



“Almost a Worst-Case Scenario”: The Baltimore Tunnel Fire of 2001 (C)

DPW Director George Winfield acceded to the Baltimore City Fire Department’s request, and allowed water from a broken main to continue gushing out unabated. For at least two hours—four, according to some accounts—water poured into the intersection of Howard and Lombard and southward down Howard Street, where some of it flowed into the tunnel. But this was a costly action for the DPW: some 60 million gallons of water were lost over this period, and the Druid Hill Reservoir, *The Baltimore Sun* reported, dropped three feet in the space of about four hours. After a time, the torrent of water began taking its toll on the street itself, carving “earthquake-like fissures into the pavement,” in the words of one account.¹ Concerned that “we were losing the entire [water delivery] system,” Winfield says, and mindful of “feedback from property owners and from the field people that we were losing the street,” the DPW “passed that information on to the fire department that we had to shut the water off.”²

Meanwhile, firefighters made some progress in their arduous efforts to inch their way into the tunnel and get closer to the fire. After two failed attempts, a new team, led by William Goodwin and equipped with supplemental oxygen supplies, made a third try at penetrating the smoke-filled tunnel. They drove in reverse—so they would be pointed the right way out in case they needed to make an “expedient escape,” as Goodwin puts it—on a CSX truck equipped with railway wheels. It was a slow and perilous trip, but the crew, says Goodwin, “did make physical contact with the train,” providing the first hard data on its location in the tunnel.

¹ Scott Calvert and Michael Scarcella, “Rail accident linked to water main break,” *The Baltimore Sun*, July 20, 2001, p. 11A.

² Even after the DPW turned off the water supply leading to the ruptured main, however, some water continued to flow into the intersection due to a broken valve.

This case was written by Esther Scott for Herman B. Leonard, George F. Baker, Jr. Professor of Public Management, and Arnold Howitt, Executive Director of the Taubman Center for State and Local Government, for use at the John F. Kennedy School of Government, Harvard University. Funds for the case were provided by the Robert Wood Johnson Foundation. (0904)

Copyright © 2004 by the President and Fellows of Harvard College. No part of this publication may be reproduced, revised, translated, stored in a retrieval system, used in a spreadsheet, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise) without the written permission of the Case Program. For orders and copyright permission information, please visit our website at www.ksgcase.harvard.edu or send a written request to Case Program, John F. Kennedy School of Government, Harvard University, 79 John F. Kennedy Street, Cambridge, MA 02138

Still, even with immediate concerns for public safety somewhat alleviated and some headway made in approaching the blaze, it was becoming increasingly clear that the city was in for a long haul—that it would be days, not hours, before the dozens of freight cars could be pulled out of the tunnel and the fire suppressed; days, too, before the 6x8 foot break in the water main, which inconveniently rested just nine inches atop the tunnel, could be repaired.

The repercussions of a protracted incident would be felt near and far. As a result of the ongoing fire and then the flooding, traffic, including light rail service, would continue to be barred from Howard Street and environs, which would create hardships for local businesses, not to mention the Baltimore Orioles, who were in the midst of a homestand.³ The same was true for CSX: the Howard Street Tunnel was a "chokepoint," as one CBS correspondent put it—the railroad line's only throughway linking the South to the Northeast. Until the fire could be doused and the tunnel reopened, CSX would have to reroute rail traffic over lines as far away as Pittsburgh and Cleveland to keep its freight moving. What's more, the tunnel was not just a conduit for rail freight: fiber-optic cable for voice and data ran through it and when it was damaged by the fire, Internet service was slowed in places as far away as Seattle and Los Angeles, and even Africa.

Meanwhile, "the domino effect of events," in the words of one account, "combined with the sheer spectacle of a fire under the downtown of a major city, created a media frenzy garnering national and international exposure."⁴ With TV cameras trained on them and reporters pressing for information on their progress, city officials—joined by representatives of a number of state and federal agencies—struggled to coordinate and control the many activities taking place at the increasingly crowded fire site. Most of those present had never experienced a crisis of this complexity and duration. "With usual incidents," Goodwin observes, "things begin to go in the decision model, or at least in the right direction, within a relatively short period of time. This was not the case with this situation, as we found out."

