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SUBJECT: Forwards revised request for relief from ASME Code repair requirements for engineered mechanical clamp on main steam drain line piping elbow to perform temporary repair.

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L-92-206
10 CFR 50.55a

JUL 09 1992

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

Gentlemen:

Re: Turkey Point Unit 4
Docket No. 50-251
Request for Relief From ASME Code
Repair Requirements for Code Class 2 Piping

This letter forwards a revised request for relief, in accordance with 10 CFR 50.55a(g)(5)(iii), from the American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel (B&PV) Code, Section XI requirements regarding repair or replacement of Code Class 2 piping, in order to perform a temporary repair. The initial relief request was submitted by Florida Power and Light Company (FPL) letter L-92-185, dated June 26, 1992.

On June 16, 1992, a small steam leak was discovered on a 1/2" Main Steam drain line on the 4A steam header, upstream of the Main Steam Isolation Valve. This leak is the result of a through wall pinhole located at the toe of the weld on a pipe elbow. The leak location in the drain line is unisolable and is subject to full steam header pressure during plant operation. FPL has determined that an ASME Section XI code repair is not practical in that the affected piping is unisolable, and a plant shutdown and cooldown with unnecessary cycling of facility systems and components would be required to perform a code repair on the leaking pipe.

FPL requests relief from the requirements of ASME Section XI so that a temporary non-code repair may be performed. Attached please find the relief request and evaluation justifying the request. A permanent repair will be performed during the outage following the next Unit 4 entry into Mode 5.

Should there be any questions, please contact us.

Very truly yours,

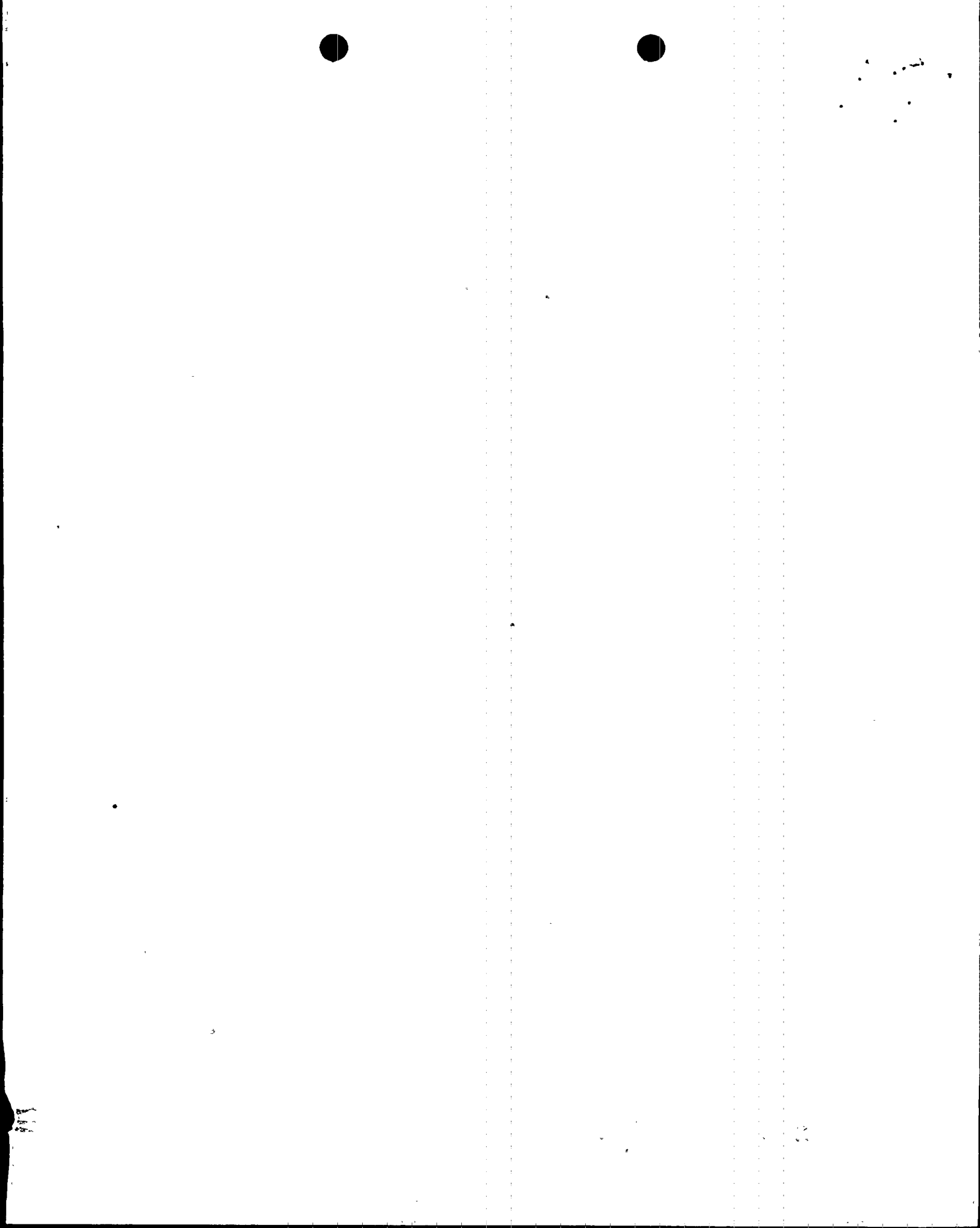
T. F. Plunkett
by [signature]
T. F. Plunkett
Vice President
Turkey Point Nuclear

attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

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ATTACHMENT



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**RELIEF REQUEST FOR ENGINEERED MECHANICAL
CLAMP ON MAIN STEAM DRAIN LINE PIPING ELBOW**

1.0 Background/Purpose

On June 16, 1992 a small steam leak was discovered on a 1/2" Main Steam drain line on the 4A steam header, upstream of the Main Steam Isolation Valve. This leak is a result of a through wall pinhole located at the toe of the weld on a pipe elbow (see Figure 1). The leak location in the drain line is unisolable and is subjected to full steam header pressure during plant operation.

An ASME Section XI code repair would require a plant shutdown and cooldown. Therefore, the purpose of this evaluation is to provide justification and the basis for relief from the requirements of ASME Section XI in order to perform a temporary non-code repair in accordance with 10 CFR 50.55a(g) (5) (iii).

2.0 Evaluation

2.1 Component Identification

This relief request involves an unisolable portion of the "A" loop of a steam trap drain pipe off the Main Steam Header at Turkey Point Unit 4. The leak developed at the 1/2" Schedule 80 pipe at the exit of the first elbow between the 26" Main Steam Isolation Valve 4-POV-2604 and valve 4-10-121 (see Figure 1). This piping is categorized as Class 2 piping. The process fluid is saturated steam.

2.2 Code Repair Requirements

ASME Section XI, 1980 Edition with Addenda through Winter 1981, Articles IWA/IWC-4000 and IWA/IWC-7000 provide requirements for the repair or replacement of ASME Class 2 pressure retaining components with defects exceeding the acceptance standards of ASME Section XI, Article IWA-3000.

2.3 Relief Requested

This relief request is in accordance with 10 CFR 50.55a(g) (5) (iii) which states that, "if the licensee has determined that conformance with certain code requirements is impractical for its facility, the licensee shall notify the commission and submit... information to support the determinations". The purpose of this request is to provide relief authorizing the use of a temporary non-code repair consisting of an



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engineered mechanical clamp secured on the leaking elbow (see Figure 1). This relief is requested to remain in effect until a permanent ASME Code repair is completed. The permanent repair will be performed during the outage following the next Unit 4 entry into Mode 5.

2.4 Basis for Relief

FPL has determined that a code repair is not practical in that the affected piping is unisolable, and a plant shutdown and cooldown with unnecessary cycling of facility systems and components would be required to perform a code repair on the leaking pipe.

FPL has examined the leaking area of the pipe in an attempt to ascertain the feasibility of performing a non-code repair. The specific considerations and evaluation criteria used are as follows:

System Interactions:

The temporary non-code repair will be located on a 1/2" drain line upstream of the Main Steam Isolation Valve for the 4A Main Steam Line. This line is safety related, Quality Group B piping (Reference 3) because it performs a passive pressure retention function. The stress induced on the piping by the temporary non-code repair has been evaluated and determined to be acceptable (Reference 4).

Jet impingement on adjacent structures, systems, and components is precluded by the design of the engineered clamp, as described in the next section.

Integrity of the Temporary Repair:

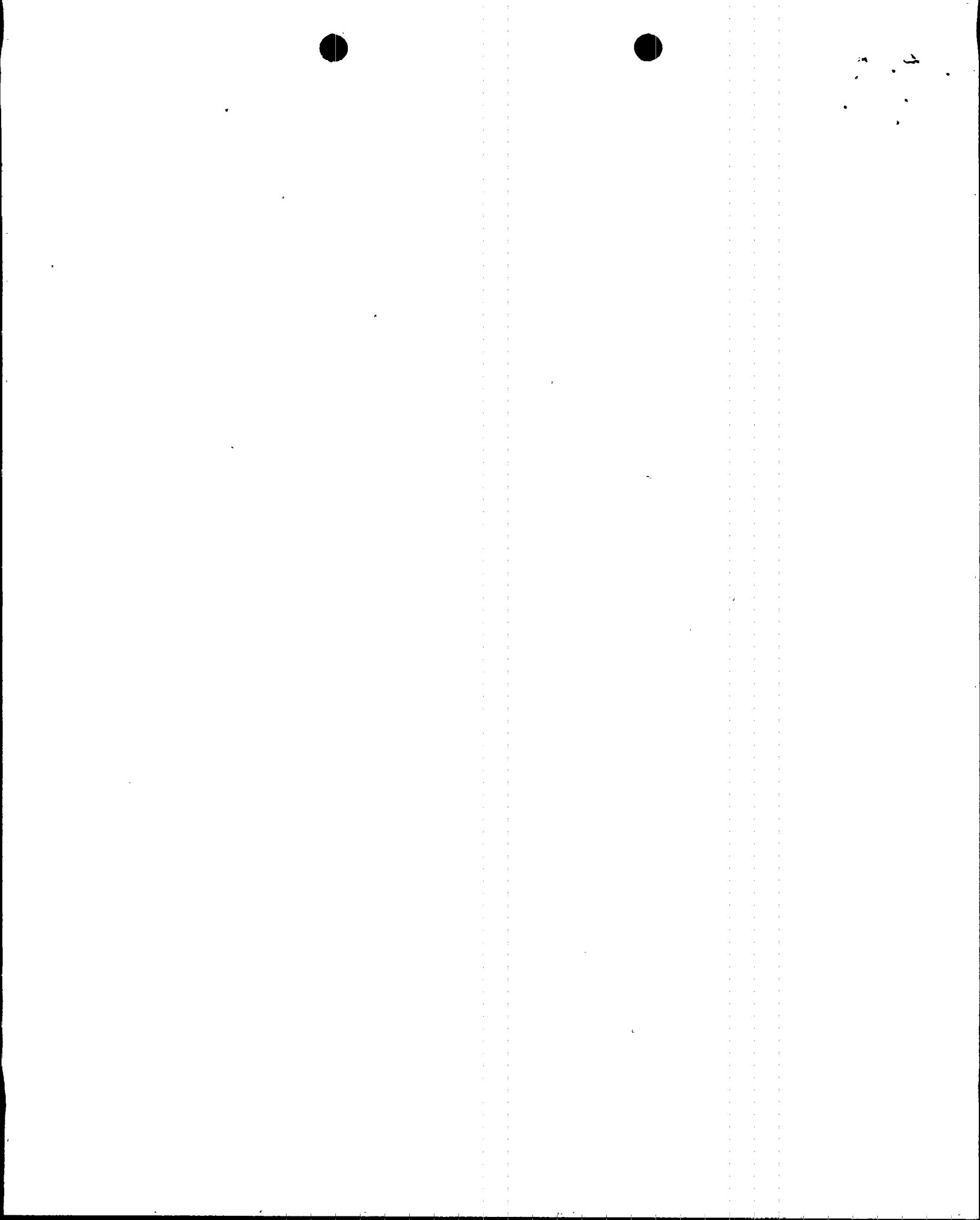
The engineered mechanical clamp is designed to maintain the pressure integrity and to perform the load bearing requirements of the steam drain piping system (1085 psig at 600 °F design). The engineered mechanical clamp design assumes that the weld defect is completely through the wall for the entire pipe circumference at the location of the flaw.

The engineered mechanical clamp consists of two halves bolted together to maintain the high energy main steam system pressure integrity. The mechanical joint seal between the two halves of the clamp and between the pipes and the clamp is maintained by graphite packing. The packing sealing force is maintained by a predetermined compression and a mechanical interference fit to ensure a proper mechanical seal. The load bearing capability required should a 360° circumferential flaw develop is provided by a restraining element of the clamp that prevents movement of the severed 1/2" nominal diameter pipe. This will maintain the Class 2 system pressure integrity under any operating conditions.

The engineered mechanical clamp has been designed to 1989 ASME Section VIII, with Addenda through 1989 requirements. The assumptions, design inputs, analytical techniques and methodology used to perform this design are adequately described, reasonable and appropriate.

The stress induced on the steam trap piping by the temporary non-code repair has been evaluated (Reference 4) and determined to have no adverse impact on the existing piping analyses performed per the requirements of Appendix 5A of the FSAR (Reference 8).

Installation procedures will be developed to ensure that excessive moments are not applied during the installation and that appropriate precautions are taken to ensure personnel safety. Post installation



checks will verify that clearances are adequate.

