Rubin Observatory

Vera C. Rubin Observatory
Data Management

LVV-P72: DM Acceptance Testing, Operations Rehearsal #2 Test Plan and Report

Jeffrey Carlin

DMTR-231

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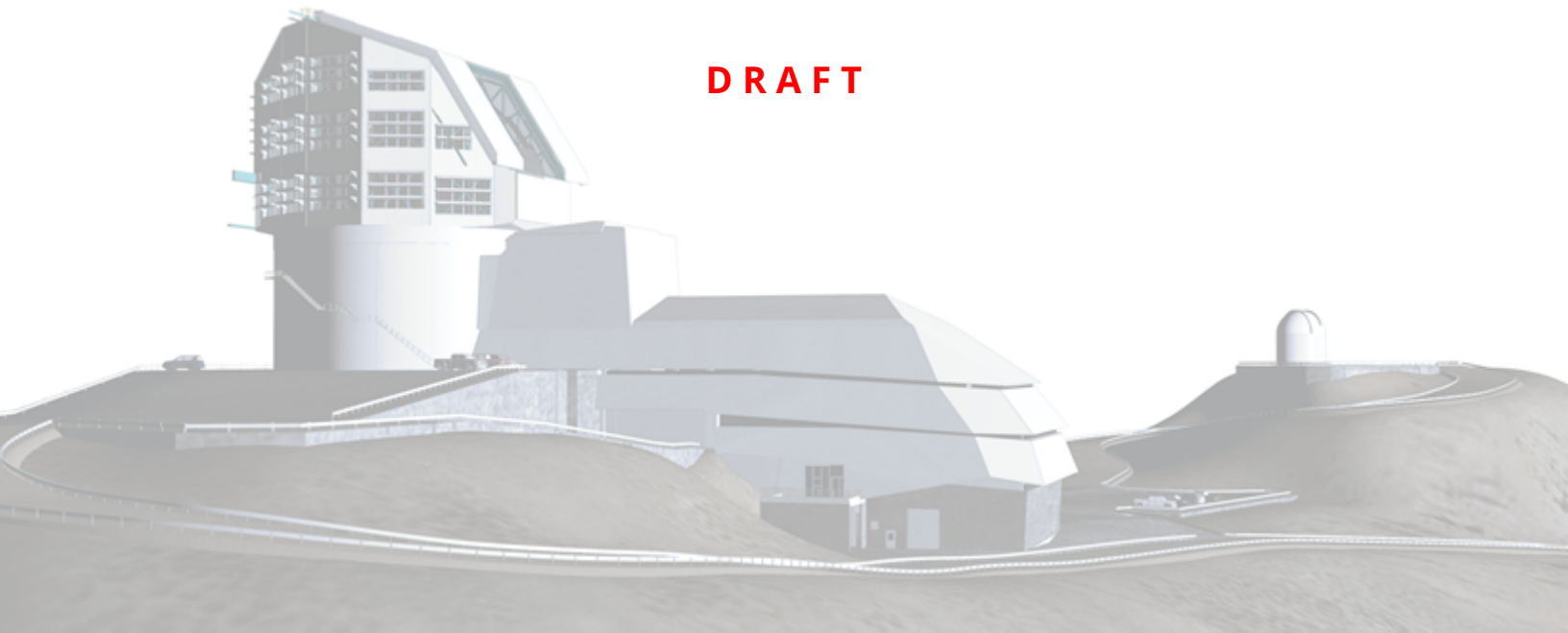
DRAFT



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Abstract

This is the test plan and report for LVV-P72 (DM Acceptance Testing, Operations Rehearsal #2), an LSST milestone pertaining to the Data Management Subsystem.

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Change Record

Version	Date	Description	Owner name
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LVV-P72: DM Acceptance Testing, Operations Rehearsal #2 Test Plan and Report

1 Introduction

1.1 Objectives

This Acceptance Test campaign aims to verify a small number of DMSR (LSE-61) requirements related to the LSST Science Pipelines. It will be executed in conjunction with Operations Rehearsal #2. This Test Plan aims to demonstrate that the included requirements have been met by the activities carried out during the Operations Rehearsal, and to thus fully verify their completion and readiness for LSST Operations.

