

# **National Incident Command's Flow Rate Technical Group**

## **Sub-Team Outline**

The Flow Rate Technical Group (FRTG), which was convened by Admiral Allen and led by USGS Director Dr. Marcia McNutt, is comprised of several Sub-Teams that are pursuing independent approaches to estimating the oil flow rate from the damaged well.

The Plume Modeling Team is pursuing the approach of observing video of the oil/gas mixture escaping from the damaged well, using particle image velocimetry analysis to estimate fluid velocity and flow volume.

The Mass Balance Team is using remote sensing data from deployment of the Airborne Visible InfraRed Imaging Spectrometer (AVIRIS) and satellite imagery to calculate the amount of oil on the ocean surface on a certain day. The team is correcting the value for oil evaporated, skimmed, burned, and dispersed up to that day and divided by time to produce an average rate.

The Reservoir Modeling Team will describe the geologic formations as well as composition and pressures of the oil, natural gas, and other compounds that are being released. Using open-hole logs; pressure, volume, and temperature data; core samples; and analog well or reservoir data; the team will populate computer models and determine flow rate from targeted sands in the well as a function of bottomhole pressure.

The Nodal Analysis Team will use input from reservoir modeling (including pressure, temperature, fluid composition and properties over time) and pressure and temperature conditions at the leak points on the sea floor, along with details of the geometries of the well, BOP, and riser to calculate fluid compositions, properties, and fluxes from both before and after riser removal.

### **FRTG Coordination:**

Marcia McNutt, Director, US Geological Survey (Lead)

Mark Sogge, Chief of Staff, US Geological Survey (Deputy Lead)

### **Modeling Team Leads:**

Don Maclay, Reservoir Modeling Team

George Guthrie, Nodal Analysis Team

Bill Lehr, Plume Analysis Team

Victor Labson, Mass Balance Team

**Plume Modeling Team membership:**

Bill Lehr, National Oceanic and Atmospheric Administration (Lead)

Alberto Aliseda, Assistant Professor of Mechanical Engineering, University of Washington

Paul Bommer, Senior Lecturer, Petroleum and Geosystems Engineering, University of Texas at Austin

Peter Cornillon, Professor of Oceanography, University of Rhode Island

Pedro Espina, National Institute of Standards and Technology.

Juan Lasheras, Prof. of Engineering and Applied Sciences, University of California San Diego

Ira Leifer, Assoc. Researcher, Marine Science Institute, University of California Santa Barbara

James Riley, Professor of Mechanical Engineering, University of Washington

Omer Savas, Professor of Mechanical Engineering, University of California Berkeley

Franklin Shaffer, Senior Research Engineer, National Energy Technology Laboratory, Department of Energy

Steve Wereley, Associate Professor of Mechanical Engineering, Purdue University

Poojitha Yapa, Professor of Civil and Environmental Engineering, Clarkson University

**The Mass Balance Team membership:**

Victor Labson, Director, Crustal Geophysics and Geochemistry Science Center (Lead)

Roger N. Clark, Lead Scientist, Research Physical Scientist

Gregg A. Swayze, Research Geologist

Todd M. Hoefen, Research Geophysicist

Raymond Kokaly, Research Geophysicist

K. Eric Livo, Research Geophysicist

Michael H. Powers, Research Geophysicist

Geoffrey S. Plumlee, Research Geologist

Gregory P. Meeker, Research Geologist

**Reservoir Modeling Team membership includes:**

Don Maclay, Petroleum Engineer, MMS Gulf Regional Office (Lead)

Other MMS engineers

**Nodal Analysis Team membership:**

George Guthrie, National Energy Technology Laboratory, Department of Energy (Lead)

Roger Aines, Lawrence Livermore National Laboratory, Department of Energy

Grant Bromhal, National Energy Technology Laboratory, Department of Energy

David Hetrick, Oak Ridge National Laboratory, Department of Energy

Bryan Morreale, National Energy Technology Laboratory, Department of Energy

Curt Oldenburg, Lawrence Berkeley National Laboratory, Department of Energy

Rajesh Pawar, Los Alamos National Laboratory, Department of Energy

Jud Virden, Pacific Northwest National Laboratory, Department of Energy