



Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc.
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T.A. Sullivan
Site Vice President - JAF

July 10, 2005
JAFP-05-0106

Mr. James Dyer
Director, Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, Maryland 20852

**SUBJECT: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Request for Additional Information on Relief Request No. RR-38,
Proposed Alternative to Perform a Temporary Non-Code Repair in
accordance with 10 CFR 50.55a(a)(3)(ii)**

Reference: 1. Letter, T. Sullivan to J. Dyer (JAFP-05-0105), dated July 9, 2005, Request for Approval of Relief Request No. RR-38, Proposed Alternative to Perform a Temporary Non-Code Repair in accordance with 10 CFR 50.55a(a)(3)(ii)

Dear Sir:

Pursuant to 10 CFR 50.55a(a)(3)(ii), Entergy Nuclear Operations, Inc. (ENO) submitted a relief request to perform a temporary non-code repair to that specified by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, Article IWC-4000 (Reference 1).

During a telephone conference with members of the NRC Staff on July 10, 2005, additional information was requested by the Staff to assist them in the review of Reference 1. The requested information is included with this letter as Attachments 1 and 2.

There is one new commitment being made in this letter. ENO will complete the ASME Code repairs and required inspections to the Residual Heat Removal (RHR) Shutdown Cooling (SDC) piping prior to startup (entry into Modes 1 or 2) from the current forced outage (see Attachment 3). Should you have any questions or comments concerning this submittal, please contact Mr. Rick Plasse at (315) 349-6793.

Sincerely,


T. A. Sullivan
Site Vice President

- Attachments:**
- 1. Additional Information on Relief Request No. RR-38 - Non-Code and Code Repair Discussion**
 - 2. Additional Information on Relief Request No. RR-38 - Temporary Support for RHR SDC Line**
 - 3. Summary of Regulatory Commitments**

**cc: Regional Administrator, Region I
U. S. Nuclear Regulatory Commission
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**Mr. Peter R. Smith, President
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**U.S. Nuclear Regulatory Commission
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**Additional Information on Relief Request No. RR-38
Non-Code and Code Repair Discussion**

Non-Code Repair:

The RHR Shutdown Cooling crack will have the stress relief provided by drilling a hole at each end of the crack. The ends of the crack were identified by MT examination and match the visual presentation on the weld map.

The leak seal weld will be performed using 3/32" E7018 employing the SMAW process. This leak seal weld deposit is anticipated to require three beads layed adjacent to each other which will produce 1 layer of weld approximately 1/8" thick.

Code Repair:

- The RHR SDC crack leak seal weld will be removed by grinding.
- The trunion and the attaching fillet weld will be removed in the vicinity of the crack to facilitate the repair of pipe wall and allow placement of radiographic film.
- The crack location will be excavated by grinding through wall; defect removal will be verified by a surface examination.
- The root of the weld will be installed using ER 70S-2 using the GTAW process and will receive a visual examination followed by a surface examination.
- The balance of the weld will be installed using ER70S-2 and the GTAW process. This completed weld will receive a visual, surface and radiographic examination.

Pre- and Post-Repair NDE:

Pre-Repair:

A VT1 visual, MT and PT were performed to characterize and locate the flaw.

Post-Repair NDE:

Visual examinations of the root and final weld will be performed in accordance with USAS B31.1 Power Piping Code 1967 / 69.

Root and final weld surfaces will also receive a surface exam in accordance with ASME III 1992.

The final weld will also receive a radiographic examination in accordance with ASME III 1992.

The trunion section will be reattached after completion of satisfactory RT of the repair weld. Any trunion section welded to itself will be full penetration. The trunion to 20 inch pipe will be attached using a fillet weld. Both full penetration and fillet welds will receive a final surface examination in accordance with ASME III 1992.

The completed repair will receive a VT-1 and VT-3 in accordance with ASME X1 1989.

The repair will have a VT-2 System Leakage Test performed in accordance with ASME X1 1992.

