

I-MOSBA-248

Feb. 15 1990

ent. #248

To: Bill Lyons, Quality Concern Program Coordinator

'95 OCT 20 P4:38

I am filing a Quality Concern with you regarding actions taken by the Vogtle Plant Review Board on Feb 8, 1990 at meeting 90-15. On that date, the Plant Review Board voted in favor of ^{recommending for} approval temporary modification A-90-001 which specified the installation of the FAVA filter skid, as a liquid radwaste treatment system ^{in Plant Vogtle} for a period of time up to 6 months. The Board ^{recommended for} approval the temporary modification despite knowing that the FAVA filter skid did not meet the requirements of Regulatory Guide 1.143, the ASME codes sections 8, and 9 and applicable Quality Assurance Programs. Questions ask during the course of 3 PRB meeting regarding the above non-compliances were not answered or the answers provided indicated that adequate safety, technical, engineering and regulatory compliance reviews had not been accomplished.

The Plant Review Board has a diverse membership based on bringing expertise in a variety of different areas to the table. As a member I accept that there may at times be different viewpoints and that there may be differences of professional opinion. This case is not one of professional differences. It is one of adequate conduct of business and fulfillment of the PRB's responsibilities under Technical Specifications as described in administrative procedure 00002-C "Plant Review Board - Duties and Responsibilities, especially paragraph 2.0 and paragraph 3.3.

Docket No. 50-424/425-OJA-3
EXHIBIT NO. II - 248
In the matter of Georgia Power Co. et al. v. Title Units 1 & 2
☐ Staff ☐ Applicant ☒ Intervenor ☐ Other
☐ Identified ☒ Received ☐ Rejected
Date 5/15/95 Witness BOL K HOLE
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I am the senior representative on the board representing the engineering, technical, and regulatory compliance areas of the Vogtle staff. I presented the following information to the Board regarding regulatory, code, and quality requirements applicable to temporary modification A-90-001:

- ① Vogtle is committed to Regulatory Guide 1.143 in chapter 1.9 of the FSAR,
- ② The FAVA filter skid was being added to the plant's design by a temporary modification under procedure 00307-C "Temporary Modifications",
- ③ The temporary modification A-90-001 is a ^{designated} safety related* and technical, design reviews and safety evaluations are required by procedure 00307-C.
- ④ The Quality Assurance department and Vice President Ken McCoy have recently stressed treating temporary and vendor equipment design like permanent.
- ⑤ The FAVA filter skid is a "system handling radioactive material in liquids" as defined in section B of Regulatory Guide 1.143.
- ⑥ The Regulatory Position section C.1.1.1 requires that "The systems should be designed and tested to requirements set forth in codes and standards listed in Table 1 supplemented by regulatory positions 1.1.2 and 4 of this guide."

TABLE I
EQUIPMENT CODES

EQUIPMENT	CODES			
	Design and Fabrication	Materials ¹	Welder Qualification and Procedures	Inspection and Testing
Pressure Vessels	ASME Code Section VIII, Div. 1	ASME Code Section II	ASME Code Section IX	ASME Code Section VIII, Div. 1
Atmospheric Tanks	ASME Code ³ Section III, Class 3, or API 650, or AWWA D-100 ²	ASME Code ² Section II	ASME Code Section IX	ASME Code ³ Section III, Class 3, or API 650, or AWWA D-100 ²
0-15 PSIG Tanks	ASME Code ³ Section III, Class 3, or API 620 ²	ASME Code ² Section II	ASME Code Section IX	ASME Code ³ Section III, Class 3, or API 620 ²
Heat Exchangers	ASME Code Section VIII, Div. 1 and TEMA	ASME Code Section II	ASME Code Section IX	ASME Code Section VIII, Div. 1
Piping and Valves	ANSI B31.1	ASTM and ASME Code Section II	ASME Code Section IX	ANSI B31.1
Pumps	Manufacturers' Standards ⁴	ASME Code Section II or Manufacturers' Standards	ASME Code Section IX (as required)	ASME Code ³ Section III, Class 3, or Hydraulic Institute

¹ Manufacturers' material certification of compliance with material specifications may be provided in lieu of certified material.

² Fiberglass-reinforced plastic tanks may be used in accordance with appropriate articles of Section 16 of the ASME Boiler and Pressure Vessel Code for applications at ambient temperature.

³ ASME Code stamp, material traceability, and the quality assurance articles of Appendix B to 10 CFR Part 50 are not required. Therefore, these components are not classified as ASME Code Class 3.

⁴ Manufacturers' standard for the intended service. Hydrotesting should be 1.5 times the design pressure.

