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24 March 2005

FINAL PROJECT DOCUMENTION
US ARMY Wolverine (Heavy Assault Bridge)

Background
The Wolverine (formerly the Heavy Assault Bridge) is an armored vehicle designed to carry, emplace, and retrieve an assault bridge capable of supporting 70 ton loads such as the M1A2 main battle tank (MBT). The Wolverine is a combat support system which integrates advanced bridging, hydraulic and electronic control capabilities into a single survivable system. Wolverine fills the need for a combat gap crossing capability with the same mobility, survivability, and transportability as the M1 Abrams tank. WOLVERINE is to be a one for one replacement for the Armored Vehicle Launched Bridge (AVLB) in select heavy divisional engineer battalions, armored cavalry regiments and heavy separate brigades.

Research
This vehicle began development in 1983 and was canceled in 1990 due to a reduction in Research and Development funding. The program was reinstated in 1991 as a Desert Storm initiave, and contracted for prototype and operational testing in 1994. The program was in Low Rate Initial Production (LRIP), but upon discussing the system with a representative from the Wolverine Project Manager (PM), funding has been drastically cut and future fielding is questionable. The Wolverine design is tied to the German Leguan and is in co-operation with US-based General Dynamics Land Systems.

Information and photos are available at http://www.fas.org/man/dod-101/sys/land/wolverine.htm. Overall vehicle dimensions were approximated from these pictures and from the Technical Manual (TM 5-5420-232-10) acquired from Wolverine Program Manager.

Modeling
The Wolverine consists of the bridge, an M1A1 chassis, and the bridge support/turret. The M1A1 chassis was modeled by using Scott Tufts' M1A1 in the Savage repository. The turret and gun tube was stripped and saved to me used as an inline for the Wolverine. A bridge half was then modeled by extrusions and primitive shapes, and then def/used for the other half. Wings3D (www.wings3d.com) was used extensively to model the bridge support system, to include the load and launch arms. By using Wings3D export capability and X3D-Edit's import capability (VRML 97 was the common denominator), the shapes were brought in as indexedFaceSets.

Animation

After the entire system inlined and aligned, the complicated task of animating the deployment of the bridge was modeled with MULTIPLE animations. The extension of the bridge required an x-component, a y-component, and a rotation component. Interpolators synchronized up with a timer proved to be a tedious exercise to get it to look right. Once the extension was satisfactory, the rear hydraulic cylinder was animated to match the bridge movement (cylinder rotation and extension/retraction).

The process to deploy the bridge was very similar with the launch arm. After orchestrating the bridge extension and deployment, animating the tank crossing over the bridge was quite easy. I then tied the animation to command buttons (touch sensors) and with sound effects (which should be changed for improved realism).

Conclusion

This was a challenging project. Wings3D made the task much easier (after learning the tool). The most difficult aspect was orchestrating all the moving pieces to make the bridge deployment look realistic.