From: <steven.e.farkas@us.westinghouse.com>
To: <Wsr@nrc.gov>
Date: Wednesday, June 18, 2003 2:24:48 PM
Subject: feedback on "Operating Experience Assessment -- Effects of Grid ..."

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cc:
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Security Level:? Internal
Mr. Raughley:

I've spent a few hours writing out the following based on about two days worth of reading and marking up my copy. What you see below is not nearly all that I have. I'd like to mail you my marked up copy of the report.

Steven Farkas

Significant technical comments:

Page 2
now: The NPP offsite power system is the "preferred source" of ac electric power, often referred to as the grid.
suggest: The word "preferred" is not accurate. Some plants are set up to draw their own power when available, e.g., Waterford 3 SUTs vs. UATs and fast-transfer back to SUTs upon trip.

Page 3
now: The capacity and capability of the offsite power system are ensured through analyses (discussed in Section 2.4)
suggest: The capacity and capability of the offsite power system are ensured through analyses (discussed in Section 2.2).

Page 3
now: ... electrical power to the essential and nonessential electric switchgear buses in an NPP ...
suggest: ... electric power to the essential and nonessential switchgear in a NPP ... [switchgear is the equipment connected to the bus bars]

Page 9
now: ... The grid design and operating configurations were established before the electric power industry was deregulated to ensure the correct voltages on the grid and at NPPs.
suggest: ... The assumptions about both grid design and operating configurations that ensure correct voltages on both the grid and at NPPs typically date from before the electric power industry was deregulated.

Page 10
now: ... A follow up meeting was held on October 27, 2000 (Ref. 15) to discuss ...
suggest: [The sentence talks about meetings but does not refer to any conclusions or actions as a result of them.]

Page 13
now: definitions for L, PL and I refer to "in the grid" where as event T refers to "in the transmission system"
suggest: [using the term "the grid" consistently]

Page 14-15:
now: The "delta CDF" was obtained by subtracting the risk "BEFORE" deregulation from the risks after deregulation. A negative delta CDF indicates the risks have decreased since deregulation. A positive delta CDFs may offset the risk reduction obtained from SBO rule implementation. Specifically a delta CDF of more than 0.6E-05/RY (the difference between the risk reduction outcome and expectation from SBO rule implementation) and a delta CDF of more than 3.2E-05/RY (the outcome from SBO rule implementation) partially and completely offsets the risk reduction from SBO rule implementation, respectively.
suggest: [I've done PRAs for a while now and I'm not even sure I know what the above paragraph means. Here's my try.] The "delta-CDF" comes from subtracting the risk "BEFORE" deregulation from the risks "AFTER" deregulation. A negative delta-CDF means risks have gone down since deregulation. SBO rule implementation itself has caused delta-CDF to be negative. A positive delta-CDF offsets both the benefits expected from SBO rule implementation (0.6E-05/RY), and the actual risk reduction achieved with SBO rule implementation (3.2E-05/RY).

Page 16
now: ... as a spike in the risk as "EDG/Avg" that is just above the risk before deregulation [no period]
suggest: ... as a spike in the risk as "DG/Avg" that is just above the risk before deregulation. [DG/Avg is the label used on Figure 1]

Page 18
now: ... group, which was dominated by grid and plant electrical weaknesses (see Section 3.3.2).
suggest: ... group, which was dominated by grid and plant electrical equipment weaknesses (see Section 3.3.1)

Page 18
now: ... shows changes in the percent of LOOPs more than four hours and median recovery times
suggest: ... shows changes in the percent of LOOPs lasting more than four hours and median recovery times.

Page 21
now: (3) Eight of the 10 R events took place in June, July, and August. Seven of the 10 events were in the Northeast

suggest: [the sentence does not consider the relative density of NPPs in the Northeast. We need a good number for "grid reliability" that, for the most part is not dependent on the presence of a nuclear plant. For example, a power interruption to a large fossil plant looks just like a LOOP at a nuclear plant in the process of estimating grid reliability. We can assume that a grid disturbance that trips off any large electric generator should be counted when trying to predict the frequency of LOOPs in a deregulated market.]

