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L-11-181

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

SUBJECT:
Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
Containment Liner Random and Non-Random Examinations Report

In accordance with license renewal commitment 35 listed in Beaver Valley Power Station, Unit No. 2, Updated Final Safety Analysis Report, Table 19-1, enclosed is the Containment Liner Random and Non-Random Examinations Report for the Beaver Valley Power Station, Unit No. 2 spring 2011 refueling outage (2R15).

There are no regulatory commitments contained in this letter. If there are questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at (330) 761-6071.

Sincerely,

Paul A. Harden

Enclosure:
2R15 Containment Liner Random and Non-Random Examinations Report

cc: NRC Region I Administrator
NRC Resident Inspector
NRR Project Manager
Director BRP/DEP
Site BRP/DEP Representative

BEAVER VALLEY POWER STATION UNIT 2

2R15 Containment Liner Random and Non-Random Examinations Report

Issue date: 6/3/11

Prepared by: DEAN HECHT Date: 6/3/11

Reviewed by: for JSeveryn Date: 6-3-11
Supervisor, Nuclear Programs

Approved by: D.C. Reeves Date: 6-3-11
Manager, Technical Services Engineering

2R15 CONTAINMENT LINER RANDOM AND NON-RANDOM EXAMINATIONS REPORT

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EXAMINATION SUMMARY

FirstEnergy Nuclear Operating Company (FENOC) performed supplemental volumetric examinations on the Beaver Valley Power Station, Unit No. 2 (BVPS-2) containment liner during the fifteenth refueling outage (2R15) to satisfy BVPS-2 license renewal commitments 33 (random) and 34 (non-random). These commitments are listed in BVPS-2 Updated Final Safety Analysis Report Table 19-1. A summary of the commitments are as follows:

License Renewal Commitment 33:
The following paragraph provides a summary of commitment 33.

Supplemental volumetric examinations will be performed on the BVPS-2 containment liner prior to the period of extended operation. A minimum of seventy-five randomly selected (as described in FENOC Letter L-09-205) sample locations will be examined (as described in FENOC Letter L-09-243). If degradation is identified, it will be addressed through the corrective action program (as described in FENOC Letter L-09-243).

If degradation (greater than 10 percent of the nominal thickness not attributable to fabrication/erection practices) is identified in the random samples examined using ultrasonic testing (UT), UT examinations shall be performed on additional random samples, to ensure a 95 percent confidence that 95 percent of the unexamined accessible containment liner is not degraded. If additional degradation is identified, the sample size for the UT examinations shall be further expanded until the statistical sampling has achieved the 95 percent confidence goal described previously. All areas with degradation shall be reexamined over at least the next three successive inspection periods to ensure that progression of the degradation is not occurring.

The initial BVPS-2 sample lot of random ultrasonic examinations will commence by the end of the Unit 2 Refueling Outage in 2011. The random sample plan (including additional examinations, if required) will be completed by May 27, 2027.

License Renewal Commitment 34:
The following paragraph provides a summary of commitment 34.

Supplemental volumetric examinations will be performed on the BVPS-2 containment liner. A minimum of 8 non-randomly selected locations will be examined, focusing on areas most likely to experience degradation based on past operating experience (as described in FENOC Letter L-09-242). If degradation is identified, it will be addressed through the corrective action program.

If degradation (greater than 10 percent of the nominal thickness not attributable to fabrication/erection practices) is identified in the non-random areas examined using ultrasonic testing (UT), UT examinations shall be performed at additional non-random areas, to be selected based on this operating experience. Should additional degradation be

identified, additional non-random areas shall be UT examined until no further degradation (greater than 10 percent of the nominal thickness) is identified. All areas with degradation shall be reexamined over at least the next three successive inspection periods to ensure that progression of the degradation is not occurring.

Examinations will be completed by May 27, 2027.

Summary of Random Scope Examinations:
Sixty-one of the seventy-five randomly selected examinations were performed during the BVPS-2 2R15 refueling outage. Sixty of sixty-one locations examined as part of the sample plan were completed with no evidence of loss of material. The UT examination of Location 2RN-063 revealed an area of lower than expected thickness and is addressed below.

The statistical screening criterion for the examinations had been established as ninety percent of the nominal wall thickness (0.337 inches for the shell and 0.450 inches for the dome). Appendix I contains the 2R15 random examinations results.

