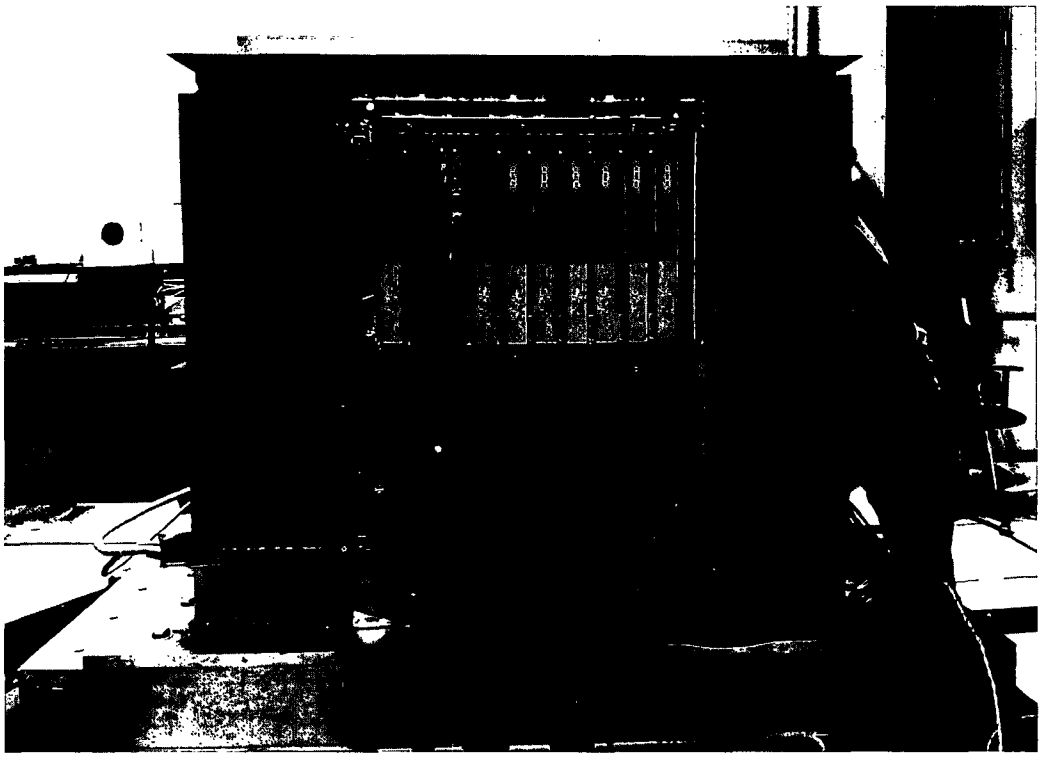
Attachment 17

Westinghouse Electric Company non-proprietary document EQLR-171-NP, "Environmental and Seismic Test Report Analog Input (AI)687 and AI688 Modules and Supporting Components for Use in Common Qualified (Common Q) Post Accident Monitoring System (PAMS)," Revision 1 (non-proprietary) (Letter Item 6)



Environmental and Seismic Test Report

Analog Input (AI)687 and AI688 Modules and Supporting Components for use in Common Qualified (Common Q) Post Accident Monitoring System (PAMS)

EQLR-171-NP, Revision 1

November 2011

Nuclear Automation
Equipment Qualification
1000 Westinghouse Drive
New Stanton, PA 15672-9606

© 2011 Westinghouse Electric Company LLC
All Rights Reserved

Environmental and Seismic Test Report

Analog Input (AI)687 and AI688 Modules and Supporting Components for use in Common Qualified (Common Q) Post Accident Monitoring System (PAMS)

EQLR-171-NP, Revision 1
November 2011

Prepared by: *Electronically Approved** — *All*
N. R. Jurcevich, Principal Engineer
Nuclear Automation / Equipment Qualification I

Prepared by: *Electronically Approved** — *Appendix B*
E. Gutierrez, Seismic Operator
Nuclear Automation / Equipment Qualification I

Reviewed by: *Electronically Approved** — *All*
J. V. Carvajal, Principal Engineer
Nuclear Automation / ALS Systems and Upgrades II

Verified by: *Electronically Approved** — *All*
S. G. Cheyne, Senior Engineer
Nuclear Automation / Equipment Qualification I

Approved by: *Electronically Approved**
G. G. Ament, Manager
Nuclear Automation / Equipment Qualification I

