

Preliminary Report on Florida Hyperbaric Chamber Fire

Date: June 9, 2009

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Source: Broward County Sheriff's Office

On May 1, 2009, a fire occurred inside one of the hyperbaric chambers at the Ocean Hyperbaric Neurologic Center in Lauderdale by the Sea, Florida. A 62 year old grandmother and her 4 year old grandson were in the chamber when the fire occurred. The fire caused 2nd and 3rd degree burns over approximately 90 percent of both their bodies. The woman died on May 2, 2009 from her burn injuries. As of June 8, 2009, the child was still alive with the aid of life support equipment.

The hyperbaric chamber involved is a Vickers 'clamshell' chamber built in 1967. The chamber is constructed of metal and acrylic, and the design does not include a patient tray for loading and unloading. The chamber was pressurized with 100% oxygen to a treatment pressure of 1.75 ata. The maximum operating pressure of the chamber is 2.0 ata. The fire occurred approximately 20 minutes after the beginning of the treatment. The chamber room was equipped with sprinkler protection, a hand-held fire extinguisher, and smoke hoods (personal protective devices) for the chamber operators.

At the time of the fire, there were a total of 5 hyperbaric chambers in operation and 2 chamber operators responsible for them. One of the operators has approximately 12 years experience operating hyperbaric chambers and holds DMT and CHT certifications. The other operator has approximately 1 year experience operating hyperbaric chambers. When the fire occurred, the chamber operators turned off the oxygen supply and activated the emergency decompression feature of the chamber. One of the administrative staff on duty called 911 to report the fire, and the chamber operators began decompressing the 4 other chambers. Decompression of the Vickers chamber took approximately 90 seconds. During the chamber decompression, one of the operators brought a nearby hand-held fire extinguisher to the Vickers chamber. The first emergency responder on the scene was a deputy sheriff who arrived at approximately the same time as the chamber operator opened the Vickers chamber. There was still some burning material inside the chamber when it was opened, so the chamber operator used the hand-held fire extinguisher on the chamber interior. The deputy sheriff then removed the child from the chamber and took him outside. Shortly thereafter, an EMS crew arrived and removed the woman from the chamber. Both the deputy and EMS were on the scene within 3 minutes of the 911 call.

Inspection of the chamber revealed that the pressure relief device on the chamber activated at some point during the fire and discharged a dark, sooty material. Although the pressure relief device allowed gas and smoke to escape into the chamber room, the fire was contained inside the chamber. There was no explosion and no fire outside the chamber.

The cause of ignition has not been determined. According to the investigators, inspection of the burn patterns in the chamber suggests an internal speaker as a possible source, but this has not been confirmed. Investigators found that all clothing and linens in the chamber were either cotton or a cotton/polyester blend. Investigators did not find any matches, lighters, warmers, or electronic devices in the chamber or on either of the occupants. The investigation is still ongoing.



Figure 1: Exterior of Vickers 'clamshell' chamber with lid closed.



Figure 2: Exterior of Vickers 'clamshell' chamber with lid open.



Figure 3: Interior of Vickers 'clamshell' chamber. Approximately $\frac{3}{4}$ of the head end of the chamber interior is visible.