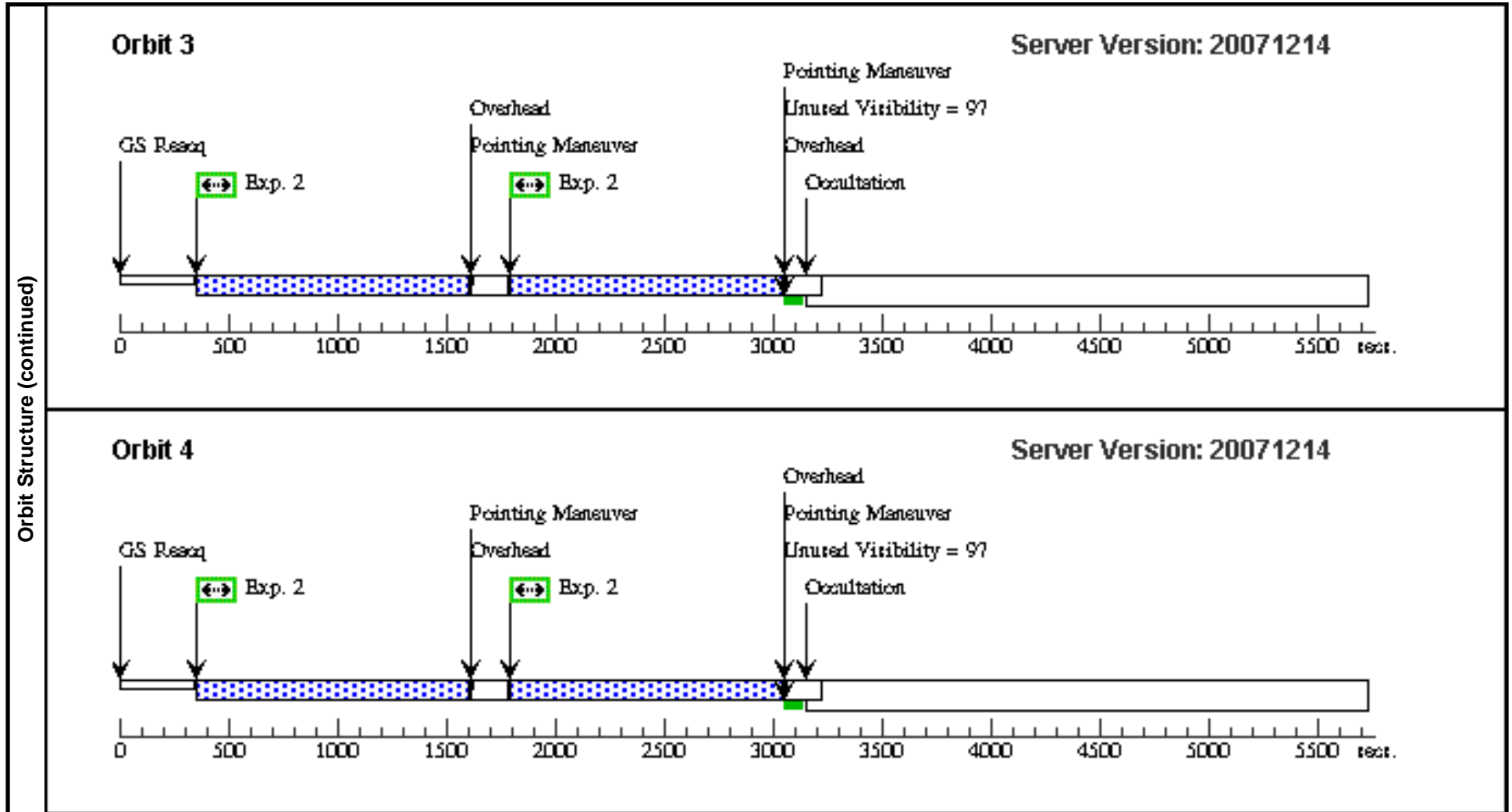


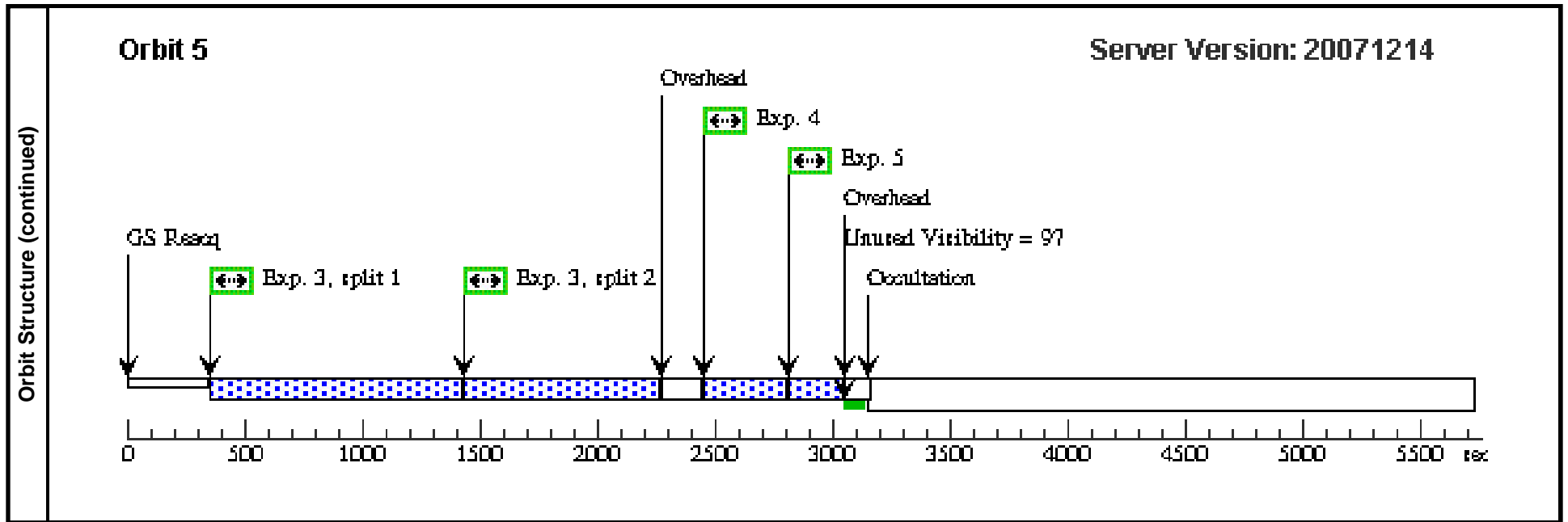
Proposal 11129 - Visit 02 - The Star Formation History of the Fornax Dwarf Spheroidal Galaxy

Fri Jan 18 02:40:01 GMT 2008

| Visit         | <b>Proposal 11129, Visit 02</b><br><b>Diagnostic Status: No Diagnostics</b><br>Scientific Instruments: WFPC2<br>Special Requirements: (none) |                    |   |   |                                 |                       |               |                  |                         |       |
|---------------|--|--------------------|---|---|---------------------------------|-----------------------|---------------|------------------|-------------------------|-------|
|               | Patterns   | #                  | Primary Pattern   | Secondary Pattern   | Exposures                       |                       |               |                  |                         |       |
|               |  | (1)                | Pattern Type=WFPC2-BOX<br>Purpose=DITHER<br>Number Of Points=4<br>Point Spacing=0.559017<br>Line Spacing=0.559017 | Coordinate Frame=POS-TARG<br>Pattern Orientation=26.56505<br>Angle Between Sides=143.1301<br>Center Pattern=false |                                 | (1), (2)              |               |                  |                         |       |
| Fixed Targets | #  | Name               | Target Coordinates  | Targ. Coord. Corrections  | Fluxes                          | Miscellaneous         |               |                  |                         |       |
|               | (2)  | FORNAX-FIELD-2     | RA: 02 40 6.6336 (40.0276400d)<br>Dec: -34 44 43.49 (-34.74541d)<br>Equinox: J2000                                |   | V=25<br>stars fainter than V=18 | Reference Frame: ICRS |               |                  |                         |       |
| Exposures     | #  | Label              | Target  | Config,Mode,Aperture  | Spectral Els.                   | Opt. Params.          | Special Reqs. | Groups           | Exp. Time/[Actual Dur.] | Orbit |
|               | 1  |                    | (2) FORNAX-FIELD-2  | WFPC2, IMAGE, WFALL-FIX   | F555W                           | CR-SPLIT=NO           |               | Pattern 1-1 (1)  | 1100.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 1)]        | [1]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 2)]        | [2]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 4)]        |       |
|               | 2  |                    | (2) FORNAX-FIELD-2  | WFPC2, IMAGE, WFALL-FIX   | F814W                           | CR-SPLIT=NO           |               | Pattern 2-2 (1)  | 1100.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 1)]        | [3]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 2)]        | [4]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |                    |   |   |                                 |                       |               | [==>(Pattern 4)] |                         |       |
| 3             |  | (2) FORNAX-FIELD-2 | WFPC2, IMAGE, WFALL-FIX   | F814W   | CR-TOLERANCE=0.0                | POS TARG 0.375,0.375  |               |                  | 1600.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               | [==>(Split 1)]   | [5]                     |       |
|               |  |                    |   |   |                                 |                       |               | [==>(Split 2)]   |                         |       |
| 4             |  | (2) FORNAX-FIELD-2 | WFPC2, IMAGE, WFALL-FIX   | F814W   | CR-SPLIT=NO                     | SAME POS AS 3         |               |                  | 120.0 Secs              |       |
|               |  |                    |   |   |                                 |                       |               | [==>]            | [5]                     |       |
| 5             |  | (2) FORNAX-FIELD-2 | WFPC2, IMAGE, WFALL-FIX   | F555W   | CR-SPLIT=NO                     | SAME POS AS 4         |               |                  | 120.0 Secs              |       |
|               |  |                    |   |   |                                 |                       |               | [==>]            | [5]                     |       |



