

SUBJECT: SUMMARY OF THREE APRIL 2002 CONFERENCE CALLS WITH THE
LICENSEE ON THE REACTOR PRESSURE VESSEL HEAD INSPECTION
PLANS AND RESULTS AT ARKANSAS UNIT ONE, UNITS 1 AND 2 (ANO-1&2)
(TAC MB4525)

During the month of April 2002, the NRC staff and the licensee
the licensee's reactor pressure vessel head inspection plans a
of those calls follows.

- failed on 05/02
- 50-313
- 50-368
- PM is Tom O'Leary

April 17, 2002

Due to questions from the Region IV inspectors on the process used by the licensee to demonstrate the surface or volumetric examination method at ANO-2, the licensee agreed to provide a demonstration report (with a summary) within 30 days after restart. This demonstration report will include a road map and supporting documentation to characterize the demonstration activities and results.

April 19, 2002

Due to questions from the Region IV inspectors on the need for eddy-current (EC) examinations in addition to ultrasonic testing (UT) examinations at ANO-2, the licensee repeated their commitment in response to Bulletin 2002-01, that they will perform inspections in accordance with Generic Letter (GL) 88-05 (visual), and under the head volumetric examinations of 100% of the vessel head penetrations. The licensee indicated that the UT examinations are capable of detecting a leak path, and that EC examinations were only being relied upon for characterizing the length of any flaws that are detected by UT examinations. The licensee assured the staff that the UT examinations will be able to detect all significant indications and that the basis for this assertion will be provided in their demonstration report, which will be provided within 30 days after restart. The licensee confirmed that ANO-2 has not experienced any conoseal leaks or any other leaks from external sources that would leave boric acid on top of the head. The licensee concluded that the absence of prior leakage, combined with the capability of the UT examinations to determine through-wall cracks, addresses the Bulletin 2002-01 concern of reactor pressure vessel head degradation. The licensee was not aware of information that the regional inspector obtained regarding apparent indications on two control element drive mechanism (CEDM) nozzles; however, the licensee agreed to follow-up on the information.

April 25, 2002

On April 25, 2002, the licensee provided the attached reactor pressure vessel head inspection summary for 2R15, which consists of the inspection plan, the inspection results, the follow-up actions, and three figures. The licensee also indicated that they inspected the head flange and performed GL 88-05 visual inspections (from the top of the head to the head flange). The licensee performed UT examinations of all vessel head penetrations, and some penetrations received EC examinations. Due to indications from the UT examination results, the licensee did additional non-destructive examination (NDE) on three nozzles. Liquid dye-penetrant testing

(PT) was performed, which included the J-groove weld area and extended 90 to 180 degrees around the circumference on the low end of the CEDM nozzle. The PT resulted in no indications. Therefore, the licensee concluded that all 90 head penetrations have pressure boundary integrity with no indications of primary water stress corrosion cracking (PWSCC) and no through-wall leaks that could cause head wastage. In addition, no signs of leakage were detected above the head on the insulation. Only very minor occasional boric acid staining was observed (likely from historical venting).

The licensee also verbally responded to five staff questions that had previously been provided to them, as follows:

- Q1. It was indicated that one nozzle at ANO-1 has been repaired due to leakage. Please discuss whether there were opportunities to discover a cavity outside the nozzle during the repair process (through pre- or post-repair inspections, through preparation of the area for repair, etc.).
- A1. The licensee performed a visual exam on nozzle #56 with a remote crawler and found a small amount of boron which they characterized as a "trail". The licensee ground the J-groove weld and performed a repair. In addition, the licensee stated that there was no evidence of a cavity and the amount of boron was very small.
- Q2. Has the boric acid on the insulation at ANO-2 been cleaned? If not, are there any plans to clean it?
- A2. The licensee has seen a slight powder which resulted from venting of the CEDMs in previous outages. Video from the most recent inspection shows no boron with the exception of the slight power, therefore, the licensee concluded that there was no need to clean the insulation.
- Q3. Are any actions taken to prevent/minimize the amount of boric acid that is sprayed onto the head during the venting operation? Please describe these actions.
- A3. The vent line is now piped off to prevent boric acid from being sprayed onto the head during venting operations.
- Q4. With regard to future inspection plans, please define the type of evaluation that is stated in the following response to question 1.D for both ANO units: "If throughwall or throughweld cracks are found and a concentration of boron is found protruding through the annulus region of the penetration, an evaluation will be performed to determine if there is potential for wastage of the adjacent vessel material."
- A4. The licensee stated that NDE technology is evolving, but UT examination is the primary method that they plan to use for their examinations. The licensee also mentioned a new EC examination process that will look for loss of contact between the CEDM nozzle and the reactor vessel head. The licensee will further discuss their proposed evaluations in their 30-day response to the Bulletin.