1.2 System Overview

The tests to be executed are intended to verify that the DM system satisfies a subset of the requirements outlined in the Data Management System Requirements (DMSR; LSE-61). This subset of requirements is related to pipeline algorithms, and was selected for this campaign to coincide with the release of a new version of the LSST Science Pipelines. Additional DMSR requirements will be verified in later Acceptance Test Campaigns.

Applicable Documents:

LSE-61 Data Management System Requirements
LDM-503 Data Management Test Plan
LDM-639 LSST Data Management Acceptance Test Specification (issue 2.1)
LDM-643 Proposed DM Ops Rehearsals (Chapter 3 in particular)
? Rubin Observatory Network Verification Baseline

The tests will be performed using...

Planning for the Operations Rehearsal is being tracked at this Confluence page .

1.3 Document Overview

This document was generated from Jira, obtaining the relevant information from the LVV-P72 Jira Test Plan and related Test Cycles (LVV-C154).

Section 1 provides an overview of the test campaign, the system under test (Acceptance), the applicable documentation, and explains how this document is organized. Section 2 provides additional information about the test plan, like for example the configuration used for this test or related documentation. Section 3 describes the necessary roles and lists the individuals assigned to them.

Section 4 provides a summary of the test results, including an overview in Table 2, an overall assessment statement and suggestions for possible improvements. Section 5 provides detailed results for each step in each test case.

The current status of test plan LVV-P72 in Jira is **Draft** .

1.4 References

[1] **[LSE-61]**, Dubois-Felsmann, G., Jenness, T., 2018, *LSST Data Management Subsystem Requirements*, LSE-61, URL `https://ls.st/LSE-61`

[2] **[LDM-639]**, Guy, L., 2018, *DM Acceptance Test Specification*, LDM-639, URL `https://ls.st/LDM-639`

[3] **[LDM-643]**, Johnson, M., Gruendl, R., 2019, *Proposed DM OPS Rehearsals*, LDM-643, URL `https://ls.st/LDM-643`

[4] **[LDM-142]**, Kantor, J., 2017, *Network Sizing Model*, LDM-142, URL `https://ls.st/LDM-142`

[5] **[LDM-503]**, O'Mullane, W., Swinbank, J., Jurić, M., Economou, F., 2018, *Data Management Test Plan*, LDM-503, URL `https://ls.st/LDM-503`

2 Test Plan Details

2.1 Data Collection

Observing is not required for this test campaign.

2.2 Verification Environment

Tests that require code and/or data analysis will use the “lsst-lsp-stable” instance of the Rubin Observatory/LSST Science Platform (LSP), hosted at the LDF, and the “lsst-dev” development cluster at NCSA.

2.3 Related Documentation

The documentation related to this test campaign should be provided in the following DocuShare Collection (as per Verification Artifacts in Jira test plan LVV-P72).

- DocuShare Collection Not Specified

2.4 PMCS Activity

Primavera milestones related to the test campaign.

- None

3 Personnel

The personnel involved in the test campaign is shown in the following table.

	T. Plan LVV-P72 owner:	**Jeffrey Carlin**	
	T. Cycle LVV-C154 owner:	**Jeffrey Carlin**	
Test Cases	**Assigned to**	**Executed by**	**Additional Test Personnel**
LVV-T196	Jeff Kantor		Ron Lambert (LSST), Albert Astudillo (REUNA), Jeronimo Bezerra (FIU/AmLight), Matt Kollross (NCSA)
LVV-T195	Jeff Kantor		Ron Lambert (LSST), Albert Astudillo (REUNA), Jeronimo Bezerra (FIU/AmLight), Matt Kollross (NCSA)
LVV-T194	Jeff Kantor		
LVV-T193	Jeff Kantor		Ron Lambert (LSST)
LVV-T1830	Jeffrey Carlin		
LVV-T105	Kian-Tat Lim		
LVV-T182	Robert Gruendl		
LVV-T190	Robert Gruendl		
LVV-T29	Kian-Tat Lim		
LVV-T32	Kian-Tat Lim		
LVV-T84	Robert Lupton		
LVV-T85	Robert Lupton		
LVV-T47	Eric Bellm		
LVV-T88	Robert Lupton		
LVV-T90	Robert Lupton		
LVV-T115	Kian-Tat Lim		
LVV-T137	Colin Slater		
LVV-T154	Colin Slater		
LVV-T191	Robert Gruendl		