**Additional Information on Relief Request No. RR-38
Temporary Support for RHR SDC Line**

Flaw Description-

The subject piping through-wall crack is a 6.5" linear crack in the 20" RHR SDC pipe, which follows the toe of the pipe support trunnion-to-pipe fillet weld. This integral attachment weld is a 3/8" fillet weld, continuous around the 6" (6.625" OD) pipe trunnion for a total length of 21" with the crack comprising about 31% of the total length. The crack extent was determined based on a VT-1 ISI Visual exam (100% of the weld), and confirmed by a "Fluorescent Wet-Mag" Surface exam for about 60% of the weld based on accessibility. The remaining third of the weld (back side of the trunnion) opposite of the crack was verified to have no indications based on a PT Surface exam.

Piping/Support Description:

Pipe line number 10-20"-W20-152-2C is the common header of the RHR SDC suction piping located in the Crescents. This portion of the system is ISI Class 2, with applicable Power Piping Code USAS (ANSI) B31.1 (1967 ed. through 1969 addenda). The piping and supports are designed for normal operating load conditions (pressure, deadweight, thermal), as well as Operating and Design Basis Earthquake loading. In addition, the designs include torus-attached piping dynamic load conditions. The piping is carbon steel, standard wall (0.375" thick), and a system pressure of 50 PSIG (operating) and 150 PSIG (design) at a temperature of 90-280 (degf).

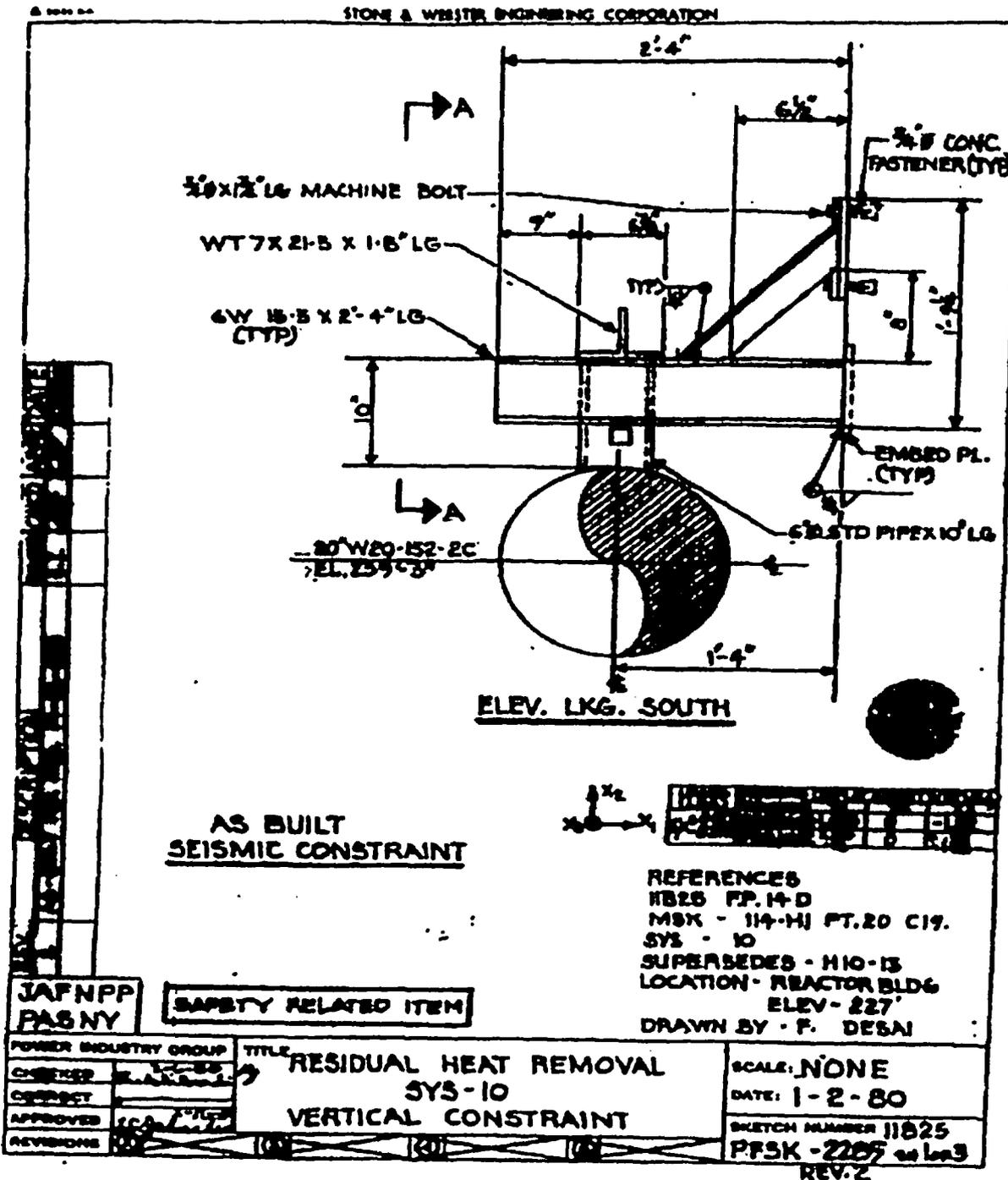
The subject degraded pipe support (PFSK-2285) is designed as a two-way vertical support, primarily for a downward dead load, but also for plus and minus vertical dynamic loads (seismic and torus-attached piping loads) as well as a small downward thermal load. The support configuration is designed as a lateral sliding support such that the pipe is not restrained in any of the lateral directions (except for minor lateral loading on the support due to friction). Less than two feet away is another permanent rigid support (PFSK-2084), which assists primarily in carrying downward loads, but no dynamic upwards load. The piping displacements are negligible due to the line being supported and restrained in all directions for dynamic load conditions (seismic and torus loads). The only operating conditions that are not specifically analyzed for is fluid transients and normal piping vibration, which are outside the design requirements. Fluid transients (such as water hammer) would not be expected to cause a significant challenge to this degraded pipe and support due to the lateral and axial dynamic restraints on the piping (anchor, snubbers, and struts). The normal piping vibration was attributed as the primary factor in the apparent high cycle fatigue failure at the trunnion-to pipe attachment (Ref. Root Cause Analysis Report for CR-JAF-2005-02749). This piping vibration has been significantly dampened out at the subject PFSK-2285 trunnion location by the addition of a shim plate under the bearing plate at support PFSK-2084 immediately after the pipe leak was discovered.

