

# 3DSL-NDT Verification Process Manual

Version 2.0



## 1. Overview

The Verification Process provides the user confirmation that the system remains correctly calibrated. If the 3D Digital Pit Gauge is dropped or suffers other types of malady, it may lose calibration. The verification process includes capturing a 3D image of a specific Verification Standard, measuring two known characteristics, and comparing the measurements to the calibrated results. The procedure is outlined in this document and is performed by the 3DSL-NDT Software.



**Figure 1** Verification Standard

## 2. Verification Standard

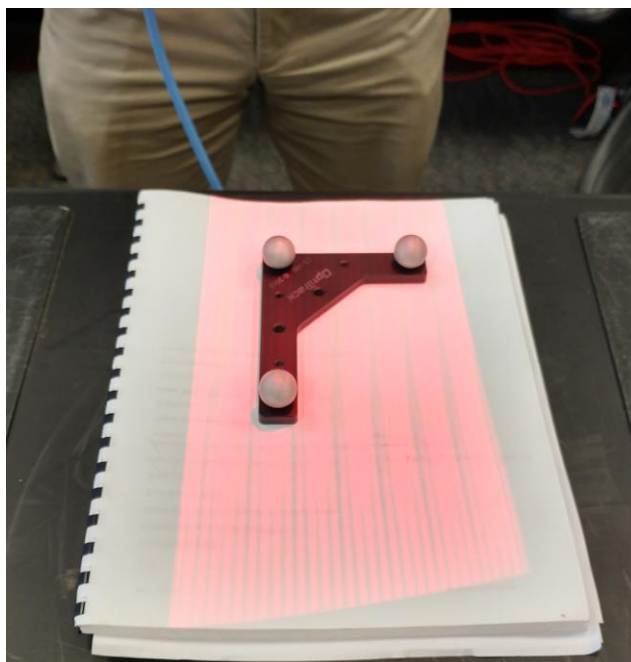
A Verification Standard is detailed in Figure 1. It is manufactured from machined aluminum and a black anodized coating is applied to protect the surface. The Verification Standard is designed with three highly reflective spheres at known distances from one another. The nominal distances between the center of each of the three spheres are as follows:

- Nominal Distance L1 is 75mm
- Nominal Distance L2 is 100mm
- Nominal Distance L3 is 125mm

The process consists of two steps: the physical setup, and the capturing and processing of the 3D image. These two steps are described below. When the 3D Camera and Verification Standard are in proper position and a 3D Image is captured in verification mode, then the 3DSL-NDT software will automatically open the Verification Software Module, measure the 3D data for the correct distances, and provide results.

## The Physical Setup

The Verification Standard software uses a background surface to detect the center of each sphere from where L1, L2, and L3 are measured so it is important that the surface behind the target is light colored and reflective. For the best results place the verification target on a white piece of paper (or one of the provided User Manuals), hold the 3D Digital Pit Gage directly above the target, and ensure that there is enough flat parent material surrounding each sphere as shown in Figure 2.

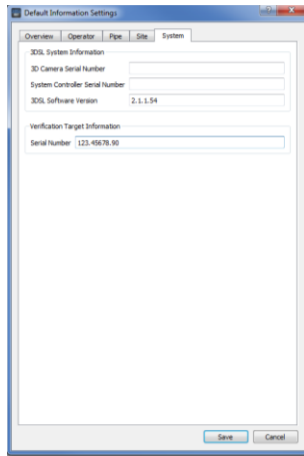


**Figure 2** Verification Target Setup

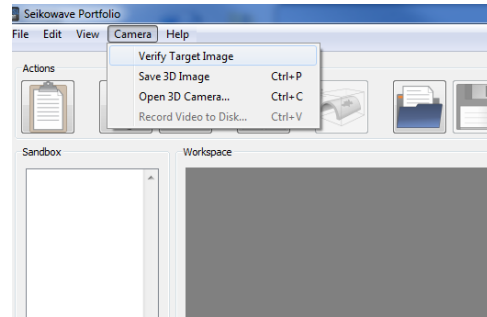
### Quick Start Guide for Verification:

1. Place the Verification Standard on top of the User's Manual as shown in Figure 2.
2. Maintain the 3D Digital Pit Gage at its optimal working distance perpendicularly to the target.
3. In Seikowave Portfolio, as shown in Figure 3, enter the verification standard serial number into the Worksite Information Dialog. Select *Okay* to save your information.
4. In Seikowave Portfolio, select the Camera dropdown menu then select *Verify Target Image*, as shown in Figure 4., in order to initiate the Verification Mode. A Red Box will appear over the live video feed to indicate Verification Mode.
5. Verify a proper exposure setting of 0.500ms. Adjust the exposure slider bar if necessary.
6. Verify the three spheres of the Verification Standard are clearly viewed on the screen.
7. Select the *Capture 3D Image* button or press the trigger on the system (if applicable) to begin the verification process. The Verification Module will open automatically.
8. The Verification Module will automatically process the scan and detect if it is viable scan to process
9. The Pass/Fail result will be displayed in the Feature List on the right-hand side of the window along with the measured distances and nominal distances of your target. Figure 6 shows the Verification Module with a Passed result.

