

BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

DW LABELLE

To E. A. WOMACK

GA4 EXHIBIT 496 FOR IDENT
4/14/82 H. A. RUSSELL

From D. G. NEWTON

8DS 443

Cust. B&W OPERATING PLANT

File No.
or Ref.

Subj. OPERATING INSTRUCTIONS FOR STUCK OPEN PORV

Date
APRIL 8, 1979-12:57 A.

This letter is cover one customer and one subject only.

ATTACHED IS THE WRITE UP YOU REQUESTED SATURDAY EVENING 4/7/79. I PREPARED THE WRITE UP FOLLOWING A DISCUSSION WITH B. M. DUNN, D. W. LABELLE, G. O. GEISSLER AND M. V. BONACA. HOWEVER, THE WRITE UP HAS NOT BEEN REVIEWED BY ANYBODY. I WAS GOING TO HAVE J. D. CARLTON REVIEW IT BUT HE IS OFF TONIGHT. I WOULD RECOMMEND HAVING THE RESPONSE REVIEWED BY SOMEONE FROM CONTROL ANALYSES AND SAFETY ANALYSES. SOMEONE FROM THESE UNITS SHOULD BE HERE TOMORROW.

THE OPERATOR ACTIONS ARE SPECIFIC BUT ARE BASED ON SOME SUBJECTIVE REASONING. THEREFORE, YOU MAY WANT TO MODIFY THEM IN THE FUTURE BASED ON SOME SPECIFIC ANALYSES TO IMPROVE PLANT RELIABILITY. THESE OPERATOR ACTIONS ARE ACCEPTABLE FROM A SAFETY STANDPOINT.

I. INTRODUCTION

ITEM 3 OF I. E. BULLETIN NO. 79-05 REQUESTS UTILITIES WITH B&W SUPPLIED NSS SYSTEMS TO REVIEW THE ACTIONS REQUIRED FOR COPING WITH TRANSIENTS. THIS IE BULLETIN WAS INSTIGATED BY THE NUCLEAR INCIDENT AT THREE MILE ISLAND. DURING THIS INCIDENT THE POWER OPERATED RELIEF VALVE (PORV) ON THE PRESSURIZER OPENED AND FAILED TO RECLOSE. CONSIDERABLE TIME PASSED BEFORE THE OPERATOR DETERMINED THE PORV HAD FAILED OPEN AND TOOK CORRECTIVE ACTION TO ISOLATE THE VALVE. THE FOLLOWING INFORMATION IS PROVIDED FOR REVIEWING THE ACTIONS REQUIRED FOR A STUCK OPEN PORV.

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2. DESIGN FUNCTION OF THE PORV

OVER PRESSURE PROTECTION OF THE RCS IS PROVIDED BY TWO CODE SAFETY VALVES ON THE PRESSURIZER. THE ASME CODE REQUIRES THAT THESE VALVES CAN NOT BE ISOLATED. CONSEQUENTLY, IF ONE OF THESE VALVES FAILED OPEN A LOCA WOULD RESULT SINCE THE LEAK COULD NOT BE ISOLATED. THEREFORE, IT IS PRUDENT TO LIMIT THE NUMBER OF TIMES THE CODE SAFETY VALVES WILL BE OPENED. THIS IS ACCOMPLISHED BY PROVIDING A PORV WITH A LOWER OPENING SET POINT. HOWEVER, THE PORV MAY ALSO FAIL OPEN. BUT SINCE THE PORV IS NOT REQUIRED FOR OVER PRESSURE PROTECTION IT CAN BE ISOLATED. THE ISOLATION IS PROVIDED BY THE RELIEF ISOLATION VALVE LOCATED UPSTREAM OF THE PORV.

THE PORV ALSO KEEPS THE RC PRESSURE BELOW THE HIGH RC PRESSURE REACTOR TRIP SET POINT WHEN AUTOMATICALLY DECREASING TURBINE GENERATOR LOAD TO PLANT LOAD FOLLOWING A LOSS OF OFFSITE POWER.

