Wide-field Infrared Survey Explorer (WISE)

WSDC MST7 Test Report

Version 1.0

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WSDC D-T011

Revision History

Date	Version	Author	Description
N/A			

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1.0 Introduction

This document summarizes planned and experienced WSDC participation in the WISE MST-7 that occurred beginning on Thursday, July 23, 2009 and ending on Saturday, July 25, 2009.

The objective of MST7 is to simulate a 72-hour period of Survey Operations during the summer solstice.

Stated success criteria are:

- Survey Operations sequences load and execute commands at the expected times with the expected results.
- The handover between two 3.5-day Survey Operations sequences executes such that control is smoothly transferred from one sequence to the next.
- Orbit state commands execute such that orbit propagation continues successfully through the update.
- During passes, sequences to read from the FMC load and execute with the expected results.
- IPAC ingests payload data from the HRP at WSC and engineering data from JPL.

2.0 WSDC Test Plan

WSDC will receive and perform ingest processing of science and housekeeping data sent by MOS and stage for processing. As a goal data will be processed through Scan/Frame pipeline and a Quicklook QA report will be generated on a close-to nominal operations schedule. While meeting the 24-hour turnaround for Quicklook QA reporting is not a requirement for this test, it will be a goal.

In preparation for the test science packet files constructed from the "30-orbit" simulated survey data set produced by N. Wright. The packets will be transmitted from the WSDC to New Mexico and loaded onto the White Sands High Rate Processor. During the MST, White Sands will "fastcopy" those science packets to IPAC at intervals corresponding to Ku-band passes starting at ~ test start + 24 hours. Since the science data files do not correspond exactly to the data that will be captured during the Ku-band passes MOS will ensure that the science files don't arrive at WSDC prior to the Spacecraft State of Health (SSOH) data files with the same times. Specific MST7 start time is set for 1200 PDT, July 21, 2009. It is expected that the first science data packets will not arrive at WSDC before July 22, 2009, PM PDT.

WTCCS will automatically transfer SSOH and related data products about 30 minutes after each Ku-band pass, based on the planned MST7 Test pass list.

After all science data files have been sent, no more file transfers from White Sands will be performed. However, MOS file transfers will continue throughout the full 72-hour period, July

21, 2009 through the afternoon of July 24, 2009. This schedule was later adjusted due to a late start, explained below.

3.0 Configuration

WSDS utilized int.v3_rc1 (7/17) software for processing of data received in MST7.

The WSDS hardware configuration consisted of 4 Sun ZFS file servers and the 32-node x64 Linux cluster.

4.0 Capabilities Not Tested

Capabilities which were not required for WSDS participation in MST7 but which will be available for subsequent tests, IOC, and Operations include: creation of coadds (Multiframe pipeline processing); not loading the archive; limited QA (Quicklook will be run but output won't be available to QA web tool). WSDC will also run the scan/frame pipeline just to observe its performance; its availability is not required for MST7.

5.0 Actual Events

D. Royer reported via e-mail that it was necessary to restart MST7, originally begun at noon PST on July 23, to run to EOD Friday. The restart would cause the test to now finish on Saturday PM. MOS would perform a final FMC dump after the end of the test to provide WSDC with the last set of HK data that matches with the last science delivery. He noted however that the last set of science packets have times that run beyond the end of the test, and will not provide HK data covering these images. MOS expected the last HK delivery to occur on Saturday morning (7/25) around 9am.

R. Beck's summary of the MOS deliveries with the expected times followed by the actual timestamps on wsdcin follows. The only anomaly seen in MOS data transfer was that the 2009204144145 delivery was broken up into two, with the .bc file in one file and the hk data in a subsequently received file, separated by 7 minutes. R. Beck reported that all data was ingested ok.

