



DPR-56 Operating License 2.C(15)(g)

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Peach Bottom Atomic Power Station, Unit 3
Renewed Facility Operating License No.
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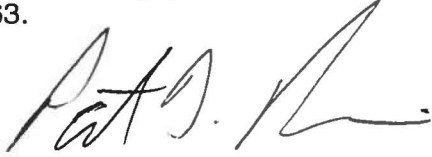
Subject: Results of Visual Inspections of Unit 3 Replacement Steam Dryer

References: 1. WCAP-17635-P, Rev. 3, Peach Bottom Atomic Power Station Units 2 and 3 Replacement Steam Dryer Comprehensive Vibration Assessment Program (CVAP), April 2014.
2. PBAPS Extended Power Uprate License Amendment Request – Supplement 24 - Response to Request for Additional Information, dated April 11, 2014.
3. NRC - Issuance of Amendments - PBAPS Units 2 and 3 Extended Power Uprate, License Amendments 293/296 (including NRC Safety Evaluation Report), dated August 25, 2014.

Enclosed is a summary of the results of the visual inspections of the Unit 3 Replacement Steam Dryer that were performed during the recent refueling outage (P3R21). The inspections are required to be performed following the guidelines of WCAP-17635-P in accordance with Operating License Section 2.C(15)(f). This first report is being submitted pursuant to Operating License Condition 2.C(15)(g) which requires that the results of the inspection be submitted in a report within 90 days following startup from each of the first two respective refueling outages.

The inspection was performed in accordance with WCAP-17635, Rev. 3 (Reference 1) which was submitted to the NRC in the Reference 2 letter and referenced by the NRC in the NRC Safety Evaluation Report for Extended Power Uprate (Reference 3).

If you have any questions concerning this letter, please contact Bryce Sessions at (717) 456-3863.

A handwritten signature in dark ink, appearing to read 'P.D. Navin', with a stylized flourish at the end.

Patrick D. Navin
Site Vice President
Peach Bottom Atomic Power Station

CCN: 17-95

Attachment - Unit 3 License Condition 2.C(15)(g) Replacement Steam Dryer Inspection
Results

cc: Regional Administrator, Region I
USNRC USNRC Senior Resident
Inspector, PBAPS
D. J., Allard, Pennsylvania Bureau of Radiation Protection
S. T. Gray, State of Maryland

ATTACHMENT

Unit 3 License Condition 2.C(15)(g) Replacement Steam Dryer Inspection Results

Peach Bottom Unit 3 Steam Dryer Inspection Results from the First Refueling Outage Following Installation of Steam Dryer and Implementation of Extended Power Uprate

Purpose:

This report provides the results of the visual inspections of the Replacement Steam Dryer (RSD) as required by the Peach Bottom Unit 3 Renewed Facility Operating License No DPR-56, License Condition 2.C(15)(g). This license condition requires that the results of the inspection be submitted in a report within 90 days following startup from each of the first two respective refueling outages.

Summary:

The Unit 3 Replacement Steam Dryer was inspected during the fall 2017 refueling outage, P3R21, from October 25th through November 1st 2017. This was the first refueling outage following installation of the RSD in November 2015, P3R20, and operation at Extended Power Uprate (EPU) conditions since December 2015. The inspections were performed in accordance with the requirements of WCAP-17635-P and recommendations from the manufacturer, Westinghouse. The inspection scope was defined based upon Operating Experience (OE) for the Westinghouse steam dryer design from previous installations, high cyclical stress locations determined from the dryer acoustic analysis, similarities to BWRVIP-139-A inspection locations and finally, by higher stress locations where solution annealing of structural welds had not been performed.

The guidelines for the dryer inspection are defined in WCAP-17635-P Section 5. Table 5-1 provides the inspection locations for the Unit 3 RSD following the first cycle of operation at EPU conditions. A general visual examination (VT-3) was performed on the entire RSD. The baseline inspection included the top of the RSD (including the outside of the skirt), underside of the RSD, lifting rods, outer ring top cage, W and U channel guides, support ring, vertical drain channels, and outer, middle and inner hoods. All observations were acceptable for the structural components and welds inspected. There were indications at three weld locations that required further evaluation. These welds are non-structural and were not explicitly modeled or analyzed as part of the structural qualification of the steam dryer. The summary results of the inspections can be found in the table below.

