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SEP 24 11:29
*85 September 23, 1985

OFFICE OF SECRETARY
DOCKETING & RECORDS
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
CAROLINA POWER & LIGHT COMPANY)	Docket No. 50-400 OL
and NORTH CAROLINA EASTERN)	
MUNICIPAL POWER AGENCY)	
)	
(Shearon Harris Nuclear Power)	
Plant))	

APPLICANTS' TESTIMONY OF
THOMAS W. BROMBACH
ON CONAM INSPECTION ACTIVITIES
(CCNC CONTENTION WB-3)

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Q.1 Please state your name.

A.1 Thomas Walter Brombach.

Q.2 Mr. Brombach, by whom are you employed and what is your position?

A.2 I am employed by Carolina Power & Light Company ("CP&L") at the Shearon Harris Nuclear Power Plant as a Project Specialist/Inservice Inspection. In this capacity I am responsible for Non-Destructive Examination ("NDE") of Class 1, 2 and 3 components, piping and their supports to ensure applicable requirements of ASME Code Section XI and 10 C.F.R. § 50.55a are met.

Q.3 Please state your professional qualifications and experience related to your present position.

A.3 I have been actively engaged in NDE and inservice inspection programs at nuclear power plants since 1976. I have received extensive NDE training, including ultrasonic testing, visual inspection and eddy current testing/examination. While employed by Virginia Electric & Power Company ("VEPCO") from 1976 until 1982, I was certified as an NDE examiner. From 1978 to the present I have been employed in supervisory positions, overseeing NDE and inservice inspection activities. Beginning with my early training and experience in the United States Navy, I have sixteen years of hands-on experience in power plant operations, maintenance and testing. A complete statement of my professional qualifications and experience are appended hereto as Attachment 1.

Q.4 What is the purpose of this testimony?

A.4 The purpose of this testimony is to respond to certain allegations set forth in an "Affidavit of Patti Miriello," dated September 6, 1985, and attached to the "Conservation Council's Response to Applicant's Motion for Summary Disposition of Contention WB-3," dated September 6, 1985. In that Affidavit Ms. Miriello alleges that certain persons employed by Conam Inspection ("Conam") of Richmond, California, who provided contractor services to the Harris Plant, used drugs. In the Affidavit Ms. Miriello accuses the following individuals of either dealing in, selling or using drugs: Richard Marlow, Jr., Vice President of Conam; John Camburn; John Funanich; a Mr. Dugas; a Mr. Dobson; Mark Matheson and Mel Matheson. She implies that such activities may have impacted on work performed by certain of those individuals on the Harris steam generators. My testimony attests to the quality of the work performed by Conam.

Q.5 Did Conam provide contractor services to CP&L at the Harris Plant?

A.5 Conam is a division of Nuclear Energy Services, Inc. ("NES"). CP&L contracted with NES to perform baseline preservice eddy current testing/examination of heat exchanger tubing, including the Harris steam generator tubes. NES' Conam Inspection Division provided these eddy current testing services.

Q.6 Do you personally know the individuals named in the Miriello Affidavit?

A.6 My responsibilities at the Harris Plant include overseeing and supervising Conam's testing and examination activities on site. In that capacity I have a professional relationship with each of the individuals named in the Miriello Affidavit. My professional acquaintance and relationship with some of the individuals began while I was employed by VEPCO and Conam performed eddy current testing on VEPCO's Surry and North Anna nuclear plants. My personal knowledge of the named individuals can be summarized as follows:

Richard Marlow is Senior Vice President of Conam. His office is in Richmond, California. I have personally known Mr. Marlow since 1976 when he first performed eddy current examinations at VEPCO's Surry Nuclear Power Station. From that time until the present I have engaged Mr. Marlow and Conam to perform numerous eddy current examinations. Mr. Marlow has only been to the Harris Plant on approximately three occasions, limiting his stay to one day or less for business purposes.

John Camburn is a Level II Data Analyst for Conam. I have known Mr. Camburn since the late 1970's. He also performed eddy current examinations for me as an examiner at VEPCO's Surry and North Anna nuclear plants from approximately 1978 to 1982. While at the Harris Plant Mr. Camburn was the Data Analyst for the steam generator eddy current baseline. He was directly supervised by me while on the Harris site during

the periods August 1 - September 14, 1984; October 8-13, 1984; and November 3-13, 1984.