- Q5. Since the insulation on ANO-2 cannot be easily removed, please address whether or not UT examination of the nozzles in ANO-2 alone (i.e., EC examination on only some of the nozzles) will identify reactor pressure vessel head wastage.
- A5. The licensee indicated that the UT examination technique alone is sufficient to identify whether or not a leakage path is present. The licensee stated that the UT examination technique can look through the nozzle, and a minimum of 0.050" into the weld. The UT examination will be further discussed in the licensee's demonstration report, which they committed to provide to the staff.

ANO-2 RV Head Inspection Summary for 2R15

Inspection Plan

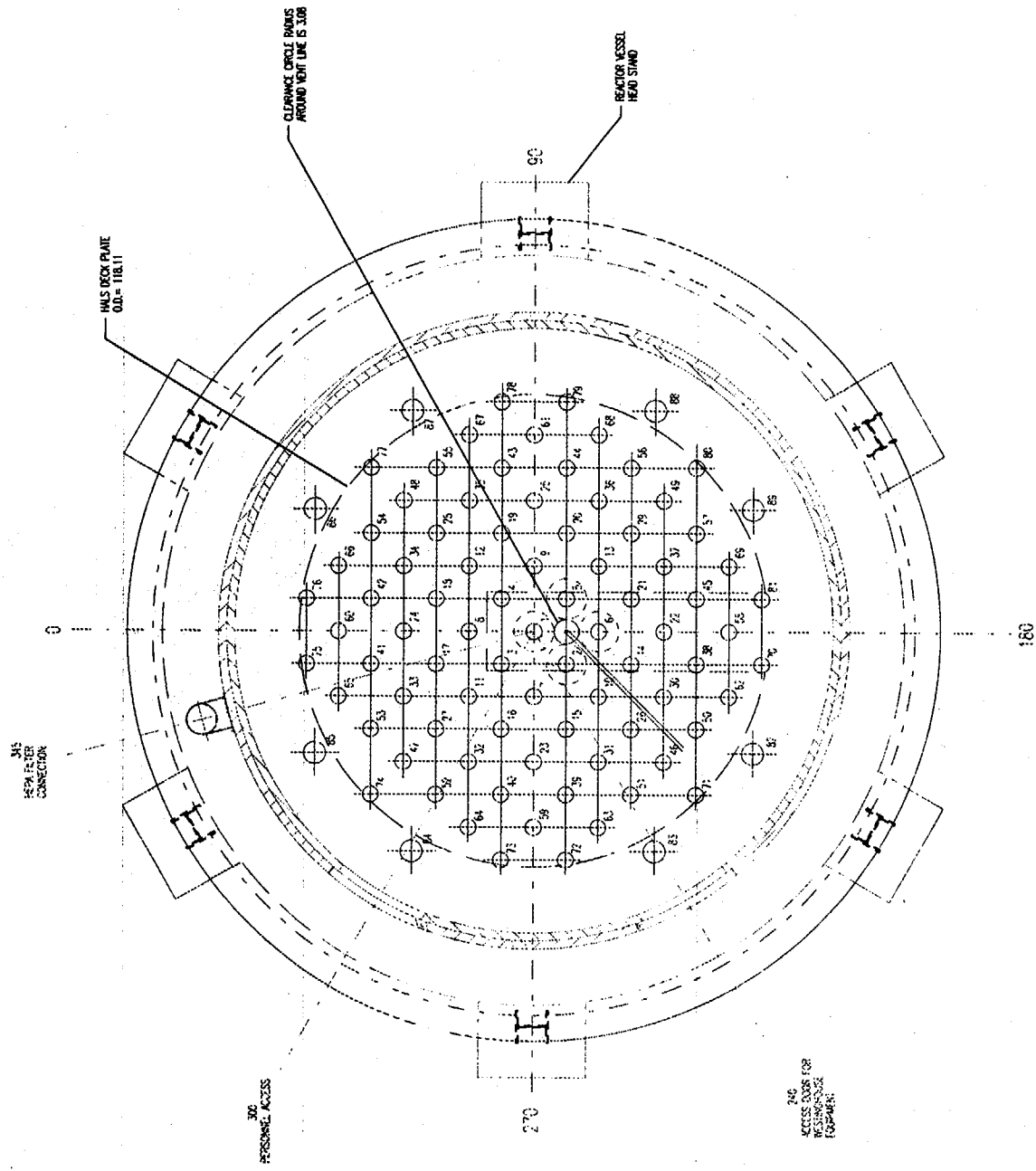
- Westinghouse performed the RV head inspection under their procedures with the oversight of ANO Engineering and Quality Control NDE specialists.
- The CEDM (81) inspection plan included the use of both a "demonstrated" eddy current and a UT probe which included the area 1.5 inches above the J- weld to the inspectible extent of the nozzle below the weld.
 - due to an electrical problem with the eddy current detection circuit, the ECT was not functional during a large portion of the examination.
- The incore instrument nozzles (8) were similarly inspected using a comparable UT and eddy current probe, but modified for the larger ICI nozzle diameter.
- The single vent nozzle was inspected by a smaller UT probe.
- Head penetrations were inspected from above the insulation for boric acid deposits at or around the nozzles and also the flange area (videotaped).