NRI = No Relevant Indication

RI = Relevant Indication

Inspection Location	Method	Inspection Result	Condition Report (If RI)	Disposition
General Inspection of Top of the Replacement Steam Dryer (to include outside of skirt)	VT-3-89	NRI		
General Inspection on Underside of Replacement Steam Dryer	VT-3-89	NRI		
Lifting Rods Top Ends (and welded attachments to the top plate of the dryer)	VT-3-89, VT-1-89	NRI		
Lifting Rods Top Ends (and welded attachments to the support ring)	VT-3-89, VT-1-89	RI	4069252	Use-as-is
Support Ring	VT-3-89	NRI		
Outer, middle, inner hoods	VT-3-89	NRI		
Outer Ring Top Cage	VT-3-89	NRI		

Inspection Location	Method	Inspection Result	Condition Report (if RI)	Disposition
Vertical Drain Channels	VT-3-89	NRI		
Skirt (Outside)	VT-3-90	NRI		
Skirt (Inside)	VT-3-91	NRI		

Visual examinations (VT-1-89) were performed on welds associated with the RSD. As described in WCAP- 17635-P, the steam dryer is octagonal (high symmetry) and VT-1-89 inspections were performed on a section of the octagon. If any flaws were identified, the comparable locations on the other sections of the dryer were examined in the same outage. The results of the VT-1-89 inspections can be found in the table below:

Weld Designation	Description	Inspection Result	Condition Report (if RI)	Disposition
AA 365270 W1 0	W channel to ring	NRI		
AA 365270 W2 90	U channel to ring	NRI		
AA 365270 W3 112.5	Vertical drain channel to ring	NRI		
AA 365270 W4 135	Upper Dryer to lower dryer circumferential weld	NRI		
AA 365270 W5 112.5	Site Drain Channel Piece Welds	NRI		
AA 365270 W6 LR 142.25	Lifting rod bracket to top of dryer	NRI		
AA 365270 W7 LR 142.25	Lifting rod bracket to ring connection	RI	4069252	Use-as-is
AA 365270 W8 LR 142.25	Lifting rod bracket to rod	NRI		
AA 365270 W9 LR 138.5	Lifting rod top to rod	NRI		
AA 365270 W12 0	Vertical shim to block	NRI		
AA 365270 W12 180	Vertical shim to block	NRI		
AA 365270 W 14 90	Horizontal shims to block	NRI		
AA 365271 W3 112.5	Inner panel to inner inner corner	NRI		
AA 365271 W5 112.5	Inner panel to inner outer corner	NRI		
AA 365271 W9 112.5	Middle panel to middle inner corner	NRI		

Weld Designation	Description	Inspection Result	Condition Report (If RI)	Disposition
AA 365271 W11 112.5	Middle panel to middle outer corner	NRI		
AA 365271 W13 90	Top Inner hood to inner panel	NRI		
AA 365271 W15 112.5	Inner hood to inner hood	NRI		
AA 365271 W18 112.5	Outer panel to outer inner corner	NRI		
AA 365271 W20 112.5	Outer panel to outer outer corner	NRI		
AA 365271 W21 112.5	Outer corner top cap all around	NRI		
AA 365271 W22 90	Top middle hood to middle panel	NRI		
AA 365271 W23 90	Bottom middle hood to outer panel	NRI		
AA 365271 W24 112.5	Middle hood to Middle hood	NRI		
AA 365271 W26 90	Top outer hood to outer panel	NRI		
AA 365271 W27 90	Bottom outer hood to support ring	NRI		
AA 365271 W28 112.5	Outer hood to Outer hood	NRI		
AA 365271 W29 112.5 Inner	Top ring girder to panel and corner and corner cap	NRI		
AA 365271 W29 112.5 Middle	Top ring girder to panel and corner and corner cap	NRI		
AA 365271 W29 112.5 Outer	Top ring girder to panel and corner and corner cap	NRI		
AA 365271 W30 90	Seismic Block (Outer 2 Welds)	NRI		
AA 365271 W32 90	Shims	RI	4067519	Use-as-is
AA 365271 W32 270	Shims	NRI		
AA 365271 W33 90	Seismic Block (Inner 2 Welds)	NRI		
AA 365271 W36 112.5	Middle corner to top middle hood	NRI		
AA 365271 W37 112.5	Outer corner to top outer hood	NRI		
AA 365274 W1 55	Two halves of main ring	NRI		
AA 365301 W5W8W18 90	Inner top channel to top strip	NRI		
AA 365302 W5W8W18 90	Middle top channel to top strip	NRI		

Weld Designation	Description	Inspection Result	Condition Report (If RI)	Disposition
AA 365303 W5W8W18 90	Outer top channel to top strip	NRI		
AA 365303 W 13 90	Outer perf plate to top strip	NRI		
AA 365311 W2 112.5	Girders to center ring	NRI		
AA 365272 W1 0	Middle ring to lower W channel	NRI		
AA 365272 W2 90	Middle ring to lower U channel	NRI		
AA 365272 W3 135	Middle ring to lower part outer walls	NRI		
AA 365272 W4 112.5	Middle ring to lower part vert drain channels	NRI		
AA 365272 W5 0	Middle ring to upper W channel	NRI		
AA 365272 W6 90	Middle ring to upper U channel	NRI		
AA 365272 W7 135	Middle ring to upper outer walls	NRI		
AA 365272 W8 90	W and U channels to upper outer walls	NRI		
AA 365272 W9 112.5	Middle ring to upper vert drain channels	NRI		
AA 365272 W10 112.5	Vert drain channels to upper outer walls	NRI		
AA 365284 W1 0	W channel to lower ring	NRI		
AA 365284 W2 90	U channel to lower ring	NRI		
AA 365284 W3 135	Lower ring to walls above	NRI		
AA 365284 W4 90	W and U channels to walls	NRI		
AA 365284 W5 112.5	Drain channels to walls	NRI		
AA 365284 W6 112.5	Lower ring to drain channels	NRI		
AA 365286 W1 45	Welds Lower Ring Together	NRI		
AA 365285 W1 45	Middle ring welded together	NRI		

