

VIRGINIA ELECTRIC AND POWER COMPANY

RICHMOND, VIRGINIA 23261

REGULATORY DOCKET FILE COPY

June 25, 1979

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Serial No. 511
PSE&C/CMRjr:mac:wang

Docket Nos. 50-280
50-281

License Nos. DPR-32
DPR-37

Dear Mr. Denton:

SUPPORT INFORMATION
REANALYSIS OF PIPING SYSTEMS
SURRY POWER STATION UNIT 1

Members of the Nuclear Regulatory Commission (NRC) staff conducted a review June 21 and 22, 1979 of the pipe stress reanalysis effort for Surry Power Station Unit 1. As a result of that review, we wish to clarify the causes for hardware modifications identified in earlier submittals.

The NRC review has confirmed the categorization of hardware modifications in the manner described as follows. Of five pipe stress problems identified as requiring modifications due to overstress conditions in the pipe, three are attributable to as-built conditions, one is due to seismic stress in a line not previously analyzed, and one is attributable to the seismic reanalysis as required by the March 13 Show Cause Order. Of three problems requiring modifications due to support loads exceeding original design allowables, all three are attributable to as-built conditions. Specific identification of these problems follows. Not all problems have been processed through Engineering Assurance as yet.

Modifications identified in the report submitted on June 5, 1979 (Veeco Serial No. 453):

1. Problem 548A - Containment and Recirculation Spray

A horizontal shock suppressor will be added to reduce pipe stress increases attributable to differences between the as-built configuration of the pipe and the original basis for design calculations.

2. Problem 731A - Low Head Safety Injection

A support brace will be added to reduce support loads caused by a difference between the support design and the as-built condition of the support.

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5/1/1
Add: W. Russell
79062903271

3. Problem 731B - Low Head Safety Injection

Same as Problem 731A.

4. Problem 743 - Low Head Safety Injection

A vertical constraint will be modified to reduce pipe stresses attributable to the support being located in a position different from that used in the original analysis.

Modifications identified in submittal of June 12, 1979 (Vepco Serial No. 477):

5. Problem 508 - Residual Heat Removal

Several modifications to reduce pipe stresses and support loads are attributable to the seismic reanalysis required by the Order to Show Cause.

Modifications identified in submittal of June 19, 1979 (Vepco Serial No. 494):

6. Problem 555 - Low Head Safety Injection

A shock suppressor will be added to reduce support loads due to differences between the as-built conditions of the supports and the original design conditions.

7. Problem 562 - Containment and Recirculation Spray

Three supports will be modified to reduce pipe stresses attributable to differences between the as-built configuration of the pipe and the original design calculations.

8. Problem 540 - Residual Heat Removal

Three supports will be deleted and one anchor added to reduce pipe stresses in a 2 inch line which was not originally computer analyzed for seismic loads.

The Order to Show Cause requires the reanalysis of piping systems for seismic loads using a computer code which does not combine loads algebraically, and any modifications to the systems indicated by such reanalysis to be necessary. In our earlier letters it was assumed that, pursuant to this Order modifications, if any, would be caused by the seismic analysis. As noted above, our subsequent submissions and discussions with the staff have shown that relatively few modifications are required as a result of changes in the seismic analysis, whereas, a larger number are required for other reasons not contemplated earlier and not covered by the Order to Show Cause. At the same time, we have undertaken a major effort to respond to IE Bulletin 79-02. It is, therefore, necessary to clarify the intent of our earlier letters, particularly our letter of June 8, Serial No. 458, to the effect that base plate flexibility considerations will be incorporated in those supports for which the new loads, due to the seismic reanalysis, exceed the original design allowable loads and for any new supports required by the reanalysis effort. Supports which must be modified for other reasons, such as as-built conditions, will be evaluated for base plate flexibility under the IE Bulletin 79-02 program.

Confirming our earlier understanding with the staff, that for emergency loading conditions the effect of anchor movement need not be considered for the $1.8S_h$ check, we shall henceforth not include seismic anchor movement stresses in the Design Basis Earthquake condition in the analysis of pipe supports and integral attachments.

Problem 630 was originally analyzed by applying the stress intensification factor (SIF) for an ASA 12" x 12" tee at the 6" 45° lateral connections on the pressurizer relief valve manifold. This SIF was applied at that time by the analyst because no better data were available for these types of connections. At this time, we consider this approach to be over-conservative. The reanalysis effort of Surry Unit 1 is using the stress intensification factor for a latrolet. We consider the SIF for a latrolet to more closely represent the 45° reinforced lateral connections. The SIF for the latrolet, as derived by Bonney Forge based on experimental data, is contained in their May 1978 Bulletin No. 785, "Stress Intensification Factors for the Latrolet."

It is our understanding that the staff now requires that prior to start-up, all pipe stress analyses must be complete, all analyses of pipe supports for SHOCK II problems inside the containment must be complete. The hardware modifications associated with either of these must also be complete. We believe this level of completion will be reached during the month of August. A closer date than that is not determinable at this time based on our past experiences with predicting completion dates. For the SHOCK II problems outside containment, all support loads will be tabulated and available for NRC review. A list of SHOCK II problems inside the containment is contained in the attached Table I.

