IPTM 2026 Symposium
Crash Test 1 & 2 Recon-3D Scene Scans

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DISCLAIMER

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Background

Recon-3D is a "scanning" program designed for use with either Apple iPhone or iPad that is equipped with both Lidar and a camera. Due to the requirement for the Lidar capability, the application is currently only available for the apple products.

The Recon-3D application allows for two ways of preparing a point cloud from the scan. One is a fusion of the Lidar with the Photogrammetry completed from the video taken during the scan. The other option is to use a photogrammetry solution only, without the Lidar. I have found the Lidar Fusion method to provide the best results, and so should be used for processing the scans whenever possible.

The Recon-3D scans completed and provided as part of the overall crash testing were performed with a iPhone 15 Pro Max.

Scan Preparation

As part of the preparation for the scene scans two "L's" were laid out on the ground with yellow Duct tape, with the interior angle of each "L" pointing to the other "L" and were set 25 feet apart, measured with a steel tape.

Part of the reason this was done is due to the nature of testing - provide known elements and then see if your equipment can match it. However, it is a good idea to always do something similar to this so thatyou have one or more "known" distances within your scan that can be used to verify the accuracy of the scan if/when it is cahllenged.

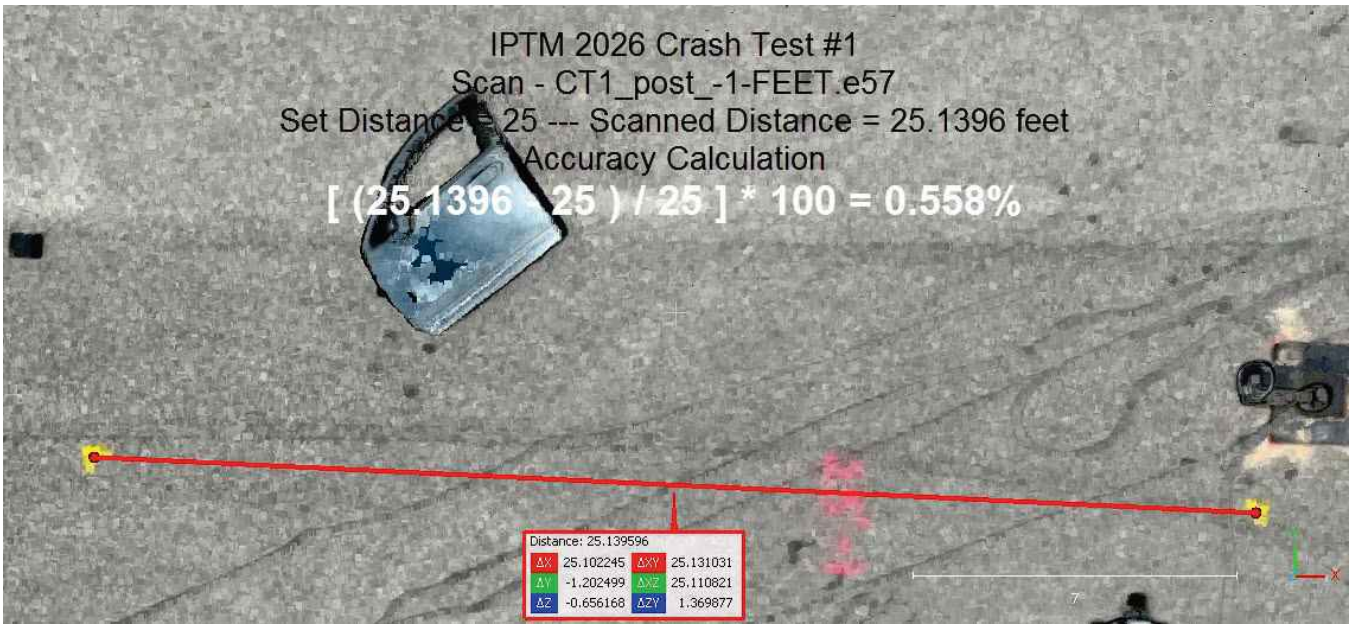
The Scans

For each scene, 2 scans were completed. Due to the ability to complete the scans in a short time, it has been found to be good practice to create “backups” through duplicate scans whenever possible.