,WISE,TDE,2009203145652,2009203151730,SK,xxx,SA1,2009203150158,2009203151730
2009_203_15_31_40:
-rw-r--r-- 1 wsdcin wise 38912 Jul 22 08:31 WISE_CK_2009_07_22_15_26_32.bc
-rw-r--r-- 1 wsdcin wise 111 Jul 22 08:31 WIS_MOS_SUM_2009_203_15_31_40.txt
-rw-r--r-- 1 wsdcin wise 3947662 Jul 22 08:31 WIS_WTCCS_VALUE_2009_07_22_15_27_34.zip

,WISE,TDS,2009203163151,2009203165216,SK,xxx,SA1,2009203163538,2009203165216
2009_203_17_04_42:
-rw-r--r-- 1 wsdcin wise   28672 Jul 22 10:04 WISE_CK_2009_07_22_16_59_27.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 22 10:04 WIS_MOS_SUM_2009_203_17_04_42.txt
-rw-r--r-- 1 wsdcin wise 2769502 Jul 22 10:04 WIS_WTCCS_VALUE_2009_07_22_17_00_14.zip

,WISE,TDW,2009203225150,2009203231243,SK,xxx,SA1,2009203225730,2009203231243
2009_203_23_37_21:
-rw-r--r-- 1 wsdcin wise   97280 Jul 22 16:37 WISE_CK_2009_07_22_23_32_06.bc
-rw-r--r-- 1 wsdcin wise   112 Jul 22 16:37 WIS_MOS_SUM_2009_203_23_37_21.txt
-rw-r--r-- 1 wsdcin wise 11003315 Jul 22 16:37 WIS_WTCCS_VALUE_2009_07_22_23_35_09.zip

,WISE,TDW,2009204002649,2009204004722,SK,xxx,SA1,2009204003101,2009204004722
2009_204_00_59_38:
-rw-r--r-- 1 wsdcin wise   28672 Jul 22 17:59 WISE_CK_2009_07_23_00_54_25.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 22 17:59 WIS_MOS_SUM_2009_204_00_59_38.txt
-rw-r--r-- 1 wsdcin wise 2772112 Jul 22 17:59 WIS_WTCCS_VALUE_2009_07_23_00_55_12.zip

,WISE,TDW,2009204020149,2009204021938,SK,xxx,SA1,2009204020650,2009204021938
2009_204_02_31_38:
-rw-r--r-- 1 wsdcin wise   28672 Jul 22 19:31 WISE_CK_2009_07_23_02_26_33.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 22 19:31 WIS_MOS_SUM_2009_204_02_31_38.txt
-rw-r--r-- 1 wsdcin wise 2764992 Jul 22 19:31 WIS_WTCCS_VALUE_2009_07_23_02_27_19.zip

following delivery seemed to be split into 2 ...

,WISE,TDE,2009204144145,2009204150227,SK,xxx,SA1,2009204144701,2009204150227
2009_204_15_41_52:
-rw-r--r-- 1 wsdcin wise 236544 Jul 23 08:41 WISE_CK_2009_07_23_15_36_48.bc
-rw-r--r-- 1 wsdcin wise   63 Jul 23 08:41 WIS_MOS_SUM_2009_204_15_41_52.txt

2009_204_15_48_42:
-rw-r--r-- 1 wsdcin wise   74 Jul 23 08:48 WIS_MOS_SUM_2009_204_15_48_42.txt
-rw-r--r-- 1 wsdcin wise 22368614 Jul 23 08:48 WIS_WTCCS_VALUE_2009_07_23_15_43_09.zip

,WISE,TDE,2009204161644,2009204163614,SK,xxx,SA1,2009204162128,2009204163614
2009_204_16_50_55:
-rw-r--r-- 1 wsdcin wise   28672 Jul 23 09:50 WISE_CK_2009_07_23_16_49_54.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 23 09:50 WIS_MOS_SUM_2009_204_16_50_55.txt
-rw-r--r-- 1 wsdcin wise 2757109 Jul 23 09:51 WIS_WTCCS_VALUE_2009_07_23_16_50_41.zip

,WISE,171,2009204223642,2009204225742,SK,xxx,SA1,2009204224215,2009204225742
2009_204_23_30_10:
-rw-r--r-- 1 wsdcin wise   64512 Jul 23 16:30 WISE_CK_2009_07_23_23_27_27.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 23 16:30 WIS_MOS_SUM_2009_204_23_30_10.txt
-rw-r--r-- 1 wsdcin wise 7113323 Jul 23 16:30 WIS_WTCCS_VALUE_2009_07_23_23_29_14.zip