Inspection Results

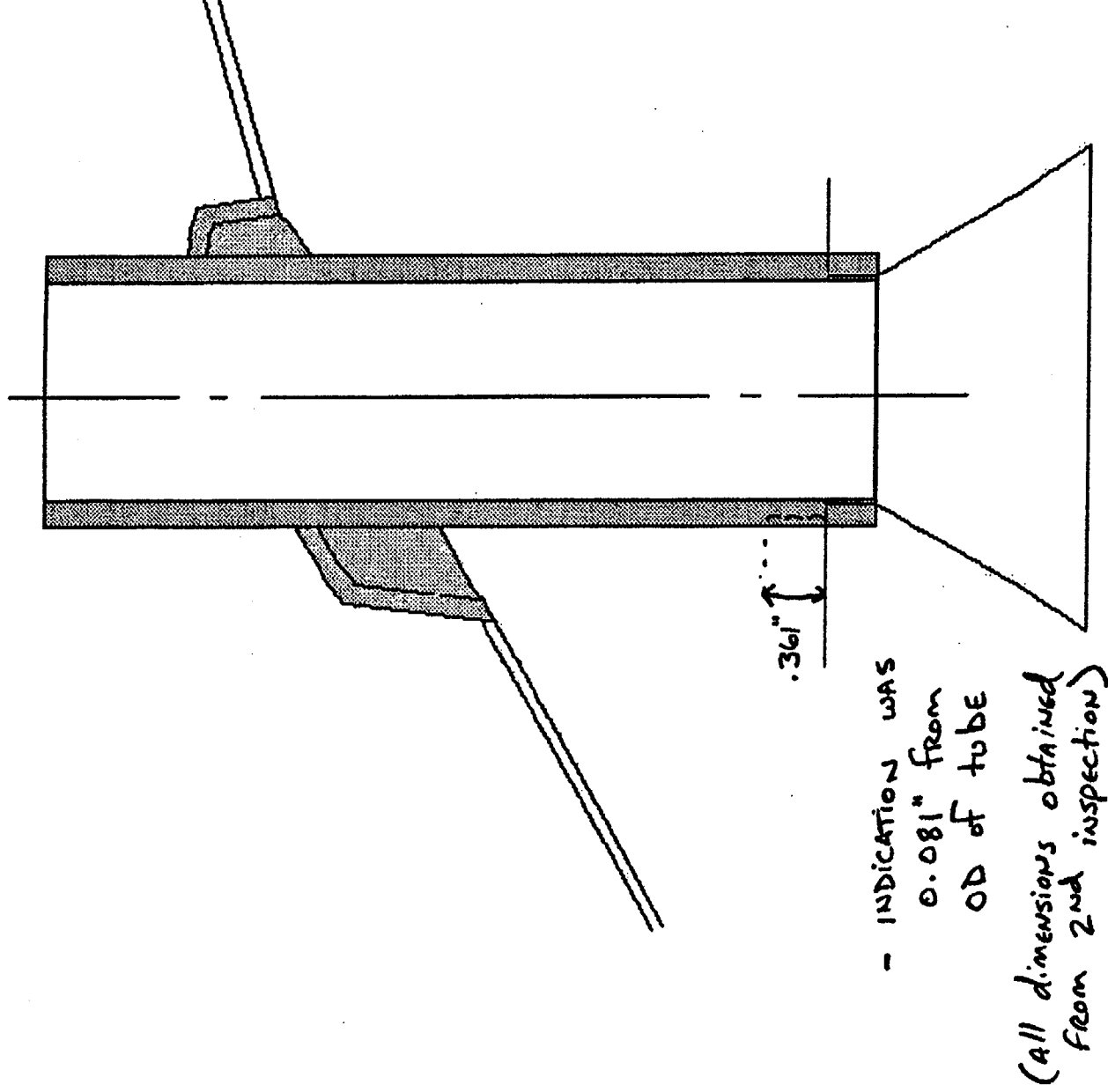
- All 90 head penetrations were confirmed to have pressure boundary integrity with no indications of PWSCC cracking and no through wall leaks that could cause head wastage.
- Additional NDE was performed on three CEDMs from under the head (see diagrams)
 - Nozzle 43 and 59 had J- weld reflections at the low side of the nozzles (~0°) that were further inspected by PT and found to have no surface indications found.
 - Nozzle 30 had indications in the nozzle just above the threading for the CEDM guide cone. An ECT was performed on the OD of the nozzle with no surface indications found.
- No signs of leakage were detected above the head on the insulation. Only very minor occasional boric acid staining observed (likely from historical venting).