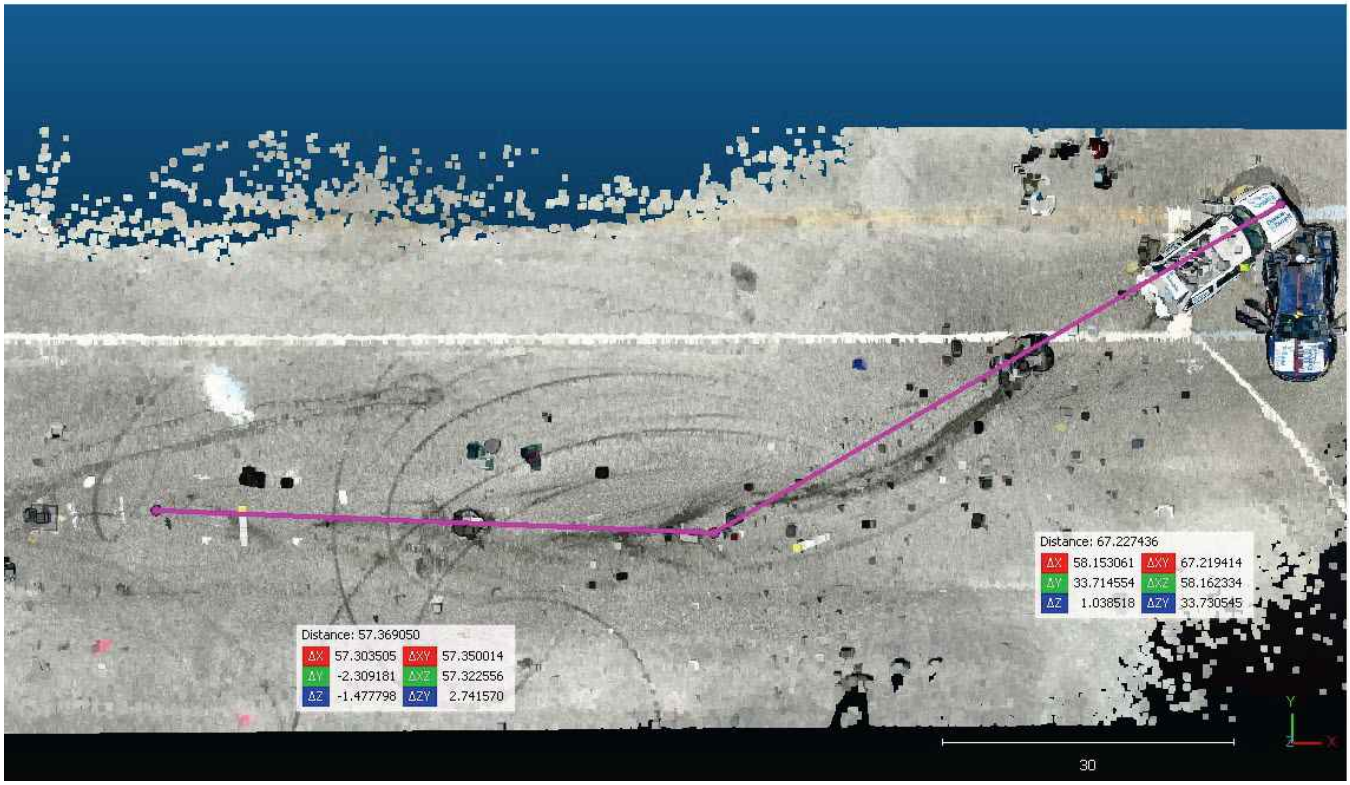
For the scan that was completed in under 5 minutes, it was processed with a resolution of 4 millimeters and a field depth of 15 meters. Although the field depth exceeds the “rech” of the Lidar, setting a longer depth measurement allows for the photogrammetry element of the application to “fill in the holes”

The Processed scans with the required scan time and error rate calculations follow-