,WISE,TDW,2009205001141,2009205003224,SK,xxx,SA1,2009205001604,2009205003224
2009_205_01_08_19:
-rw-r--r-- 1 wsdcin wise   60416 Jul 23 18:08 WISE_CK_2009_07_24_01_05_41.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 23 18:08 WIS_MOS_SUM_2009_205_01_08_19.txt
-rw-r--r-- 1 wsdcin wise 6635735 Jul 23 18:08 WIS_WTCCS_VALUE_2009_07_24_01_07_43.zip

,WISE,TDW,2009205014641,2009205020508,SK,xxx,SA1,2009205015124,2009205020508
2009_205_02_18_27:
-rw-r--r-- 1 wsdcin wise   28672 Jul 23 19:18 WISE_CK_2009_07_24_02_16_57.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 23 19:18 WIS_MOS_SUM_2009_205_02_18_27.txt
-rw-r--r-- 1 wsdcin wise 2745262 Jul 23 19:18 WIS_WTCCS_VALUE_2009_07_24_02_17_43.zip

I just transferred the SEQ products for sequence # 2 which is currently running
on the S/C. I forgot to do this yesterday. - from Don

2009_205_14_53_51:
-rw-r--r-- 1 wsdcin wise 1268413 Jul 24 07:53 SummerSolsticeDPTRAJ_35ecl.oef
-rw-r--r-- 1 wsdcin wise 21239808 Jul 24 07:53
WISE2NOV_MV_HP_MKSPK600s_TDRS_DEFGJ_extended.bsp
-rw-r--r-- 1 wsdcin wise   182 Jul 24 07:53 WIS_MOS_SUM_2009_205_14_53_51.txt
-rw-r--r-- 1 wsdcin wise   535792 Jul 24 07:54 WIS_WSEQ_1026_1h.cmf
-rw-r--r-- 1 wsdcin wise 1625200 Jul 24 07:54 WIS_WSEQ_1026_1h.pef

,WISE,TDS,2009205142636,2009205144739,SK,xxx,SA1,2009205143211,2009205144739
2009_205_15_20_02:
-rw-r--r-- 1 wsdcin wise 117760 Jul 24 08:20 WISE_CK_2009_07_24_15_17_16.bc
-rw-r--r-- 1 wsdcin wise   112 Jul 24 08:20 WIS_MOS_SUM_2009_205_15_20_02.txt
-rw-r--r-- 1 wsdcin wise 7552192 Jul 24 08:20 WIS_WTCCS_VALUE_2009_07_24_15_19_22.zip

,WISE,TDE,2009205160135,2009205162128,SK,xxx,SA1,2009205160612,2009205162128
2009_205_17_00_09:
-rw-r--r-- 1 wsdcin wise   58368 Jul 24 10:00 WISE_CK_2009_07_24_16_58_14.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 24 10:00 WIS_MOS_SUM_2009_205_17_00_09.txt
-rw-r--r-- 1 wsdcin wise 6352627 Jul 24 10:00 WIS_WTCCS_VALUE_2009_07_24_16_59_46.zip

,WISE,TDS,2009205173634,2009205175500,SK,xxx,SA1,2009205174115,2009205175500
2009_205_18_27_17:
-rw-r--r-- 1 wsdcin wise   50176 Jul 24 11:27 WISE_CK_2009_07_24_18_24_57.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 24 11:27 WIS_MOS_SUM_2009_205_18_27_17.txt
-rw-r--r-- 1 wsdcin wise 5342117 Jul 24 11:27 WIS_WTCCS_VALUE_2009_07_24_18_26_29.zip

,WISE,171,2009205222226,2009205224150,SK,xxx,SA1,2009205222827,2009205224150
2009_205_23_17_30:
-rw-r--r-- 1 wsdcin wise   119808 Jul 24 16:17 WISE_CK_2009_07_24_23_12_48.bc
-rw-r--r-- 1 wsdcin wise   113 Jul 24 16:17 WIS_MOS_SUM_2009_205_23_17_30.txt
-rw-r--r-- 1 wsdcin wise 13686015 Jul 24 16:17 WIS_WTCCS_VALUE_2009_07_24_23_16_21.zip