Page 34
now: 10. U.S. Nuclear Regulatory Commission, The Effects of Deregulation ...
suggest: 10. U.S. Nuclear Regulatory Commission, SECY 99-129, "The Effects of Deregulation ...

Appendix A
Item 38
now: type R
suggest: type S [work was in the switchyard providing power to RCPs]

Item 60
now: type R
suggest: type S [generator at issue is the one for the plant]

Item 76
now: type T
suggest: type S [transformer protective circuit wiring is at the plant, not remote]

Item 79 and 80
now: Item 79 refers to 525kV for 2.5 minutes as an administrative limit. Item 80 refers to a 524kV for 10 seconds administrative limit.
suggest: revisit why these two administrative limits are different for the same plant, PVNGS-1 -- 25Feb1999 vs. 29Jul1999

Item 83
now: no type given
suggest: type I [eye]

Table A1 and Table C1
now: no apparent relationship between the events cited in Appendix A (and summarized on Table A1) with the counts shown on Table C1
suggest: [using the knowledge from Appendix A to calculate initiating event frequencies in Appendix C]

Significant cost suggestions:

Page ix
now: ... should include: (a) assessment of offsite power system reliability ...
suggest: [this is a notoriously complex calculation that requires real time

data from the grid operator]

Missing abbreviations:

AC -- inconsistently typed "ac" and "AC" as in "AC power"
AFW -- auxiliary feedwater; see pages A-5
PORV -- power operated relief valve; see page A-5
RAT -- reserve auxiliary transformer; see page A-19
UAT -- unit auxiliary transformer; see page A-4

Typo or unclear writing

Page viii
now: .. an emergency diesel generator (EDG) out of service can be larger than previously realized.
suggest: almost any risk can be smaller or larger than previously realized -- this sentence is unnecessarily alarming. Rewrite or delete.

Page ix, 20, 32
now: ... station blackout (SBO) (alternate ac) power supply responsibilities, and NPP and grid
suggest: [drop the words "and NPP and grid" as it makes no sense or something has been left out.]

Page x
now: ... voltage and load management programs and investigation found insufficient ...
suggest: ... voltage and load management programs. And, investigation found insufficient ...

Page x, 9 (twice), 20, 21, 23, 32
now: ... identified in SECY 99-129 ...
suggest: ... SECY 99-129 (Ref. 10) ...

Page x, 32
now: ... In some events, plant equipment which control safety bus ...
suggest: ... In some events, plant equipment that controls safety bus ...

Page 1
now: ... and after deregulation (1997-2001)..
suggest: remove the second period

Page 1
now: ... is intended to identify changes to grid performance relative to NPPs which could impact safety. ...
suggest: ... is intended to identify changes to grid performance relative

to NPPs that could impact safety. ...

Page 1, 8, 14, 16, 21, 25, 28, 30
now: i.e or i.e. or i.e,
suggest: appropriate writing is "i.e.," [that is]

Page 4 (twice), 7 (twice), 8 (twice)
now: e.g or e.g. or e.g,
suggest: appropriate writing is "e.g.," [for example,]

Page 2
now: ... risks relative to the grid as discussed below..
suggest: [remove the second period]

Page 3
now: ... Spinning reserves, and voltage and load management programs are important ...
suggest: ... Spinning reserves, as well as voltage and load management programs are important ...

Page 4
now: NUREG-1032 data shows that prior to SBO implementation, of the ...
suggest: NUREG-1032 data shows that prior to SBO rule implementation, of the ...

Page 7
now: and the "minimum expected" and "maximum expected ...
suggest: [fix the unbalanced quote marks]

Page 8
now: ... began deregulating after the April, 1996 issuance of FERC Order ...
suggest: ... began deregulating after the April 1996 issuance of FERC Order ... [inappropriate comma]

Page 10
now: ... Industry Deregulation, " February 27, 1998" (Ref. 11) to alert ...
suggest: [fix the unbalanced quote marks]

Page 17
now: (3) As shown in Figure 1 and Table 2, the worse case ...
suggest: (3) As shown in Figure 1 and Table 2, the worst case ...

Page 28
now: It could be argued that there EDG could have been restarted immediately if required.
suggest: It could be argued that the EDG could have been restarted immediately, if required. ["the" not "there"]