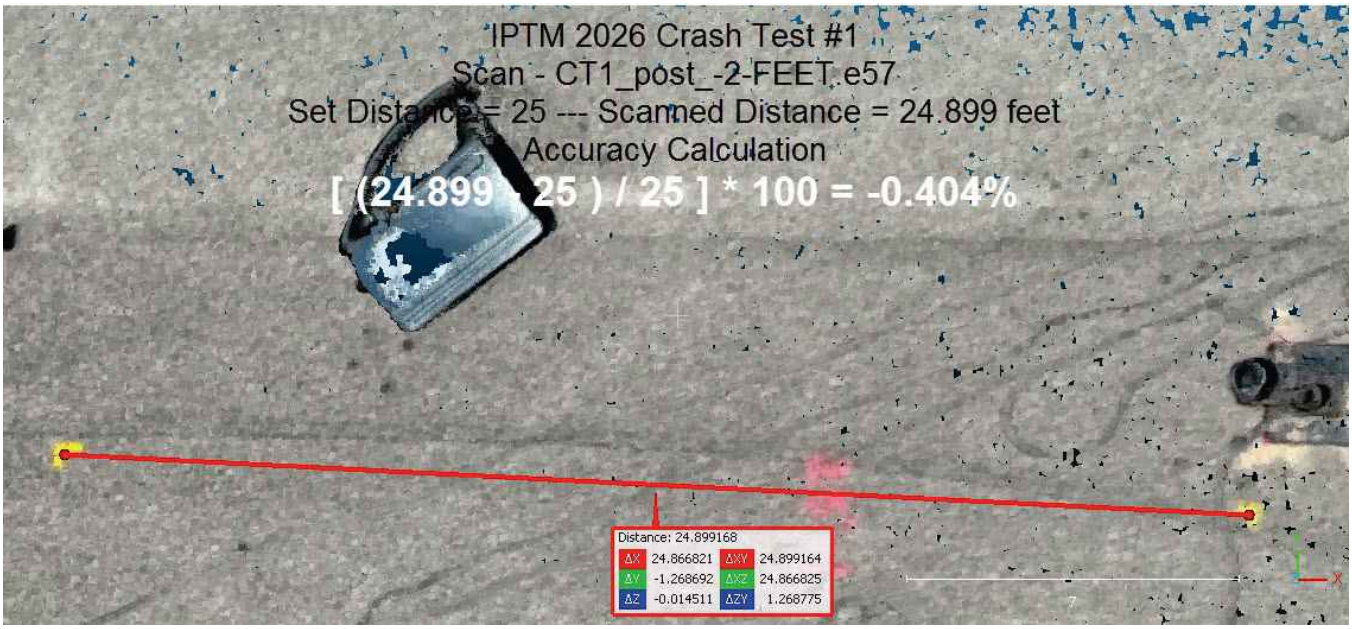
Crash Test 1 - Scene Scan 1



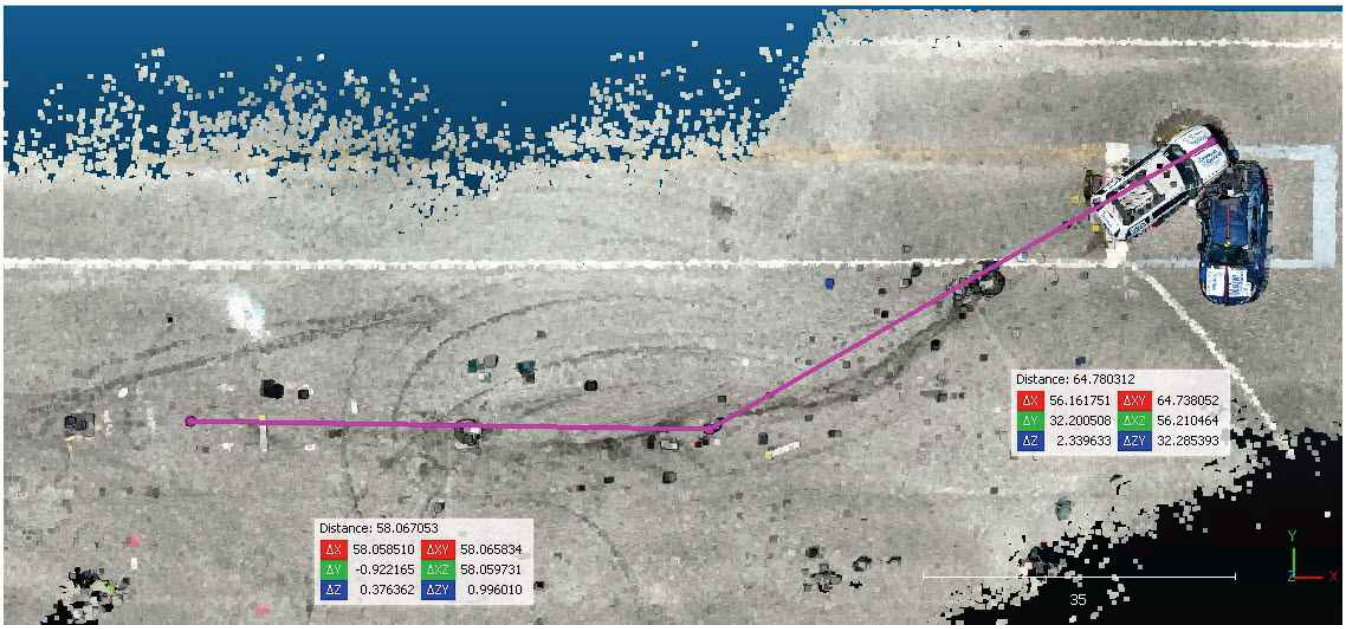
Crash Test #1 - Impact Speed ~ 58 mph
Scene Scan - CT1_post_-1.e57 - 5 minute 18 seconds
Accuracy ~ 0.56%



