MSE-SMT-429(94)
October 24, 1994

# ASSESSMENT OF INDICATIONS IN DONALD C. COOK UNIT 2 HEAD PENETRATION 75

Westinghouse has just completed their inspection of the reactor vessel head penetrations at Donald C. Cook Nuclear Plant Unit 2. A total of 71 penetrations of the 78 in the head were inspected. Seven part-length penetrations were not inspected because of access difficulties. The results of the inspections showed indications in one penetration, number 75. The upper extent of the largest indication is near the attachment weld, but the flaw is mostly below the weld, as shown in Figure 1.

The results of the eddy current scan of penetration 75 are shown in Figure 2, and show that three indications were found, with lengths of 9mm, 16mm, and 45mm. These indications were axial in orientation, and were closely spaced. As seen in Figure 2, the longer indication brackets the other two, and is located at 160°, which is near the innermost extent of the penetration (which is 180°).

Ultrasonic testing was done on penetration number 75, covering the locations from 90 to 270 degrees, which confirmed the location of the indication between 153° and 160°, as well as the maximum length as 45mm. The UT results showed a maximum depth of 6.8mm for the largest indication. The smaller two indications did not show up separately on the UT scans, either because they were too shallow (less than 1mm) or because of proximity to the larger indication. The UT result is shown graphically in Figure 3.

These inspection findings do not invalidate the safety evaluation which was prepared and submitted in February 1993. The key points of the safety evaluation are listed below:

1. Continued operation does not increase probability of any accidents evaluated in the FSAR.

2. Consequences of any accidents evaluated in the FSAR are not changed.

3. Operation with potentially cracked penetrations has been evaluated, assuming leaking flaws.

4. Design margins are maintained for at least six years under the conditions of Item 3.

The location of the indication is such that even if the flaw were to propagate through the thickness, the pressure boundary would not be violated, and no leakage would result.

A flaw evaluation has been completed for the indications in penetration 75, and the methodology is documented in WCAP-14118, Revision 1. In this evaluation, the maximum depth of the indication, 6.8mm (as measured by UT) was used, with the length of 45mm. A flaw evaluation chart was developed in WCAP-14118, Revision 1, for indications in this location (Figure 6-1, top) and this figure has been reproduced as Figure 4 here. Since the indication has been characterized as 6.8mm deep, and the penetration wall thickness is 16mm, the indication is 42.5 percent of the wall at its deepest point. The results of the flaw evaluation show that the NEI acceptance criteria will not be violated for the next fuel cycle of 18 months.

In summary, our evaluation has shown that, in operation of the Donald C. Cook Nuclear Plant Unit 2 for an additional fuel cycle, the plant will remain within the umbrella of the safety evaluation, and the indications will remain within the acceptance criteria for at least the next fuel cycle.

