

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

DOCKETED
USNRC

'85 AUG -7 AIO:56

In the matter of :

GEORGIA POWER COMPANY,
et al. :

(Vogtle Electric Generating
Plant, Units 1 and 2) :

Docket Nos.
50-424 and 50-425

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

AFFIDAVIT OF G. A. HALLSTROM

G. A. Hallstrom, states under oath that:

1. My name is George A. Hallstrom. My business address is U. S. Nuclear Regulatory Commission, 101 Marietta Street, Suite 2900, Atlanta, GA 30323. I am employed as a Reactor Inspector for the Nuclear Regulatory Commission, Region II. In that position my primary responsibilities involve inspection of nuclear power plants in the areas of welding and nondestructive examination. A statement of my professional qualifications is attached.
2. I make this Affidavit with regard to the Applicants' Motion for Summary Disposition of Joint Intervenors' Contention No. 8 (Quality Assurance). I am personally knowledgeable of matters set forth herein and the statements made are true and correct to the best of my knowledge. The matters which I will address in the following paragraphs are the embed assemblies in the auxiliary building and cracking in containment pipe rack welds.

WELDING ALLEGATIONS

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Embed Assemblies in the Auxiliary Building

3. I became aware of specific details with regard to problems with embed assemblies during a January 29 - February 1, 1985 inspection (Report Nos. 424, 425/85-03) while assessing licensee actions on Construction Deficiency Report (CDR) No. 424, 425/CDR 80-07. The licensee's formal written notification to the NRC on improper installation and inspection of these embed assemblies was dated December 20, 1978. The final report was submitted on November 21, 1979, and amended on April 10, 1980, and June 20, 1980. The amendments were issued to clarify the completion status of corrective actions.
4. There were 127 embed assemblies involved and all were reported to have either been derated or abandoned. However, four abandoned and 46 derated embeds were subsequently used and another report (No. 424, 425/CDR 82-21) was issued on February 21, 1982 describing the discrepancies as a potential 50.55(e) item. On April 22, 1982, the licensee informed Region II that engineering evaluations were complete, which indicated that the later discrepancies would not have adversely affected public or plant safety during the expected lifetime operations of the nuclear power plant. Additional deficiencies concerning a lack of anchor-bolt thread engagement for 222 embed assemblies were reported to Region II on April 26, 1982, by CDR No. 424, 425/CDR 82-25. The final report was submitted on July 1, 1983.
5. I completed assessment of the licensee's corrective actions on these items during a February 25 - March 1, 1985 inspection (Report Nos. 424, 425/85-08). Confidence in the adequacy of corrective actions for CDR 80-07

was obtained by random verification of engineering analyses of the 127 embed assemblies involved, field inspections of randomly selected assemblies, records review, and discussions with cognizant licensee inspection and audit personnel. Agreement with the licensee's conclusions regarding CDR 82-21 required review of the pertinent engineering analyses which demonstrate that all of the derated embeds used were structurally adequate for the design loads to be imposed and verification that all abandoned embeds were completely removed and no longer usable. The four abandoned embeds located in the auxiliary building were used to attach a platform ledger and were not required to satisfy the structural requirements of the platform. These embeds were detached from the platform and also removed. Confidence in the adequacy of the licensee's corrective actions for CDR 82-25 was also obtained by field inspections, records review, verification of engineering analyses and discussions with licensee inspection and audit personnel. During reassessment of the 222 embeds with potential deficient thread engagements 82 were identified as having the required thread engagement for full development. They had been misidentified due to incorrect assumptions by inspection personnel that the bolts were required to be fully threaded into the plate nut to obtain full development. Of the 140 remaining embed assemblies, 75 were repaired and restored to their full design capacity. The remaining 65 embeds were either derated or modified to ensure that the load ultimately applied was within actual capacity of the plates involved. Additional confidence was obtained by review of followup overview audit reports by licensee Quality Assurance (QA), Quality Control (QC) and civil groups which identified no recurrences of thread engagement problems.

6. I am aware of additional potential discrepant conditions due to separation of a non-safety-related pipe support from its embed plate. The licensee had concluded that this was an isolated event caused by Lammelar tearing of the plate material. This conclusion is supported by random inspection of 54 safety-related pipe support embed assemblies with no other lammelar tearing identified. The adequacy of the licensee's corrective actions will be evaluated in the routine NRC inspection program.

7. In conclusion, to the best of my knowledge the licensee had identified problems regarding embeds, reported them to the NRC, and taken adequate corrective actions. The quality of embed assemblies is acceptable and they are in compliance with design requirements.

Cracking in Containment Rack Pipe Welds

8. I became cognizant of most details with regard to cracks on pipe racks in Unit 1 containment during an October 30 - November 2, 1984, inspection (Report Nos. 424, 425/84-30) for which the major objective was assessment of the generic implications, potential for additional cracking, and ongoing corrective actions by the licensee. The licensee had identified this problem to Region II on July 20, 1984, through CDR No. 424/CDR 84-66. The final report was issued on October 17, 1984. Additional deficiencies in other areas were identified during the inspection and the resulting findings included violation 84-30-01 "Failure to Incorporate Corrections in Revisions of Design Drawings", violation 84-30-02 "Failure to Follow Nonconformance Procedure," and unresolved item 84-30-03 regarding the adequacy of welding quality data. The deficiencies cited were primarily caused by the unusual

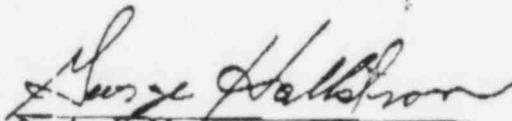
complexity of the design drawings involved in relation to other ongoing work.

