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10 151 THE BABCOCK & WILCOX COMPANY 10 CONTIDENTIAL POWER GENERATION GROUP COUNSEL ONLY To DISTRIBUTION From J. H. Taylor, Manager, Licensing (2817) 805 443-5 File No. Cust. 205 T4.4 or Ref. PSC 16-79 Date Subj. May 31, 1979 Preliminary Report of Safety Concern PSC 16-79 This lattar to cover she customer and and tubject any Distribution E. R. Kane J. D. Agar G. O. Geissler H. A. Bailey S. H. Klein B. A. Karrasch J. P. Jones W. A. Cobb B. B. Cardwell D. W. Berger D. Mars E. A. Womack C. E. Parks B. M. Dunn D. H. Roy J. C. Deddens R. E. Kosiba G. M. Olds R. C. Jones J. McFarland E. G. Ward A. H. Lazar Record Center K. R. Ellison In accordance with Procedure NPG-1707-01, "Processing of Safety Concerns," I am forwarding herewith a reported concern on a small break LOCA should the RC pumps go off the line by any means such as hy operator action or loss of offsite power. PSC 16-79 has been assigned to this case. When my staff has completed its evaluation as to whether a reportable concern exists, I will communicate their findings to you. The point of contact within Licensing on this matter is H. A. Bailey, Ext. 2678. Mayor JHT/fw Attachment

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a to man and a proper service of the × ... ERL J. H. Tavlur \$war-20708 (2-77) 12 BABCOCK & WILCOX -MAY 2 9 1979 PRELIMINARY REPORT OF SAFETY CONCERNS PSC 16-79 3 SIGNIFICART DEFICIENCY DATE TO: MANAGER, LICENSING, NPGD 14.4 Charles E. Parks SUBSTANTIAL SAFETY MAZARD FILE NO.\_\_ COSTRACT NO. - wist. streatablt ifte Plant Design 111 \*-Las . 78" 1081 -PAGE I OF-ATTAIN AND "SENTIFY. ST PAGE NUMBER. ANY SUPPORTING INFORMATION/SOCCHENTS 3 TO TOUR ENDILLOGE IS CUSTOMER AWARET CIESZ 10 - ----- ---- --- ON UNICH PLANT WAS THE SAFETY CONCERN ........... - \*\*\* & #34 Analysis performed by ECCS Analysis Unit in January, 1979 for the 205FA TO TOUR ERDOLLOGS IS MAC AWARE? DTES 2 10 standard plant. sale i see attachment 2 S GIRLE AFFECTED CONTRACTS (CUSTOMER NAME AND LOCATION) Possibly All (177, 205 & 145 FA plants) . DESCRIPTION OF SAFETY CONCEAN-IDENTIFY AFFECTED COMPONENTES). STATEM(S) OR ACTIVITY/SUPPLIER, AND IMPACT ON SAFETY OF PLANT OPERATIONS See attachment 1 a star and a star and a star and a star P DESCRIBE CORRECTIVE ACTION COMPLETED/TO BE INITIATED ECCS Analysis/Safety Analysis/PS & Controls RESPONSIBLE UNIT . SILBALURE AND DAIL Allonach . 5/29/79 5/25/79 Val Clake ......... in an and the

## ATTACHMENT 1

in the ECCS Analysis Unit's and Plant Design's progress report for January. 1979, the following item was reported as resolution of a concern over the RC pump status during a small LOCA. 1

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Small Break Analysis with No Loss-of-Offsite Power - The 0.05 ft<sup>2</sup> break was studied on the 205 F.A. Plants to determine the impact of keeping the R.C. pumps on. Results show a much more rapid loss of R.C. inventory relative to a case with tripped R.C. pumps. While it has been determined that the liquid inventory situation is worse for a pumps running case, hand calculations have been performed which show that, due to the pumps running, a forced flow, steam cooling situation will exist in the core and will result in cladding temperatures of less than 670F. Thus, the pumps tripped case remains a worse situation for small LOCA evaluations. This position will be documented during February.

Examining this case from the standpoint of being able to withstand multiple failures brings about this concern. While the statement above may be true if the RC pumps remain in operation, the case that was run also shows that the reactor vessel would contain only  $1550 \text{ ft}^3$  of water in 10 minutes after the break should the RC pumps go off line by any means such as by operator action or loss of offsite power.

