

July 31, 1984  
SBN-699  
T.F. Q2.2.2

United States Nuclear Regulatory Commission  
Region I  
631 Park Avenue  
King of Prussia, PA 19406

Attention: Mr. Richard W. Starostecki, Director  
Division of Project and Resident Programs

- References:
- (a) Construction Permits CPPR-135 and CPPR-136, Docket Nos. 50-443 and 50-444.
  - (b) Telecon of October 24, 1983, A. L. Legendre (YAEC) to Harry Kister (NRC Region I)
  - (c) PSNH Letter, dated November 23, 1983, "Interim 10CFR50.55(e) Report; Pacific Scientific Mechanical Shock Arrester Capstan Spring", J. DeVincentis to R. W. Starostecki
  - (d) PSNH Letter, dated January 13, 1984, "Interim 10CFR50.55(e) Report; Pacific Scientific Mechanical Shock Arrester Capstan Spring" J. DeVincentis to R. W. Starostecki
  - (e) PSNH Letter, dated February 28, 1984, "Interim 10CFR50.55(e) Report; Pacific Scientific Mechanical Shock Arrester Capstan Spring", J. DeVincentis to R. W. Starostecki
  - (f) PSNH Letter, dated June 1, 1984, "Interim 10CFR50.55(e) Report; Pacific Scientific Mechanical Shock Arrester Capstan Spring", J. DeVincentis to R. W. Starostecki

Subject: Interim 10CFR50.55(e) Report; Pacific Scientific Mechanical Shock Arrester Capstan Spring

Dear Sir:

On October 24, 1983, we reported a potential 10CFR50.55(e) deficiency to Region I [Reference (b)], regarding cracked capstan springs in Pacific Scientific mechanical shock arresters.

It has been determined that this item is reportable under 10CFR50.55(e). The following information is being filed pursuant to the interim reporting provision of 10CFR50.55(e)(3).

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A. Description of Deficiency

We were informed by our supplier ITT-Grinnell, on October 5, 1983, that a Capstan Spring Potential Quality Problem was reported on PSA-1 and PSA-3 shock arresters manufactured by Pacific Scientific Company. Failures of shock arresters from these model numbers occurred during testing at Union Electric's Callaway Station. The failures were attributed to Capstan Spring tangs severance after the shock arresters were tested for a small number of cycles. An examination performed by Callaway personnel on Capstan Springs in the remaining untested shock arresters revealed the presence of micro cracks on the spring tangs. At Seabrook Station, we have forty-eight shock arresters that are either the PSA-1 or PSA-3 model types.

An independent metallurgical analysis was performed on capstan springs from the PSA-1 and PSA-3 lot. Some of the springs examined exhibited cracking and some of the springs received had tangs completely severed. The metallurgical analysis concluded that the spring cracking is attributed to improper forming of the spring tangs during manufacturing. The manufacturer of the springs which are experiencing cracking problems formed the spring tangs after age hardening at 900°F. High residual stresses resulted from this forming process and caused hydrogen cracking during subsequent plating. The report also states that another spring manufacturer forms the spring tangs prior to age hardening, and these tangs do not experience any cracking problem.

We have returned all forty-eight shock arresters to Pacific Scientific for Capstan Spring examination. To date, eight shock arresters have been identified as having capstan springs which exhibit micro cracks.

Based upon the discovery of cracked capstan springs in our shock arresters and the quick failures of PSA-1 and PSA-3 shock arresters during testing at Callaway Station, we feel that some of our PSA-1 and PSA-3 shock arresters could become inoperable.

B. Analysis of Safety Implications

The failure of these shock arresters could affect the operability of the safety-related piping systems that are supported by these shock arresters.

C. Corrective Action

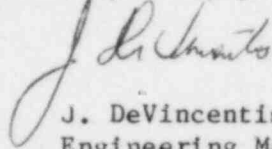
As previously stated, we have returned all suspect shock arresters to Pacific Scientific for examination. All springs exhibiting micro cracks will be replaced. All springs whose tangs were formed prior to age hardening will also be replaced. All snubbers which have springs replaced will be tested and recertified.

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We will notify Region I when the above corrective actions are completed.

Very truly yours,



J. DeVincentis  
Engineering Manager

cc: Atomic Safety and Licensing Board Service List

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