

Contention No. 8 (Quality Assurance). I have personal knowledge of the matters stated herein and I believe them to be true and correct. First, I will describe the welding procedures used at the Vogtle Project; I will include within that description a discussion of the relevant organizational responsibilities, the training and qualifications of welders and inspectors, the procurement and storage of welding equipment and materials, and the fabrication; installation, inspection and testing procedures. Second, I will discuss Intervenors' allegation concerning "welding in a light misting rain." Third, I will discuss Intervenors' allegation concerning pipe rack cracking.

WELDING PROCEDURES

Organization and Responsibility

3. Georgia Power Company Nuclear Construction Department has the overall responsibility for completion of VEGP and has established a Project Welding Section to implement the field welding program for those contractors working under the GPC Quality Assurance Manual and assist contractors working under their own Quality Assurance program (i.e. Pullman Power Products, NISCO, Pullman/Kenith-Fortson, Chicago Bridge and Iron). Contractors working under the GPC Quality Assurance Manual (Cleveland Electric, Ingalls/Mosher, Walsh Construction) use welding procedures qualified by GPC and their work is inspected by GPC Quality Control Inspectors. The VEGP welding program ensures quality in functional areas which are generic to

all contractors. Although contractors with their own Quality Assurance programs may use different methods to meet their required need, all contractors who perform welding, perform that welding under an approved Quality Assurance program.

4. Welding is controlled as a special process at nuclear power plant construction sites. To ensure this responsibility is met, a proven, qualified welding program has been implemented at Plant Vogtle.

Qualification of Welding Procedures

5. The Welding Procedure Specification (WPS) is a document providing direction to the welder or welding operator while making production welds to code requirements. WPS's used by contractors under the GPC Quality Assurance Manual are developed at the Vogtle site by GPC Welding Specialists. Welding procedure qualification welds are welded, inspected, and tested in accordance with the applicable code (ASME Boiler and Pressure Vessel Code, AWS D1.1, AWS D1.3, etc.). A Procedure Qualification Record (PQR) is then completed documenting the actual welding variables used to produce an acceptable weld and the test results obtained. Mechanical testing is performed offsite by an independent testing laboratory to determine the test weld's tensile strength, notch toughness, etc. as required by the applicable code. When WPS development and qualification is completed and docu-

mented it is then reviewed by Bechtel Project Field Engineering group prior to issuing the procedure for use. These procedures are audited periodically by the Quality Assurance group and the Nuclear Regulatory Commission.

Qualification of Welders

6. Welders for the Vogtle site are requisitioned from the union locals by the contractors. When arriving on site they are sent to the Weld Test Shop prior to performing any welding on site. At the Weld Test Shop the welders are required to weld test coupons under the direction of the Weld Test Shop supervisor. The purpose of this test is to determine the welder's ability to make sound welds that meet the requirements of the applicable code. Tests are administered in accordance with written procedures, such as GPC Field Procedure WG-T-01 for AWS welding or Pullman Power Products Field Procedure II-8. Welder tests are inspected during the test by the Weld Test Shop supervisor, and if during the test it becomes apparent that the welder does not have the required skill to produce satisfactory results, the test is terminated and considered failed regardless of the stage of completion. Weld test coupons that are completed and pass visual inspection receive destructive bend tests or other tests required by the applicable code. Welders that fail are returned to the contractor, who usually terminates them if they cannot be assigned to other work. Welders

that pass are assigned a unique identifying symbol consisting of letters or numbers that he must use to identify all welds that he performs on site. The welder is then returned to the contractor for training on welding procedures, electrode control, quality assurance, quality control, and any other new-hire orientation required by each company.

7. The Weld Test Shop supervisor documents the test results on a Welder Qualification Test Record, attaches a picture of the welder to the form and forwards it to the Project Welding supervisor who reviews it, signs it, sends a copy to the QA Records Vault, and maintains the original for file. These records are reviewed and audited periodically by Quality Assurance and the Nuclear Regulatory Commission.

