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GULF OIL SPILL

Government Chided for Poor Planning and Communication

It wasn't long after the drilling platform *Deepwater Horizon* sank into the Gulf of Mexico that two contentious scientific issues rose to the surface. Researchers in and out of the government sparred over exactly how much oil was gushing out of the damaged well. And some scientists raised concerns about the wisdom of injecting large volumes of dispersants near the ocean floor to break up the oil gushing from the wellhead, given the potential toxicity of the chemicals and the unprecedented use of dispersants at that depth. Last week, a presidential commission investigating the disaster released two preliminary reports from its staff that fault the government's handling of both issues.

Perhaps most damaging to the government's credibility was its initial, low-ball estimate of how much oil per day was gushing from the well. The commission's report on the fate of the oil reveals for the first time the story behind this controversial first estimate—and the public confusion it sowed.

On 28 April, a week after the *Deepwater Horizon* exploded, government officials released an estimated flow rate of 5000 barrels a day from the Macondo well. Despite immediate skepticism and a flurry of conflicting estimates from outside experts that

pegged the flow rate at roughly 10 times as high—estimates that turned out to be in the ball park of the actual figure—the government stood by its figure for a month.

According to the report, the first estimate came from a National Oceanic and Atmospheric Administration (NOAA) scientist who apparently had no particular expertise in the video technique involved. This scientist had cautioned in his e-mail to authorities that his was a “very rough estimate.” But neither his warning about the uncertainties in his figure nor any aspects of his methodology made it into the public release. The report found this to be “an overly casual approach.”

A month after the spill began, the government set up the interagency Flow Rate Technical Group composed of about 20 members from government, academia, and independent organizations to apply a variety of measurement methodologies. Still, the report laments, the sketchy technical information released by the group discouraged helpful input from the broader scientific community. And the group's official estimates, though growing, continued to come in low, although some group members argued that the flow rate was much higher.

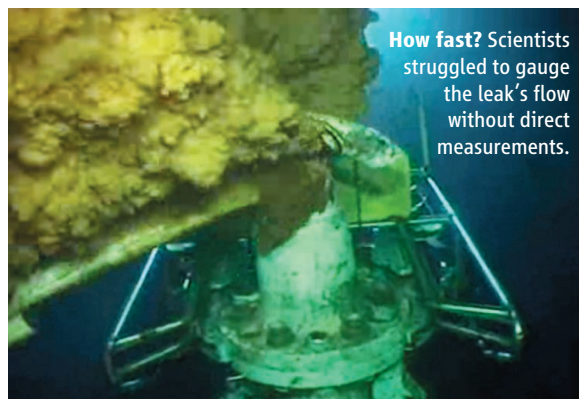
The commission staff says it has no evidence so far that the low estimates slowed the response, but the less-than-transparent estimation process, according to the report, generated “significant controversy, which undermined public confidence in the federal government's response to the spill.”

The government could have enhanced confidence, says the report, by being more forthcoming about how bad the spill might have been. From the outset, responders stated that they were

scaling their efforts to the “worst-case” spill scenario, not anyone's estimate of the flow rate. But authorities never revealed their worst-case flow rate or how they arrived at it. In late April or early May, NOAA sought to make public some of its worst-case spill models, according to the report, but the White House's Office of Management and Budget (OMB) denied the request. (In a recent statement, OMB claims it delayed release of NOAA's worst-case scenario only for technical reasons, but by the time the report came out, the true flow was known.) The “lack of information may have contributed to public skepticism about whether the government appreciated the size of the *Deepwater Horizon* spill and was truly bringing all of its resources to bear,” the report states.

The government also bungled the rollout of a report about the fate of the oil, according to the commission staff. Although the “oil budget” report was technically sound, it was doomed to misinterpretation because of poor presentation, the staff report says. Appearing on news shows on 4 August, the day of the report's release, Carol Browner, the director of the White House Office of Energy and Climate Change Policy, remarked that “the vast majority of the oil is gone” even though the oil budget report in no way supported her take. For months to come, the media would use her comments to characterize the oil budget report as overly optimistic.

A second report focuses on the government decision to use unprecedented volumes of dispersants on the surface and at depth. Neither the Environmental Protection Agency (EPA) nor NOAA had planned for large-scale use of dispersants in a deep-water accident. As a result, according to the

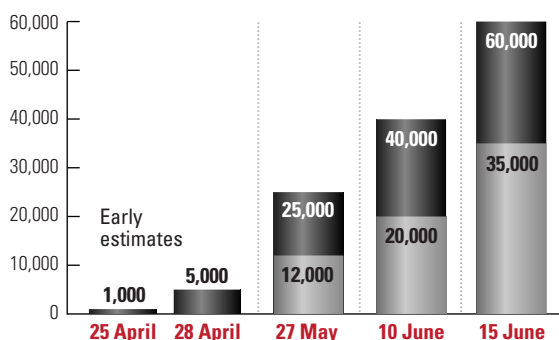


How fast? Scientists struggled to gauge the leak's flow without direct measurements.

