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Sprinkler, Smoke & Heat Vent, Draft Curtain Interaction -- Large Scale Experiments and Model Development

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5.2.2 Test P-2

Test P-2 was intended to present an extreme situation as far as venting is concerned. The ignition point was put directly under a vent. The objective was to see how vent activation soon after ignition could affect sprinkler response. In the experiment, flames reached the top of the central array at about 65 s and the vent cavity at about 70 s. The first sprinkler activated at 100 s, followed 8 s later by the sprinkler on the opposite side of the vent. The vent above the ignition point did not open at any time during the 30 min test. However, the vent 6 m (20 ft) to the west of the ignition point did open at 6:04. Unlike Test P-1, in Test P-2 all 23 sprinkler activations occurred within 6 min of ignition.

By about 10 min after ignition the smoke layer throughout the test facility was at the height of the third tier. Up to this point in time, there was no observable difference in the amount of smoke in the north and south aisles. The fire damage in Test P-2 was similar to that of Test P-1, with more damage observed in the fourth tier (Fig. 28).