Welder Training

8. When welders need instruction and/or training to upgrade their skill to pass welder tests for specialized procedures, the welder is sent to a training facility, separate from the test shop, where he receives detailed instruction and is allowed to practice on sample weld coupons until the training instructor is satisfied the welder has obtained a level of skill sufficient to pass the welder test and be capable of performing satisfactorily in the field. Only then is he sent to the Weld Test Shop for testing. Contractors administer classroom training,

as needed, to keep the welders informed of procedural requirements. This includes new-hire orientation, refresher training, electrode control requirements, and WPS requirements.

WELD FILLER MATERIAL PROCUREMENT,
STORAGE, ISSUE AND FIELD CONTROL

Procurement

9. Weld filler materials (coated electrode, bare wire, consumable inserts, etc.) are procured for Plant Vogtle in accordance with specifications written and controlled by Bechtel. These specifications are prepared in accordance with the design criteria prepared by Bechtel and contained in the VEGP Project Design Manual. These criteria incorporate the licensing commitments of the PSAR and 10 C.F.R. 50.

10. All suppliers of "Q" related hard materials are required to implement a Quality Assurance program. A supplier does this by submitting his Quality Assurance Manual for review and approval. This manual then becomes the basic document upon which his work is audited. Quality surveillance is based upon the specifications and all codes referenced therein.

11. Each supplier must produce certified documentation in executing this Quality Assurance program. Requirements for this documentation were established by Bechtel and comply with 10 C.F.R. 50 Appendix B criteria.

These criteria require documented evidence that material and equipment conform to procurement requirements, and that they be available at the site prior to installation or use of the item.

Storage of Materials on Site

12. Georgia Power Company purchases, receives, inspects, and stores piping, equipment, and material, including welding materials, required for construction at Plant Vogtle. GPC is also delegated the responsibility as the material supplier for ASME III, Division 1 material. Requirements of the ASME B&PV Code Section III, Division 1 necessitate that receipt inspection and control of ASME Code items and materials be performed by the "NA" installers, Pullman Power Products (PPP), and Nuclear Installation Services Company (NISCO). NISCO responsibility is limited to components and activities that are within the Westinghouse Electric Company scope of supply (the NSSS System).

13. All materials, including restricted consumables, are initially received and inspected at the job site by GPC. After satisfactory completion of receipt inspection, the material is released for use until it is inspected and all documentation is reviewed to confirm that the material conforms to specified standards.

14. Welding Material Distribution Centers (WMDC) maintain inventories of welding materials sufficient to

support the needs of construction. Welding materials are handled and stored in a manner that prevents contact with dirt, dust, grease, moisture, or other contaminants. The WMDC is a Level "B" storage area. A Level "B" storage area is a well-ventilated facility with a temperature range of between 40°F and 140°F, paved floors, and satisfactory pallets for material storage.

15. The material stored in "Q" storage areas, which contain permanent Plant material, is segregated into ASME and non-ASME material, with the exception of large bore pipe spools, which are intermingled. Fittings are separated by the type of material, material description, code class, or use. Carbon steel material is separated from stainless steel material and pipe or storage racks made from carbon steel are suitably protected to avoid contamination of stainless steel material. Small bore fittings and miscellaneous material (bolts, nuts, etc.) are stored in separate bins, barrels, boxes, and similar containers. The material or its container is clearly marked for ease of identification and to prevent unnecessary opening of crates or boxes. Storage areas are monitored every 30 days to assure acceptable material status. Inspection of material in storage is performed pursuant to a periodic schedule and is documented on a Storage Inspection Report.

Issue and Field Control

16. Field issuance of weld filler materials to the welder is controlled. The craft foreman prepares an appropriate requisition in accordance with the isometric or piping detail. It is then submitted to the WMDC where it is reviewed for accuracy and completeness. Once the requisition has been reviewed, the welder is issued the quantity, type, and size of weld material specified on the requisition and the correct log, heat, or control number of weld filler materials is recorded on the requisition.