The Long Haul

The first signs that things were not quickly moving in the right direction, in Goodwin's view, were evident in the efforts of the group assembled in the Comstat room, where he had been directed to go by Chief Heinbuch. "They were making an attempt at a unified command," he says, but what he found instead was, he judged, "a real inefficient operation." Despite its advanced telecommunications equipment, the room was not, he concluded, well suited for emergency management. "It was not really set up to go external," he explains, "to provide in and out feeds to the rest of the city. ... The police building, being a secure location, [had] no access to the news media. ..." The fire department's radios, moreover, "did not always work" in the Comstat room,

³ The major roads and highways into the city were, however, reopened the following morning, July 19; the Inner Harbor also reopened early that morning.

⁴ Alexander D. Mitchell IV, "Fire in the Hole," *Railfan & Railroad*, November 2001, p. 45.

Heinbuch notes, so fire officials in the room had to communicate with the field by phone. "The fire department [was] the lead command organization," Goodwin observes tartly, "[but] we were in the police building, and I didn't even have a seat at the table or a telephone. I was operating off my portable radio in the hall." Frustrated that the Comstat gathering "was not satisfying the unified command that was necessary," he continues, "I recommended abandoning the position, and was finally given the authority to do so."

Goodwin defined unified command as "the assembling of everybody that happens to be stakeholders in the operation, so that they're all in one location should a need arise to make a decision—not the incident command decision, not the tactical decision, [but] the overall decision and how it would affect all the individuals involved." There was widespread agreement that, in this pre-September 11 era, the city was ill-equipped to run a unified command. For one thing, Goodwin points out, it did not have a functioning emergency operations center, "so Comstat was sort of quasi-the-next-best-thing, but did not really have the mechanics" to facilitate the decisions of the command. For another, city officials had little practice in operating a unified command. "We had some rudimentary training," says former Fire Department Chief Carl McDonald, "but not the in-depth training that should have gone on, so that everybody knows this is a fire emergency situation, that the fire department is in command and everybody else is support." There had been "some tabletop exercises," he continues, but "no formalized training between the different agencies. Everybody had the idea of what was supposed to go on, but it had never actually been walked through."

Moreover, Goodwin notes, city officials were "not really used to [managing] a protracted incident over many days. A few hours—that we're used to, but a thing that shuts down a good portion of your city for days is something that, luckily, most urban areas deal with in the theoretical aspect, but don't really deal with maybe during somebody's whole career." McDonald agrees. "In my 37 years [with the fire department]," he says, "we never had an incident of that magnitude that required that much coordination between other agencies."

Going to the Site. When Mayor O'Malley arrived at the Comstat room, he soon reached essentially the same conclusion that Goodwin had: that it was not the ideal place for managing the crisis.⁵ "Communication was strained," he recalls, and he decided it would be "a hell of a lot easier to stay on top of what was going on" if he were closer to the action. "I think it probably violates textbook," he acknowledges, "[but] we quickly moved our command center to the actual fire grounds."

By nightfall of July 18, the fire site was filling up with agency officials and workers who had gathered to help with different facets of the crisis. These included members of the city's fire, police, public health, and public works departments; the state's departments of transportation, the

⁵ Goodwin had left the Comstat room before Mayor O'Malley arrived.

environment, and emergency management; the US Coast Guard, the EPA, and, the following day, the National Transportation Safety Board, which had come to investigate the derailment; and several different private contractors hired by CSX who specialized in chemical accidents and derailments. At first, recalls Deputy Mayor Michael Enright, the scene was "confusing," as he tried to "figure out where the mayor is supposed to go." The fire department, having initially set up a command post at the north end of the tunnel, moved it to the south end, in the parking lot at Camden Yards, later that night; but it also maintained secondary posts at the north end and at the manhole at Howard and Lombard Streets. DPW officials set up their own "command trailer" at the intersection of Howard and Lombard, where the water main break had occurred. Other agencies established posts at Camden Yards as well. The police, for example, brought their own van—a Winnebago—to the site, and state transportation officials installed a bus, which MDE used as its post as well. "We had the police here and we had the fire department here and we had us here," Alan Williams recalls. "Everybody was setting up their little kingdom in different places." It was, as Goodwin puts it, "a campground of individuals." Eventually, the mayor settled into the police Winnebago—"where I hung out," he says, "and where my people and press people hung out"—thereby not crowding the fire department's command post, but remaining "always within earshot."