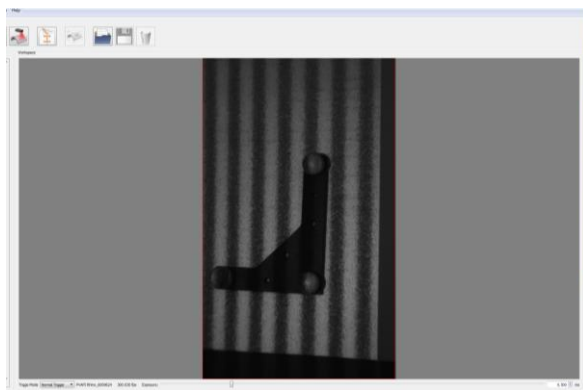
10. Select the *Save Report* icon on the top left of the Verification Module to generate a Verification Report (an example shown in Figure 7) for your records.



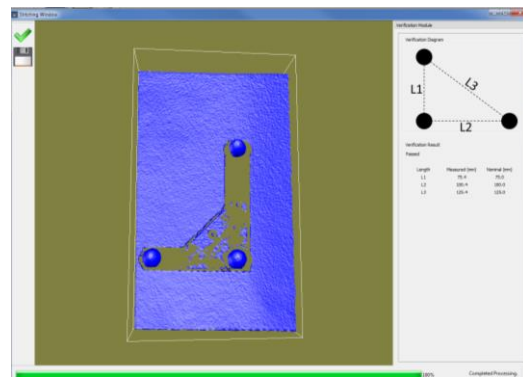
**Figure 3** Worksite Info for Verification



**Figure 4** Entering Verification Mode



**Figure 5** Red box centered on Verification Standard



**Figure 6** Verification Module showing a PASSED result

Company: Seikowave  
 User Name: John Digger  
 Location: Home Office  
 Date: 2016/7/24  
 System Serial Number: 6006959

**3DSL NDT**

**Verification Result PASSED**

| Triangle Edges | Calculated Length (mm) | Nominal Length (mm) |
|----------------|------------------------|---------------------|
| L1             | 74.7                   | 75.0                |
| L2             | 100.4                  | 100.0               |
| L3             | 125.2                  | 125.0               |

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Approved by:

**Figure 7** Example of a Verification Report

## About Us

### Seikowave, Inc.

Seikowave, Inc. was founded to commercialize new technologies that can make high speed 3D measurements at reasonable costs suitable for diverse markets. Seikowave systems can acquire 3D point clouds with 350,000 points per point cloud at rates up to 1,000 point clouds per second. The key technologies are in the areas of digital signal processing, image processing, optical systems, and the interactions among these technologies.

We live in a three-dimensional world of length, width, and height. Our ability to make accurate measurements of these dimensions is critical to a wide variety of applications as diverse as measuring parts for automobiles, inspecting pipelines, inspecting coatings, inspecting welds, inspecting composite materials on aircraft, examining teeth for dental restoration, and many others.

Seikowave provides portable, ruggedized 3D imaging systems that even go 100 meters deep under water. The 3D imaging techniques pioneered by Seikowave are also used in the motion control of the robots – we give “eyes” to robots. This allows our robots to be used in applications other than inspection (for example, welding, coating application).

Seikowave uses 3D measurements to solve common problems encountered in general NDT applications. Our solutions acquire 3D data, analyze the data for defects and anomalies, and generate reports that determine the fitness for service and can help guide repair procedures if necessary. Our software tools enable characterization of infrastructure damage and determination of fitness-for-service using methods defined in API-579, ASME B31G, RSTRENG, ASME B31.8, ASME B31.4, and other guiding regulatory documents. Seikowave develops and manufactures all of the 3DSL hardware and software for these solutions.

More information can be found at [www.seikowave.com](http://www.seikowave.com) . Our headquarters is located at:

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Seikowave has a global distribution network. Contact Seikowave to find out the distributor in your area.