



OG-02-029

August 8, 2002

Domestic Members

- AmerenUE
- Callaway
- American Electric Power Co
- D C Cook 1 & 2
- Carolina Power & Light Co.
- H B Robinson 2
- Shearon Hams
- Dominion Nuclear Connecticut
- Millstone 3
- Dominion Virginia Power
- North Anna 1 & 2
- Surry 1 & 2
- Duke Power Company
- Catawba 1 & 2
- McGuire 1 & 2
- Entergy Nuclear Operations Inc
- Indian Point 2 & 3
- Exelon Generation Company LLC
- Braidwood 1 & 2
- Byron 1 & 2
- FirstEnergy Nuclear Operating Co.
- Beaver Valley 1 & 2
- Florida Power & Light Co
- Turkey Point 3 & 4
- Northeast Utilities
- Seabrook
- 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
- VC 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
- Wolf Creek Nuclear Operating Corp.
- Wolf Creek

International Members

- Electrabel
- Doel 1, 2, 4
- Tihange 1, 3
- Electricite de France
- Kansai Electric Power Co.
- Mihama 1
- Takahama 1
- Oh 1 & 2
- Korea Hydro & Nuclear Power Co
- Kon 1 - 4
- Yonggwang 1 & 2
- British Energy plc
- Sizewell B
- Krsko
- Krsko
- Spanish Utilities
- Asco 1 & 2
- Vandellos 2
- Aimaraz 1 & 2
- Ringhals AB
- Ringhals 2 - 4
- Taiwan Power Co.
- Maanshan 1 & 2

Mr. Timothy Reed
 U.S. Nuclear Regulatory Commission
 One White Flint North
 11555 Rockville Pike - Mail Code 7 D4
 Rockville, MD 20852-2738

Subject: Westinghouse Owners Group
Generic Cost-Benefit Assessment of the Proposed Draft
10 CFR Part 50.69

Dear Mr. Reed:

The Westinghouse Owners Group has developed a detailed generic cost benefit assessment related to support decision-making by the Westinghouse Owners Group members related to future implementation of the proposed 10 CFR Part 50.69. A summary of the cost-benefit assessment is enclosed for your use in developing the NRC's regulatory impact assessment to support the proposed rulemaking process.

This cost benefit assessment was developed based on thorough evaluations by teams of plant and vendor personnel for three commercial nuclear power plants. The evaluations considered the results of the industry demonstrations of the NEI-00-04 (Rev. B) guidance and the ASME Code Case N-658 for categorization of systems structures and components (SSCs). The benefits were assessed based on detailed reviews of the current repair and replacement costs, identification of the potential areas of savings, and an estimation of the savings that might be realized by a licensee implementing the proposed 50.69 process. It is to be noted that the cost-benefit assessment was based on the industry interpretation of the draft 50.59 rule language as published by the NRC on April 3, 2002 related to the framework for specifying the reduced treatment for low safety significant SSCs. The enclosed cost-benefit assessment results are the blend of information from three plants in order to evaluate all the potential regulatory treatment areas - i.e, no individual licensee currently has all the information for their specific site. We expect the generic cost-benefit assessment results to be updated as the Option 2 initiative proceeds forward and further plant-specific information is obtained.

Sincerely,

Bob Bryan, Chairman
 Westinghouse Owners Group

YGOI 1/1 per Reed
 Add: WRR/DRIV
 Tim Reed

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Cc: Westinghouse Owners Group Steering Committee
Adrian Heymer – Nuclear Energy Institute
Anthony Petrangelo – Nuclear Energy Institute
G. C. Bischoff - Westinghouse ECE 5-16
K. R. Balkey - Westinghouse ECE 466
J. A. Brown - Westinghouse ECE 472
R. J. Lutz - Westinghouse ECE 473

JULY 2002 WOG GENERIC OPTION 2 COST-BENEFIT EVALUATION

Background and Overall Assumptions

A generic cost-benefit evaluation for Option 2 of risk informing 10 CFR 50 has been completed by the Westinghouse Owners Group (WOG). Input to the evaluation has been provided from the three demonstrations of the NEI-00-04 (Rev. B)¹ guidance and the ASME Code Case N-658² conducted by the WOG. These demonstrations involved the categorization of the systems, structures and components (SSCs) of the containment spray and normal service water systems at Wolf Creek and the charging and feedwater systems at Surry Unit 1. The demonstrations also involved convening an Integrated Decision-Making Panel (IDP) as called for in the guidance to consider the SSC categorization. Both active and passive SSCs have been addressed. Cost-benefit data has been compiled from information and insights from more than five WOG nuclear electric generating units.

Based on the above Option 2 categorization work and insights from other plant risk-informed programs (e.g., Maintenance Rule, risk-informed ISI), it is estimated that a program scope that includes 12 plant systems may provide the best return-on-investment. However, the appropriate number of systems needs to be determined on a plant specific basis prior to any licensee undertaking a plant-specific Option 2 application.

Option 2 is even more cost-effective for licensees of dual unit sites since implementation costs, including cultural change costs, are fairly fixed between the two units. Categorization costs can also be significantly reduced for the second unit, while the full measure of benefits can be realized by each unit.

