

# BULK PROPANE

## MODEL DESCRIPTION DOCUMENT (MDD)

Version 1.0



MARCH 24, 2017

**PREPARED FOR:**  
DS FEDERAL CDDMAI  
ATTN: GEORGE STONE



**PREPARED BY:**  
DIGNITAS TECHNOLOGIES, LLC  
3504 LAKE LYNDAL DR., SUITE 170  
ORLANDO, FL 32817

## DOCUMENT REVISION HISTORY

Version	Description	Date
1.0	Initial Release	03/24/2017

## TABLE OF CONTENTS

DOCUMENT REVISION HISTORY .....	i
TABLE OF FIGURES.....	iii
TABLE OF TABLES.....	iii
1    MODEL OVERVIEW .....	1
1.1    DESCRIPTION .....	1
1.2    REFERENCES.....	1
1.3    MODEL VERSION AND HISTORY .....	1
1.4    MODEL SUMMARY .....	2
2    UNITY PACKAGE.....	5
2.1    IMPORTING THE UNITY PACKAGE.....	5
3    MODEL ATTRIBUTES .....	6
3.1    POLYGON ALLOCATION .....	6
3.2    LEVEL OF DETAIL (LODS) .....	6
3.3    TEXTURE MAPS .....	6
3.4    SENSOR VIEWS.....	6
3.5    MODEL STATES.....	6
3.6    SKELETAL STRUCTURE .....	6
4    ANIMATIONS .....	7
5    VERIFICATION APPROACH.....	7
5.1    RUNTIME SYSTEMS .....	7
6    LIMITATIONS .....	7
7    CONTACT INFORMATION .....	7

## TABLE OF FIGURES

Figure 1 Bulk Propane Model (Unity Render) .....	1
Figure 2 Bulk Propane Origin on Cartesian X, Y, Z Coordinate System (Maya Software Render) .....	2
Figure 3 Bulk Propane – Side A (Unity View) .....	3
Figure 4 Bulk Propane – Side B (Unity View) .....	3
Figure 5 Bulk Propane – Side C (Unity View) .....	3
Figure 6 Bulk Propane – Side D (Unity View) .....	4
Figure 7 Bulk Propane – Tanks from Side A (Unity View) .....	4
Figure 8 Bulk Propane – Truck At Loading Rack (Unity View) .....	4
Figure 9 Unity Import Package.....	5

## TABLE OF TABLES

Table 1 Model Revision History.....	1
Table 2 Model Summary.....	2
Table 3 Polygon Allocation.....	6

## 1 MODEL OVERVIEW

### 1.1 DESCRIPTION

A bulk propane facility usually is defined as a place that stores and distributes propane gas via delivery truck or piping systems.

### 1.2 REFERENCES

- 3D\_Model\_Development\_Process.docx
  - The 3D model development process details Dignitas Technologies' procedure for building 3D models.



Figure 1 Bulk Propane Model (Unity Render)

### 1.3 MODEL VERSION AND HISTORY

Information about the model version can be found in the "Model\_Version.txt" file located in the model's directory (same directory the model's .fbx file is located).

Table 1 Model Revision History

Version	Description	Date
1.0	Initial release of the Bulk_Propane.fbx	03/24/2017

## 1.4 MODEL SUMMARY

Table 2 Model Summary

Model Name	Bulk_Propane.fbx
Unity Package	Bulk_Propane.unitypackage
Model Units	Meters
Coordinate System	Cartesian X, Y, Z (see Figure 2 below)
Model Origin	Origin is located at center mass. (0, 0, 0) (See figure 2 below)
Model Orientation Runtime	Forward: Positive Z Up: Positive Y
Model Orientation Maya	Forward: Positive Z Up: Positive Y



Figure 2 Bulk Propane Origin on Cartesian X, Y, Z Coordinate System (Maya Software Render)



This model was imported into Unity 5.5 to verify the model (see Figure 3 below).



Figure 3 Bulk Propane – Side A (Unity View)



Figure 4 Bulk Propane – Side B (Unity View)



Figure 5 Bulk Propane – Side C (Unity View)



Figure 6 Bulk Propane – Side D (Unity View)



Figure 7 Bulk Propane – Tanks from Side A (Unity View)



Figure 8 Bulk Propane – Truck At Loading Rack (Unity View)



## 2 UNITY PACKAGE

### 2.1 IMPORTING THE UNITY PACKAGE

1. Download the “Bulk\_Propane.unitypackage” file from Google Drive or Bit Bucket.
2. Open the “CCDMMAI” Unity Project in Unity 5
3. In the top menu bar go to “Assets → Import Package → Custom Package...”
4. A window should pop up showing you the contents of the Unity Package being imported
  - a. This Unity Package should look like this:

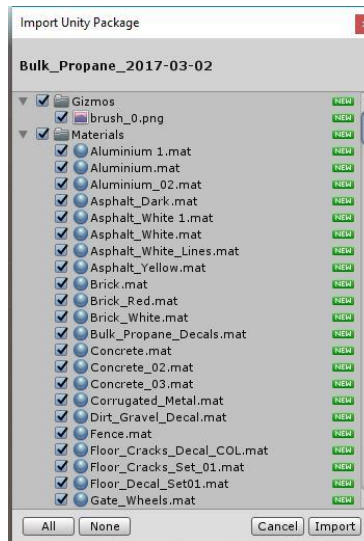


Figure 9 Unity Import Package

5. Press “Import” and the model and materials will be placed into the Assets section.
6. Make sure that when dragging in the model that you select the “\_Prefab.prefab” instead of the FBX as the prefab has the materials stored on it correctly.
7. Make sure that the prefab is dragged into the hierarchy instead of directly into the scene to make sure that the transforms are correct.

### 3 MODEL ATTRIBUTES

#### 3.1 POLYGON ALLOCATION

Polygon allocation is the number of triangles and vertices for a given state and Level of Detail (LODs) in the model. The method for calculating the number of polygons is to gather each model state then count the polygons present in each representation. Animations are not included in the polygon allocation. The Bulk Propane model has a single LOD which is labeled LOD0.

**Table 3 Polygon Allocation**

<b>Model</b>	<b># of Triangles</b>	<b># of Vertices</b>
Bulk Propane	514468	291889

#### 3.2 LEVEL OF DETAIL (LODS)

TBD

#### 3.3 TEXTURE MAPS

For most models in this scene we used tileable textures, most of which comprise of diffuse, normal, metalness, and specular maps. For the materials that use specularity, the spec maps are found in the Alpha Channel of the Metalness maps.

1. Texture Map Formats – JPG, PNG, TGA
2. Texture Map Types – Diffuse, Normal, Metalness, Specularity
3. Average Texture Map Sizes – 2048 x 2048

Decals are used for the grime and damage details. These decal materials are fully customizable as far as color, opacity, normal maps etc. Each decal is a separate object that can be moved, deleted, hidden or copied. Feel free to modify as needed.

#### 3.4 SENSOR VIEWS

N/A

#### 3.5 MODEL STATES

N/A

#### 3.6 SKELETAL STRUCTURE

N/A

## 4 ANIMATIONS

N/A

## 5 VERIFICATION APPROACH

### 5.1 RUNTIME SYSTEMS

The 3D model was tested using the following tools:

- Unity 5.5

## 6 LIMITATIONS

N/A

## 7 CONTACT INFORMATION

Project Manager: Greg Dukstein

Phone: (407) 601-7847

Email: [gdukstein@dignitastech.com](mailto:gdukstein@dignitastech.com)