** Electronically Approved Records are Authenticated in the Electronic Document Management System*

Nuclear Automation
1000 Westinghouse Drive
New Stanton, PA 15672-9606

© 2011 Westinghouse Electric Company LLC
All Rights Reserved

REVISION HISTORY

Revision	Author	Description	Date
0	S. G. Cheyne	Original Release	September 28, 2010
1	S. G. Cheyne	a,c [ ]	March 31, 2011
1-NP	N. R. Jurcevich	Revision 1-NP is Revision 1 with proprietary content removed. Note that the revision bars from Revision 1 were left as is.	See EDMS

TABLE OF CONTENTS

REVISION HISTORY i
TABLE OF CONTENTS ii
LIST OF TABLES iii
LIST OF FIGURES iv
LIST OF ACRONYMS vi
1.0 TEST PROGRAM OBJECTIVE 1
2.0 TEST SUMMARY AND OPEN ITEMS 2
3.0 DESCRIPTION OF TEST PROGRAM AND TEST SPECIMEN 5
4.0 QUALITY ASSURANCE 7
5.0 PROGRAM REQUIREMENTS 8
6.0 TEST PROCEDURE 10
7.0 RESULTS 20
8.0 REFERENCES 43
APPENDIX A: [ ]a,b,c ..... A1 – A50
APPENDIX B: [ ]a,b,c ..... B1 – B42
APPENDIX C: [ ]a,c ..... C1 – C4
APPENDIX D: [ ]a,b,c ..... D1 - D15
APPENDIX E: ENVIRONMENTAL [ ]a,b,c CHARTS ..... E1 – E10
APPENDIX F: AI687 AND AI688 [ ]a,b,c ..... F1 – F689
APPENDIX G: [ ]a,b,c ..... G1 – G196
APPENDIX H: AI687 AND AI688 [ ]a,b,c ..... H1 – H237
APPENDIX I: [ ]a,b,c ..... I1 – I35
APPENDIX J: AI687 AND AI688 [ ]a,b,c ..... J1 – J133
APPENDIX K: [ ]a,b,c ..... K1 – K8

LIST OF TABLES

Table 1: [ ]a,c 45
Table 2: [ ]a,c 47
Table 3: [ ]a,c 50
Table 4: [ ]a,c 51
Table 5: [ ]a,c 51
Table 6: [ ]a,c 51
Table 7: [ ]a,b,c 52
Table 8: [ ]a,b,c 53
Table 9: [ ]a,b,c 55
Table 10: [ ]a,b,c 56
Table 11: [ ]a,b,c 57
Table 12: [ ]a,b,c 59
Table 13: [ ]a,b,c 60
Table 14: [ ]a,b,c 61
Table 15: [ ]a,b,c 62

LIST OF FIGURES

Figure 1: [ ]a,b,c 63
Figure 2: [ ]a,b,c 64
Figure 3: [ ]a,b,c 65
Figure 4: [ ]a,b,c 66
Figure 5: [ ]a,b,c 67
Figure 6: [ ]a,b,c 68
Figure 7: [ ]a,b,c 69
Figure 8: [ ]a,b,c 70
Figure 9: [ ]a,b,c 71
Figure 10: [ ]a,b,c 72
Figure 11: [ ]a,b,c 73
Figure 12: [ ]a,b,c 74
Figure 13: [ ]a,b,c 75
Figure 14: [ ]a,b,c 76
Figure 15: [ ]a,c 77
Figure 16: [ ]a,c 78
Figure 17: [ ]a,c 79
Figure 18: [ ]a,c 80
Figure 19: [ ]a,c 81
Figure 20: [ ]a,b,c 82
Figure 21: [ ]a,b,c 83
Figure 22: [ ]a,b,c 84
Figure 23: [ ]a,b,c 85

Figure 24: [ ]a,b,c 86
Figure 25: [ ]a,b,c 87
Figure 26: [ ]a,b,c 88
Figure 27: [ ]a,b,c 89
Figure 28: [ ]a,b,c 90
Figure 29: [ ]a,b,c 91
Figure 30: [ ]a,b,c 92
Figure 31: [ ]a,b,c 93
Figure 32: [ ]a,b,c 94
Figure 33: [ ]a,b,c 95
Figure 34: [ ]a,b,c 96

