DEPARTMENT OF THE ARMY

WRITTEN STATEMENT
OF

MAJOR GENERAL WILLIAM H. GRAHAM
DEPUTY CHIEF OF ENGINEERS AND DEPUTY COMMANDING GENERAL / DEPUTY COMMANDING GENERAL, CIVIL & EMERGENCY OPERATIONS

U.S. ARMY CORPS OF ENGINEERS

BEFORE
TRANSPORTATION AND INFRASTRUCTURE COMMITTEE
UNITED STATES HOUSE OF REPRESENTATIVES

ON

REVIEWING AND EXAMINING THE FRANCIS SCOTT KEY BRIDGE FEDERAL RESPONSE

MAY 15, 2024

Chairman Graves, Ranking Member Larsen and distinguished members of the Committee, thank you for the opportunity to testify before you today to discuss the ongoing challenging emergency response to the collapse of the Francis Scott Key Bridge in Baltimore, Maryland and, specifically, the role of the U.S. Army Corps of Engineers (Corps) in the recovery effort.

I am Major General Butch Graham, the Corps' Deputy Chief of Engineers, Deputy Commanding General, and Deputy Commanding General for Civil and Emergency Operations.

On behalf of the Corps, please allow me to begin today by offering our heartfelt condolences for the families of the six individuals lost to this tragedy. From the outset of this response, we were committed to supporting the effort to recover their loved ones and our thoughts and prayers are with them.

We also extend our sympathy to the people of Baltimore, the State of Maryland, and the surrounding areas, particularly those whose livelihoods depend on the vitality of the Port of Baltimore. Along with our partners in the Unified Command, we are working tirelessly to restore the uninterrupted flow of critical commerce in and out of Baltimore, and we are incredibly proud of the progress that has been made over the past six weeks.

The Incident

When the Singaporean-flagged container ship, the Motor Vessel Dali, struck the Key Bridge in the early hours of March 26, we as a Nation were confronted with many challenges. The Dali's collision destroyed a supporting pier and caused a nearly one-mile-long span of the 1.6-mile bridge to fall into the Patapsco River below, raining down approximately 50,000 tons of concrete, asphalt, and steel. Two construction workers survived and were injured, while another six perished.

The bridge's collapse crippled Interstate 695, a major transportation route used by an estimated 12 million motor vehicles each year, and obstructed the Fort McHenry Federal Navigation Channel, blocking access to the Port of Baltimore.

Soon after the incident, Maryland Governor Wes Moore declared a State of Emergency, and the Corps' Baltimore District Commander, Colonel Estee Pinchasin, activated the district's Emergency Operations Center. The Corps team joined the multi-agency effort across all levels of government to form a Unified Command and Incident Command Post to begin the difficult task of determining how to begin clearing the wreckage and restoring vessel transit through the federal navigation channel.

Corps Authority

Congress authorized the Baltimore Harbor and Channels, Maryland and Virginia project, and the Corps' operation and maintenance of the 700-foot wide and 50-foot-deep channel, in various Rivers and Harbors and Water Resources Development Acts.

Additionally, the Rivers and Harbors Appropriation Act of 1899, as amended, (33 USC 409, 411-415) authorizes the Secretary of the Army to remove sunken vessels or similar obstructions/hazards from navigable waters of the United States. Implementing regulations, 33 CFR Part 245, allow the District Commander to fully restore the federal navigation channel in emergency situations where an obstruction impedes or stops navigation for safety and navigation.

Partnership

Utilizing our various authorities, the Baltimore District survey teams sprang into action within hours of the incident. The debris vessel, REYNOLDS, and survey vessel, CATLETT, were deployed to support the Maryland Transportation Authority Police, the initial incident commander in the first twenty-four hours of the response. These vessels, along with Baltimore District structural engineers with urban search and rescue experience, supported the search and rescue dive operations. This support continued as the Unified Command was established and the U.S. Coast Guard became the Federal On-Scene Coordinator. By the end of the first day, the mission shifted from search and rescue to recovery operations, and the Corps began clearing floating debris from the channel. Survey crews from the Philadelphia District provided supplemental support for this monumental effort.

