ENCLOSURE 2

Generic Methodology for JOG MOV Periodic Verification (PV) Program - Category D MOV Evaluations

(BWR OWNERS' GROUP NON-PROPRIETARY)

BWROG Non-Proprietary Information

BWROG-TP-09-033
Revision 1
December 22, 2009

Generic Methodology for JOG MOV Periodic Verification (PV) Program - Category D MOV Evaluations

A Technical Product of the BWR Owners Group
Valve Technical Resolution Group

Prepared by: Valve Technical Resolution Group Committee **Date:** 10/16/09

Approved by: Ted Neckowicz (Exelon) Committee Chairman **Date:** 10/16/09

Revision 1 **Date:** 12/22/2009

NOTICE

This guideline contains a simplified generic methodology for addressing motor operated valves (MOVs) outside the scope of the Final JOG Report for MOV Periodic Verification, MPR-2524B. Such MOVs are classified as JOG Class D. This methodology was developed based on industry operating experience and the collective engineering expertise of the BWROG Valve Technical Resolution Group. It is the decision of each member utility to implement any or all of the generic methodology provided herein.

Any use of this guideline or the information contained herein by anyone other than members of the BWR Owners Group Valve Technical Resolution Group (112) is unauthorized. With regard to any unauthorized use, the BWR Owners Group makes no warranty; either expressed or implied, as to the accuracy, completeness, or usefulness of this guideline or the information, and assumes no liability with respect to its use.

Participating Utilities

The Valve Technical Resolution Group is a non-generic committee and all BWROG members participated, at the time of this report the BWROG membership included:

Utility (Members)	
Constellation – NMP	Exelon (P/L)
DTE Energy – Fermi	FPL - DAEC
Energy Northwest – Columbia	FirstEnergy – Perry
Entergy – FitzPatrick	NPPD – Cooper
Entergy – Pilgrim	NMC – Monticello
Entergy – VY	PPL – Susquehanna
Entergy – RB/GG	PSEG – Hope Creek
Exelon (Clinton)	Progress Energy – Brunswick
Exelon (OC)	SNC – Hatch
Exelon (D/Q/L)	TVA – Browns Ferry

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1. EXECUTIVE SUMMARY

This document provides Joint Owners' Group (JOG) Program participants a simple methodology to apply Generic Risk Based Methods to evaluate motor operated valves (MOVs) outside of the scope of the Final JOG MOV PV Program (i.e. Class-D). JOG MOV Program participants may adopt these methods or justify their own Class D MOV Program approach as applicable. This methodology is not all-inclusive and may not address all Class D MOVs.

2. INTRODUCTION

The purpose of this document is to provide "simple to apply" generic methodologies to evaluate MOVs outside the Final JOG MOV Program (i.e. Class D). This document will service a recognized need in the U.S. Nuclear Industry that is expected to occur once JOG MOV Program participants begin to evaluate and classify MOVs according to the Final JOG Program recommendations. The conservative methods this document describes consider JOG Program Results / Lessons Learned, MOV Margin, industry/vendor standards and in-situ DP test results.

The Class D MOV Evaluation Methods provided are Risk-Based. Therefore, High Risk Significance MOVs would have more stringent acceptance criteria than MOVs of Low or Medium Risk Significance. The two main methods include:

- The Margin Threshold (MT) Method – This Method is provided for MOVs that are typically not DP testable. However, the Margin Threshold Method is considered to be sufficiently conservative so that it may be applied on any applicable valve whether or not it is DP Testable.

- The DP Testing (DPT) Method - This method is provided for MOVs that are DP Testable to establish an acceptable Qualifying Basis.

Either Method could be used to evaluate suitable Class-D MOVs and treat them similar to Class-B MOVs with respect to MOV Periodic Verification. Treatment as Class B instead of Class A requires utilities to apply the Risk/Margin based MOV periodic verification interval. This inherently provides additional margin over a Class-A evaluation, which automatically bins such valves as having High Margin. Therefore, all Class-D MOVs that successfully apply the method with be treated as Class B rather than Class A MOVs. They will still be classified as Class D.

