

The Fire Pump Room was located on the ground floor in the southwest corner of the building and contained an automatic (as well as a manual) fire pump. There were two Fire Department of New York connections in the southwest quadrant - one on the south façade and one on the west façade.

Each stairway had standpipes in it. At each floor in each stairway, there was a 2-1/2-inch outlet with a 1-1/2-inch hose (with a 3/4-inch nozzle). In addition, the east side of each floor also had a supplemental fire hose cabinet. Primary water supply to the standpipe system came from a yard main, which was fed from the municipal water supply.

5.3.5 Power

Power to WTC 7 entered at 13,800 volts (V), was stepped down to 480/277 V by silicone oil-filled transformers in individual masonry vaults on the 5th floor, and was distributed throughout the building. On each floor, one of the 277 legs was tapped and stepped down to supply single-phase 120-V branch circuits. The main system had ground fault protection. Emergency power generators were located on various levels and provided a secondary power supply to tenants. This equipment supplied backup power for communications equipment, elevators, emergency lighting in corridors and stairwells, and fire pumps. Emergency lighting units in the exit stairways, elevator lobbies, and elevator cabs were equipped with individual backup batteries.

The tanks that provided fuel for the emergency generators were located in the building. The Silverstein and Salomon Smith Barney (SSB) fuel tanks were underground below the loading dock. The OEM tank was on the ground floor on a fire-rated steel platform within a 4-hour fire-rated enclosure. SSB had supply and return piping to the emergency generators made from a 2-1/2-inch double-wall steel pipe with a 4-inch outside diameter. The SSB fuel oil riser was single-wall pipe with a masonry shaft. Only the horizontal piping on the 5th floor was a double-wall pipe within a pipe. The pumps located at the ground floor could supply 75 gallons per minute (gpm). A 3-gpm fuel supply rate was needed for each of the nine 1,725-kilowatt (kW) generators located on the 5th floor. One gallon would be consumed and the other 2 gallons would continue to circulate through the system. The SSB fuel oil pumps were provided with UPS power supported by both base building emergency power and SSB standby power. The volume between the inner and outer pipes was designed to contain a leak from the inner pressurized pipe and direct that fuel oil to a containment vessel. Upon detection of fuel oil in the containment vessel, the fuel oil pumps automatically de-energized. The SSB fuel oil pumps and distribution piping were dedicated to the SSB generator plant. The base building life safety generators and OEM generators had their own dedicated fuel oil pumps and piping. The Silverstein generators consisted of two 900-kW units, which were also located on the 5th floor, and supplied by a 275-gallon day tank. Other characteristics of the design or controls for the fuel system for the generators are unknown.

5.4 Building Loads

The degree of impact damage to the south façade could not be documented. However, damage was evident from review of photographs and video records. The number of fires observed after the collapse of WTC 1 also makes it likely that debris impact damage occurred in a number of locations.

An array of fuels typically associated with offices was distributed throughout much of the building. In addition, WTC 7 contained 10 transformers at street level, 12 transformers on the 5th floor, and 2 dry transformers on the 7th floor. The Con Ed substation contained (outside the building footprint) eight 30-foot-wide transformers that supplied 13-kilovoltampere (kVA) power to the 6th floor of the building. Fuel oil (ranging from diesel to #4) was provided for the generators serving OEM, SSB, Silverstein Properties, and the U.S. Secret Service. Table 5.2 shows where the generators, fuel tanks, pumps, and risers were located for the various occupants. There was also a Con Ed 4-inch-diameter gas line with 0.25 pounds per square inch (psi) (low) pressure going into WTC 7 for cooking purposes. Early news reports had indicated that a high-pressure, 24-inch gas main was located in the vicinity of the building; however, this proved not to be true.