② Regulatory Position C.1.2 states

1.1.2 Materials for pressure-containing components should conform to the requirements of the specifications for materials listed in Section II of the ASME Boiler and Pressure Vessel Code,³ except that malleable, wrought, or cast iron materials and plastic pipe should not be used. Materials should be compatible with the chemical, physical, and radioactive environment of specific applications during normal conditions and anticipated operational occurrences. Manufacturers' material certification of compliance with material specifications such as those contained in the codes referenced in Table I may be provided in lieu of certified material test reports.

- ⑧ It is the policy of the Georgia Power Company that "should" requirements in Regulatory Guides Positions are applied as "shall", in that they are a regulatory requirement.
- ⑨ Table 1 presents the codes to which Radwaste Systems are to be designed, constructed and tested. I reviewed with the board the requirements for pressure vessels as an example.
- ⑩ Regulatory Position C.6 presents the Quality Assurance requirements for radwaste management systems. Specifically I reviewed with the Board item 4.2.3 and 4.2.3.1 as examples.

I provided to the board the following information regarding the compliance of the FAVA filter skid and the safety and engineering evaluation of Temporary Modification A-90-001 with the above requirements.

- ⑪ The FAVA filter skid's pressure vessel and the system other pressure retaining components are not code stamped vessels or components. No information was provided to the Board that they met any of the ASME code requirements of Table 1. This includes ASME section II, VIII, IX and ANSI B31.1 This includes requirements for Design and Fabrication, Materials. A-1/1

Welder Qualifications and Procedures and Inspection and Testing.

- ② The status as to whether system hydrostatic tests had been completed was raised as a question to the board. The completion of a 1.5 times design hydrostatic test ^{of the filter container} is stated as having been completed in section VII of the Engineering Evaluation response to REA VG-9057 page 4 item 1 ^{dated 11-28-89}. This fact is used as justification for not meeting requirements of Reg Guide 1.143. No information was presented to the board that this test had been performed. On 1-9-90 a purchase order ⁹⁰⁻⁶⁰⁰²¹⁷⁶ had been initiated to request such documentation from the vendor.

A system hydrostatic test is recommended in REA-VG-9057 section XI item C. No documentation was presented to the board that this test had been satisfactorily completed prior to the PRB voting.

- ③ The FAVA filter system is constructed almost exclusively of PVC piping and fittings which is specifically prohibited by Regulatory Guide 1.143 section C1.1.2. There are dozens of PVC fittings, valves and approximately 50 or more linear feet of piping runs. The engineering A-

review response to REA-VG-9057 states

in section IX (1) "The amount of PVC piping used is not extensive and is contained on the FAVA filter skid." The same REA in section II states the FAVA filter ---- "use has been temporarily discontinued due to a concern raised regarding compliance with Regulatory Guide 1.143 (ie. use of PVC pipe) for a portion of the interconnecting temporary process lines (approximately 10 linear feet total length for the filter inlet and outlet) on the FAVA filter skid.

The engineering review and 50.59 safety evaluation justify the use of PVC piping because it is "Schedule 80 and suitable for this service", "There have been no reported leaks", because "the integrated dose to the PVC piping would be well below the radiation damage threshold", and finally the "PVC pipe would not be subjected to excess pressure conditions since the maximum available inlet pressure to the filter is 80 to 100 psig"

What the engineering review and 50.59 safety evaluation fail to address are many other technical issues that would be needed to attempt to justify the use of PVC, such as resistance to water hammer, ^{impact resistance} adequacy of solvent weld joints, stresses from pipe supports, thermal expansion and ^{temperatures of} contraction. Because the material and physical properties of PVC are so different than steel, the evaluation is

(7)

Other errors and omissions in the engineering and safety evaluation^{also} make the justification of acceptability of PVC piping invalid. The holding pump has a dead head pressure of about 115 psig per Larry FAVA. The FAVA skid does not contain a relief valve. As a result of this, PVC pipe could be subjected to excess pressure conditions from thermal expansion, from radiolytic off gassing and from various pumping operations. Pressure rating of PVC pipe degrades rapidly at 120 °F.* Ambient conditions in the ARB approach this level during the summer.*

- ④ The FAVA filter pressure vessel (as mentioned above) is not protected by a relief valve. No explanation was provided in the engineering evaluation or in further questioning of SCS design engineers as to why this is acceptable. As stated above there appears to be conditions that could subject the pressure vessel to excessive pressures. Adequate over - pressure protection of pressure vessels is a requirement of ASME Code section VIII.

- ⑤ SCS engineering performed the engineering and so, safety evaluation for the FAVA filter skid. On a telephone call in the presence of the PRB SCS engineering admitted that "No engineer or representative of their design engineering group

had ever seen or "walked down" the FAVA skid first hand. Where as it may be acceptable in certain circumstances to perform an engineering review, without viewing the equipment, from drawings and specifications; it would not be acceptable for ^{the} FAVA skid. The skid was not procured to an ^{normal} standards or specifications, there do not exist norms as built drawings and as discussed in item 8 no Quality Assurance program was utilized. Because of this the reviewer could not know with any certainty what the as built contents, configuration and condition of the skid was.

