

Attachment "A"

EXAMPLES OF MAJOR PIPELINE ACCIDENTS (1980 - 1999)

Accidents

- (1) Fredericksburg VA 1980 (and again in 1989)
330,000 gallons of aviation fuel entered the city water supply, and the Rappahannock River, shut down the water treatment plant, a state of emergency was declared, and businesses and residents hauled water for a week
Causes: pipe damage upon installation, subsequent undetected corrosion, operator error, insufficient valve placement.

- (2) Moundsview MN 7/8/86
An 8-inch gasoline pipeline burst, gasoline flowed along neighborhood streets until it was ignited, killing 2 people who burned to death and injuring 7.
Causes: failure to correct known defects, inadequate pipe specifications, inadequate operator training including delay in responding.

- (3) Flathead Indian Reservation MT 1986-1993
Seventy-one leaks and three major spills of gasoline, aircraft fuel, and diesel (including 163,000 gallons into a creek) over this period resulted in the Flatheads refusing to renew Yellowstone's franchise and move the line off of the reservation.
Causes: inattention and failure to correct defects.

- (4) North Blenheim NY 3/13/90
A liquid natural gas pipeline burst sending 100,000 gallons of product flowing down into the town -- enough to engulf the entire town. Residents noticed a "heavy fog" on their windshields, until one called and notified a company employee. Two people were killed and seven injured.
Causes: negligent maintenance procedures resulting in cracks in the pipe which were undetected; operator error; insufficient remotely operated valves and check valves.

- (5) Reston (Herndon) VA 3/28/93
Pipe burst sending a geyser of diesel fuel (407,000 gallons) into the storm sewer and eventually into a tributary of the Potomac River. (Could have been gasoline or jet fuel.) Significant environmental damage (\$1 million clean-up).
Causes: Third-party damage causing corrosion which went undetected

for a long period.

(6) Edison NJ 3/23/94

Natural gas transmission line burst and exploded. 1500 residents evacuated and \$25 million damage. Injuries included minor burns and cuts from broken glass.

Causes: Line hadn't been "pigged" since 1986, but it had deteriorated; no remote automatic valves; pipe manufacturing standards lax; no extra measures for highly populated areas.

(7) Allentown PA 6/9/94

Natural gas pipe burst and product flowed underground into the basement of an 8-story retirement home, where it migrated through vents into other floors and was eventually ignited. One death and 55 injuries.

Causes: company employee (backhoe operator) error; no excess flow valves which had been recommended by NTSB since 1972; insufficient public awareness.

(8) Reedy River SC 6/26/96

Fuel oil pipeline crossing the river burst resulting in a \$20 million clean-up effort.

Causes: Pipeline corrosion not responded to soon enough; computer malfunction; employee error; inadequate leak detection.

(9) Lively TX 8/8/96

Liquid natural gas pipeline burst, killing two men who accidentally ignited it.

Causes: Inadequate corrosion protection.

(10) Murphreesboro TN 11/5/96

84,000 gallons of diesel fuel (could have been gasoline) and \$5.7 million damage.

Causes: Corrosion; operator error -- 3 1/2 hours before detection.

(11) San Juan PR 11/21/96

Thirty-three people killed when a liquid natural gas line exploded.

Causes: Employee negligence in responding to a leak which had been ongoing for a week.

(12) Bellingham WA 6/10/99

Notes

None of these accidents were the result of "third party damage" with the exception of the Reston incident.

All of them could have been prevented -- if safety recommendations had been acted upon.

The common causes of pipeline accidents are:

- ~ anomalies in the pipe not detected or not acted upon
- ~ operator inattention or error
- ~ computer system malfunction
- ~ shut-off capability insufficient or improperly deployed
- ~ leak detection insufficient

On average 6 million gallons spilled each year; 8 million last year.
Since 1996, 54 accidents investigated by NTSB, resulting in 209 recommendations

Since 1986, 39 deaths/189 injuries (natural gas); 35 deaths/247 injuries (liquid products)

Pipeline companies involved: Colonial, Yellowstone, Koch, Olympic, Williams, Texas Eastern, and others

Koch just fined \$30 million for 300 separate spills of 3 million gallons in six states between 1990 and 1997; leak detection system: wait until it breaks. (See attached article.)

Further resource: Battelle Labs' "Causes of Pipeline Incidents, Effect of the Aging Infrastructure on Incidents and Areas of Technology Development," Robert J. Eiber (1994), delivered at an OPS summit on pipeline safety.