July 24, 1984

U.S. NRC

1984 JUL 33 AM 7:38

OFFICE OF INVESTIGATIONS
FIELD OFFICE, REGION I

Mr. James Asselstine
Chairman
Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Dear Mr. Asselstine:

I am sending you this material at the suggestion of Ross Gelbspan of the Boston Globe, to whom I first brought it.

While I am extremely concerned about protecting my identity, I would be willing to speak on the telephone to your or your investigators, should you decide to act on this material.

Sincerely,

David Day

(Not my real name)

Exhibit 1

Mr. James Asselstine
Chairman
Nuclear Regulatory Commission
Washington, D.C.

As a result of my working on the Seabrook Nuclear Power Station, I observed a number of violations of NRC, ASME and ANSI code procedures which I would like to bring to your attention.

- Faulty welds and mismatches of round pipe with out-of-round pipe in the auxiliary reactor cooling system. In addition to the potential for a loss-of-coolant accident such mismatches could -- if the emergency cooling system was activated -- create turbulence in the water which could lead to the formation of air pockets.

- The grinding down of pipes to thicknesses significantly below those mandated by NRC codes. Bombardment from radioactive particles could cause the overly-thin pipe sections to become brittle before engineering projections would anticipate their embrittlement. Such grinding down of pipes to make them fit properly was one thing everyone at the plant knew we were doing. It was as illegal as hell, but everyone did it. See, for example, line E2936-283 - 1-CBS-1211 -- the Containment Building Spray line from the main steam feed which runs through the Pump Auxiliary Building through the Radioactive tunnel through the Equipment Vault.

I worked on the CBS system connecting the main steam feed pipes to valve set into the contrete containment hull. Throughout the plant, welding crews frequently found that the pipes didn't match in size or shape the valve or pump they feed. The company appeared to be using cheaper pipe as money got tighter at the plant. Often the piple wouldbe significantly out-of-round. We would have a 1/4" concentric in a large pipe. Under codes of both the NRC and American Society of Mechanical Engineers, only 1/16th" concentric (or 1/32nd" eccentric) is permitted. When a concentric mismatch greater than 1/16th" was found, a welder was sent squirming (sometimes, myself) inside the pipe to grind out the inside base metal diameter. That would, however, reduce the thickness of the pipe from 1/2" to 1/4" concentrically. I am concerned this could affect the metal's ability to withstand radiation. The error is not detectable by X-rays. I understand that ultrasonic tests must be conducted to determine pipe thickness. I know of no ultrasonic tests done on this specific line, except for one weld repair at a different location.

Exhibit 1

- On the Reactor Coolant Line, it was also a normal practice to grind down excessive mismatch, center line shrinkage, suck back and unconsumed ring. Look at the RC line from the main steam feed.

- The failure to check nozzles on three of the plant's four steam generators. In one case, workers found a separation of cladding -- that is, the stainless steel nozzle kept separating from the carbon steel ofthe steam generator. After much grinding and rewelding, it was discovered that the nozzle was contaminated by large amounts of slag. Representatives of General Electric, which manufactured the nozzles, apparently repaired that particular nozzle. But to my knowledge, none of the other nozzles on the plant's other three steam generators were checked for similar problems.

- Working in thepipe tunnel, I saw frequent instances of lack of proper documentation of faulty welds in pipes. Many welds were performed with the use of 2 Diametrics (automatic welding) machines. (After six Diametrics welds were cut out and discovered to suffer from lack of fusion and "suck back", the company (Pullman Higgins) quality assurance inspector was ordered not to inspect other welds performed with the machine.) The Diametrics machine was used to weld beveled pipe ends with a consumable ring. But the ring, which is about 1/16th" thick and the same diameter as the pipes, would shrink by as much as 1/8th". As a result , the inner circle of the ring would shear off or "fingernail." The crew was ordered to cut out 6 such welds. All were found to have up to 75 percent of their root below accepted standards. All these welds resulted in excessive suck back and lack of fusion, center line shrinkage and unconsumed ring. (After the 6 welds were cut out and repaired, the company ordered the quality assurance inspector to stop examining other Diametrics welds. The supervisor said, "My God, we've got over 100 suspect welds." To my knowledge, they were never checked or repaired. Near the end of the job, the company switched to a different type of consummable welding ring which seemed to perform properly. (See notes below)

- In the Waste Processing Building, cracks have appeared in the two-foot thick concrete walls because of improper concrete pouring. In one instance, a 30-foot-long crack was chiseled out and filled with ordinary grouting material to a depth of two inches and a width of six inches.

The Perini Corp. apparently circumvented standards applying to concrete pours. Those standards limit each pour to a depth of 10 feet liquid. At the plant, they made 30-foot pours. This was done with the use of a vibrator which causes the crushed rock in the concrete to settle to the bottom. I believe this is why cracks and groundwater leaks have developed (see photographs).

- Concrete linings of several sections of ferro-cement pipe which brings service water into the plant have cracked.

Exhibit 1

When the pipes fa ed to meet properly, a 1 ton Portapower Hydraulic Jack was used to "cold spring" the pipe -- that is to try to bend the pipe to make it fit. When the pipes were cold sprung, I could hear concrete cracking some distance behind the joint in the pipe slot. I am afraid some worker could get hurt if he loosens the phlanges.

