

DUKE POWER COMPANY

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August 23, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Regarding: Catawba Nuclear Station
Docket No. 50-413 and 50-414
Resolution of Outstanding Items on Diesel Generators

References: 1) NRC letter to H. B. Tucker, DPCo. from T. M. Novak of
August 14, 1984.
2) Safety Evaluation Report Catawba Nuclear Station Unit 1 -
Reliability of Diesel Generators Manufactured by
Transamerica Delaval, Inc. - TDI Project Group Division of
Licensing.
3) Failure Analysis Associates, "Metallurgical Analysis of
Catawba Injection Port Leak", June, 1984.

Dear Mr. Denton:

The purpose of this letter is to inform you of action that Duke Power Company is taking on cylinder heads for the Catawba diesel generators.

1. Background

Four cylinder heads at Catawba, one on engine 1A and three on engine 1B, developed small jacket water leaks into the fuel injection cavity. The 1A cylinder head has been examined by FaAA. This investigation (reference 3) revealed that the leak was caused by a crack initiating from the corner of a welded-in plug where it was seated in the cylinder head as shown in Figure 1A. This welded-in plug is reported by TDI to have been used to repair the casting around the fuel injector hole. This head as well as the three heads on engine 1B were replaced. Reference 2, forwarded by reference 1, requested that Duke Power Company replace another head on diesel 1A (head 6L) where it was suspected, based on visual examination, that this head had the same welded-in plug. This head was subsequently replaced on diesel 1A. The remaining heads on both engines were inspected and we therefore believe that none of the cylinderheads on the Catawba Unit 1 diesels have weld repairs.

2. Course of Action

Since the inspection of Unit 1 diesels, Duke Power Company has developed an eddy current test (ECT) technique to be used in conjunction with the

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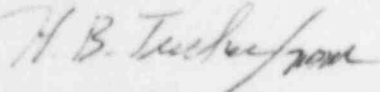
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visual inspection to detect the partial penetration plug welds in cylinder heads.

Results of both visual and ECT inspections on diesel 2A showed that five heads had been repaired with partial penetration welds. These heads have been replaced. Of the heads replaced three heads (cylinders 6L, 7L and 8L) are heads with no weld repair. The other two replacement heads (cylinders 2R and 3R) have been repaired per Figure 1B. Results of the same inspections on diesel 2B showed that no heads had plug repair welds.

Referring to Figure 1B, the weld repair of the cylinder heads consists of welding a plug into the head, stress relieving the weld and machining the injector port back side of the plug out such that the repair is a full penetration weld. This repair is described on TDI drawing 102718, Rev. 0. Cylinder heads at Catawba that have been repaired in this fashion are stamped 1NR. The full penetration weld eliminates the crack starter found in previous partial penetration weld repaired heads. Post weld stress relieving reduces welding residual stresses to low levels. Thus, weld repaired castings with full penetration welds which are stress relieved are considered equivalent in quality to non weld repaired castings.

