

# Understanding Environmentally Friendly Drilling through Serious Games

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**Abstract:** This session is an educational serious game that teaches players the concepts involved in environmentally friendly petroleum drilling. Petroleum calamities have happened since the early days of drilling. With catastrophic impacts in all the ecological systems, oil spills are some of the most devastating events through human history. Yet, there are diverse ways to avoid oil spills from happening, as well as methods to create eco-friendly drilling rigs. With these ideas, the oil rig serious game was born. The oil rig serious game application is necessary to educate the public and future energy industry workers on how traditional oil rigs can become more eco-friendly oil rigs, and create consciousness about what truly happens within an oil rig and within oil rig catastrophes. This application educates the public as well as those preparing to join the oil and energy industry.

## What is the game about?

The oil rig serious game introduces the audience to the oil industry by allowing participants to explore a land based drill rig. This virtual land rig provides participants (players) diverse information about how a drill rig works, and allows them to try out the different types of machinery used on land rigs around the world. While players are immersed in the game world, the game program introduces a number of revolutionary- “eco-friendly alternatives”- to the traditional equipment currently used on rigs. In this case “eco-friendly” is defined as the alternatives that make a land rig create less toxic waste for the environment, and wastes the least amount of resources possible. These green technologies allow the rig to be more environmentally friendly, while also improving the safety of the personnel who are using it.

The game can also be used for training purposes: a player will experience a series of danger scenarios that culminate in the blow-out of the rig (see Figure 1). Through simulation, the game teaches the player steps necessary to prevent such accidents, and if they do occur, how to make it out safely. The serious game has been created to inform the public about the oil industry, as well as a tool to effect change in the way that the industry is currently marketed to future energy industry workers.

## What is the purpose of the game?

The purpose of the oil rig serious game is used to immerse the player on a rig site and allow them to simulate the experience of walking through the environment. An example is when the player moves close to a piece of machinery, the sound of the machine gets louder as it would in a real environment. This gives the player the feeling that they are on the rig and immersed in the environment. When players approach an item/object it turns green, and if desired they can interact with it and gain additional information about eco-friendly options for that piece of equipment. Videos (cut-scenes) play, and players can rotate and interact with 3D objects, read technical information, and access to a host of external links for more information on the subject.

The oil rig serious game is an opportunity to experience being on the oil rig and to experience both malfunctions and problem scenarios without being subject to the dangers inherent in an on-site visit. The application was created for use by a variety of individuals who work with rig environments: namely first responders and “rough-necks”. First responders are those medically trained experts who respond in the event of a catastrophe and “rough-necks” is a slang-term for the individuals who work the hard manual labor on the oil rigs. The differences in use and approach in the game, depending on the role is that first responders will use the simulation rig to understand how a rig works, rig nomenclature, and safety procedures that need to be enacted should something catastrophic happen. Rough necks might use the simulation to learn the diverse equipment within a rig and each of its functions. Both groups, when playing the serious game, must successfully achieve the tasks for their role to minimize risks caused by the rig failure/blow-out.

## What are the success and failures of the game?

Mechanical rig simulators cost up to six million dollars, yet the oil rig serious game costs a fraction of what a rig simulator costs. Additionally, the serious game is downloadable on any computer, and much like the United States Army’s serious game *America’s Army* (2002), the environmentally friendly drilling rig serious game will be made

available to the general public to provide them with exposure to the industry and the environmentally friendly techniques that should be occurring; this will equip citizens with knowledge of environmentally friendly techniques available for the petroleum and energy industry. This provides multiple people, teams, and interested individuals the opportunity to experience working within an oil rig environment in multiple capacities through a variety of scenarios.

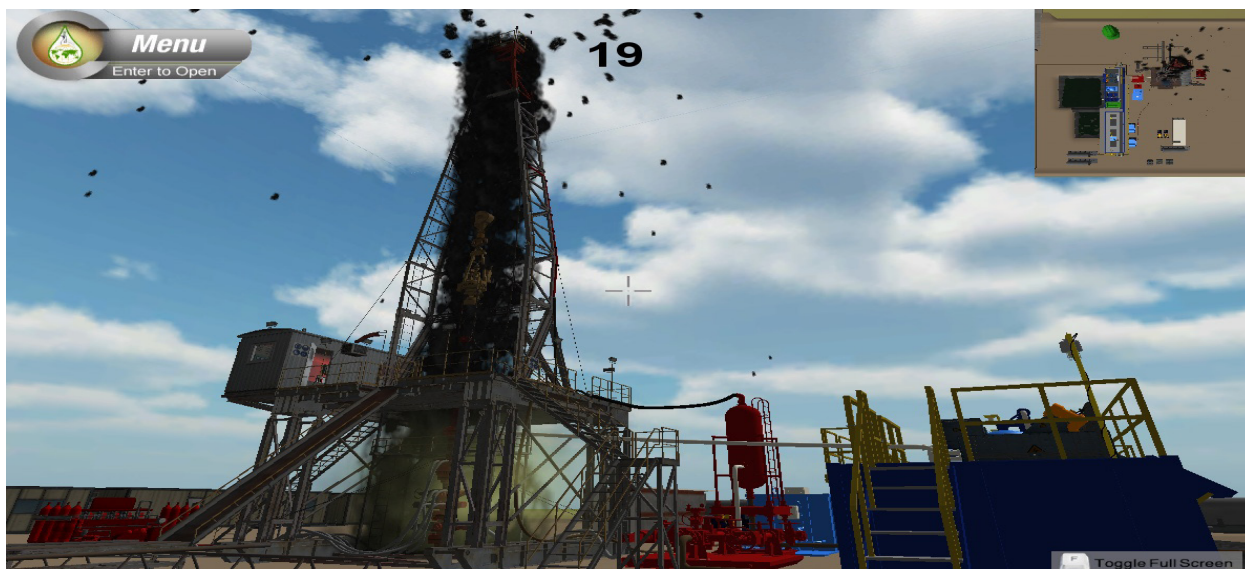


Figure 1: Screen-capture of rig blowout.

## References

United States of America Army. (Publisher). *America's Army* [PC Game]. Available from <http://www.americasarmy.com/>

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