This cost benefit assessment assumes that current treatment requirements for high safety significant SSCs are unchanged and the treatment requirements for low safety significant components are based on the current industry interpretation of the treatment framework in the April, 2002 50.69 draft rule language.

Estimate of Option 2 Cost Elements (based on 12 systems)

The cost elements are divided into program development and program implementation costs. The categorization effort is the primary contributor to the program development costs. It was found from the WOG categorization and IDP efforts that the categorization costs are related to the system complexity, i.e., the number of functions performed by the system. Evaluation of changes in special treatment requirements for low safety significant SSCs (e.g., changes in controlled documentation for these SSCs) and the preparation of an Option 2 submittal to the NRC, along with NRC review fees, comprise the remainder of the program development costs.

Program implementation costs are comprised of efforts to revise plant procedures and design specifications in order to address changes primarily related to the reduction in special treatment requirements for safety-related SSCs. Training of plant staff is also assumed to be necessary to successfully implement Option 2.

Program maintenance costs are assumed to be minimal compared to the program development and implementation costs, and these costs can be readily incorporated into the Maintenance Rule update process already in place at each plant

The estimated Option 2 total costs for program development, implementation and maintenance for single and dual unit sites, including both utility and contractor support effort over a 3-year period, are:

TOTAL OPTION 2 COST PER UNIT	\$2,400,000
TOTAL OPTION 2 COST FOR 2-UNIT SITE	\$3,300,000

¹ "Option 2 Implementation Guideline, Revision B", Nuclear Energy Institute, May 2001.

² "Case N-658, Risk-Informed Safety Classification for Use in Risk-Informed Repair/Replacement Activities", ASME Section XI, Division 1.

Estimate of Option 2 Annual Savings per Unit

Estimated savings are compiled from several sources, as mentioned above, across more than 10 special treatment areas, including:

- Procurement Savings
- Repair/Replacement Examination and Documentation
- In-service Inspection (Beyond RI-ISI)
- In-service Testing
- Surveillance Testing
- Appendix J – Option B: Type C ILRT
- Maintenance Rule Efforts
- Appendix B
- Qualification
- Administrative Savings (work orders, reporting, etc)

While the April 2002 draft rule language for §50.69 discusses the scope of special treatment requirements in terms of regulations in place, the savings need to be categorized in terms of how programs are implemented at plants to address those requirements. Both hard dollar and soft dollar savings are rolled into the evaluation with the majority of hard dollar savings being attributed to the procurement area.

The hard and soft dollar savings were developed from intensive evaluations by teams of plant and vendor personnel to identify the current costs and potential areas of savings. Plant databases have been evaluated in detail in order to obtain insights on potential savings. Procurement purchases of services and hardware are still being evaluated using data from multiple sites. The current cost benefit assessment does not include changes in costs for hardware purchases; these are still being evaluated. The inclusion of potential savings from hardware purchases, when the investigation is completed, is expected to make the cost benefit assessment more favorable.

Thus, the value below is a first attempt to estimate potential savings associated with Option 2. The data reflects information that is available at this time and will be amended as additional information becomes available.

TOTAL OPTION 2 SAVINGS PER UNIT ~\$1,100,000 PER YEAR

Estimated Payback Period for Option 2 Program

Using the above estimated costs and savings, the following payback periods are estimated:

$$\text{Single Unit Site} = \frac{\$2,400,000 \text{ investment}}{>\$1,100,000 \text{ saved / year}} = \sim 2.2 \text{ Years}$$

$$\text{Dual Unit Site} = \frac{\$3,300,000 \text{ investment}}{>\$2,200,000 \text{ saved / year}} = \sim 1.5 \text{ Years}$$

Estimated Net Present Values for Option 2 Program

A net present value (NPV) calculation has been performed for Option 2 in order to determine an overall benefit of this initiative taking into account the time value of money over the remaining life of plants that choose to implement this initiative. Calculations have been performed to reflect the average licensed-life and average extended license of the WOG fleet of plants. Consistent with prior calculations performed for other WOG risk-informed initiatives, the average licensed-life of the WOG fleet of plants ends in 2020 with the extended life ending in 2040, considering a 20-year license renewal period.

NPV calculations have been completed taking into account escalation rates and the cost of money, and using the estimated costs and savings discussed previously. It is assumed that program development begins in 2003 with savings only being realized in 2006. The following table summarizes the results of the NPV calculations:

Avg. WOG Plant	Single Unit Site NPV	Dual Unit Site NPV
Licensed Life (2020)	\$6,800,000	\$14,800,000
License Renewal (2040)	\$11,200,000	\$23,400,000

The above estimated NPVs reflect the value of the Option 2 program in today's dollars for both single unit and dual unit sites for operation through licensed life and life extension periods. The Option 2 NPVs are significant (i.e., the overall value to the WOG fleet of 48 U.S. reactors potentially exceeds \$½ Billion), meaning that successful completion of NRC Rulemaking and NEI Guidance development for this initiative should have high priority within the WOG, industry and NRC.