In May, 1983, the company issued a memo forbidding any more "cold springing" of pipes and indicating that anyone found to be engaging in the practice would be disciplined and perhaps terminated. However, following the memo, at least one area supervisor instructed workers to "cold spring" a pipe from the Tank Farm near the Pump Auxiliary Building to a valve.

- While working in Turbine Building No. 1, the crew received many prefabricated sections of welded pipe made by Dravo. Many times the joints did not meet ASME codes.

On May 11, 1982, I was assisting another welder on line EX-4125-01-REV/1, field weld no. 108, a 10" weld outlet (WOL) off a 24" carbon steel line, when I noticed a Dravo shop weld defect. I informed the Quality Assurance inspector about a one-inch lack of fusion zone on the interior of the root pass. However, I was told, "A Dravo shop weld is not our concern." This was the accepted philosophy about all fabricated pipe on the job, no matter how severe the defect. I was told on several occasions by supervisors and foremen not to worry because "it's not our problem."

Two days later, I was assigned to work on line No. 4417-01-R/1 P0101, NCR no. 2166 to grind and remove block weld stainless metal from weld area. This field weld had sugar deposits (oxidation caused by atmospheric contamination when welding stainless steel) from 10:00 to 2:00 on the interior of the root pass. I pointed this out the welding foreman, but the field weld was completed regardless of this defect. I believe it involved the diesel generator.

- In the Waste Processing Building, I observed several instances of improperly welded pipes to valves. Because the valves are made with teflon seating material, a manufacturer's tag warns never to heat them beyond 250 degrees. A photo of one such valve shows discoloration and rust, an apparent result of exposures far in excess of 250. The welding was apparently so hot it baked the chromium out of the alloy. The valves have been installed but, to my knowledge, they have never been checked for damage to the seating. A company inspector wrote up NCRs on this and several hundred other joints. But the company decided to "Accept As Is" the work in question.

- In January, 1982, near the Waste Process Building, I observed electronically activated valves stored in the rain and showing signs of rust. Such equipment, with its exposed wiring, is covered by Class B cleanliness requirements. Desipite their condition, the NRC site inspector apparently overlooked the violation and the valves were installed. No one ever took them apart and looked at them to be sure they weren't damaged. I know because I helped install them. These valves are located in the main steam feed zone and are connected to pipes emerging from the containment.

- I also observed a number of improper welds on Dravo-made pipe with excessive mismatches in the Radioactive Tunnel -- up to 1/2" concentric.

Exhibit 1

Explanations of photographs:

Photo 1:
Waste Processing Building
Elevation: -25.0
Description: South exterior wall, with crack extending approximately 30 feet. Ground water is evidently percolating through. Crack was superficially repaired by removing concrete the length of the defect to an approximate depth of one to two inches and a width of 6 inches, and replacing it with mortar.

Photo 2:
WPB
Description: South exterior wall, with crack extending approximately 4 feet. Evidence of ground water percolating through.

Photos 3&4:
WPB
Description: West Exterior wall, with crack extending along embed plate. Evidence of ground water and mineral deposits percolating through.

Photo 5:
Waste Processing Building
Elevation: 0.0
Descrpition: 3-inch Teflon valve welded to 3-inch stainless steel nipple. Valve and nipple were obviously overheated. An NCR on this joint and several hundred others was written up by a Pullman Higgins inspector, but the dispositions from the company came back "Accept as Is."

Photos 6 & 7
Area: Main Steam Feed, Penetrations
Elevation: -20. 0
Description: Containment Vessel for 16" stainless steel Motorized Gate Valve, on Containment Building Spray (CBS) Line. Also pipe fabrication by Dravo, which extended from the valve through the Radioactive Tunnel and connecting to the Equipment Vault. Upon an attempted "fit-up" of the valve described above, an excessive "mismatch" existed between it and the Containment Penetration Connection. With Quality Assurance acquiescence and awareness of a 1/4" mismatch, the joint was welded out as is. As an accepted practice by Production Management, Quality Assurance and NDT, I was told by my area supervisor and foreman to grind down the mismatch so that the joint would pass X-ray criterion, thus diminishing the wall thickness by a minimum of 1/4 inch. Due to the out-of-roundness of all of the Dravo fabricated pipe, from the opposite side of the valve to the Equipment Vault tie in, the practice of grinding the root inside diameter was necessary for it to pass NDT tests because of mismatch and excessive suck back.

Photo No. 8
Area: Main Steam Feed, Penetrations:
Elevation: -20.0
Description: 4-inch motorized gate valve ss. This valve and many others were left out in the open, exposed to the elements during the winter months of 1981, through February 1982. Note the water drops on the coiled wire in the foreground, attesting to the open roof conditions these ASME Class III Section 1 valves were exposed to. The NRC did cite these valves with obvious storage violations. However, LWAs were issued, the valves installed and accepted as is.

Photo No. 9
Area: Main Steam Feed, Penetrations:
Elevation: -20.0
Description: Fabricated Dravo pipe used in the assembly of ASME lines off the penetrations. Obviously they are exposed to the elements. Note the ice in the center of the photograph.

Photo No. 10:
Area: Main Steam Feed, Penetrations:
Elevation: -20.0
Description: ASME and ANSI pipes and valves being stored in conditions which are flagrant dode violations.

Photo No. 11
Area: WPB (Pipe Tunnel)
Elevation: -4.0
Description: Shown is one of the two Diametrics Automatic Welding machines used in the pipe tunnel.

Exhibit 1