4 Test Campaign Overview

4.1 Summary

T. Plan LVV-P72:	**DM Acceptance Testing, Operations Rehearsal #2**			Draft
T. Cycle LVV-C154:	**DM Acceptance Testing, Operations Rehearsal #2**			Not Executed
Test Cases	**Ver.**	**Status**	**Comment**	**Issues**
LVV-T196	1	Not Executed		
LVV-T195	1	Not Executed		
LVV-T194	1	Not Executed		
LVV-T193	1	Not Executed		
LVV-T1830	1	Not Executed		
LVV-T105	1	Not Executed		
LVV-T182	1	Not Executed		
LVV-T190	1	Not Executed		
LVV-T29	1	Not Executed		
LVV-T32	1	Not Executed		
LVV-T84	1	Not Executed		
LVV-T85	1	Not Executed		
LVV-T47	1	Not Executed		
LVV-T88	1	Not Executed		
LVV-T90	1	Not Executed		
LVV-T115	1	Not Executed		
LVV-T137	1	Not Executed		
LVV-T154	1	Not Executed		
LVV-T191	1	Not Executed		

Table 2: Test Campaign Summary

4.2 Overall Assessment

Not yet available.

4.3 Recommended Improvements

Not yet available.

5 Detailed Test Results

5.1 Test Cycle LVV-C154

Open test cycle *DM Acceptance Testing, Operations Rehearsal #2* in Jira.

Test Cycle name: DM Acceptance Testing, Operations Rehearsal #2
Status: Not Executed

This test cycle verifies a subset of DMSR (LSE-61) requirements in order to verify their completion and readiness for LSST Operations (i.e., that the requirements laid out in LSE-61 have been met by the DM Systems). These acceptance tests are to be carried out during DM Operations Rehearsal #2.

5.1.1 Software Version/Baseline

Not provided.

5.1.2 Configuration

Not provided.

5.1.3 Test Cases in LVV-C154 Test Cycle

5.1.3.1 LVV-T196 - Verify implementation of Base to Archive Network Secondary Link

Version **1**. Open *LVV-T196* test case in Jira.

Verify Base to Archive Network Secondary Link failover and capacity, and subsequent recovery primary. Demonstrate the use of the secondary path in “catch-up” mode.

Preconditions:
Archiver/Forwarders are configured at Base, connected to REUNA DWDM, loaded with simulated or pre-cursor data.

Archiver/Forwarder receivers or other capability is on configured at LDF, connected to Base - Archive Network.
As-built documentation for all of the above is available.

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Transfer data between base and archive on primary links over uninterrupted 1 day period. Test Data LATISS, ComCAM, or FullCAM data. Expected Result Data is successfully transferred over primary link at or exceeding rates specified in LDM-142 throughout period. Actual Result Status: **Not Executed**
2	Description Simulate outage by disconnecting fiber on primary fiber on Base side of Base - Archive Network. Test Data NA Expected Result Network fails over to secondary links in <=60s Actual Result Status: **Not Executed**
3	Description Transfer data between base and archive over secondary equipment uninterrupted 1 day period. Test Data LATISS, ComCAM, or FullCAM data.

