

DONJON MARINE FRANCIS SCOTT KEY BRIDGE SALVAGE RESPONSE







BACKGROUND

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At 0129 on 26 March 2024, the Francis Scott Key bridge collapsed following a vessel allision with one of the two primary bridge piers. M/V DALI, registered under the flag of Singapore, lost ship's power shortly after departing the Port of Baltimore. Due to this loss of power, DALI was uncontrollable and allided with the Francis Scott Key Bridge (FSK) causing a total collapse of the truss section into the Fort McHenry Navigation Channel. Over 3500' of bridge was now wreckage on the river bottom effectively blocking the Port of Baltimore to all vessel traffic.

The U.S. Army Corps of Engineers (USACE) is responsible for Federally-designated channels. To aid in clearing those channels when necessary, it maintains an agreement with Navy's Supervisor of Salvage for access to salvage support.

In those early morning hours of 26 March, it was clear USACE was going to need that support - and more – to clear of the Ft McHenry Navigation Channel under what had been the FSK bridge.



Information Classification: G

PORT OF BALTIMORE – TERMINALS AND USES

SEVEN MAJOR TERMINALS INACCESSIBLE



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Information

Unified Command



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US Coast Guard: US Corp of Engineers: MD Dept of the Environment: MD Dept of Transportation: MD State Police: Responsible Party:

CAPT Dave O'Connell COL Estee Pinchasin Geoff Donahue Jim Harkness Roland Butler Chris Nutt

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Salvage Branch Organization



Inform





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Salvage Coordination



- SUPSALV (IC Salvage Branch) coordinating three simultaneous salvage operations
 - Priority 1: Federal Channel Clearance (DONJON MARINE)
 - Priority 2: Removal of M/V DALI (RESOLVE MARINE via OPA 90)
 - Priority 3: Removing wreckage outside of the Federal Channel (MDTA and SKANSKA)





DONJON Marine's Involvement



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To access this salvage support, the US Army Corps of Engineers exercised an existing interservice support agreement with NAVSEA, Supervisor of Salvage and Diving. They requested SUPSALV to provide salvage services to clear and restore the Fort McHenry navigation channel.

As the Navy's Lead Emergency Salvage Contractor for ZONE A Salvage Contract, <u>Donjon</u> Marine was directed by SUPSALV to begin mobilization from Port Newark, NJ on 27 March. Within 24 Hours, Donjon Equipment/Assets were enroute to Baltimore.

On 27 March 2024, less than 28 hours after the collapse, DONJON Salvage Masters and Key personnel joined the Incident Command. In consultation with the Unified Command, SUPSALV was appointed the Salvage Branch Lead within the Incident Command and was charged with coordinating the overall salvage response.

This was the start of an unprecedented multi-agency, multi-company response to a disaster with no modern parallel, poised to cripple Baltimore's, the State of Maryland's, and indeed the U.S.'s economy.



Daunting Salvage Challenge



- 16,000 tons of steel
- > 20,000 tons of concrete and roadway material
- > 700' wide x 50' deep channel completely blocked
- > 10-20' depth outside channel restricts almost 100% of commercial traffic
- Three simultaneous tasks
 - Channel clearance
 - Removal of M/V DALI
 - Removal of bridge wreckage outside main channel

US NAVY SUPERVISOR OF SALVAGE AND DIVING (SUPSALV) tasked two of its emergency contractors – Donjon Marine, its ZONE A salvage contractor - to commence mobilization.









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The Unknown: What does the salvage problem actually look like **underwater?**

<u>48 hours after the collapse-</u>

- Lead Donjon Salvors onsite surveying above water
 * MASSIVE Scale Salvage Operations Required
- Underwater Survey needed to fully grasp the problem and to build the Salvage Plan.
- WE NEEDED to pull our longstanding Industry Partners into Operations.
 - Randive and Phoenix International (Diving)
 - Gulfstream Services (GSI) (DWS and Hydraulic Shear)



The Salvor's Challenge: Underwater Operations 🛞





- Zero visibility
- Potential for HR (six souls still missing)
- Unknown condition of bridge as she lays on bottom of channel
- Dive Surveys revealed that the bridge's lower chord (at some locations) mainly buried in mud and under hanging road deck, concreate and rebar

Diving Conditions

Hanging Road Deck (Concrete and Rebar) pushed up into main bridge structure *Concreate and Rebar "jumbled mess" was major diver hazard- *NO Penetration Diving*



Salvage Operations



- Operated TWO Dive Sides during "survey" phase to fully survey all bridge structure in the Federa Channel
- These surveys fed <u>critical information</u> to the development of the <u>Salvage Plan</u>
 - Determined location for cutting operations to separate the bridge structures into crane liftable pieces.
 - (Ex. Sections 1A and 1B required 6 cuts to separate into two pieces: 2 upper chords; 2 lower chords; 2 diagonal beams).
- DWS used for all underwater cutting (set by diver)
- Used Hydraulic Shear and few instances using propane Cutting Torches for topside cutting.
- Needed to dig out bottom chord buried in mud to access lower chords on some of the sections





