APPENDIX A

Hayward Tyler Pump Company
Docket No. 99900345/82-02

NOTICE OF NONCONFORMANCE

Based on the results of an NRC inspection conducted on January 25-29, 1982, it appears that certain of your activities were not conducted in accordance with NRC requirements as indicated below:

Criterion V of Appendix B to 10 CFR Part 50 states: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished."

Nonconformances with these requirements are as follows:

A. Section 20 of the Hayward Tyler Pump Company (HTPC) QA Manual states that the QA manager is responsible for administration of the training program, including developing of training schedules and maintaining attendance records together with records of education and experience of training course attendees.

Engineering STD 9.0.5/1-1, January 4, 1977, General Training and Indoctrination Procedure for Personnel Performing ASME Code and HTPC QA Manual Activities states that personnel who have had no previous code experience shall participate as a minimum in applicable training as outlined in attached schedule (identified as Exhibit I) before being assigned to code work. It also requires that the attendance at a training course be noted on each individual's training report (identified as Exhibit IV).

Contrary to the above, review of current and historical training and indoctrination schedules and records identified numerous deviations from these requirements. Specific examples are as follows:

1. Neither the current (1982) training schedule nor training schedules for the past 3 years are consistent with the training requirements identified in Exhibit I of Eng. St'd. 9.0.5/1-1. There are significant differences in identification of specific Job Classifications designated for indoctrination and training as well as in the type of training applicable to these Job Classifications.

2. Only about one-half of the training specified in the 1981 training schedule was actually completed. Although required by the schedule, no training was given to manufacturing personnel.

3. The training schedule for 1980 identifies training in Process Control and Nonconformities as applicable training for Methods Technicians, and shows this training as completed. However, examination of training course attendance records showed no evidence of Methods Technicians having received this training.

4. Training records (Exhibit IV of Engineering St'd 9.0.5/1-1) are retained only for QA/QC personnel. No such records are retained for other employees engaged in quality activities. Similarly, there are no education and experience records retained for training course attendees other than QA/QC personnel.

B. Section 6.12 of the HTPC QA Manual requires that changes to design drawings be documented on an Engineering Change Request (ECR). The ECR is to be routed to the Manufacturing Engineering Supervisor who logs it in, enters his recommendation, determines if current shop work is affected and if route sheet change is required and passes it on to the Project Engineer for the applicable contract. The Project Engineer is responsible for approving/disapproving the recommendation and indicating whether the customer specification is violated, or if a design review is required. QA Systems Engineer approval is required for all Quality Level 1 through 4 items.

Contrary to the above, review of records identified numerous instances where processing of ECRs did not comply with these requirements. Specific examples are as follows:

1. ECR 260 was dispositioned by the Project Engineer without the required input from the Manufacturing Engineering Supervisor.

2. ECR 254 was signed off by the Project Engineer without indicating appropriate disposition (acceptance, requirement for design review, referral to customer, etc.).

3. ECR 261 did not have blanks for Quality Level or contract number filled in, and no disposition was indicated.

4. ECR 274 (Quality Level I) was closed out by the Project Engineer but did not have the required sign-off by the QA Systems Engineer.

C. Section 16.0 of the HTPC QA Manual requires the QA Manager to review Non Conformity Reports at least every six months for conditions adverse to quality and trends that show that these conditions exist. The documented results of this review including findings are required to be reported to the General Manager and the responsible manager for response and action. The supervisor having responsibility for the area requiring corrective action is stated to be responsible for implementing corrective action.

Contrary to the above, corrective actions were not implemented by appropriate management with responsibility for shop compliance with QA program manufacturing process control provisions, as evidenced by manufacturing process control implementation being identified as discrepant in each six month QA manager report for the time period from December 2, 1977, to June 30, 1981.

D. Paragraph 10.1.3 in Section 10 of the HTPC QA Manual states in part, "Operations which must be completed in sequence shall be indicated by numbers in the column marked 'Oper. No.' When the sequence of operations is not mandatory, the operations shall be indicated by letters following the sequence number, e.g., 4A, 4B, 4C . . .The following operations shall not be performed out of numerical sequence.

a) Q.C. and Q.A. operations and examinations identified by Work Station 7XX on the Route Sheet.

b) Hold Points, including A.I., Q.A./Q.C., Engineering, Manufacturing Engineering, and the customer. Welding and welding-related operations . . . ."

Contrary to the above, the following examples were identified where mandatory sequences of operations were not completed in the order indicated on the Route Sheet, and QC/QA operations were performed out of numerical sequence:

1. Route Sheet 3-0173-8223, B/M Item 1102 & 1110, Top-Bottom Casing, Yellow Creek

a. The initial operation on the Route Sheet, Oper. No. 010, a QC 7XX Work Station operation for verification of casing material identity, was signed off as being performed on August 17, 1981. Machining Operations Nos. 050, 060, and 070 were signed off, however, as having been completed on August 13, 1981.

b. Operation No. 030, A QC 7XX Work Station operation for verification of stud and nut material identity, was signed off on August 20, 1981, deferrring assignment of the items until assembly on the assembly Route Sheet. Operation No. 050 was signed off, however, on August 13, 1981, indicating studs and nuts had been installed. It was additionally noted that Operation No. 020 which

provided for drilling and tapping the holes for the studs, was not signed off as being performed until August 17, 1981.