Two special case methods have been developed and justified to address specific flow and valve material conditions that are not addressed by either the MT or DPT Methods.

In addition to the above methods, several exclusions are provided that would allow applicable Class D valve to be immediately considered Class B. These exclusions include:

- MOVs with static (zero flow and DP) design basis strokes
- Plug valves and Floating Type Ball Valve without bearings

Those Class D MOVs meeting the exclusion criteria may be treated (considered) as Class B. Those MOVs listed under exclusions have no service related degradation mechanisms that need to be evaluated.

This document will be submitted to the NRC for information as an Owners Group Product and may be referenced by individual utilities for addressing their Class D valves. Utilities are expected to report their plans to address Class D MOVs in accordance with the conditions specified in the NRC Safety Evaluation on the JOG MOV Program dated September 25, 2006 (Reference 6.2).

3. BACKGROUND

MPR Report MPR-2524-B (Reference 6.1) documents the Final Joint Owners Group (JOG) Report for Motor Operated Valve Periodic Verification (PV) Program. This report documents the conclusions and final PV approach for the JOG MOV PV Program. These outcomes are based on the results of repeat testing of 176 MOVs in power plants under conditions with flow and differential pressure (DP). The JOG MOV testing program was designed to address as many valves as possible through valve selection and logical groupings of valve parameters with the expectation of over 95% coverage of the industry's safety related MOV population. MPR-2524-B is silent on program methods to address MOVs outside of the JOG scope leaving this program element up to the individual utilities and plants that may be impacted.

4. ISSUE / GAP

The Final JOG MOV Program does not provide any recommended approach for evaluating MOVs outside the scope of the JOG Program. These out of scope valves are referred to as Class D MOVs.

5. BENEFITS

This document provides a common fleet approach to address JOG Class D MOV endorsed by BWROG and submitted to the NRC that can be referenced by individual utilities and plants. This reduces the burden on individual plants and utilities and provides for a common approach to be evaluated by the regulator.

6. REFERENCES

6.1 Joint Owners' Group (JOG) Motor Operated Valve Periodic Verification Program Summary, MPR-2524-B, November 2007.

6.2 NRC Final Safety Evaluation on Joint Owners' Group Program on Motor Operated Valve Periodic Verification, Dated September 25 2006.

6.3 EPRI TR-103674-V3P1, EPRI MOV Performance Prediction Program – High Pressure Cold and Hot Water Blowdown facility Test Report Volume 3 Part 1: Test Results for MOV#48, March 1994.

6.4 EPRI TR-111595 – Assessment of the Effects of Flow and Sub cooling on Y-Pattern Unbalanced Globe Valve – April 2000.

6.5 INPO Operating Experience Report OE6315, Maine Yankee, 1993.

7. DEFINITIONS

7.1 Design Basis Valve Factor – The valve factor used to demonstrate design basis capability in accordance with Generic Letter 89-10 Program Closure and GL 96-05 requirements.

7.2 Gate Valve Design Basis Valve Factor Coefficient of Friction – The coefficient of friction corresponding to the Design Basis Valve Factor. Derived using the equations found in Appendix A of MPR-2524-B.

7.3 Quarter-Turn Valve Friction Coefficient – The friction coefficient used to demonstrate design basis capability of butterfly, plug and ball valves in accordance with Generic Letter 89-10 Closure. Only trunnion mounted ball valves have bearings for consideration of a bearing friction coefficient. Floating Type Ball valves and Plug valves typically do not have bearings that are subject age related degradation.

7.4 Class D Gate Valve COF Threshold – The threshold value established by the Margin Threshold Method, which if the design basis VF coefficient of friction meets or exceeds would allow the valve to be treated as Class B.

7.5 Class D Bearing COF Threshold – The threshold value established by the Margin Threshold Method, which if the design basis coefficient of friction meets or exceeds would allow the valve to be treated as Class B.

