

# USE OF SURFACE-WASHING AGENTS DURING THE M/V GENMAR HECTOR OIL SPILL

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**ABSTRACT:** On 14 March 2001, the M/V GENMAR HECTOR was oiled on both the superstructure and hull after a transfer line broke during an unexpected storm event with winds gusting to 70 mph. In addition to the tanker vessel, seven other vessels, as well as floating docks and barges, were oiled at the waterline. The crude oil rapidly weathered to the point that conventional cleanup techniques were ineffective at removing residual oil from the vessels so that they could be released from the port area. Members of the Regional Response Team were convened and the use of National Contingency Plan listed surface-washing agents that had the effect of "lifting and floating" remobilized oil was approved. Using the guidance of the Regional Response Team, a test was conducted to evaluate conventional and chemically-enhanced washing techniques. It was found that pretreatment with PES-51 followed by a high pressure, hot water wash resulted in the desired cleanup level, which was, essentially, the complete removal of oil and oil stain. PES-51 was selected for this application because of its availability and the minimal contact time required before flushing. The cleaning and demobilization of oiled vessels was greatly enhanced by using a surface-washing agent.

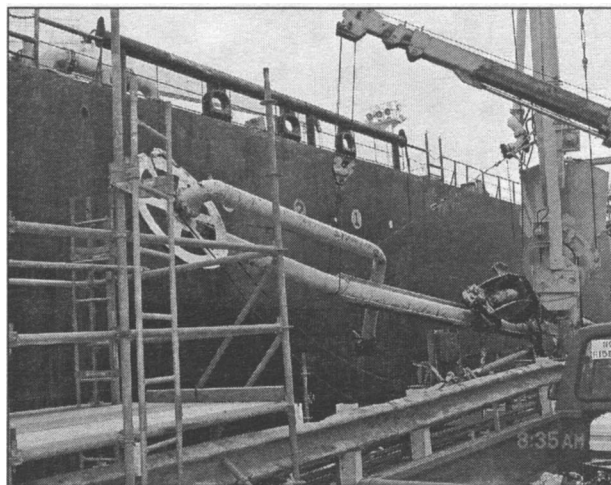


Figure 1. Damaged transfer line on the starboard side.

## Introduction

On the evening of March 14, 2001, during an unexpected storm event with winds gusting to 70 mph, the M/V GENMAR HECTOR surged in its moorings at Texas City, Texas during a transfer operation. The surging vessel broke the transfer line (Figure 1) and spilled a reported 100 barrels of Kuwait Crude into the environment, oiling the hull and superstructure of the vessel (Figure 2). The source was secured and a cleanup contractor arrived on scene to begin containment and recovery operations as weather conditions improved.

This paper will document the use of surface-washing agents during the M/V GENMAR HECTOR response and report on the status and key elements of the proposed pre-approval process.

## Discussion

In addition to recovering oil on the water and shoreline during a response, any structure that has been oiled and can become a secondary source of pollution must, if possible, be cleaned. During the response, the Unified Command requested alternative methods be evaluated to clean and demobilize oiled vessels in the

port area. Regional Response Team (RRT)-VI was convened to request guidance and permission to evaluate the use of a surface-washing agent along with conventional techniques. Surface-washing agents are oil spill treating products designed to enhance oil removal from substrates (Michel *et al.*, 2001). Permission was granted with the caveat that all remobilized oil be boomed and recovered, and if a chemical agent was used, it had to provide a "lift and float" capability. Lift and float products do not disperse oil; instead they remove the oil from the surface it is adhered to, allowing the oil to float on the surface of the water where it can be recovered (Michel *et al.*, 2001).

Three techniques were evaluated for effectiveness in removing oil from the M/V GENMAR HECTOR: high-pressure ambient temperature water wash, high-pressure hot water wash, and pretreatment with a surface-washing agent followed by high-pressure hot water wash. The high-pressure ambient temperature water technique had no effect on removing oil from the vessels hull. The high-pressure hot water technique had only minimal effect in removing black oil and left a greasy film. After these two techniques failed to meet the desired level of cleanliness, the National Contingency Plan (NCP) Product Schedule (EPA, 2002) was reviewed and found to have four surface-washing agents and two miscellaneous oil spill control agents listed with the lift and float capability. Information on surface-washing agents and miscellaneous oil spill control agents in the *Selection Guide for Oil Spill Applied Technologies, Volume 1, Decision Making*

(Walker *et al.*, 2000) was reviewed and discussions were held with RRT-VI members. The decision was made to use PES-51 due to its availability and minimal contact time. Contact time was based on manufacturers recommendations for each product evaluated.



Figure 2. Starboard side looking aft of the M/V GENMAR HECTOR. Note streaks of oil on the hull and superstructure.