	Expected Result Data is successfully transferred over secondary link at or exceeding rates specified in LDM-142 throughout period.
	Actual Result
	Status: **Not Executed**
4	Description Restore connection on primary link by reconnecting fiber.
	Test Data NA
	Expected Result Network recovers to primary.
	Actual Result
	Status: **Not Executed**
5	Description Demonstrate use of secondary in catch-up mode.
	Test Data DAQ buffer full of images and associated metadata.
	Expected Result Images from DAQ buffer and associated metadata are retrievable over secondary path while current observing data is being transferred over primary path.
	Actual Result
	Status: **Not Executed**

5.1.3.2 LVV-T195 - Verify implementation of Base to Archive Network Reliability

Version **1**. Open *LVV-T195* test case in Jira.

Verify Base to Archive Network Reliability by demonstrating that the network can recover from outages within baseToArchNetMTTR = 48[hour].

Preconditions:
Archiver/Forwarders are configured at Base, connected to REUNA DWDM, loaded with simulated or pre-cursor data.
Archiver/Forwarder receivers or other capability is on configured at LDF, connected to Base - Archive Network.
At least 6 months of monitoring data for this link is available.
As-built documentation for all of the above is available.

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Disconnect primary fiber on base side of Base - Archive network. Test Data LATISS, ComCAM, or FullCAM data. Expected Result Network fails over to secondary path. Actual Result Status: **Not Executed**
2	Description Simulate diagnosis and repair by elapsed time. Test Data NA Expected Result

	Wall clock advances by 48 hours. Data is successfully transferred over secondary path.
	Actual Result
	Status: **Not Executed**
3	Description Reconnect primary fiber on base side of Base - Archive network.
	Test Data NA
	Expected Result Network recovers to primary path.
	Actual Result
	Status: **Not Executed**
4	Description Analyze fail-over and recovery times. Compare to historical data and extrapolate to MTTR.
	Expected Result Verify recovery can occur within baseToArchNetMTTR = 48[hour]. Demonstrate reconnection and recovery to transfer of data at or exceeding rates specified in LDM-142.
	Actual Result
	Status: **Not Executed**

5.1.3.3 LVV-T194 - Verify implementation of Base to Archive Network Availability

Version **1**. Open *LVV-T194* test case in Jira.

Verify the availability of the Base to Archive Network communications by demonstrating that it meets or exceeds a mean time between failures, measured over a 1-yr period of MTBF > baseToArchNetMTBF (180[day])

Preconditions:
Archiver/Forwarders are configured at Base, connected to REUNA DWDM, loaded with simulated or pre-cursor data.

Archiver/Forwarder receivers or other capability is on configured at LDF, connected to Base - Archive Network.
At least 6 months of historical monitoring data on this link is available.
As-built documentation for all of the above is available.

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Transfer data between base and archive over uninterrupted 1 week period. Test Data LATISS, ComCAM, or FullCAM data. Expected Result Data is successfully transferred during the entire week. Actual Result Status: **Not Executed**
2	Description Analyze monitoring/performance data, compare to historical data, and extrapolate to a full year, average and peak throughput and latency. Test Data NA Expected Result Extrapolated network availability meets baseToArchNetMTBF = 180[day]. Note that this is for complete loss of transfer service (all paths), not a single path failure with successful fail-over. Actual Result Status: **Not Executed**

5.1.3.4 LVV-T193 - Verify implementation of Base to Archive Network

Version **1**. Open *LVV-T193* test case in Jira.

Verify that the data acquired by a DAQ can be transferred within the required time, i.e. verify that link is capable of transferring image for prompt processing in oArchiveMaxTransferTime = 5[second], i.e. at or exceeding rates specified in LDM-142.

Preconditions:
Archiver/Forwarders are configured at Base, connected to REUNA DWDM, loaded with simulated or pre-cursor data.
Archiver/Forwarder receivers or other capability is on configured at LDF, connected to Base - Archive Network.
As-built documentation for all of the above is available.

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Transfer data between base and archive while monitoring the network over uninterrupted 1 day period (with repeated transfers on normal observing cadence). Test Data LATISS, ComCAM, or FullCAM data. Expected Result Data transfers occur without significant delay or frequent latency spikes. Actual Result Status: **Not Executed**
2	Description

Analyze the network logs and monitoring system to determine average and peak latency and packet loss statistics.

