

INDEX OF COLLECTED DATA FOR DPV ON D.C. COOK, UNIT 2

ITEM 1 - ACTION REQUEST STATUS REPORT (5 PAGES) FOR AR A0156971

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ITEM 3 - SUMMARY OF POUR CARD DATA SHOWING STRENGTH AT 4807 VS. 4867 psi

ITEM 4 - WESTINGHOUSE LETTER DATED APRIL 27, 2000, REQUIRED 40% MARGIN

ITEM 5 - WESTINGHOUSE LETTER DATED JUNE 1, 2000, REMOVES 40% MARGIN

B/2

REPORT REQUESTOR: BARTLETT, B.L.

*** ACTION REQUEST ***

Page: 1

A/R Type : CM	A/R Number : A0156971
Pri/Ctd : 35	A/R Status : COMPLT
Request Org : ENPT	Status Date: 20APR00
Request Date: 11FEB98	Last Update: 26APR00
Requested By: PHELAN, S.M.	Print Date : 02MAY00
Pend Reason :	

A. Equipment Code Related Information.

Comp Nbr:	Unit: 2	System:	Type:
FEG : 295.01	Desc: UNIT 2 CONTAINMENT		
Disp FEG: 295.01			
Unit Loc:	Bldg:	Elevation:	Room No.:
A/R Tag?: N	Tag Loc: N/A		Safety Rel:
			Maint. Cat.: P

A/R Desc: INVESTIGATE DEGRADED CONCRETE IN 2-HV-CEQ-2 FAN ROOM.

B. Detail Description and Location of Problem.

DURING MATERIAL CONDITION WALKDOWN, SEVERELY DEGRADED	SMP	11FEB98
CONCRETE COATING AND GROUT WITH LOOSE PIECES WERE FOUND	SMP	11FEB98
AT THE TOP CORNER OF THE WEST WALL DIRECTLY OVER THE FAN	SMP	11FEB98
HOUSING. (CONTINUED)	SMP	11FEB98
THIS CONDITION DOES NOT IMPACT 2-HV-CEQ-2 OPERABILITY.	SMP	11FEB98
THE COMPONENT NUMBER WAS USED ONLY TO DESIGNATE LOCATION.	SMP	11FEB98
G. 295.01	JAH	12FEB98
SENT TO IPSO FOR U2R ADD REVIEW	JAH	12FEB98
NOT APPROVED FOR U2R97 PER ORB U2R99	JAH	12FEB98
ASSIGNED NNPC BY NNSC	JMC	12FEB98
ADDED TO U2R97 PER MT CM BACKLOG REVIEW	LCH	19DEC98
C45329-01 PRINTED/ISSUED TO P. RICHARD VIA JAY NIYOGI	JMC	21OCT99
C45329-01 REFILED DUE TO ENGINEERING FLAG	JMC	28FEB00
C45329-01 REPRINTED/RE-ISSUED TO PHIL RICHARD VIA GFR	JMC	10APR00
C45329-01 SENT TO NRM 4/22/00	JMC	26APR00

REPORT REQUESTOR: BARTLETT, B.L.

*** ACTION REQUEST ***

Page: 2

A/R Type : CM
Pri/Ctd : 35
Request Org : ENPT
Request Date: 11FEB98
Requested By: PHELAN, S.M.
Pend Reason :

A/R Number : A0156971
A/R Status : COMPLT
Status Date: 20APR00
Last Update: 26APR00
Print Date : 02MAY00

=====

Date Required : N/A
Supervisor Rvwd: VERTERAMO, A.X.
Reg Doc Cd :
A/R Pkg Nbr :

Date: 11FEB98
Commitment Nbr:
Recurring Task Nbr:

C. FAILURE STATUS CODE

Sta Review?: N Tech Spec Rel? :
Syst. Code : N Severity Level : L
Comp. Inop?: N Equip Req'd Mode:
SS Notified: N SS Name: N/A
RCM System Status Code: F

Detect Code : N
Plant Effect: G Syst Stat Code: A

N/A /
RCM When/How Discovered: I

D. Action Request Plan Information.

A/R Accepted By : ROLAND, G.F.

Date: 17JUN98

Assigned Org: NNCP Assigned To: ROLAND, G.F.
Action Plan Desc: INSPECT/REPAIR CONCRETE IN 2-HV-CEQ-2 AREA

Planning Code: R02
Network Name: U2R97

Design Change: - -00000-

CR Number: 00-00610 Work Complete: N ECAP Updated: N
CR Number: 99-27755 Work Complete: N ECAP Updated: N

A/R Completed By: CLARK, J.M.