,WISE,TDW,2009205235631,2009206001722,SK,xxx,SA1,2009206000106,2009206001722
2009_206_00_32_39:
-rw-r--r-- 1 wsdcin wise   55296 Jul 24 17:32 WISE_CK_2009_07_25_00_30_12.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 24 17:32 WIS_MOS_SUM_2009_206_00_32_39.txt
-rw-r--r-- 1 wsdcin wise 5943549 Jul 24 17:32 WIS_WTCCS_VALUE_2009_07_25_00_31_45.zip

,WISE,171,2009206013131,2009206015045,SK,xxx,SA1,2009206013607,2009206015045
2009_206_02_06_47:
-rw-r--r-- 1 wsdcin wise   28672 Jul 24 19:06 WISE_CK_2009_07_25_02_05_26.bc
-rw-r--r-- 1 wsdcin wise   111 Jul 24 19:06 WIS_MOS_SUM_2009_206_02_06_47.txt
-rw-r--r-- 1 wsdcin wise 2775053 Jul 24 19:06 WIS_WTCCS_VALUE_2009_07_25_02_06_13.zip

R. Beck also provided a summary of the telemetry deliveries. TLM deliveries began late due to a problem is on the JPL side as reported by J. LaPointe having to do with relative vs. full path addressing when setting up the fcopy command line arguments.

The initial TLM delivery did not transfer to the hrp dir and did not have a summary file R. Beck created the sum file and moved the data to the correct subdirectory to get the delivery to transfer correctly. All summary files were edited to delete the blank line at the bottom.

This was also a problem for the WSDC file transfer script. The first delivery did not transfer because the data had already delivered in previous testing. That previous test data was renamed and the data transferred successfully, occurring “smoothly” from that point forward.

All telemetry data ingests were successful (returned 0 code). The seventh delivery of eight did not find any housekeeping data to populate FITS headers with and a good number of error messages from ingestpipe probably due to this. D. Royer had advised earlier that no HK data would be sent for the last telemetry transfer.

The pointing data associated with the 30 orbit sim scans was used to get the quicklook frames to process. Of the eight deliveries, three ran through the quicklook processing error-free. In the remaining five deliveries, the first frames failed to pattern match in the sfprex module.

2009_195_12_48_39:
-rw-r--r-- 1 wsdcin wise 1033733064 Jul 24 14:53 WIS_HRP_PKT_FE1A_2009_195_12_48_39.bin
-rw-r--r-- 1 wsdcin wise 1173252444 Jul 24 15:24 WIS_HRP_PKT_FE1B_2009_195_12_48_39.bin
-rw-r--r-- 1 wsdcin wise 1775430384 Jul 24 17:27 WIS_HRP_PKT_FE1C_2009_195_12_48_39.bin
-rw-r--r-- 1 wsdcin wise 428346828 Jul 24 12:55 WIS_HRP_PKT_FE1D_2009_195_12_48_39.bin
-rw-rw-r-- 1 wsdcin wise   221 Jul 24 19:26 WIS_HRP_SUM_2009_195_12_48_39.txt

2009_195_13_28_26:
-rw-r--r-- 1 wsdcin wise 1061138988 Jul 24 18:07 WIS_HRP_PKT_FE1A_2009_195_13_28_26.bin
-rw-r--r-- 1 wsdcin wise 1197279720 Jul 24 18:35 WIS_HRP_PKT_FE1B_2009_195_13_28_26.bin

-rw-r--r-- 1 wsdcin wise 1791385596 Jul 24 20:30 WIS_HRP_PKT_FE1C_2009_195_13_28_26.bin
-rw-r--r-- 1 wsdcin wise 438943596 Jul 24 16:04 WIS_HRP_PKT_FE1D_2009_195_13_28_26.bin
-rw-rw-r-- 1 wsdcin wise   221 Jul 24 15:53 WIS_HRP_SUM_2009_195_13_28_26.txt

