July 14, 2003

MEMORANDUM TO: Stuart Richards, Chief
Inspection Program Branch
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

Patrick D. O'Reilly
Operating Experience Risk Applications Branch
Division of Risk Analysis and Applications
Office of Nuclear Regulatory Research

FROM: Mark F. Reinhart, Chief **/RA/**
Licensing Section
Probabilistic Safety Assessment Branch
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

SUBJECT: RESULTS OF THE WOLF CREEK PLANT SDP PHASE 2 NOTEBOOK BENCHMARKING VISIT

During August, 2002, NRC staff and contractors visited the Wolf Creek Generating Station in Burlington, Kansas to compare the Wolf Creek Significance Determination Process (SDP) Phase 2 notebook and licensee's risk model results to ensure that the SDP notebook was generally conservative. The current plant probabilistic safety assessment's (PSA's) internal event core damage frequency was 5.5 E-5/reactor-year excluding internal flood events. The Wolf Creek PSA did not include external initiating events and therefore sensitivity studies were not performed to determine any impact of these initiators on SDP color determinations. In addition, the results from analyses using the NRC's draft Revision 3i Standard Plant Analysis Risk (SPAR) model for Wolf Creek were also compared with the licensee's risk model. The results of the SPAR model benchmarking effort will be documented in the next revision of the SPAR (revision 3) model documentation.

In the review of the Wolf Creek SDP notebook for the benchmark efforts, the team determined that some changes to the SDP notebook were needed to reflect how the Wolf Creek plant is currently designed and operated. Thirty four hypothetical inspection findings were processed through the SDP notebook and compared with the licensee's related importance measures. Results from this effort indicated that the risk impacts modeled in the SDP notebook were less

CONTACT: Mike Franovich, SPSB/DSSA/NRR
415-3361

conservative by 9 percent, more conservative by 9 percent, and consistently estimated by 82 percent. Consequently, 36 changes were made to the SDP notebook. Using the revised SDP notebook, the team obtained 3 percent of the cases that were less conservative, 24 percent were more conservative, and 73 percent of the cases were consistent with the licensee's results. Of the conservative cases, all but one were one order of magnitude greater than the results obtained with the licensee's model and as such are generally consistent with the expectation that the notebooks should be slightly conservative when compared to the licensee's model.

The licensee's PSA staff had substantial knowledge of both the Wolf Creek PSA model and conduct of plant operations. The licensee's comments greatly improved the quality and content of the SDP notebook

Attachment A describes the process and specific results of the comparison of the Wolf Creek SDP Phase 2 Notebook and the licensee's PSA.

Attachments: As stated

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The licensee's PSA staff had substantial knowledge of both the Wolf Creek PSA model and conduct of plant operations. The licensee's comments greatly improved the quality and content of the SDP notebook

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CONTACT: Mike Franovich, SPSB/DSSA/NRR
415-3361

Accession #ML031960092

G://SPSB/Franovich/WolfCreekbench.wpd

OFFICE	SPSB	SPSB:SC
NAME	MFranovich:nxh2	MReinhart
DATE	07/11/03	07/14/03

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SUMMARY REPORT ON BENCHMARKING TRIP TO WOLF CREEK GENERATING STATION

(August 13-14, 2002)

G. Martinez-Guridi
Brookhaven National Laboratory (BNL)
Energy Sciences and Technology Department
Upton, NY 11973

Attachment A

Table of Contents

Page

List of Tables

Page

1. Introduction

A benchmarking of the Wolf Creek Generating Station (WCGS) Significance Determination Process (SDP) Risk-Informed Inspection Notebook was conducted during a plant site visit on August 13-14, 2002. Mike Franovich (NRC), supported by Gerardo Martinez-Guridi (BNL), participated in this benchmarking exercise.

In preparation of the plant site visit, BNL staff reviewed the Rev. 0 WCGS SDP notebook and evaluated a set of hypothetical inspection findings using the Rev. 0 SDP notebook, plant system diagrams and information in the licensee's updated PSA.

The major activities performed during this plant site visit were:

1. Discussed licensee's comments on the Rev. 0 SDP notebook.

2. Obtained listings of the Risk Achievement Worth (RAW) values for basic events of the internal events PRA model.

3. Identified a target set of basic events (hypothetical inspection findings) for the benchmarking exercise.

4. Performed benchmarking of the Rev. 0 SDP notebook with considerations of the licensee's proposed modifications to this notebook.