2. Route Sheet 3-0173-8049, Final Assembly, Hydro & Perf. Test, Pump Serial No. 804901, Hope Creek

Using Revision B of the Route Sheet, the final pump assembly was made at Operation No. 150 on December 21, 1979. A tack weld was made of the impeller retaining screw head to the impeller at Operation No. 180 and not signed off. The following QC operations were not signed off to indicate performance in the required numerical sequence: (1) Operation No. 140-Inspection for cleanliness prior to assembly; (2) Operation No. 160-Allocation of weld rod; (3) Operation No. 170A- Verification of welder's identity; and (4) Verification of welder's compliance with the welding procedure specification.

E. Paragraph 3.10 in Section 3.0 of the HTPC QA Manual states in part, "The Shop Superintendent reports to the Manufacturing Manager, and is responsible through the Manufacturing Foreman, for carrying out all manufacturing operations listed on the Route Sheet and signing off each operation as it is completed (10.2) . . . ."

Contrary to the above, each operation listed on Route Sheets was not signed off on completion, as evidenced by the following examples:

1. Operation Nos. 100, 102, 104, and 106 on Route Sheet 3-0173-8127, B/M Item 0202 (Base Plate, South Texas) were unsigned for the completed and shipped item.

2. Operation Nos. 130 and 140 on the Route Sheet for Casing Assembly D910-001 and 002, Pump Serial No. 804002, South Texas, were unsigned for the completed and shipped item.

F. Paragraph 10.1 in Section 10.0 of the HTPC QA Manual states in part, "The Route Sheet . . . is the controlling document for all operations, including manufacturing and inspection operations such as examinations,

tests, and Code processes. It specifies the drawing and revision approved for the part or assembly . . . It provides space for sign off to signify satisfactory completion of each operation . . . When completed it documents the history of manufacturing . . . ."

Contrary to the above, the following examples were identified of where the Route Sheet did not control and document the history of all operations:

1. Manufacture of O-rings by Hayward Tyler is not controlled by a Route Sheet.

2. A dimension was instructed to be changed on December 15, 1981, from that specified on the applicable drawing listed by the Route Sheet for Part No. 01-300-865 (Suction Bowl), Contract No. 3-0173-8232, B/M Item 1602, Batch No. 664U-001. This change was not permitted or documented by the Route Sheet, and was made without the required prior submittal and approval of an Engineering Change Request for a drawing revision.

3. A gland dimension was instructed to be changed on August 21, 1981, from the specified part drawing requirements, as a result of clearance problems during pump assembly on Route Sheet 3-0173-8223, B/M Item 1101. This change was not documented by the Route Sheet and was made without either issue of a Non Conformity Report by QC for the assembly operation, or making the required prior submittal and approval of an Engineering Change Request for a drawing revision.

G. Paragraph 10.2 in Section 10.0 of the HTPC QA Manual states in part, " . . . The operator or inspector performing the operation shall stamp or initial and date the appropriate column when the operation is completed satisfactorily."

Contrary to the above, the following examples were identified on Route Sheets for shipped items where inspection operations had not been signed off to denote satisfactory completion of the operations:

1. Operation No. 110 on Route Sheet 3-0173-8127, B/M Item 0202, Base Plate, had not been signed off to denote QA review had been performed of the Route Sheet for completeness. Operation No. 050, an Authorized Nuclear Inspector hold point, was not signed on this Route Sheet.

2. Operation Nos. 120 (Inspect Visual), 150 (Final Inspect Visual) and 160 (QA Review Route Sheet) were unsigned on the Route Sheet for Casing Assembly D910-001 and 002, Pump Serial No. 804002.

H. Paragraph NCA-4134.12 in Section III of the ASME Code states in part, "(a) Measures shall be established and documented to assure that tools,

gages, instruments, and other measuring and testing equipment and devices used in activities affecting quality are of the proper range, type, and accuracy to verify conformance to established requirements. A procedure shall be in effect to assure that they are calibrated and properly adjusted at specified periods or use intervals to maintain accuracy within necessary limits . . .(c) When discrepancies in measuring or testing equipment are found at calibration, the Certificate Holder shall determine what corrective action is required. Materials and items previously checked (since the previous valid calibration) with equipment which is out of calibration shall be considered unacceptable until the Certificate Holder can determine that all applicable requirements have been met . . . ."

Contrary to the above, measures were not established in regard to a pump assembly torque wrench (Serial No. HTS51-029) to assure necessary accuracy and to allow determination of required corrective actions if the tool was found discrepant at calibration; i.e., Purchase Order 21831 (February 26, 1981) to a calibration service vendor required the vendor to calibrate and adjust as required. Neither specific accuracy limits were provided to the vendor, nor was any statement included in regard to the error value on initial calibration check at which the customer must be informed.