9. Subsequent licensee corrective actions have been adequate to resolve NRC concern on items 84-30-02 and 84-30-03 and these items were closed during a followup inspection on April 15-19, 1985 (Report Nos. 424, 425/85-14). Resolution of NRC concern on 84-30-01 has been delayed due to a similar infraction (violation 85-03-01) identified during a January 29 - February 1, 1985, inspection (Report Nos. 424, 425/85-03). However, additional corrective actions have been taken by the licensee and Region II advised the licensee by letter dated May 31, 1985, that the corrective actions were considered acceptable and their implementation will be examined in a future inspection under the routine enforcement program.

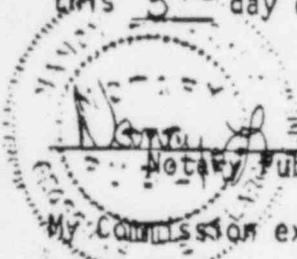
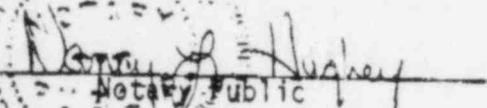
10. Assessment of the underlying cause of crack initiation is not complete. However, the most probable cause was due to inadequate engineering consideration of need for welding sequencing to minimize the effects of weld shrinkage stresses during fabrication of the massive structures involved. These types of considerations were imposed on portions of the structures completed after November 2, 1984 as well as repair of the original cracks involved. Ongoing interactions between the licensee and NRC on this issue have occurred during several inspections (Report Nos. 424, 425/84-30, 84-36, 85-03, and 85-08). Licensee responses have been adequate to resolve concerns as identified and all known deficient welds are incorporated in the DER-061 corrective action plan. This item remains open pending completion of all corrective actions involved.

11. In conclusion, to the best of my knowledge, completed and/or planned corrective actions are adequate and all NRC concerns are resolved. The licensee's interaction with NRC has been sufficient such that additional enforcement action does not appear necessary.

12. In summary, based on my knowledge described above on the specific issues raised by Intervenors, and based on my overall knowledge of QA/QC activities at Plant Vogtle as applied to my areas of expertise as set forth above, I do not believe there has been a programmatic breakdown in the QA/QC program at Vogtle.


G. A. Hallstrom

Subscribed and sworn before me
this 5 day of ~~July~~ August 1985



Notary Public

My Commission expires
Notary Public, Georgia, State at Large
My Commission Expires May 15, 1988

GEORGE A. HALLSTROM
STATEMENT OF PROFESSIONAL QUALIFICATIONS

I graduated from Mississippi State University in 1966 with Bachelor of Science Degree in Nuclear Engineering. I am a Vice-Chairman of the American Welding Society A5 Committee on Filler Metal and Chairman of the American Welding Society A5M Subcommittee on Filler Metals for Flux-Cored Arc Welding.

In 1984, I accepted a position as a Reactor Inspector with the U. S. Nuclear Regulatory Commission. My duties have primarily involved inspections related to fabrication, inspection and testing of nuclear components and systems with particular attention directed to welding and nondestructive examinations. As a specialist, I provide assistance to other members of NRC staff concerning conditions arising during construction, inservice inspection, or operation of nuclear facilities which require a knowledge of welding and/or destructive examination.

From 1981 to mid-1983, I was employed as a Senior manufacturing welding engineer in the Chattanooga, Tennessee facilities of Combustion Engineering, Incorporated. My employment at Combustion Engineering was interrupted by a brief tour of duty with the Tennessee Valley Authority.

My major responsibilities at Combustion Engineering included functioning as the assigned contract welding engineer in the fabrication of nuclear navy reactor vessels and ASME code nuclear and non-nuclear components. Necessary areas of expertise included qualification of welders and procedures; nondestructive examination; materials purchasing; heat-treating, cleaning and forming to the applicable codes and standards. Additional responsibilities included evaluation of the metallurgical aspects of welding and other thermal treatments.

My major responsibilities at Tennessee Valley Authority were on-site provision of welding and welding-related expertise in major modifications of boiling water reactors and related assemblies including surveillance of welding and nondestructive examinations.

From 1974 to 1981, I was employed as a welding engineer and technical secretary in the Miami, Florida headquarters of the American Welding Society. My major responsibilities included technical clarification of welding standards and specifications to domestic and foreign inquirers, technical input and administrative support to committees responsible for welding codes and standards, and other coordination duties associated with Codes and Standards Organization, American National Standards Association, American Society of Mechanical Engineers, and other technical societies. Additional responsibilities included acting as a national level representative of the American Welding Society.

From 1971 to 1974, I functioned as owner and manager of Ocean Jewels of Miami, Florida. The business was licensed to warehouse and wholesale marine tropical animals.

From 1967 to 1971, I was employed as a Consulting Engineer in the Orlando, Florida, and Denver, Colorado offices of R. W. Beck and Associates. My major responsibilities included computer programming and other technical evaluations for publicly-owned electric utility clients.

From 1966 to 1967, I was employed as an Aerospace Engineer in the Propulsion Research and Development Laboratory of the National Aeronautics and Space Administration in Huntsville, Alabama.