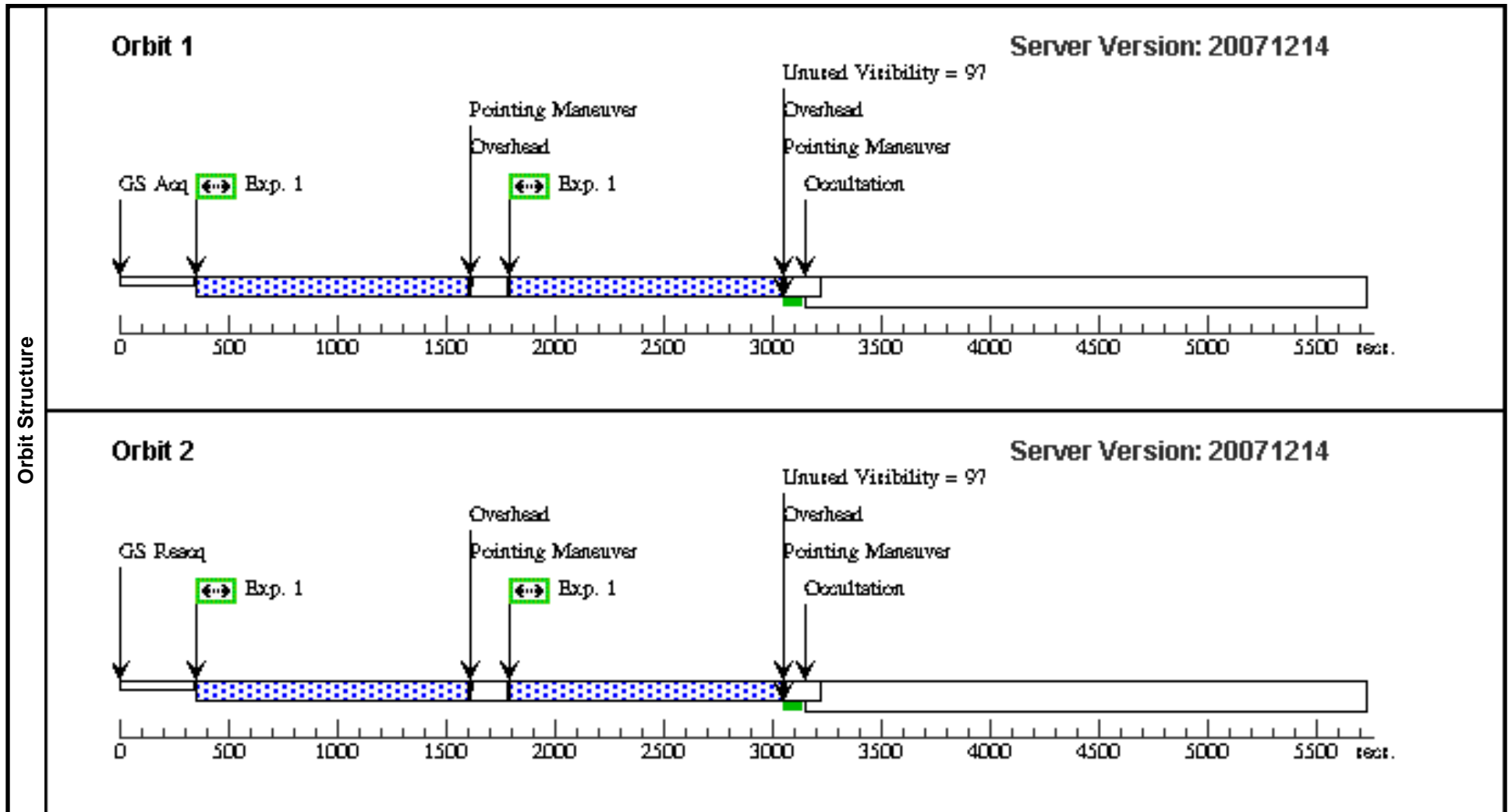


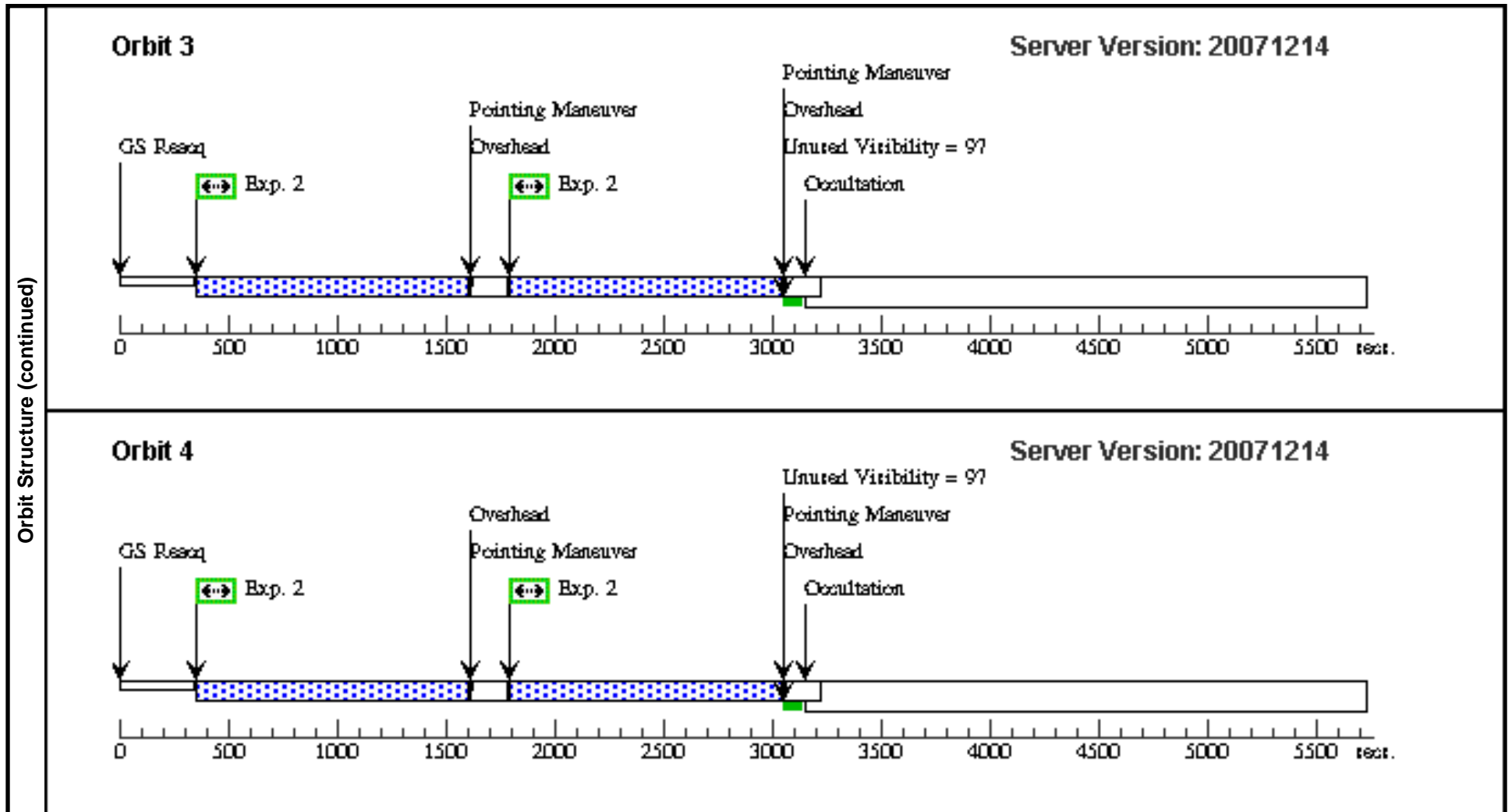


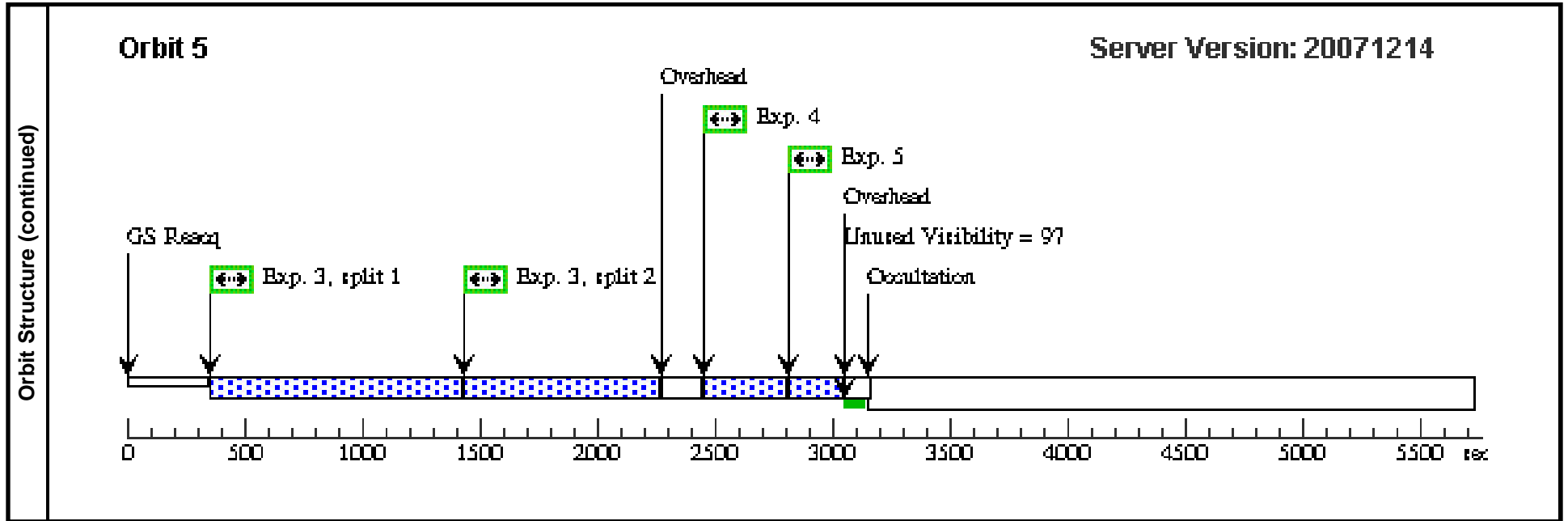
Proposal 11129 - Visit 03 - The Star Formation History of the Fornax Dwarf Spheroidal Galaxy

Fri Jan 18 02:40:02 GMT 2008

| Visit         | <b>Proposal 11129, Visit 03</b><br><b>Diagnostic Status: No Diagnostics</b><br>Scientific Instruments: WFPC2<br>Special Requirements: (none) |                    |   |   |                                 |                       |               |                  |                         |       |
|---------------|--|--------------------|---|---|---------------------------------|-----------------------|---------------|------------------|-------------------------|-------|
|               | Patterns   | #                  | Primary Pattern   | Secondary Pattern   | Exposures                       |                       |               |                  |                         |       |
|               |  | (1)                | Pattern Type=WFPC2-BOX<br>Purpose=DITHER<br>Number Of Points=4<br>Point Spacing=0.559017<br>Line Spacing=0.559017 | Coordinate Frame=POS-TARG<br>Pattern Orientation=26.56505<br>Angle Between Sides=143.1301<br>Center Pattern=false |                                 | (1), (2)              |               |                  |                         |       |
| Fixed Targets | #  | Name               | Target Coordinates  | Targ. Coord. Corrections  | Fluxes                          | Miscellaneous         |               |                  |                         |       |
|               | (4)  | FORNAX-FIELD-3     | RA: 02 39 7.8296 (39.7826233d)<br>Dec: -34 41 19.92 (-34.68887d)<br>Equinox: J2000                                |   | V=25<br>stars fainter than V=18 | Reference Frame: ICRS |               |                  |                         |       |
| Exposures     | #  | Label              | Target  | Config,Mode,Aperture  | Spectral Els.                   | Opt. Params.          | Special Reqs. | Groups           | Exp. Time/[Actual Dur.] | Orbit |
|               | 1  |                    | (4) FORNAX-FIELD-3  | WFPC2, IMAGE, WFALL-FIX   | F555W                           | CR-SPLIT=NO           |               | Pattern 1-1 (1)  | 1100.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 1)]        | [1]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 2)]        | [2]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 4)]        |       |
|               | 2  |                    | (4) FORNAX-FIELD-3  | WFPC2, IMAGE, WFALL-FIX   | F814W                           | CR-SPLIT=NO           |               | Pattern 2-2 (1)  | 1100.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 1)]        | [3]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 2)]        | [4]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |                    |   |   |                                 |                       |               | [==>(Pattern 4)] |                         |       |
| 3             |  | (4) FORNAX-FIELD-3 | WFPC2, IMAGE, WFALL-FIX   | F814W   | CR-TOLERANCE=0.0                | POS TARG 0.375,0.375  |               |                  | 1600.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               | [==>(Split 1)]   | [5]                     |       |
|               |  |                    |   |   |                                 |                       |               | [==>(Split 2)]   |                         |       |
| 4             |  | (4) FORNAX-FIELD-3 | WFPC2, IMAGE, WFALL-FIX   | F814W   | CR-SPLIT=NO                     | SAME POS AS 3         |               |                  | 120.0 Secs              |       |
|               |  |                    |   |   |                                 |                       |               | [==>]            | [5]                     |       |
| 5             |  | (4) FORNAX-FIELD-3 | WFPC2, IMAGE, WFALL-FIX   | F555W   | CR-SPLIT=NO                     | SAME POS AS 4         |               |                  | 120.0 Secs              |       |
|               |  |                    |   |   |                                 |                       |               | [==>]            | [5]                     |       |



