



PERF Newsletter

Volume 2 Issue 1

February 2001

Environmental Technical Solutions for the Petroleum Industry

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Welcome BOC Gases Technology!

We are pleased to announce that on 2nd August, 2000, **BOC Gases** of Murray Hill, New Jersey joined PERF as an Associate Member.

BOC Gases is part of the **BOC Group** which has headquarters in the United Kingdom. It has an international portfolio of companies grouped for management control and report-



ing into three business segments. These are Gases & Related Products, Health Care, and Vacuum Technology & Distribution Services.

We welcome representative **Ram Ramachandran** and **BOC Gases** to the PERF family, which is listed in full on Page 4.

Next Quarterly Meeting in San Antonio, Texas, February 28-March 2, 2001

The 54th PERF Quarterly Meeting will be hosted by **Petro-Canada** in San Antonio, Texas, March 1 & 2, 2001. There will be a reception the evening of February 28.

The theme of the meeting is "New Directions in Environmental Research for the Oil Industry" with a focus on University research.

There will be a General Session on the Morning of March 1, when preeminent academic researchers in the fields of site remediation, risk assessment, environmental management, bioavailability, and other areas of interest will present their views on technical gaps and research opportunities in the oil industry. The meeting objective is to find project ideas in which

both universities and PERF members can jointly participate and support.

In the afternoon of March 1, there will be concurrent session focusing on the needs of both Upstream and Downstream.

Details of the meeting and of accommodations are posted on our web site: <http://www.perf.org/>

See you in San Antonio!



The Alamo
San Antonio, Texas

Highlights of Meeting in Tulsa, November 1 & 2, 2000

The 53rd PERF Quarterly meeting was co-sponsored by **ExxonMobil** and **DOE-NPTO** (the National Petroleum Technology Office of the US Department of Energy) and very successfully held on October 30 & 31, 2000, in Tulsa, Oklahoma. The minutes of the meeting and agenda are available on our web site at: <http://www.perf.org/>

The day before the PERF meeting, DOE organized an air workshop. The presentations made at this workshop are also available on our web site.

On the first day, **John Wilkinson** of **ExxonMobil** and **Bill Lawson** of **DOE-NPTO** welcomed participants to the meeting in Tulsa. Then, researchers from the DOE-NPTO presented a one-half day overview of that office's program. The afternoon was devoted to a discussion of Human Factors, and was

presented by **Jerry Kubik** of **ExxonMobil** and **Bruce Hartman** of **Chevron**. (Details of this session are presented on Page 3).

On the second day, there were concurrent sessions of the Upstream and Downstream Discussion Groups. The Upstream group discussed the projects under way, and those seeking more participation. The Downstream group focused on the impact of crude quality upon refineries, filter technology to remove solids from crude, reduction of NO_x and other emissions, and early upset warning systems for wastewater treatment.

Details of all are on our web site.



New Project Proposals and Discussion Group in 2000

During 2000, the following projects were proposed:

- 2000-01 Best Practices for E&P Waste Treatment
- 2000-02 Identify/Evaluate Flaring Best Practices
- 2000-03 Next Generation Lo-NO_x Burner Tests

Additionally, the Human Factors Discussion Group was formed (see Page 3). Additional information on proposed Project 2000-03 is given elsewhere in this Newsletter. But, for more detailed information on any of these proposals, please visit our web site, where you will also find a way to contact the

project leader.

Note that details of all of the projects performed under the PERF umbrella since our formation in 1986 are presented on the web site. Also note that specific results of projects are generally not published, as these remain proprietary to the participating companies.

“. . . details of all of the projects . . . since our formation in 1986 are presented on the web site.”

Highlights of Meeting in Stavanger, Norway in June 2000

The 52nd PERF Quarterly Meeting was hosted by **Statoil**, **Phillips**, and **Elf** in Stavanger, Norway, June 29-30, 2000. **Per Gerhard Grini** of **Statoil** welcomed participants to the meeting, where the theme was improving collaboration between PERF and international technical organizations.

