



OG-01-011

Project Number 694

February 9, 2001

**Domestic Members**

**AmerenUE**  
Callaway  
**American Electric Power Co.**  
D.C. Cook 1 & 2  
**Carolina Power & Light Co.**  
H.B. Robinson 2  
Shearon Harris  
**Consolidated Edison Company of NY, Inc.**  
Indian Point 2  
**Duke Power Company**  
Catawba 1 & 2  
McGuire 1 & 2  
**Entergy Nuclear Operations Inc.**  
Indian Point 3  
**Exelon**  
Braidwood 1 & 2  
Byron 1 & 2  
**First Energy Nuclear Operating Co.**  
Beaver Valley 1 & 2  
**Florida Power & Light Co.**  
Turkey Point 3 & 4  
**Northeast Utilities**  
Seabrook  
Millstone 3  
**Nuclear Management Co.**  
Point Beach 1 & 2  
Prairie Island 1 & 2  
Kewaunee  
**Pacific Gas & Electric Co.**  
Diablo Canyon 1 & 2  
**PSEG - Nuclear**  
Salem 1 & 2  
**Rochester Gas & Electric Co.**  
R.E. Ginna  
**South Carolina Electric & Gas Co.**  
V.C. Summer  
**STP Nuclear Operating Co.**  
South Texas Project 1 & 2  
**Southern Nuclear Operating Co.**  
J.M. Farley 1 & 2  
A.W. Vogtle 1 & 2  
**Tennessee Valley Authority**  
Sequoyah 1 & 2  
Watts Bar 1  
**TXU Electric**  
Commanche Peak 1 & 2  
**Virginia Electric & Power Co. (Dominion)**  
North Anna 1 & 2  
Surry 1 & 2  
**Wolf Creek Nuclear Operating Corp.**  
Wolf Creek

**International Members**

**Electrabel**  
Doel 1, 2, 4  
Tihange 1, 3  
**Kansai Electric Power Co.**  
Mihama 1  
Takahama 1  
Ohi 1 & 2  
**Korea Electric Power Co.**  
Kori 1 - 4  
Yonggwang 1 & 2  
**Nuclear Electric plc**  
Sizewell B  
**Nuklearna Elektrarna Krsko**  
Krsko  
**Spanish Utilities**  
Asco 1 & 2  
Vandellos 2  
Almaraz 1 & 2  
**Vattenfall AB**  
Ringhals 2 - 4  
**Taiwan Power Co.**  
Maanshan 1 & 2

Document Control Desk  
US Nuclear Regulatory Commission  
Washington, DC 20555-0001

Attention: Mr. T.L. King, Director  
Division of Risk Analysis and Applications  
Office of Nuclear Regulatory Research

Subject: Westinghouse Owners Group  
**Westinghouse Owners Group Review and Comment on Draft Report "NUREG-1715, Vol. X, Component Performance Study – Air Operated Valves, 1987-1998" (MUHP-4019)**

Reference: Letter from T.L King, NRC, to A.P. Drake, WOG  
Project Manager, Westinghouse, dated December 14,  
2000

The Westinghouse Owners Group (WOG) would like to thank you for this opportunity to review and comment on the draft report, "Component Performance Study – Air Operated Valves, 1987-1998". The WOG believes peer review by the industry will help to strengthen these type activities and allows both the NRC and industry to benefit from the final documents. The attachment to this letter provides the WOG comments. Please include these comments in your review process prior to issuing the final report.

If you have any questions regarding these comments, please contact Mr. Ike Ezekoye, Westinghouse, at (412) 374-6643, or myself (423) 751-8201.

Very truly yours,

Robert H. Bryan  
Chairman  
Westinghouse Owners Group

attachment

cc: T.L. King, USNRC (1L, 1A)  
Westinghouse Owners Group Primary Representatives (1L, 1A)  
WOG Systems and Equipment Engineering Subcommittee (1L, 1A)  
Westinghouse Owners Group Steering Committee (1L, 1A)  
A.P. Drake, WOG Project Manager (1L, 1A)

DOYB

**NUREG 1715, Vol. X  
AIR-OPERATED VALVES**

Comment 1:

The conclusion of "No indications of increased failure rates due to "aging" concerns were found" (see page 24, subsection 4.4 under NUREG -1275, Vol. 13 Concerns) is significant and should be restated in the Executive Summary. The WOG notes that the nuclear industry appears to be doing the right things relative to compliance with Generic Letter 88-14 on air systems and improving AOV performance. The recent initiative by the Joint Owners Group (WOG, BWROG, CEOG and BWROG) to develop a non-mandatory document that specifies the minimum requirements of a plant's Air Operated Valves program should provide additional improvement in the performance and reliability of AOVs. The WOG further recommends that the current industry initiative on AOVs should be discussed in the NUREG in relation to future impact on AOV reliability.

Comment 2:

The study provides the performance of AOV failures. A review of the failure lists, which included the components that failed, showed that many of the components that failed are not safety related (e.g., air line, air regulator) which would not have affected the valve performing its safety related function. Thus, the number of actual valve failures ascribed to AOVs is on the conservative side, as many failures appear not to affect the safety related functions of the valves, which are usually to open or to close on loss of air. It is recommended that the report recognize the conservatism of the failure data.

Comment 3

In the Executive Summary, it will be useful to clarify if the comparison of AOV probability of failure on demand is done on a mean basis or a range basis (upper bound, lower bound). It appears that the comparison was done on a mean basis as the example provided in the summary suggests. However, the narrative did not make any distinction between mean and range. We recommend clarification in the narrative.

Comment 4: Omissions and Typos

1. Page vi: Appendices II and III (Titles are inconsistent with text)
2. Pages x, Figure ES-4: MOV should be AOV. See also Figure 6 and Figure 8.
3. AOV Standby Failure Rate Table B (Add to Table F)
4. AOV Failures in the CCF Database (1987-1995) Table C (Add to Table F)
5. 5<sup>th</sup> Sentence in the 4<sup>th</sup> paragraph, change "hat" to "that"
6. Table F: Correct the following: Section 3.2 should be Section 3.3  
Appendix III deleted in item 4  
Figures 8-11 should be 8 - 9 (item 6)  
Table C should be Table D (item 7)
7. page IV-1 – Failure to operate as requird .... The word required is spelled wrong.

Comment 5

Suggested Unidentified Commonly Used Acronym for page xvi:  
MTBF

Comment 6

Mis-specified References: Page 2, Note section of Item 8: Reference 11 should be Reference 8. Reference 12 should be Reference 10.

Comment 7

Provide reference for the calculation of Chi-square equation on page 8.

Comment 8

There is inconsistency between the lower bound value of AOV probability of failure on demand from NUREG/CR-4550 reported on page 2 of the Mr. Thomas L. King transmittal letter and value reported on page vii (Table ES-A). The numbers are  $5.4E-3$  Versus  $5.4E-4$ .

Comment 9

Smudged and/or Overtyped Figures:  
a. Figure ES-6  
b. Figure 9

Comment 10

Missing Reference: NUREG-1150

Comment 11

The symbol "L" is undefined in the equation for the statistic U