Expected Result

Data can be transferred within the required time, i.e. verify that link is capable of transferring image for prompt processing in oArchiveMaxTransferTime = 5[second]. Verify transfer of data at or exceeding rates specified in LDM-142 at least 98% of the time.

Actual Result

Status: **Not Executed**

5.1.3.5 LVV-T1830 - Verify Implementation of Scientific Visualization of Camera Image Data

Version **1**. Open *LVV-T1830* test case in Jira.

Verify that all scientific visualization of camera image data uses the coordinate systems defined in LSE-349.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description
	Expected Result
	Actual Result

	Status: **Not Executed**

5.1.3.6 LVV-T105 - Verify implementation of Generate Calibration Report Within Specified Time

Version **1**. Open *LVV-T105* test case in Jira.

Verify that the DMS can generate a night Calibration Report in both human-readable and machine-parseable forms.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Execute single-day operations rehearsal
	Expected Result
	Actual Result
	Status: **Not Executed**
2	Description Observe calibration report is generated on time and with correct contents
	Expected Result
	Actual Result

Status: **Not Executed**

5.1.3.7 LVV-T182 - Verify implementation of Prefer Computing and Storage Down

Version **1**. Open *LVV-T182* test case in Jira.

Only build compute or storage facilities at the summit that are justified by operational need or to prevent loss of data during networking downtimes.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Analyze design
	Expected Result
	Actual Result
	Status: **Not Executed**

5.1.3.8 LVV-T190 - Verify implementation of Base Facility Co-Location with Existing Facility

Version **1**. Open *LVV-T190* test case in Jira.

Verify that the Base Facility is located at an existing known supported facility.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Analyze design
	Expected Result
	Actual Result
	Status: **Not Executed**

5.1.3.9 LVV-T29 - Verify implementation of Raw Science Image Data Acquisition

Version **1**. Open *LVV-T29* test case in Jira.

Verify acquisition of raw data from L1 Test Stand DAQ while simulating all modes

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Ingest raw data from L1 Test Stand DAQ, simulating each observing mode Expected Result Actual Result Status: **Not Executed**
2	Description Observe image and its metadata is present and queryable in the Data Backbone. Expected Result Well-formed image data with appropriate associated metadata. Actual Result Status: **Not Executed**

5.1.3.10 LVV-T32 - Verify implementation of Raw Image Assembly

Version **1**. Open *LVV-T32* test case in Jira.

Verify that the raw exposure data from all readout channels in a sensor can be assembled into a single image, and that all required/relevant metadata are associated with the image data.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Ingest data from the L1 Camera Test Stand DAQ. Expected Result Actual Result Status: **Not Executed**
2	Description Simulate all different modes of data gathering. Expected Result Actual Result Status: **Not Executed**
3	Description Verify that a raw image is constructed in correct format. Expected Result A single raw image combining data from all readout channels for a given sensor. Actual Result Status: **Not Executed**
4	Description Verify that a raw image is constructed with correct metadata. Expected Result Image header or ancillary table contains the required metadata about the observing context in which data were gathered. Actual Result Status: **Not Executed**

5.1.3.11 LVV-T84 - Verify implementation of Bias Residual Image

Version **1**. Open *LVV-T84* test case in Jira.

Verify that DMS can construct a bias residual image that corrects for temporally-stable bias structures.
Verify that DMS can do this on demand.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Identify the location of an appropriate precursor dataset. Expected Result Actual Result Status: **Not Executed**

2	Description
	Identify the path to the data repository, which we will refer to as 'DATA/path', then execute the following:
	Example Code
	`import lsst.daf.persistence as dafPersist`
	`butler = dafPersist.Butler(inputs='DATA/path')`
	Expected Result
	Butler repo available for reading.
	Actual Result

Status: **Not Executed**

3 Description

Import the standard libraries required for the rest of this test:

Example Code

```
import osimport lsst.afw.display as afwDisplay
from lsst.daf.persistence import Butler
from lsst.ip.isr import IsrTask
from firefly_client import FireflyClient
from IPython.display import IFrame
```

Expected Result

Actual Result

Status: **Not Executed**

4 Description

Ingest the dataset from step 1 using the Butler (e.g., following example code below).