5. Identified underestimates and reviewed the licensee's PSA model to determine the underlying reasons. Additional changes to the SDP notebook were proposed, as appropriate.

Thirty-four cases of hypothetical findings were evaluated. As a result of the benchmarking exercise, the revised notebook yielded twenty-five matches, one underestimate, and eight overestimates. The underestimate by one color (one order of magnitude) is failure of one EDG, and the eight overestimates are: MOV HV8801A (CCP discharge to cold legs on SI) fails to open, one SI pump fails, a primary PORV fails to open, a primary safety valve fails to open, failure of the AMSAC, one MSIV fails to close on demand, failure of the motor-driven fire pump, and operator fails to isolate faulted steam generator (in a SGTR). All overestimates are by one color, except one MSIV failing to close which is overestimated by two colors.

Chapter 2 presents a summary of the results obtained during benchmarking, and Chapter 3 discusses the proposed revisions to the Rev. 0 SDP notebook. Finally, Attachment 1 shows a list of the participants in the benchmarking activities.

2. Summary Results From Benchmarking

This Section provides the results of the benchmarking exercise. The results of benchmarking analyses are summarized in Table 1 which consists of eight column headings. In the first two columns, the out-of-service components, including human errors, are identified for the case analyses. The colors assigned for significance characterization from using the Rev. 0 SDP notebook before incorporation of the licensee's comments are shown in the third column. The licensee's basic event for which the RAW was found, representing the hypothetical finding, is presented in the fourth column. The fifth and sixth columns show the RAW values and the associated colors based on the licensee's latest PRA model, respectively. The colors assigned for significance characterization from using the SDP notebook after incorporation of the licensee's comments are shown in the seventh column. Finally, the eighth column presents the rule used to evaluate the hypothetical finding related to components of support systems, or other relevant comments.

As mentioned in the previous chapter, thirty-four cases of hypothetical findings were evaluated. As a result of the benchmarking exercise, the revised notebook yielded twenty-five matches, one underestimate, and eight overestimates. The underestimate by one color (one order of magnitude) is failure of one EDG. Using the licensee's PSA model, a red is obtained, while the SDP notebook yields a yellow. The cause of this underestimate is that, after the failure of one EDG, the LOOP worksheet assigns a credit of 2 [1/1 Emergency Diesel Generator (1 train)]. On the other hand, in the licensee's model, the unavailability of a single EDG is higher. The licensee's rough estimate of this unavailability was 0.08, which is close to the SDP notebook's equivalent of a credit of 1. The cause of this underestimate is similar to the cause of the underestimate obtained for the failure of an EDG during the benchmarking exercise at the Palisades nuclear plant. A generic assessment of this issue may be required.

The eight overestimates are: MOV HV8801A (CCP discharge to cold legs on SI) fails to open, one SI pump fails, a primary PORV fails to open, a primary safety valve fails to open, failure of the AMSAC, one MSIV fails to close on demand, failure of the motor-driven fire pump, and operator fails to isolate faulted steam generator (in a SGTR). All overestimates are by one color, except one MSIV failing to close which is overestimated by two colors.

The potential reasons behind these overestimates were not further investigated per the benchmarking process for overestimates by one color. The cause of the overestimates for a primary safety valve failing to open and for failure of the AMSAC appear to be that the licensee's ATWS frequency (with loss of main feedwater) is of the order of 10^{-7}, while the SDP notebook uses a generic frequency of 10^{-6}.

The cause of the overestimate by two colors of one MSIV failing to close is that the SDP notebook considers that pressurized thermal shock (PTS) occurs if more than one MSIV fails to close after an MSLB, while the licensee's PSA model does not include PTS due to MSIV failures.

A comparative summary of the benchmarking results is provided in Table 2. Table 2 shows the number of cases where the SDP was more or less conservative, or the SDP matched the outcome from the licensee's PRA model. The associated percentage of differences found for the 34 cases that were evaluated also are shown in Table 2. The revised SDP notebook obtained 73.5% of the

actual significance of inspection findings (same color), 23.5% of overestimates, and 2.9% of underestimates.