Date: 20APR00

Item # 3
(1 page)

SUMMARY OF POUR CARD DATA FOR CEQ/ACCUMULATOR/INSTRUMENT R
WALLS FROM ELEVATION 612'-0" TO 638"-0"

Wall	Elevations	Pour Number	
AZ 54°	631' - 638'	2C18D7	3/4/1974
	622' - 631'	2C18D3	2/25/1974
	612' - 622'	Not Retrievable	
AZ 126°	631'-5 1/4" - 638'-0"	2C18D8	4/2/1974
	622' - 631'-5 1/4"	2C18D4	3/21/1974
	612' - 622'	2C18C5	3/6/1974
AZ 234°	631'-9 1/4" - 638'	2C18D9	6/11/1974
	622'- 631'- 5 1/4"	2C18D5	4/2/1974
	612' - 622'	2C18C6	3/21/1974
AZ 307°	626'-10 1/2" - 638'	2C18D6	6/3/1976
	612' - 624'-4 1/2"	2C18C9	3/15/1976

Concrete Break Strength in psi

Wall	Pour #	3 Day		7 Day		28 Day	
		1 st Test	2 nd test	1 st Test	2 nd test	1 st Test	2 nd test
AZ 54°	2C18D7	2805	2858	4220	4294	5585	5547
	2C18D3	2455	2557	3785	4018	5656	5759
AZ 126°	2C18D8	2402	2455	4238	4198	5476	5419
	2C18D4	2575 (4days)	2480 (4days)	4050	4149	4807	4892
	2C18C5	2448	2398	4167	4117	5688	5603
AZ 234°	2C18D9	2253	2349	3353	3180	4949	4998
	2C18D5	2402	2455	4238	4198	5476	5419
	2C18C6	2575 (4 days)	2480 (4 days)	4050	4149	4807	4892
AZ 307°	2C18D6			4227	4015	5253	5164
				4139	3997		
	2C18C9	3272	3325	4262	4262	5536	5695

[Handwritten signature]

Concrete strength
Should be 4807 psi
not 4867 psi

Item #4
(3 pages)



Westinghouse
Electric Company LLC

Box 355
Pittsburgh Pennsylvania 15230-0355

AEP-00-139
April 27, 2000

Mr. Mike Hoskins
American Electric Power
500 Circle Drive
Buchanan, Michigan 49107

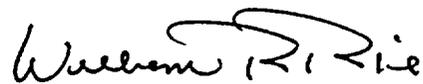
AMERICAN ELECTRIC POWER
DONALD C. COOK NUCLEAR PLANT UNITS 1 AND 2
REACTOR CAVITY AND LOOP SUBCOMPARTMENT - PRESSURE TIME HISTORIES

- References:
1. AEP-00-063, "American Electric Power Donald C. Cook Nuclear Plant Units 1 & 2, Reactor Cavity Subcompartment Analysis (CR 99-02649)", 2/15/00
 2. AEP-99-369, "American Electric Power Donald C. Cook Nuclear Plant Units 1 & 2, Input for Electronic Corrective Action Plan SN P-99-2650", 10/18/99

Dear Mr. Kingseed,

Westinghouse performed a reanalysis of the reactor cavity and loop subcompartment to include the effects of as-built plant data. The results of these analyses were formally transmitted to American Electric Power (References 1 and 2). Mr. Satyananda Chakrabarti, AEP, recently requested additional information regarding these analyses and clarification of the respective TMD subcompartment analyses. The specific questions asked by Mr. Chakrabarti and the Westinghouse responses to them are contained in the attached letter.

This work was performed under AEP Contract Number C-7693, Release 00-03 (DETR-00-018). Please contact Mr. Don Peck (412-374-2052) or me if you have further questions on this subject.


W. R. Rice
Customer Projects Manager

Attachment

cc: Ken Green - AEP (Buchannon)
Jeff Smetters - AEP (SGRP Grp., D. C. Cook, Unit 1)
Satyananda Chakrabarti - AEP (Buchannon)



LTR-CRA-00-94

From : Containment and Radiological Analysis
WIN : 284-4079
Date : April 27, 2000
Subject : Donald C. Cook – Reactor Cavity & Loop Subcompartment – Pressure Time Histories