- expected delivery - 7/25 @ 11:17:00 UTC 2009_195_15_52_09
2009_195_15_52_09:
-rw-r--r-- 1 wsdcin wise 1185146508 Jul 25 08:19 WIS_HRP_PKT_FE1A_2009_195_15_52_09.bin
-rw-r--r-- 1 wsdcin wise 1345871436 Jul 25 08:55 WIS_HRP_PKT_FE1B_2009_195_15_52_09.bin
-rw-r--r-- 1 wsdcin wise 2041561704 Jul 25 11:16 WIS_HRP_PKT_FE1C_2009_195_15_52_09.bin
-rw-r--r-- 1 wsdcin wise 497143920 Jul 25 05:55 WIS_HRP_PKT_FE1D_2009_195_15_52_09.bin
-rw-r--r-- 1 wsdcin wise   221 Jul 25 07:37 WIS_HRP_SUM_2009_195_15_52_09.txt

- expected delivery - 7/25 @ 12:51:00 UTC 2009_195_16_34_48
2009_195_16_34_48:
-rw-r--r-- 1 wsdcin wise 1217084232 Jul 25 10:05 WIS_HRP_PKT_FE1A_2009_195_16_34_48.bin
-rw-r--r-- 1 wsdcin wise 1373943480 Jul 25 10:36 WIS_HRP_PKT_FE1B_2009_195_16_34_48.bin
-rw-r--r-- 1 wsdcin wise 2057483064 Jul 25 12:54 WIS_HRP_PKT_FE1C_2009_195_16_34_48.bin
-rw-r--r-- 1 wsdcin wise 503282052 Jul 25 07:34 WIS_HRP_PKT_FE1D_2009_195_16_34_48.bin
-rw-r--r-- 1 wsdcin wise   221 Jul 25 07:38 WIS_HRP_SUM_2009_195_16_34_48.txt

- expected delivery - 7/25 @ 14:25:00 UTC 2009_195_17_11_06 Actual Del. - 2009_195_17_11_06:
-rw-r--r-- 1 wsdcin wise 1038582636 Jul 25 11:00 WIS_HRP_PKT_FE1A_2009_195_17_11_06.bin
-rw-r--r-- 1 wsdcin wise 1178377200 Jul 25 11:29 WIS_HRP_PKT_FE1B_2009_195_17_11_06.bin
-rw-r--r-- 1 wsdcin wise 1781415636 Jul 25 13:34 WIS_HRP_PKT_FE1C_2009_195_17_11_06.bin
-rw-r--r-- 1 wsdcin wise 435120504 Jul 25 08:59 WIS_HRP_PKT_FE1D_2009_195_17_11_06.bin
-rw-r--r-- 1 wsdcin wise   221 Jul 25 07:39 WIS_HRP_SUM_2009_195_17_11_06.txt

- expected delivery - 7/25 @ 18:11:00 UTC 2009_195_17_54_16 Actual Del. - 2009_195_17_54_16:
-rw-r--r-- 1 wsdcin wise 1216583004 Jul 25 15:26 WIS_HRP_PKT_FE1A_2009_195_17_54_16.bin
-rw-r--r-- 1 wsdcin wise 1381119012 Jul 25 16:01 WIS_HRP_PKT_FE1B_2009_195_17_54_16.bin
-rw-r--r-- 1 wsdcin wise 2095151604 Jul 25 18:25 WIS_HRP_PKT_FE1C_2009_195_17_54_16.bin
-rw-r--r-- 1 wsdcin wise 509932332 Jul 25 12:56 WIS_HRP_PKT_FE1D_2009_195_17_54_16.bin
-rw-r--r-- 1 wsdcin wise   221 Jul 25 12:18 WIS_HRP_SUM_2009_195_17_54_16.txt