FABRICATION, INSTALLATION, INSPECTION AND TESTING

Overview

17. Georgia Power Company Construction Division is responsible for site fabrication, installation, inspection, and testing activities for process piping and equipment. GPC Construction Quality Control monitors these activities in accordance with written Plant Vogtle field procedure. ASME Section II, Division 1 Code work is performed in accordance with the 1977 Edition through the 1977 Winter Addenda and under ASME Certificates of Authorization No. 1102-3 for "NA" installation and 1101-3 for "NPT" fabrication.

18. Welding is performed in the field under contractor supervision. Welders are assigned to welds by their foreman who gives them the WPS to use, the type of weld required, and the size of the weld. This information

is taken from drawings and procedures prepared by engineering. The GPC Project Welding Section performs random surveillance of in-process welding operations to assure welders are welding within the parameters of the qualified WPS, within the limits of their qualification, and the welding material control procedures are being followed. GPC Welding Specialists, Contractor Welding Engineers and Welding Coordinators provide technical assistance to the welder and supervisor when needed.

19. Craftsmen perform the physical work activities under the technical direction of craft superintendents and field engineers. The primary documents used by the craftsmen are piping drawings and WPS or process sheets. The process sheet specifies work activities, sequence, procedural references, and inspection hold points. Craftsmen notify the QC inspector when a hold point is reached and inspections are performed and documented.

Quality Control Inspections

20. The inspector verifies that the welding materials agree with the rod requisition, that the welding procedure specification is correct for the joint to be welded, and that the description and identification entries on the WPS or process sheet are correct. Prior to releasing the joint for welding, the inspector assures that the weld area is adequately protected from high winds, rain, snow, or other adverse environmental conditions. When the joint is found acceptable, the inspector enters the welder's

symbol on the appropriate documents and signs off the required hold points. Any ANI hold points for ASME Section III weld fit-up operations are conducted at this time.

21. The contractor is responsible for performing the required Nondestructive Examination (NDE). A report is issued for each examination performed in accordance with the applicable NDE procedure (radiographic, ultrasonic, liquid penetrant, magnetic particle, eddy current or leak testing). The item examined, method of examination, and examination results (accept or reject) are documented.

22. The Quality Assurance group performs periodic audits to ensure work is being performed in accordance with the applicable procedures and that the procedures are adequate to ensure the quality required by the applicable codes and NRC guidelines. The NRC also performs periodic inspections of work activities to ensure they are being performed in accordance with the applicable codes, regulations, NRC guidelines, and industry standards.

23. Documentation of the required Quality Control inspections, procedure qualification records, welder qualification records, and welding material documentation are maintained on file in the QC Records Vault as objective evidence that activities affecting quality are performed and controlled in accordance with written

approved procedures that will ensure the applicable code requirement is met.

WELDING IN LIGHT MISTING RAIN

24. Intervenors have challenged the assurance of quality at Plant Vogtle based, in part, upon an instance which occurred on November 18, 1982 in which an NRC inspector observed welding being performed on No. 2 primary containment dome sections in what he characterized as "a very light misting rain." The rain was not yet enough, at the time, completely cover a flat surface, however, if the condition were to continue, it would have become detrimental to the quality of the weld. The NRC inspector documented his findings in I&E Report 82-29.

25. The inspector noted that he discussed the condition with the welding supervisor and the site QA supervisor. Work was stopped for the day although the welding supervisor and the QA supervisor were of the opinion that this condition was acceptable for welding and this position could be substantiated by appropriate CB&I procedures.

26. With regard to the safety of the weld, it is clear that the weld is safe. Not only did the weld undergo routine final inspection as required by appropriate procedures, this particular weld was dry at the time and the "light misting rain" occurring in the vicinity had no effect on integrity of the final weld. I have no question as to the credibility of the welds performed in this type

of weather based upon extensive work with this type of material. There are no metallurgical problems that will surface provided the minimum temperature of the surrounding metal is maintained according to appropriate procedures. The minimum temperature is maintained in weather conditions such as that which existed on Thursday, November 18, 1982 when the NRC senior resident inspector called into question the procedures.

