



ENTERGY

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Director
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Waterford 3

W3F1-95-0054

A4.05

PR

April 28, 1995

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Use of Tubing without Code Certification in Essential
Chiller Evaporator Heat Exchanger

Gentlemen:

Entergy Operations, Inc. requests approval for the continued use of tubing installed in Essential Chiller 'B' Evaporator Heat Exchanger without complete Code Certification, as defined by ASME Section XI, 1980 Edition, Winter 1981 Addenda, IWA-7210. This request is based on the allowance of proposed alternatives to the NRC accepted portions of the ASME code as specified in 10 CFR 50.55a(a)(3). When approved, the attached Relief Request (RR ISI-015, Rev.0), will be included in the Waterford 3 Ten Year Inservice Inspection Program.

In 1992, 120 replacement tubes were installed in Essential Chiller 'B' evaporator heat exchanger. These replacement tubes were from a common lot of 384 tubes supplied by the manufacturer to a vendor who in turn supplied the tubing to Waterford 3. The vendor, United Technologies Carrier, is the original equipment manufacturer for the Waterford 3 chillers. In January, 1995, in preparation for planned work on the essential chillers, Materials Technical personnel assisted maintenance in the retrieval of purchase documentation for stocked evaporator and condenser tubing. Upon review of this documentation it was discovered that neither the tubing manufacturer nor the supplier of the tubes was authorized or qualified to provide Code certified material.

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Although the tubes replaced in Essential Chiller 'B' were not properly certified, the Certified Material Test Report (CMTR), the three year performance history since replacement, a redesigned refrigerant system (addition of a dehydrator circuit), and the retesting performed after replacement of the tubes indicate that the chiller continues to maintain its high level of performance and satisfies all design and safety function criteria. A Waterford 3 engineering evaluation concluded that the essential chiller remains operable with the tubes as installed. The CMTR supplied with the replacement tubes documents the material's chemical and mechanical properties. According to the CMTR for the replacement evaporator tubes, the material is certified to conform with ASME SB359 Type 122. The chemical analysis and physical test of the replacement tubes is consistent with the original evaporator tubes CMTR. It is Waterford's belief that the chemical and mechanical properties listed on the CMTR provide evidence that the replacement tubes are made of the correct material. Additionally, the remainder of the original tube lot has been certified through a third party vendor who holds a Quality System Certificate.

Essential Chiller 'B' is one of three chillers designed to supply 42°F chilled water to safety systems via two independent system trains. The third chiller is a "swing" chiller which can supply either the 'A' train or the 'B' train of chilled water, depending on the electrical alignment. This tubing condition only affects the Essential Chiller 'B'. The tubing in this chiller has been evaluated to be of such a quality that the chiller can continue to perform its intended design and safety functions. Therefore, the nuclear safety capabilities of Essential Chiller 'B' are not degraded and the tubes continue to provide an acceptable level of quality and safety.

It is Waterford's belief that replacing the tubing with Code certified material would result in an undue hardship on plant maintenance and operations and there would be no compensating increase in safety or quality since the replacement tubes have performed satisfactorily and are of a similar quality. Therefore, these replacement tubes satisfy the criteria of 10 CFR 50.55a(a)(3).

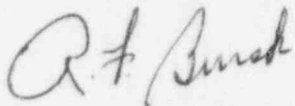
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Based on the foregoing discussion and that which is provided in Relief Request RR ISI-015, Rev.0, Waterford 3 requests approval to use these 120 replacement tubes installed in the Essential Chiller 'B' without a Code Certification.

Should you have any questions regarding this matter, please contact W.H. Pendergrass at (504) 739-6254.

Very truly yours,



R.F. Burski
Director
Nuclear Safety
RFB/WHP/tjs
Attachment:

- 1) Relief Request RR ISI-015, Rev. 0,
Replacement of Chiller Heat Exchanger Tubes

cc: L.J. Callan, NRC Region IV
C.P. Patel, NRC-NRR
R.B. McGehee
N.S. Reynolds
NRC Resident Inspectors Office (WMSB4101)

REPLACEMENT OF CHILLER HEAT EXCHANGER TUBES

1. Component:

W3 is equipped with three chillers that are able to supply chilled water to air handling systems that cool areas containing safety related equipment. The chillers transfer heat from the Chilled Water (CHW) system to the Component Cooling Water (CCW) system. Each chiller is supplied with two heat exchangers (HX): the condenser HX and the evaporator HX. The condenser HX transfers heat from the refrigerant to the CCW system. The evaporator HX transfers heat from the CHW system to the refrigerant. CCW and CHW process flow is on the tube side of the HXs. The relief addresses replacement tubing in the evaporator HX on water chiller MCHL-0001B. The evaporator tubing is required to be ASME SB359, alloy 122.