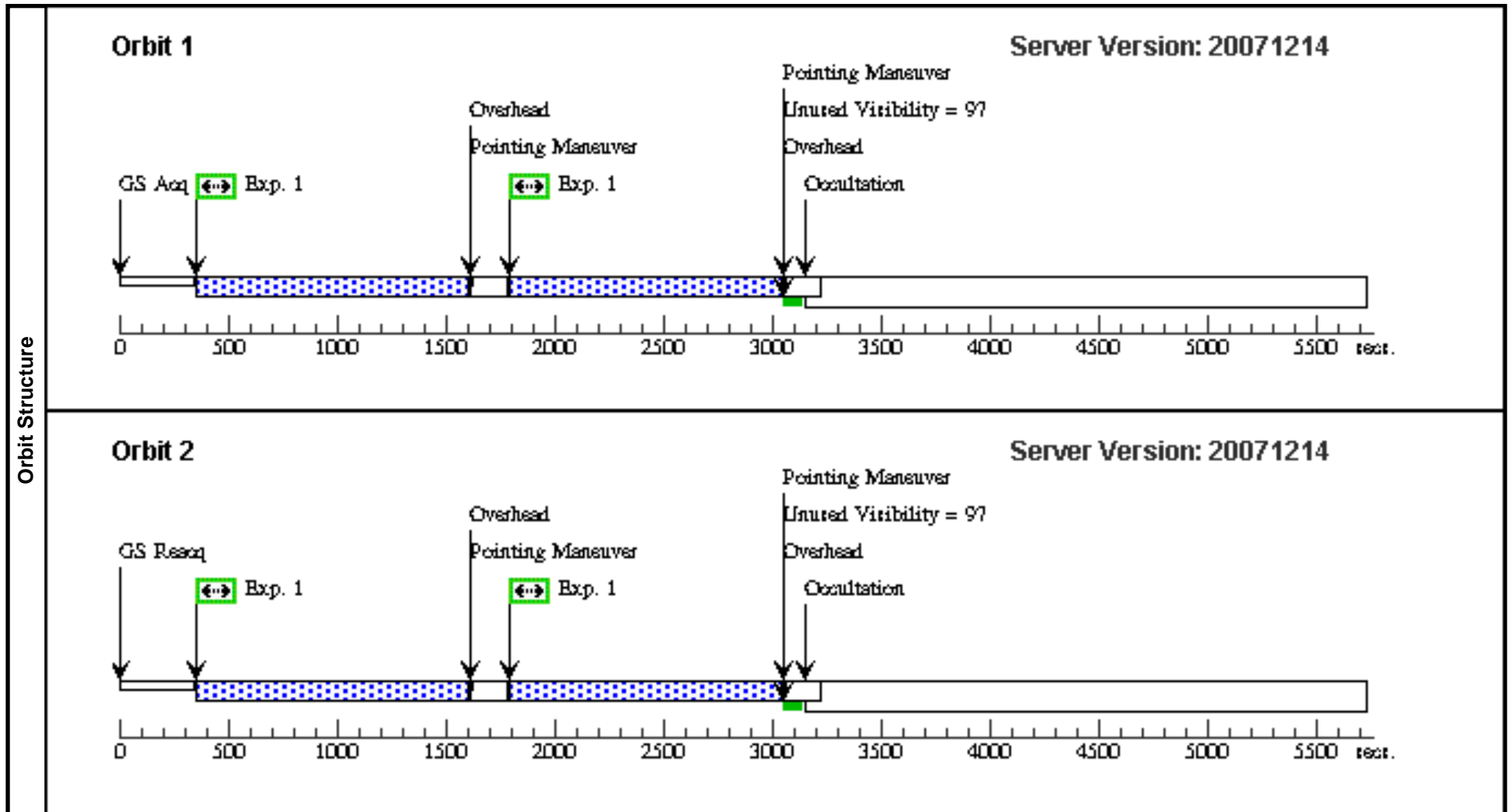


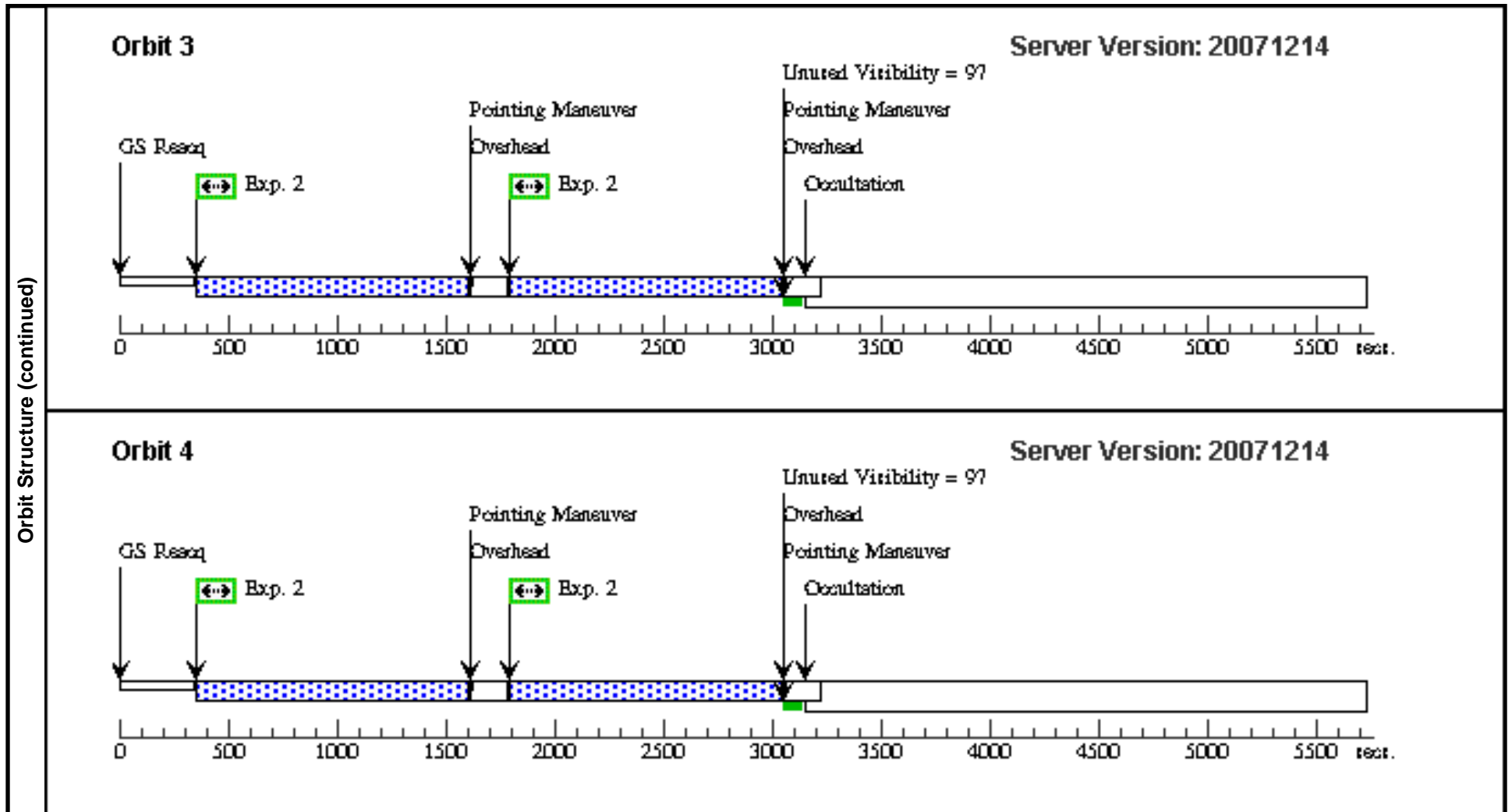


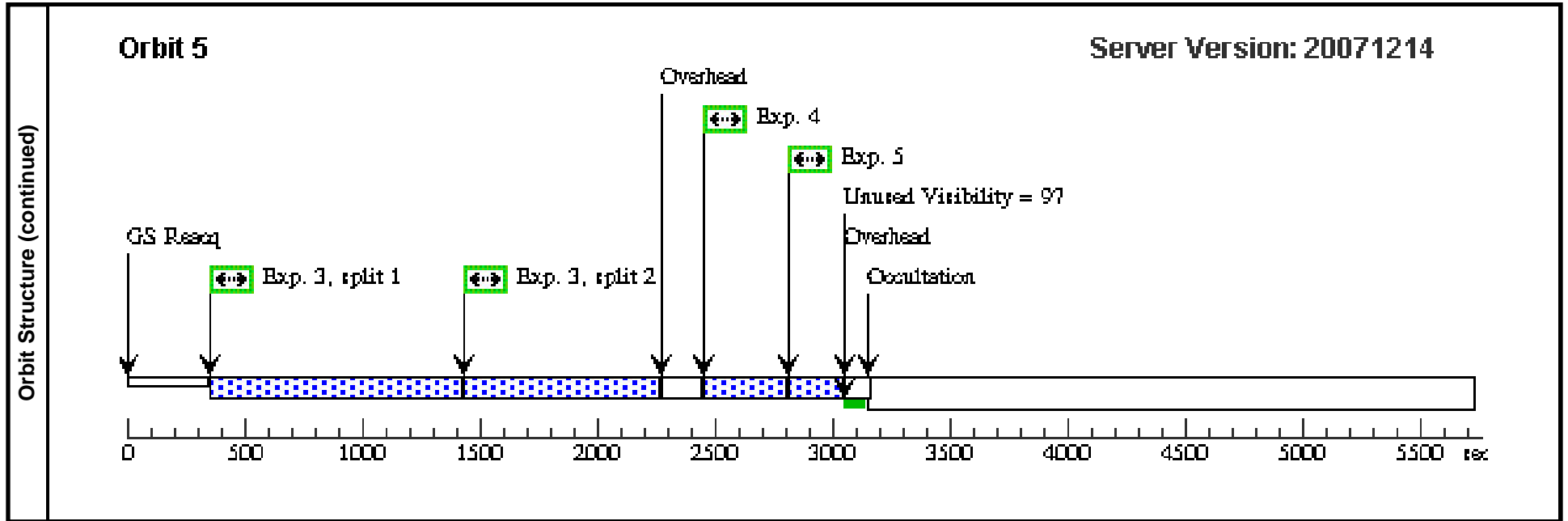
Proposal 11129 - Visit 04 - The Star Formation History of the Fornax Dwarf Spheroidal Galaxy

