

AFGHAN TEEN FEMALES

MODEL DESCRIPTION DOCUMENT (MDD)

Version 1.0



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DOCUMENT REVISION HISTORY		
Version	Description	Date
0.1	Draft	01/07/15
1.0	Initial Release	09/11/15

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1 MODEL OVERVIEW

1.1 DESCRIPTION

This document details the 3-Dimensional (3D) models of Afghan Teen Female characters. The Afghan Teen Female character models can be used with and without weapons and with a set of animations (see the specific weapons and animations Model Description Documents for more information). Weapons are attached and detached from the Afghan Teen Female character models at specific attach points. During runtime weapons are attached and detached to the model by the visualization system that controls the 3D model. These models can be used with any visualization system that can import FBX or COLLADA formats.

The Afghan Teen Female character models were developed by Dignitas Technologies for the SE Core DT Phase III Small Business Innovative Research (SBIR) project. The models were part of a larger set of character and weapon models, and animations developed to support the LVC-IA AAR 3D Viewer. The models designs were based on screen captures of the CCTT DI Guy Afghan Teen Female models provided by SE Core. To meet the LVC-IA AAR performance requirement, a medium fidelity model was developed.

The Afghan Teen Female character model components include:

- Dress
- Flats
- Hijab

1.2 REFERENCES

- 3D_Model_Development_Process.docx
 - The 3D model development process details Dignitas Technologies' procedure for building 3D characters and animations.
- Character_Model_Specification.docx
 - The character model specification provides the requirements for developing 3D character models and attachments.



Afghan Teen Female 1



Afghan Teen Female 2



Afghan Teen Female 3



Afghan Teen Female 4

Figure 1 Afghan Teen Female Character Models



Afghan Teen Female 1



Afghan Teen Female 2



Afghan Teen Female 3



Afghan Teen Female 4

Figure 2 Afghan Teen Female with Bomb Vests Character Models

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 Character Revision History

Version	Description	Date
1.0	Initial release of the AfghanTeen Female1_skelmesh.fbx	09/11/15
1.0	Initial release of the AfghanTeen Female1_WithBombVest_skelmesh.fbx	09/11/15
1.0	Initial release of the AfghanTeen Female2_skelmesh.fbx	09/11/15
1.0	Initial release of the AfghanTeen Female2_WithBombVest_skelmesh.fbx	09/11/15
1.0	Initial release of the AfghanTeen Female3_skelmesh.fbx	09/11/15
1.0	Initial release of the AfghanTeen Female3_WithBombVest_skelmesh.fbx	09/11/15
1.0	Initial release of the AfghanTeen Female4_skelmesh.fbx	09/11/15
1.0	Initial release of the AfghanTeen Female4_WithBombVest_skelmesh.fbx	09/11/15

1.4 MODEL SUMMARY

Table 2 Model Summary

Model Name	AfghanTeenFemale1_skelmesh.fbx AfghanTeenFemale1_WithBombVest_skelmesh.fbx AfghanTeenFemale2_skelmesh.fbx AfghanTeenFemale2_WithBombVest_skelmesh.fbx AfghanTeenFemale3_skelmesh.fbx AfghanTeenFemale3_WithBombVest_skelmesh.fbx AfghanTeenFemale4_skelmesh.fbx AfghanTeenFemale4_WithBombVest_skelmesh.fbx
SE Core MEL Version L ID Afghan Teen Female	911
SE Core MEL Version L ID Afghan Teen Female with Bomb Vest	865
Model Units	Meters
Model Height	1.6 Meters (units) or 160 Centimeters
Coordinate System	Cartesian X, Y, Z (see Figures 3-6 below)
Model Origin	Origin is located on the ground between the character’s feet. (0, 0, 0) (See figures 3-6 below)
Model Orientation Runtime	Forward: Positive Y Up: Positive Z
Model Orientation Maya	Forward: Positive Z Up: Positive Y