- Ref 1) : CN-CRA-00-10-R0, "D. C. Cook Units 1 and 2 (AEP/AMP) – Evaluation of Input Changes to the TMD Reactor Cavity Subcompartment Model", 02/09/2000.
2) : CN-CRA-99-81-R0, "D. C. Cook Units 1 and 2 (AEP/AMP) – Evaluation of Input Changes to the TMD Loop Subcompartment Model", 10/15/1999.
3) : AEP-00-063, "American Electric Power Donald C. Cook Nuclear Plant Units 1 & 2 Reactor Cavity Subcompartment Analysis (CR 99-02649)", 02/15/2000.
4) : AEP-99-369, "American Electric Power Donald C. Cook Nuclear Plant Units 1 & 2 Input for Electronic Corrective Action Plan SN P-99-2650", 10/18/1999.
5) : CN-COA-88-005, "AEP/AMP Thot Reduction Program – Subcompartment Evaluation", 08/3/1988.
6) : CN-CRA-99-94-R0, "D. C. Cook Units 1 and 2 (AEP/AMP) – Evaluation of Input Changes to the TMD Fan/Accumulator Room Subcompartment Model", 10/28/1999.
7) : CN-CRA-99-57-R1, "D. C. Cook Units 1 and 2 (AEP/AMP) – Ice Condenser Blowdown Loads", 11/09/1999.
8) : AEP-99-397, "American Electric Power Donald C. Cook Nuclear Plant Units 1 & 2 Condition Report Number 99-2647 – Fan Accumulator Analysis", 11/3/99.

To: D. E. Peck

cc: E. C. Arnold
W. R. Rice

Westinghouse reanalyzed the reactor cavity and loop subcompartment to include the effects of as-built plant data. Reference 1 and Reference 2 document the analysis. The results were formally transmitted to the customer in Reference 3 and Reference 4.

Mr. Chakrabarti of AEP has recently requested additional input and clarification of the respective TMD subcompartment analyses. Following is a listing of the specific questions and our responses:

1. Required Clarification for Design Margins

Does Westinghouse require a design margin to be applied to the pressures from TMD analyses? If yes, what is the required design margin?

Response

Following is an excerpt from the current Donald C. Cook Nuclear Plant UFSAR:

"The LOCA mass and energy analysis has been performed in accordance with the criteria shown in the Standard Review Plan (SRP) section 6.2.1.3. In this analysis, the relevant requirements of General Design Criteria (GDC) 50 and 10 CFR Part 50 Appendix K have been included by confirmation that the calculated

pressure is less than the design pressure, and because all available sources of energy have been included, which is more restrictive than the old GDC criteria, Appendix H of the original FSAR, to which the Donald C. Cook Plants are licensed. These sources include: reactor power, decay heat, core-stored energy, energy stored in the reactor vessel and internals, metal-water reaction energy, and stored energy in the secondary system.

Although the Donald C. Cook Nuclear Plant is not a standard review plan plant, the containment integrity peak pressure analysis has been performed in accordance with the criteria shown in the SRP Section 6.2.1.1.b, for ice condenser containments. Conformance to GDC's 16, 38, and 50 is demonstrated by showing that the containment design pressure is not exceeded at any time in the transient. This analysis also demonstrates that the containment heat removal systems function to rapidly reduce the containment pressure and temperature in the event of a LOCA."

Similarly for the subcompartment analyses, although the Donald C. Cook Nuclear Plant is not a standard review plan plant, the subcompartment pressure analyses have in general been performed in accordance with the criteria shown in the SRP. Applicable margins are discussed in SRP section 6.2.1.1.b (NUREG-0800 Rev. 2 July 1981), page 6.2.1.1.B-4,

"For plants being reviewed for construction permits, the design differential pressures for all ice condenser control volumes or subcompartments, and system components (e.g., reactor vessel, pressurizer, steam generators) and supports, should provide at least 40% margin above the highest calculated differential pressures. For plants being reviewed for operating licenses, the highest calculated differential pressures for all ice condenser control volumes or subcompartments should not exceed the corresponding design differential pressures."

Research by both AEP and Westinghouse, as part of the review of Condition Reports 99-02649 and 99-2650, determined that there was not a sound basis for all of the input used in the subcompartment analyses. In these instances, the data was recreated. However, the balance of the input, for which adequate documentation existed, was not recreated. This input could be based upon design information, or it could be current, but the status was not verified. The latest subcompartment re-analysis utilized this hybrid set of information. Since it has not been confirmed that all of the TMD input data is as-built information, it is Westinghouse's interpretation that the 40% margin is required. It is also the opinion of Westinghouse that this can be relaxed once all data is verified as being as-built.

Imp

2. Reactor Cavity (Ref. Westinghouse letter AEP-00-058)

a) We need the time history for the peak upper reactor cavity pressure of 79.0 psi.

Response

Figure 1 illustrates the pressure time history for the upper reactor cavity.

b) We need the time history for the peak missile shield differential pressure of 79.2 psi.

Response

The time history plot for the missile shield differential pressure is not available. However, Figure 1, which illustrates the pressure time history for the upper reactor cavity, and Figure 2, which illustrates the pressure time history for the upper containment, can be used to determine the time history differential pressure.