Subsequent Random Examination Evaluations:
Examination of random location (2RN-063) required additional actions during 2R15. Manual UT examination of location 2RN-063 identified an indication on the inaccessible side of the liner, having a general thickness below the statistical screening criterion. The lowest thickness measured within the 2RN-063 examination area was 0.310 inch. A subsequent autoscan examination of 2RN-063 verified the presence of the indication along with an approximately 2 inch (vertical) by 10 inch (horizontal) area, extending beyond location 2RN-063, with lower thickness than the surrounding area. The general thickness of this 2 inch by 10 inch area was between 0.300 inch and 0.400 inch. The lowest thickness observed within the extended area was 0.267 inch at a localized point. The minimum design thickness for the general wall of the liner at this location is 0.213 inch. The localized point dimension is 0.250 inch in the vertical axis by 0.300 inch in the horizontal axis. For a localized point having these dimensions, the minimum required thickness is 0.032 inch.

The apparent cause of the thinner liner thickness cannot be determined with certainty at this time since the concrete covering of the liner precludes access to visually examine the area. 2RN-063 and the extended area will be examined for at least the next three successive inspection periods as required by the renewed operating license to ensure that the degradation is not progressing. The results of these successive examinations will determine the extent of potential examination scope expansion.

Summary of Non-Random Scope Examinations:
Eight non-random locations were performed during the BVPS-2 2R15 refueling outage. The locations selected included irregular contours of the liner, non-coated below grade areas and repainted areas of the liner. Acceptance criterion for the examinations had been established as ninety percent of the nominal wall thickness (0.337 inches). All eight non-

random locations were completed with no evidence of loss of material. Appendix II contains the 2R15 non-random examination results.

References

1. FENOC Letter L-09-205, "Supplemental Information for the Review of the Beaver Valley Power Station, Units 1 and 2, License Renewal Application (TAC Nos. MD6593 and MD6594), and License Renewal Application Amendment No. 39," dated July 28, 2009, Accession Number ML092110117.

2. FENOC Letter L-09-242, "Supplemental Information for the Review of the Beaver Valley Power Station, Units 1 and 2, License Renewal Application (TAC Nos. MD6593 and MD6594), and License Renewal Application Amendment No. 40," dated September 2, 2009, Accession Number ML092510168.

3. FENOC Letter L-09-243, "Supplemental Information for the Review of the Beaver Valley Power Station, Units 1 and 2, License Renewal Application (TAC Nos. MD6593 and MD6594), and License Renewal Application Amendment No. 41," dated September 4, 2009, Accession Number ML092530241.

APPENDIX I
2R15 COMPELETED RANDOM EXAMINATIONS

FirstEnergy Nuclear Operating Company, 76 South Main St., Akron, OH 44308
Beaver Valley Power Station Unit 2, Route 168, Shippingport, PA 15077
Commerical Service Date: 11/17/1987

Component ID	Report No.	Lowest	Highest	General
2RN-015	UT-11-1066	0.517"	0.534"	0.526"
2RN-016	UT-11-1067	0.506"	0.515"	0.506"
2RN-017	UT-11-1056	0.526"	0.534"	0.530"
2RN-018	UT-11-1075	0.495"	0.506"	0.498"
2RN-019	UT-11-1076	0.460"	0.506"	0.500"
2RN-020	UT-11-1073	0.501"	0.572"	0.506"
2RN-021	UT-11-1072	0.499"	0.508"	0.501"
2RN-022	UT-11-1062	0.487"	0.500"	0.496"
2RN-023	UT-11-1068	0.361"	0.374"	0.367"
2RN-024	UT-11-1054	0.411"	0.418"	0.414"
2RN-025	UT-11-1055	0.406"	0.414"	0.410"
2RN-026	UT-11-1032	0.380"	0.402"	0.397"
2RN-027	UT-11-1069	0.387"	0.397"	0.391"
2RN-028	UT-11-1070	0.375"	0.406"	0.392"
2RN-029	UT-11-1053	0.402"	0.417"	0.408"
2RN-030	UT-11-1074	0.383"	0.396"	0.389"
2RN-031	UT-11-1071	0.387"	0.394"	0.390"
2RN-032	UT-11-1027	0.390"	0.414"	0.408"
2RN-033	UT-11-1077	0.383"	0.407"	0.399"
2RN-034	UT-11-1010	0.384"	0.412"	0.400"
2RN-035	UT-11-1022	0.414"	0.420"	0.416"
2RN-036	UT-11-1021	0.393"	0.404"	0.396"
2RN-037	UT-11-1008	0.393"	0.408"	0.400"
2RN-038	UT-11-1037	0.394"	0.401"	0.401"
2RN-039	UT-11-1018	0.337"	0.410"	0.406"
2RN-040	UT-11-1023	0.398"	0.415"	0.410"
2RN-041	UT-11-1041	0.363"	0.378"	0.374"
2RN-042	UT-11-1042	0.369"	0.384"	0.374"
2RN-043	UT-11-1020	0.387"	0.404"	0.404"
2RN-044	UT-11-1061	0.387"	0.394"	0.400"
2RN-045	UT-11-1045	0.360"	0.384"	0.372"
2RN-046	UT-11-1038	0.394"	0.401"	0.398"
2RN-047	UT-11-1043	0.394"	0.408"	0.400"
2RN-048	UT-11-1019	0.390"	0.415"	0.410"
2RN-049	UT-11-1011	0.396"	0.409"	0.400"