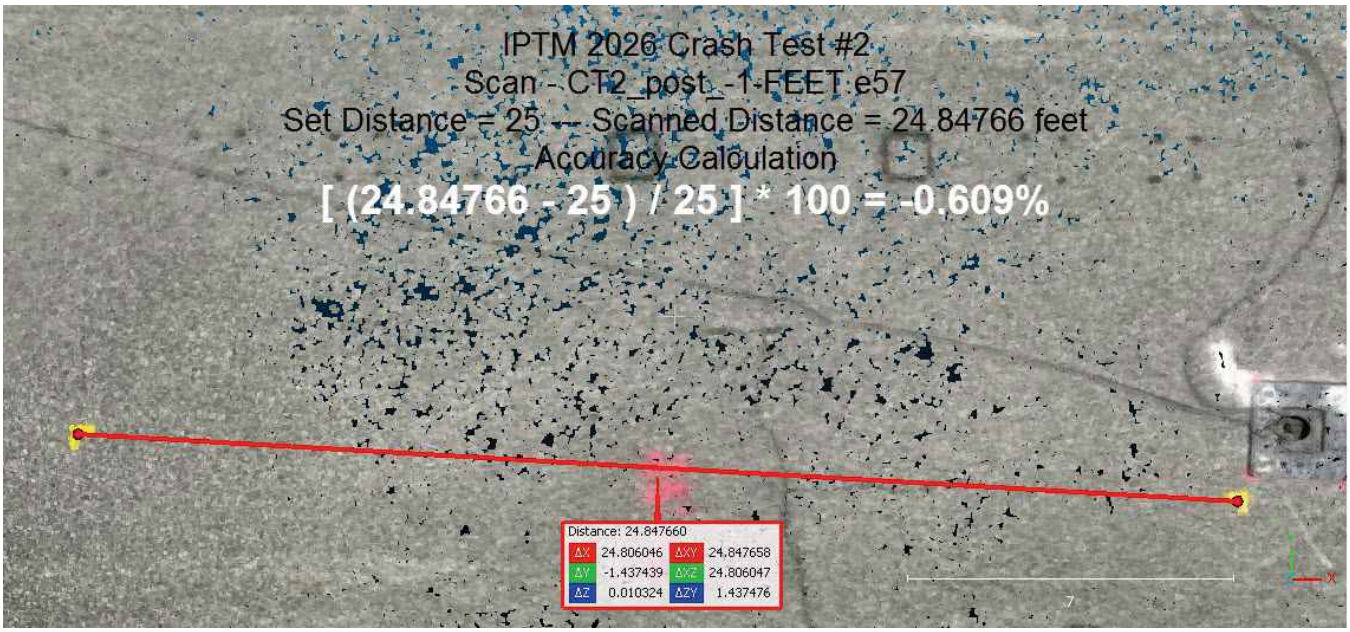
Crash Test 1 - Scene Scan 2



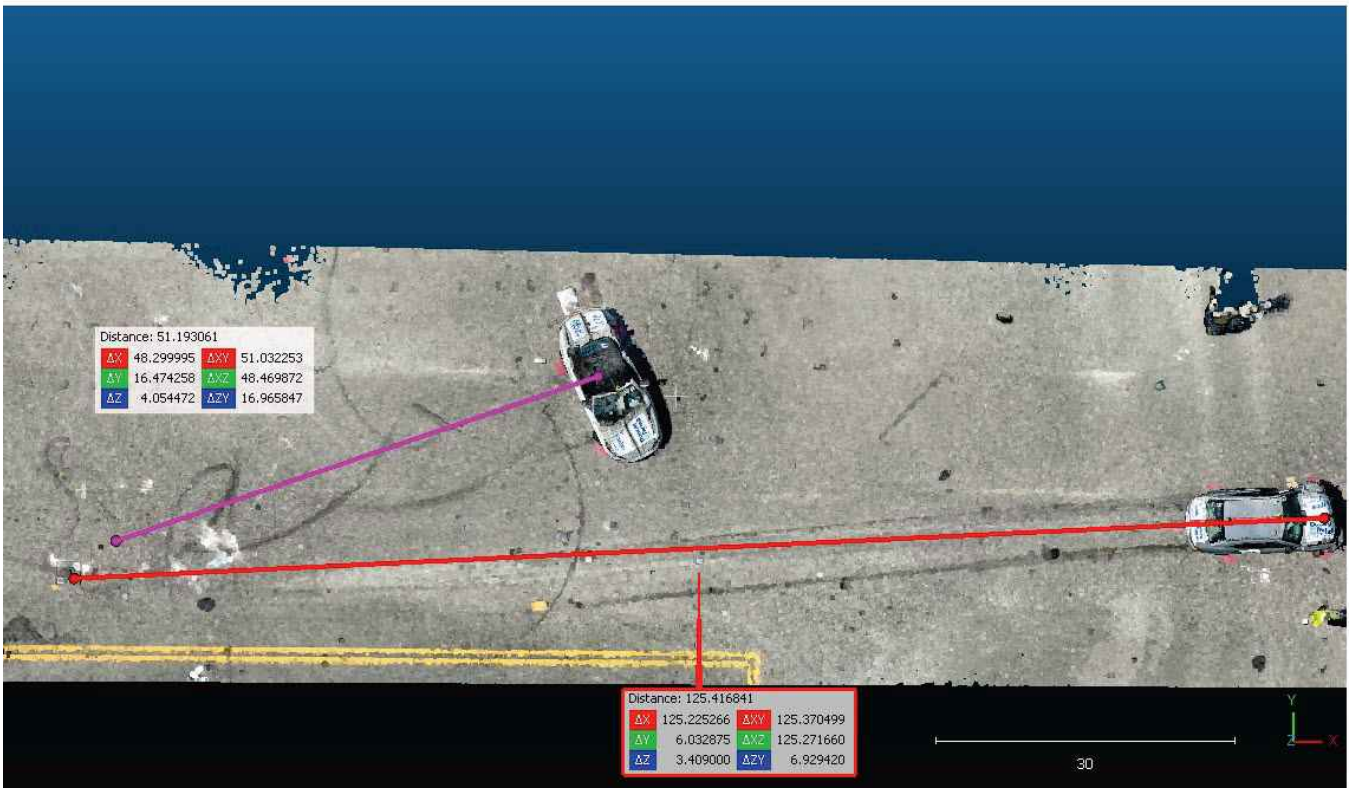
Crash Test #1 - Impact Speed ~ 58 mph
Scene Scan - CT1_post_-2.e57 - 5 minute 45 seconds
Accuracy ~ -0.40%