LIST OF ACRONYMS

ABB	Asea Brown Boveri
AC	Alternating Current
AI	Analog Input
AIR	Auxiliary Instrument Room
CAP	Corrective Actions Program
CDI	Commercial Dedication Instruction
CI	Communications Interface
CN	Calculation Note
DC	Direct Current
DE	De-energized
E	Energized
EDMS	Electronic Document Management System
EQ	Equipment Qualification
EUT	Equipment Under Test
FRS	Floor Response Spectra
g	Gravity
HRHF	Hard Rock High Frequency
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IERS	In-Equipment Response Spectra
IR	Issue Report
LTR	Letter
mA	milliamp
mm	millimeter
ms	milliseconds
msec	milliseconds
mVDC	Direct Current millivolts
NA	Nuclear Automation
NC	Normally Closed
NIST	National Institute of Standards and Technology
NO	Normally Open
NON	Notice of Nonconformance
NPO	Nuclear Parts Operation
OBE	Operating Basis Earthquake
P/N	Part Number
PA	Pennsylvania
PAMS	Post Accident Monitoring System
PDF	Portable Document Format
PM	Processor Module
PSD	Power Spectral Density
QC	Quality Control
RH	Relative Humidity
RRS	Required Response Spectra
RTD	Resistance Temperature Detector
SKN 3&4	Shin-Kori 3&4
SSE	Safe Shutdown Earthquake
T	Transition
T/C	Thermocouple
TP	Test Procedure
TRS	Test Response Spectra
TU	Termination Unit
VDC	Direct Current Volts
WBN	Watts Bar Nuclear
WBT	Watts Bar Unit 2
ZPA	Zero Period Acceleration

1.0 TEST PROGRAM OBJECTIVE

The objective of this test program was to environmentally and seismically qualify the Analog Input (AI)687 and AI688 modules, [ ]^{a,c}, for use in the Westinghouse Common Q Platform PAMS. In addition to the AI687 and AI688 modules, certain supporting components were also environmentally and seismically qualified by the testing performed.

The environmental qualification performed met the technical requirements of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) Std 323-1983 (Reference 1) for equipment located in a mild environment. The seismic qualification testing performed met the technical requirements of IEEE Std 344-1987 (Reference 2). This test program also addressed the [ ]^{a,c} requirement for demonstrating seismic adequacy of [ ]^{a,c} seismic-sensitive components for the [ ]^{a,c}.

[

]^{a,c}

2.0 TEST SUMMARY AND OPEN ITEMS

2.1 Test Summary

The EUT identified in Table 1 and Table 2 were subjected to environmental and seismic testing, as specified in [ ]a,c. Environmental testing was conducted in accordance with IEEE Std 323-1983 (Reference 1) [ ]a,c. Seismic testing was conducted in accordance with IEEE Std 344-1987 (Reference 2) [ ]a,c. Both sequences of testing were performed [ ]a,c during July and August 2010.

The test program consisted of the following test sequence:

[

]a,c

Environmental testing was performed on the EUT identified in Table 1 to the environmental profile identified in Figure 1. Results from the testing are discussed in Section 7.2 and show that the EUT demonstrated acceptable performance per Section 5.3.

During the Phase 1 seismic testing, all EUT identified in Table 2 were subjected to [ ]^{a,c} OBE test runs to the RRS identified in Figure 8. All EUT were then subjected to [ ]^{a,c} SSE test runs to the RRS identified in Figure 9. [ ]^{a,b,c} the AI687 modules were qualified to the TRS identified in Figure 26 through Figure 28. The AI687 modules demonstrated acceptable performance per Section 5.3 at the [ ]^{a,c} SSE RRS, shown in Figure 26 through Figure 28. All other Table 2 EUT demonstrated acceptable performance per Section 5.3 during the Phase 1 seismic testing RRS of Figure 9.

The AI687 and AI688 modules were not required to perform acceptably during the Phase 2 seismic testing, however were monitored for information. The EUT identified in Table 2, were subjected to [ ]^{a,c} OBE test runs that envelope the RRS identified in Figure 10 and Figure 11, and [ ]^{a,c} SSE test runs to the RRS identified in Figure 12 and Figure 13. All Table 2 EUT aside from the AI687 and AI688 modules demonstrated acceptable performance per Section 5.3 during the Phase 2 seismic testing.

