

# Exhibit D

## Leaks, release & exposures at TMI:

- 1980, The Susquehanna Valley Alliance, based in Lancaster, successfully prevented GPU/Met Ed from dumping **700,000 gallons of radioactive water into the Susquehanna River.**

- June-July, 1980 - **For 11 days, Met Ed illegally vented 43,000 curies of radioactive Krypton-85 (10-year half-life; beta and gamma) and other radioactive gasses into the environment without having scrubbers in place.** (See November 1980, for court ruling.)

- November, 1980 - The United States Court of Appeals for the District of Columbia ruled that the krypton venting (June-July ,1980) was illegal.

- July 24-27, 1984 - During the 159-ton reactor head lift, which was delayed due to polar crane failure, **GPU vented radioactive gases** into the environment despite pledges by the Company and NRC that no radioactive releases would occur. This is the time there has been direct access to Unit-2's damaged fuel. GPU was fined \$40,000 by the NRC for this violation. July 24-27, 1984 - During the 159-ton reactor head lift, which was delayed due to polar crane failure, GPU vented radioactive gases into the environment despite pledges by the Company and NRC that no radioactive releases would occur. This is the time there has been direct access to Unit-2's damaged fuel. GPU was fined \$40,000 by the NRC for this violation.

- May 23, 1988 - A clean up worker "fell part-way into an opening above the Unit 2 reactor vessel" and "received low **radiation exposure** to the skin below the knees." During the incident the "worker's legs were immersed in shielding water above the reactor vessel up to his knees."

- September 24, 1993 - "[D]ue to a level difference, about 4000 gallons of water were **inadvertently** transferred from the fuel transfer canal to the pressurizer..." (IR 50-289/93-22.)

- October 14, 1993 - NRC staff reported: "...one day prior to startup from the 10R refueling outage, the licensee noted that one of two reactor coolant system (RCS) pressurizer code safety valves...was **leaking at 25 gallons per hour (gph)**. **The leak gradually increased** to 58 gph and on November 14, the licensee placed the plant in hot shutdown to attempt to reseal the valve" (IR 50-289/93-25.)

“We found that your staff planned to slightly open the valve at power without a sound technical basis for concluding that the valve would not fully lift. In addition, your staff did not give sufficient consideration to the relative risks of performing the evolution at power versus hot shutdown” (Lawrence T. Doerflien, Chief, Projects Branch No. 4, Division of Reactor Projects, January 6, 1994.)

In other words: “They wanted to do something we didn’t want them to do” (Michelle Evans, NRC, February 25, 1994.)

- May 31, 1994 - GPU announced a planned shutdown for June 1, 1994 to **test for leaks in the condenser**. “In March, GPU technicians discovered that 12 of the 69 control rods used to control the nuclear reaction **failed** to move into position in the 1.66-second time period required by the NRC. Ability to move the rods over the reactor’s fuel is critical to plant safety, NRC officials said” (“The Patriot News,” May 31, 1994, B4.) (See March 7 and 17, 1994 for related information.) (Also, please refer to the *Executive Summary* for a complete listing of problems relating to control rods.)

- November 14, 1993 - The plant was shut down for a couple of days so GPU could repair a pressurizer code safety **valve leaking 720 gallons per day**.

- March 5, 1994 - The **reactor coolant system leak rate increased**.

- March 7, 1994 - GPU reduced power from 100% to 75% due to a **leak on the pressurizer spray valve**. (See March 17 and May 31, 1994 for related incidents.)

- March 17, 1994 - The plant was shut down due to problems with the pressurizer spray valve. (See March 7 and May 31, 1994.)

“Following the shutdown, control rod drive drop testing was performed, and the licensee found that 12 control rod drives had excessive drop times” (IR 50-289-/94-04.) The plant returned to operation on March 23, 1994. (See September 9, 1995 for a related incident. Also, please refer to the *Executive Summary*, for a complete listing of problems related to control rods.)

