



**Wisconsin Electric** POWER COMPANY  
231 WEST MICHIGAN, MILWAUKEE, WISCONSIN 53201



November 22, 1974

Mr. Edson G. Case, Deputy Director  
Directorate of Licensing  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Dear Mr. Case:

DOCKET NOS. 50-266 AND 50-301  
POSSIBLE GENERIC PROBLEM WITH SOLENOID VALVES  
POINT BEACH NUCLEAR PLANT

This letter is to report the details of a possible generic problem with the lower disc spring and, additionally, the lever arm-to-valve stem gap clearance on 1/4 inch pipe, 3/16 inch orifice, 120 volt/60 cycle ASCO solenoid valves, Catalog #HB8302C25F.

This letter, filed in accordance with Section 15.6.6.A.3.b of the Point Beach Nuclear Plant Technical Specifications is a follow-up report of an abnormal occurrence report concerning failure of a sample line isolation valve to close. In that letter addressed to Mr. John F. O'Leary, it was noted that the reason for the valve failure to close had not been conclusively established and further investigations would be conducted.

An examination was made by the plant staff of the solenoid valve removed from the sample line isolation valve described in the above report. This examination disclosed that the color and dimensions of the lower disc spring in the repair kits provided by ASCO for this valve did not match the spring found in the valve. Suspecting a possible generic problem, the valve was returned to the manufacturer with a request that they fully investigate the reason for this discrepancy and the solenoid's varying reliability of operation.

The returned valve was found by the manufacturer to have an incorrect spring. Primarily, the spring was found capable of exerting approximately one pound more than required.

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The Point Beach solenoid valves were manufactured prior to 1969, at which time a green colored lower disc spring was used. In 1969, this spring was changed, in new designs, to Spring #20-932-14 (transparent orange color code) for improved operation at the 300 psi rating.

The manufacturer installed a new spring in the Point Beach valve but it was then found that although the valve operated normally with the new spring installed, a check of necessary clearances showed that the valve did not have a gap between the end of the lower disc stem and the bottom of the operating lever when the solenoid was energized. Such clearance is, we believe, a necessity for optimum reliable operation.

The gap between the lower disc stem end and the lever when the valve is energized allows the top spring to perform two functions. The first is to break the face of the core from the plug nut when the valve is de-energized. Only a minute amount of travel is required to accomplish this function. The gap allows the top spring to pull the core away from the plug nut before it is required to begin compressing the weaker, lower spring. In general, when valves are energized for long periods, the core and plug nut become magnetically saturated, resulting in a slow decay of residual magnetism when the valve is de-energized. Without a sufficient gap between the lower disc stem end and the lever, the top spring would be marginal in being able to break the residual magnetism and start to compress the lower spring at the same time. However, if the valve is only energized momentarily, the residual magnetism is not as intense, and in some valves, the top spring may be strong enough to shift the valve without the low disc gap. This, we believe, explains why the valve can operate successfully under one condition but may not operate consistently under another set of conditions.

Following their investigation, the manufacturer recommended that all ASCO solenoid valves of this type at Point Beach be examined for spring type and gap clearance. The gap clearance was specified to be set at a minimum of 0.014 inch by grinding off and rounding the lower valve disc stem where less than this clearance is found.

A total of 79 solenoid valves of this type are utilized at Point Beach with 22 of these being in valves with a safeguards function (mainly sample line containment isolation valves) or safeguards associated functions.

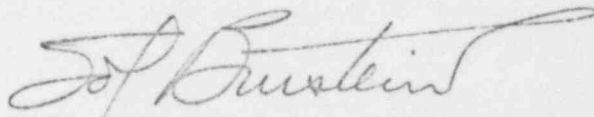
November 22, 1974

A program to investigate the valves commenced on Unit 2 at Point Beach the week of October 21, 1974, during the unit's current refueling shutdown. Evidence to date indicates that all valves inspected contain the higher rated incorrect spring. We have also found that lever-to-stem clearances are, in the majority of cases, less than the specified 0.014 inch. The program to change out all lower disc springs and reset all gaps is in progress and will be expedited.

It should be stressed that despite the fitting of a spring with a force one pound greater than required, plus the lower gap clearance, the reliability of these valves at Point Beach has been excellent except for the one unique case of the steam generator sample line valve which led to this investigation. It is not considered that the above findings posed a hazard to the health and safety of the public.

We would suggest that other plants which suspect a similar problem contact their ASCO representative before taking any action on similar valves installed in those plants.

Very truly yours,



Sol Burstein

Executive Vice President

cc: Mr. James G. Keppler, Regional Director  
Directorate of Regulatory Operations, Region III