

Entergy Operations, Inc. 1448 S.R. 333 Russellville, AR 72802 Tel 501 858 5000

2CAN070403

July 15, 2004

U.S. Nuclear Regulatory Commission Attn: Document Control Desk Washington, DC 20555-0001

Subject: Clarification of a Request for Additional Information Response for Environmental Report TAC No. MB8405 Arkansas Nuclear One – Unit 2 Docket No. 50-368 License No. NPF-6

Dear Sir or Madam:

By letter dated April 23, 2004 (2CAN040402), Entergy provided responses to NRC requests for additional information (RAIs) on the Arkansas Nuclear One, Unit 2 (ANO-2) License Renewal Application Environmental Report. The responses to the RAIs were related to the severe accident mitigation alternatives (SAMAs). In a teleconference on June 15, 2004, the Staff requested a clarification to RAI 7. The clarification to RAI 7 is contained in the attachment.

There are no new commitments contained in this submittal. Should you have any questions concerning this submittal, please contact Ms. Natalie Mosher at (479) 858-4635.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 15, 2004.

Throthy G. Mitchell Director, Nuclear Safety Assurance

TGM/nbm

Attachment



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cc: Dr. Bruce S. Mallett Regional Administrator U. S. Nuclear Regulatory Commission Region IV 611 Ryan Plaza Drive, Suite 400 Arlington, TX 76011-8064

> NRC Senior Resident Inspector Arkansas Nuclear One P.O. Box 310 London, AR 72847

U. S. Nuclear Regulatory Commission Attn: Mr. Drew Holland Mail Stop 0-7 D1 Washington, DC 20555-0001

U. S. Nuclear Regulatory Commission Attn: Mr. Tom Kenyon Mail Stop 0-11 F1 Washington, DC 20555-0001

Mr. Bernard R. Bevill Director, Division of Radiation Control and Emergency Management Arkansas Department of Health 4815 West Markham Street, Slot 30 Little Rock, AR 72205-3867 Attachment to

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RAI 7 Clarification

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<u>RAI 7 Clarification</u>: The NRC requested Entergy to further address contributions to core damage frequency (CDF) from fire events for selected SAMAs.

The Staff indicated that because the reported CDF for fires is much larger than the internal events CDF, estimated benefits (which are based on internal events) should be increased by a factor of five for some SAMAs. When this adjustment is performed, a number of SAMAs appear cost beneficial and several additional SAMAs are within a factor of two of being cost beneficial. With the higher benefit estimates, SAMAs may appear cost beneficial because of the way benefits and costs were calculated. Also, certain SAMAs may not reduce risk in fire events (in which case a multiplier of five would not be appropriate).

<u>Response</u>: Entergy is providing refined cost/benefit estimates for selected SAMAs. The following table provides results of the refined cost/benefit estimates.

SAMA	Benefit x1 (\$)	Cost Estimate (\$)	Benefit Refinements	Cost Estimate Refinements
AC/DC-10	14,254	155,456	Evaluated benefit of eliminating failure to align the 125VDC buses to alternate power sources	Adjusted 1998 Calvert Cliffs estimate to account for inflation
AC/DC-16	15,252	35,000	Evaluated benefit of reducing probability of failure to recover from loss of offsite power	None
AC/DC-24	9,742	131,094	Evaluated benefit of eliminating failure to align 2D01 to an alternate power source	Used 1998 Calvert Cliffs estimate adjusted to account for inflation
AT-02	39,778	412,225	Evaluated benefit of eliminating failure of borated water injection following an anticipated transient without scram	Adjusted 1993 NUREG-1462 estimate to account for inflation and backfit costs
CB-10	428	35,000	Evaluated benefit of eliminating failure to properly handle a ruptured steam generator	None