For its part in the salvage effort, the Corps utilized an existing interservice support agreement under the Economy Act to partner with the United States Navy Supervisor of Salvage and Diving (SUPSALV). The Baltimore District coordinated with SUPSALV for mobilization under this interagency agreement, starting with $3 million from Baltimore Harbor and Channels 50-foot Project Operations and Maintenance funds. This cost-reimbursable agreement allowed SUPSALV to immediately execute a delivery order to mobilize assets for this salvage mission. Donjon Marine (Donjon) is SUPSALV’s emergency salvage contractor for this geographic area.

Operations

Partnering with the U.S. Navy has been crucial to ongoing operations, offering both technical expertise and additional resources with its salvage capabilities. This collaboration between the Army and the Navy enabled a rapid emergency response, and I want to underscore how quickly this mobilization occurred—SUPSALV

coordinated with Donjon to mobilize wreckage removal assets and support deep-water channel remediation and restoration within hours of the bridge falling.

Donjon secured the Chesapeake-1000, one of the largest floating cranes on the Eastern Seaboard, with a maximum lift capacity of 1,000 tons, which has proved to be an invaluable resource. To begin lifting the debris, however, it was critical to understand how the wreckage fell and what the conditions were like under the water. By partnering with SUPSALV, we brought in commercial dive companies to survey and map the underwater hazards and develop and safely execute the underwater salvage plan.

I cannot overstate the danger these divers faced—the Patapsco River is unforgiving, incredibly murky, and very cold. Salvage divers could, at most, see a foot in front of them. These perilous natural conditions were compounded by the jagged, twisted rubble of steel, concrete, and exposed rebar, adding the risk of impalement and snagged air supply hoses.

Through the courageous, methodical work of these divers and our survey crews, we began to develop a clearer understanding of the operational landscape. SUPSALV's initial salvage plan focused on clearing the Fort McHenry Channel, but the overall salvage operation has three lines of effort: (1) the Corps and SUPSALV's efforts, through Donjon, to clear the federal navigation channel; (2) the Maryland Transportation Authority's work, through its contractor, Skanska-Corman-Mclean, to clear the areas outside of the channel; and (3) the Dali's owner, Grace Ocean Private Limited, and operator, Synergy Group, and their contractor, Resolve Marine's, efforts to clear cargo from the vessel, enabling the unified team to ultimately clear remaining wreckage from the vessel.

After the initial planning and scoping, the Unified Command established three principal priorities to be accomplished concurrently: (1) clear the federal navigation channel; (2) refloat and move the vessel; and (3) clear the remaining wreckage from the entire waterway.

Clearing the Federal Channel

Dive and survey operations continued over the course of the first week using highly sophisticated three-dimensional (3-D) sonar and LiDAR imagery captured by the Navy's CODA Octopus 3-D imaging system, which enabled us to map the wreckage field. We learned how challenging the rigging and lifting process would be due to the tangled state of the wreckage and that much of it was submerged below the mudline, in some cases buried up to 30 feet deep. Additionally, the steel was under tension and compression, presenting an engineering challenge and safety hazard. As a result, the wreckage would need to be re-evaluated after removing each piece.

Once the wreckage was mapped, the northern side of the channel, opposite of the Dali, could be cleared to create a smaller, temporary one-way channel. We planned for this "Limited Access Channel" to have a width of 280 feet and a depth of 35 feet, which would allow for more than half of the vessels trapped in the Port of Baltimore to depart. Significant commercial and marine traffic could resume, bringing cargo and commodities into the port even as the salvage effort continued.

After stabilizing the vessel, cutting and rigging wreckage, and extensive engineering analyses, in collaboration with industry partners, we developed an ambitious, but feasible, timeline to reopen the navigation channel. We could clear the Limited Access Channel by the end of April and restore the full federal navigation channel by the end of May. The President announced this plan to the American people during his April 5 site visit. With this timeline in mind, the Unified Command pressed forward, paying careful attention to site safety and environmental concerns while prioritizing victim recovery.

Within the federal channel, we identified five principal sections of truss, the steel supporting structure of the Key Bridge, numbered zero (on the northern side) to four (on the southern side and laying atop the Dali). To open the Limited Access Channel, we had to remove truss sections zero and one.