Table 1 Comparison of Sensitivity Calculations
Between SDP Phase 2 Worksheets and Wolf Creek RAWs

Internal Events CDF is 5.48E-5/yr
RAW Thresholds are White = 1.02, Yellow = 1.18, and Red = 2.83

No.	Component Out of Service or Failed Operator Action	SDP Worksheet Results (Before)	Basic Event Name	Internal RAW	Site Color	SDP Worksheet Results (After)	Comments
	Component						
1	One cold leg accumulator fails to inject	Green	CVEP-----8956A-CC	1.0 [1]	Green	Green	
2	Emergency DG NE01 fails to start (FTS)	Yellow	DGNE----NE01–PS	7.78	Red	Yellow	
3	4.1 kV bus NB01 bus failure (safeguards)	Red	BUNB-------NB01-FA	735.92	Red	Red	Evaluated using rule 2.2 of the usage rules.
4	MDAFW pump PAL01B FTS	Yellow	MPAL—PAL01B-PS	2.61	Yellow	Yellow	
5	Both MDAFW pumps FTS	Red	MPALP0AB-12-DSA	43.34	Red	Red	
6	TD AFW pump PAL02 FTS	Yellow	TPAL—PAL02-PS	1.34	Yellow	Yellow	
7	Valve HV312 fails to open (FTO) on demand (TDAFW trip or throttle valve)	Yellow	MVFC—HV0312-CC	2.52	Yellow	Yellow	Included here just for comparison to TDAFW pump worth.

No.	Component Out of Service or Failed Operator Action	SDP Worksheet Results (Before)	Basic Event Name	Internal RAW	Site Color	SDP Worksheet Results (After)	Comments
8	ESW pump A FTS	Red	MPEF----PEF01A-PS	8.04	Red	Red	Evaluated using rule 2.2 of the usage rules.
9	CCW pump PEG01C fails to run (FTR)	White	MPEG–PEG01C-PR	1.3	Yellow	Yellow	Evaluated using rule 1.5 of the usage rules.
10	Centrifugal charging pump PBG05A FTR	White	MPBG–PBG05A-CPR	1.16	White	White	
11	MOV HV8801A FTO (CCP discharge to cold legs on SI)	White	MVEM–HV8801A–CC	1.0 (1)	Green	White	This is 1 of 2 valves in parallel. Injection paths are reduced to one train. Evaluated using loss of redundancy rule (2.3 of the usage rules).
12	SI pump PEM01A FTS	Green	MPEM—PEM01A-PS	1.0 (1)	Green	White	
13	RHR pump PEJ01A FTS	Red	MPEJ-----PEJ01A-BPS	3.99	Red	Red	
14	Containment recirculation sump valve HV8811A FTO	Yellow	MVEJ-HV8811A-BCC	2.68	Yellow	Yellow	
15	Failure of RWST level lo 2/4 instruments	Red	CABN–RWSTLLO-SA	32.8	Red	Red	It assumes that one train of HPR and of LPR are lost, and that LPR is lost in a LLOCA.

No.	Component Out of Service or Failed Operator Action	SDP Worksheet Results (Before)	Basic Event Name	Internal RAW	Site Color	SDP Worksheet Results (After)	Comments
16	ECCS piggy back valve HV8804B FTO	Yellow	MVEJ-HV8804B-BCC	2.38	Yellow	Yellow	
17	One primary PORV 455A FTO	Red	SVBB-PCV0455A-CC	1.58	Yellow	Red	Solenoid valve failure.
18	Common cause both primary PORVs FTO	Red	SVBB-4556–12-O1	8.70	Red	Red	
19	Primary PORV block valve BBHV8000A fails to close (FTC) on demand (hardware)	White	MVBB-HV8000A-OO	1.04	White	White	Failure probability of 2.9E-3.
20	Primary Safety Valve 8010A FTO	Green	PVBB-----8010A-CC	1.0 (1)	Green	White	Failure probability 1E-5.
21	AMSAC circuit failure	Green	AMS-FAILS	1.00	Green	White	
22	125 VDC bus NK01 failure	Red	BUNK----NK01-FA	379.03	Red	Red	
23	125 VDC battery NK11 failure	Red	BTNK-----NK11-FA	3.41	Red	Red	
24	One MSIV FTC on demand (HV0011, 0014, 0017, or 0020)	Yellow	MVBB----HV0014-BOO	1.0	Green	Yellow	