Gulf of Mexico Oil Leak Estimates

Estimated ranges, in barrels per day

(Note: 1 barrel = 42 gallons)



Up and up. Government estimates of the flow from the damaged Gulf of Mexico well grew until early August, when direct measurements put the flow near 60,000 barrels per day.



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report, a lack of studies on dispersant toxicity meant that the Coast Guard's Thad Allen, EPA's Lisa Jackson, and NOAA's Jane Lubchenco were "seriously handicapped" when deciding about the use of dispersants. So far, they seem to have made the right call, the staff paper concludes, because dispersants helped protect surface-dwelling wildlife, the wetlands, and cleanup workers.

But the biological impact of the dispersant-oil mixture in the water column remains unknown. "This event clearly

shows that ecosystem-based information on dispersants and oil is really inadequate," says Robert Diaz of the Virginia Institute of Marine Science in Gloucester Point, who is not on the panel. "The feds should have seen this [deep-water spill] coming and adjusted their planning," he adds. The report calls for more extensive testing of existing dispersants and development of less-toxic alternatives. EPA and NOAA declined to comment on the dispersant report.

The commission continues to investigate

the response to the spill, especially whether the low flow estimates slowed efforts to cap the well. The five-member commission will issue a final report in January.

Meanwhile, says science policy analyst Roger Pielke Jr. of the University of Colorado, Boulder, the government should learn from this crisis "to deal openly and honestly with uncertainties. ... The public is smarter than politicians give them credit for. They can handle uncertainties."

—RICHARD A. KERR AND ERIK STOKSTAD

ECONOMICS NOBEL

Three Laureates Explained Why Unemployment Is Inevitable

High unemployment is now plaguing many nations' economies, but even in the best of times, about one out of every 25 workers will be out of a job. This year's winners of the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel laid out the theory that explains why full employment is impossible.

Peter Diamond, 70, of the Massachusetts Institute of Technology (MIT) in Cambridge; Dale Mortensen, 71, of Northwestern University in Evanston, Illinois; and Christopher Pissarides, 62, of the London School of Economics will split the \$1.5 million prize. Starting in the 1970s, they developed, mostly independently, the theory of markets that suffer "search friction," or costs for consumers and suppliers of a good to find one another. Dubbed the "DMP theory" in the economists' honor, it has become the bedrock for the study of labor markets and explains why people are sure to be out of work even when the number of vacant jobs equals the number of job seekers, so-called equilibrium unemployment.

"It's a wonderful choice," says Michael Elsbey, an economist at the University of Michigan, Ann Arbor, of the trio's honor. "If you're going to be thinking about unemployment, you're going to start by playing around with the DMP model."

Classical economics predicts that unemployment should vanish whenever the number of available jobs equals or exceeds the number of workers. In reality, that never happens. For example, even during the economic boom a decade ago, unemployment in the



PETER DIAMOND



DALE MORTENSEN



CHRISTOPHER PISSARIDES



ECONOMICS NOBEL PRIZE 2010

United States dipped only as low as 3.8%.

Diamond, Mortensen, and Pissarides found that they could explain that fact. They began with a dynamical model that considers the flow of workers both into and out of jobs. They imposed costs for an unemployed worker to find a job and for an employer to find a suitable employee, which affected the flows. The economists then showed mathematically that a new equilibrium would arise with at least some unemployment, the amount of which depended on the costs.

In the 1960s, much of economic theory strived to prove that the results from idealized classical economics still held sway as economists made their models more realistic, Diamond said at an MIT press conference after the prize was announced. He preferred to let the improved models lead where they may. "It seemed to me that a better approach was to think about real dynamics and see where they go," he says. "Maybe they go to the [classical] equilib-

rium solution, and maybe they don't."

Although the DMP theory started out as a mathematical abstraction, it has become a tool for applied economists and policymakers. That's because it provides a framework for studying in detail the effectiveness of a specific intervention in reducing unemployment or ameliorating its effects. "There's a whole literature out there on unemployment insurance that uses the model," says Stephen Woodbury, an economist at Michigan State University in East Lansing.

Given the unemployment crunch afflicting many countries, Pissarides says he favors political action to get people back to work. "What we should really be doing is to ensure that they do not stay unemployed too long," he said at another press conference. "Give them direct work experience—not necessarily advanced training—after a few months so they don't lose touch with the labor market."

—ADRIAN CHO

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