7.6 LFSTMB – Low friction surface treated metallic bearings whose base metal has been given a specific surface treatment to reduce bearing friction (e.g. Microseal SS bearings)

7.7 In-service DP Stroking – Valve DP stroking during normal/abnormal plant conditions that may result in potential age related degradation of valve factors / COFs. In-service DP stroking does not pertain to design basis accident DP strokes, which are not normally seen by the valve while in-service and therefore would not cause age related degradation. See MPR-2524-B Appendix B for definition.

8. GENERIC JOG CLASS D METHODOLOGIES

8.1 Margin Threshold (MT) Method

The Margin Threshold Method establishes a Coefficient Of Friction (COF) Threshold value that could be applied as the design basis COF and used for the determination of design basis thrust or torque. If so applied, the valve could be treated as JOG Class B and be subject to Risk/Margin based periodic verification using STATIC rather than DYNAMIC diagnostic testing. In order to qualify for this method, each valve must be operated within the applicable pressure, temperature and (flow *and/or differential pressure*) design limits established by the original valve manufacturer.

8.1.1 Margin Threshold Method - Gate Valves

Note: For Gate Valves, valve factor must be converted to valve coefficient of friction (COF) for use in the Margin Threshold Methodology

8.1.1.1 High / Medium Risk Valves

Gate Valve COF Threshold is the **MAXIMUM** of the following:

1. Current GL89-10 Design basis VF COF (89-10 DB)
2. 1.2 times the OEM recommended VF COF (if applicable)
3. 0.85 (i.e. 1.2 times the highest COF threshold for all gate materials addressed by JOG)

8.1.1.2 Low Risk Valves

Gate Valve COF Threshold is the **MAXIMUM** of the following:

1. Current GL89-10 Design basis VF COF (89-10 DB)
2. 1.1 times the OEM recommended VF COF (if applicable)
3. 0.78 (i.e. 1.1 times the highest COF threshold for all gate materials addressed by JOG)

8.1.2 Margin Threshold Method – Quarter-Turn Valves with non-metallic bearings (NMB)

8.1.2.1 High / Medium Risk Valves

Quarter-Turn Valve Bearing COF Threshold is the **MAXIMUM** of the following:

1. Current GL89-10 Design basis bearing COF (89-10 DB)
2. 1.2 times the OEM recommended Bearing COF (if applicable)
3. 0.37 (i.e. 1.2 times the highest COF threshold for all non-metallic bearing materials addressed by JOG)

8.1.2.2 Low Risk Valves

Quarter-Turn Valve Bearing COF Threshold is the **MAXIMUM** of the following:

1. Current GL89-10 Design basis bearing COF (89-10 DB)
2. 1.1 times the OEM recommended Bearing COF (if applicable)
3. 0.34 (i.e. 1.1 times the highest COF threshold for all non-metallic bearing materials addressed by JOG)

8.1.3 Margin Threshold Method - Quarter-Turn Valves with low friction surface treated metallic bearings (LFSTMB)

8.1.3.1 All Risk Valves

Quarter-Turn Valve Bearing COF Threshold is the **MAXIMUM** of the following:

1. Current GL89-10 Design basis bearing COF (89-10 DB)
2. The OEM recommended Bearing COF (if applicable)
3. The JOG Threshold COF for the base metal (if 300SS or Bronze) (if applicable). If base metal is not covered by JOG, use 0.6. 0.6 corresponds to the highest JOG threshold of any metal (i.e. 300 SS) tested under JOG.