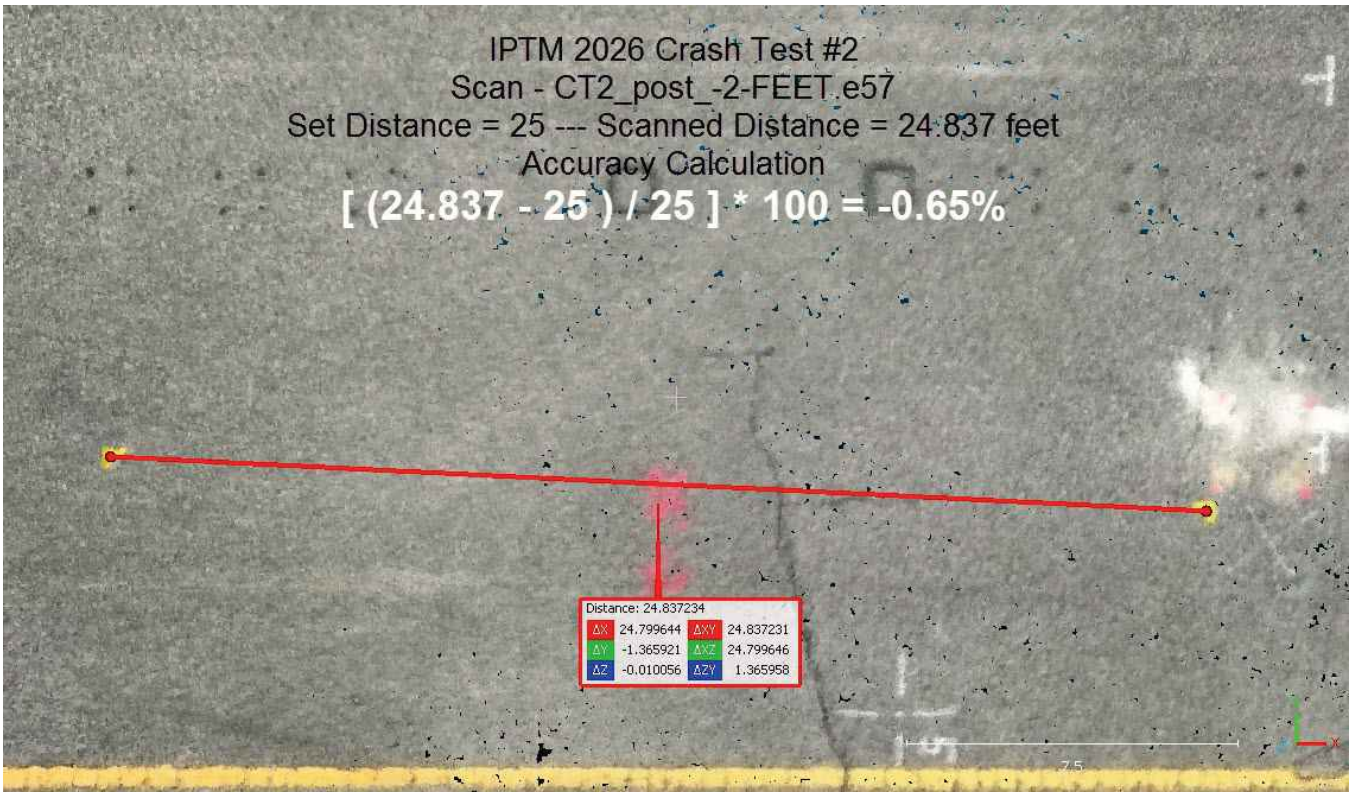
Crash Test 2 - Scene Scan 1



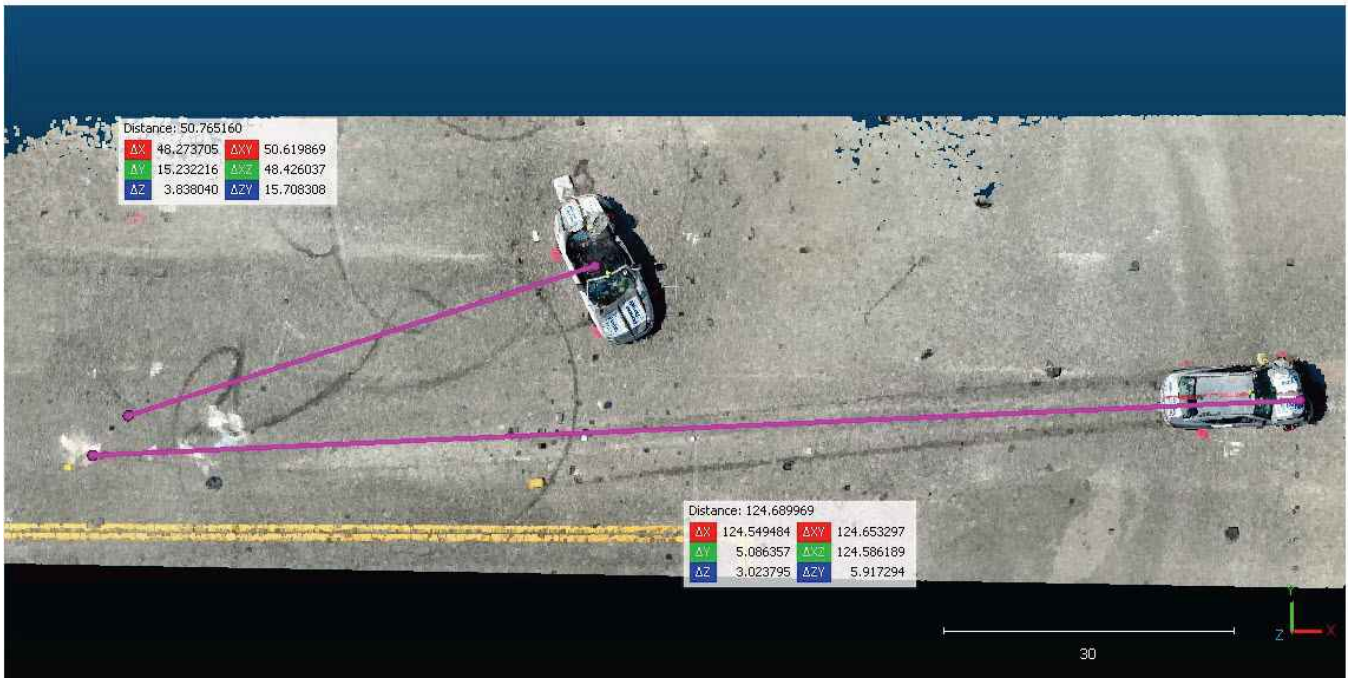
Crash Test #2 - Impact Speed ~ 68 mph
Scene Scan - CT2_post_-1.e57 - 4 minute 43 seconds
Accuracy ~ -0.61%