On April 6, we began with diving, rigging, and cutting, and by April 14, the Chesapeake-1000 lifted the 440-ton piece of truss section one. Two days later, salvors lifted the second half of section one. Section zero, weighing nearly 1,000 tons, was lifted in three pieces as teams removed the final piece late into the night of April 22. Additionally, prior to these lifts the Corps' Engineer Research and Development Center worked with the Association of Maryland Pilots to develop and test simulations that projected the viability of the Limited Access Channel.

The Corps was able to clear the Limited Access Channel a week early and above scope at 300 feet in width by 38 feet deep. After the U.S. Coast Guard's assessments, the Limited Access Channel was open to one-way vessel traffic on April 25, capable of supporting approximately 80 percent of the types of vessels that the port served prior to the collapse.

Refloating and Moving the Motor Vessel Dali

Concurrently, while salvage operations were taking place in and around the federal channel, work had begun to refloat and move the Dali. This involved removing about four percent of the nearly 4,700 containers on the ship, along with removing obstructions from the bow of the ship. To remove the largest section of truss from the Dali, the Unified Command approved a controlled demolition technique involving precision cutting using small charges to break the section safely and efficiently into more manageable, liftable pieces. As of the date of this testimony, the Corps is on track

to complete the removal of section four by mid-May and to restore two-way traffic to the federal channel by the end of May 2024.

Clearing the Remaining Wreckage (Federal Channel and Adjacent Areas)

Currently, work continues to remove all remaining wreckage across the full federal channel. On April 20, a 200-ton wreck grab claw arrived onsite that, when rigged to the Chesapeake-1000, removes greater amounts of wreckage from the riverbed, increasing efficiency. All recovered wreckage is moved via barge from the incident site to a location approximately two miles to the east known as Sparrows Point. Skanska-Corman-Mclean, Maryland's contractor, leased ten acres of property on Sparrows Point to establish a wreckage processing operation there.

Once wreckage is deposited, Maryland assumes ownership, and its contractor is responsible for breakdown, processing, and recycling disposal. Much of the wreckage, specifically within the federal channel, is buried deep in the mud, and the lifts of the wreckage are mixed with mud and smaller pieces of steel, concrete, and asphalt. Donjon has been handling this mixed wreckage for offload and further separation and processing.

Outside of the federal channel, temporary alternate channels at Sollers and Hawkins Points, to the north and south of the federal channel respectively, were opened by the Coast Guard on April 1. Shallow-draft vessels and other smaller craft, in coordination with the U.S. Coast Guard, have been transiting these channels since that time. A third temporary alternate channel, Fort Carroll, with a 20-foot depth, was similarly opened by the Coast Guard on April 18 and remains in operation. The Maryland Transportation Authority's efforts to clear wreckage from outside the federal channel continue as of the date of this testimony.

Salvage Operations Funding

Acknowledging the emergency nature of this disaster and the critical need to reopen the federal channel quickly, the Corps used the Fiscal Year 2024 funds appropriated to support the operation and maintenance of the Baltimore Harbor and Channels 50-foot project to initiate the salvage efforts.

The Corps obtained additional funds through an internal emergency reprogramming of unused Operation and Maintenance funds from prior year appropriations to continue to support this mission utilizing prior-year. We are taking great care to ensure these reprogramming efforts will not negatively impact other Corps projects. So far, the Corps has obligated approximately $37M on wreckage removal and emergency response.

Closing

In closing, I'd like to thank the Committee for having me here today. I'm incredibly proud of our Corps team members, our partners in the Unified Command (U.S. Coast Guard, Maryland Department of the Environment, Maryland Transportation Authority, Maryland State Police), as well as all other associated agencies and industry partners, and for having zero safety incidents on any of the salvors thus far.

From day one, this entire mission was about a commitment to get the job done right and safely, deliver for the people of Baltimore and the Nation, and honor the families whose loved ones were taken from them. I believe we have continued to deliver on that promise, and I will be forever proud of the work we have accomplished together. This challenge is immense, but with a unified effort, it is not insurmountable.

Thank you again for the opportunity to be here today, and I look forward to your questions.

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