At the General Session on the morning of June 29, there were presentations from several international environmental research organizations, including **SINTEF** (Norway), the **Rogaland Research Center**



The Oil Industry is Visible in Stavanger

(Norway), **TNO** (Netherlands), **IFE** (Norway).

An Upstream Session on the afternoon of June 29 focused on the treatment of produced water. A concurrent Downstream Session featured discussions of developing environmental regulations in Europe. **CONCAWE** participated in this session.

Additional details of the meeting and of presentations are posted on our web site: <http://www.perf.org/>

Human Factors Discussion Group Formed

Human Factors (HF) is the application of science about human capabilities and limitations (physical, mental and behavioral) with the objective of reducing the potential for human error and injury. Proper application of HF will enhance incident avoidance and increase productivity.

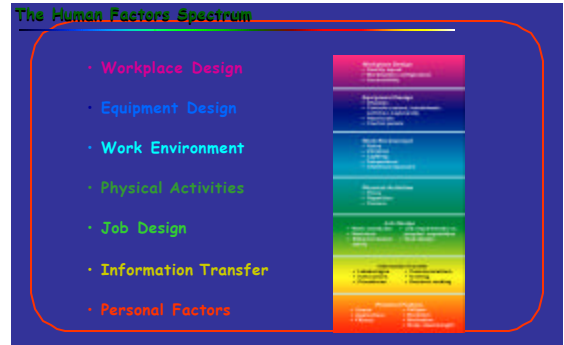
There is a spectrum of potential issue areas in HF that ranges from workplace design to personal factors. PERF has begun to address integration of HF considerations into facility design to attain an incident-free interface between the worker and the workplace during operation, construction, and maintenance of the facility; and four areas of potential emphasis have been identified:

1. Access and clearance at equipment
2. Interface between humans and the process
3. Labeling and communication
4. Workplace environment (e.g., noise, illumination)

At PERF's November, 2000 meeting, HF was presented as a possible new technical area.

Presenters were **Jerry**

Kubik, ExxonMobil and **Bruce Hartman, Chevron**. At the meeting, additional interest was shown by **TotalFinaElf, Petro-Canada, API, Philips** and **CPPI**. Based on this interest, an HF Discussion Group is being formed with initial discussions on potential projects focusing on areas noted above. Anyone interested in this area should contact Jerry (jkubik@erenj.com) or Bruce (ribh@chevron.com)



Projects 2000-2. Identify /Evaluate Flaring Best Practices

The **Gas Technology Institute (GTI)** has proposed a project to develop best practices in monitoring, reporting and speciation of flare emissions (NO_x, CO, methane, ethane, VOCs and HAPs), and to evaluate new technologies for reducing routine flaring and increasing destruction efficiencies.

There is a need for the oil industry to take an active role in identifying and evaluating best available technologies to reduce routine flaring and well venting and blow down events. Reduction in flaring activities and improvement in flare efficiencies is an important future strategy to cost-effectively reduce emissions of greenhouse gases (GHGs).

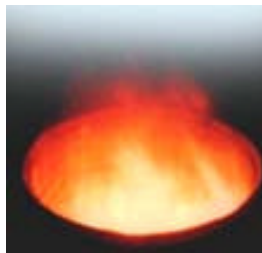
The way to proceed is to develop a trusted, active partnership with all concerned parties. This will help to create a favorable regulatory climate by providing accurate data on destruction efficiencies to counteract the confusion which arose from a recently-published Canadian study and to distinguish Canadian from US flaring practices.

“... to evaluate new technologies for reducing routine flaring and increasing destruction efficiencies.”

To learn more about this proposal, please contact **Jeff Panek** of **GTI** at jeffreypanek@gastechnology.org.

