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# Wings of Dreams

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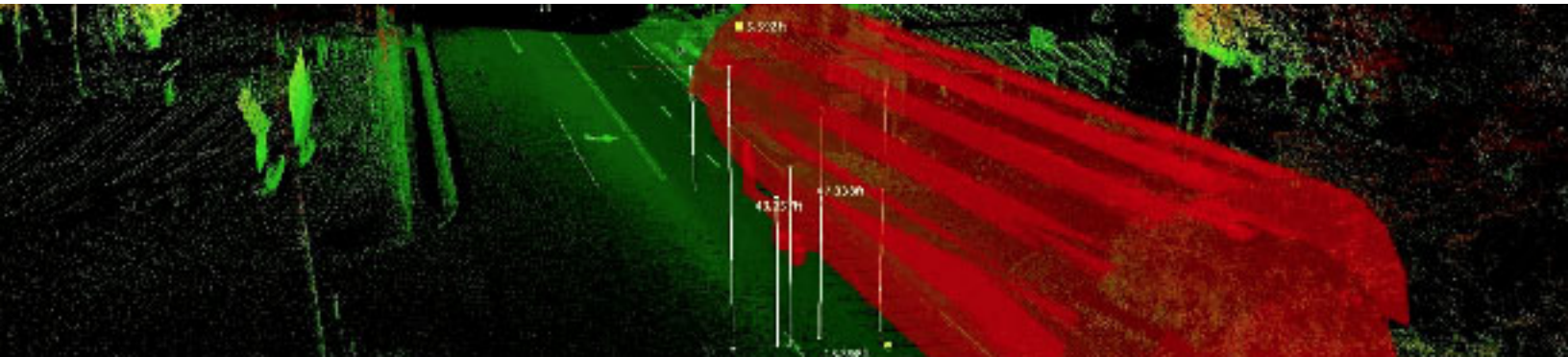
| CLIENT | **Wings of Dreams Aviation Museum** | INDUSTRY | **Education** |
| LOCATION | **Starke, Florida** | YEAR | **2013** |

## INTRODUCTION

**IN 2013,** the Wings of Dreams Aviation Museum in Starke, Florida, acquired a very unique object: the last remaining NASA shuttle program external fuel tank. They were then tasked with transporting the 153ft tank to their museum, 55 miles away.

Because transporting wide-load and other oversized objects presents serious logistical issues, The Wings of Dreams museum hired Star Intermodal Transportation to manage the transportation of the tank. Preparation for the transport of an object of this size takes many hours and diligent foresight. From preparation and loading, to acquiring permits and a State DOT approved route, the checklist before mobilization is very long. Added to that checklist are the numerous items along the route that need to be removed beforehand to avoid collision (such as street lights, bus stops, fire hydrants, utility poles and many other assets). It's obvious how daunting a heavy and over-sized haul can become.



# CHALLENGE

The tank itself is more than half the length of a football field, and weighs about 75,000 pounds unfueled. It stands more than 15 stories tall. The push bar attached to the transport cradle is 11 feet long, extending the total length to approximately 165 feet. On a working shuttle, these shuttle tanks were referred to as the “backbone” of the shuttle, and would propel the spacecraft to orbit with the 535,000 gallons of liquid hydrogen and oxygen they contained.

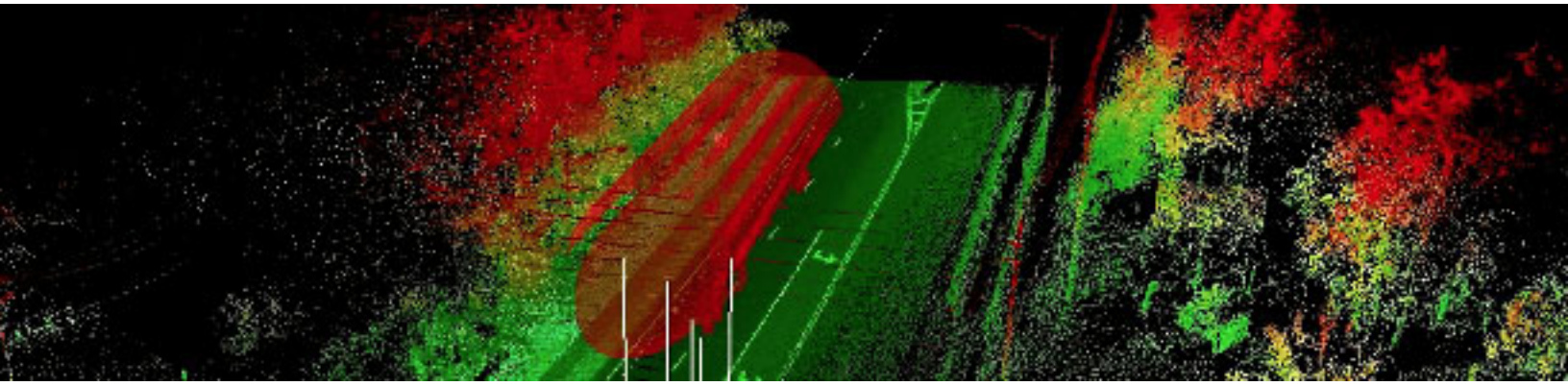
Dimensions of the tank:

» Length: 153.8 ft.

» Diameter: 27.6 ft.

» Height (on the transporter): 34 ft.

The route to travel was a relatively short distance of 55 miles. The main challenges Star Intermodal Transportation was facing were two-fold: how to mobilize a mobile data collection unit efficiently in order to have little to zero impact on other production projects, and after collection, how to most effectively produce a useful deliverable. Prior to transporting the tank, Star Intermodal Transportation conducted a manual collision audit of the State-approved route. Through their efforts, they were able to identify 300 objects that would need to be removed before transporting the tank.



# MAVERICK SOLUTION

In order to confirm their conclusion and identify additional clash points that may have been missed, Star Intermodal Transportation hired Mandli Communications to use mobile LiDAR and 360 degree imaging for clash detection. Mandli suggested the use of the Maverick, a portable and powerful spatial data collection system. With Maverick, the entire collection process took one engineer only three days to collect all necessary roadway information. By collecting the roadway information with a portable mobile

LiDAR system, the entire process was done more quickly, efficiently, and safely.

While processing the collected data, Mandli added a 5ft radius to the tank model and found points of contact based off of that radius to ensure that the tank could be safely transported.

**Mandli is the leader in mobile data collection.**

## RESULTS

After post-processing the data, Mandli sent the hard drives to Orbit Geospatial Technologies. Orbit ran the Maverick data through their clash detection software, which produced a rich output of clash points along the 55 mile route. Star's initial audit of 300 items was confirmed, and with the data from the Maverick, we were able to add additional items which would have become problematic during the haul.