- expected delivery - 7/25 @ 19:47:00 UTC 2009_195_18_03_12 Actual Del. - 2009_195_18_03_12:
-rw-r--r-- 1 wsdcin wise 1063398336 Jul 25 16:33 WIS_HRP_PKT_FE1A_2009_195_18_03_12.bin
-rw-r--r-- 1 wsdcin wise 1651739544 Jul 25 18:31 WIS_HRP_PKT_FE1B_2009_195_18_03_12.bin
-rw-r--r-- 1 wsdcin wise 1792713468 Jul 25 19:02 WIS_HRP_PKT_FE1C_2009_195_18_03_12.bin
-rw-r--r-- 1 wsdcin wise 439536552 Jul 25 14:20 WIS_HRP_PKT_FE1D_2009_195_18_03_12.bin
-rw-r--r-- 1 wsdcin wise   221 Jul 25 17:02 WIS_HRP_SUM_2009_195_18_03_12.txt

- expected delivery - 7/25 @ 21:20:00 UTC 2009_195_20_53_09 Actual Del. - 2009_195_20_53_09:
-rw-r--r-- 1 wsdcin wise 1249047072 Jul 25 18:38 WIS_HRP_PKT_FE1A_2009_195_20_53_09.bin
-rw-r--r-- 1 wsdcin wise 1411168668 Jul 25 19:10 WIS_HRP_PKT_FE1B_2009_195_20_53_09.bin
-rw-r--r-- 1 wsdcin wise 2114799960 Jul 25 21:23 WIS_HRP_PKT_FE1C_2009_195_20_53_09.bin
-rw-r--r-- 1 wsdcin wise 517166832 Jul 25 16:12 WIS_HRP_PKT_FE1D_2009_195_20_53_09.bin
-rw-r--r-- 1 wsdcin wise   221 Jul 25 17:02 WIS_HRP_SUM_2009_195_20_53_09.txt

R. Beck reported that five of the eight tlm deliveries had first-frameset pattern match failures during the quicklook processing. The IDs of the deliveries and quicklook scans with problems are:

quicklook scan 5e/09195e for delivery 09195T155209
quicklook scan 5f/09195f for delivery 09195T163448
quicklook scan 5g/09195g for delivery 09195T171106
quicklook scan 5h/09195h for delivery 09195T175416
quicklook scan 5j/09195j for delivery 09195T205309

C. Gelino reported that in all cases the framesets that failed contained only W4 images and no images for the shorter wavelength bands W1, W2, and W3. The Single Frame Position Reconstruction subsystem (SFPRex) failed to match the pattern of detected W4-only stars with the 2MASS Point Source Catalog. A pattern match failure for a W4-only source list is not an unexpected failure given the large difference in the wavelengths between W4 and 2MASS and the lack of W4 sources that are detected in a single frame.

C. Gelino also reports that the W1, W2, and W3 frames for these framesets were delivered in previous deliveries. The W4 frames were delivered with their corresponding shorter-wavelength frames in the previous delivery, and were also sent solo during the subsequent delivery. This is an expected behavior given that the frames between subsequent deliveries are designed to have some overlap. In order to limit the number of failed frames during Quicklook processing, we modified the frameset selection criteria (see below).

Two images from the Quicklook pipeline are shown below to demonstrate a very small subset of the information that is viewed during the QA process.