Michael Dobson is a Level II Data Analyst for Conam. I have known Mr. Dobson since approximately 1976 when Conam first performed eddy current examinations at VEPCO's Surry and North Anna nuclear plants as an examiner. Mr. Dobson was directly supervised by me while he was at the Harris Plant during the periods August 20-30, 1984 and January 18-30, 1985.

John Funanich is a Level II Data Analyst for Conam. I have known Mr. Funanich since 1978 when he was an examiner doing eddy current examinations at VEPCO's Surry Nuclear Power Station. Mr. Funanich was at the Harris Site September 27-28, 1983; February 13-25, 1984 and June 10-13, 1984.

Melvin Matheson is a Level II Examiner for Conam. My first contact with him was in 1983 when he was assigned as Conam's site supervisor for performing the Harris Plant baseline eddy current examinations. Mr. Matheson was on site during the following times: December 2-31, 1983; January 2 - September 21, 1984; October 1-12, 1984; October 30 - November 16, 1984; November 19 - December 21, 1984; January 2 and 18-25, 1985; and March 4 - April 5, 1985.

Kenneth Dugas is a Level II eddy current examiner for Conam. I have known Mr. Dugas about four years. He performed eddy current work for me at VEPCO's Surry Nuclear Power Station and at the Harris Plant from August 1 - September 7, 1984.

Mark Matheson is a laborer and an eddy current Level I trainee for Conam. Mark is Melvin Matheson's son. I first met Mark Matheson when he came to Harris during the period of July 30 - October 18, 1984. Other than seeing him work with his father and occasionally talking to him, I never had much contact with Mark Matheson.

While I have only established a business relationship with each of the named individuals and, with the exception of an occasional business lunch with Mr. Marlow, have never mixed with them socially, I have no reason to believe that any of them has been involved in drug use.

Q.7 What is the purpose of eddy current examinations of the Harris steam generators?

A.7 The purpose of eddy current examinations of steam generator tubing prior to operation is to establish a baseline condition of the tubing for comparison with the examination results of the first inservice inspection after commencing commercial service of the plant. This is consistent with NRC Regulatory Guide 1.83 (Revision 1)(1975) at Section C.3.a.

Q.8 Are eddy current examinations required to assure the safe construction of the Harris Plant?

A.8 No. The steam generator tubing was inspected and subject to non-destructive examinations at the point of fabrication to detect any defects and flaws. After installation at the Harris Plant, the steam generators were subjected to a hydrostatic test to ensure integrity sufficient to meet ASME Code

standards. The eddy current examination performed on site is to establish baseline information for comparison with later inservice test results. In fact, the contract involved here is an Operations and not a Construction contract. Further, none of the employees of Conam are quality assurance inspectors as that term is used to describe CP&L QA/QC/CI inspection personnel or vendor QA/QC inspectors.

Q.9 Describe eddy current testing/examination techniques and analyses of eddy-current tapes.

A.9 The method most commonly used to check for defects or flaws in heat exchanger tubing is eddy current examination. This method is based upon measuring the changes of an electromagnetic field induced into the tubing to be tested. A differential set of electric coils called a probe is drawn at a constant rate through the tubing to be tested. When these coils are energized, an electromagnetic current is induced in the tube in the areas adjacent to the probe. This induced electromagnetic field generates eddy currents.

Changes in tube wall thickness or permeability or the presence of flaws will cause changes to the flux and density of the induced current, which in turn causes changes in the impedance of the coil. From the measurement of these impedance changes the size and orientation of defects can be calculated and determined. To assist and enhance this process the eddy current probe is attached through an interface system with a digital computer, which allows a permanent record to be made

via magnetic tape of the calibration, sequence of testing, and the actual data inspection results. The eddy current test data acquired and stored is unique for each tube tested. The magnetic tapes that are generated during an examination are reviewed using a similar computer system by a data analyst. In this manner the validity of the test results can be re-established. If necessary the magnetic tapes can be reviewed again by a third party at any time.

Q.10 Who supervised the work of individuals from Conam while performing eddy current testing/examination activities at the Harris site?

A.10 While Conam was at the Harris site performing eddy current testing they were directly supervised by me and I had an engineering technician work directly with them in the field on a daily basis.

Q.11 Did you ever observe any of the individuals performing eddy current testing or analyses of data exhibit behavioral traits of a person who has used cocaine or other controlled substances?

A.11 At no time while any Conam personnel were on site did they exhibit any aberrant behavioral traits which I would associate with an individual using cocaine or other controlled substances. My engineering-technician confirmed my own observation.

Q.12 Have you taken CP&L training courses designed to educate supervisory personnel to be able to detect individuals

whose performance may be affected due to use of controlled substances?