Inspection Results:

Indications were identified in weld AA 365270 W7 fillet weld at the lifting rod interface to the support ring for two of the four (4) lifting rod locations at 142.25 and 322.25 degree azimuths and at the AA 365270 W9 fillet weld from the lifting lug to lifting rod interface on the lifting rod at 37.75 degree (Ref. IR 4069252). Similar indications were observed during examinations of the Unit 2 replacement steam dryer as documented in the 2016 Visual Inspections Results Letter (Ref. ML16342B621, Letter from Exelon to NRC dated December 7, 2016, Results of Visual Inspections of Unit 2 Replacement Steam Dryer). Also, during examination of the steam dryer support shims, gouge marks on the face of the shim and FME wear were observed on weld AA 365271 W32 90 deg shim. The other shims had no recordable indications. The FME (scrapings and sliver) identified on the 90 deg shim was removed and no other loose material was identified (Ref. IR 4067519). All indications have been dispositioned as use-as-is. The indications do not adversely affect the steam dryer's structural integrity. The welds are non-structural and were not explicitly modeled or analyzed as part of the structural qualification of the steam dryer.

The lifting rod weld locations and shims are scheduled for re-inspection during the Unit 3 P3R22 in 2019 to determine if any changes have occurred. No other recordable indications were identified during the inspection process.

Disposition of Indications:

During P3R21, cracks were observed at the AA365270 W7 fillet weld at the lifting rod interface to the support ring for two of the four (4) hold down rod locations at 142.25 and 322.25 degree azimuths as well as at the AA365270 W9 fillet weld from the lifting lug to lifting rod interface on the lifting rod at 37.75 degree. Gouge marks and FME wear were also observed on the shim at weld AA365271 W32 at 90 deg. The FME was retrieved and the other shims had no recordable indications.

The non-structural fillet welds (AA365270 W7 and W9) of the lifting rod are for positioning and anti- rotation during construction. In that function, as construction welds, they do not carry primary load. The lifting rod function does not depend on the non-structural AA365270 W7 and W9 fillet welds. During plant operation, the positioning at the top and bottom of the lifting rod is guaranteed by the threaded portions of the lifting rod; and the anti-rotation is maintained by the top bracket and its structural hold down rod top to rod AA 365270 W8 weld.

The AA 365270 W7 and W9 non-structural welds are not credited to show ASME III Code compliance for the lifting or hold down function. The purpose for including this weld in the inspection plan was primarily due to its inclusion in BWRVIP-139-A, which requires inspection of similar locations on GE steam dryer based on previous operating experience. Based on review of the purpose of the fillet welds, the critical aspect of the inspection for the lifting rod attachment to the ring is the integrity of the threaded connection at the ring attachment location. The inspection has confirmed no crack extension into the rod, and no crack extension into the rod is anticipated.

The top bracket with its structural weld AA365270 W8 maintains position, prevents rotation and assures thread engagement, thus eliminating any risk for loose parts. The design stress margins for the top bracket remain unchanged by the cracking of the construction fillet welds at the bottom support ring location.

No repair is required to the non-structural welds at the top and bottom of the lifting rods.

The AA365270 W7 and W9 locations will be re-inspected during P3R22 to confirm no crack extension into the lifting rod at the ring attachment location or crack initiation at the upper bracket welds. The AA365271 W32 location will also be re-inspected during P3R22 to determine if additional gouge marks or wear are apparent.

The lifting lugs for PBAPS Unit 3 have two functions: (1) dryer installation lifting operation, and (2) hold-down of the dryer during faulted condition load and possible lifting of the dryer. These conditions do not impact the lifting rods (LR) ability to perform their function. No linear indications (fatigue or IGSCC cracks) were identified on any of the lifting rod assemblies. As such, there is no degradation mechanism present that could impact the integrity of the attachment weld to the top of the LR bracket, or the integrity of the LR itself.

Conclusion:

A complete baseline inspection of the Peach Bottom Unit 3 Steam Dryer was performed during the fall 2017 refueling outage 21. The baseline inspection included successful visual inspection of all of the inspection locations required by the Facility Operating License Condition 2.C(15)(f) for inspection of the Replacement Steam Dryer. All observations were acceptable for the structural components and welds inspected. There were three non-structural welds found with cracks and one shim found with marks/wear that were dispositioned acceptable as-is. The welds were not explicitly modeled or analyzed as part of the structural qualification of the dryer. The subsequent inspection scope of the steam dryer will be performed during the Unit 3 P3R22 outage in 2019 and the results will be provided at that time consistent with the Peach Bottom Operating License.