Follow-up Actions

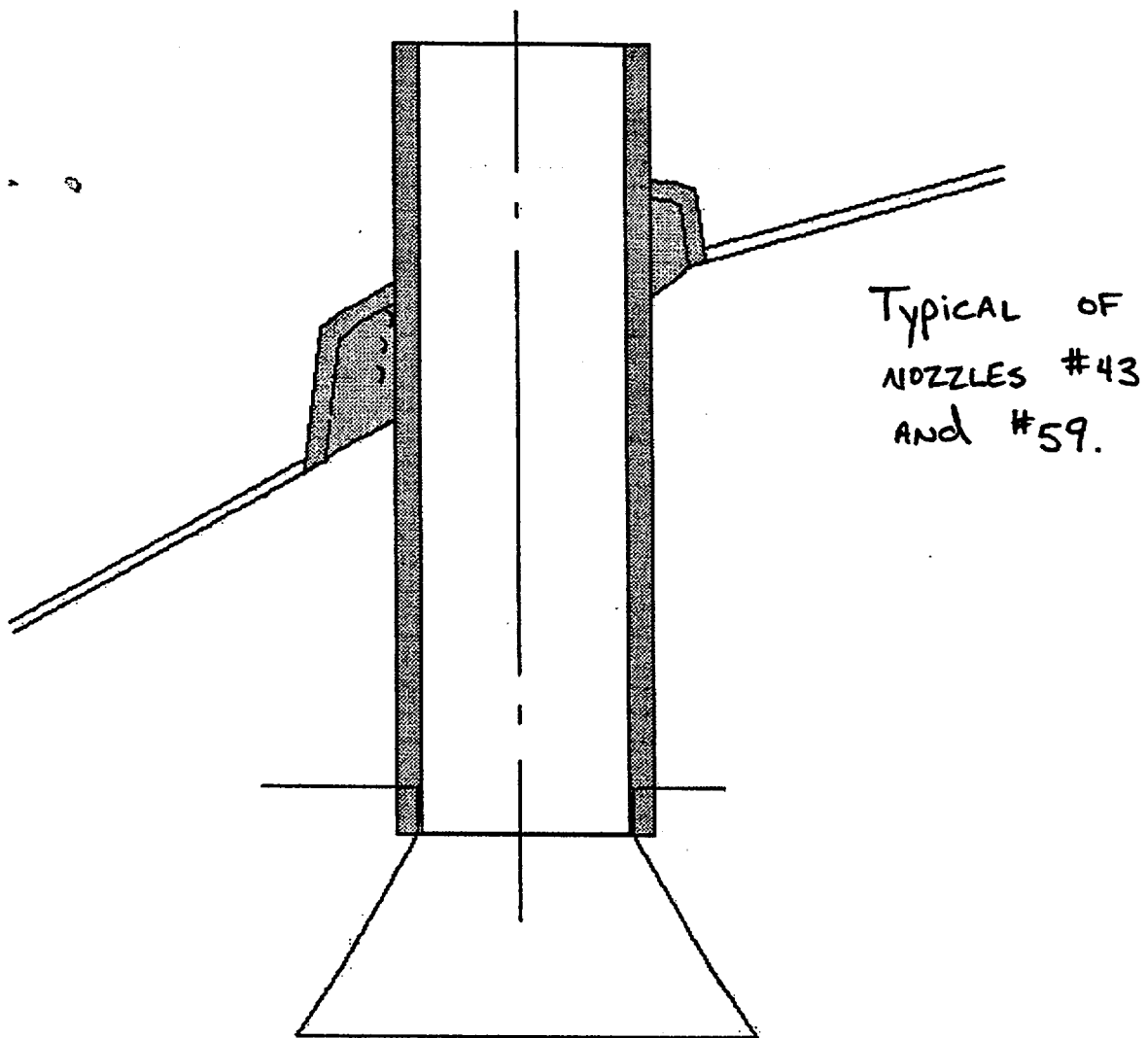
Entergy will provide an NDE demonstration report 30 days after startup from 2R15 which provides a summary of the testing performed for confirming the ability to detect flaws in the head penetration nozzles and the nozzle/weld interface.



ANO-2 PV Head Plan View



Elevation View of UT Reflectors on Nozzle 30



Elevation View of UT Reflectors on ANO-2 Nozzles 43 and 59