2. Code:

The evaporator HX is designed, fabricated and certified to the 1974 Edition, Summer 1975 Addenda of ASME Section III, Subsection ND (Class 3). Tubing on the HX is included in the Class 3 boundary.

3. Code requirements:

ASME Section XI, 1980 Edition, Winter 1981 Addenda, IWA-7210 requires that replacements meet the requirements of the original construction code. Subsection ND, ND-2130 requires certification of all material used in construction of components. At the time of the replacement material order (June, 1990), Code requirements for manufacturers/suppliers of certified materials were contained in Section III, Subsection NCA, NCA-3800.

4. Relief Requested:

In 1992, replacement tubing was installed in the chiller HX. The original tubing manufacturer provided the tubing to a vendor who supplied the tubing to W3. The replacement tubing was not provided as Code certified by the manufacturer or supplier. Neither the manufacturer nor supplier were authorized or qualified to provide Code certified material.

REPLACEMENT OF CHILLER HEAT EXCHANGER TUBES

120 replacement tubes were installed in the evaporator HX. Relief is requested to allow use of the tubes as-is without meeting the Code material certification requirements.

5. Basis for relief:

384 tubes were supplied as replacements for the evaporator HX. The tubes were provided with a material test report from the manufacturer. The test report indicated that it was applicable to 384 tubes. The supplier indicated that all 384 pieces were from the same material lot. Therefore, it is concluded that the test report is applicable to all supplied tubes and all tubes are from the same lot of material.

The material test report documented compliance with material specification ASME SB359, alloy 122. The test report is not an ASME Code certified material test report, but the report does indicate the tubing was manufactured, tested and provided in accordance with the required material specification. Per the manufacturer's material test report, the replacement tubing was subjected to eddy current testing; a pneumatic pressure test at 250 psig; tensile testing; and chemical analysis. All results were satisfactory.

Even though neither the manufacturer nor supplier of the replacement tubes possessed the appropriate ASME Certificate of Authorization or Quality System Certificate to provide Code certified material, the supplier was on the W3 Qualified Suppliers List (QSL). The supplier met the requirements of 10CFR50, Appendix B.

Immediately after installation, the shell side of the replacement tubing was subjected to a pressure test at 150 psig. No leakage was detected from the replacement tubes. Also during the Ten Year ISI hydrostatic test conducted in the fall of 1992, the tubing was subjected to a test pressure of approximately 100 psig with satisfactory results.

A third party possessing a Quality System Certificate was contracted to perform Code certification of the unused material under the rules of Section III. Based on their tests and examinations, the unused material was certified as required by ASME Section III.

Since the Code does not permit certification of used material, it was not possible to certify the installed tubing. However, based on the lot

REPLACEMENT OF CHILLER HEAT EXCHANGER TUBES

information provided for the original test report (see above), it is believed that the Code Certification provided by the third party is representative of the quality of all tubing (including the installed tubing).

As part of the W3 corrective action and root cause reviews, it was determined that this was an isolated incident.

During a chiller maintenance outage, 100% of the heat exchanger tubes (including the replacement tubes) were examined using visual and eddy current techniques. The results of the examination were satisfactory and indicate the tubing is performing as expected.

The chiller is equipped with a refrigerant circuit loop which separates water and air from the refrigerant system. Since the water side pressure is higher than the refrigerant pressure, a tube leak would result in water contamination in the refrigerant. The separator includes a sight glass which gives positive indication of water leakage. There has been no indication of tube leakage.

It is concluded that replacing the tubing with Code certified material results in undue hardship with no compensating increase in safety or quality.

6. Alternate Testing

None

7. Schedule for Implementation.

First and Remaining Ten Year Intervals

8. NRC discussion statement (Revision 0):

To be added later.