Fri Jan 18 02:40:03 GMT 2008

| Visit         |     | <b>Proposal 11129, Visit 04</b><br><b>Diagnostic Status: No Diagnostics</b><br>Scientific Instruments: WFPC2<br>Special Requirements: SAME ORIENT AS 03 |   |                          |                                 |                       |                   |                 |                         |       |
|---------------|-----|---|---|--------------------------|---------------------------------|-----------------------|-------------------|-----------------|-------------------------|-------|
| Patterns      | #   | Primary Pattern   |   | Secondary Pattern        |                                 |                       | Exposures         |                 |                         |       |
|               | (1) | Pattern Type=WFPC2-BOX<br>Purpose=DITHER<br>Number Of Points=4<br>Point Spacing=0.559017<br>Line Spacing=0.559017                                       | Coordinate Frame=POS-TARG<br>Pattern Orientation=26.56505<br>Angle Between Sides=143.1301<br>Center Pattern=false |                          |                                 |                       |                   | (1), (2)        |                         |       |
| Fixed Targets | #   | Name  | Target Coordinates  | Targ. Coord. Corrections | Fluxes                          | Miscellaneous         |                   |                 |                         |       |
|               | (7) | FORNAX-FIELD-4  | RA: 02 39 7.8296 (39.7826233d)<br>Dec: -34 41 19.92 (-34.68887d)<br>Equinox: J2000                                |                          | V=25<br>stars fainter than V=18 | Reference Frame: ICRS |                   |                 |                         |       |
| Exposures     | #   | Label   | Target  | Config,Mode,Aperture     | Spectral Els.                   | Opt. Params.          | Special Reqs.     | Groups          | Exp. Time/[Actual Dur.] | Orbit |
|               | 1   |   | (7) FORNAX-FIELD-4  | WFPC2, IMAGE, WFALL-FIX  | F555W                           | CR-SPLIT=NO           | POS TARG 40.0,0.0 | Pattern 1-1 (1) | 1100.0 Secs             |       |
|               |     |   |   |                          |                                 |                       |                   |                 | [=>(Pattern 1)]         | [1]   |
|               |     |   |   |                          |                                 |                       |                   |                 | [=>(Pattern 2)]         | [2]   |
|               |     |   |   |                          |                                 |                       |                   |                 | [=>(Pattern 3)]         |       |
|               |     |   |   |                          |                                 |                       |                   |                 | [=>(Pattern 4)]         |       |
|               | 2   |   | (7) FORNAX-FIELD-4  | WFPC2, IMAGE, WFALL-FIX  | F814W                           | CR-SPLIT=NO           | POS TARG 40.0,0.0 | Pattern 2-2 (1) | 1100.0 Secs             |       |
|               |     |   |   |                          |                                 |                       |                   |                 | [=>(Pattern 1)]         | [3]   |
|               |     |   |   |                          |                                 |                       |                   |                 | [=>(Pattern 2)]         | [4]   |
|               |     |   |   |                          |                                 |                       |                   |                 | [=>(Pattern 3)]         |       |
|               |     |   |   |                          |                                 |                       |                   | [=>(Pattern 4)] |                         |       |
| 3             |     | (7) FORNAX-FIELD-4  | WFPC2, IMAGE, WFALL-FIX   | F814W                    | CR-TOLERANCE=0.0                | POS TARG 40.375,0.375 |                   | 1600.0 Secs     |                         |       |
|               |     |   |   |                          |                                 |                       |                   | [=>(Split 1)]   | [5]                     |       |
|               |     |   |   |                          |                                 |                       |                   | [=>(Split 2)]   |                         |       |
| 4             |     | (7) FORNAX-FIELD-4  | WFPC2, IMAGE, WFALL-FIX   | F814W                    | CR-SPLIT=NO                     | SAME POS AS 3         |                   | 120.0 Secs      |                         |       |
|               |     |   |   |                          |                                 |                       |                   | [=>]            | [5]                     |       |
| 5             |     | (7) FORNAX-FIELD-4  | WFPC2, IMAGE, WFALL-FIX   | F555W                    | CR-SPLIT=NO                     | SAME POS AS 4         |                   | 120.0 Secs      |                         |       |
|               |     |   |   |                          |                                 |                       |                   | [=>]            | [5]                     |       |