3. OPERATOR ACTION: IF THE PORV FAILS OPEN

THE VALVE SHOULD BE ISOLATED BY CLOSING THE MOTOR OPERATED ISOLATION VALVE WHENEVER THE PORV FAILS OPEN.

THE OPERATOR SHOULD ALWAYS KEEP IN MIND THAT THE PORV PROVIDES NO SAFETY FUNCTION AND THEREFORE CAN BE ISOLATED AT ANY TIME WITHOUT JEOPARDIZING THE SAFETY OF THE PLANT.

THE PORV PROVIDES PLANT RELIABILITY. THE PLANT IS SAFE IF THE PORV FAILS OPEN OR CLOSED OR IF THE CODE SAFETY VALVES FAIL OPEN.

ACTIONS

1. IF THE RC PRESSURE INCREASES TO THE PORV SETPOINT AND THEN DECREASES BELOW 2000 PSIG THE PORV SHOULD BE CLOSED.

2. IF THE RC PRESSURE DECREASES TO THE HPI ACTUATION PRESSURE THE PORV SHOULD BE CLOSED.

NOTE: THE PORV POSITION INDICATOR LIGHTS DO NOT PROVIDE DIRECT STATUS OF THE VALVE POSITION. THE LIGHT INDICATES THE POSITION OF THE SOLENOID OPERATOR ON THE PORV. THEREFORE, THE INDICATOR LIGHTS MIGHT NOT INDICATE A STUCK OPEN PORV.

4. SYMPTOMS OF A STUCK OPEN PORV

1. DECREASING RC PRESSURE OR PRESSURIZER LEVEL WITH NO DECREASE IN RC TEMPERATURE OR INCREASE IN LET DOWN FLOW.
2. INCREASE IN THE RC DRAIN TANK LEVEL AND/OR TEMPERATURE.

5. BASES FOR OPERATOR ACTION

THE PORV SHOULD BE AVAILABLE FOR INCREASING RC PRESSURE TRANSIENTS AND FOR TRANSIENTS WHICH HAVE AN INITIAL DECREASE IN PRESSURE FOLLOWED BY AN INCREASE IN PRESSURE FOR PLANT AVAILABILITY.

FOR INCREASING PRESSURE TRANSIENTS THE RC PRESSURE SHOULD COME BACK DOWN AND LEVEL OFF BEFORE REACHING A 2000 PSIG RC PRESSURE. IF THE PRESSURE DROPS BELOW 2000 PSIG THE PORV MAY BE STUCK OPEN. HOWEVER, THE PORV HAS DONE ITS JOB BY MITIGATING THE INITIAL RC PRESSURE INCREASE PRESUMABLY AND IS NOT NEEDED AGAIN SO IT CAN BE ISOLATED WITHOUT AFFECTING PLANT OPERATIONS. THE INCREASING PRESSURE TRANSIENT IS INDICATED BY AN INITIAL PRESSURE INCREASE TO OR ABOVE THE PORV SET POINT FOLLOWED BY A REDUCTION IN PRESSURE.

FOR A TRANSIENT WHICH INITIALLY DECREASES THE OPERATOR SHOULD NOT ISOLATE THE PORV UNTIL THE PRESSURE HAS RETURNED AND BEEN RELIEVED BY THE PORV.

NTON TO WOMACK

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FOR THIS TRANSIENT THE INITIAL PRESSURE REDUCTION USUALLY DOESN'T REACH THE HPI SET POINT. IF IT DOES, THE PORV MAY BE STUCK OPEN. THIS TYPE OF TRANSIENT IS INDICATED BY NO INITIAL PRESSURE INCREASE.

DGN:jvg

CC: B. M. DINN

D. W. LABELLE

G. O. GEISSLER

M. V. BONACA

E. W. SWANSON

D. G. Newton

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