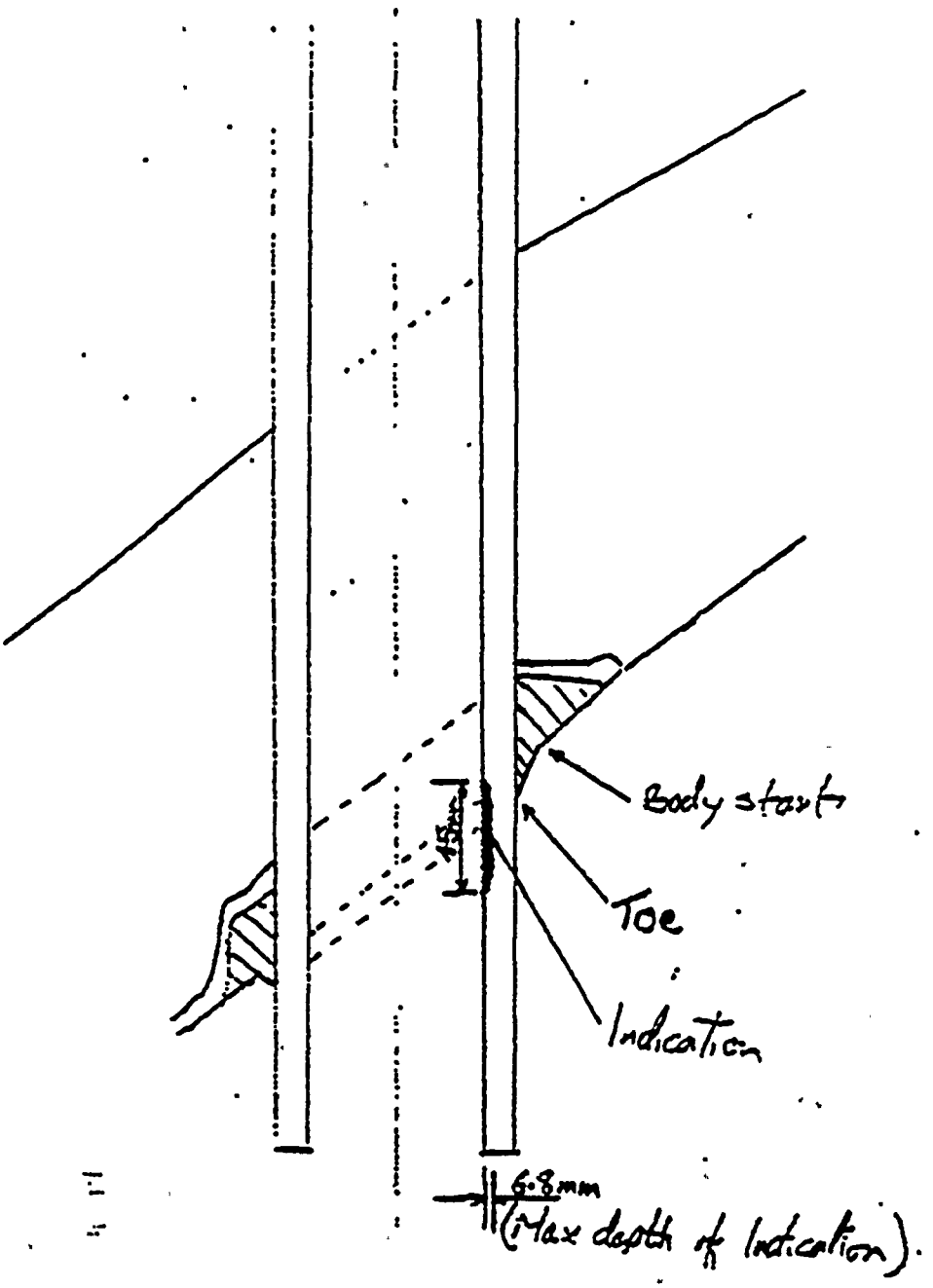


FIGURE 1: Inspection Results for Donald C. Cook Nuclear Plant Unit 2, Penetration 75

