# CSI Country Wide Case Study Safety Strategy Discussion

# Construction Safety Investigator

#### **Instructions**

The objective of this tool is to provide field supervisors with information to proactively engage workers and discuss safety related concerns that they may encounter. Safety discussions should not be limited to the subject above and should pertain to the activities that workers will be involved in that may have the potential for safety related exposures.

## Case Day:

August 2007

## **Accident Type:**

Barge Accident - Capsized

# Relevant laws, rules and codes may include:

29CFR 1926.20(a)(1), 1926.21(b)(2), Barge Mfr. design and technical specifications

#### Case:

A demolition worker was killed when a custom-engineered segmented barge capsized in a river after its load became imbalanced.

# **Accident Detail:**

A custom-engineered segmented barge and 25-foot tugboat overturned while a crew was demolishing an old highway bridge. To catch discarded rubble underneath the bridge, the contractor fashioned its own hopper barge out of three Flexi-float segments, steel plates and I-beams.

During the operation, the demolition crew recognized that debris was piling up on the barge, causing a load imbalance. They attempted to solve the problem by using a piece of construction gear with a bucket to press down on one side of the barge, then attaching a cable to one side of the barge and the other end to another piece of the machinery on the bridge to stabilize it. Once they thought the barge was in a stable situation, they attempted to move it.

When the worker went to disconnect the cable with the tugboat attached, the barge tipped one way then reversed direction and capsized on top of the worker, trapping him underwater. He died from drowning in 10 to 12 feet of water.

# **Reconstructive Safety Evaluation:**

- What are some of the possible causes of the accident being discussed?
- What actions could have been taken that might have prevented this accident from occurring?

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#### **Accident Scene Conclusion:**

The investigation revealed the custom-engineered barge was used because a regular hopper barge would have been too large for the job due to the tight space and need for a shallow draft. The deceased worker was wearing a life jacket but was pinned under the barge segments. The employees had no idea, due to lack of training, how unstable the barge had become and the construction company's owner and superintendent stated that they did not calculate the capacity or the stability of the barge, nor was any training provided.

## **Preventive Safety Measures Include:**

- All operations are preplanned using a Job Safety Task Analysis (JSTA) to ensure potential safety hazards associated with an
  operation are identified and appropriate steps are taken to eliminate or control them.
- Workers should be trained in the hazards of the work they are to perform, the personal protective equipment and safe work procedures necessary to perform their assigned tasks.
- When dropping demolition rubble onto a barge, employers must be aware of the vessel's ability to carry the weight and potential imbalance that would cause it to capsize.
- To ensure the correct barge is used and/or configured, so the barge will perform as intended without failure, the barge design, buoyant capacity, stability characteristics and calculations must be reviewed by a qualified person who specializes in marine vessels and/or the barge manufacturer prior to beginning any operations.

Attendance Roster		

 $Reference: This case was reported in the Professional Mariner - Journal of the Maritime Industry; Issue {\tt\#106}, August 2007.$ 

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