**Additional Information on Relief Request No. RR-38
Temporary Support for RHR SDC Line**

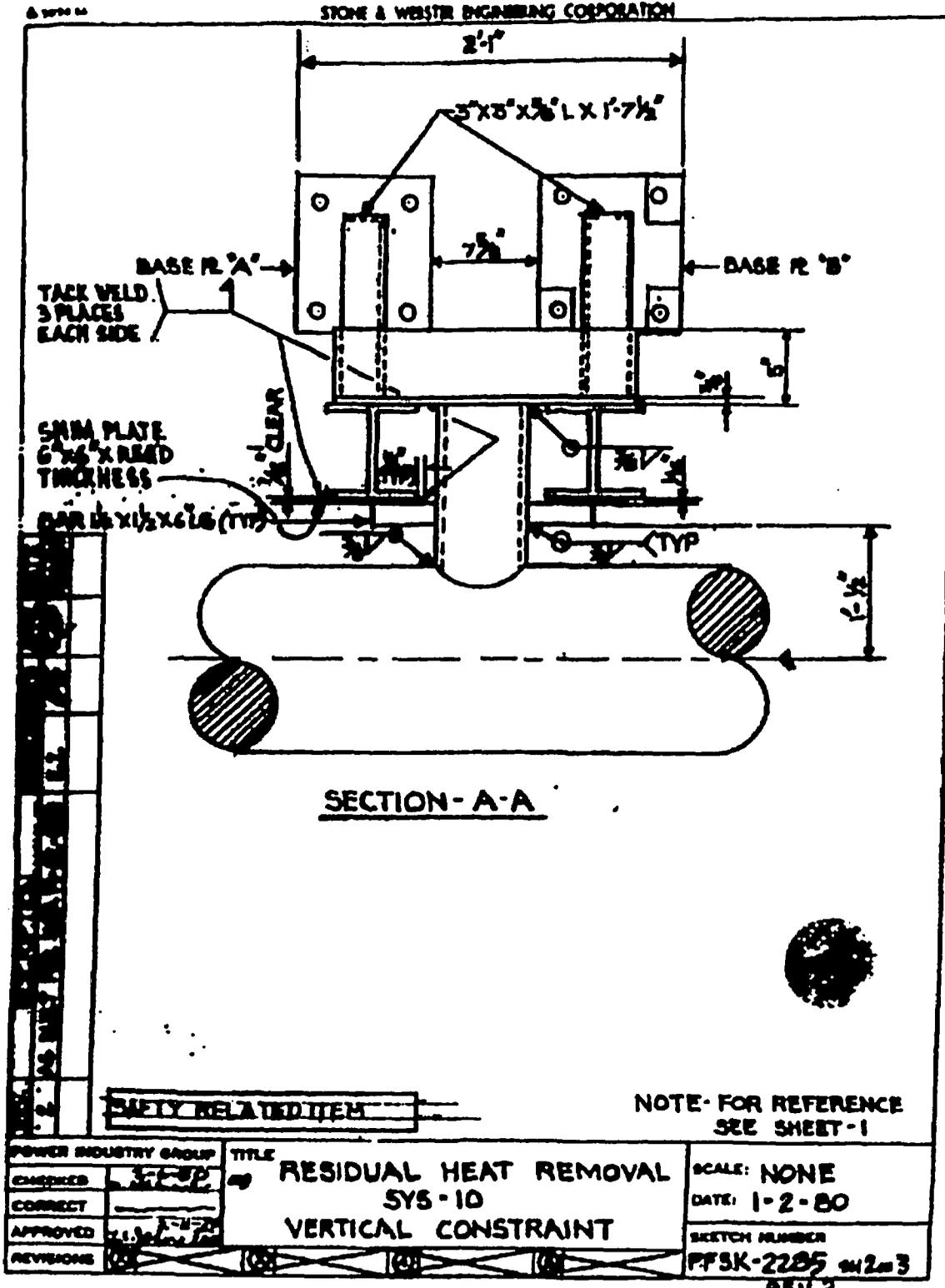
Bases for Operability:

- The pipe crack will be stressed-relieved locally by applicable technique recognized within fracture mechanics (commonly referred to as “crack arrest”), which involves drilling approximately 1/8” diameter hole through the pipe at each end of the crack. This effectively prevents the crack propagation mechanism by eliminating the stress riser at the tips of the crack.
- The primary cause of the failure was high cycle fatigue due to vibration. The condition developed during shutdown cooling mode of operation cumulative over the 30 year life of the plant. The localized vibration at this failed trunnion support has been significantly reduced by restoring the adjacent support (PFSK-2084) by installing a shim plate where the support was not load-bearing as intended. The reduced vibration at the failed trunnion support during shutdown cooling mode is no longer a significant concern for the relatively short term that this degraded condition will remain in effect.
- The primary design load at the degraded PFSK-2284 support is dead load (4525# compared to either dynamic load case (+/-1097# seismic, or +/-2610# Torus loading). The bearing shim plate installed at existing adjacent support PFSK-2084 (only 2 feet away) will enable the that support to assist in carrying the dead load. As an extra measure, a suitable temporary deadweight support is positioned under the pipe only a few feet down the pipe on the opposite side of the failed trunnion from PFSK-2084. Thereby two rigid dead load supports, straddling the degraded pipe support PFSK-2285 in close proximity provides a significant level of redundancy for the primary loading, and significantly reduces the downward load on the PFSK-2285 trunnion (for the DL+THER+SEIS+Torus loads all acting downward).
- A conservative evaluation has been performed to demonstrate that the fillet weld attachment between the trunnion and pipe for PFSK-2285 could be reduced 50% in length, and still provide adequate load capacity for the design conditions.
- The temporary seal welded patch over the pipe crack is intended to prevent further leakage. The through-wall crack is a localized condition, which does not affect the structural integrity of the piping and supports.

Additional Information on Relief Request No. RR-38
 Temporary Support for RHR SDC 1 line



Additional Information on Relief Request No. RR-38
 Temporary Support for RHR SDC Line



Attachment 3 to JAFP-05-0106
Entergy Nuclear Operations, Inc. – FitzPatrick

Summary of Regulatory Commitments

This table identifies actions discussed in this letter for which Entergy Nuclear Operations, Inc. (ENO) commits to perform. Any other actions discussed in this submittal are described for the NRC's information and are not commitments.

REGULATORY COMMITMENT	TYPE		SCHEDULED COMPLETION DATE
	One Time Action	Continuing Compliance	
ENO will complete the ASME Code repairs and required inspections to the RHR SDC piping prior to startup (entry into Modes 1 or 2) from the current forced outage.	X		Prior to restart from current forced outage.