While moving to the fire scene essentially brought the city together on one site, it did not immediately lead to an improvement in communications or decision-making among those working to solve the many challenges posed by the fire and the water main break. To the contrary, says Goodwin, the situation got "more and more convoluted as additional agencies became involved." The participation of so many different organizations meant transitioning from an incident command, with which, as Terry Ryer observes, the fire department was "historically and traditionally" familiar, to the much less familiar operation of a unified command. "For instance," Heinbuch explains, "early on, CSX Railroad were just players, ... but as things went on, they became decision-makers, too, as did public works. So when we were going to do something, everybody had to have a buy-in." The problem, however, was that the people who could provide the "buy-in" were, in the first hours of the fire, often not on hand when needed. Heinbuch faulted himself in part for this. "As incident commander," he acknowledges, "I should have made that liaison [with other agencies] more solid, but I [was reactive] more than being proactive." Goodwin agrees. "There was no glue, no cohesiveness" among the agencies and organizations gathered at the fire grounds, he says. "And I have to say that's our responsibility as incident command; we didn't [have that] fully in place." In addition, and perhaps more seriously, it was not always clear to some of those involved who, formally, was in command of the increasingly complex situation at the Howard Street Tunnel.

Friction. The difficulties of managing communications in an incident with multiples sites and multiple problems and sometimes clashing priorities became perhaps most starkly apparent when the Department of Public Works decided to commence work on the ruptured water pipe. DPW officials, according to Winfield, were doing "our own independent things" at the site, focusing on the issue of most immediate concern to them—the repair of a major water main

break—and did not forewarn Heinbuch of their plans. Unlike the fire department, which had "always worked in an incident command situation," the public works department "had never" done so, Winfield maintains. At the time, moreover, "I would say there was no formal procedure whereby DPW would have recognized the fire department as being the lead agency for this incident." On the morning of July 19, DPW crews began excavations at the intersection of Howard and Lombard in an effort, Winfield explains, "to locate where exactly the break occurred." As it happened, there were firefighters in the tunnel at the same time that the DPW began digging over it. When water suddenly began pouring into the tunnel from a broken valve, the firefighters were hastily evacuated, and the DPW told to cease its operations; but fire officials were upset that their men had been put at risk—"it could have killed some of them," Heinbuch maintains—by DPW's actions. "We worried long and hard," McDonald notes, "about putting guys down in that tunnel in the first place."

Meanwhile, fire officials were also having problems with CSX that were slowing their efforts to reach the derailed cars in the tunnel. Under Federal Railroad Administration guidelines, Goodwin explains, CSX workers on the scene had to obtain approval from company officials based in Jacksonville, Florida each time they or city firefighters entered the tunnel. This process proved cumbersome and time-consuming and, to Goodwin and others in the fire department, deeply frustrating. "I was, along with a few others, really intense," he maintains, "about a unified command structure being set up so that when we needed a CSX asset, somebody didn't have to look for the CSX man with the radio [to contact Jacksonville]. There needed to be somebody next to our decision-maker [who] could effect things immediately." The need for this was driven home after a harrowing incident in which CSX workers left Goodwin and other firefighters deep inside the tunnel, intending to return shortly with their vehicle to pick them up. But obtaining permission from CSX to re-enter the tunnel took longer than anticipated and, with their oxygen supplies running dangerously low, firefighters were forced to walk three-quarters of a mile to make their own way out of the tunnel. Soon after that, Goodwin recalls, during a "debriefing of the last chain of events" with a group of city officials that included O'Malley and McDonald, "I extremely reiterated the need for a unified command to stop this," Goodwin says.

The Mayor Steps In. Looking back, Carl McDonald was philosophical about the disorder that characterized the first hectic hours of the tunnel fire and accompanying water main break. "Anytime you have an incident of that magnitude," he reflects, "there's going to be some disconnect, especially when agencies that had not traditionally worked together in a coordinated effort are thrown together and there's been no training or practice. ... There's always some confusion [and] disconnect, until the lines of authority are clearly defined." The one who ultimately did the defining, by most accounts, was Mayor O'Malley.