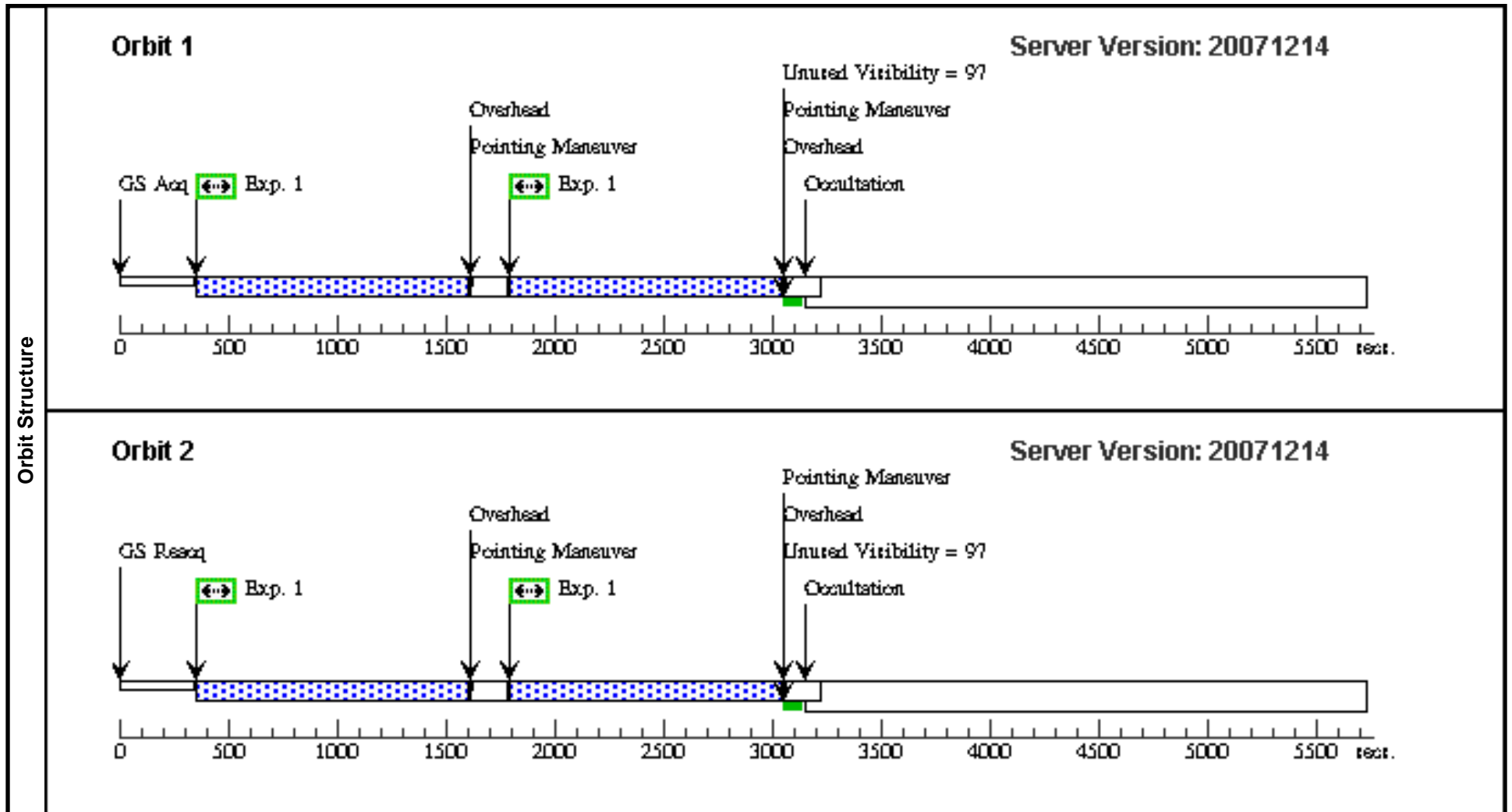


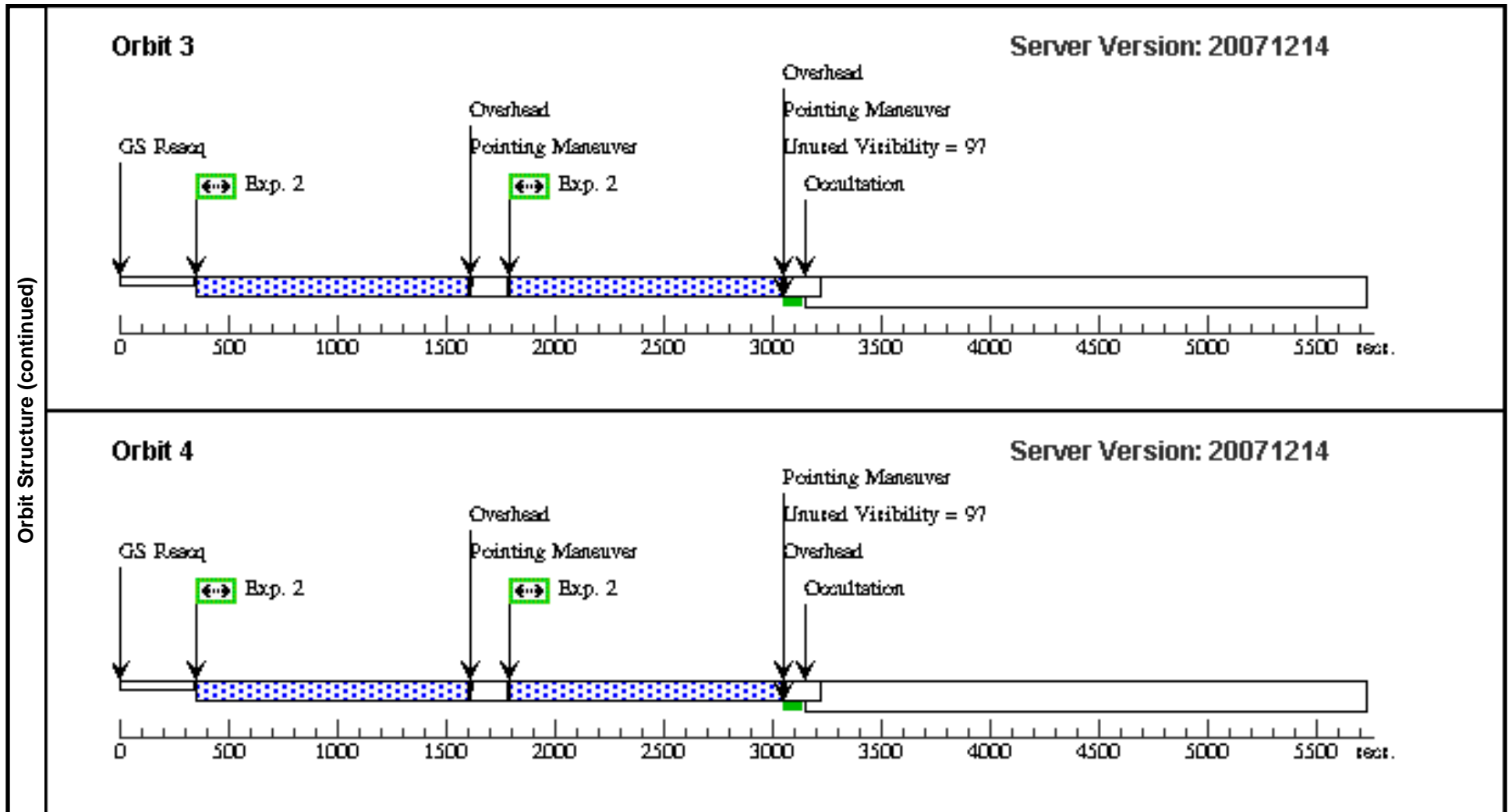


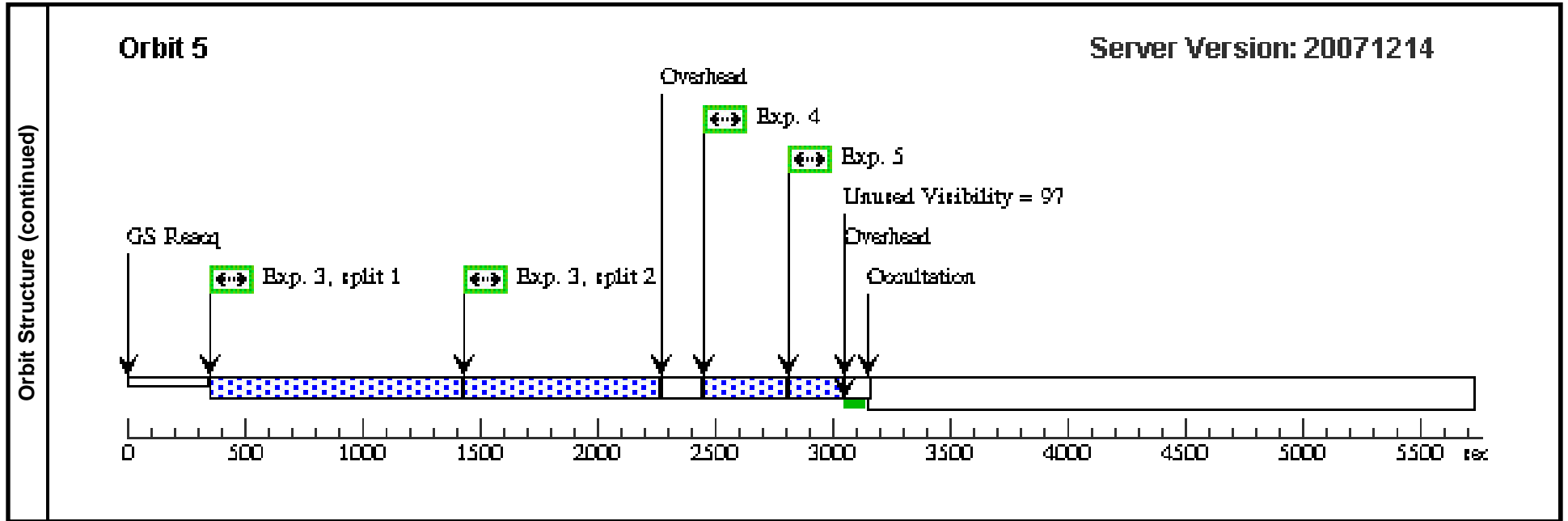
Proposal 11129 - Visit 05 - The Star Formation History of the Fornax Dwarf Spheroidal Galaxy

Fri Jan 18 02:40:04 GMT 2008

| Visit         | <b>Proposal 11129, Visit 05</b><br><b>Diagnostic Status: No Diagnostics</b><br>Scientific Instruments: WFPC2<br>Special Requirements: (none) |   |   |                          |                                 |                       |               |                  |                         |       |
|---------------|--|---|---|--------------------------|---------------------------------|-----------------------|---------------|------------------|-------------------------|-------|
|               | Patterns   | #   | Primary Pattern   | Secondary Pattern        | Exposures                       |                       |               |                  |                         |       |
|               | (1)  | Pattern Type=WFPC2-BOX<br>Purpose=DITHER<br>Number Of Points=4<br>Point Spacing=0.559017<br>Line Spacing=0.559017 | Coordinate Frame=POS-TARG<br>Pattern Orientation=26.56505<br>Angle Between Sides=143.1301<br>Center Pattern=false |                          | (1), (2)                        |                       |               |                  |                         |       |
| Fixed Targets | #  | Name  | Target Coordinates  | Targ. Coord. Corrections | Fluxes                          | Miscellaneous         |               |                  |                         |       |
|               | (3)  | FORNAX-FIELD-5  | RA: 02 39 53.1193 (39.9713304d)<br>Dec: -34 30 58.37 (-34.51621d)<br>Equinox: J2000                               |                          | V=25<br>stars fainter than V=18 | Reference Frame: ICRS |               |                  |                         |       |
| Exposures     | #  | Label   | Target  | Config,Mode,Aperture     | Spectral Els.                   | Opt. Params.          | Special Reqs. | Groups           | Exp. Time/[Actual Dur.] | Orbit |
