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L-02-018

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

**Subject: Beaver Valley Power Station, Unit No. 2**  
**Docket No. 50-412, License No. NPF-73**  
**2R09 Steam Generator Tube Plug Special Report**

In accordance with Beaver Valley Power Station (BVPS) Unit No. 2 Technical Specification 4.4.5.5.a which requires that a Steam Generator Special Report be submitted within 15 days of completion of steam generator inspections, the following information is submitted for the examinations performed during the 2R09 refueling outage.

#### Eddy Current Examination

One hundred percent of the in-service tubes in Rows 3 through 46 from Steam Generators 2RCS-SG21A, 2RCS-SG21B and 2RCS-SG21C were examined full length with bobbin coil probes. In-service tubes in Rows 1 and 2 were examined with bobbin coil probes to the upper most tube support plate in each leg. The U-bend regions of the tubes in Rows 1 and 2 were examined with single coil Plus Point probes.

The following additional examinations were performed using Plus Point probes:

- (a) 100% of the hot leg top-of-tubesheet region (-3.00"/+6.00") in each steam generator,
- (b) 100% of distorted tube support plate indications,
- (c) 100% of the dents  $\geq 5.00$  volts, located at hot leg tube support plate intersections,
- (d) 20% of dents and free-span dings  $\geq 2.00$  volts but  $< 5.00$  volts located between the top of the hot leg tubesheet and the third hot leg support plate,
- (e) 20% of Alloy 690 rolled plugs
- (f) 20% of bobbin Anti-Vibration Bar (AVB) wear indications

- (g) High frequency (single coil) examination of four Row 1 U-bends with excessive noise levels.

All circumferential indications located at the top of the hot leg tubesheet were stabilized prior to removing the tube from service.

Examination of the 'A' steam generator (2RCS-SG21A) used to meet the Technical Specification surveillance resulted in a total of eighteen (18) tubes being removed from service. Attachment 1 lists the number of tubes removed from service from each steam generator during 2R09.

#### New Degradation Mechanisms

During the 2R09 examinations, three new degradation mechanisms were observed at BVPS Unit No. 2. These mechanisms are:

Axial Primary Water Stress Corrosion Cracking (PWSCC) at the hot leg top-of-tubesheet in the expansion transition (1 tube)

Axial Primary Water Stress Corrosion Cracking (PWSCC) at dented hot leg tube support plate intersections (2 tubes)

Axial Outside Diameter Stress Corrosion Cracking (ODSCC) at hot leg free-span dings (1 tube)

All tubes were removed from service via plugging prior to returning the steam generators to service.

The complete and detailed results of the 2R09 steam generator tube inspections will be submitted within the next 12 months in accordance with BVPS No. 2 Technical Specification 4.4.5.5.b.

Beaver Valley Power Station, Unit No. 2  
2R09 Steam Generator Tube Plug Special Report  
L-02-018  
Page 3

If there are any questions concerning this matter, please contact Mr. Larry R. Freeland,  
Manager, Regulatory Affairs/Corrective Action at 724-682-5284.

Sincerely,



Lew W. Myers

Attachment

c: Mr. D. S. Collins, Project Manager  
Mr. D. M. Kern, Sr. Resident Inspector  
Mr. H. J. Miller, NRC Region I Administrator

**ATTACHMENT 1 TO L-02-018**

	<b>2RCS-SG21A</b>	<b>2RCS-SG21B</b>	<b>2RCS-SG21C</b>
<b>Number of tubes previously removed from service prior to 2R09</b>	<b>106</b>	<b>101</b>	<b>97</b>
<b>Number of tubes removed from service during 2R09:</b>	<b>18</b>	<b>12</b>	<b>5</b>
Buses: Circumferential ODSCC above or within Hot Leg Tubesheet	6	3	2
Axial ODSCC above Hot Leg Tubesheet	8	1	0
Axial PWSCC above Hot Leg Tubesheet	0	0	1
Volumetric Indication (Wear) @ Hot Leg Tubesheet	1	0	0
Volumetric Indication (Wear) @ Cold Leg Tubesheet	0	1	0
Axial ODSCC at Hot Leg Tube Support Plate	0	4	0
Axial PWSCC at Hot Leg Tube Support Plate	0	1	1
Axial ODSCC at Free-Span Ding	1	0	0
Restricted in Row 2 U-Bend Region	1	2	0
Plugged to Support 1.4% Power Uprate	1	0	1
<b>Number of tubes removed from service after 2R09</b>	<b>124</b>	<b>113</b>	<b>102</b>
Percentage of tubes plugged after 2R09	3.67%	3.35%	3.02%