Attachment III of our June 8, 1979 letter (Veeco Serial No. 458) identified a priority list and schedule for all problems for both pipe stress analysis and support analysis. June 30 was the last date shown for the completion of the pipe stress portion of the analysis. We would propose a meeting for Tuesday, July 10, 1979 for the staff to review the results of all problems for which hardware modifications are required to meet allowable pipe stresses. This would include work done by Stone & Webster Engineering Corporation and Quadrex/NSC Corporation.

Very truly yours,



W. C. Spencer
Vice President - Power Station
Engineering and Construction Services

Attachment

SHOCK II PROBLEMS INSIDE CONTAINMENT

<u>Problem Number</u>	<u>System</u>
555	Low Head Safety Injection
1555	Low Head Safety Injection
706A	Low Head Safety Injection
707A	Low Head Safety Injection
708	Low Head Safety Injection
1525A	Containment & Recirculation Spray
525A	Containment & Recirculation Spray
546/560	Containment & Recirculation Spray
546/5600	Containment & Recirculation Spray
546/5620	Containment & Recirculation Spray
548C	Containment & Recirculation Spray
547	Containment & Recirculation Spray
548A	Containment & Recirculation Spray
548B	Containment & Recirculation Spray
544	Containment & Recirculation Spray
544A	Containment & Recirculation Spray
544B	Containment & Recirculation Spray
562	Containment & Recirculation Spray
323A	Main Steam
322A	Main Steam
334A	Main Steam
323B	Feed Water
322B	Feed Water
334	Feed Water
417	Auxiliary Feed Water

<u>Problem Number</u>	<u>System</u>
636	Pressurizer Spray & Relief
630	Pressurizer Spray & Relief
540	Residual Heat Removal
508	Residual Heat Removal
465	Service Water
603A	Component Cooling
605A	Component Cooling
605B	Component Cooling
603B	Component Cooling

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

June 22, 1979

IE Circular No. 79-09

OCCURRENCES OF SPLIT OR PUNCTURED REGULATOR DIAPHRAGMS IN CERTAIN SELF-CONTAINED BREATHING APPARATUS

Description of Circumstances:

The Nuclear Regulatory Commission (NRC) has been informed by mailgram (copy enclosed) from the National Institute of Occupational Safety and Health (NIOSH) of the high rate of regulator diaphragm failures in the Scott Air Pak II/IIA and Presur-Pak II/IIA self-contained breathing apparatus. The failures, ranging from pin holes in the diaphragm to complete diaphragm rupture, have been identified in about 10 percent of the units by the NIOSH field survey. Tests of the Scott apparatus by NIOSH showed reduced respiratory protection in the Demand-Mode and a loss of service time (but no loss of protection) in the Pressure Demand-Mode.

Notice to Licensees:

Many major licensees use the types of Scott apparatus described above. Users of the devices should take the following action:

1. Establish a program for examination of the described respiratory devices in accordance with the enclosed NIOSH mailgram; or
2. Incorporate the provisions of the NIOSH mailgram into your current program for inspection of the described devices.

No written response to this Circular is required. If you require additional information regarding this subject, please contact the individual specified in the enclosed mailgram.

Enclosure:
Mailgram

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GSA SWITCHING CTR
P O BOX 430
ROMNEY, WV 26757



1-056186U122014 05/02/79 ICS WA12139
00592 MLTN VA 05/02/79

WSHA

MR. JERRY CAPLIN
USNRC
WASHINGTON, DC 20555

RESPIRATOR USERS WARNING

THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH) WANTS TO ADVISE USERS OF SCOTT AIR PAK II/IIA AND PRESUR-PAK II/IIA SELF-CONTAINED BREATHING APPARATUS OF THE OCCURRENCES OF SPLIT OR PUNCTURED REGULATOR DIAPHRAGMS. NIOSH TESTS INVESTIGATING THE EFFECT OF SUCH DEFECTS SHOWED REDUCED RESPIRATORY PROTECTION ON DEMAND-MODE APPARATUS. THESE SAME TESTS ALSO SHOWED NO LOSS IN PROTECTION, BUT A LOSS IN SERVICE TIME WHEN IN THE PRESSURE DEMAND-MODE. NOTE: THE PRESSURE DEMAND UNIT IS NOT APPROVED WHILE IN THE DEMAND MODE; THE DEMAND MODE IS TO BE USED FOR DRESSING PURPOSES ONLY.

NIOSH BEGAN THIS INVESTIGATION FOLLOWING THE RECENT DEATH OF THREE FIREFIGHTERS WHO WERE WEARING THIS TYPE OF RESPIRATOR, ALTHOUGH IT HAS NOT BEEN ESTABLISHED THAT THE DEATHS WERE DUE TO DAMAGED REGULATOR DIAPHRAGMS. A SAMPLING OF THE APPARATUS IN THE FIELD HAS SHOWN AT LEAST 10% OF THE UNITS EXAMINED HAVE RUPTURED OR PUNCTURED DIAPHRAGMS.

