

# NASA Shuttle Tank Factory Facing Catastrophic Ruin From Katrina

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NASA has had some close calls from hurricanes before. Its huge launch facilities at Cape Canaveral have suffered moderate damage on several occasions. And each time, observers of the US space program have speculated what would happen if a major hurricane struck the Cape and destroyed the Vehicle Assembly Building, - the irreplaceable heart of Shuttle launch operations.

Now it seems that the killing blow may occur hundreds of miles to the west, at the Michoud Assembly Facility near New Orleans where the Space Shuttle's external propellant tanks are manufactured. Hurricane Katrina is now heading almost directly toward this vital installation.

Michoud itself, is located alongside a deep-water canal, directly west of Lake Borgne at the apex of a swampy triangle bounded by high ground. This natural funnel will face directly into the wind as Hurricane Katrina approaches Louisiana. The factory site is below sea level and a pumping station is needed to keep it dry even under normal conditions.

The storm surge is predicted to be at least 28' high, and the top of the Michoud factory levee is less than 20' above sea level. The levee will be of little use in keeping the rising water out, but it will hold the water in after the tide goes down.

The main factory building dates back to World War II and probably won't stand up very well to 160mph winds. It seems that only a major weakening or track change by the hurricane can save Michoud from a

serious beating.

Because of the stand-down in Shuttle operations since February 2003, there are now seven complete External Tanks stored at Michoud (plus components for 8-10 more). All of these tanks may well be destroyed or seriously damaged.

There are two Shuttle tanks still safely at KSC, but they were supposed to be barged back to Michoud for modifications that cannot be made at the Cape.

One of these tanks was scheduled to be returned to KSC by November 12 for the slated March Shuttle launch (dubbed "RTF-3" by some). Significant damage at Michoud could wreck this schedule and delay the resumption of Space Station assembly flights, already on hold for 3.5 years.

Support for continued Shuttle operations declines with every delay and disaster. It seems possible that Katrina could be the straw that finally breaks the camel's back.

And after Shuttle, NASA Administrator Mike Griffin apparently plans to use the Michoud facility to build modified Shuttle ETs which will serve as the core of his new heavy-lift booster. If Michoud is destroyed, what becomes of this plan?

Historically, when major government facilities are wrecked by hurricanes, local politicians obtain bales of federal money to rebuild them. Florida's Holmstead Air Force Base and Pensacola Naval Air Station were rebuilt even as their parent services were contracting and discarding bases elsewhere.

But at Michoud, lots of skeptics will ask whether this is a wise

expenditure of resources. The US has surplus capacity in the space booster industry and the two major private booster builders are talking about consolidating their production into a single factory.

If the existing tooling for Shuttle tanks needs to be rebuilt, much of the alleged savings gained by adopting a Shuttle-derived design will evaporate. The partisans of an EELV-based or clean-sheet HLV design will come out of the woodwork again.

It would be ironic if the design of the booster that returns men to the moon were to be determined by the track of a hurricane.

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