A.12 I have received training both while at VEPCO and CP&L designed to educate supervisors to detect personnel whose performance may be affected by using alcohol or controlled substances.

Q.13 Have you checked the work of individuals from Conam to ensure the accuracy of the eddy current testing/examinations and correctness of the analysis of eddy current tapes?

A.13 During most of the analysis work performed by John Camburn I worked directly with him while reading a significant amount of the test data results. If at any time an anomaly of significance was detected he brought it to my attention for review. The purpose of my involvement was to assure the accuracy of the eddy current examinations and the test results. During the data acquisition phase of actual examination of the tubes, I made several trips to the field to overview the work of the examiners. Also, during data acquisition CP&L Quality Assurance Personnel performed surveillance checks. Because of my personal supervision of the eddy current examinations and data analyses, I have no reason to question the integrity nor correctness of the test results, notwithstanding the allegations in the Miriello Affidavit.

Q.14 As a result of the allegations by Ms. Miriello did you perform an evaluation of the work performed by Conam?

A.14 Yes. Nine of the magnetic tapes acquired by Conam during the baseline examination of Harris steam generator tubes were taken to the Electric Power Research Institute ("EPRI") NDE Center in Charlotte, N.C., and EPRI was requested to perform an independent third party review, reanalysis and verification of the data acquired and analyzed by Conam.

Q.15 Describe the independent review of Conam's analysis and the results.

A.15 The tubes selected for reanalysis by EPRI had either been tested by and/or analyzed by the individuals identified in the Miriello affidavit (with the exception of Richard Marlow who performed no onsite work). Three reels of data were randomly selected from each of the three steam generators, representing five percent of the total number of steam generator tubes examined by Conam. Included in the sample were tubes with no quantifiable indications and others that had identified anomalies requiring evaluation.

EPRI used the same procedure, data analysis system and calibration system as those used by Conam personnel. Based on its review of the data on the tapes, EPRI concluded that the data acquisition had gone very smoothly and validated Conam's use of procedures, selection and application of the defect sizing criteria and interpretation of the eddy current signals. Thus, EPRI confirmed Conam's eddy current testing and examination results.

Q.16 Is the sample size of the number of tapes reanalyzed sufficient to assure a high confidence level of the validity of the original work?

A.16 Yes. The five percent sample of data is greater than the sampling requirements of NRC Regulatory Guide 1.83, which requires a three percent sample of the total number of tubes to be inspected during inservice inspections. The five percent sample provides greater than a 95 percent confidence level that the sample results are representative of the data from which the sample was taken.

Q.17 Have you any reason to believe that the work performed by personnel from Conam was of a quality that suggests their performance was influenced by use of controlled substances?

A.17 I have personally supervised the Conam personnel performing eddy current examinations and analysis of data at the Harris Plant and can attest to the high quality of their work. The independent review of a representative, statistically significant sample of the Conam analyses of eddy current tapes provides additional confirmation of the quality of the work performed by Conam. Conam has an excellent reputation in the industry for the professionalism and quality of its employees and the quality of its testing and evaluations. My experience with the individuals employed by Conam, who performed examinations and provided analytical evaluations at the Harris Plant, has been entirely satisfactory. I have found them to be highly

trained, competent and professional in a unique field of non-destructive examination. At no time have I had cause to question the physical or mental condition of a Conam employee performing examinations or analytical work at the Harris Plant.

Attachment 1

Resume

THOMAS W. BROMBACH

EDUCATION

MILITARY

- ° Basic Propulsion and Engineering School
- ° Machinist Mate A" School
- ° Water Treatment School
- ° Power Plant Maintenance School
- ° Damage Control School
- ° Fire Fighting School
- ° Submarine School
- ° Nuclear Power School (25 weeks)
- ° Hydraulic and Pneumatic School
- ° AC & R School
- ° Magnetic and Liquid Penetrant School
- ° 3M Records Management School
- ° Radiological Control School

CIVILIAN

- ° High School Graduate
- ° 5 Semesters of College
- ° Continuing Education Units Awarded for:
 - Magnetic Particle Inspection
 - Liquid Penetrant Inspection
 - Ultrasonic Weld Inspection
 - ASME Section XI Short Courses
- ° Formal 5 1/2 Year Journeyman Power Plant Mechanic Apprenticeship
- ° Company Sponsored Schools:
 - Dresser Valve School
 - Radiation and Radiological Control School
 - Grinnel Valve School
 - Milton Roy Pump School
 - Non-destructive Testing Schools for MT, PT, VT and Eddy Current Tube Inspection
 - Multifrequency Eddy Current Examination
 - Personnel Management
 - Aberrant Behavior