CRACKING IN CONTAINMENT PIPE RACK WELDS

27. The next attack which Intervenors make upon the welding program at VEGP concerns their suggestion that cracking has occurred in containment pipe rack welds. This was a situation which was first identified by Georgia Power Company and reported as a licensee identified item.

28. Containment pipe rack is a supporting structure made of structural steel members which supports and arranges critical piping inside the containment building.

29. The pipe racks are fabricated by welding structural members using a fabrication procedure defined by Pullman Power Products (PPP) field welding engineer. Bechtel reviewed the design documents and related welding procedures. These procedures were found to be acceptable and did not need to be revised. The cracks in the pipe racks were discovered subsequent to final Quality Control inspections. On April 24, 1984, Pullman Power Products

issued eight nonconformance reports covering two welds with cracks on containment pipe rack R0002 and seven welds with cracks on containment pipe rack R0003. Thus, nine welds out of approximately 12,000 welds had cracks.

30. Subsequently, an evaluation of the nonconformance report indicated the existence of a potentially significant deficiency which was reported to the NRC by GPC. To resolve the situation, Georgia Power Company requested the assistance of Bechtel Material and Quality Services Organization. After extensive investigation and review, it was determined that there was no problematic breakdown in the Quality Assurance program of the PPP.

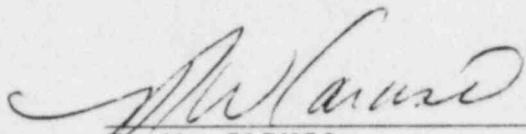
31. A repair of the welds in question was performed, and all uncracked welds with generic rack designs similar to those which cracked were identified. With regard to each of those, corrective action was planned which would include one of the following:

- (1) local stress relief;
- (2) reinforced joint with doubler plates;
- (3) remove and replace weld; or
- (4) load test to 25% over size of load.

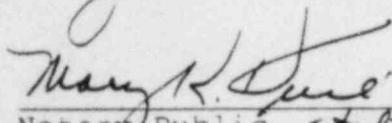
32. The NRC has reviewed the corrective action and has indicated a preference that all generic welds be removed and replaced. However, Georgia Power Company may justify why the other alternatives are also viable. The corrective actions in question have not been completed. Therefore, the item remains open pending review and

acceptance of the corrective action. No additional NRC enforcement action is anticipated.

Further Affiant sayeth not.


R. W. CARUSO

Sworn to and subscribed
before me this 20th day
of June, 1985.


Notary Public, State of Georgia
Comm Expires 6/23/86

KEITH W. CARUSO

EDUCATION: B. S., Engineering (Welding) Technology
California Polytechnic State
University, San Luis Obispo

SUMMARY: 4 YEARS: February 1981 to present,
hired as a junior engineer in the Los
Angeles Area Office of Materials &
Quality Services and proceeded from
this position to Materials & Quality
Services Coordinator on the Vogtle Job
to Materials & Quality Services Jobsite
Coordinator for the Vogtle Project.

EXPERIENCE:

1982 to Present: Project Coordinator at the Vogtle
Jobsite providing technical services to Client (Georgia
Power Company) in Welding, NDE and related areas.
Developed AWS and ASME welding programs for Georgia Power
Company. Additionally assisting Bechtel site engineering
in welding as it relates to the BPC N-stamping of piping
systems. Support of site engineering in interfacing with
the NSSS Supplier (Westinghouse) and the "NA" installer
(Pullman Power Products). Qualified as
Auditor-in-Training (1983).

1981 to 1982: Assigned to the Vogtle Project part time
coordinating the work between Materials & Quality Services
and the project.

1981: Junior Engineer in Materials & Quality Services,
Los Angeles Area Office reviewing specifications and
suppliers procedures.

Three months (summer) with Stoddy Company as Lab
Technician testing Welding Consumables and developing
procedures for hardfacing, cladding and rebuilding.

Three months (summer) Welding, Repairing and Coating of
Bailey Bridge Components.

Four months with Wolff Manufacturing designing Machine
Welders for rebuilding under carriage components of
Crawler Tractors.

PROFESSIONAL DATA:

Member of AWS and ASM.