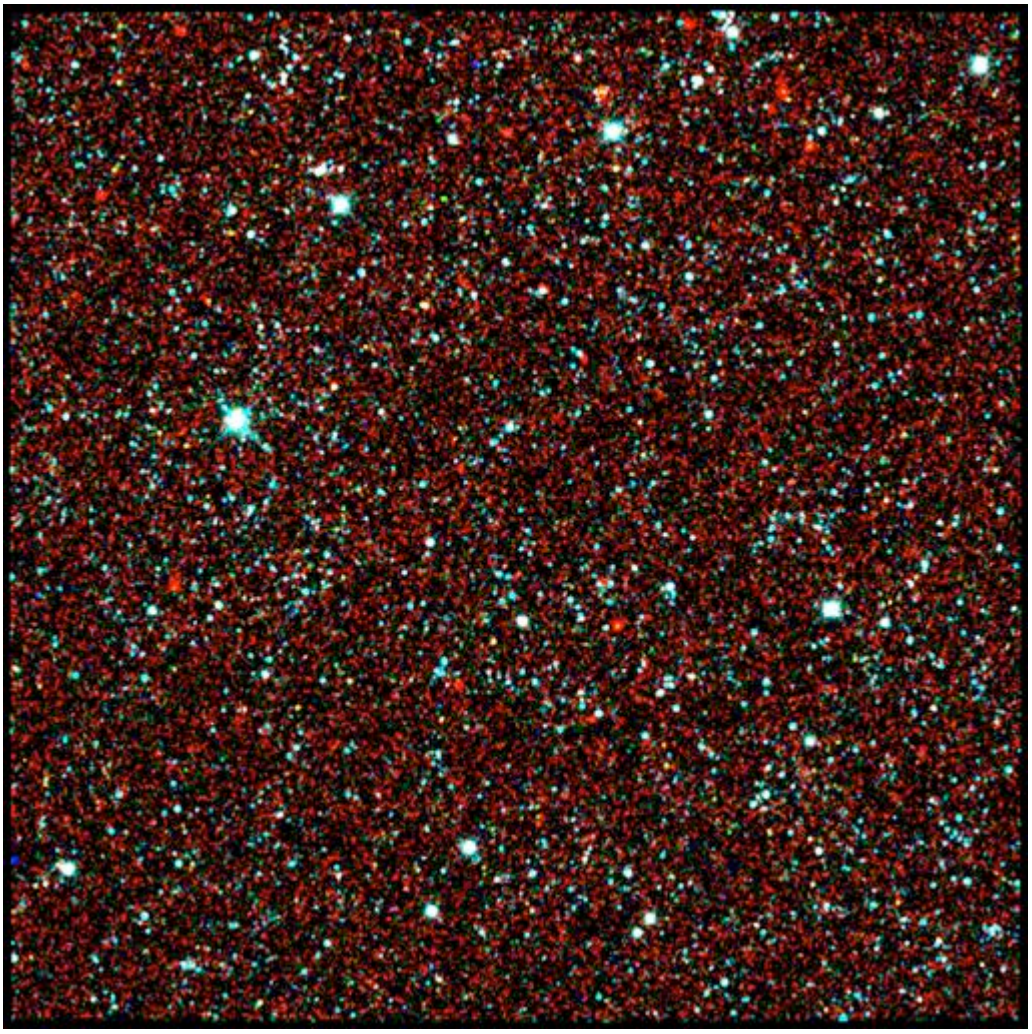

Figure 1: A 3-color composite image of Frame #021 from Quicklook scan 09195c. Blue=W1, Green=W2, and Red=W3.