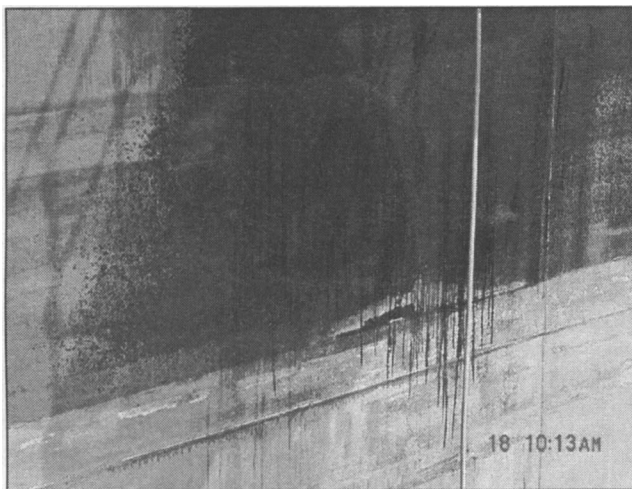


Figure 3. Starboard side of vessel approximately 2-5 minutes after application of PES-51. Note black oil starting to run down the side.

PES-51 was applied to the oiled surfaces of the M/V GENMAR HECTOR using a low-pressure garden-type sprayer and allowed to soak for approximately 2-5 minutes (Figure 3 and 4) before being washed with high-pressure hot water. An oil containment boom was placed around the vessel, and the remobilized oil was allowed to drain down the side of the vessel to the waterline, where it was recovered using sorbent pads and skimmers.

In addition, seven other vessels were oiled, leaving a bathtub ring of oil 10 to 60 centimeters wide around the vessels at the waterline. Due to the difficulty of getting equipment down to the waterline of these vessels, PES-51 was applied to a sorbent pad and the bathtub ring was removed manually by wiping. By using this method, no oil or chemical agent was washed into the water, requiring water recovery.

### Conclusions

Cleaning and demobilization was greatly enhanced by using a surface-washing agent to clean oiled vessels and other hard surfaces during this response. As a result of the successful use of surface-washing agents during this response, and at a second spill in Galveston Bay, Texas, the United States Coast Guard (USCG) sought to expedite the approval process by establishing pre-approval authorization for the Federal On-Scene Coordinator. The pre-approval provides guidance on when to consider using surface-washing agents, and on available techniques, monitoring requirements, and pre-approved areas. These guidelines are in draft form and are being reviewed by RRT-VI. Port areas are being identified that would benefit from this streamlined process.

### Disclaimer

References to any specific surface-washing product do not constitute an endorsement or recommendation by NOAA or the USCG.

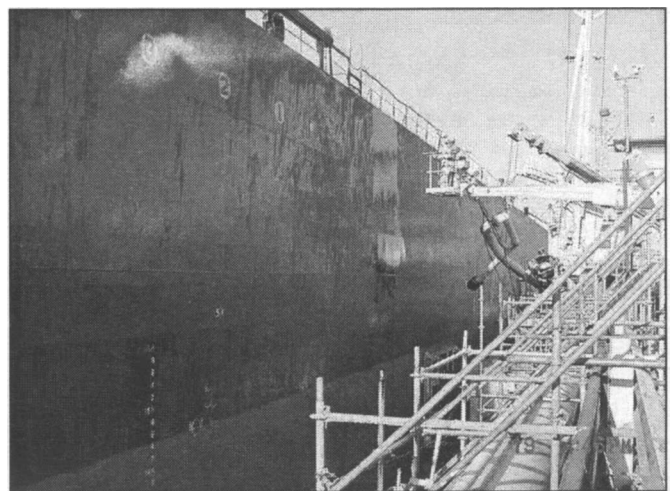


Figure 4. Starboard side looking forward. Cleanup worker applying PES-51. Hull is clean to the right of the worker.

### Biography

Lieutenant Stephen J. Thumm is a commissioned officer with the National Oceanic and Atmospheric Administration Commissioned Officer Corps and is currently assigned to the National Ocean Service, Office of Response and Restoration as the Assistant Scientific Support Coordinator.

### References

1. EPA (U.S. Environmental Protection Agency). 2002. National Contingency Plan Product Schedule Notebook. April 2002.
2. Michel, J., A.H. Walker, D. Scholz, and J. Boyd. 2001. Surface washing agents: Product evaluations, case histories, and guidelines for use in marine and freshwater habitats. *Proceedings of the 2001 International Oil Spill Conference*, Tampa, Florida, American Petroleum Institute, Washington, D.C. pp. 805-813.
3. Walker, A.H., D. Scholz, J. Michel, B. Benggio, J. Boyd, and W. Walker. 2000. Selection guide for oil spill applied technologies, Volume 1, Decision making. EPA region III-SATA Contract No.68553002. U.S. Environmental Protection Agency, Philadelphia, Pennsylvania. pp. 131-138.