Afghan Teen Female 1



Afghan Teen Female 1 with Bomb Vest

Figure 3 Afghan Teen Female 1 Origin on Cartesian X, Y, Z Coordinate System



Afghan Teen Female 2



Afghan Teen Female 2 with Bomb Vest

Figure 4 Afghan Teen Female 2 Origin on Cartesian X, Y, Z Coordinate System



Afghan Teen Female 3



Afghan Teen Female 3 with Bomb Vest

Figure 5 Afghan Teen Female 3 Origin on Cartesian X, Y, Z Coordinate System



Afghan Teen Female 4



Afghan Teen Female 4 with Bomb Vest

Figure 6 Afghan Teen Female 4 Origin on Cartesian X, Y, Z Coordinate System

1.5 LICENSING/RIGHTS

Models built by Dignitas Technologies along with all files and documentation, have full Government Purpose Rights.

2 MODEL ATTRIBUTES

2.1 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 Afghan Teen Female character models have a single LOD which is labeled LOD0.

Table 3 Polygon Allocation

Model	# of Triangles	# of Vertices
Afghan Teen Female 1	2890	1447
Afghan Teen Female 1 Bomb Vest	2890	1447
Afghan Teen Female 2	2762	1420
Afghan Teen Female 2 Bomb Vest	2762	1420
Afghan Teen Female 3	2762	1420
Afghan Teen Female 3 Bomb Vest	2762	1420
Afghan Teen Female 4	2904	1474
Afghan Teen Female 4 Bomb Vest	2904	1474

2.2 LEVEL OF DETAIL (LODS)

Dignitas supports only one LOD (LOD0) and no switch distances at this time.

2.3 TEXTURE MAPS

Textures:

- AfghanTeenFemale1_COL.dds (Diffuse) 2048 x 2048 pixels
- Texture Version: 1.0

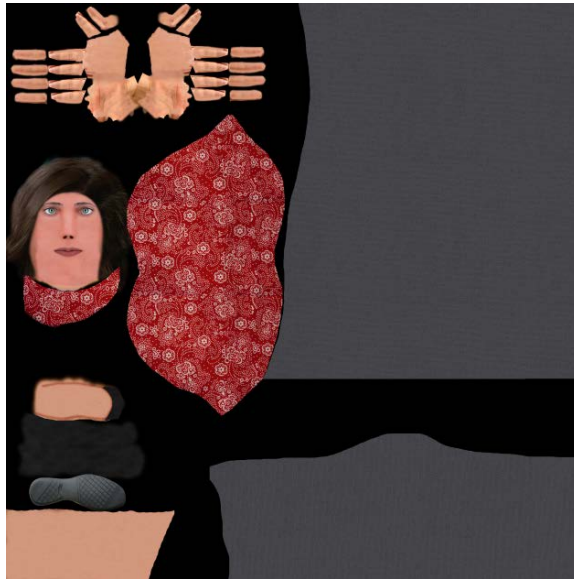


Figure 7 Afghan Teen Female 1 Texture Map

- AfghanTeenFemale1_NRML.dds (Normal map) 2048 x 2048 pixels
- Texture Version: 1.0



Figure 8 Afghan Teen Female 1 Normal Map

- AfghanTeenFemale2_COL.dds (Diffuse) 2048 x 2048 pixels
- Texture Version: 1.0

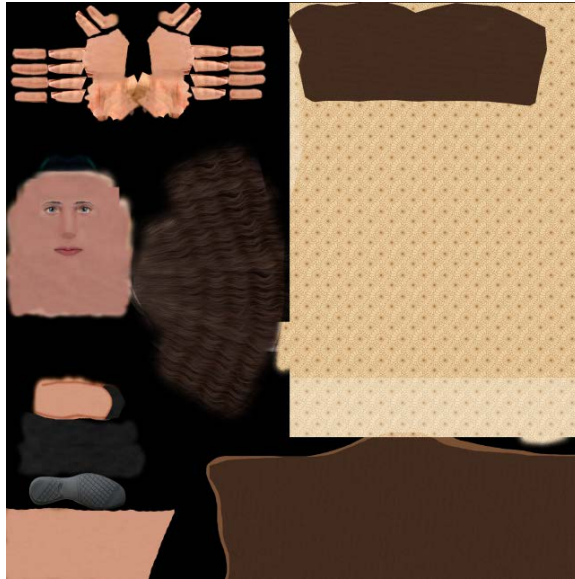


Figure 9 Afghan Teen Female 2 Texture Map

- AfghanTeenFemale2_NRML.dds (Normal map) 2048 x 2048 pixels
- Texture Version: 1.0