[ ]^{a,b,c}

2.2 Open Items

The open items from Revision 0 of this document [ ]^{a,c} have been closed. [ ]^{a,c}

[

]a,c

3.0 DESCRIPTION OF TEST PROGRAM AND TEST SPECIMEN

3.1 Test Specimen

The EQ test configuration for environmental and seismic testing is identified in [ ]a,c. EUT during the environmental testing portion of this test program are identified in Table 1. [ ]a,c

EUT during the seismic testing portion of this test program are identified in Table 2. [ ]a,c

[ ]a,c

[

]a,c

3.2 Modifications

No modifications were made to the test specimen prior to or during the test program that impacts the qualification of the EUT.

4.0 QUALITY ASSURANCE

All work on this test program was performed in accordance with Westinghouse Electric Company, LLC Quality Management System, which complies with applicable requirements of 10CFR50, Appendix B (Reference 10). Defects are reportable, in accordance with the requirements of 10CFR21 (Reference 11). All instrumentation required for the test [

]^{a,c} was in calibration, traceable to the National Institute of Standards and Technology (NIST).

5.0 PROGRAM REQUIREMENTS

The environmental and seismic testing of the components identified in Table 1 and Table 2 support the requirements identified for the [ ]a,c platform.

5.1 Environmental Testing Requirements

5.1.1 Environmental Conditions

The environmental qualification requirements [ ]a,c are identified in the Common Q Topical Report, WCAP-16097-P-A (Reference 12). The EUT identified in Table 1 were subjected to the environmental profile identified in Figure 1 which envelops the requirements identified in Reference 12.

5.1.2 Environmental Performance Criteria

The test specimens were required to operate within the specified tolerances identified in [ ]a,c, and copied below in Section 5.3 during the environmental profile contained in Figure 1.

5.2 Seismic Testing Requirements

5.2.1 Seismic Conditions

Seismic testing was performed in accordance with IEEE Std 344-1987 (Reference 2). The [ ]a,c seismic conditions identified in [ ]a,c are shown in Figure 2 through Figure 7. The OBE RRS is shown in Figure 2 through Figure 4 for the front-to-back, side-to-side, and vertical directions, respectively. The SSE RRS is shown in Figure 5 through Figure 7 for the front-to-back, side-to-side, and vertical directions, respectively.

[

]a,b,c

Since there were additional EUT [

]a,c, an additional phase of testing was performed. The Phase 2 RRS is specific to the [ ]a,c application. The OBE RRS is shown in Figure 10 and Figure 11 for the horizontal and vertical directions, respectively while the SSE RRS is shown in Figure 12 and Figure 13, for the horizontal and vertical directions, respectively. [ ]a,c

All RRS shown in Figure 2 through Figure 13 contained the 10% margin recommended by IEEE Std 323-1983 (Reference 1).

An additional screening test for HRHF was performed for information only at the conclusion of all required seismic qualification testing. [

]a,b,c The RRS for the HRHF screening test for all directions at 5% critical damping is shown in Figure 14.

5.3 Performance Requirements

The AI687 and AI688 modules shall operate within the specified tolerances identified in [ ]a,c and copied in Table 3. The tolerances identified in Table 3 and Reference 13 are based upon those identified in [ ]a,c for the WBT PAMS.

All EUT shall maintain structural integrity before, during, and after all acceptable seismic test runs.

6.0 TEST PROCEDURE

6.1 Test Sequence

The following test sequence was used during the test program:

[

]a,b,c

6.2 [ ]a,c

[

]a,c

6.3 [ ]a,c

[

]a,c

6.4 [ ]a,c

[

]a,c

6.5 [ ]a,c

[

]a,c

6.5.1 [ ]a,c

[

]a,c

6.5.2 [ ]a,c

[

]a,c

6.6 [ ]a,c

[

]a,c

6.7 [ ]a,c

6.7.1 [ ]a,c

[

]a,c

6.7.2 [ ]a,c

[

]a,c

6.7.2.1 [ ]a,c

[

]a,c

6.7.2.2 [ ]a,c

[

]a,c

6.8 [ ]a,c

[

]a.c

6.9 [ ]a,c

6.9.1 [ ]a,c

[

]a,c

6.9.2 [ ]a,c

[

]a,c

6.9.3 [ ]a,c

[

]a,c

[

]a,c

6.9.4 [ ]a,c

[

]a,c

6.10 [ ]a,c

[

]a,c

7.0 RESULTS

7.1 [ ]a,b,c

[

]a,b,c

7.2 [ ]a,b,c

[

]a,b,c

7.2.1 [ ]a,b,c

[

]a,b,c

[

]a,b,c

7.2.2 [ ]a,b,c

[

]a,b,c

[

]a,b,c

[

]a,b,c

[

]a,b,c

7.2.3 [ ]a,b,c

[

]a,b,c

[

]a,b,c

[

]a.b.c

[

]a,b,c

[

]a,b,c

7.3 [ ]a,b,c

[

]a,b,c

7.4 [ ]a,b,c

7.4.1 [ ]a,b,c

[

]a,b,c

7.4.2 [ ]a,b,c

[

]a,b,c

7.4.2.1 [ ]a,b,c

[

]a,b,c

[

]a,b,c

7.4.2.2 [ ]a,b,c

[

]a,b,c

[

]a,b,c

7.4.3 [ ]a,b,c

[

]a,b,c

7.4.3.1 [ ]a,b,c

[

]a,b,c

[

]a,b,c

7.4.3.2 [ ]a,b,c

[

]a,b,c

7.4.4 [ ]a,b,c

[

]a,b,c

7.4.4.1 [ ]a,b,c

[

]a,b,c

[

]a,b,c

7.4.4.2 [ ]a,b,c

[

]a,b,c

7.4.5 [ ]a,b,c

7.4.5.1 [ ]a,b,c

[

]a,b,c

7.4.5.2 [ ]a,b,c

[

]a,b,c

7.4.6 [**]a,b,c**

[

]a,b,c

7.4.6.1 [**]a,b,c**

[

]a,b,c

7.4.6.2 [**]a,b,c**

[

]a,b,c

[

]a,b,c

7.4.6.3 [ ]a,b,c

[

]a,b,c

7.4.6.4 [ ]a,b,c

[

]a,b,c

7.4.7 [ ]a,b,c

[

]a,b,c

7.4.8 [ ]a,b,c

[

]a,b,c

7.5 Summary and Conclusions

Environmental testing was performed on the EUT identified in Table 1 to the environmental profile identified in Figure 1. Results from the testing are discussed in Section 7.2 and show that the EUT demonstrated acceptable performance per Section 5.3.

[ ]a,c The EUT identified in Table 2 were then subjected to two phases of seismic testing. During the Phase 1 testing, all EUT identified in Table 2 were subjected to [ ]a,c OBE test runs to the RRS identified in Figure 8. All EUT were then subjected to [ ]a,c SSE test runs to the RRS identified in Figure 9. [ ]a,b,c AI687 modules were qualified to the TRS identified in Figure 26 through Figure 28. The AI687 modules demonstrated acceptable performance per Section 5.3 at the [ ]a,c SSE RRS shown in Figure 26 through Figure 28. All other Table 2 EUT demonstrated acceptable performance per Section 5.3 during the Phase 1 seismic testing RRS of Figure 9.

The AI687 and AI688 modules were not required to perform acceptably during the Phase 2 seismic testing, however were monitored for information. The EUT identified in Table 2 were subjected to [ ]a,c OBE test runs that envelop the RRS identified in Figure 10 and Figure 11 and [ ]a,c SSE test runs to the RRS identified in Figure 12 and Figure 13. All Table 2 EUT aside from the AI687 and AI688 modules demonstrated acceptable performance per Section 5.3 during the Phase 2 seismic testing.

The Table 2 EUT were also subjected to an HRHF screening test. [ ]a,b,c

8.0 REFERENCES

1. **IEEE Std 323-1983**, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," June 1983.
2. **IEEE Std 344-1987**, "IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations," June 1987.
3. [ ]a,c
4. [ ]a,c
5. [ ]a,c
6. [ ]a,c
7. [ ]a,c
8. [ ]a,c
9. [ ]a,c
10. United States Nuclear Regulatory Commission - Code of Federal Regulations for Domestic Licensing of Production Facilities **10CFR50, Appendix B**, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."
11. United States Nuclear Regulatory Commission – Code of Federal Regulations **10CFR21**, "Reporting of Defects and Noncompliance."
12. Westinghouse Topical Report **WCAP-16097-P-A, Revision 0**, "Common Qualified Platform Topical Report," May 2003.
13. [ ]a,c