Example Code

```
butler = Butler($REPOSITORY_PATH)
raw = butler.get("raw", visit=$VISIT_ID, detector=2)
bias = butler.get("bias", visit=$VISIT_ID, detector=2)
```

Expected Result

Actual Result

Status: **Not Executed**

5 Description

Display the bias image and inspect that its pixels contain unique values.

Expected Result

A relatively flat image showing the bias level with roughly Poisson noise.

Actual Result

Status: **Not Executed**

6 Description

Configure and run an Instrument Signature Removal (ISR) task on the raw data. Most corrections are disabled for simplicity, but the bias frame is applied.

Example Code

```
isr_config = IsrTask.ConfigClass()
isr_config.doDark=False
isr_config.doFlat=False
isr_config.doFringe=False
isr_config.doDefect=False
isr_config.doAddDistortionModel=False
isr_config.doLinearize=False
isr = IsrTask(config=isr_config)
result = isr.run(raw, bias=bias)
```

Expected Result

A trimmed, bias-corrected image in 'result'.

Actual Result

Status: **Not Executed**

7	Description Display the 'result' image and confirm that the bias correction has been performed. Expected Result A displayed image with bias removed (i.e., typical background counts reduced relative to the raw frame). Actual Result Status: **Not Executed**

5.1.3.12 LVV-T85 - Verify implementation of Crosstalk Correction Matrix

Version **1**. Open *LVV-T85* test case in Jira.

Verify that the DMS can generate a cross-talk correction matrix from appropriate calibration data.
Verify that the DMS can measure the effectiveness of the cross-talk correction matrix.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Identify an appropriate calibration dataset that can be used to derive the crosstalk correction matrix. Expected Result Actual Result Status: **Not Executed**
2	Description Execute the Calibration Products Production payload. The payload uses raw calibration images and information from the Transformed EFD to generate a subset of Master Calibration Images and Calibration Database entries in the Data Backbone. Expected Result Actual Result Status: **Not Executed**
3	Description Confirm that the expected Master Calibration images and Calibration Database entries are present and well-formed. Expected Result Actual Result Status: **Not Executed**
4	Description

	Confirm that the crosstalk correction matrix is produced and persisted.
	Expected Result A correction matrix quantifying what fraction of the signal detected in any given amplifier on each sensor in the focal plane appears in any other amplifier.
	Actual Result
	Status: **Not Executed**
5	Description Apply the crosstalk correction to simulated images, and confirm that the correction is performing as expected.
	Expected Result A noticeable difference between images before and after applying the correction.
	Actual Result
	Status: **Not Executed**

5.1.3.13 LVV-T47 - Verify implementation of Prompt Processing Calibration Report Definition

Version **1**. Open *LVV-T47* test case in Jira.

Verify that the DMS produces a Prompt Processing Calibration Report. Specifically check that this report is capable of identifying when aspects of the telescope or camera are changing with time.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Identify precursor and simulated calibration datasets on which to run the L1 calibration pipeline. Expected Result Actual Result Status: **Not Executed**
2	Description Execute the Daily Calibration Products Update payload. The payload uses raw calibration images and information from the Transformed EFD to generate a subset of Master Calibration Images and Calibration Database entries in the Data Backbone. Expected Result Actual Result Status: **Not Executed**
3	Description Confirm that the expected Master Calibration images and Calibration Database entries are present and well-formed. Expected Result Actual Result Status: **Not Executed**
4	Description Check that a dynamic report is created that triggers alerts if calibrations go out of range. Expected Result A dynamic report is available via UI to users, and if any out-of-spec changes have occurred, alerts have been issued. Actual Result Status: **Not Executed**
5	Description

	Check that a static report is created and archived in a readily-accessible location.
	Expected Result An archived version of the calibration report is available and will be retained in a static file format.
	Actual Result
	Status: **Not Executed**

5.1.3.14 LVV-T88 - Verify implementation of Calibration Data Products

Version **1**. Open *LVV-T88* test case in Jira.