No.	Component Out of Service or Failed Operator Action	SDP Worksheet Results (Before)	Basic Event Name	Internal RAW	Site Color	SDP Worksheet Results (After)	Comments
25	Motor-driven feedwater pump PAE02 fails to run	White	MPAE—PAEO2-GPR	1.03	White	White	The associated human error probability (HEP) is 2.1E-2.
26	Air compressor ‘C’ FTS on demand	White	CPKA—KA01C-PS	1.02	White	White	
27	Motor-driven fire pump unavailable due to test or maintenance	Green	XXFP--MOTORFP-TM	1.01	Green	White	
28	Diesel-driven fire pump 1FP01PB fails to start on demand	Green	DPFP--1FP01PB-PS	1.07	White	White	
	<u>Operator Actions</u>						
29	Fail to emergency borate	White	OPA-LTS-EXE	1.04	White	White	HEP = 1.7E-3.
30	Fail to trip RCP on loss of thermal barrier cooling	Yellow	OPA-RCPTRIP-EXE	1.93	Yellow	Yellow	HEP = 2E-3.
31	Fail to HPR	Red	OPA-HPR-EXE	6.36	Red	Red	HEP = 1.2E-3.
32	Fail to refill RWST	White	OPA-REF-EXE	1.13	White	White	HEP = 9.4E-5.
33	Fail to isolate faulted steam generator	Yellow	OPA-MSI-EXE	1.24	Yellow	Red	HEP = 6.8E-4.

No.	Component Out of Service or Failed Operator Action	SDP Worksheet Results (Before)	Basic Event Name	Internal RAW	Site Color	SDP Worksheet Results (After)	Comments
34	Fail to pressure equalization in SGTR event	Red	OPA-OD1-EXE	3.85	Red	Red	HEP = 4.8E-3.

Note:

1. The RAW for this component was not found in the list of RAWs. We assumed it has a RAW of 1.0 (green).

8

Table 2: Comparative Summary of the Benchmarking Results

Total Number of Cases Compared	SDP Notebook Before (Rev. 0)		SDP Notebook After (Rev. 1)	
	Number of Cases	Percentage	Number of Cases	Percentage
SDP: Less Conservative	3	8.8	1	2.9
SDP: More Conservative	3	8.8	8	23.5
SDP: Matched	28	82.4	25	73.5
Total	34	100	34	100

3. Proposed Revisions to Rev. 0 SDP Notebook

Based on insights gained from the plant site visit, a set of revisions are proposed for the Rev. 0 SDP notebook. The proposed revisions are based on licensee's comments on the Rev. 0 SDP notebook, better understanding of the current plant design features, consideration of additional recovery actions, use of revised Human Error Probabilities (HEPs) and initiator frequencies, and the results of benchmarking.

3.1 Specific Changes to the Rev. 0 SDP Notebook for the Wolf Creek Generating Station

The licensee provided several comments on the Rev. 0 SDP Notebook. In addition, several major revisions that directly impacted the color assignments by the SDP evaluation were discussed with the licensee and their resolutions were identified in the meeting. Several significant changes that had an impact on the evaluation of the notebook were incorporated during the visit, including revised HEPs and initiator frequencies. The proposed revisions are discussed below:

1. Table 1. A footnote indicates that loss of HVAC is included in the frequency of Loss of Vital DC Bus (LBDC).

2. The worksheet and event tree for "Loss of All Service Water (LSW)" were substituted by the corresponding ones for "Loss of (Normal) Service Water System (LSWS)." The loss of the (normal) service water system causes loss of cooling to the turbine generator auxiliary systems and a turbine trip, which causes a reactor trip. The operators then have to manually start the ESW. This is done to be consistent with SDP usage rules. The LSWS is assigned to row II of Table 1 such that the results are consistent with the licensee's combined initiator. "Loss of All Service Water (LSW)" was removed from Table 1. The column "Initiating Event Scenarios" of Table 2 for the Essential Service Water System (ESW) was changed from LSW to All. A separate row was created in Table 2 for the (Normal) Service Water System, and LSWS was assigned to its column "Initiating Event Scenarios."

3. Table 2. The dependencies of the TDAFW pump on AC and HVAC were removed.

4. Table 2. The dependency of injection systems, such as the Safety Injection System, on the RWST was added.

5. Table 2. A row for RWST was added.

6. Table 2. The two 67% turbine-driven feedwater pumps were removed from Table 2 and the worksheets in which they were used. The licensee does not give credit to them in its PRA model.

7. Table 2. The Class 1E Electrical Equipment HVAC was added as a support to the following systems: Emergency Diesel Generators, 120 VAC System, and 125 VDC Power system.

8. Table 2. 480 VAC was added as a support to the 125 VDC Power system.

9. Table 2. The column "Initiating Event Scenarios" for the Instrument Air (IA) was changed to TPCS. A worksheet for loss of IA was not deemed necessary because the worksheet for TPCS can be used to assess findings in the IA.