Salvage Operations



DONJON MARINE

-Once Survey Dives completed and Salvage Plan approved-

Process for removing LARGE intact sections out of Federal Channel:

- 1. Sections needed to be completely separated into liftable sized pieces for Chesapeake 1000 Crane
 - <u>Cut bottom chord</u>: Divers and DWS
- *Some digging required using dredge bucket to expose chord enough for DWS to effectively Cut
 - <u>Cut Diagonal beams</u>: Divers and DWS
 - <u>Cut Top Chord</u>: Topside personnel; DWS; Hydraulic Shear; Torches
- 2. Pre-Rig with smaller Cranes once separated into liftable pieces
- 3. Chesapeake 1000 rig into pieces and lift.
- 4. Chesapeake with piece in the Main hook transported via tugs to Sparrows Point for processing. Skanska Processing Yard established during the FSKB Salvage. All Bridge Scrap would be transported over to Sparrows Point for Processing.





Salvage Operations



Process for removing Remaining Road deck, concrete, and Bridge Steel Pieces in the Federal Channel





Using Hydrographic Survey equipment to locate debris-Assets used to clear Federal Channel:

- Dredges with Hard digging buckets
- Chesapeake 1000 with the Hydraulic Grab
- LOTS OF SURVEY











UC's Priority 1: Open Federal Channel Milestones



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UC's Milestones

First Milestone (300' x 35' Temporary Channel) achieved ...29 Days after the collapse...

Second Milestone (400' x 50' Temporary Channel) achieved

After Precision Cutting executed by other Salvor to separate bridge section off of Dali

....56 Days after the collapse...

Third Milestone (700' x 50' <u>FULL</u>Channel) achieved ...77 Days after the collapse...

The full (700' wide x 50' deep) Ft McHenry Federal Navigation Channel was certified for unrestricted operations on <u>10 JUN 2024.</u>

Fourth and Final Milestone (NO STEEL or DEBRIS LEFT BEHIND) achieved ...91 Days after the collapse...

MET ALL MILESTONES IN UNEXPECTED <u>TIMELINE....</u> <u>WITH ZERO SAFETY MISHAPS</u>



High Level Timeline



- <u>26MAR:</u> FRANCIS SCOTT KEY BRIDGE COLLAPSED FOLLOWING A VESSEL (M/V DALI) ALLISION // DONJON DIRECTED TO MOBILIZE
- 27MAR: MOBILZATION OF ASSETS FROM PORT NEWARK
- <u>28MAR:</u> KEY DONJON PERSONNEL ARRIVE ON SCENE
- <u>29MAR</u>: DIVING OPERATIONS BEGIN FOR SURVEY
- <u>02APR:</u> SALVAGE PLAN SUBMITTED
- 05APR: HR #1 RECOVERED
- 14APR: CHESAPEAKE 1000 LIFTS AND REMOVES SECTION 1A; HR #2 RECOVERED
- <u>16APR</u>: CHEASAPEAKE 1000 LIFTS AND REMOVES SECTION 1B
- <u>19APR</u>: CHEASAPEAKE 1000 LIFTS AND REMOVES SECTION 0A
- <u>22APR</u>: CHEASEAPEAKE 1000 LIFTS AND REMOVES SECTION 0B
- <u>23APR:</u> COLUMBIA LIFTS AND REMOVES SECTION 0C
- <u>24APR:</u> FIRST MILESTONE REACHED: 300' X 35' CHANNEL
- 01MAY: HR #3 RECOVERED
- <u>06-11MAY: CHESAPEAKE AND COLUMBIA ASSIST SKANSKA LIFTING SECTION 17</u>
- 07MAY: HR #4 RECOVERED *ALL HR ACCOUNTED FOR
- <u>13MAY:</u> SECTION 4 EXPLOSIVE CUTTING OFF M/V DALI (RESOLVE MARINE)
- <u>14-16 MAY:</u> CHESAPEAKE 1000 ASSIST RESOLVE MARINE REMOVING SECTION 4 OFF AND AWAY FROM PORT BOW OF M/V DALI
- <u>21 MAY:</u> SECOND MILESTONE REACHED: 400' X 50' CHANNEL
- 24MAY: CHESAPEAKE 1000 LIFTS AND REMOVES SECTION 4-0
- O1JUNE: CHESAPEAKE 1000 LIFTS AND REMOVES SECTION 4B
- <u>04JUNE: CHESAPEAKE 1000 LIFTS AND REMOVES SECTION 4C *ALL LARGE BRIDGE STRUCTURES REMOVED</u>
- <u>10JUNE:</u> THIRD MILESONE REACHED: 700' X 50'
- <u>25 JUNE:</u> FOURTH AND FINAL MILESONE REACHED: "NO STEEL LEFT BEHIND"





Success takes a TEAM



#1 ASSET which attributed to the SUCCESS of one of the most Complex and Massive Salvage Operations. ON MARINE

THE PEOPLE!

Lots of Dedicated and Talented People