|               | 1  |   | (3) FORNAX-FIELD-5  | WFPC2, IMAGE, WFALL-FIX  | F555W                           | CR-SPLIT=NO           |               | Pattern 1-1 (1)  | 1100.0 Secs             |       |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 1)]        | [1]   |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 2)]        | [2]   |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 4)]        |       |
|               | 2  |   | (3) FORNAX-FIELD-5  | WFPC2, IMAGE, WFALL-FIX  | F814W                           | CR-SPLIT=NO           |               | Pattern 2-2 (1)  | 1100.0 Secs             |       |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 1)]        | [3]   |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 2)]        | [4]   |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |   |   |                          |                                 |                       |               | [==>(Pattern 4)] |                         |       |
| 3             |  | (3) FORNAX-FIELD-5  | WFPC2, IMAGE, WFALL-FIX   | F814W                    | CR-TOLERANCE=0.0                | POS TARG 0.375,0.375  |               |                  | 1600.0 Secs             |       |
|               |  |   |   |                          |                                 |                       |               | [==>(Split 1)]   | [5]                     |       |
|               |  |   |   |                          |                                 |                       |               | [==>(Split 2)]   |                         |       |
| 4             |  | (3) FORNAX-FIELD-5  | WFPC2, IMAGE, WFALL-FIX   | F814W                    | CR-SPLIT=NO                     | SAME POS AS 3         |               |                  | 120.0 Secs              |       |
|               |  |   |   |                          |                                 |                       |               | [==>]            | [5]                     |       |
| 5             |  | (3) FORNAX-FIELD-5  | WFPC2, IMAGE, WFALL-FIX   | F555W                    | CR-SPLIT=NO                     | SAME POS AS 4         |               |                  | 120.0 Secs              |       |
|               |  |   |   |                          |                                 |                       |               | [==>]            | [5]                     |       |



