#

# Appendix F4

**FGS Dithering Details**

**In this chapter…**

|  |
| --- |
| **F4.1** Introduction**/**1**F4.2** FGS External Calibration**/**1**F4.3** FGS External Calibration Primary Dithers**/**2**F4.4 /**4**F4.5** FGS Internal Flat**/**4**F4.6** FGS Internal Flat Primary Dithers**/**4**F4.7** FGS Internal Flat Secondary Dithers**/**5 |

**Tables and Figures**

Table F4.1 – FGS External Calibration Primary Dither Offsets

Table F4.2 – FGS External Calibration Secondary Dither Offsets

Table F4.3 – FGS Internal Flat Primary Dither Offsets

Table F4.4 – FGS Internal Flat Secondary Dither Offsets

General notes:

1. The text for this chapter came directly from commanding (Morse).

Changelog:

Version 5 (August 31, 2016)

1. Changed Internal Flat to add support for 1 arc-minute dithers for commissioning Program 1017 (FGS-010).

Version 4 (August 15, 2016)

1. Changed Internal Flat to 2-point dither pattern

Version 3 (March 11, 2016)

1. Renamed FGS Imaging to FGS External Calibration
2. Added predefined dither offsets for Internal Flat

Version 2 (September 13, 2012)

1. OPR 71184 – updated Primary Dithers Dx and Dy values in Table F4.1

## Introduction

This Appendix provides the details to support dithering for the FGS External Calibration template and the FGS Internal Flat template.

## FGS External Calibration

The following tables specify the offsets for dithering. The offsets in the tables are relative to the aperture center.

*OSS needs the dither pattern to be converted to a set of offsets, where each offset is relative to the previous one. The first position is relative to the visit’s initial pointing.*

The offsets in Table F4.1 are used, based on the number of **PRIMARY\_DITHERS**. If **PRIMARY\_DITHERS=N**, all of the offsets from 1 to N, inclusive, are used.

All of the listed offsets in the corresponding section of Table F4.2, for a given value of **SUBPIXEL\_POSITIONS**, are used. For example, if **SUBPIXEL\_POSITIONS=4**, dither points 1 through 4 will be used. All the selected secondary dither points are used for each primary dither point.

## FGS External Calibration Primary Dithers

Table F4. – FGS External Calibration Primary Dither Offsets

|  |  |  |
| --- | --- | --- |
| **PRIMARY\_DITHERS** | **x "** | **y "** |
| **1** | 0.00″ | +0.00″ |
| **2** | +32.76″ | +32.76″ |
| **3** | +32.76″ | -32.76″ |
| **4** | –32.76″ | –32.76″ |
| **5** | –32.76″ | +32.76″ |
| **6** | +0.00″ | +32.76″ |
| **7** | +32.76″ | +0.00″ |
| **8** | +0.00″ | –32.76″ |
| **9** | –32.76″ | +0.00″ |
| **10** | –16.38″ | +16.38″ |
| **11** | +16.38″ | +16.38″ |
| **12** | +16.38″ | –16.38″ |
| **13** | –16.38″ | –16.38″ |
| **14** | –16.38″ | +0.00″ |
| **15** | +0.00″ | +16.38″ |
| **16** | +16.38″ | +0.00″ |
| **17** | +0.00″ | –16.38″ |
| **18** | –16.38″ | –32.76″ |
| **19** | –32.76″ | –16.38″ |
| **20** | –32.76″ | +16.38″ |
| **21** | –16.38″ | +32.76″ |
| **22** | +16.38″ | +32.76″ |
| **23** | +32.76″ | +16.38″ |
| **24** | +32.76" | -16.38" |
| **25** | +16.38" | -32.76" |

## FGS External Calibration Secondary Dithers

Table F4. – FGS External Calibration Secondary Dither Offsets

|  |  |  |
| --- | --- | --- |
| N | x " | y " |
| SUBPIXEL\_POSITIONS=1 |
| 1 | 0 | 0 |
| SUBPIXEL\_POSITIONS=4 |
| 1 | 0 | 0 |
| 2 | 5.00" | 4.50" |
| 3 | 2.50" | 7.00" |
| 4 | 7.50" | 1.50" |

## FGS Internal Flat

The following tables specify the offsets for dithering. The offsets in the tables are relative to the aperture center.

*OSS needs the dither pattern to be converted to a set of offsets, where each offset is relative to the previous one. The first position is relative to the visit’s initial pointing.*

The offsets in Table F4.3 are used, based on the number of **PRIMARY\_DITHERS**. If **PRIMARY\_DITHERS=N**, all of the offsets from 1 to N, inclusive, are used.

All of the listed offsets in the corresponding section of Table F4.4 for a given value of **SUBPIXEL\_POSITIONS**, are used. For example, if **SUBPIXEL\_POSITIONS=2**, dither points 1 through 2 will be used. All the selected secondary dither points are used for each primary dither point.

## FGS Internal Flat Primary Dithers

The following table specifies the offsets for dithering. The offsets in the table are relative to the initial position.

*OSS needs the dither pattern to be converted to a set of offsets, where each offset is relative to the previous one. The first position is relative to the visit’s initial pointing.*

Table F4. – FGS Internal Flat Primary Dither Offsets

|  |  |  |
| --- | --- | --- |
| **N** | **x "** | **y "** |
| 1 | 0.00" | 0.00" |
| 2 | 1.00' | 1.00' |

## FGS Internal Flat Secondary Dithers

The following table specifies the offsets for dithering. The offsets in the table are relative to the initial position.

*OSS needs the dither pattern to be converted to a set of offsets, where each offset is relative to the previous one. The first position is relative to the visit’s initial pointing.*

Table F4. – FGS Internal Flat Secondary Dither Offsets

|  |  |  |
| --- | --- | --- |
| **N** | **x "** | **y "** |
| SUBPIXEL\_POSITIONS=1 |
| 1 | 0 | 0 |
| SUBPIXEL\_POSITIONS=2 |
| 1 | 0 | 0 |
| 2 | 10.00" | 10.00" |