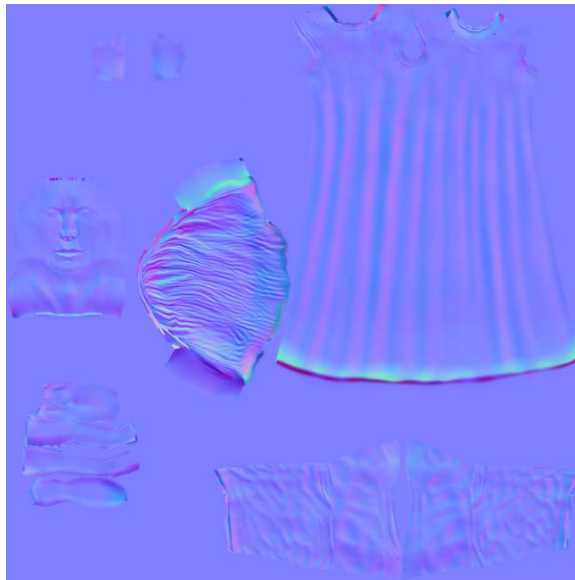


Figure 10 Afghan Teen Female 2 Normal Map

- AfghanTeenFemale3_COL.dds (Diffuse) 2048 x 2048 pixels
- Texture Version: 1.0



Figure 11 Afghan Teen Female 3 Texture Map

- AfghanTeenFemale3_NRML.dds (Normal map) 2048 x 2048 pixels
- Texture Version: 1.0

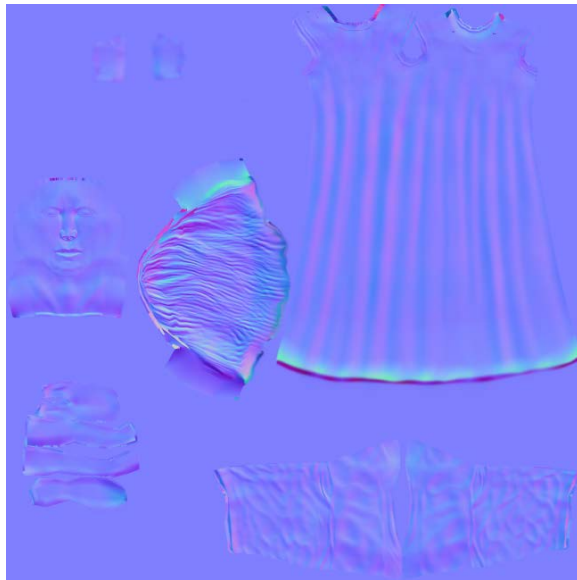


Figure 12 Afghan Teen Female 3 Normal Map

- AfghanTeenFemale4_COL.dds (Diffuse) 2048 x 2048 pixels
- Texture Version: 1.0

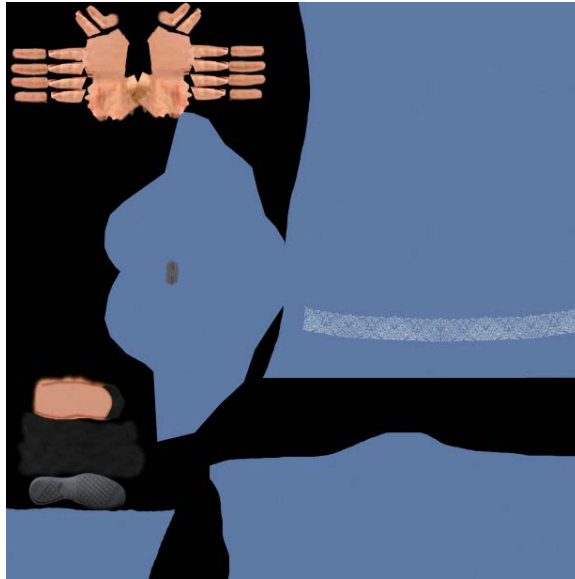


Figure 13 Afghan Teen Female 4 Texture Map

- AfghanTeenFemale4_NRML.dds (Normal map) 2048 x 2048 pixels
- Texture Version: 1.0