Verify that the DMS can produce and archive the required Calibration Data Products: cross talk correction, bias, dark, monochromatic dome flats, broad-band flats, fringe correction, and illumination corrections.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Identify a suitable set of calibration frames, including biases, dark frames, and flat-field frames.
	Expected Result
	Actual Result
	Status: **Not Executed**

2	Description Execute the Calibration Products Production payload. The payload uses raw calibration images and information from the Transformed EFD to generate a subset of Master Calibration Images and Calibration Database entries in the Data Backbone. Expected Result Actual Result Status: **Not Executed**
3	Description Confirm that the expected Master Calibration images and Calibration Database entries are present and well-formed. Expected Result Actual Result Status: **Not Executed**
4	Description Confirm that the expected data products are created, and that they have the expected properties. Expected Result A full set of calibration data products has been created, and they are well-formed. Actual Result Status: **Not Executed**
5	Description Test that the calibration products are archived, and can readily be applied to science data to produce the desired corrections. Expected Result Confirmation that application of the calibration products to processed data has the desired effects. Actual Result Status: **Not Executed**

5.1.3.15 LVV-T90 - Verify implementation of Dark Current Correction Frame

Version **1**. Open *LVV-T90* test case in Jira.

Verify that the DMS can produce a dark correction frame calibration product.
Verify that the DMS can determine the effectiveness of a dark correction and determine how often it should be updated.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Identify the path to a dataset containing dark frames (i.e., exposures taken with the shutter closed). Expected Result Actual Result Status: **Not Executed**
2	Description Execute the relevant steps from 'cp_pipe' (the calibration pipeline) to produce dark correction frames. Expected Result Actual Result Status: **Not Executed**
3	Description Inspect the resulting dark correction frame to confirm that it appears as expected.

	Expected Result A well-formed dark correction frame is present and accessible via the Data Butler.
	Actual Result
	Status: **Not Executed**
4	Description Determining whether the dark correction is being done properly will require on-sky science data. The dark correction can be applied to these frames and the results inspected to ensure that the correction was correctly measured and applied.
	Expected Result Applying the dark correction to a dataset produces noticeable differences between the original frame(s) and the corrected outputs.
	Actual Result
	Status: **Not Executed**

5.1.3.16 LVV-T115 - Verify implementation of Calibration Production Processing

Version **1**. Open *LVV-T115* test case in Jira.

Execute CPP on a variety of representative cadences, and verify that the calibration pipeline correctly produces necessary calibration products.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Identify a suitable set of calibration frames, including biases, dark frames, and flat-field frames. Expected Result Actual Result Status: **Not Executed**
2	Description Execute the Calibration Products Production payload. The payload uses raw calibration images and information from the Transformed EFD to generate a subset of Master Calibration Images and Calibration Database entries in the Data Backbone. Expected Result Actual Result Status: **Not Executed**
3	Description Confirm that the expected Master Calibration images and Calibration Database entries are present and well-formed. Expected Result Actual Result Status: **Not Executed**
4	Description Confirm that the expected data products are created, and that they have the expected properties. Expected Result Repos containing valid calibration products that are well-formed and ready to be applied to processed datasets. Actual Result Status: **Not Executed**

5.1.3.17 LVV-T137 - Verify implementation of Data Product Ingest

Version **1**. Open *LVV-T137* test case in Jira.

Verify that data products can be ingested.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Identify a suitable set of raw data to be run through “mini-DRP” processing. Expected Result Actual Result Status: **Not Executed**
2	Description Process data with the Data Release Production payload, starting from raw science images and generating science data products, placing them in the Data Backbone. Expected Result Actual Result Status: **Not Executed**
3	Description Identify the path to the data repository, which we will refer to as ‘DATA/path’, then execute the following: Example Code

```
import lsst.daf.persistence as dafPersist
butler = dafPersist.Butler(inputs='DATA/path')
```

Expected Result

Butler repo available for reading.