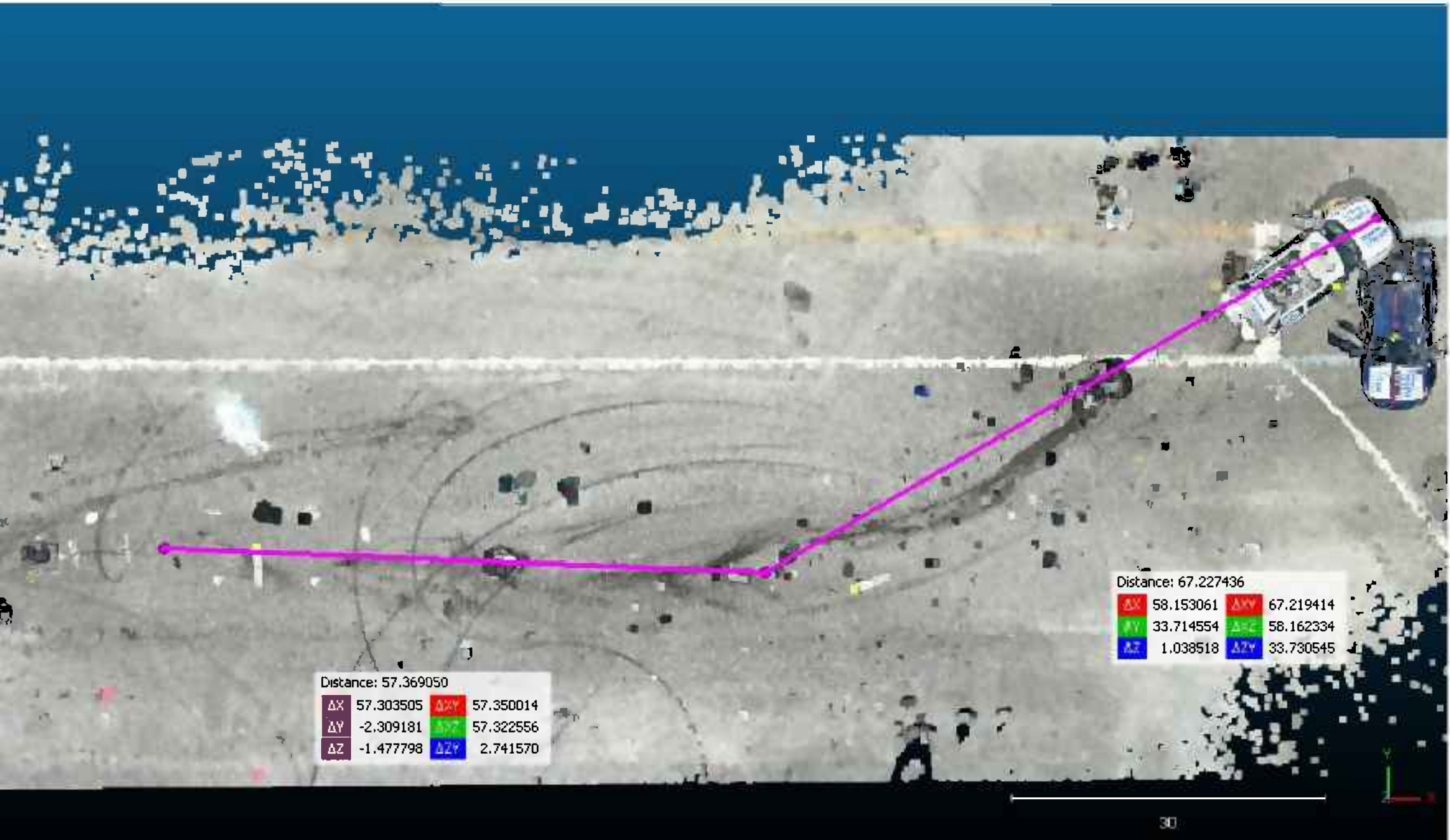
Crash Test 2 - Scene Scan 2



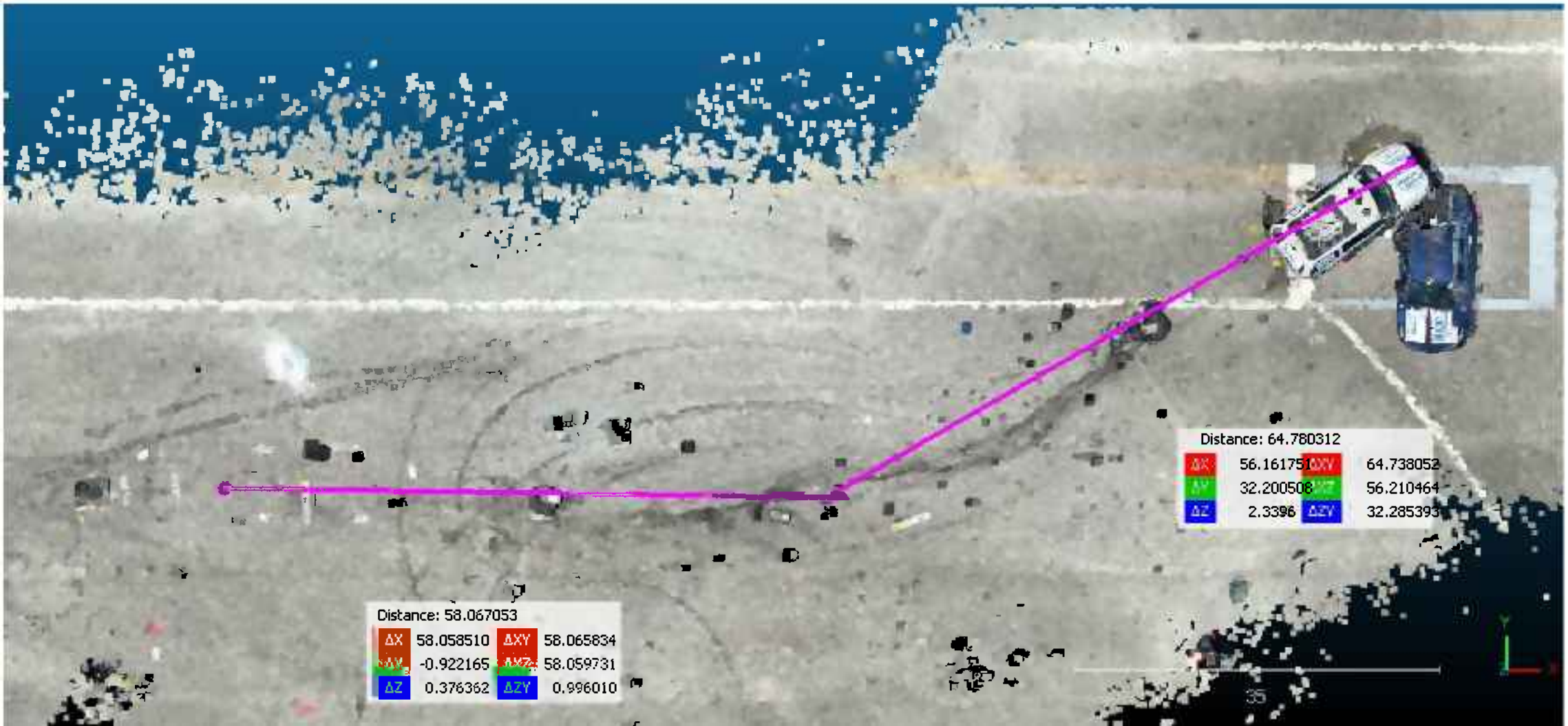
Crash Test #2 - Impact Speed ~ 68 mph
Scene Scan - CT2_post_-2.e57 - 3 minute 57 seconds
Accuracy ~ -0.65%