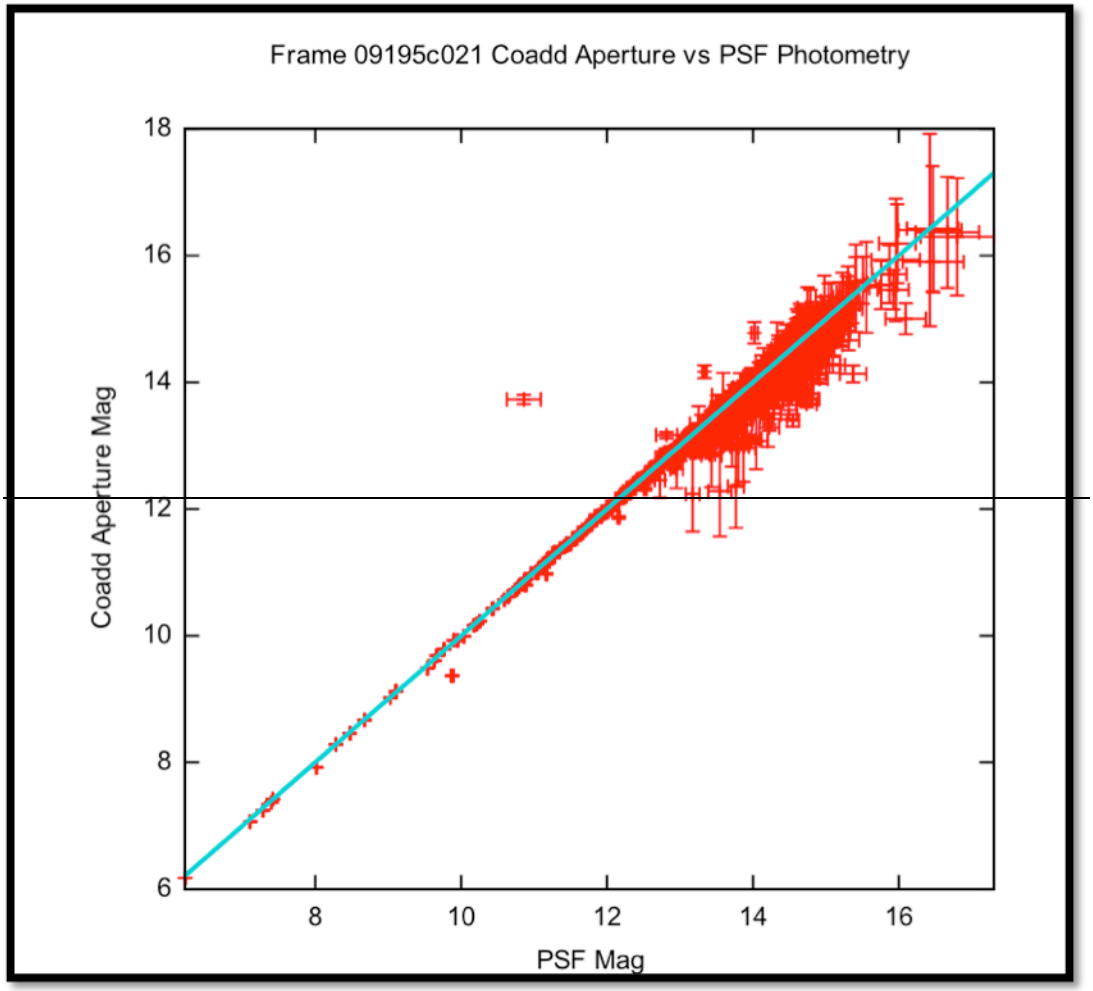

Figure 2: The coadd aperture magnitude as a function of the PSF magnitude for Frame #021 in Quicklook scan 09195c. Points that deviate greatly from the equal magnitude line are generally confused or blended sources. A future iteration of the QA system will filter out confused sources and plot the difference between the two magnitudes. This is one of many types of plots that are examined during the Quicklook QA process.-

6.0 Anomaly Summary

Only one anomaly was seen:

MOS data transfer 2009204144145 delivery was broken up into two, with the .bc file in one file and the hk data in a subsequently received file, separated by 7 minutes. R. Beck reported that all data was ingested ok.

Under the more correct heading of a “surprise”

Ingest quicklook frame 1 failed to pattern match in Quicklook files /wise/fops/ql/5j/09195e, f, g, h, and j.

7.0 Planned Actions

WSDC will provide better filtering of frames used in Quicklook processing to insure that multiple bands are present in each frameset.

The WSDS Ingest script will be modified to make it less sensitive to spaces at the end of the files transferred

Appendix A: Transfer Times

Approximate transfer times for the ms7 telemetry (PDT):

PACKET	START	STOP	ELAPSED
09195T132826	Jul 24 14:35:54	- Jul 24 20:30:00	05:54:06
09195T155209	Jul 25 04:17:52	- Jul 25 11:16:00	06:58:08
09195T163448	Jul 25 05:57:52	- Jul 25 12:54:00	06:56:08
09195T171106	Jul 25 07:27:52	- Jul 25 13:34:00	06:06:08
09195T175416	Jul 25 11:18:54	- Jul 25 18:25:00	07:06:06
09195T180312	Jul 25 12:48:55	- Jul 25 19:02:00	06:13:05
09195T205309	Jul 25 14:21:05	- Jul 25 21:23:00	07:01:55

The start times are from where the directory first shows up on wsdcin with the SUM file. The SUM file shows up first. Unfortunately, R. Beck had edited all of the SUM files so that he had to use the raw copy log file to see when it first started checking the HRP directory. The script which checks the HRP directory runs every 10 minutes, hence the approximation. The stop time is the band 3 packet timestamp on wsdcin, which was the last to complete due its largest size