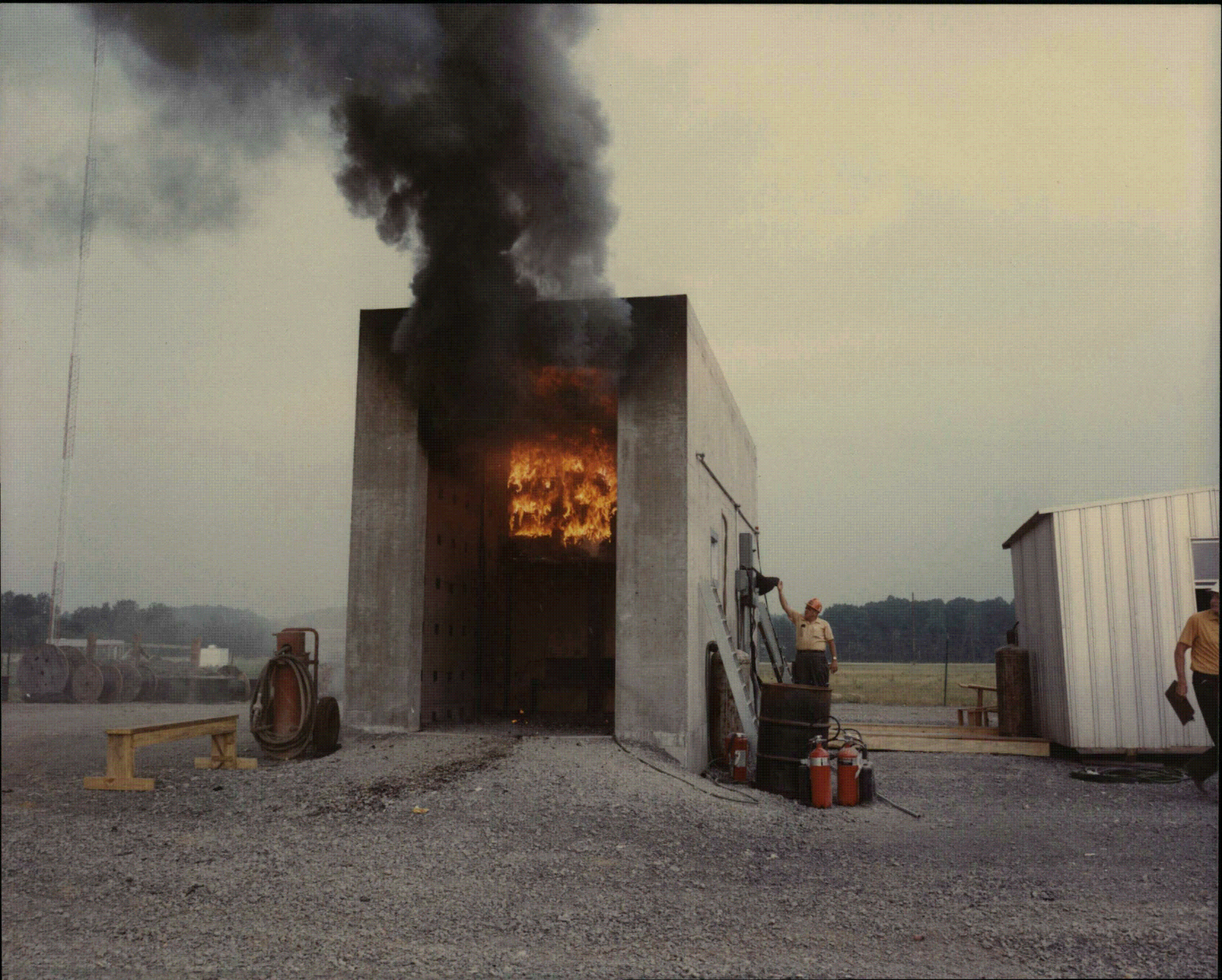
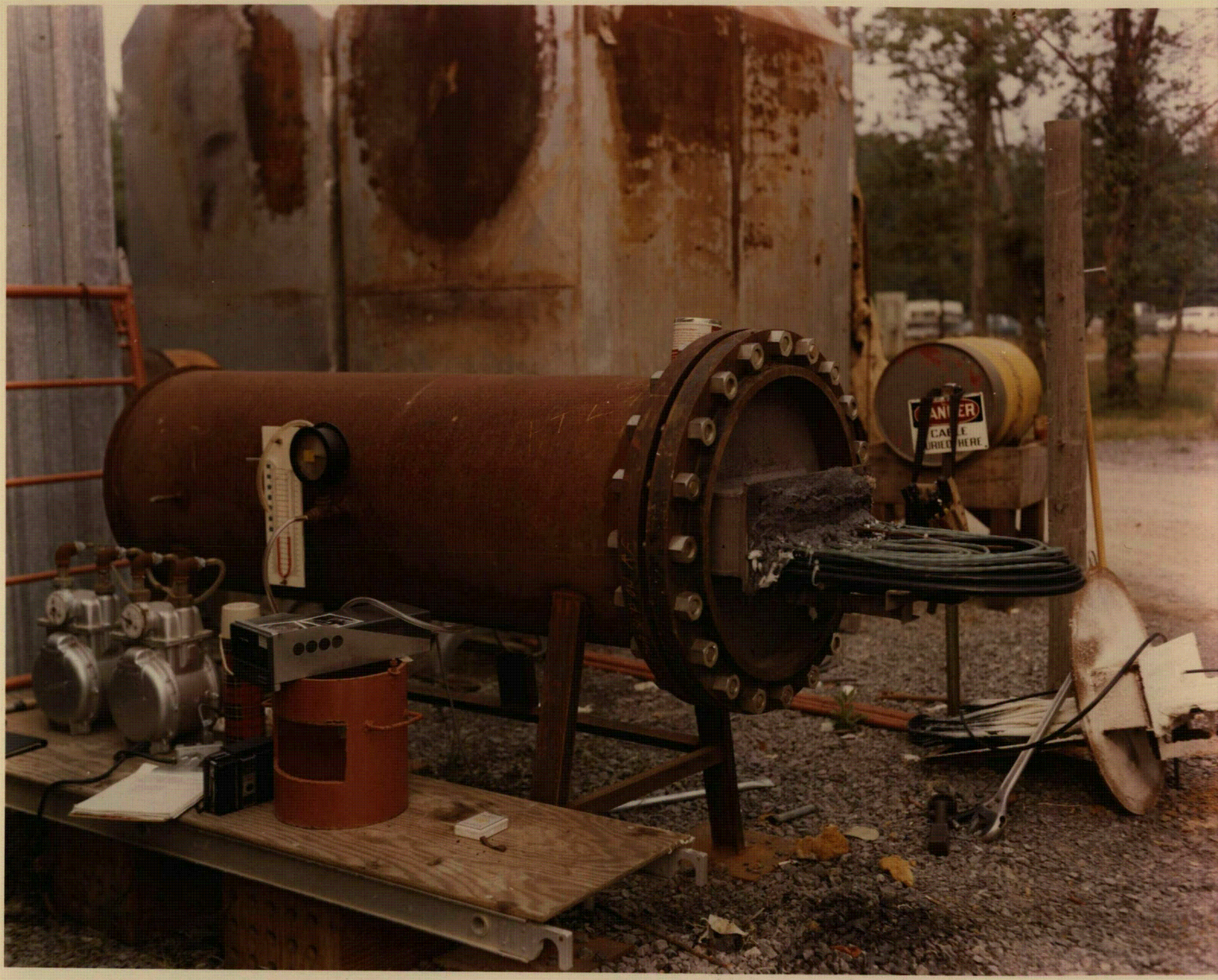
Introduction:

Immediately following the Browns Ferry Nuclear Power Plant (NPP) Fire, Tennessee Valley Authority (TVA) began assessing the damage and repairing Units 1 and 2. One of the biggest challenges for TVA was to redesign the cable tray penetration seal and prove to the NRC that this seal was safe. At the time of the Browns Ferry NPP Fire, no nationally recognized standards were available for fire testing of cable tray penetration seals.