- June 23, 1999 - “Three Mile Island, trying to rid itself of clams, recently released too much of a potentially **hazardous chemical into the Susquehanna River**...State regulations allow TMI to release 0.3 parts per million of Clamtrol back into the Susquehanna River. For about an hour, the plant was releasing 10,500 gallons per minute containing twice that amount.” (*York Daily Record*, July 7, 1999.)

- September 25, 1989 - Two cleanup workers received **radiation exposures** while handling a “small piece of reactor core debris...” in the decontamination area. “Officials said preliminary calculations show one worker may have a radiation exposure on the hands above 75 rem. The second worker may have an exposure greater than 18.75 rem. The federal occupational limit for exposure to extremities is 18.75 per calendar quarter.”

- November 1, 1989 - One of two workers involved in a radiation exposure “incident” may have received 220 rems to the hands, i.e., “extremities.” The other worker in the incident is projected to have received 35 rems of exposure. The incident began when the workers picked up an object they thought was a “nut” or “bolt”, but was in fact a piece of highly radioactive fuel. The workers were then advised to throw the “object into the reactor vessel.” Since the fuel was “discarded”, GPU had to use models to predict dose calculations and exposure rates.

- November 28, 1989 - Another **exposure incident** occurred at TMI-2 when a worker, who was wearing protective clothing, took the object [a 40-foot poll] and began wiping it with a towel...the worker was holding a radiation monitor and noticed after a few seconds that the object was highly radioactive...” GPU termed this incident an “unplanned exposure” [below one rem] and not an overexposure. (See September 25 and November 1, 1989, for recent worker exposures.)

**GPU was also in violation for failing to report this incident in a timely fashion. Additionally, the workers have reported contradictory statements about the event.** (See September 25 and November 28, 1989, for recent worker exposures.)

- January 13, 1990 - GPU was fined \$50,000 for **excessive radiation exposure to a worker**. (See September 25 and November 1 and 28, 1989, for background information.)

- In December 1990 , despite legal objections by TMI-Alert and the Susquehanna Valley Alliance, GPU began **evaporating 2.3 million gallons of accident-generated radioactive water (AGW)**. The evaporator was shut down two days after operations commenced due to mechanical problems.

- September 15, 1993 - During surveillance testing, “250 gallons of water leaked from the ‘C’ makeup pump casing drain valve, MU-V-172C, because the valve had been **inadvertently** left open approximately 1.5 turns.” (IR 50-289/93-22.)

- September 22, 1993 - During a 90 minute interval, “4,600 gallons of water were **inadvertently** transferred from the reclaimed water storage tank to the Reactor Building sump...Maintenance personnel had opened the reclaimed water supply valve, CA-V-194, to the reactor coolant drain (RCDT) which in turn overflowed to the Reactor Building sump via the opening from the RCDT relief valve. Operators were not alerted to the rising level in the RCDT, because the level instrumentation and high level alarm were out of service.” (IR 50-289/93-22.)

- October 28, 1993: According to the Pennsylvania Department of Environmental Resources, the total activity during evaporation was 658 curies **of tritium or 1 to 1.3 MR dose to the public.**

- June 6, 1994 - “A worker who was decontaminating piping failed to meet the Radiation Protection Work permit clothing requirements when she treated an area decontaminated before it was radiologically surveyed and released by a Radiological Controls Technician” (Jacques P. Durr, Chief, Projects No. 4, Division of Power Reactors, NRC.)

- December 15, 1994 - “Operators were investigating the decrease in power [plant output] when a phone call from a member of the public alerted them of steam coming from the turbine roof. This led them to identify that steam was flowing through the relief valve for the ‘A’ second stage feedwater (FEW) heater (HV-V-13A). This resulted in steam from the secondary plant being **released to atmosphere** through MS-V-103 to the turbine building roof.” (IR 50-289/94-26.)

- February 13, 1995 - “The inspector reviewed a radiological incident report that documented the failure by radiological controls technicians to identify **contamination on the same individual on a number of occasions**...The licensee’s staff calculated the exposure to the worker from the contamination event and assigned 236 millirems to the skin of the whole body.” (NRC IR 50-289/95-09 & 50-320/95-03, September 29, 1995.)