Augmented Inspections:

The Class 2 steam trap drain piping for the other two steam trains as well as the equivalent piping for the three steam trains of Unit 3 were also visually inspected. No leakage was discernable (Reference 7). As such, this leak is considered to be a one time event that is not generic in nature.

As an additional precaution, the clamp assembly will be visually inspected by an engineer at least once per day.

Root Cause:

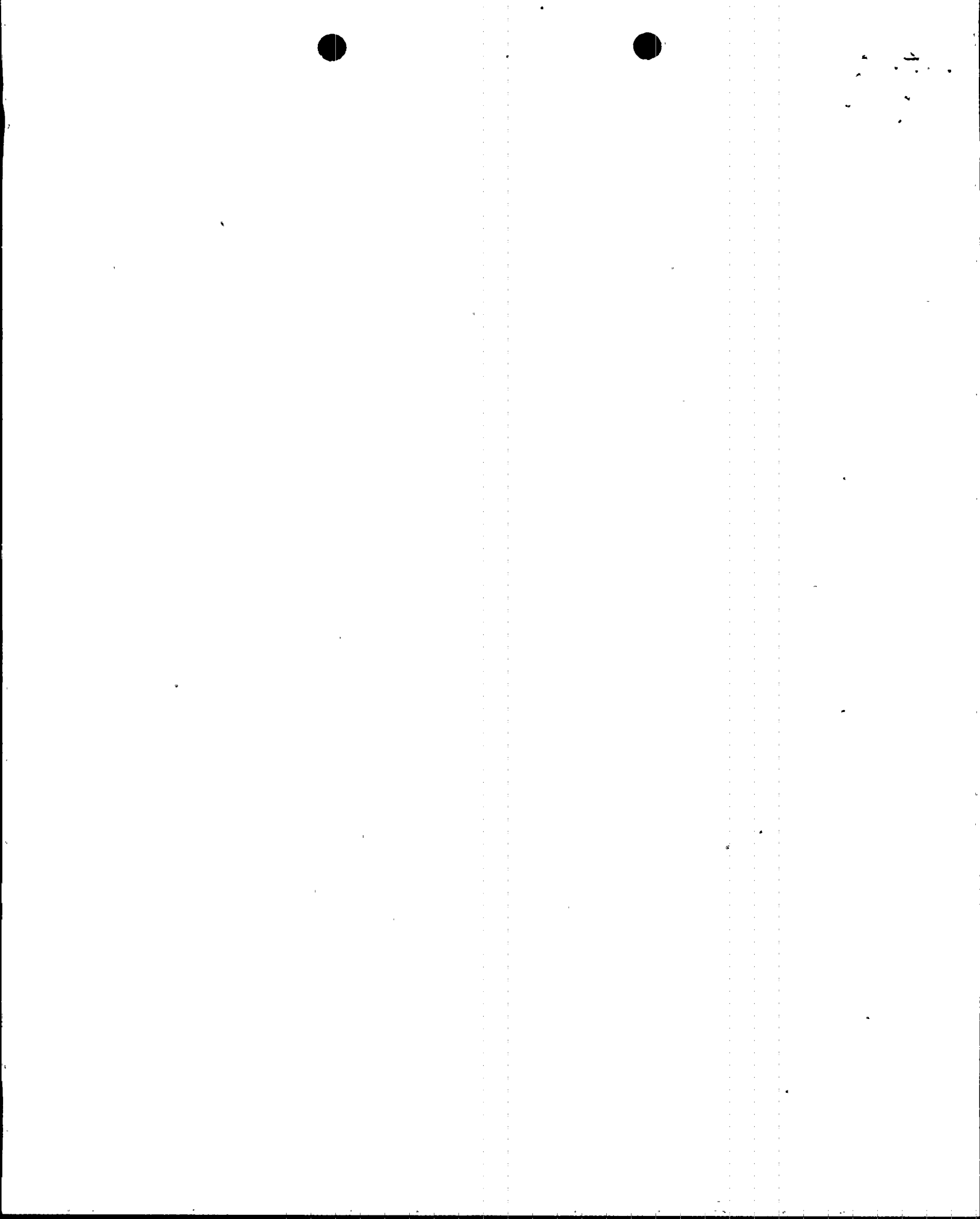
The root cause evaluation of the steam leak will be performed following removal of the failed weld.

3.0 Conclusion

A code repair of the leaking main steam drain line would require a shutdown and cooldown of the unit. An engineered clamp has been designed as a temporary non-code repair and was evaluated as acceptable for design loading conditions. Therefore, FPL concludes that temporary relief from the specified portion of ASME Section XI is appropriate.

