

## Flow Rate Estimates Qs and As

### **Q: What is the Flow Rate Technical Group?**

A. Established by National Incident Commander Thad Allen and headed by USGS Director Dr. Marcia McNutt, the FRTG is comprised of federal scientists, independent experts, and representatives from universities around the country. It includes representatives from USGS, NOAA, DOE, Coast Guard, MMS, the national labs, National Institute of Standards and Technology, UC Berkeley, University of Washington, University of Texas, Purdue University, and several other academic institutions. BP is not involved in the FRTG except to supply raw data for the scientists and experts to analyze. (See page 3 for names of individuals.)

### **Q: Will the federal response effort to the BP oil spill in the Gulf of Mexico be stepped up as a result of the new flow rate estimates released by the Flow Rate Technical Group (FRTG)?**

A: Admiral Thad Allen, the National Incident Commander who established the FRTG, has emphasized since day one that the Administration's deployments of resources and tactics in response to the BP oil spill have been based on a worst-case, catastrophic scenario, and have not been contained by flow rate estimates. We have mounted an all-out, all-hands on-deck response

### **Q: What does the Flow Rate Technical Group give as the best initial estimate for flow rates of oil from the Deepwater Horizon in the Gulf of Mexico?**

A: The FRTG says the best initial coverage estimate of the lower and upper boundaries of flow rates of oil is in the range of 12,000 and 19,000 barrels per day. This is a preliminary estimate.

### **Why didn't the Federal Government come up with independent estimates sooner?**

It took time to identify the tools and resources necessary to calculate a more accurate estimate than previously reported. Measurement of the flow of oil is extremely challenging, given the environment, unique nature of the flow, limited visibility, and lack of human access to BP's leaking oil well. New methodologies had to be employed to better understand a highly dynamic and complex situation. As the FRTG collects more data and improves their scientific modeling in the coming days and weeks ahead, they will continue to refine and update their range of oil flow rate estimates, as appropriate.

### **Q: How did they calculate their preliminary estimate?**

A: The FRTG used three separate methodologies to calculate their initial estimate.

- **The first approach** analyzed how much oil is on the surface of the Gulf of Mexico using USGS and NOAA analysis of data that was collected from NASA's Airborne Visible

InfraRed Imaging Spectrometer (AVIRIS), an advanced imaging tool. USGS has previously used the AVIRIS tool to discover water on the moon. Based on observations on May 17th, the FRTG estimated that between 130,000 and 270,000 barrels of oil are on the surface of the Gulf of Mexico and that a similar amount had already been burned, skimmed or dispersed by responders or had evaporated naturally as of May 17th. Adjusting the calculations accordingly yielded an initial estimate of 12,000-19,000.

- **The second approach** used video observations of the oil/gas mixture escaping from the kinks in the riser and at the end of the riser pipe alongside advanced image analysis to estimate fluid velocity and flow volume. This methodology provided an initial range estimate of 12,000 to 25,000 barrels of oil per day.
- **The third approach** did a reality check of the previous two methodologies and came up with a basic calculation of the lower limit of possible oil that is spilling. The lower limit was calculated based on the amount of oil collected by the Riser Insertion Tube Tool (RITT) on May 25, plus the estimate of how much oil is escaping the RITT, and how much oil is leaking from the kink in the riser. This lower bound estimate of the total oil flow is at least 11,000 barrels of oil per day.

**The overlap of the three approaches led to the best overall initial estimate of 12,000-19,000 barrels a day.**

**Q. Why is this a “preliminary” estimate?**

A. The estimate provided by the FRTG is preliminary because it is based on new methodologies. As the FRTG collects more data and improves their scientific modeling in the coming days and weeks ahead, they will continue to refine and update their range of oil flow rate estimates, as appropriate.

**Q. Were these estimates peer reviewed and, if so, by whom?**

A. These were preliminary estimates. The FRTG is working diligently to ensure the estimates are peer reviewed by independent experts and academics as expeditiously as possible.

**Q. Will the federal government make available the data, so that external scientists can draw their own conclusions?**

A. More information will be available after the reports are finalized and peer reviewed. The FRTG will set up a website to ensure this information is available to the public in a timely fashion.

**Q. Why are these estimates so different from the NOAA estimates conducted earlier?**

A. The earlier estimate was a Unified Command-issued estimate, not a "NOAA" estimate and was based on the best available information at the time. Measurement of the flow of oil is extremely challenging, given the environment, unique nature of the flow, limited visibility, and lack of human access to BP's leaking oil well. As new information becomes available the estimates are being refined.

**Q.What is the total amount of oil spilled into the Gulf to date?**

AThe 130,000 to 270,000 range is the portion of the estimate of total spilled volume accounted for by oil observed on the sea-surface from AVIRIS and satellite sensors on May 17. The remainder, dispersed, skimmed, burned and evaporated is roughly equivalent in volume. Corresponding to the lower and upper estimates of flow rate of 12,000 to 19,000 barrels/day the estimate of total volume is 264,000 barrels to 418,000 barrels. This mass balance estimate as yet does not fully account for oil suspended in the sub-surface water column.

**Q. Why are these estimates much lower than Prof. Steve Wereley's estimates from Purdue University?**

A.Prof. Wereley is a member of the FRTG. He agrees with the new estimates announced today which are based on sound scientific methodologies and consensus among FRTG members. His original estimates were based on limited information and technology that did not allow him to distinguish between oil, gas, and other elements flowing from the leaking well head.

**Q: Who are the individuals on the National Incident Command's Flow Rate Technical Group (FRTG)?**

***FRTG Members from the Federal Government appointed to date include:***

Marcia McNutt, Director, USGS; William Rees, Jr., Los Alamos National Lab, Department of Energy; Darren Mollot, Department of Energy; Franklin Shaffer, Department of Energy; Victor Labson, USGS; Bill Orr, National Oceanic and Atmospheric Administration; Austin Gould, US Coast Guard; Richard Brennan, US Coast Guard; Don Maclay, Minerals Management Service (MMS); Gerald Crawford, MMS; David Absher, MMS; and Bill Courtwright, MMS.

***FRTG Members from academia and independent organizations appointed to date include:***

Omar Savas, Professor of Mechanical Engineering, University of California Berkeley  
James Riley, Professor of Mechanical Engineering, University of Washington  
Juan Lasheras, Prof. of Engineering and Applied Sciences, University of California San Diego  
Poojitha Yapa, Professor of Civil and Environmental Engineering, Clarkson University  
Paul Boomer, Senior Lecturer, Petroleum and Geosystems, University of Texas at Austin  
Steve Wereley, Associate Professor of Mechanical Engineering, Purdue University  
Peter Cornillon, Professor of Oceanography, University of Rhode Island  
Ira Leifer, Assoc. Researcher, Marine Science Institute, University of California Santa Barbara  
Alberto Aliseda, Assistant Professor of Mechanical Engineering, University of Washington  
Pedro Espina, National Institute of Standards and Technology.

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