Project 2000-03. Next Generation Lo-NO_x Burner Demonstration Tests

BP **Amoco** has proposed a project to demonstrate the next generation of Lo-NO_x burners for process heaters in refineries. Specifically, the project will install and evaluate at least two different sets of sub-10 ppm (0.1 lb/million BTU) burners across various operating conditions and fuels in a real-world, refinery process heater.



A typical burner in a refinery

(NO_x) by 90% below 1998 permitted levels.

To date, five companies have agreed to participate in the test. These are: **BP Amoco, Equilon Enterprises LLC, Phillips Petroleum Co., Repsol YPF Refining & Marketing Europe**, and **TotalFinaElf**.

The work is driven by the need in various parts of the world, e.g. in the Houston-Galveston area of the United States where we must reduce oxides of nitrogen

If you are interested in participating in this project, please contact **Dave Fashimpaur** at fashimdn@bp.com. Additional details are on the

PERF web site at: <http://www.perf.org/>

Environmental Technical
Solutions for the Petroleum Industry

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TEAMWORK: Together we achieve the extraordinary!



PERF

We're on the web:
<http://www.perf.org/>

The Petroleum Environmental Research Forum (PERF)* is a research and development joint venture, formed to provide a stimulus to and a forum for the collection, exchange, and analysis of research information relating to the development of technology for health, environment & safety, waste reduction and system security in the petroleum industry. PERF is a non-profit organization of Members which are corporations engaged in the petroleum industry that recognize the importance of a clean, healthy environment and are committed to support cooperative research and development. PERF does not itself participate in research projects but provides a forum for Members to collect, exchange, and analyze research information relating to practical and theoretical science and technology concerning the petroleum industry, and a mechanism to establish joint research projects in that field.

*The name Petroleum Environmental Research Forum and its acronym PERF are registered service marks

Letter from the Chair

Dear Members and Associates:

Our quarterly meetings provide an effective forum to stimulate cooperative research and development of environmental control, safety and waste management. To date, and while benefiting all, innovation and mutual technical interest has led to the initiation and completion of 66 projects with a value of \$58 million, while twelve projects valued at \$12 million are currently underway.

However, since 1999, the mergers of major oil companies has led to the reduction in PERF membership and the subsequent reduction in the number of new projects. Project initiation, coordination and execution are critical to the success and long-term sustainability of the PERF organization.

To achieve faster and cost effective solutions for our industry's environmental challenges, we need to create more

partnership with academia, national laboratories, trade organizations, and government agencies. This collaboration can also avoid redundant research, help engage stakeholders, and assist in creating a New World of opportunities.

We have organized the next PERF quarterly meeting on March 1&2, 2001 in San Antonio, to discuss the way forward for achieving this alliance. The theme for this meeting is "New Directions in Environmental Research for the Oil Industry" with a focus on university research. At this meeting and through the Discussion Groups, we will review best practices to raise awareness in Flare emission reduction, in FCC NOx/SOx Control, in soluble Organics removal from produced water, and in risk-based screening and assessment of contaminants in oil field wastes.

We are looking forward to a productive and interesting meeting. **See you in San Antonio!**
Zara I. Khatib

Member Companies & Representatives

Amerada Hess
Aramco Services Co.
BHP Research
BP Amoco
Chevron Research and Technol.
Conoco, Inc.
EniTecnologie
ExxonMobil
Marathon Oil
Oryx Energy
PetroCanada
Phillips Petroleum Company
Shell International E&P
Statoil
Texaco, Inc.
TotalFinaElf
Unocal

Robert Bartzokas
Robert Finley
Nancy Liberts
Colin Grieves
Sara McMillen
Stephen Jester
Renzo Boni
John Wilkinson
Jim Hollowell
Patrick Grizzle
Bruce Kennedy
John Cruze
Zara Khatib
Per Gerhard Grini
Sheryl Maruca
Elisabeth Adam
Todd Ririe

Associate Members & Representatives

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Canadian Petroleum Products Institute (CPPI)
Petrozyme Technologies

Ram Ramachandran
Adolfo Silva
Bill Mullin