10. Table 2. For the Main Steam System, separate rows for support systems and for "Initiating Event Scenarios" were created and updated for the following components: Main steam isolation valves (MSIVs), atmospheric relief valves (ARVs), safety valves, and steam dump valves.

11. Table 2. The AFW pumps take suction from the condensate storage tank (CST) with backup suction supply from the ESW. According to the FSAR, the CST can last more than 24 hours after an initiating event. A footnote was added with this information.

12. Table 2. The Class 1E 125 VDC Power system has four buses. Loss of either vital 125 VDC bus NK02 or bus NK03 does not cause a reactor trip, and hence, they are not initiating events. Loss of either vital 125 VDC bus NK01 or bus NK04 progresses as a transient without main feedwater where one train of frontline and support safety systems will be rendered unavailable. Separate rows were created for buses NK01 and NK04, and for buses NK02 and NK03.

13. Table 2. The batteries last 8 hours without a source of power, with no load shed. The TDAFW pump is lost when the batteries are exhausted. The inspection findings related to the batteries associated with buses NK01 and NK04 should be evaluated by assuming the loss of the associated DC bus when offsite power is not available in the LOOP and LEAC worksheets, and increasing the frequency of the LBDC initiator by one order of magnitude. A footnote was added with this information.

14. Table 2. On loss of a battery, the associated battery charger can carry the starting of the SI loads. There is one battery charger per DC bus, plus 1 swing charger that can be aligned to either bus. A footnote was added with this information.

15. Table 2. There is one EDG fuel oil transfer pump per EDG. Gravity feed is not possible. The capacity of the day tank is 550 gallons; it is expected to last for about one hour. A footnote was added with this information.

16. Table 2. Regarding Instrument Air, there are three 100% non-safety related air compressing trains, each with a compressor unit. The licensee does not give credit to compressors A and B. A footnote was added with this information.

17. Table 2. IA is shed on a SI or LOSP signal, and it is not sequenced automatically. A human action is required to re-align the compressor. This action is credited by the licensee when AC power is available. A footnote was added with this information.

18. Table 2. The MSIVs are normally de-energized. 125 VDC is required to actuate them. On loss of 125 VDC, they fail in the position they were in at the time of the loss. A footnote was added with this information.

19. Table 2. A footnote was added to indicate that on loss of 125 VDC, the pressurizer PORVs fail in the position they were in at the time of the loss.

20. Table 2. The block valves are normally open. They receive an automatic signal to close when RCS pressure reaches 2185 psig. A footnote was added with this information.

21. Table 2. The column "Initiating Event Scenarios" of Table 2 was updated according to the modifications in the worksheets.

22. In all worksheets having the function "Early Inventory, HP Injection (EIHP)" with a credit equal to "1/2 CCP trains (1 multi-train system) or 1/2 SIP trains (1 multi-train system)," the credit was changed to "1/2 CCP trains or 1/2 SIP trains (1 multi-train system)." This change was implemented for consistency with other Westinghouse plants in treating dependencies on common support systems.

23. The switchover to low pressure recirculation is automatic. For those worksheets that credit low pressure recirculation, the operator action was removed and a footnote added.

24. SORV worksheet. The block valves of the pressurizer PORVs are normally open. They receive an automatic signal to close when pressure reaches 2185 psig. The mitigation capability of the function "Isolation of Small LOCA (BLK)" was enhanced with this information, and a footnote was added.

25. An event tree for "Stuck-open PORV (SORV)" was added, and the sequence numbers of the associated worksheet were updated.

26. LOOP worksheet. In an SBO with failure of the TDAFW, the RCS pressure is expected to be above the shutoff head of the SI pumps. Under this condition, only the CCPs are available to inject to the vessel. The licensee indicated that the success criteria for these pumps is 1/2, and not 2/2.

27. SGTR worksheet. The equipment used and detailed success criteria were added for isolating the affected SG (ISOL), pressure equalization (EQ), and cooldown and depressurization of the RCS (DEPR).

28. SGTR worksheet. A footnote was added to indicate that no credit is given to the affected SG and its associated equipment.

29. ATWS worksheet. The equipment used and success criteria for the steam relief path was revised to 4/5 safety valves per SG. The licensee also credits the steam dump to condenser, but since the SDP worksheet models ATWS with loss of main feedwater, the steam dump was not credited in this worksheet.

30. MSLB worksheet. The generic event tree and worksheet were implemented.

31. Loss of (Normal) Service Water System (LSWS) and Loss of Component Cooling Water (LCCW) worksheets. The equipment used and detailed success criteria were added for "Operator Establishes Alternate Cooling (ALCO)" and "Operator Fills RWST (RWST)."