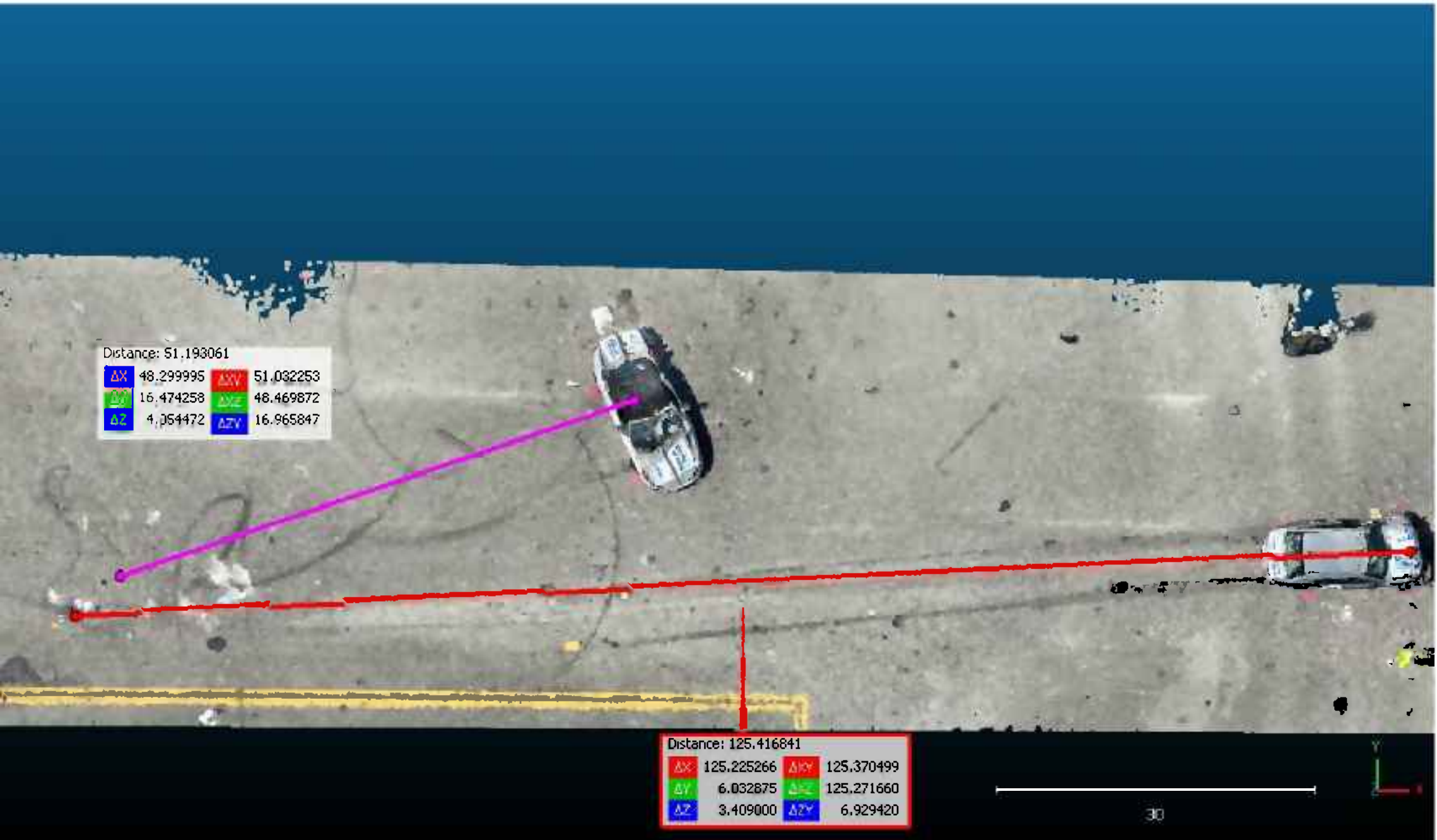
Crash Test #1 - Impact Speed ~ 58 mph
Scene Scan - CT1_post_-1.e57 - 5 minute 18 seconds
Accuracy ~ 0.56%



Crash Test #1 - Impact Speed ~ 58 mph
Scene Scan - CT1_post_-2.e57 - 5 minute 45 seconds
Accuracy ~ -0.40%



Crash Test #2 - Impact Speed ~ 68 mph
Scene Scan - CT2_post_-1.e57 - 4 minute 43 seconds
Accuracy ~ -0.61%



Crash Test #2 - Impact Speed ~ 68 mph
Scene Scan - CT2_post_-2.e57 - 3 minute 57 seconds
Accuracy ~ -0.65%