A subsidiary of Pinnacle West Capital Corporation

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Company Correspondence

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SUBJECT: RVH CEDM NOZZLE EXAMINATIONS

The following is a description of our CEDM Nozzle inspection plan in response to NRC Bulletin 2001-01. The plan has been refined due to the recent boric acid corrosion issue at Davis Besse and resulting NRC Bulletin 2002-01 concerning Reactor Vessel head degradation.

The current under-the-head inspections call for inspecting 97 CEDM nozzles with remote tooling using a combination of surface eddy current (ET) and volumetric ultrasonic (UT) techniques. The ET scans will be applied from the ID of the nozzle using Westinghouse's open probe scanner. The UT will also be applied from the ID with the same scanner. The ET and UT scans will be performed at the same time and gives us the capability of examining the ID and OD nozzle wall. The scan area includes all wetted surfaces below the j-weld and up to two (2) inches above the j-weld.

The UT technique has been refined to include two zero degree transducers with different gain settings to capture near surface and j-weld crack indications. The Westinghouse NDE techniques have been qualified using the Entergy/EPRI nozzle mock-up.

In response to Bulletin 2002-01, potential or through-wall crack indications in the nozzle at or above the j-weld area will require additional examinations:

1) Full length UT of the nozzle OD to assess nozzle OD cracking
2) Low Frequency eddy current interference fit NDE to assess potential bore corrosion (currently under final qualification)
3) Top of head visual examination for leakage if the nozzle is accessible. It is expected that the bore assessment using ET may justify us to not perform a top head visual for inaccessible nozzles.

Indications in the j-weld, or potential indications will result in the j-weld being surface ET examined using the Westinghouse "grooveman" tool. This will allow confirmation of any crack defect.

If there is no confirmation of a linear defect, then the weld is considered acceptable;

If there is a confirmed weld defect, then further examination is required before repairs may commence. The further examinations include:

1) Full length UT of the nozzle to assess the OD of the nozzle;
2) Low Frequency eddy current interference fit NDE to assess potential bore corrosion;
3) Top of head visual examination for leakage if the nozzle is accessible. It is expected that the bore assessment using ET may justify us to not perform a top head visual for inaccessible nozzles.

Note that weld cracks are not planned for excavation for depth sizing, therefore we are assuming through-wall extension and performing NDE to assess potential damage to the nozzle OD and to the Bore. We have the capability to perform deep crack repair, however, the evolution is expected to be very dose intensive.

The additional examinations have been incorporated into the schedule adding time to "special interest" testing. APS Engineering personnel will have the final approval of all NDE data and repair recommendations associated with the reactor vessel head penetration examinations.

There have been no changes to the current vent line inspection plan, which is 1: perform visual exam from the top of the vessel head, or 2: perform under the head ultrasonic examinations. If the top of head visual examination can be performed and if acceptable, then no under the head examination for the vent nozzle will be performed. The visual examination is the preferred method based on machining necessary to access the vent nozzle from under the head and the resulting limited examination area due the EDM machining. In addition, inspection experience to-date, including European experience, has shown no vent line leakage due to primary water stress corrosion cracking. Therefore, Engineering believes top-of-head visual examination to be justified.

Note that should top-of-head visual examinations become necessary in light of equipment reliability issues with Westinghouse equipment, then any nozzles with indications of leakage will need to be addressed individually for damage assessment.

Any questions or comments please let me know.