- March 7, 1995 - A **reactor coolant leak** of approximately 15 gallons per minute developed.

- January 9 & 19, 1999 - **Elevated tritium levels** and potential leaks from the waste evaporator condensate storage tank for the months of January, February and March, 199[8] were reported. (IR 50-289/99-01).

- **February 18, 1999 - The offgas radiation monitor (RM-A-5) alarm “alerted”, and indicated a possible “primary to secondary leakage from the once through steam generator tubes (OTSG) tubes...**There was no appreciable increase in the OTSG primary to secondary leakage. The most likely case for this momentary increase was a **leaking OTSG tube plug.**” (IR 50-289/99-01). (See follow-up problems on March 21, 28 & 29, 1999. Also, related problems were documented on May 19, 1994, and June 2, 1995.)

- **April 16 to May 7, 1999 - A leak was identified in the radioactive liquid waste discharge line.** “GPUN completed repairs to the WECST discharge line and the line was returned to service on May 7. Approximately 70 feet of piping was replaced. Of that, less than ten feet showed evidence of external corrosion. Two through-wall leaks were identified in the ten foot section. The cause of the corrosion was failure of the external protective coating. There was no corrosion identified on any of the other piping sections that were examined.” (IR 50-289/99-03.)

- **December 5, 2000 - On December 5, 2000, AmerGen recorded excessive leakage in the emergency core cooling system (ECCS) leak rate.** “...AmerGen’s failure to follow the procedural requirements for collecting and measuring ECCS leakage is a violation...” The NRC issued a **Non-Cited Violation** was issued. (IR 05000289/2000-008.)

- **May 12, 2001 - “AmerGen shut down the reactor to investigate a leaking pressurizer relief valve that developed on May 11, 2001. The leak was about 0.7 gallons per minute to the reactor coolant drain tank.”** (IR 50-289/2001-03).

- **January 23-25, 2003 - AmerGen “identified a reactor coolant system leak source inside containment...leak rate at the time was 0.1 gallons per minute. On January 25, 2003, operators isolated the direct leak path from the reactor coolant system to the fitting by shutting the RCITS [reactor coolant system inventory tracking system] isolation valves from the decay heat drop line”** (50-289/03-02).

- **November 5, 2003 -A BORIC ACID LEAK AT TMI-1 APPEARS TO BE FROM THE REACTOR PRESSURE boundary.** According to a notice posted on the agency's Web site that operator Exelon filed with the NRC Nov. 4, plant personnel found a leak as they were inspecting the unit's pressurizer heater bundle (PHB) diaphragm plate during the unit's current refueling outage. According to the notice, "this degraded condition of the PHB Diaphragm Plate is indicative of a [reactor coolant system] pressure boundary leak." Exelon spokesman Dave Simon said that repairs were scheduled to be completed today and that the discovery of the leak would not extend the outage (Platts, *Nuclear News*).

- December 10, 2004 MIDDLETOWN, Pa. (AP) – **The Three Mile Island nuclear power plant was forced to reduce power because of a steam leak,** but there was no danger to employees or the public, a company spokesman said.

An alarm sounded shortly after noon Thursday about a problem within Unit 1's intermediate building, said Ralph DeSantis, a spokesman for plant operator AmerGen Energy. Two workers entered the building and found the steam leak on an instrument line fitting, DeSantis said.

Plant operators reduced power by 22 percent, and neither DeSantis nor Nuclear Regulatory Commission spokesman Neil Sheehan knew how long it would be before full power was restored.

"They will need to troubleshoot this and make repairs," Sheehan said. "Our resident inspectors are following up on this."

- June 27, 2006 - **TMI just dug up and fixed leaks from the condensate storage tank. The leak was following telephone conduit and flooding.**

The only reason TMI even started looking for a leak was because water was flowing out of the top of one manway cover (far away from the plant) and they sampled it and found tritium. They pumped all the water out of the manways and dumped it to their industrial waste treatment system which eventually goes to the river. TMI had no idea the storage tank was leaking, how much, or for how long.