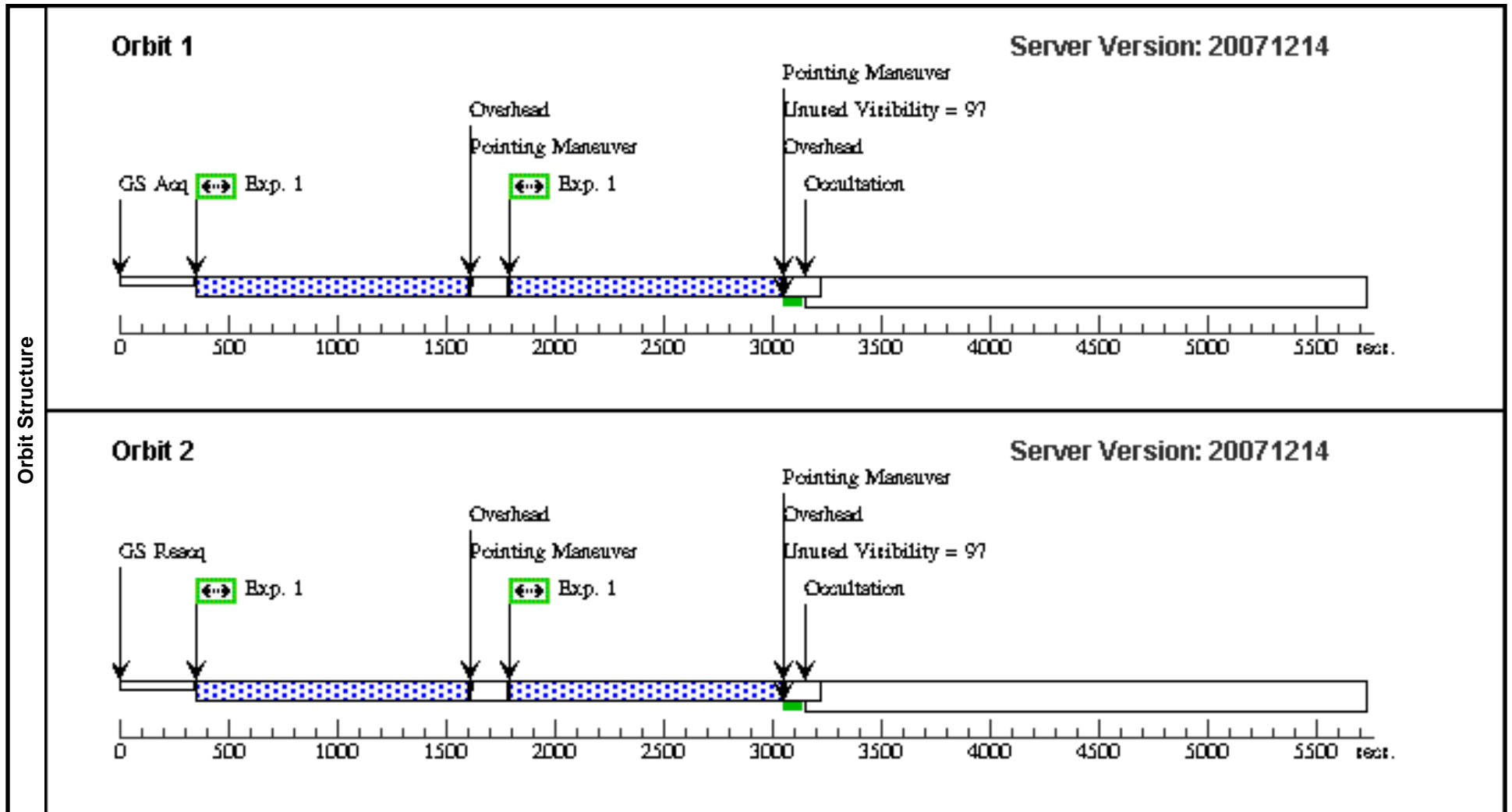


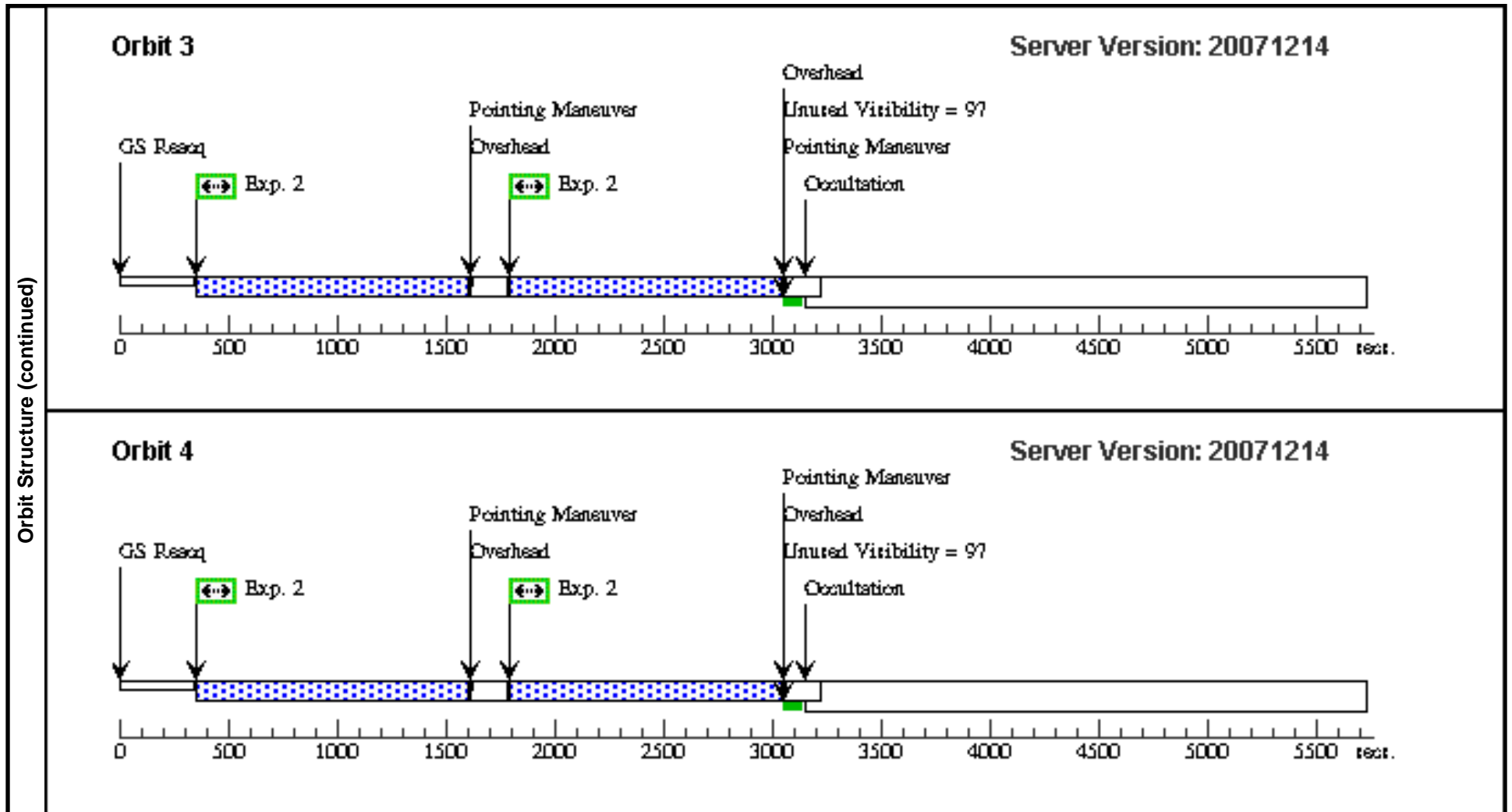


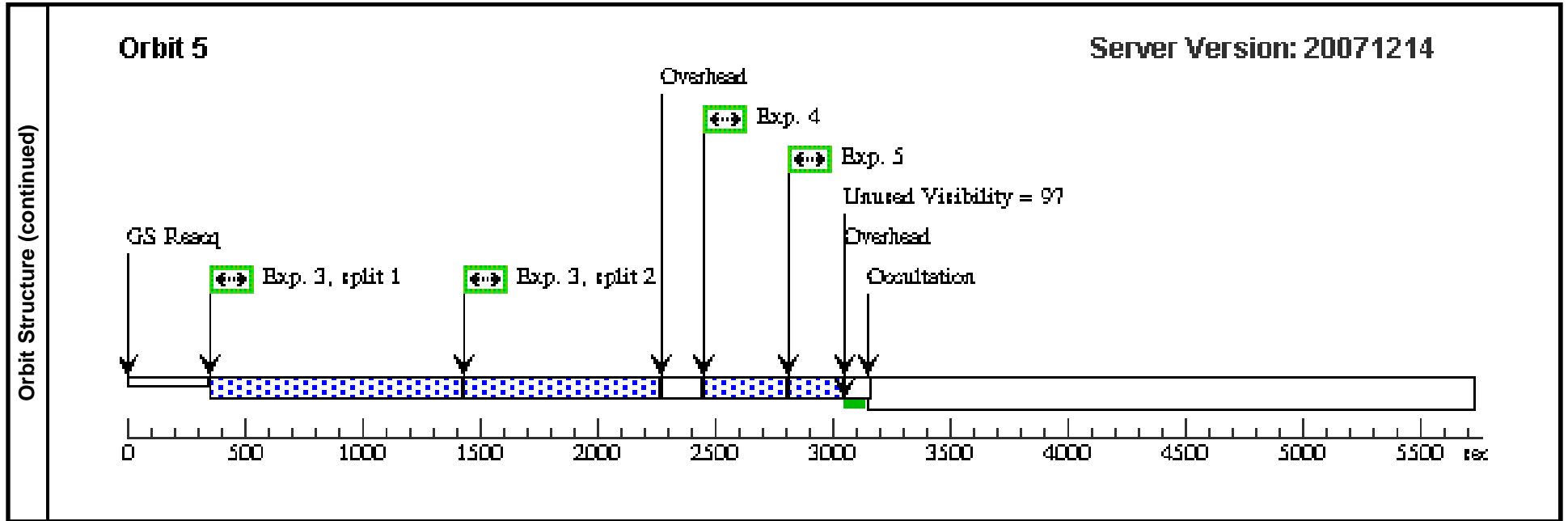
Proposal 11129 - Visit 06 - The Star Formation History of the Fornax Dwarf Spheroidal Galaxy

Fri Jan 18 02:40:05 GMT 2008

| Visit         | <b>Proposal 11129, Visit 06</b><br><b>Diagnostic Status: No Diagnostics</b><br>Scientific Instruments: WFPC2<br>Special Requirements: (none) |   |   |                          |                                 |                       |               |                  |                         |       |
|---------------|--|---|---|--------------------------|---------------------------------|-----------------------|---------------|------------------|-------------------------|-------|
|               | Patterns   | #   | Primary Pattern   | Secondary Pattern        | Exposures                       |                       |               |                  |                         |       |
|               | (1)  | Pattern Type=WFPC2-BOX<br>Purpose=DITHER<br>Number Of Points=4<br>Point Spacing=0.559017<br>Line Spacing=0.559017 | Coordinate Frame=POS-TARG<br>Pattern Orientation=26.56505<br>Angle Between Sides=143.1301<br>Center Pattern=false |                          | (1), (2)                        |                       |               |                  |                         |       |
| Fixed Targets | #  | Name  | Target Coordinates  | Targ. Coord. Corrections | Fluxes                          | Miscellaneous         |               |                  |                         |       |
|               | (5)  | FORNAX-FIELD-6  | RA: 02 40 23.7300 (40.0988750d)<br>Dec: -34 59 21.00 (-34.98917d)<br>Equinox: J2000                               |                          | V=25<br>stars fainter than V=18 | Reference Frame: ICRS |               |                  |                         |       |
| Exposures     | #  | Label   | Target  | Config,Mode,Aperture     | Spectral Els.                   | Opt. Params.          | Special Reqs. | Groups           | Exp. Time/[Actual Dur.] | Orbit |
|               | 1  |   | (5) FORNAX-FIELD-6  | WFPC2, IMAGE, WFALL-FIX  | F555W                           | CR-SPLIT=NO           |               | Pattern 1-1 (1)  | 1100.0 Secs             |       |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 1)]        | [1]   |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 2)]        | [2]   |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 4)]        |       |
|               | 2  |   | (5) FORNAX-FIELD-6  | WFPC2, IMAGE, WFALL-FIX  | F814W                           | CR-SPLIT=NO           |               | Pattern 2-2 (1)  | 1100.0 Secs             |       |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 1)]        | [3]   |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 2)]        | [4]   |
|               |  |   |   |                          |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |   |   |                          |                                 |                       |               | [==>(Pattern 4)] |                         |       |
| 3             |  | (5) FORNAX-FIELD-6  | WFPC2, IMAGE, WFALL-FIX   | F814W                    | CR-TOLERANCE=0.0                | POS TARG 0.375,0.375  |               |                  | 1600.0 Secs             |       |
|               |  |   |   |                          |                                 |                       |               | [==>(Split 1)]   | [5]                     |       |
|               |  |   |   |                          |                                 |                       |               | [==>(Split 2)]   |                         |       |
| 4             |  | (5) FORNAX-FIELD-6  | WFPC2, IMAGE, WFALL-FIX   | F814W                    | CR-SPLIT=NO                     | SAME POS AS 3         |               |                  | 120.0 Secs              |       |
|               |  |   |   |                          |                                 |                       |               | [==>]            | [5]                     |       |
| 5             |  | (5) FORNAX-FIELD-6  | WFPC2, IMAGE, WFALL-FIX   | F555W                    | CR-SPLIT=NO                     | SAME POS AS 4         |               |                  | 120.0 Secs              |       |
|               |  |   |   |                          |                                 |                       |               | [==>]            | [5]                     |       |