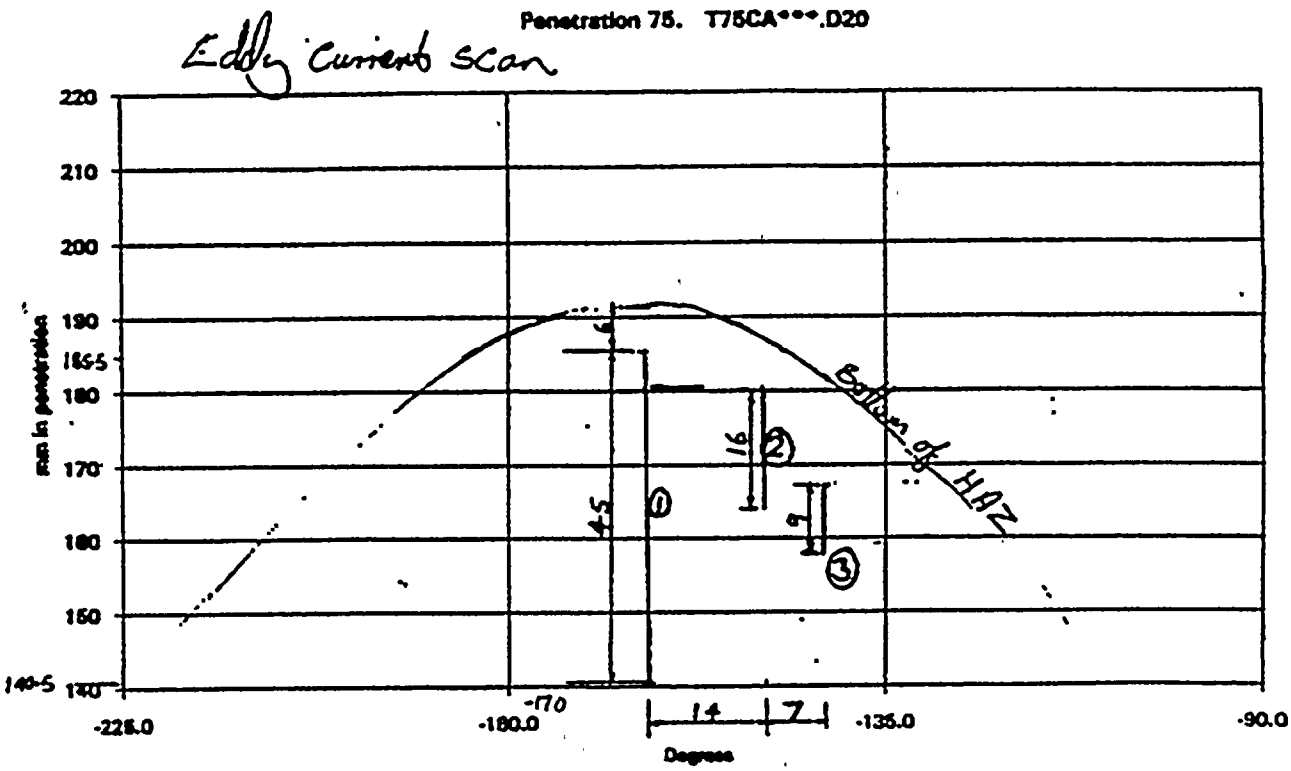


FIGURE 2: EDDY CURRENT SCAN SUMMARY, PENETRATION 75

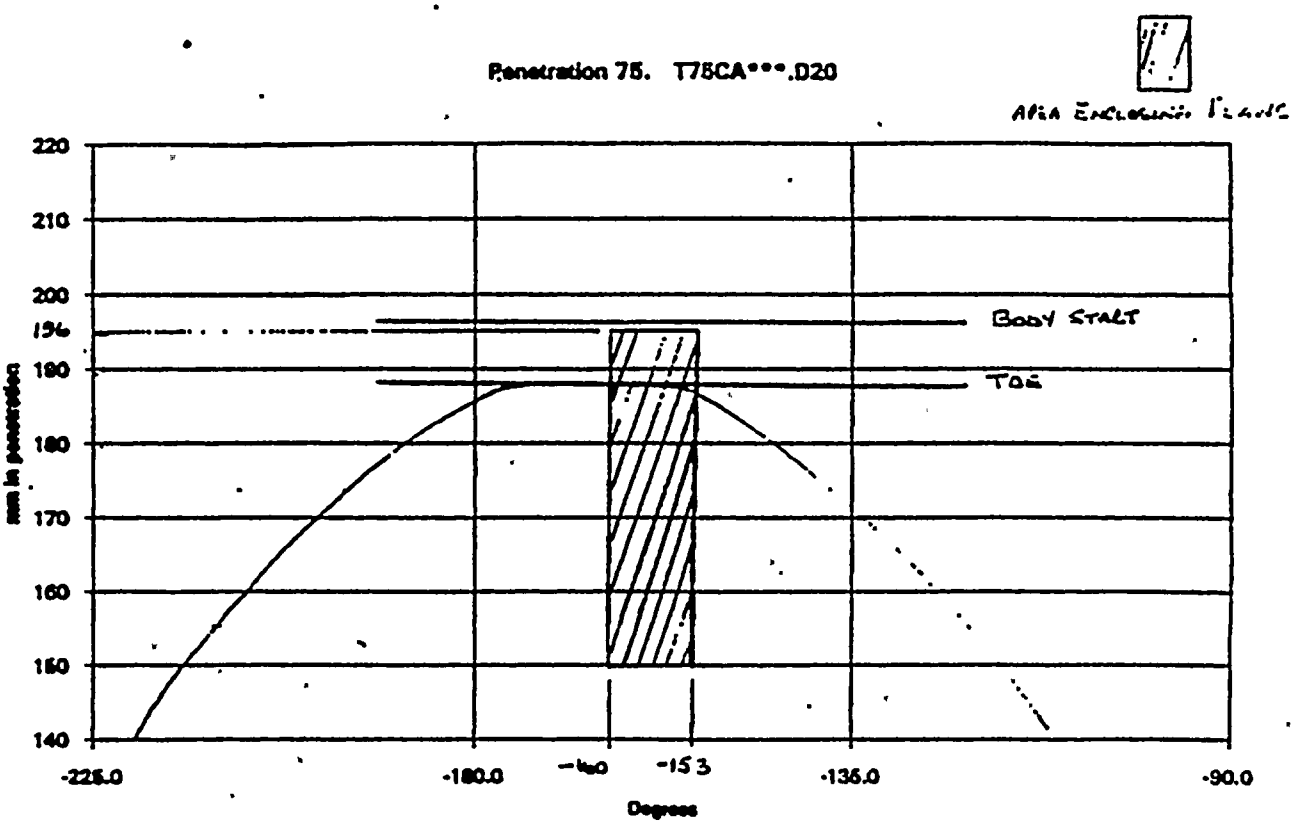


FIGURE 3: UT SCAN SUMMARY, PENETRATION 75