TVA constructed a full-scale mock-up of the BFN penetration at its Watts Bar NPP construction site. The test configuration modeled the full scale 2 x 5, 18 inch ladder back cable array as it passed from the cable spreading room (high pressure side) through the penetration bulkhead to the Unit 1 Reactor Building (low pressure side).

The changing pressure across the penetration seal was a critical factor in the spread of the fire. TVA recognized this as part of the root cause of the BFN fire and replicated the pressure difference in the fire testing. TVA successfully qualified the redesigned cable tray penetration seal and used this design to restart Browns Ferry Unit 1 and Unit 2 and license Unit 3.

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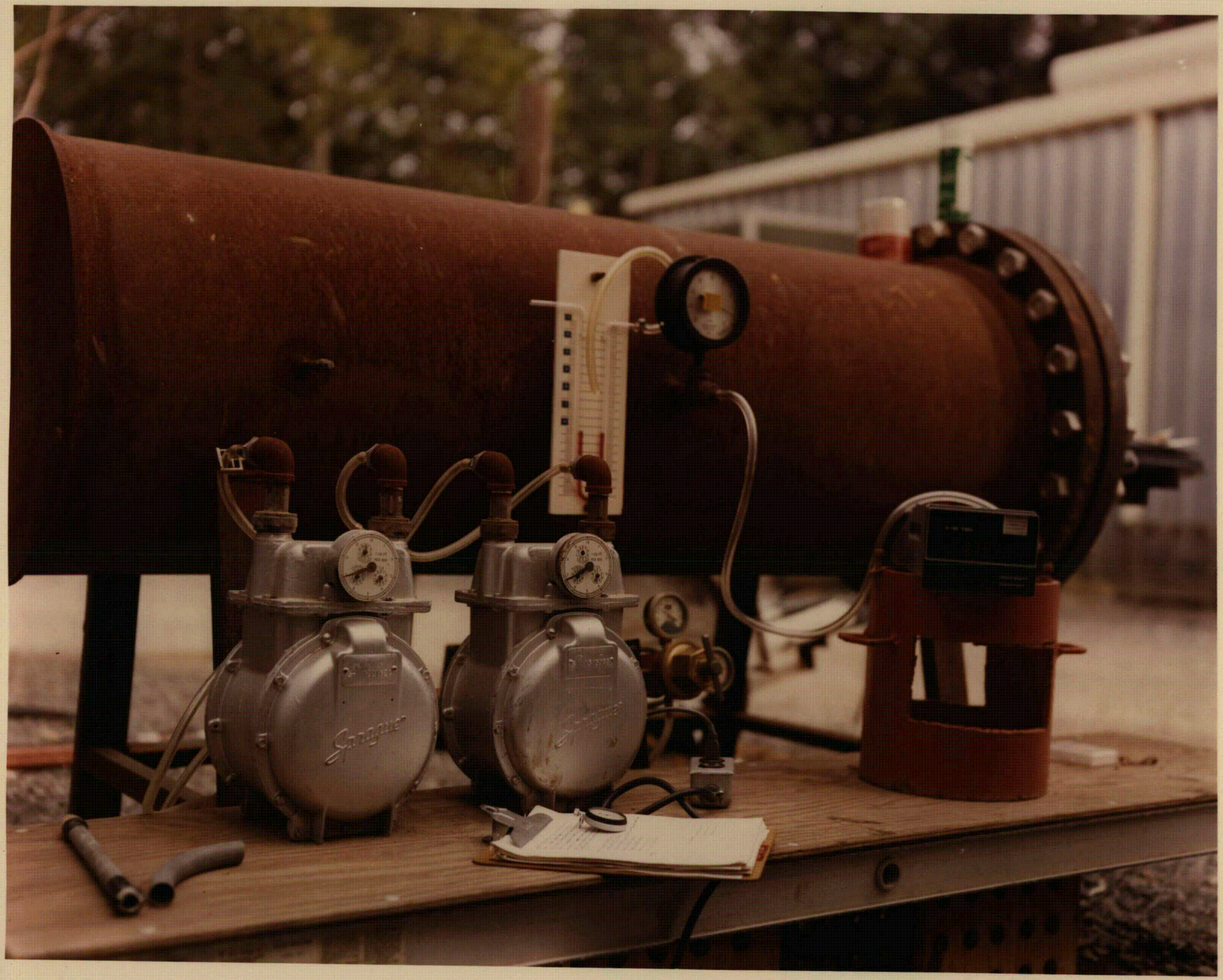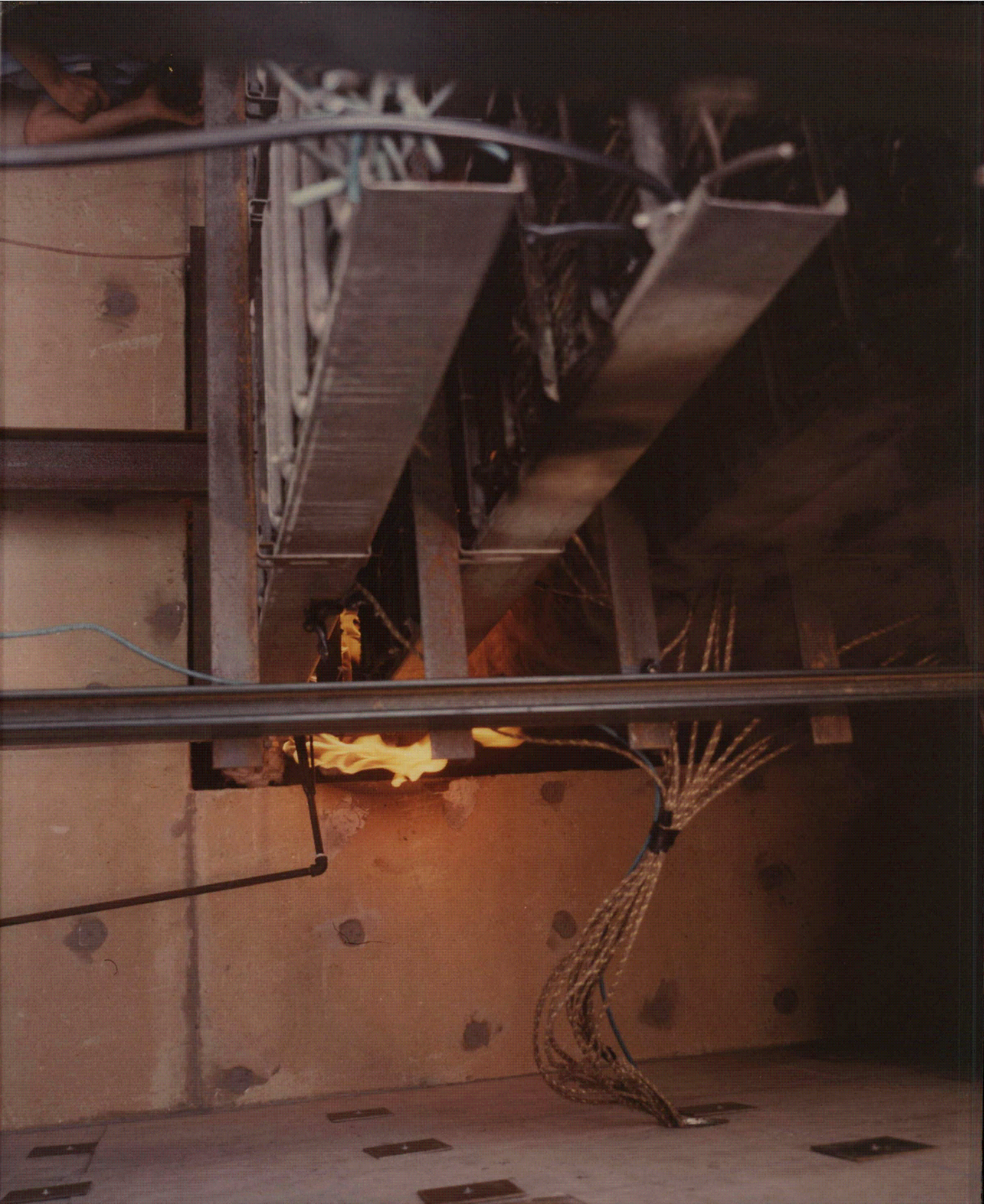
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