Actual Result

Status: **Not Executed**

4	Description Confirm that the data products from the DRP processing have been ingested into the Data Backbone. Expected Result Processed images, catalogs, calibration information, and other related data products are present and accessible via the Butler. Actual Result Status: **Not Executed**

5.1.3.18 LVV-T154 - Verify implementation of Raw Data Archiving Reliability

Version **1**. Open *LVV-T154* test case in Jira.

Verify that raw images are reliably archived.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details

1	Description Analyze sources of loss or corruption after mitigation to compute estimated reliability
	Expected Result
	Actual Result
	Status: **Not Executed**

5.1.3.19 LVV-T191 - Verify implementation of Commissioning Cluster

Version **1**. Open *LVV-T191* test case in Jira.

Verify that the Commissioning Cluster has sufficient Compute/Storage/LAN at the Base Facility to support Commissioning.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed steps results:

Step	Step Details
1	Description Analyze design and budget
	Expected Result
	Actual Result
	Status: **Not Executed**

A Traceability

Test Case	VE Key	VE Summary
LVV-T29	LVV-8	DMS-REQ-0018-V-01: Raw Science Image Data Acquisition
LVV-T32	LVV-11	DMS-REQ-0024-V-01: Raw Image Assembly
LVV-T47	LVV-43	DMS-REQ-0101-V-01: Level 1 Calibration Report Definition
LVV-T84	LVV-23	DMS-REQ-0060-V-01: Bias Residual Image
LVV-T85	LVV-24	DMS-REQ-0061-V-01: Crosstalk Correction Matrix
LVV-T88	LVV-57	DMS-REQ-0130-V-01: Calibration Data Products
LVV-T90	LVV-113	DMS-REQ-0282-V-01: Dark Current Correction Frame
LVV-T105	LVV-42	DMS-REQ-0100-V-01: Generate Calibration Report Within Specified Time
LVV-T115	LVV-120	DMS-REQ-0289-V-01: Calibration Production Processing
LVV-T137	LVV-130	DMS-REQ-0299-V-01: Data Product Ingest
LVV-T154	LVV-140	DMS-REQ-0309-V-01: Raw Data Archiving Reliability
LVV-T182	LVV-72	DMS-REQ-0170-V-01: Prefer Computing and Storage Down
LVV-T190	LVV-80	DMS-REQ-0178-V-01: Base Facility Co-Location with Existing Facility
LVV-T191	LVV-147	DMS-REQ-0316-V-01: Commissioning Cluster
LVV-T193	LVV-81	DMS-REQ-0180-V-01: Base to Archive Network
LVV-T194	LVV-82	DMS-REQ-0181-V-01: Base to Archive Network Availability
LVV-T195	LVV-83	DMS-REQ-0182-V-01: Base to Archive Network Reliability
LVV-T196	LVV-84	DMS-REQ-0183-V-01: Base to Archive Network Secondary Link
LVV-T1830	LVV-18465	DMS-REQ-0395-V-01: Scientific Visualization of Camera Image Data_1

B Acronyms used in this document

Acronym	Description
CPP	Calibration Production Processing
DAQ	Data Acquisition System
DM	Data Management
DMS	Data Management Subsystem
DMS-REQ	Data Management System Requirements prefix
DMSR	DM System Requirements; LSE-61
DRP	Data Release Production
DWDM	Dense Wave Division Multiplex
EFD	Engineering and Facility Database
FIU	Florida International University
ISR	Instrument Signal Removal
L1	Lens 1
LAN	Local Area Network
LATISS	LSST Atmospheric Transmission Imager and Slitless Spectrograph
LDF	LSST Data Facility
LDM	LSST Data Management (Document Handle)
LSE	LSST Systems Engineering (Document Handle)
LSP	LSST Science Platform
LSST	Legacy Survey of Space and Time (formerly Large Synoptic Survey Telescope)
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
NCSA	National Center for Supercomputing Applications
PMCS	Project Management Controls System
REUNA	Red Universitaria Nacional
UI	User Interface