PROFESSIONAL MEMBERSHIPS

American Society of Mechanical Engineers

EMPLOYMENT

September 1982
to
Present

CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
Project Specialist/Inservice Inspection

Scope of Responsibility

Responsible for developing and maintaining the Harris Plant's inservice inspection ("ISI") program in accordance with, and as required by, ASME Code Section XI to assist in meeting NRC, plant Technical Specification, operating license, and other related plant and regulatory requirements. The ISI program is developed based on the latest regulatory requirements. The ISI program provides direction and support of inservice inspection related tests such as hydrostatic testing, weld inspections, and eddy current testing.

Major Functions

1. Developing and maintaining an inservice inspection program for welds by working with Operations and Maintenance.
2. Coordinating inservice inspection activities and schedules.
3. Developing, updating, and maintaining ASME Code Section XI inspection programs.
4. Maintaining interface responsibilities among the Plant's organizations to ensure the ISI program is implemented effectively.
5. Analyzing and providing resolution to Plant problems resulting from ISI.
6. Preparing and monitoring budget items pertaining to ISI.
7. Staying updated on changes to, and latest requirements of, the ASME Code.
8. Responsible for ensuring the proper maintenance of inservice inspection records, deficiencies and resolutions.

March 1976
to
August 1982

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY NUCLEAR POWER STATION
Engineering Supervisor of Non-destructive
Testing and Evaluation

Scope of Responsibility

Performed unit and component testing in the field of non-destructive examination and provided evaluation of test results to insure component and vessel integrity.

Major Functions

1. Conduct inservice and preservice inspections to assure compliance with ASME Code Section XI and plant technical specifications.
2. Provide non-destructive testing services for the station, i.e.: PT, MT, RT, VT, UT and ET, in accordance with ASME Code Sections III, IV, IX and XI and other designated applicable codes as required.
3. Coordinate inspection services with the designated ANSI to assure full compliance with the ASME Code in effect.
4. Provide eddy current examination services to meet the requirements of USNRC Regulatory Guide 1.83 and ASME Code Section XI for steam generators.
5. Provide eddy current examination services in examination of condenser and other various heat exchanger tubing.
6. Prepare and submit inservice, preservice and eddy current reports.
7. Assist Engineering in identifying generic problems and working toward solutions.
8. Support and implement additional training programs for NDT technicians to keep personnel abreast and trained in new field developments.
9. Establish and maintain appropriate records management of all work conducted.
10. Prepare and submit budgets for procurement of equipment, supplies and arrange for contractor and vendor services.

11. Provide schedules and commitment dates during plant outages for inspection services.
12. Review and implement non-destructive examination procedures.
13. Certified in accordance to ASNT-TC-1A as a LEVEL II in Visual, Liquid Penetrant, Magnetic Particle and Eddy Current examinations and LEVEL I in Ultrasonic Testing.

Also prior to being promoted to a supervisory position, I was a journeyman mechanic providing round-the-clock maintenance and repair to all station equipment, i.e.: pumps, valves, hydraulic and pneumatic systems, HVAC, steam turbines and auxiliary systems on both the primary and secondary sides of the plant. A collateral duty was to travel to various fossil fuel plants within the VEPCO system and conduct maintenance and repair on high pressure power boilers, coal systems and other plant systems.

September 1975
to
March 1976

NEWPORT NEWS SHIPBUILDING AND DRYDOCK, CO.
Newport News, VA
Power Plant Operator, Utilities Department

Assigned to the operation of the main power plant and all substations -- maintaining and operating 600 lb. boilers, air compressors and related equipment supplying power steam and compressed air to the shipyard.

September 1974
to
September 1975

COLLEGE OF DUPAGE
Glen Ellyn, Illinois
Assistant Chief of Plant Operations

Responsible for the operation of the steam generating and air conditioning plant, in addition to which, performed all repairs as necessary to its plumbing, hydraulic, pneumatic and electrical systems. Collaterally responsible for the maintenance of the buildings and all service support systems.

April 1974
to
September 1974

FACTORY MUTUAL ENGINEERING CO.
Chicago, Illinois
Boiler & Machinery Inspector

Conducted on-site physical inspections of steam generating power plants and machinery for compliance with ASME, state and local codes.

January 1969
to
December 1973

UNITED STATES NAVY
E-4 Machinist Mate