- ⑥ SCS engineering admitted on the same phone call that they had not done a "line by line comparison" of the skid's components with codes and design standards and requirements. No as built drawings are contained in the engineering evaluation. There is only a simple P&ID schematic.
- ⑦ A question was raised as to whether the engineering review had considered previous radiation exposure of the skid. No ^{specific} answer was provided only that its contribution was small. Looking at page 4 of the safety evaluation tends to indicate that previous exposure was not considered.

8. I questioned how the engineering and safety evaluation could ignore addressing the total lack of a Quality Assurance Program on the design, construction and testing of the skid. No answers were provided. The requirements of applicable Quality Assurance Programs is set forth in the FSAR section 17.2 and thru section 1.9. A reduction in applicable Quality Assurance Programs can only be done with prior permission of the NRC.
9. The Quality Assurance Manager stated to the Board that sometimes a Quality Assurance program could be used to justify items of non-compliance with Codes and sometimes Code compliance could be used justify certain items of non-compliance with Quality Assurance programs, but he didn't see how we could justify a lack of both.

* Item not specifically drawn with PAB.

In summary the Board ignored general and specific questions as well as negative information regarding regulatory, code, procedural, and Quality Assurance program compliance and ^{recommended for} approval temporary modification A-90-001. The Board seemed to be pressured by the fact that the vendor, Larry Fava, was on site and ready to reinstall the skid. The vote was called for without resolving pertinent issues or waiting for

pertinent documentation. The vote was called for in the face of strong objection from the Vice Chairman and was approved 5 to 1 in favor of temporary modification A-90-001.

Since Radwaste Systems have regulatory and quality requirements and since this Temporary Modification was designated "Safety Related" this is a "quality concern".

Allen L. Mendenhall

Subsequent to the PRB meeting of 2-8-90 I have reviewed additional information and drawn additional conclusions with resulting concerns as follows:

Document: I&E Circular 80-18: 10 CFR 50.59 Safety Evaluations for changes to Radioactive Waste Treatment Systems.

Conclusion: From the "Discussion" section, reference is made to "permanent or temporary" systems which implies that requirements apply equally to temporary systems.

Conclusion: From the "Notice" section, "the appropriate portions of 10 CFR 20, 30, 50, 71 and 100 the Facility Technical Specifications, and 40 CFR 190 (Environmental Dose and results standard) are applicable." Because of this, evaluation of failure modes resulting in spraying down the building, its occupants and the potential for release to unrestricted areas must be addressed. These have not been previously addressed because the probability of failure of code compliant systems is very low.

Document: (SONOPRO Draft 50.59 Policy) and NSAC 125.
 (Statement and Procedure)

Conclusion: The Safety Evaluation in A90-001 is inadequate and therefore the FAVA Filter shield and its operation represents an "unreviewed safety question." I draw this conclusion because failure modes, probabilities of failure, and consequences of failures have not been analyzed, reviewed, or enveloped as part of the licensing basis because compliance with FSAR committed Reg. Guides, codes and standards and Quality Assurance programs was implicit in the licensing basis itself. Wholesale deviation was

Since the 50.59 review fails to adequately address these implicit items, the modification is "unreviewed"

Document: A-90-001 FAVA Temporary Modification

Conclusion: On 2-12 this temporary modification was made active by the shift supervisor, installed and verified. If the FAVA skid represents an unreviewed safety question and since the skid is now installed, we are now in an unanalyzed condition of operation. This represents a deficient condition and may be reportable if determined to be significant.

As additional background, the FAVA filter had been previously installed and operated in the plant without any temporary modification, for about 6 months.

The need for such a filter first came into existence in ^{early} ~~mid~~ 1988 (see attached problem statement) when Radwaste, Chemistry and Health Physics personnel thought they were close to exceeding Niobium 95 discharge limit. The filter was procured to limit Niobium discharges. Later it was discovered there were "order of magnitude" errors in the Niobium discharge limit calculations due to the use of wrong environmental concentration factors. Despite this, the effort to procure a filter continued and the emphasis shifted from Niobium 95 to Cobalt 58 and 60. Since the software errors were corrected, Niobium 95 limits have not been a problem.

The problems with the FAVA filter not meeting applicable regulatory requirements was first identified by the Materials and Procurement review groups who brought the problem to the attention of management and Quality Assurance. Based on these concerns the filter was removed from service, and efforts to procure a system that met requirements begun. In the meantime a RFA was initiated to obtain engineering justification to reinstall the unit.