Item # 5
(3 pages)

Westinghouse
Electric Company LLC

Box 355
Pittsburgh Pennsylvania 15230-0355

AEP-00-178

June 1, 2000

05/26/00

Mr. Scott Greenlee
American Electric Power
500 Circle Drive
Buchanan, Michigan 49107

AMERICAN ELECTRIC POWER
DONALD C. COOK NUCLEAR PLANT UNITS 1 AND 2
TMD Analysis - Clarification of 40% Design Margin

Dear Mr. Greenlee,

Per your request, Westinghouse is providing the attached letter to provide clarification of the 40 % design margin discussed in Standard Review Plan (SRP) section 6.2.1.1.B (NUREG-0800, Rev. 2, July 1981), page 6.2.1.1.B-4. Specifically, the attached letter discusses the applicability of the design margin to the Donald C. Cook Nuclear Plant TMD Analyses performed by Westinghouse.

Please contact Mr. Don Peck (412-374-2052) or me if you have further questions on this subject.


W. R. Rice
Customer Projects Manager

Attachment

cc: Brenda Kovarik - AEP, Bridgman
NDM - AEP, Bridgman - Mail Zone #1



LTR-CRA-00-124

From : Containment and Radiological Analysis
WIN : 284-4079
Date : June 01, 2000
Subject : Donald C. Cook – Clarification of 40% Design Margin
Ref 1) : CN-CRA-99-111-R0, "D. C. Cook Units 1 and 2 (AEP/AMP) – Evaluation of Input Changes to the TMD Steam Generator Enclosure Subcompartment Model", 11/19/99.
2) : CN-CRA-99-081-R0, "D. C. Cook Units 1 and 2 (AEP/AMP) – Evaluation of Input Changes to the TMD Loop Subcompartment Model", 10/15/99.
3) : CN-CRA-00-010-R0, "D. C. Cook Units 1 and 2 (AEP/AMP) – Evaluation of Input Changes to the TMD Reactor Cavity Subcompartment Model", 02/09/00.
4) : CN-CRA-99-094-R0, "D. C. Cook Units 1 and 2 (AEP/AMP) – Evaluation of Input Changes to the TMD Fan/Accumulator Subcompartment Model", 10/28/99.
5) : CN-CRA-99-123-R0, "D. C. Cook Units 1 and 2 (AEP/AMP) – Evaluation of Input Changes to the TMD Pressurizer Enclosure Subcompartment Model", 01/14/00.
6) : CN-COA-88-005-R0, "AEP/AMP Thot Reduction Program – Subcompartment Evaluation", 8/3/88.
7) : LTR-CRA-00-94, "Donald C. Cook – Reactor Cavity & Loop Subcompartment – Pressure Time Histories", 4/27/00, (AEP-00-139).
8) : NUREG-0800 Rev.2 July 1981, Section 6.2.1.1.b.

To: D. E. Peck

cc: E. C. Arnold
W. R. Rice

Over the last year, Westinghouse reanalyzed the steam generator enclosure, reactor cavity, loop subcompartment, pressurizer doghouse, and fan accumulator room to include the effects of as-built plant data on the TMD results. Reference 1 through 5 are the calculations that document these analyses.

Reference 6 documents the evaluation conducted as part of the 1988 Thot Reduction Program.

Reference 7 supplied additional clarification input for the Reactor Cavity & Loop Subcompartment Analyses. This reference also discussed the 40 % design margin of Reference 8, for example, the following is taken directly from Reference 7.

"Research by both AEP and Westinghouse, as part of the review of Condition Reports 99-02649 and 99-2650, determined that there was not a sound basis for all of the input used in the subcompartment analyses. In these instances, the data was recreated. However, the balance of the input, for which adequate documentation existed, was not recreated. This input could be based upon design information, or it could be current, but the status was not verified. The latest subcompartment re-analysis utilized this hybrid set of information. Since it has not been confirmed that all of the TMD input data is as-built information, it is Westinghouse's interpretation that the 40% margin is required. It is also the

opinion of Westinghouse that this can be relaxed once all data is verified as being as-built."

The purpose of this letter is to clarify further the 40% margin statement of Reference 7.

If the plant specific data supplied by AEP, and used for the steam generator enclosure, reactor cavity, loop subcompartment, pressurizer doghouse, and fan accumulator room subcompartment analyses, are as-built information, then it is Westinghouse's opinion that the 40% margin is not required for application in the evaluation of the structural capability of these subcompartments.

As long as the as-built information supplied by AEP is correct, and considering the inherent analysis conservatisms, the actual accident subcompartment pressurization will not exceed the calculated values.

Please formally transmit this information to AEP.

Should you have any questions, please contact the undersigned.



L. C. Smith

Containment and Radiological Analysis

Reviewed by:



J/A. Kolano

Containment and Radiological Analysis