APPENDIX I
2R15 COMPELETED RANDOM EXAMINATIONS

FirstEnergy Nuclear Operating Company, 76 South Main St., Akron, OH 44308
Beaver Valley Power Station Unit 2, Route 168, Shippingport, PA 15077
Commerical Service Date: 11/17/1987

Component ID	Report No.	Lowest	Highest	General
2RN-050	UT-11-1012	0.402"	0.417"	0.402"
2RN-051	UT-11-1007	0.394"	0.412"	0.399"
2RN-052	UT-11-1044	0.360"	0.384"	0.375"
2RN-053	UT-11-1030	0.417"	0.432"	0.427"
2RN-054	UT-11-1013	0.400"	0.406"	0.400"
2RN-055	UT-11-1039	0.401"	0.436"	0.411"
2RN-056	UT-11-1040	0.391"	0.412"	0.401"
2RN-057	UT-11-1026	0.380"	0.401"	0.390"
2RN-058	UT-11-1033	0.406"	0.418"	0.410"
2RN-059	UT-11-1015	0.398"	0.406"	0.400"
2RN-060	UT-11-1051	0.389"	0.401"	0.393"
2RN-061	UT-11-1050	0.388"	0.405"	0.400"
2RN-062	UT-11-1063	0.394"	0.408"	0.400"
2RN-063*	UT-11-1004 / UT-11-086	0.310"	0.393"	0.381"
2RN-064	UT-11-1005	0.378"	0.404"	0.383"
2RN-065	UT-11-1006	0.388"	0.410"	0.395"
2RN-066	UT-11-1014	0.398"	0.410"	0.400"
2RN-067	UT-11-1046	0.397"	0.407"	0.402"
2RN-068	UT-11-1052	0.397"	0.412"	0.404"
2RN-069	UT-11-1048	0.397"	0.402"	0.400"
2RN-070	UT-11-1047	0.407"	0.414"	0.410"
2RN-071	UT-11-1049	0.380"	0.412"	0.405"
2RN-072	UT-11-1031	0.388"	0.411"	0.400"
2RN-073	UT-11-1060	0.387"	0.396"	0.392"
2RN-074	UT-11-1034	0.393"	0.404"	0.402"
2RN-075	UT-11-1064	0.404"	0.412"	0.407"

*Refer to the Examination Summary of Subsequent Random Examination Evaluations for discussion of expanded examination area extending beyond Location 2RN-063.

APPENDIX II
COMPELETED 2R15 NON-RANDOM EXAMINATIONS

FirstEnergy Nuclear Operating Company, 76 South Main St., Akron, OH 44308
Beaver Valley Power Station Unit 2, Route 168, Shippingport, PA 15077
Commerical Service Date: 11/17/1987

Component ID	Report No.	Lowest	Highest	General	Type
2NR-01	UT-11-1016	0.404"	0.421"	0.409"	Irregular Contour
2NR-02	UT-11-1058	0.415"	0.430"	0.426"	Paint Repair
2NR-03	UT-11-1059	0.400"	0.432"	0.426"	Paint Repair
2NR-04	UT-11-1024	0.400"	0.428"	0.409"	Paint Repair
2NR-05	UT-11-1001	0.384"	0.399"	0.385"	Non-Coated Area
2NR-06	UT-11-1002	0.379"	0.406"	0.389"	Non-Coated Area
2NR-07	UT-11-1003	0.379"	0.402"	0.393"	Non-Coated Area
2NR-08	UT-11-1025	0.418"	0.437"	0.424"	Non-Coated Area