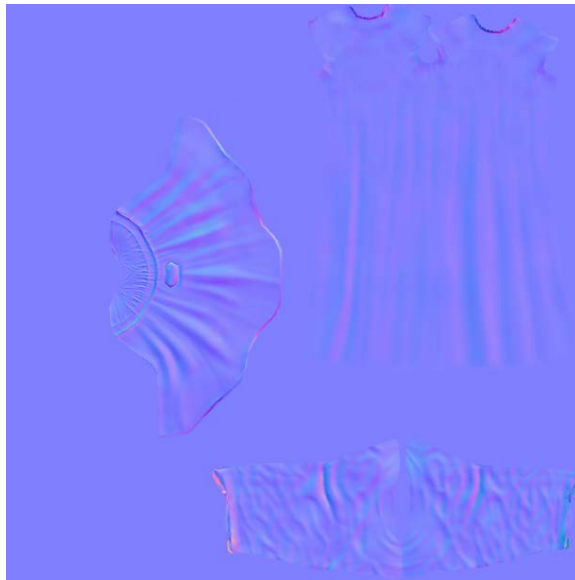


Figure 14 Afghan Teen Female 4 Normal Map

- AfghanTeenFemale1_WithBombVest_COL.dds (Diffuse) 2048 x 2048 pixels
- Texture Version: 1.0

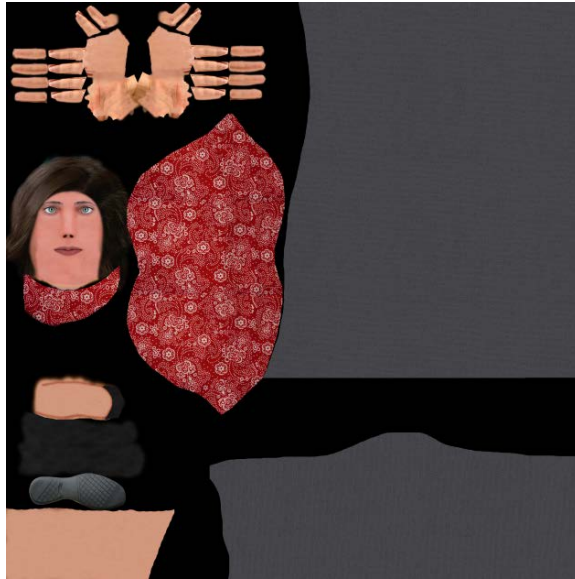


Figure 15 Afghan Teen Female 1 with Bomb Vest Texture Map

- AfghanTeenFemale1_WithBombVest_NRML.dds (Normal map) 2048 x 2048 pixels
- Texture Version: 1.0



Figure 16 Afghan Teen Female 1 with Bomb Vest Normal Map

- AfghanTeenFemale2_WithBombVest_COL.dds (Diffuse) 2048 x 2048 pixels
- Texture Version: 1.0

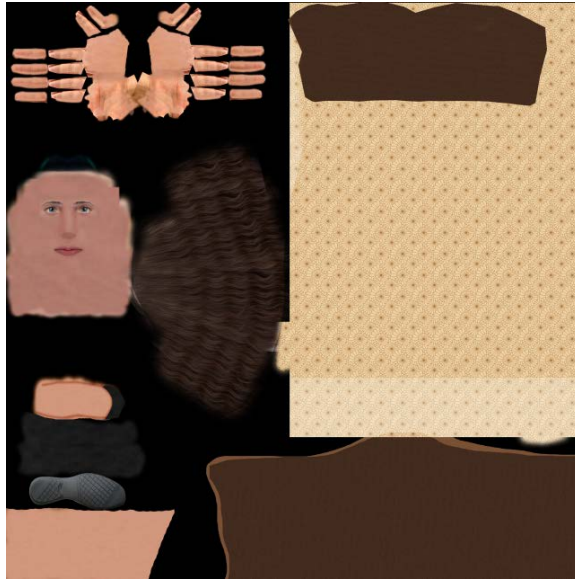


Figure 17 Afghan Teen Female 2 with Bomb Vest Texture Map

- AfghanTeenFemale2_WithBombVest_NRML.dds (Normal map) 2048 x 2048 pixels
- Texture Version: 1.0