I. HTPC QA Manual Section 9.0, paragraph 9.1 states in part, "All incoming material and parts shall be delivered to the Store Room and checked by the Receiver . . . The Receiver shall allocate a batch number and serial number for each piece or item . . . The Batch number which is the means of assuring material traceability is a four digit alphanumeric number allocated sequentially from a log by the Receiver."

HTPC QA Manual Section 12.0, paragraph 12.7 states in part, "The Inventory Control Clerk shall check welding materials which are released to him, to ensure that the containers are properly identified and shall be responsible for storing them by batch and serial no. in the Material Store Room . . . Each welder shall use the Route Sheet covering the welding to obtain the necessary welding material. This Route Sheet shall specify the batch numbers released for the contract by the Q.A. Systems Engineer, who shall have verified that these batch numbers meet the contract requirements. He shall take the Route Sheet package to the Inventory Control Clerk, who, shall issue sufficient welding materials from the Batch released for the contract to the welder with the Q.C. Inspectors verification. The Inventory Control Clerk shall enter the batch and serial number of welding material issued on the Route Sheet. . . . "

Paragraph 12.8 states in part, "The Q.C. Inspector has the responsibility for inspection of the welding in accordance with the requirements specified on the applicable Route Sheet. . . The Q.C. Inspector shall also list on the Route Sheet the welders identification by joint, and batch and serial number of welding materials used."

Contrary to the above, the allocation of a batch number to certain welding material with subsequent recording of that batch number when welding material was issued and used, did not assure its traceability, in that the welding material used was not the same material that the batch number had been allocated to.

Batch number Y622 had been assigned to a container of 1/8" type E316L-16 electrodes, for which the Certified Material Test Report and the container identified the electrodes as being from Lot Number 3099003. However, observation of the electrodes in the container revealed that they were identified (stenciled) with Lot Number 2999003. The records show that this batch number was recorded as being used on Emergency Service Water Pumps for Carolina Power and Light Company's Shearon Harris Nuclear Power Plant.

J. HTPC QA Manual Section 12.0, paragraph 12.1 states in part, "All Welding Procedure Specifications (WPS) shall be written and qualified in accordance with ASME Code Section IX and the applicable requirements of the Code . . . ."

ASME Code Section IX, paragraph QW-201.2 states in part, " . . . A change in any essential variable shall require requalifications, to be recorded in another PQR . . . ."

QW-406.1 (an essential variable) states, "A decrease for more than 100°F (56°C) in the preheat temperature qualified. The minimum temperature for welding shall be specified in the WPS."

Contrary to the above, Procedure Qualification Record (PQR) dated July 20, 1981, states in regard to preheat, "200°F actual", while Shielded Metal Arc Welding WPS 6.3.3/3-1.1, Revision 0, dated July 20, 1981, states, "Preheat 60°F minimum (200°F actual)", thus allowing a decrease of more than 100°F from the preheat temperature qualified, without requalification being recorded in another PQR.

K. HTPC QA Manual Section 12.0, paragraph 12.4 states in part, "All welding personnel performing welds governed by the Code shall be qualified in accordance with the ASME B & PV Code, Sections III and IX . . . ."

ASME Code Section IX, paragraph QW-351 states in part, "A welder shall be requalified whenever a change is made in one or more of the essential variables listed for each welding process. . . ."

Paragraph QW-353 includes the addition of other welding positions than those already qualified as a performance qualification essential variable for the shielded metal arc welding process; i.e. QW-405.1.

Contrary to the above, WPS 6.3.3/3-1.1 allowed performance of welding in a position (2G, horizontal) for which welders had not been qualified.

L. HTPC QA Manual Section 12.0, paragraph 12.7 states in part, " . . . Each welder shall use the Route Sheet covering the welding to obtain the necessary welding material. This Route Sheet shall specify the batch numbers released for the contract by the Q.A. Systems Engineer . . . ."

Paragraph 12.8 states in part, "The Q.C. Inspector has the responsibility for inspection of the welding in accordance with the requirements specified on the applicable Route Sheet . . . ."

The Route Sheet used for Bill of Material Item No. 1402, Diffuser, Contract 0173-8232, specified the following operations and requirements, and included welding material, batch number 731U, as permissible material:

Operation 050 - Verify filler metal identity.

Operation 070 - Weld repair per WPS 6.3.3/3-5.1 or 6.3.3/3-6.1, both Revision 01.

Operation 080 - Verify compliance during performance of operation 070.

These operations were performed, and stamped off as having been verified by the QC Inspector (Stamp No. QC 14). It was further documented that filler metal batch number 731U and WPS 6.3.3/3-5.1 were used.

Contrary to the above, specifying and verifying the use of batch number 731U filler metal (R CUAL-A2), by Quality Assurance and the Quality Control Inspector, were not in accordance with the requirements of WPS 6.3.3/3-5.1, in that this filler metal is 1/8" diameter while the WPS requires the use of 3/32" diameter filler metal.