SAMAs for which NRC Requested Refined Benefit/Cost Estimates

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SAMA	Benefit x1 (\$)	Cost Estimate (\$)	Benefit Refinements	Cost Estimate Refinements
CB-26	13,357	70,000	Evaluated benefit of eliminating inter-system loss-of-coolant accident (ISLOCA) contribution from failure of the low pressure safety injection lines and halving ISLOCA contribution from reactor coolant pump seal cooler tube rupture	None
CC-07	12,389	1,308,651	Evaluated benefit using analysis case steam generator tube rupture (SGTR)	Adjusted 1993 NUREG-1462 estimate to account for inflation
CC-19	14,608	1,000,000	None	Performed cost estimate
CC-20	52,044	424,783	Evaluated benefit of removing common cause failure of sump suction valve operators and reduced excess conservatism in failure to recover sump suction valves	Performed cost estimate
CC-21	10,918	424,783	None	Performed cost estimate
CW-01	55,837	826,670	None	Performed cost estimate
CW-06	9,174	35,000	Evaluated benefit of reducing failure to trip reactor coolant pumps upon loss of component cooling water (CCW)	None
CW-09	100,967	1,158,000	None	Performed cost estimate
CW-21	2,144	35,000	Evaluated benefit of reducing individual support system human failure events	None
CW-23	3,037	35,000	Evaluated benefit of eliminating failure to recover failed service water equipment	None
CW-24	9,174	100,000	Evaluated benefit of reducing failure to trip reactor coolant pumps upon loss of CCW	Performed cost estimate

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SAMA	Benefit x1 (\$)	Cost Estimate (\$)	Benefit Refinements	Cost Estimate Refinements
CW-27	44,981	247,000	Evaluated benefit of reducing common cause failure of service water pump discharge strainers	Performed cost estimate
EV-02	89,000	934,566	None	Performed cost estimate
EV-22	14,399	565,000	Evaluated benefit of eliminating failure to provide water to containment spray	None
EV-30	18,901	424,783	None	Performed cost estimate
FW-13	5,228	314,393	Evaluated benefit of eliminating failure to align to the alternate condensate storage tank	Adjusted 1998 Calvert Cliffs estimate to account for inflation
HV-03	87,101	1,200,000	None	Performed cost estimate
HV-05	51,896	628,000	None	Performed cost estimate
OT-06	3,046	1,100,000	Evaluated benefit of eliminating main steam line breaks (MSLBs)	None

The following four SAMAs from the above table are within a factor of two of being cost beneficial when the Staff-recommended factor of five is used to account for external events (factor of two if SAMA affects SGTR, ISLOCA, or MSLB).

- <u>AC/DC-16</u>, <u>Emphasize steps in plant recovery following a station blackout event</u>: More in-depth review of the proposed SAMA reveals that steps in plant recovery are emphasized within the current operations training cycle. Standard post-trip actions direct operators to assess plant conditions and enter the station blackout emergency operating procedure (EOP) if at least one 4160V vital bus is not energized. The station blackout EOP delineates steps in plant recovery following a station blackout event. As part of the standard post-trip actions, the instructions are repeatedly addressed during classroom training and simulator exercises in accordance with 10CFR Part 55. Since this SAMA does not relate to adequately managing the effects of aging during the period of extended operation, and is adequately addressed within the current operations training cycle, no further action is necessary as part of license renewal pursuant to 10CFR Part 54.
- 2. <u>CC-20</u>, Replace either containment sump valve 2CV-5649-1 or 2CV-5650-2 with an <u>air-operated valve</u>: This modification is only slightly within a factor of two of being cost beneficial when the Staff-recommended factor of five is used to account for external events. Although the refined benefit estimates remove bounding modeling assumptions and the refined cost estimates are less conservative than the original cost estimates, other conservatisms listed in response to RAI 8b in correspondence dated April 23, 2004 (2CAN040402), still exist. Thus, the analysis adequately accounts for external events and uncertainty and the SAMA is not cost-beneficial.

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- 3. <u>CW-06</u>, <u>Proceduralize shedding CCW loads to extend CCW heat-up time</u>: While adding steps to accomplish during an accident scenario may address one particular human failure probability, the additional required actions may adversely impact the probability of successful completion of other steps critical to event mitigation. The benefit of this SAMA is small enough that its implementation is not warranted in light of the potential detrimental impact to operator performance of other event mitigation actions. Since this SAMA does not relate to adequately managing the effects of aging during the period of extended operation, no further action is necessary as part of license renewal pursuant to 10CFR Part 54.</u>
- 4. <u>CW-27, Replace current service water pump discharge strainers with backwash filters to reduce probability of common cause failure</u>: Although this SAMA does not relate to adequately managing the effects of aging during the period of extended operation, it is currently undergoing evaluation as a potential future modification for reasons unrelated to license renewal.