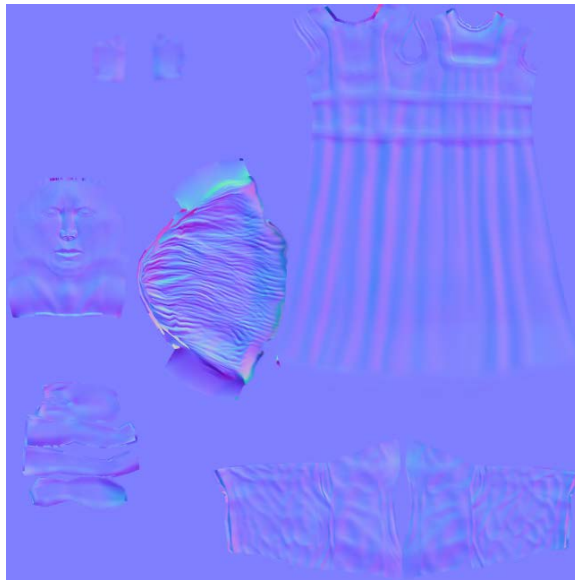


Figure 18 Afghan Teen Female 2 with Bomb Vest Normal Map

- AfghanTeenFemale3_WithBombVest_COL.dds (Diffuse) 2048 x 2048 pixels
- Texture Version: 1.0



Figure 19 Afghan Teen Female 3 with Bomb Vest Texture Map

- AfghanTeenFemale3_WithBombVest_NRML.dds (Normal map) 2048 x 2048 pixels
- Texture Version: 1.0

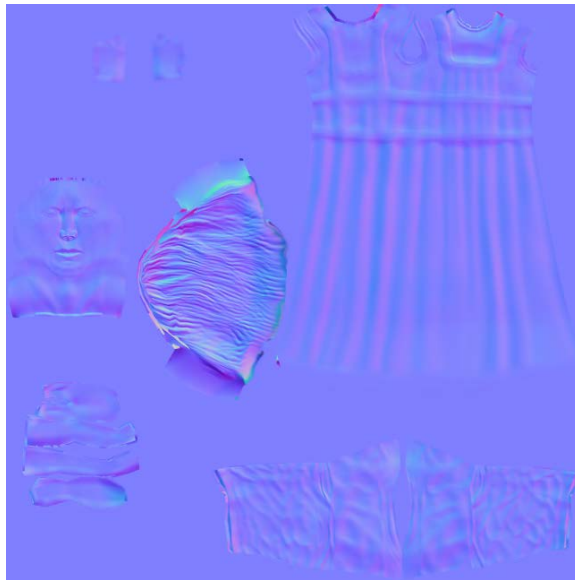


Figure 20 Afghan Teen Female 3 with Bomb Vest Normal Map

- AfghanTeenFemale4_WithBombVest_COL.dds (Diffuse) 2048 x 2048 pixels
- Texture Version: 1.0