14. [ ]a,c

15. [ ]a,c

16. [ ]a,c

17. [ ]a,c

18. [ ]a,c

19. [ ]a,c

20. [ ]a,c

21. [ ]a,c

Table 1: [ ]a,c

a,c

a,c

a,c

Table 2: [ ]a,c

a,c

a,c

a,c

Table 3: [ ]a,c

a,c

Table 4: [ ]a,c

a,c

Table 5: [ ]a,c

a,c

Table 6: [ ]a,c

a,c

Table 7: [ ]a,b,c

a,b,c

Table 8: [ ]a,b,c

a,b,c

a,b,c

Table 9: [ ]a,b,c

a,b,c

Table 10: [ ]a,b,c

a,b,c

Table 11: [**]**[a,b,c]** a,b,c

a,b,c

Table 12: [ ]a,b,c

a,b,c

Table 13: [ ]a,b,c

a,b,c

Table 14: [ ]a,b,c

a,b,c

Table 15: [ ]a,b,c

a,b,c

a,b,c

Figure 1: [ ]a,b,c

a,b,c

Figure 2: [**]**[a,b,c]

a,b,c

Figure 3: [**]a,b,c**

a,b,c

Figure 4: [**]**[a,b,c]

a,b,c

Figure 5: [**]a,b,c**

a,b,c

Figure 6: [**]a,b,c**

a,b,c

Figure 7: [**]**[a,b,c]

a,b,c

Figure 8: [**]a,b,c**

a,b,c

Figure 9: [**]**[a,b,c]

a,b,c

Figure 10: [**]a,b,c**

a,b,c

Figure 11: [**]**[a,b,c]

a,b,c

Figure 12: [**]**[a,b,c]

a,b,c

Figure 13: [**]**[a,b,c]

a,b,c

Figure 14: [**]a,b,c**

a,c

Figure 15: [ ]a,c

a,c

Figure 16: [ ]a,c

a,c

Figure 17: [ ]a,c

a,c

Figure 18: [**]a,c**

a,c

[ ]

Figure 19: [ ]a,c

a,b,c

Figure 20: [**]a,b,c**

a,b,c

Figure 21: [**]**[a,b,c]

a,b,c

Figure 22: [**]a,b,c**

a,b,c

Figure 23: [**]**[a,b,c]

a,b,c

Figure 24: [**]**[a,b,c]

a,b,c

[

]

Figure 25: [**]**[a,b,c]

a,b,c

Figure 26: [**]**[a,b,c]

a,b,c

Figure 27: [**]a,b,c**

a,b,c

Figure 28: [**]**[a,b,c]

a,b,c

Figure 29: [**]a,b,c**

a,b,c

Figure 30: [**]a,b,c**

a,b,c

Figure 31: [**]**[a,b,c]

a,b,c

Figure 32: [**]a,b,c**

a,b,c

Figure 33: [**]a,b,c**

a,b,c

Figure 34: [**]a,b,c**

Appendix A:

[ ]a,b,c

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Appendix B:
[ ]a,b,c

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Appendix C:

[ ]a,c

C.1.0 INTRODUCTION

[

]a,c

C.2.0 INPUT

[

]a,c

C.3.0 EVALUATIONS

[

]a,c The 10% margin recommended by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) Std 323-1983 (Reference C.4) is included in the RRS shown in Figure C.3.0-1.

C.4.0 REFERENCES

C.1 [

]a,c

C.2 [

]a,c

C.3 [

]a,c

C.4 **IEEE Std 323-1983**, *IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations*, June 1983

a,c

Appendix D:
[ ]a,b,c

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Appendix E:

Environmental [ ]^{a,b,c} Charts

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Appendix F:

AI687 and AI688 [ ]a,b,c

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Appendix G:

[

]a,b,c

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Appendix H:

AI687 and AI688 [ ]a,b,c

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Appendix I:

[

]a,b,c

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Appendix J:

AI687 and AI688 [ ]a,b,c

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Appendix K:

[ ]a,b,c

This section in its entirety is proprietary class a, b, and c information and is not included in this report.

