

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 82-36

Docket No. 50-387

License No. NPF-14 Priority _____ Category C

Licensee: Pennsylvania Power & Light Company
2 North Ninth Street
Allentown, Pennsylvania 18101

Facility Name: Susquehanna Steam Electric Station, Unit 1

Inspection At: Salem Township, Pennsylvania

Inspection Conducted: August 23 - 26, 1982, September 2-3, 1982

Inspectors: Robert A. McBrearty 11-4-82
R. A. McBrearty, Reactor Inspector date
Harry W. Kerch 11-4-82
H. Kerch, Mechanical Engineer, NDE date

S. D. Ebnetter, Chief EPB, DETP

Approved by: J. P. Durr 11/4/82
J. P. Durr, Chief, Materials & Processes date
Section

Inspection Summary: Inspection conducted August 23-26 and September 2-3, 1982
(Report No. 50-387/82-36)

Areas Inspected: Routine, announced inspection of nondestructive examination results associated with the recirculation system modification. The inspection involved 53 inspector hours onsite by two regional based inspectors and one supervisor.

Results: One violation was identified (failure to properly interpret radiographs, paragraph 3).

DETAILS

1. Persons Contacted

Pennsylvania Power & Light Company (PP&L)

+ T. Abbaliello	PLNQA
+* R. A. Beckley	PLNQA
+* S. L. Denson	Proj. Const. Mgr.
+ R. H. Featenby	Asst. Proj. Dir.
+* R. Fenton	PLNQA
+ J. Linelberg	PLNQA
* A. Sabol	PLNQA
G. Lockyer	NQA Consultant
M. Strenk	NPE

Nuclear Energy Services (NES)

G. Martens NDE Level III

Bechtel

+ G. C. Bell	PQAE
+* G. T. Finnan	QCE
* G. Gelines	FQCE
+* T. M. Henery	APFQCE
+* A. M. Konjura	LPFQAE
+ T. Miner	PFE
+ W. Monier	FCM
+ G. Pederson	RE
+* J. O'Sullivan	APFE
+ J. Tennis	C/S

+ Present at exit meeting held August 26, 1982

* Present at exit meeting held September 3, 1982

2. Preservice Inspection (PSI) and Inservice Inspection (ISI) of Recirculation System Piping Welds

The licensee reported to the NRC that portions of the required Section XI examinations could not be performed on certain recirculation system welds. The affected welds were those to which a corrosion resistant cladding was applied in response to NUREG-0313, Revision 1. The cladding was applied to minimize susceptibility to intergranular stress corrosion cracking.

The inspection problem was manifested by numerous ultrasonic indications which were attributed to the geometric and metallurgical condition of the materials comprising the welds, base material and cladding through which the ultrasonic beam must pass. The great number of indications preclude a meaningful interpretation of the data.

In a letter dated August 17, 1982 to the NRC, the licensee requested partial relief from the ASME Section XI examination requirements and provided justification for same on the basis that an acceptable examination cannot be performed in parts of the examination volume due to metallurgical and geometric restraints using state of the art ultrasonic techniques. Based on its review and evaluation of the request, the NRC granted the relief from preservice inspection requirements.

The licensee stated in his relief request that automated ultrasonic "surveillance" of the joints, for ISI purposes, is being pursued. Toward that end the licensee's PSI contractor, NES, did a study to determine the feasibility of performing the examinations using existing automated ultrasonic equipment.

The work involved the ultrasonic scanning of three of the problem welds with equipment which was modified to accommodate the piping configuration at the site. No automatic couplant application system was available therefore couplant was applied manually. Data were collected on video tape and on paper strip charts.

The inspector reviewed selected portions of the video tapes and strip charts representing the NES feasibility study.

The system permitted comparing tapes and charts which represented identical examination volumes. The inspector confirmed the interpretation problems reported by the licensee, but noted that the information presented on the tapes and charts would be useful for monitoring changes displayed by subsequent examination data.

Because the information is intended for comparison purposes, the examination system must be capable of consistently producing repeatable results. To demonstrate this characteristic NES performed four scans of the same volume and then compared the results. The inspector was advised that the scans were done without disassembling and reassembling the equipment between trials. He stated that repeatability could be better demonstrated by disassembling the equipment after collecting one set of data and then having a second examination crew reinstall the equipment as they would for a routine scan at the same location. The data resulting from the second scan should then be compared with the initial data.

The licensee expects the equipment to be available for use during the scheduled outage in January, 1983 after additional modification to adapt it to the examination requirements at the site.

The inspector stated that this item is considered unresolved pending performance of the automated scans and NRC review of the resulting data.
(387/82-36-02)

No violations were identified.

3. Recirculation Loop Discharge Piping Weld Radiographs

Welds were modified single-Vee design to a "W" configuration. The licensee was experiencing large numbers of ultrasonic indications due to weld configuration during PSI. The NRC suggested off set radiographs be made on 16 July 1982, in order to assist in establishing the ultrasonic PSI base line.

The following is a list of radiographs reviewed by the inspector.

<u>Original film</u>	<u>Off Set film</u>
VRRB31-1FWA10M	FWA10 90° ≤ 70%
VRRB31-2FWB10M	A11 0° ≤ 90%
VRRB31-1FWA11M	A11 0° ≤ 90%
VRRB31-2FWB11M	A13 0° ≤ 90%
VRRB31-2FWB12M	B10 0° ≤ 90%
VRRB31-1FWA13M	B12 0° ≤ 90%
VRRB31-2FWB14M	B14 0° ≤ 90%
VRRB31-2FWB15M	
VRRB31-2FWB16M	
VRRB31-2FWB17M	
VRRB31-1FWB18M	
VRRB31-1FWA19M	

The Offset Radiographs revealed two (2) previously approved ASME welds containing unacceptable linear indications. The licensee repaired and re-radiographed repairs in accordance with NCR # 945 for welds VRR-B31-1FW-A11M and VRR-B31-1FW-A13M.