O'Malley accomplished this in ways both particular and general. In response to the incident with the DPW, for example, "the mayor got involved," Winfield recalls, "and said we need somebody from DPW down at the incident command center with the fire department so that

we all know what each other is doing. And that's what happened. We got pulled into that environment because we needed to coordinate our work efforts." The mayor and his staff also let public works officials know that they were expected to yield to the authority of the fire chief. "We stressed to them," Enright says, "[that] you're working for him now, and you don't make any decisions operationally on your end that he doesn't approve."

Similarly, after hearing of persistent problems with CSX—and, in particular, the stranding of the firefighters in the tunnel—O'Malley personally phoned the CEO of the company, John Snow.⁶ Later, the mayor recalled "berating the CEO of CSX" in the course of their conversation for leaving "our firefighters in a tunnel hundreds of feet from safety." But he also impressed upon Snow the need for improved coordination and communication with CSX. Snow was "very understanding," says Enright. He immediately appointed "somebody with authority," as McDonald puts it, to stay at the fire scene and expedite the company's response to the fire department's requests for assistance. O'Malley "went right to the top guy," McDonald notes, "and said, 'Look, this is what I need.' ... That's when we started getting absolute cooperation from CSX."

The mayor did more, however, than mediate specific problems that arose at the fire scene: at a meeting sometime on Thursday, July 19, he "made it clear to everybody," says McDonald, "...who was in command of this incident until it was resolved"—i.e., McDonald himself. As chief executive, McDonald notes, O'Malley had the option of assuming command of the emergency himself; instead, however, "he left it in my hands." As O'Malley recalls it, once the "evacuation crisis" had been settled, the focus "shifted from being primarily a police 'get-people-out-of-harm's-way' function" to one in which "the fire department was then the lead [agency]." His own role, he decided, would be "to become the best deputy the fire chief ever had, and [to] force these other agencies to cooperate."

Among other things, the mayor did this by making sure that every agency and organization involved in the incident appointed liaisons, "whose job it was," says O'Malley, "to sit by the fire chief's command post," essentially at his beck and call. Their presence would help prevent agencies from working at cross-purposes and ease the burden on the fire department of tracking down officials whose cooperation or assistance it needed. "Whenever Chief Heinbuch and I were interfacing," McDonald explains, "we would bring [the liaisons] in so that they could [hear] firsthand what was going on, what our plan was, what we would need from their agency or whether we needed their agency or not." The liaisons at the command post went a long way toward opening lines of communication among the disparate encampments at the fire site. Still, even more important, McDonald believed, was the newfound clarity about the command structure. "I would say," he reflects, "that it really began operating a lot smoother when the mayor made it clear to everybody who was in command of the incident. That was the defining factor."

⁶ Snow was appointed secretary of the treasury by President George W. Bush in January 2003.

As he looked back, Goodwin believed that the passage of time also helped build trust and, consequently, teamwork among the groups working on the incident. After about twelve hours on the scene, he points out, they began to feel comfortable working together. Whatever the precise combination of causes, most of those present agreed that by the second day of the blaze, things were running much more efficiently at the site. "By that day," Goodwin recalls, "we set the entire incident up in a textbook command structure. We had the incident command properly identified, with individuals from unified command at or in proximity to that location." Moreover, he continues, "we really not only built the unified command as it should be, but we built a reliance and a trust in each other that continued day after day, for six days."

Progress. By the end of Thursday, July 19, the second day of the incident, the city was able to report real progress in its battle to subdue the tunnel blaze. Still unable to reach it from either end of the tunnel, firefighters had changed tactics and attacked the fire through the manhole at Howard and Lombard Streets, which provided access to the tunnel. In addition, contract workers had begun pumping 20,000 gallons of hydrochloric acid out of a leaking tanker car through the manhole. These and other efforts paid off: crews were finally able to start hauling cars from the tunnel and, by late Friday, July 20, a total of 22 had been removed. There were still 38 cars left, some of them burning, but, as McDonald told reporters, "We see light at the end of the tunnel."⁷