Attachment 18

Westinghouse Electric Company document CAW-11-3299, Application For Withholding Proprietary Information From Public Disclosure EQLR-171-P, Revision 1, "Analog Input (AI)687 and AI688 Modules and Supporting Components for Use in Common Qualified (Common Q) Post Accident Monitoring System (PAMS)," (Proprietary)," dated November 11, 2011 (Letter Item 6)

Westinghouse

Westinghouse Electric Company
Nuclear Services
1000 Westinghouse Drive
Cranberry Township, Pennsylvania 16066
USA

U.S. Nuclear Regulatory Commission
Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

Direct tel: (412) 374-4643
Direct fax: (724) 720-0754
e-mail: greshaja@westinghouse.com
Proj letter: WBT-D-3601

CAW-11-3299

November 11, 2011

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: EQLR-171-P, Revision 1, "Analog Input (AI)687 and AI688 Modules and Supporting Components for use in Common Qualified (Common Q) Post Accident Monitoring System (PAMS)" (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-11-3299 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Tennessee Valley Authority.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-11-3299, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company LLC, Suite 428, 1000 Westinghouse Drive, Cranberry Township, Pennsylvania 16066.

Very truly yours,

J. A. Gresham, Manager
Regulatory Compliance

Enclosures

CAW-11-3299

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF BUTLER:

Before me, the undersigned authority, personally appeared J. A. Gresham, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

J. A. Gresham, Manager
Regulatory Compliance

Sworn to and subscribed before me
this 11th day of November 2011

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Cynthia Olesky, Notary Public
Manor Boro, Westmoreland County
My Commission Expires July 16, 2014
Member, Pennsylvania Association of Notaries

(1) I am Manager, Regulatory Compliance, in Nuclear Services, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.

(2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse Application for Withholding Proprietary Information from Public Disclosure accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390; it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in EQLR-171-P, Revision 1, "Analog Input (AI)687 and AI688 Modules and Supporting Components for use in Common Qualified (Common Q) Post Accident Monitoring System (PAMS)" (Proprietary) for submittal to the Commission, being transmitted by Tennessee Valley Authority letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse is that associated with the Post-Accident Monitoring System (PAMS) and may be used only for that purpose.

This information is part of that which will enable Westinghouse to:

(a) Assist the customer in providing technical licensing information to the NRC that is required for approval of the Watts Bar Nuclear Unit 2 PAMS System.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for the purpose of licensing in-core instrumentation systems.

(b) Its use by a competitor would improve his competitive position in the development and licensing of a similar product.

(c) The information requested to be withheld reveals the distinguishing aspects of a design developed by Westinghouse.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar calculations, analysis and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

COPYRIGHT NOTICE

The reports transmitted herewith each bear a Westinghouse copyright notice. The NRC is permitted to make the number of copies of the information contained in these reports which are necessary for its internal use in connection with generic and plant-specific reviews and approvals as well as the issuance, denial, amendment, transfer, renewal, modification, suspension, revocation, or violation of a license, permit, order, or regulation subject to the requirements of 10 CFR 2.390 regarding restrictions on public disclosure to the extent such information has been identified as proprietary by Westinghouse, copyright protection notwithstanding. With respect to the non-proprietary versions of these reports, the NRC is permitted to make the number of copies beyond those necessary for its internal use which are necessary in order to have one copy available for public viewing in the appropriate docket files in the public document room in Washington, DC and in local public document rooms as may be required by NRC regulations if the number of copies submitted is insufficient for this purpose. Copies made by the NRC must include the copyright notice in all instances and the proprietary notice if the original was identified as proprietary.

Tennessee Valley Authority
Letter for Transmittal to the NRC

The following paragraphs should be included in your letter to the NRC:

Enclosed are:

1. __ copies of EQLR-171-P, Revision 1, "Analog Input (AI)687 and AI688 Modules and Supporting Components for use in Common Qualified (Common Q) Post Accident Monitoring System (PAMS)" (Proprietary)

2. __ copies of EQLR-171-NP, Revision 1, "Analog Input (AI)687 and AI688 Modules and Supporting Components for use in Common Qualified (Common Q) Post Accident Monitoring System (PAMS)" (Non-Proprietary)

Also enclosed is the Westinghouse Application for Withholding Proprietary Information from Public Disclosure CAW-11-3299, accompanying Affidavit, Proprietary Information Notice, and Copyright Notice.

As Item 1 contains information proprietary to Westinghouse Electric Company LLC, it is supported by an affidavit signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b) (4) of Section 2.390 of the Commission's regulations.

Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR Section 2.390 of the Commission's regulations.

Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse affidavit should reference CAW-11-3299 and should be addressed to J. A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company LLC, Suite 428, 1000 Westinghouse Drive, Cranberry Township, Pennsylvania 16066.