8.1.4 Margin Threshold Method - Quarter-Turn Valves with metallic bearings

8.1.4.1 High/Medium Risk Valves

Quarter-Turn Valve Bearing COF Threshold is the **MAXIMUM** of the following:

1. Current GL89-10 Design basis bearing COF (89-10 DB)
2. 1.2 times the OEM recommended Bearing COF (if applicable)
3. 0.72 (i.e. 1.2 times the highest COF threshold for all metallic bearing (MB) materials addressed by JOG)

8.1.4.2 Low Risk Valves

Quarter-Turn Valve Bearing COF Threshold is the **MAXIMUM** of the following:

1. Current GL89-10 Design basis bearing COF (89-10 DB)
2. 1.1 times the OEM recommended Bearing COF (if applicable)
3. 0.66 (i.e. 1.1 times the highest COF threshold for all metallic bearing materials addressed by JOG)

Table 1 provides a matrix for the selection of Margin Threshold Method recommended generic coefficient of friction for each of the MOV type and risk categories described above.

Table 1 - Margin Threshold Matrix Table

Valve Type	Risk	JOG COF Threshold Is Maximum of		
Gate	High/Med	0.85	1.2 x OEM	89-10 DB
Gate	Low	0.78	1.1 x OEM	89-10 DB
Qtr-Turn NMB	High/Med	0.37	1.2 x OEM	89-10 DB
Qtr-Turn NMB	Low	0.34	1.1 x OEM	89-10 DB
Qtr-Turn LFSTMB	All	Note 1	OEM	89-10 DB
Qtr-Turn MB	High/Med	0.72	1.2 x OEM	89-10 DB
Qtr-Turn MB	Low	0.66	1.1 x OEM	89-10 DB

Note 1: Select JOG Threshold COF value for applicable metal

8.2 Differential Pressure Test (DPT) Method

The Differential Pressure Test Method establishes a Qualifying Basis approach to justify the required thrust and/or torque similar to JOG Qualifying Basis described in MPR-2524-B. If so applied, the valve could be treated as JOG Class B and be subject to Risk/Margin based periodic verification using STATIC rather than any additional DYNAMIC diagnostic testing. In addition, the approach provides added conservatism by maintaining the original GL 89-10 closure basis as well as requiring adherence to applicable OEM valve vendor standards for required thrust/torque and/or related COFs. As with the Margin Threshold Method, each valve must be operated within the applicable pressure, temperature and flow design limits established by the original valve manufacturer

8.2.1 DPT Method - Gate Valves

8.2.1.1 High/Medium Risk Valves

Available DP testing validating the required thrust meets the JOG Gate Valve Qualifying Basis Criterion 4.1 Screen or Criterion 4.2 Screen
AND
Design Basis Valve Factor is the maximum of the:

- GL89-10 Design Basis Valve Factor
- 1.1 times the OEM recommended Valve Factor (If applicable)

8.2.1.2 Low Risk Valves

Available DP testing validating the required thrust meets the JOG Gate Valve Qualifying Basis Criterion 4.1 Screen or Criterion 4.2 Screen
AND
Design Basis Valve Factor is the maximum of the:

- GL89-10 Design Basis Valve Factor
- OEM recommended Valve Factor (If applicable)

8.2.2 DPT Method - Quarter Turn Valves with metallic or non-metallic bearings

8.2.2.1 High / Medium Risk Valves

Available DP testing validating the required torque meets the JOG Butterfly Valve Qualifying Basis Criterion 3.1 Screen or Criterion 3.2 Screen
AND
Design Basis Bearing COF (or Required Torque) is the maximum of the:

- GL89-10 Design Basis Bearing COF (or Required Torque)
- 1.1 times the OEM recommended Bearing COF (or Required Torque) Value (If applicable)

8.2.2.2 Low Risk Valves

Available DP testing validating the required torque meets the Butterfly Valve Qualifying Basis Criterion 3.1 Screen or Criterion 3.2 Screen
AND
Design Basis Bearing COF (or Required Torque) is the maximum of the:

- GL89-10 Design Basis Bearing COF (or Required Torque)
- OEM recommended Bearing COF (or Required Torque) Value (If applicable)

8.2.3 DPT Method - Unbalanced and Balanced Globe Valves

8.2.3.1 All Risk Valves

Available DP testing validating the required thrust meets the Qualifying Basis Criterion 4.1 (a or b only) Screen or Criterion 4.2 Screen
AND
Design Basis Valve Factor is the maximum of the:

- GL89-10 Design Basis Valve Factor
- OEM recommended Valve Factor (If applicable)

8.3 Special Case Method 1 – Unbalanced Disk Globe Valves w/High Velocity or Flashing Fluid Conditions

MPR-2524-B, Section 7 states that unbalanced disk globe (UBDG) valves were found to have steady valve factors with no age related or service related degradation that required special evaluation. Valve factors rather than coefficients of friction are typically applied to UBDG valves since the required thrust to operate largely depends on overcoming DP force on the projected disc area obstructing flow.

UBDG valve applications with flashing water, steam, air or nitrogen "in-service" flow rates in excess of 86 feet/sec are currently excluded from JOG Program coverage. UBDG valves that are not subject to these same in-service conditions would be classified by the JOG Program as either Class A or B depending on in-service fluid temperatures.

For UBDG valves with in-service conditions of flashing water or flow velocities >86 fps, the following acceptance criteria would be necessary to be classified as Class B:

- The valve factor used must be guide based versus seat based. Guide based valve factors are applied in conjunction with the projected valve disc guide and/or valve bore diameter, which is always larger than the nominal seat diameter. This results in a larger required DP thrust than using the seat based valve factor. Guide based VF are appropriate for bore guided globe valve applications or when due to high velocities conventional Y- and T-pattern globe valves behave as guide based. The high velocities coupled with the restricted flow area around the disc after unseated creates side load effects which increase the required VF from seat based to guide based.

- For conventional Y- and T-Pattern valves which exhibit seat based performance at low velocities, the guide based design basis valve factor must be the larger of:
  - 1.4 for High/Medium Risk MOVs
  - 1.2 for Low Risk MOVs
  - The VF value recommended by the Original Equipment Manufacturer (OEM) for the specified high flow conditions
  - The VF value established under the GL 89-10 Program

- For bore-guided valves which exhibit guide based performance at low velocities, the guide based design basis valve factor must be the larger of:
  - 1.8 for High/Medium Risk MOVs
  - 1.5 for Low Risk MOVs
  - The VF value recommended by the Original Equipment Manufacturer (OEM) for the specified high flow conditions
  - The VF value established under the GL 89-10 Program

- The valve shall have undergone in-body inspection to verify that no internal degradation has occurred as a result of in-service high velocity (> 86 fps) or flashing DP stroking. Examples of internal degradation that could influence the required thrust include: abnormal wear or galling of the disc, seat or disc guides (if applicable). Previous in-body inspection results documented in station valve maintenance history records may be used to document this required condition. Grouping of plant and industry in-body inspection data is permitted provided that the following grouping criteria apply:
  - Same valve type, size and manufacturer
  - Same seat/disc/guide materials
  - Same in-service fluid type
  - Representative fluid conditions (velocity and temperature)

8.4 Special Case Method 2 – Gate Valve Disc Guide Materials with alloy steels other than 13 Cr and 300 series stainless steels

The following alloy steels frequently used in valve construction have % chromium content in between carbon steels and 13-Cr stainless steel (type 410) and are not specifically covered by the JOG Program as a disc guide material:

- ASTM A182 F9
- ASTM 217 WC1
- ASTM 217 WC6
- ASTM 217 WC9
- ASTM 217 C5
- ASTM 217 C12

For these materials, the JOG Classification may be justified as "B" provided that the COF threshold criteria are also satisfied.

8.5 Special Case Method 3 – Rising Rotating Stem Globe valves with flow over seat configuration and Open Safety Function

Applicability - Rising Rotating stem Unbalanced Globe Valves with Flow Overseat Configuration (with Split Ring Stem/Disc Interface Design) and Open Safety Function.

The following additional Unseating Torque must be applied to the total required opening torque in order to be treated as a JOG Class B valve.