Despite the progress, however, citizens were beginning to chafe at the inconvenience and cost of the ongoing incident. After a couple of days, Goodwin observes, "it was not as intense [a threat] to the private citizen and to the business person as it was a disruption, so that they started to feel more the disruption than the fear of anything else happening." O'Malley agrees. "Merchants were disgruntled" over street closures, and the Baltimore Orioles were unhappy when O'Malley called them, on the 19th and again on the 20th, to tell them that the game scheduled for that day would have to be cancelled. This was expensive for the team—which put its losses for the three cancelled games at between \$3.5 and \$4 million—and initially Orioles officials let the city know their displeasure. "The Orioles management were insisting that they were going to play [that] night," O'Malley recalls, "and on the radio I said, 'Well, they're welcome to play, but they can't do it here.'" After that testy start, however, communications between city and Orioles' management improved, and the ball club opened its parking lot and facilities to firefighters while they battled the blaze. When the Orioles were finally permitted to play, on Saturday, July 21, it happened to be, coincidentally, "Firefighter Appreciation Day" at the ballpark, an event scheduled months earlier.

The Orioles and local merchants were not the only ones eager to see the tunnel fire extinguished and traffic restored to normal. CSX had been scrambling for days to reroute the thirty-plus trains that usually plied the north-south rails each day. The company "applied a great deal of pressure to the fire department," says Jerry Young of the DPW, "to get the tunnel back in service." But the mayor supported fire officials' careful approach to the blaze. "I try never to get in

⁷ John Bierner, "Firefighters extinguish two burning train cars, remove 16 more," Associated Press, July 20, 2001.

the way of operational decisions," he says. "I would never say [for example], 'Come on, Carl, can't we pull that one out sooner?' ... What I tried not to do was apply time pressures on them. ... My primary concern was to err on the side of, just do it methodically, get it done." Those on the scene appreciated O'Malley's tact and his backing. "One of the things that went well with this [incident]," says Alan Williams of MDE, "was strong mayoral support. [O'Malley] was giving support to the responders, and I can't stress the importance of that enough."

Endgame. On Saturday night, July 21, emergency crews hauled three boxcars filled with burning paper out of the Howard Street Tunnel; it took nearly a day, according to one account, to put out the fires in the three cars.⁸ Events moved quickly after that. On Monday, July 23, the last of the freight cars were removed; the following day, after an inspection uncovered no structural damage, CSX resumed partial freight service through the tunnel. Meanwhile, also on July 23, the DPW was finally able to repair a broken valve that had allowed water to continue leaking into the intersection of Howard and Lombard and to begin repairs on the ruptured water main. It had been a trying time for the DPW which had had to cool its heels while the fire department had battled the blaze. "The first couple of days," Winfield says, "we were kind of delayed from doing what we thought we should have been doing"; but, he adds, once "we had this coordinated effort" with the fire department, so that each knew when the other was working in or on the tunnel, "we were able to move forward with the repair." The DPW completed repairs on the water main itself on July 29, but the intersection of Howard and Lombard remained closed to traffic—and to light rail service—until early September, while the DPW replaced pipe adjacent to the repaired main.

Looking back on the incident as it wound down, most observers applauded the way the city had managed the crisis. The city had had "a close call," *The Baltimore Sun* editorialized, and was indebted to its "courageous firefighters," as well as to "the police, hazardous materials experts and public works workers who toiled on no notice through the night to cope with fire, train mishap, water main break and power outage." Aside from the siren alert, which proved more mystifying than enlightening, the city and other authorities had been "right to err on the side of caution," the *Sun* continued, "in closing roads, waterways, baseball, business and normal life until public safety was secured." The situation would have been considerably worse, the paper noted, if the chemicals had caught fire or released toxic fumes into the atmosphere—or if, as others later pointed out, it had been carrying radioactive waste. In the end, the tunnel fire was, as one citizen pointed out, "almost a worst-case scenario."⁹

The last clean-up work related to the fire—repairs on the road surfaces in the tunnel area—was completed on September 10, 2001.

⁸ Mitchell, p. 47.

⁹ Michael James, "'It's a little bit of hell'; 22 smoldering cars pulled out," *The Baltimore Sun*, July 21, 2001, p. 1A.