32. Loss of (Normal) Service Water System (LSWS) and Loss of Component Cooling Water (LCCW) worksheets. On failure of the TDAFW, the RCS pressure is expected to be above the shutoff head of the SI pumps. Under this condition, only the CCPs are available to inject to the vessel. The licensee indicated that the success criteria for these pumps is 1/2, and not 2/2.

33. A worksheet for "Loss of Instrument Air (LIA)" was included to be consistent with developing guidelines for SDP notebooks. There are three 100% non-safety related air compressing trains, each with a compressor unit. The licensee only credits one of them (C). Hence, we assigned a generic frequency of 2 to Loss of Instrument Air. Consistent with the licensee's assumption, loss of compressor C would result in loss of IA.

34. Loss of Vital DC Bus (LBDC) worksheet. The Class 1E 125 VDC Power system has four buses. Loss of either vital 125 VDC bus NK02 or bus NK03 does not cause a reactor trip, and hence, these losses are not analyzed by the licensee. Loss of either vital 125 VDC bus NK01 or bus NK04 progresses as a transient without main feedwater where one train of frontline and support safety systems will be rendered unavailable. The TDAFW pump is not affected by the loss of either vital 125 VDC bus NK01 or bus NK04. Loss of either of these buses is analyzed in this worksheet. This information was included in a footnote.

35. Loss of Vital DC Bus (LBDC) worksheet. The licensee credits both CCPs. An operator action is needed to align the CCP that was originally aligned to the DC bus that was lost to a DC bus that is available. This information was included in a footnote.

36. LEAC worksheet. The steam dump to condenser was removed from the function "Rapid Cooldown and Depressurization" because the PCS is lost after a LOOP.

3.2 Generic Change in IMC 0609 for Guidance to NRC Inspectors

No specific recommendation for changes to IMC 0609 was identified as a result of this benchmarking exercise.

3.3 Generic Changes to the SDP Notebook

The following generic changes are proposed:

1. The SDP notebooks for the Wolf Creek Generating Station and the Palisades nuclear plant underestimate the failure of one EDG. An SDP notebook may be giving too much credit to a single EDG (1 train = 2). A credit of 1 for an EDG appears to be a good choice because (1) it is closer to the credit given by licensees' PSA models, (2) it is the same credit given to a diesel-driven pump, and (3) it may be somewhat conservative, that is in accordance with the overall approach of the SDP notebooks.

   A sensitivity study for Wolf Creek assigning a credit of 2 (1 train) to both EDGs, and a credit of 1 to a single EDG, was conducted to test this approach. As a result of this sensitivity study, the underestimate for a single EDG was now turned into a match, and two hypothetical findings' colors were overestimated by one color: the turbine-driven (TD) AFW pump, and the valve HV312 FTO on demand (TDAFW pump trip or throttle valve). These two findings are in essence the same finding because they both cause the loss of the TDAFW pump. The overestimate for this loss is not caused by assigning a credit of 2 (1 train) to both EDGs, but by other unrelated factors, such as the licensee's ATWS frequency (with loss of main feedwater) which is of the order of 10^{-7}, while the SDP notebook uses a generic frequency of 10^{-6}. This sensitivity study shows that for Wolf Creek assigning a credit of 2 (1 train) to both EDGs, and a credit of 1 to a single EDG, solves the underestimate for a single EDG, and does not introduce overestimates. We recommend that this approach be further studied for its possible implementation in future revisions of the SDP notebooks.

2. According to usage rule 1.7, inspection findings that involve the unavailability of a battery charger for a safety-related DC bus should be treated in the same fashion as a finding that increases the likelihood of the loss of DC bus special initiator. However, we note that the loss of some DC buses do not cause a reactor trip, so they are not initiating events. For these buses, and their associated batteries and battery chargers, an increase of the initiating event of a loss of a DC bus is not applicable. This note could be added to the usage rules, so the user of these rules is aware of the difference in evaluating components related to a DC bus associated with an initiating event versus components related to a DC bus which is not associated with an initiating event.

Attachment 1. List of Participants

Mike Franovich	NRC/NRR
David Loveless	NRC/Region IV
Todd Anselmi	Wolf Creek Nuclear Operating Corporation
Vernon D. Luckert	Wolf Creek Nuclear Operating Corporation
Robert Buell	Idaho National Engineering & Environmental Laboratory
Gerardo Martinez-Guridi	Brookhaven National Laboratory