Additional Unseating Torque
T_{SR} (ft-lbs) = Torque Split Ring = (F * μ * r) /12

Where:
A = Projected Disc Area (in^2)
F = DP load = 1.1 * A * P (lbs)
P = differential pressure across disc (psi)
μ = bounding friction coefficient between the split ring and stem (contact vendor or apply conservative values)
r = effective radius of the contacting areas (rotating and non-rotating) (contact vendor)

Provided that bounding friction coefficients are applied, service related degradation of the required torque is not expected.

9. CONDITIONS AND LIMITATIONS (C&L)

This Section identifies required conditions and limitations so that the methodologies described in Section 8 will not be misapplied and invalidate findings from either the JOG or EPRI MOV Performance Prediction Programs. Applicable plant specific industry, operating experience or vendor data shall be considered before using the Section 8 Methods for a specific valve application.

9.1 Margin Threshold Method Conditions and Limitations

1) If the valve disc/seat material or other affected sliding surfaces (i.e. guides) are 1) 300 or 400 Series stainless steel and the temperature is greater than 120F or 2) NOREM, then this generic method cannot be used due to potential galling concerns unless 1) DP test or Operational MOV in-service history and subsequent inspection data, or 2) independent laboratory testing or 3) OEM valve vendor testing verifies that galling does not occur under these conditions.

2) The MT Method is applicable only to gate and Quarter-Turn valves. Balanced or unbalanced globe valves are excluded.

9.2 Differential Pressure Test Method Conditions and Limitations

1) If a gate valve disc/seat material or other affected sliding surfaces are 300 or 400 Series stainless steel and the temperature is greater than 120F or NOREM, then the DPT Method cannot be used due to potential galling concerns unless 1) DP test or Operational MOV in-service history and subsequent inspection data, 2) independent laboratory testing or 3) OEM valve vendor testing verifies that galling does not occur at or above the design basis valve fluid temperature.

2) The DPT Method cannot be applied to Balanced and Unbalanced Globe Valve applications in flashing water or with steam/air/nitrogen flow rates in excess of 86 fps unless 1) DP test or Operational MOV in-service history and subsequent inspection data, 2) independent laboratory testing or 3) OEM valve vendor testing verifies that galling does not occur which could influence the required operating thrust.

9.3 Special Case Method –1 Conditions and Limitations

1) If the valve disc/seat material or other affected sliding surfaces (i.e. guides) are 1) 300 or 400 Series stainless steel and the temperature is greater than 120F or 2) NOREM, then this generic method cannot be used due to potential galling concerns unless 1) DP test or Operational MOV in-service history and subsequent inspection data, or 2) independent laboratory testing or 3) OEM valve vendor testing verifies that galling does not occur under these conditions.

2) Rising rotating stem valves must not have flow over seat configuration and a design basis safety function to OPEN.

3) Users of this methodology are expected to stay abreast of industry testing (e.g. EPRI, NRC) on unbalanced globe valves and incorporate any findings into their MOV JOG Class D Evaluations as appropriate.

9.4 Special Case Method –2 Conditions and Limitations
None

9.5 Special Case Method –3 Conditions and Limitations
Applies to rising/rotating stem valves with disc/stem split ring interface

10. EXCLUSIONS

The following two valve categories may be considered as JOG Class B without further evaluation.

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11. METHODOLOGY BASIS

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12. CONCLUSIONS

The MT, DPT and Special Methods along with the Exclusions provide JOG participants simple to apply approaches to address many Class D MOVs. The methods are considered inherently conservative and apply the JOG Program lessons learned as well as existing industry standards. The methods also maintain or add additional conservatism rather than relax the design basis required thrust and torque bases derived during Generic Letter 89-10.

13. EXAMINATION OF ALTERNATIVES

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14. LIST OF ATTACHMENTS

1) Attachment A – Example Results for Applying the BWROG Generic JOG Class D Methodologies

2) Attachment B – List of nuclear industry MOVs that have been identified as potential candidates for application of the BWROG Generic Methodology for JOG Class D MOVs. (Note: Application on specific MOVs will be identified by licensees in docketed correspondence to the NRC required under Reference 6.2.)