Very truly yours,



H. B. Tucker, Vice President
Nuclear Production

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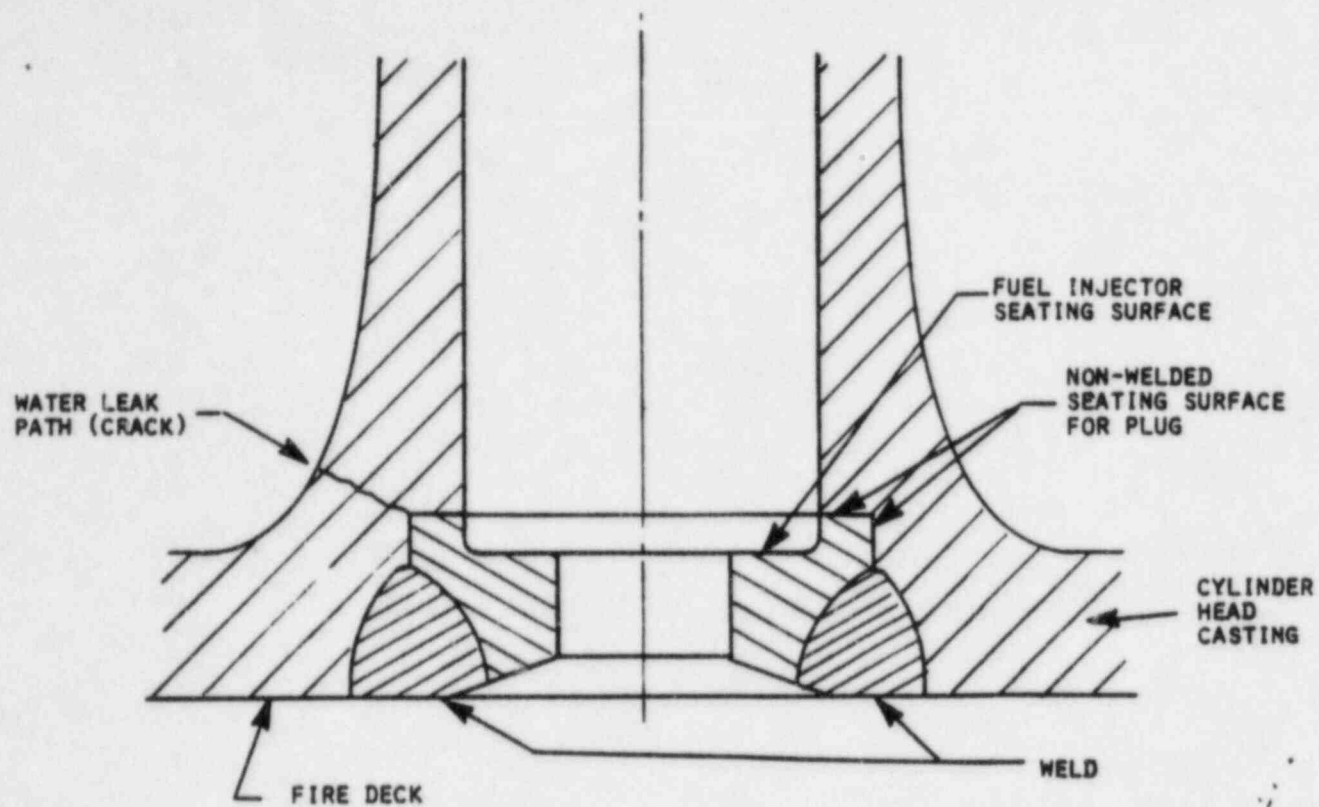
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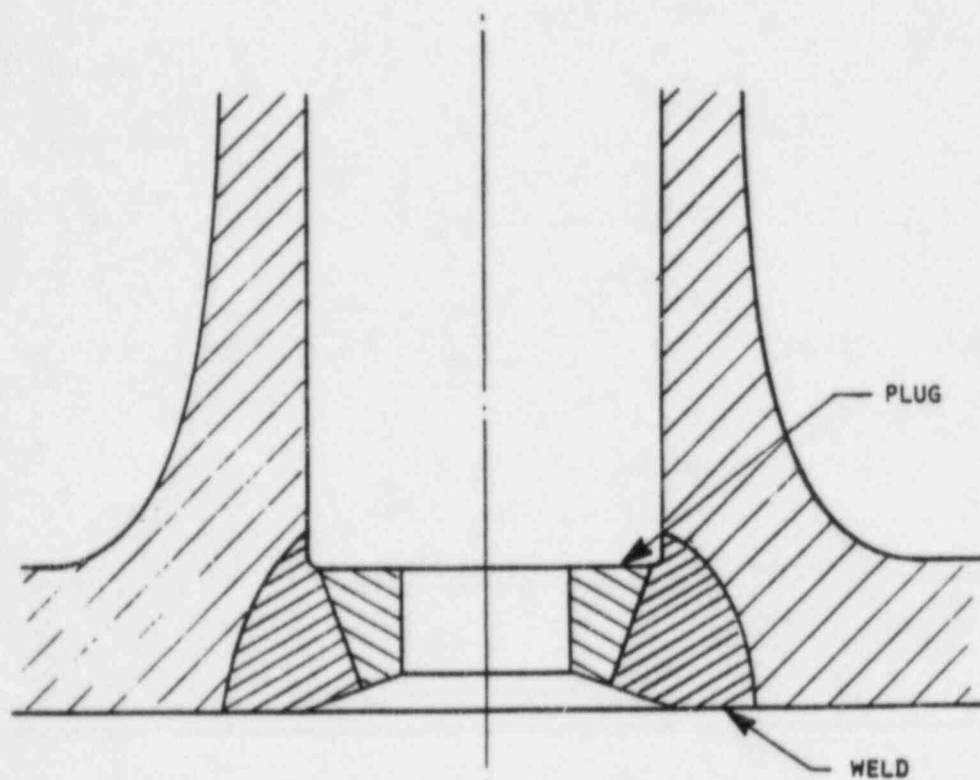
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NRC Resident Inspector
Catawba Nuclear Station



A. OLD HEAD REPAIR



B. NEW HEAD REPAIR

FIGURE 1. CYLINDER HEAD REPAIR