Since the RV lower head is ~900 ft<sup>3</sup>, it would take several minutes just to fill the head with only 1 HPI pump. (RC pressure ~1300 psia at 10 min) The core temperature transient would probably be unacceptable. Rough hand calcs predict a temperature rise of 300-400 F/min for the hot pin. Assuming a starting cladding temperature of 700F and a 300 F/min rise, clad temperature would reach 2200 F in 5 minutes. The lower head cannot be filled in 5 minutes.

One solution to this problem is to develop a signal to trip the RC pumps such as a low system pressure signal or some new signal such as a low level signal which currently does not exist.

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In any case, should a trip signal be installed, a great deal of safety and ECCS analyses would have to be performed or re-examined. On the other hand, if the pumps are not tripped, unacceptable results would probably occur if the RC pumps should go off line. Further study of this situation is warranted. 0 2 0

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HE BABCOCK & WILCOX COMPANY	TACHMENT 2	1
C.R. KANE, LICENSING	RUTI	200 205 443.5
B.M. DUNN, MANAGER, ECCS ANALYSIS	(2138)	File No. or Ref.
Subj. Telephone Conversation with Zolta	an Rosztoczy on May 15. ns Running and No AuxFeed	Date May 29, 1979
supply information on the expect with loss of an auxiliary feedwa cover the concern that the analy sidered the same case with the F case. I responded that in my of that the scenario of events would tion and said that I would const and call them back with a posit with them and actually made the As Mr. Rosztoczy was not availa NRC. Bob Jones of our staff als follows: A typical small break	ter and RC pumps running. (ses provided over the vec RC pumps off may not have pinion they had studied the ld be altered by the diffe- ider these in more detail ion. At SPM I was unable call at approximately 10 ble, a discussion was hel- to listened in. I describt k evaluation of a stuck of mass running and with one 1 SS). Scenario of events:	. This was to ekend which com- been the worst he worst case but erent pump assump- in the afternoon to make contact 0:30AM, May 15th. Id with Paul Norian, bed the analysis as pen PORV without HPI and realistic The system would

two locations, approximately 50% into the RC vessel and approximately 25% each to each steam generator. This would create a solid water level in the reactor vessel of 7 feet or a core mixture level of approximately the reactor vessel of 7 feet or a core mixture level of approximately 8-1/2 feet. If the RC pumps did not coastdown instantaneously, I stated that in my opinion the HPI flow occurring during the pump coastdown would that in my opinion the HPI flow occurring during the pump coastdown would that in my opinion the HPI flow occurring during the pump coastdown would throughout the RC system and that this flow would fill the remaining 3-1/2 throughout the RC system and that this flow would fill the remaining 3-1/2 throughout the core region. Thus it would be my expectation that no core feet within the core region. Thus it would be my expectation that no core incovery would take place even if the reactor pumps would trip at the most uncovery would take place even if the reactor pumps would trip at the most unfavorable time. Further, should the HPI flow not fill the reactor vessel, the cladding temperature heatup would be minimum and not result in core damage. The heatup would be limited to between 400 and 500°F and the resulting peak temperature could not be in excess of 1300°F. This situation

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BM Dunn to ER Kane Subj: Telephone Conversation with Zoltan Rozztoczy on May 15, 1979, on Stuck Open PORV With Pumps Running and No AuxFeed May 29, 1979 The .

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would last for only about five (5) minutes and after that time core covery would again be maintained. As an over-riding concern, I pointed out that there is no intention within the operating guidelines to cause an RC pump trip during the transient and that this is true regardless of pump performance variables. In other words, I restated our position that at least one pump per loop will rum other words. I confirmed that my experience with RC pumps running in high woid systems has shown to problems with their performance and that our pump experts indicate no concern in pumping a two-phase fluid.

Our phone call ended with Mr. Norian to pass this information on to Mr. Roxztoczy 'and have followup telephone calls as necessary. I have not, at this time, had further contact on this issue.

EMD/lc

cc: R.C. Jones E.A. Womack C.E. Parks'

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