Attachment A
Example Results for Applying the BWROG Generic JOG Class D Methodologies

Margin Threshold Method – Class D Gate Valve

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Margin Threshold Method – Class D Quarter-Turn w/ Non-Metallic Bearings

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Differential Pressure Test Method – Class D Gate Valve

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Differential Pressure Test Method – Class D Butterfly Valve

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Special Case Method 1 - Unbalanced Globe Valve

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ENCLOSURE 3

AFFIDAVIT REQUESTING WITHOLDING OF ENCLOSURE 1

BWR Owners' Group (BWROG)
AFFIDAVIT

I, **Frederick P. "Ted" Schiffley, II**, state as follows:

(1) As the elected Chair of the BWR Owners' Group (BWROG), I have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding. This action is taken on behalf of the Utility Members that financially participated (reference table below) in development (hereinafter referred to as "BWROG"):

Constellation Energy Nuclear Group - NMP
Detroit Edison Company - Fermi
Energy Northwest - CGS
Entergy Nuclear Northeast - Fitzpatrick
Entergy Nuclear Northeast - Pilgrim
Entergy Operations, Inc. - RB/GG
Entergy Nuclear Northeast - VY
Exelon/AmerGen Energy - Clinton
Exelon Nuclear - Dres/QC/LS
Exelon Nuclear - Limerick/Peach Bottom
Exelon/AmerGen Energy - Oyster Creek
FirstEnergy Corporation - Perry
Nebraska Public Power District - Cooper
NextERA Energy - DAEC
PPL Susquehanna LLC - Susquehanna
Progress Energy Carolinas - Brunswick
PSEG Nuclear - Hope Creek
Southern Nuclear Operating Company, Inc. - Hatch
Tennessee Valley Authority - Browns Ferry
Xcel Energy - Monticello

(2) The information sought to be withheld is contained in BWR Owners' Group (BWROG) Report, BWROG-TP-09-033, *Generic Methodology for JOG MOV Periodic Verification (PV) Program - Category D MOV Evaluations,* December 22, 2009. The proprietary information in said document is identified by [[dotted underline inside double square brackets$^{\{3\}}$]]. Figures and other large objects are identified with double square brackets before and after the object. In each case, the superscript notation {3} refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.

(3) In making this application for withholding of proprietary information of which it is the owner or licensee, BWROG relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for "trade secrets" (Exemption 4). The material for which exemption from disclosure is here sought also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

(4) Some examples of categories of information, which fit into the definition of proprietary information, are:

a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by BWROG's competitors without license from BWROG constitutes a competitive economic advantage over other companies;

b. Information which, if used 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 of a similar product;

c. Information, which reveals aspects of past, present, or future BWROG customer-funded development plans and programs, resulting in potential products to BWROG;

d. Information, which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b. above.

(5) To address 10 CFR 2.390(b)(4), the information sought to be withheld is being transmitted to NRC in confidence. The information is of a sort customarily held in confidence by BWROG, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by BWROG, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties, including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or subject to the terms under which it was licensed to BWROG. Access to such documents within BWROG is limited on a "need to know" basis.

(7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist, or other equivalent authority for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside BWROG are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.

(8) The information identified in paragraph (2), above, is classified as proprietary because it contains detailed results of analytical models, methods and processes, including computer codes, which BWROG has developed, and applied to perform licensing and design evaluations for BWR plants.

The development of the evaluation process along with the interpretation and application of the analytical results is derived from the extensive experience database that constitutes a major BWROG asset.

(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to BWROG's competitive position and foreclose or reduce the availability of profit making opportunities. The information is part of BWROG's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical and NRC review costs comprise a substantial investment of time and money by BWROG.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

BWROG's competitive advantage will be lost if its competitors are able to use the results of the BWROG experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to BWROG would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive BWROG of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 27th day of June 2011.

Frederick P. "Ted" Schiffley, II
Chairman
BWR Owners' Group