Review of weld VRR-B31-FW-A11M radiographed on March 23, 1980 disclosed that the licensee rejected film area 6 for incomplete fusion, however the original film had two (2) other detectable unacceptable linear indications located at film areas 2-3 and 5-6 that were not detected or dispositioned by the licensee. Two (2) repair cycles followed. The repair radiographs contained the same unacceptable linear indications still undetected and not dispositioned by the licensee.

If the supplemental offset radiographs had not been performed, these rejectable defects would not have been dispositioned.

Weld radiograph VRRB31-2FW-B10M did not provide full coverage of weld.

Weld VRR-B31-2FW-B11M area 0-12 had a penetrameter within the area of interest.

Weld VRRB31-1FWA13M had markers and penetrometer within the area of interest.

Weld VRR-B31-2FW14M and VRR-B31-2FWB16 disclosed linear indications not reported or dispositioned on radiographic report.

These welds are part of the reactor coolant pressure boundary as described by 10CFR50.2(v) and, therefore, this is a violation of 10 CFR 50.55a, (387/82-36-01).

Review of weld NRR-B31-1FW-A13M radiographed on March 17, 1980 disclosed that the licensee accepted radiographs of this weld to meet ASME Section III Code requirements. Original film area 16 contained a detectable, unacceptable linear indication not detected or dispositioned by the licensee. General Electric, on April 26, 1982 reviewed the original riser piping radiographs and identified the presence of this missed indication. However, this indication was misinterpreted at this time as surface ID and dispositioned as acceptable. Subsequently, the offset radiography identified this as a rejectable defect and the licensee repaired the weld. The radiographic documentation does not properly correlate area 16 of the original radiographs to the offset repair radiographs. This item is unresolved pending proper correlation and documentation. (387/82-36-05)

The inspector reviewed 15(PPL) audits of Bechtels' film interpretation program. The inspector noted that the PPL audit findings were not relevant in that the PPL Auditor identified: (1) that weld radiographs required shims under penetrameters when, in fact, they did not; (2) that radiographs required 2T penetrometer sensitivity when the slit was acceptable; (3) weld radiographs were unacceptable because of processing marks when the two film adequately represented the area of interest. These and similar findings are indicative of a problem in the PPL audit program. In the process of verifying the audit findings the inspector had to disregard these audits due to inaccuracies of the findings. Discussions were held with the licensee on this subject.

This item is unresolved pending further review by the NRC and the licensee. (387/82-36-03).

The inspector reviewed (1) one PPL NDE training record and found the record not to be in accordance with SNT-TC-1A in that:

1. The radiographic specific examination did not have appropriate questions to demonstrate a knowledge of test variables and the employer's procedural requirements.
2. The required practical examination was not on file with his training record. A discussion was held with licensee on this subject. The individual performed only an audit function and required no NDE certification. The licensee uses an outside certification source now.

The inspector had no further questions concerning this matter.

The inspector reviewed (10) ten Bechtel certified film interpreter qualification records for Susquehanna. The review disclosed that one film interpreter was certified Level II for radiographic film interpretations on February 7, 1980. His training record inaccurately accepted NDE schooling for equivalency to Level II, (1) one year experience per requirements of SNT-TC-1A. Further, procedure NEPQ-2, paragraphs 6.2 and 6.4 require that the sum of the training and experience criteria be satisfied for levels I and II for direct certification to level II. It does not appear to be an acceptable practice to utilize the schooling to satisfy experience criteria.

This is a unresolved item pending completion of the licensee's review. (387/82-36-04)

Another film interpreter was certified a Level II radiographic film interpreter on June 17, 1981. His training record does not indicate the date he started radiographic training. His training record does not indicate class room hours nor experience for Levels I and II certification. They also do not reflect that Bechtel's procedure NEPQ-BPC-2, para. 1.5, has been satisfied in that "Training and examination for certification shall be administered by a Bechtel MS, QS NDE Level III MSQS Examiner". Bechtel's procedure NEPQ-2 para. 6.2 states that, "To be considered for certification, a candidate shall satisfy the criteria for the applicable level and method as noted in Table 1. Para. 6.4 "For certification as a Level II, the experience and Training shall include the time as a Level I. If a person is being qualified directly to Level II with no time at Level I, the required experience and training hours shall consist of the sum of the times required for Level I and II." Training records do not indicate this has been done. Bechtel's procedure NEPQ-BP2-2 para 6.1.1 "Candidates shall receive a minimum number of training hours for the NDE method for which that individual is being certified by the Level III Examiner. The required training hours are outlined in Table 1. Training shall

be in accordance with the training outline in the appropriate Appendix attached." There is no appropriate training record that satisfies this procedure for this individual.

This item is unresolved pending licensee justification of certification and NRC review (387/82-36-06).

Radiographs did not correlate or resolve PSI ultrasonic data. Presently there are large numbers of indications obtained by ultrasonic testing that cannot be located as demonstrated by off set radiographs. Review of the recirculation piping radiographs disclosed that the quality of the welds is acceptable.

4. Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items, violations or deviations. Unresolved items identified during this inspection are discussed in paragraph 2 and 3.

5. Exit Interview

The inspector met with members of the licensee's staff on August 24 - 26, and September 3, 1982. The inspector summarized the purpose, the scope of the inspection and the findings. Mr. J. McCann, Resident Inspector, attended the exit meeting.