

Noble lowering greenhouse gas emissions through proactive environmental program

EMPHASIS ON ENVIRONMENTAL initiatives and issues that affect the global drilling industry, both onshore and offshore, are ever increasing. Drilling contractors and others are becoming more proactive in their efforts to reduce emissions of greenhouse gases and other pollutants.

One such company is **Noble Corporation**, which was previously featured in this magazine with the recycling program on its Gulf of Mexico rigs. Since that article, Noble has extended their recycling efforts to every division in the company.

Now the company is concentrating on reducing its engine emissions of both greenhouse gases and criteria pollutants. Noble created a three-year baseline of greenhouse gas emissions for every rig in its fleet and is developing short-term and long-term programs to reduce their emissions profile as a company. These programs include improving diesel engine efficiency with more complete fuel burning and testing new, efficient diesel engines and various oils and additives, including synthetic engine oils.

MEASUREMENTS, BASELINES

Before beginning these initiatives, Noble completed a pilot inventory of greenhouse gas emissions aboard a rig in the Gulf of Mexico. The inventory demonstrated that diesel engines that provide power for Noble rigs are the primary source of the company's greenhouse gas emissions.

Next, Noble collected data on diesel consumption from every rig in its fleet for the years 2001-2003. To obtain the data, Noble rigs took tank soundings each day to determine an accurate amount of diesel fuel burned. The data was loaded into SANGEA™ Emissions Estimation Software (created by **Chevron** and donated to the American Petroleum Institute) to calculate the estimated greenhouse gas emissions resulting from Noble's diesel consumption. The industry-accepted SANGEA™ software includes API data with regard to processes that create gases that potentially cause climate change.

The baseline allows Noble to pinpoint emissions for management and reduction strategies. The main target for reduction is carbon dioxide (CO₂), a by-product of diesel combustion, explained **Kerric Peyton**, Noble's Manager of Health, Safety, Environment and Quality.

Noble's estimated emissions per rig operating day in 2004 were lower than in 2003 and the lowest since 2001. The company attributes this reduction to the success of its efforts to improve engine efficiency.

PERFORMANCE IMPROVEMENT

While public discussion continues about the long-term effects of increased levels

of greenhouse gases in the atmosphere, Noble believes that proactively managing these emissions from its fleet is simply the right and responsible course of action. The company is being proactive on several fronts to manage and reduce its greenhouse gas emissions.

Noble investigated three US-based programs for self-reporting and reducing emissions. The company eventually joined the US Environmental Protection Agency (EPA) Climate Leaders program. Climate Leaders is a voluntary government-industry partnership that encourages companies to develop long-term comprehensive climate change strategies and set targets for reducing green-



The semisubmersible Noble Therald Martin is one of the company's rigs that is contributing to Noble's efforts to reduce its emissions profile.

house gas emissions. Noble was the first drilling contractor to join the program.

As part of the Climate Leaders application process, the EPA audited Noble. The agency verified the company's greenhouse gas emissions efforts and audited Noble's rigs to ensure there were no other significant processes contributing to the company's greenhouse gas emissions profile.

The audit also examined Noble's methodology for recording and reporting fuel usage, as well as the accuracy of the procedure.

ENGINE EFFICIENCY

Noble is now focusing on engine efficiency to generate fewer CO₂ and equivalent emissions per unit of power. To reduce diesel emissions through better efficiency and fuel burning, Noble experimented with several different configurations of fuel injectors on its engines. The injectors atomize the fuel more completely, resulting in better combustion.

Noble worked with the company that supplies injectors for **General Motors Electro Motive Division (EMD)** diesel engines to test various injectors and

determine the best configuration. Both companies received the test data and worked together to determine the best configuration.

"We reduced our nitrogen oxide emissions by almost 50% in some cases by changing the injectors and optimizing the diesel engine's timing," Mr Peyton said.

Noble has standardized its rigs that utilize EMD engines on the selected injector configuration.

"That is where we focused because that is where the most significant improvement could be realized," Mr Peyton explained.

LONG-TERM PROGRAMS

One of Noble's longer-term initiatives is an engine replacement program to standardize to the most efficient, cleanest engines available.

"As part of its long-term approach to reducing its emissions profile, Noble is willing to go far beyond meeting minimum engine emissions requirements," Mr Peyton said.

"We are striving to go above and beyond the requirements placed upon us," he explained, "by obtaining the best available technology. When we do need to replace an engine, we will strive to replace it with the best available technology."

ENGINE OILS, ADDITIVES

Noble is also conducting pilot tests to determine if synthetic oils improve engine efficiency, thereby reducing emissions of greenhouse gases and criteria pollutants. The oils are being compared in engines on the same rigs, with two engines running synthetic oil and two running regular oil.

The company is also investigating the use of diesel fuel additives that may improve combustion efficiency.

"There are several products on the market designed to improve combustion efficiency," Mr Peyton said.

"We find that performing small scale pilot tests on our engines in the field provides the evidence we need to make decisions on a fleet-wide basis." ■