

Vulnerability of Supplemental Oxygen System Components to Fire

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In this presentation, two case histories concerning aircraft supplemental oxygen system fires are reviewed. The two fires occurred within the last two years and involved a Boeing 767 cargo aircraft and a Bombardier CRJ-200 passenger aircraft. In both cases the fires occurred on airport grounds while the aircraft were being prepared for flight. In both instances flexible oxygen hoses were involved in the fire, and in one instance the flexible oxygen hose also acted as the fire's ignition source. During the course of the NTSB's investigation, fire tests were performed at the FAA Technical Center on exemplar flexible oxygen hoses. The tests exposed a mechanism for ignition by electrical fault for some types of these hoses and also demonstrated the severe fire that could be sustained and spread by a burning flexible oxygen hose. A pressurized flexible oxygen hose burns like an oxygen cutting torch until the hose is consumed or the oxygen runs out. As a result of the Boeing 767 investigation the NTSB put forth recommendations to address the issue of the hoses becoming an ignition source. In the event that the flexible oxygen hose is not the ignition source, but a mere victim of an unrelated fire, the outcome will be very similar once the pressurized hose ignites. The selection of materials and the overall design and routing of oxygen system components needs to be examined from the fire protection perspective. Requirements in the FARs that specifically address the fire resistance of oxygen system components do not currently exist.

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