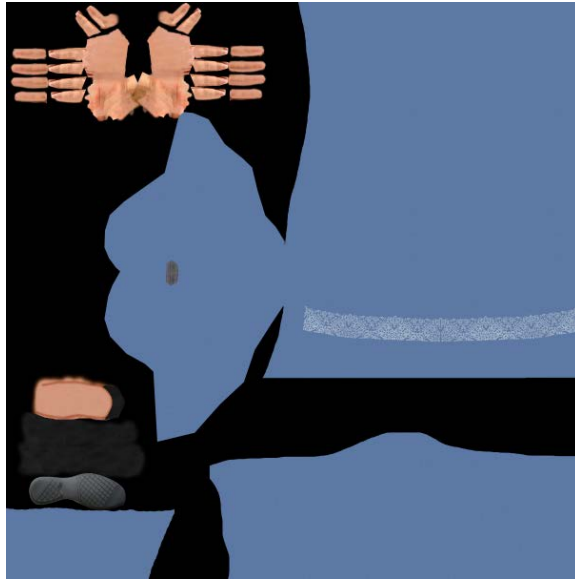


Figure 21 Afghan Teen Female 4 with Bomb Vest Texture Map

- AfghanTeenFemale4_WithBombVest_NRML.dds (Normal map) 2048 x 2048 pixels
- Texture Version: 1.0

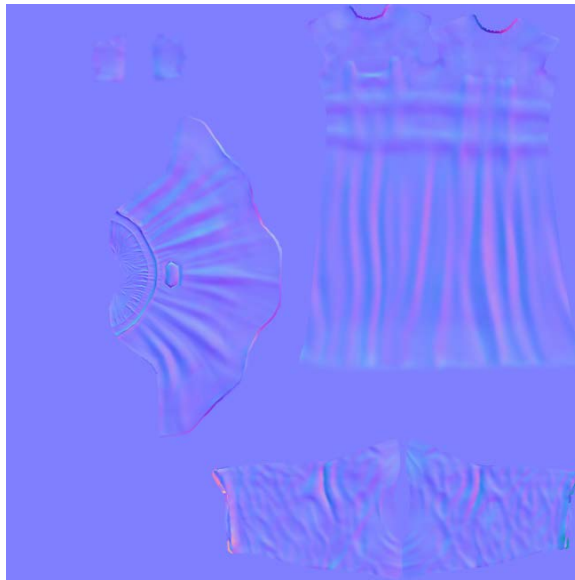


Figure 22 Afghan Teen Female 4 with Bomb Vest Normal Map

2.4 SENSOR VIEWS

Not applicable at this time.

2.5 HEALTH STATES

For more information on the Incapacitated and Killed States refer to their respective MDDs.

Healthy State

Incapacitated State

Killed State

2.6 SKELETAL STRUCTURE

2.6.1 JOINTS IN THE RIG

A **rig** is a skeleton that attaches to the 3D model to allow for animations to be added. The **joints** in the rig hold the translation and rotational data from the animations.

Naming convention for joints:

Table 4 Naming Convention for Joints

Hips	RightForeArm
Spine	RightHand
Spine1	RightThumbBase
Neck	RightThumbTip
Head	RightHandTip
HeadEnd	LeftUpLeg
LeftShoulder	LeftLeg
LeftArm	LeftFoot
LeftForeArm	LeftToeBase
LeftHand	LeftToe
LeftThumbBase	RightUpLeg
LeftThumbTip	RightLeg
LeftHandTip	RightFoot
RightShoulder	RightToeBase
RightArm	RightToe

2.6.2 ATTACH POINTS AND ATTACH MODELS

The model rig and the **Attach Model** (e.g. weapons, cell phones, etc) both have **Attach Points** where they can be connected (“attached”) during runtime. **Attach Points** are unweighted joints on the model rig that represent locations where **Attach Models** can be connected. Attachments occur during runtime

based on the animation applied to the model rig. Table 5 lists all Attach Points, associated Attach Models, and corresponding animations for this character model.

Table 5 Attached Models

Name of Attached Model	Animations	Attach Points
N/A	N/A	N/A

3 ANIMATIONS

The animations associated with this character are shown below. For additional animations compatible with this character, or more information on those listed above, please refer to the Animation MDDs.

- Walking
- Running
- Crawling
- Standing
- Kneeling
- Prone
- Incapacitated
- Crouching
- Killed

4 VERIFICATION APPROACH

4.1 RUNTIME SYSTEMS

This 3D model, associated accessories and weapons, and animations were tested using the following:

- Veritas 3D Viewer v1.13
- Veritas Model Viewer v1.4
- FBX Viewer 2013.3
- OneSAF v8.0

5 LIMITATIONS

Killed state is not implemented yet, however, it is under development.

6 CONTACT INFORMATION

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