USERS SHOULD EXAMINE THEIR SCOTT APPARATUS FOR POSSIBLE DAMAGED DIAPHRAGMS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. THE USER SHOULD CHECK THE DIAPHRAGM BEFORE EACH USE BY CLOSING BOTH THE MAIN LINE AND BYPASS VALVES AND BLOWING THROUGH THE REGULATOR OUTLET PORT. IT SHOULD BE POSSIBLE TO MAINTAIN A SLIGHT POSITIVE PRESSURE IN THE REGULATOR. THE USER SHOULD CHECK THE REGULATOR DIAPHRAGM AFTER EACH USE AND DURING MONTHLY INSPECTIONS OF THE COMPLETE APPARATUS. IT IS NOT KNOWN IF FAILURE OCCURS DURING ASSEMBLY, STORAGE, OR USE OF THE RESPIRATOR REGULATOR. THEREFORE, EXTREME CAUTION MUST BE EMPLOYED WHEN USING THE RESPIRATOR. IN CHECKING THE OPERATION OF THE RESPIRATOR, USERS ARE CAUTIONED NOT TO BLOCK THE FLOW OF AIR FROM THE REGULATOR WHEN THE BYPASS VALVE IS OPEN, BECAUSE SUBSTANTIAL OBSTRUCTION MAY RUPTURE OR DISLUDGE THE DIAPHRAGM. IF THE USER OBSERVES A LOOSE OR DISLODGED REGULATOR COVER, THE COVER MUST BE REMOVED AND THE DIAPHRAGM INSPECTED BEFORE BEING USED.



Mailgram



▷ OF THE REGULATOR.

NIOSH HAS REQUESTED THE MANUFACTURER STOP ALL SALES OF THE RESPIRATOR PENDING DETERMINATION OF THE REASON FOR AND NECESSARY CORRECTIVE ACTION TO PREVENT DIAPHRAGM FAILURE. FOR FURTHER TECHNICAL INFORMATION CONTACT: MR. RICHARD RONK, NIOSH, 944 CHESTNUT RIDGE ROAD, MORGANTOWN, WV 26505. PHONE: (301) 599-7337.

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ANTHONY ROBBINS, M.D.
DIRECTOR, NIOSH
RUCKVILLE MD

(ARS RUEVFCZ 0-26-01-036883)
21:19 EST

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LISTING OF IE CIRCULARS ISSUED IN
LAST TWELVE MONTHS

Circular No.	Subject	Date of Issue	Issued To
78-10	Control of Sealed Sources Used in Radiation Therapy	6/14/78	All Medical Licensees in Categories G and G1
78-11	Recirculation M-G Set Overspeed Stops	6/15/78	All Holders of BWR OLs or CPs
78-12	HPCI Turbine Control Valve Lift Rod Bending	6/30/78	All Holders of BWR OLs or CPs for plants with HPCI Terry Turbine
78-13	Inoperability of Multiple Service Water Pumps	7/10/78	All Holders of Reactor OLs and CPs except for plants located in: AL, AK, CA, FL, GA, LA, MS, SC
78-14	HPCI Turbine Reversing Chamber Hold Down Bolting	7/12/78	All Holders of BWR OLs or CPs for plants with a HPCI Terry Turbine excepting Duane Arnold and Monticello
78-15	Checkvalves Fail to Close In Vertical Position	7/20/78	All Holders of Reactor OLs or CPs
78-16	Limitorque Valve Actuators	7/26/78	All Holders of Reactor OLs or CPs
78-17	Inadequate Guard Training/Qualification and Falsified Training Records	10/13/78	All Holders of and applicants for Reactor OLs
78-18	UL Fire Test	11/6/78	All Holders of Reactor OLs or CPs

LISTING OF IE CIRCULARS ISSUED IN
LAST TWELVE MONTHS

Circular No.	Subject	Date of Issue	Issued to
78-19	Manual Override (Bypass) of Safety Actuation Signals	12/28/78	All Holders of CPs
79-01	Administration of Unauthorized Byproduct Material to Humans	1/12/79	All Medical Licensees except Teletherapy Medical Licensees and each Radiopharmaceutical Suppliers
79-02	Failure of 120 Volt Vital AC Power Supplies	2/16/79	All Holders of Reactor OLs and CPs
79-03	Inadequate Guard Training- Qualification and Falsified Training Records	2/23/79	All Holders of and applicants for Special Nuclear Material Licenses in Safeguards Group I
79-04	Loose Locking Nut On Limitorque Valve Operators	3/16/79	All Holders of Reactor OLs or CPs
79-05	Moisture Leakage In Stranded Wire Conductors	3/20/79	All Holders of Reactor OLs or CPs
79-06	Failure to Use Syringe and Battle Shields in Nuclear Medicine	4/19/79	All Holders of Medical Licensees except teletherapy licensees
79-07	Unexpected Speed Increase of Reactor Recirculation MG Set Resulted in Reactor Power Increase	5/2/79	All Holders of BWR OL's or CP's
79-08	Attempted Extortion - Low Enriched Uranium	5/18/79	All Fuel Facilities Licensed by NRC