MJW/MAM

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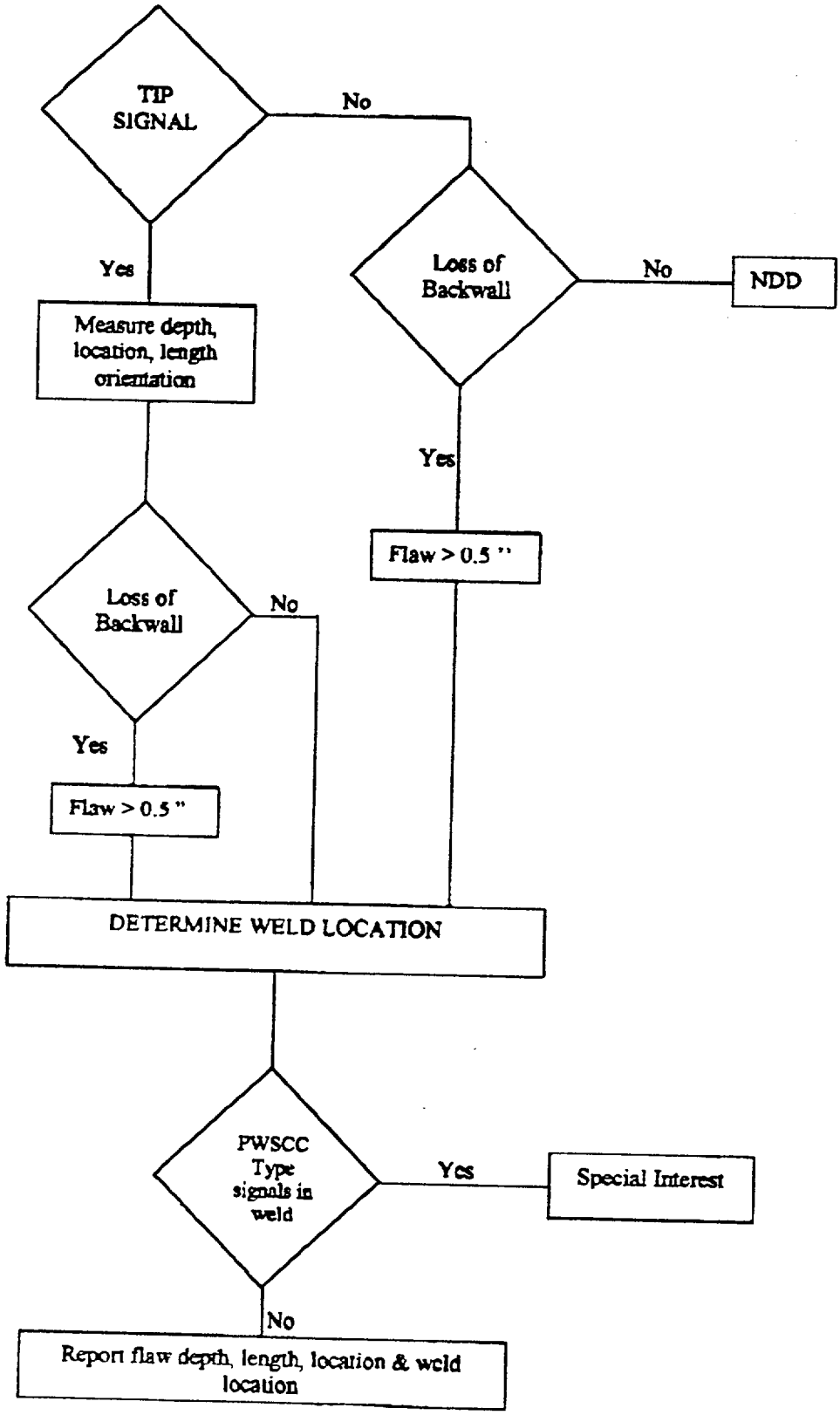
PENETRATION TUBE OD FLAWS EVALUATION



PWSCC TYPE SIGNALS

Linear in one direction, TOF like in the other hyperbolic echodynamic intermediate amplitude, does not follow weld interface

OR

Linear region with loss of blackwall for PWSCC >0.5" deep from OD

False positives can be caused by

- Weld repairs
- Reflective weld interface grain structure
- Lack of fusion

Suspect signals are categorized as:

Special interest for additional surface inspection on the J groove weld surface

PWSCC, by definition must start on a wetted surface. The tube ID & OD surface flaws are detected with the open housing probe. The J groove weld surface exam is performed with the grooveman ET scanner.

PENETRATION TUBE ID FLAW EVALUATION