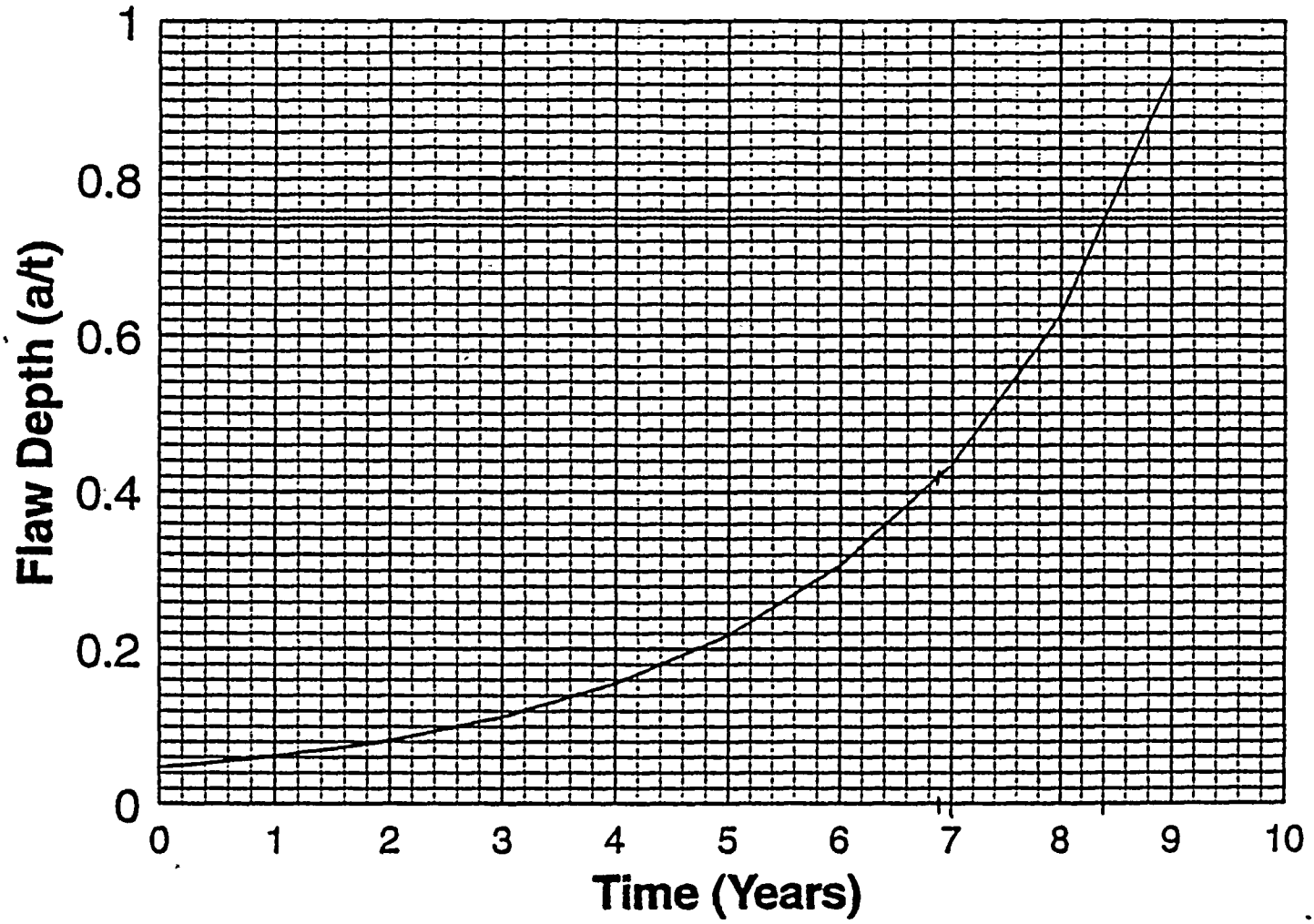


FIGURE 4: FLAW EVALUATION CHART, PENETRATION 75

ATTACHMENT 3 TO AEP:NRC:1218

AFFIDAVIT FOR WITHHOLDING WCAP-14118
FROM PUBLIC DISCLOSURE