Proposal 11129 - Visit 07 - The Star Formation History of the Fornax Dwarf Spheroidal Galaxy

Fri Jan 18 02:40:06 GMT 2008

| Visit         | <b>Proposal 11129, Visit 07</b><br><b>Diagnostic Status: No Diagnostics</b><br>Scientific Instruments: WFPC2<br>Special Requirements: (none) |                    |   |   |                                 |                       |               |                  |                         |       |
|---------------|--|--------------------|---|---|---------------------------------|-----------------------|---------------|------------------|-------------------------|-------|
|               | Patterns   | #                  | Primary Pattern   | Secondary Pattern   | Exposures                       |                       |               |                  |                         |       |
|               |  | (1)                | Pattern Type=WFPC2-BOX<br>Purpose=DITHER<br>Number Of Points=4<br>Point Spacing=0.559017<br>Line Spacing=0.559017 | Coordinate Frame=POS-TARG<br>Pattern Orientation=26.56505<br>Angle Between Sides=143.1301<br>Center Pattern=false |                                 | (1), (2)              |               |                  |                         |       |
| Fixed Targets | #  | Name               | Target Coordinates  | Targ. Coord. Corrections  | Fluxes                          | Miscellaneous         |               |                  |                         |       |
|               | (6)  | FORNAX-FIELD-7     | RA: 02 40 41.2773 (40.1719888d)<br>Dec: -35 00 4.25 (-35.00118d)<br>Equinox: J2000                                |   | V=25<br>stars fainter than V=18 | Reference Frame: ICRS |               |                  |                         |       |
| Exposures     | #  | Label              | Target  | Config,Mode,Aperture  | Spectral Els.                   | Opt. Params.          | Special Reqs. | Groups           | Exp. Time/[Actual Dur.] | Orbit |
|               | 1  |                    | (6) FORNAX-FIELD-7  | WFPC2, IMAGE, WFALL-FIX   | F555W                           | CR-SPLIT=NO           |               | Pattern 1-1 (1)  | 1100.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 1)]        | [1]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 2)]        | [2]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 4)]        |       |
|               | 2  |                    | (6) FORNAX-FIELD-7  | WFPC2, IMAGE, WFALL-FIX   | F814W                           | CR-SPLIT=NO           |               | Pattern 2-2 (1)  | 1100.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 1)]        | [3]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 2)]        | [4]   |
|               |  |                    |   |   |                                 |                       |               |                  | [==>(Pattern 3)]        |       |
|               |  |                    |   |   |                                 |                       |               | [==>(Pattern 4)] |                         |       |
| 3             |  | (6) FORNAX-FIELD-7 | WFPC2, IMAGE, WFALL-FIX   | F814W   | CR-TOLERANCE=0.0                | POS TARG 0.375,0.375  |               |                  | 1600.0 Secs             |       |
|               |  |                    |   |   |                                 |                       |               | [==>(Split 1)]   | [5]                     |       |
|               |  |                    |   |   |                                 |                       |               | [==>(Split 2)]   |                         |       |
| 4             |  | (6) FORNAX-FIELD-7 | WFPC2, IMAGE, WFALL-FIX   | F814W   | CR-SPLIT=NO                     |                       | SAME POS AS 3 |                  | 120.0 Secs              |       |
|               |  |                    |   |   |                                 |                       |               | [==>]            | [5]                     |       |
| 5             |  | (6) FORNAX-FIELD-7 | WFPC2, IMAGE, WFALL-FIX   | F555W   | CR-SPLIT=NO                     |                       | SAME POS AS 4 |                  | 120.0 Secs              |       |
|               |  |                    |   |   |                                 |                       |               | [==>]            | [5]                     |       |

