

# Mexico Lights up!

## Internal floating roof tank ignites from lightning strike

A lightning strike during a tropical storm of June 28, 2006 set a tank ablaze in an older section of a refinery located in Minatitlan Veracruz. The fire directly affected a 134 ft diameter internal floating roof tank, which stood 40 feet in height, and was located in a congested area of the facility. At the time of ignition the tank was estimated to be approximately half full with about 55,000 barrels of 87 octane gasoline.

Felipe Hanhausen, Williams Fire & Hazard Control South American Regional representative, was contacted 9 hours after ignition by facility representatives asking for his guidance, and that he be available for onsite assistance if necessary. Felipe advised the facility to establish a footprint with available foam stores and their “Hired Gun”, Patriot II (2,000 gpm monitor), and aerial platform with HotShot foam system.

Onsite responders were joined by sister facility brigade members from the region throughout the night. Faced with the frenzy of the initial stages of the event and the magnitude of the fire itself — this was a large fully involved surface fire — multiple response teams reacted quickly to apply massive amounts of water and foam to this fire during immediate extinguishment efforts. Initial efforts by onsite responders in the early morning hours following the ignition gained control of the fire several times only to have the tank relight until foam stores were depleted.

At this point, Hanhausen was asked to respond to the site personally and to provide additional foam supplies. Felipe was able to secure foam from several sources — Williams Fire & Hazard Control’s Texas facility placed foam on stand by, Pemex’ sister facilities provided foam to the scene, and ANSUL was able to immediately move in 3,000 gallons from local Mexico reserves.

Upon Hanhausen’s arrival, responder activities had been reduced to exposure protection and cooling of adjacent structures as foam stores had nearly been exhausted and reinforcements were badly needed to continue extinguishment operations. Hanhausen had located and requested over 3,000 gallons of ThunderStorm foam to be expedited to the scene with more available in the



An overcast night sky lights up when a storage tank ignites due to a lightning strike.

area if needed

With the foam en route, Hanhausen’s initial priorities onsite were to assess the fire scene personally. His observations of the scene led to concerns regarding the disposition of the attack, which was currently upwind, approximately 15 feet below the level of the dike floor, and in a very congested area of the facility. Also, the high level of water in the involved tank’s dike area, and a crack in the dike wall were a real concern. If the tank failed and a spill occurred the dike would be overwhelmed and would immediately begin leaking fuel into surrounding areas adding spill fires to their list of challenges.

Hanhausen also noticed odd behavior in the fire itself not fully representative of merely a surface fire.

### Success Breeds Success

“I contacted Dwight Williams to share my observations from the scene and to get his insight. Dwight has an uncanny ability to read a fire ... if you can be patient and observe the fire’s behavior you will be able to determine its strengths, its weaknesses, and how best to defeat it. It is sometimes difficult to take this tact when faced with an event that few — if any — on your force have confronted before. However, this mindset is invaluable when leading an attack and assuring proper use of precious resources on hand.”

“The appearance of the fire was as if the flames were free flowing as with a full surface fire. In fact, at times the active areas of the fire behaved much like a pressure fire with the flames towering along the perimeter in two primary areas, while the center of the fire was meek - indicating some kind of internal obstruction.”

“Fortunately for us, Dwight had just face an identical situation only two weeks prior in Oklahoma with an even larger gasoline tank fire that was obstructed by the collapse of the internal floating roof and the debris field it had caused. There, initial extinguishment attempts were challenged due to the obstructions that were not visible from the ground. Dwight defined the vertical foam attack he had directed in Oklahoma and how it was able to shower down over the tanks internal area — blanketing the entire flammable surface with greater authority.”

“Dwight’s guidance expanded our use of resources to include an E-ONE aerial with foaming capacity to support our ground attack from the Patriot II. We

related to tank structure, and results from the fire itself caused this fire to act in a unique manner. The reason we were successful was because we patiently assessed the fire’s behavior and developed our attack to the circumstances at hand.”

“Among other things, Williams’ success over the last 26 years is due in large part to patiently observing the

**patience ... results in a more precise, efficient, and effective response.**

*Dwight Williams,  
President Williams Fire & Hazard Control.*



**Congestion of this older portion of facility, the results of tank design when under fire stresses, the elevated position of the affected tank, wind conditions, and the actions/fire characteristics of the blaze itself were all factors making this tank fire a unique challenge.**

had a great footprint established with the Patriot II. The aerial was used in support from an elevated position to shower foam downward over the shadowed areas. This combined application resulted in a dynamic and very efficient application of foam for this situation ... we had the fire out within approximately 10 minutes using very little foam by comparison to earlier attempts.”

“This fire was very peculiar ... circumstances directly

behavior of the fire in any given event ... to respond deliberately with tactics that match the characteristics of the fire at hand. As it certainly is human nature to put the wet stuff on the red stuff as soon as possible — and usually in large quantities — experience (and this is key) shows that a little time taken to assess the nature of the threat will usually result in a more precise, efficient, and effective response”, Dwight Williams, President Williams Fire & Hazard Control.