4.0 Verification Summary

The output is reasonable with respect to the inputs. The safety classification is correctly specified as safety related. The conclusion that the temporary non-code repair meets all applicable design/regulatory requirements is correct.



5.0 References

1. Deleted.
2. Deleted.
3. Code Boundary Drawing, 5610-T-E-4061, Sheet 4, Rev. 72.
4. Calculation PTN-4FSM-92-019, Revision 2.
5. ASME Section XI, 1980 Edition with Addenda through Winter 1981.
6. Deleted.
7. PTN Quality Report Nos. 92-0432 and 92-0433.
8. Turkey Point Units 3 and 4 FSAR, Revision 9, July 1991, Appendix 5A.
9. ASME Section VIII, 1989 Edition, with Addenda through 1989.



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Turkey Point Unit 4
Main Steam Drain Piping
Engineered Clamp
Informational Sketch

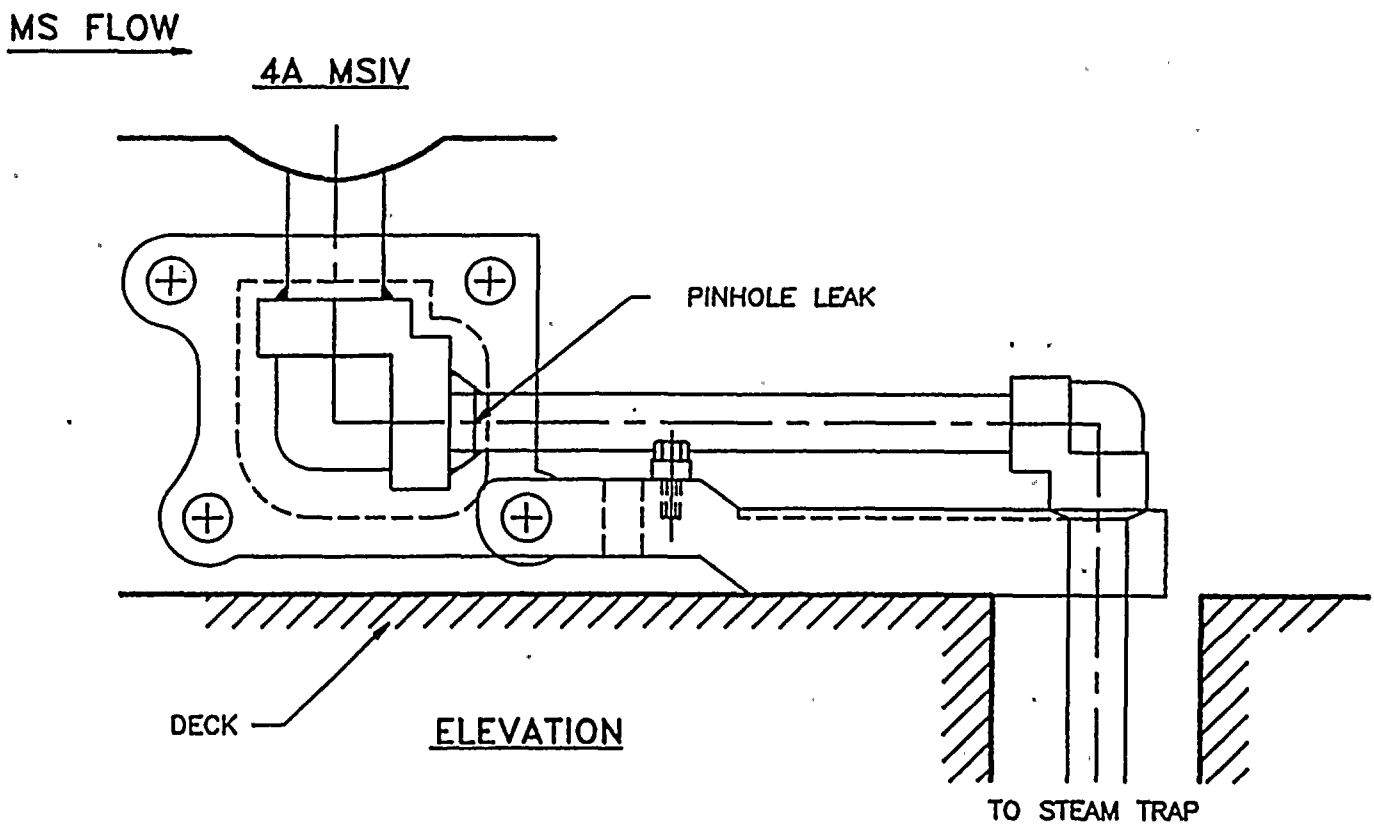


FIGURE 1

