Mark J. Ajluni, P.E.
Nuclear Licensing Director

Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201

Tel 205.992.7673
Fax 205.992.7885

SOUTHERN COMPANY

August 11, 2011

Docket Nos.: 50-348

NL-11-1543

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Joseph M. Farley Nuclear Plant – Unit 1
Response to NRC Request for Additional Information –
Proposed Relief Request FNP-ISI-RR-01

Ladies and Gentlemen:

By letter dated March 28, 2011, Southern Nuclear Operating Company (SNC) submitted proposed relief request FNP-ISI-RR-01 for Farley Nuclear Plant, Unit 1, that would allow the use of an alternate depth-sizing qualification for volumetric examinations of the reactor pressure vessel nozzle-to-safe end dissimilar metal welds from the inside surface. Subsequently, the NRC issued a request for additional information (RAI), by letter dated July 14, 2011 (ML11173A047), to enable completion of the review. The responses to the NRC RAIs are provided in the Enclosure.

This letter contains no NRC commitments. If you have any questions, please contact Jack Stringfellow at (205) 992-7037.

Sincerely,

Mark J Ajluni

M. J. Ajluni
Nuclear Licensing Director

MJA/LPH/lac

Enclosure: Response to NRC RAI Regarding Proposed Relief Request
FNP-ISI-RR-01 for Farley Nuclear Plant, Unit 1

cc: Southern Nuclear Operating Company
Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. J. T. Gasser, Executive Vice President
Mr. L. M. Stinson, Vice President – Farley
Ms. P. M. Marino, Vice President – Engineering
RTYPE: CFA04.054

U. S. Nuclear Regulatory Commission
Mr. V. M. McCree, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Farley
Mr. E. L. Crowe, Senior Resident Inspector – Farley
Mr. P. G. Boyle, NRR Project Manager

Joseph M. Farley Nuclear Plant – Unit 1
Response to NRC Request for Additional Information –
Proposed Relief Request FNP-ISI-RR-01

Enclosure

Response to NRC RAI Regarding Proposed Relief Request FNP-ISI-RR-01
for Farley Nuclear Plant, Unit 1

1. NRC RAI

Some details about the welds were not included in the relief request. Provide detailed cross-sectional diagrams including sketches of the weld area. These diagrams should identify the materials (stainless steel, carbon steel, nickel alloy) of the base metal, weld, and buttering and show dimensions (Nominal inside diameter (ID), outside diameter (OD), and wall thickness) for each of the welds.

SNC Response to NRC RAI 1

Figures 1 and 2 show the hot-leg and cold-leg drawings, respectively. The drawings show both configuration and materials.

2. NRC RAI

Some of the ultrasonic testing (UT) techniques qualified by PDI from the ID have difficulty in detecting axial cracks, and use supplemental eddy current testing for this purpose. Will any supplemental examinations, such as eddy current testing, be performed on the ID to detect possible surface-breaking flaws and to confirm if possible indications detected by UT are surface breaking?

SNC Response to NRC RAI 2

Supplemental eddy current examinations are used by our vendor to detect possible surface-breaking flaws and to confirm if possible indications detected by UT are surface-breaking.

3a. NRC RAI

The cited difficulties in depth-sizing come from issues with the specific PDI mock-ups used for Appendix VIII, Supplement 10 ID depth-sizing qualifications. Specifically, these samples do not have smooth (<1/32 inch waviness) ID surfaces. It is not clear if the limitations in the PDI specimens apply to the inspection conditions in Farley Unit 1.

Has profilometry been previously performed on any of these welds? If yes, provide a description of the surface waviness and estimate the percentage of areas with suspected probe lift-off.

SNC Response to NRC RAI 3a

The UT technique utilized by our vendor includes the methodology for measuring the profile of the ID surface of these welds and adjacent base metal using an immersion ultrasonic technique. This profile can be used to apply beam plotting

of indications for establishing a through-wall depth and ligament of a flaw indication, to assist in defining examination limitations, to help discriminate geometric reflectors, and to aid the UT examiner in understanding the effects of surface geometry on the inspection data.

Profilometry using UT methods was performed on the ID surface during the fall 2007 1R21 outage at Unit-1. The surface condition of the nozzle to safe-end welds were relatively smooth with no lack of coverage noted. A more recent examination on Farley-2 was completed during the fall 2008 2R19 outage with similar results. Figures 3, 4, and 5 provide representative profilometry profiles for Farley-1 hot-leg nozzles.

3b. NRC RAI

If the PDI mockups have significantly different ID surface conditions than the welds in this relief request, provide a discussion on the time and effort necessary to produce mockups that match the ID conditions in the welds covered in this relief request.

SNC Response to NRC RAI 3b

SNC has no plans to fund the fabrication of additional mock-ups with less conservative surface conditions. No ultrasonic indications were observed in the previous Unit-1 or -2 examinations, and we expect similar results in future examinations. If UT indications are found, the depth of the observed flaw will be increased by the RMSE value. This process would be conservative when evaluating actual flaw depth vs. the acceptance standards. Therefore, the fabrication of additional mock-ups and the associated costs are not warranted.

4. NRC RAI

All of the examinations described in this relief request are to be preformed from the inner diameter of the welds. If the vendor has qualified for depth-sizing from the OD, please provide a discussion on the difficulties that would inhibit depth sizing from the OD.

SNC Response to NRC RAI 4

The Farley-1 vendor for the ID Supplement 10 examinations is Appendix VIII qualified for depth-sizing using an automated system from the OD. However, the "sand-box" configuration at Farley does not permit access to the OD while the cavity is flooded for ID examinations. Access from the OD for Plant Farley requires the cavity to be drained and the "sand box" covers in the cavity to be removed. These welds should be able to be examined from the OD; however,

walkdowns will need to be performed to determine the feasibility and limitations associated with OD ultrasonic examinations.

5a. NRC RAI

Some licensees have located representative mockups (with smooth ID surfaces) containing cracks. UT vendors have used these mockups to demonstrate ID depth sizing RMSE capabilities. Also, vendors have independently participated in blind and non-blind round robin demonstrations on mockups containing representative cracks.

Provide a discussion of SNC's efforts to provide representative mockups containing cracks (or simulated cracks with crack-like responses) with ID surfaces similar to the surfaces used for successful OD depth-sizing qualifications.

SNC Response to NRC RAI 5a

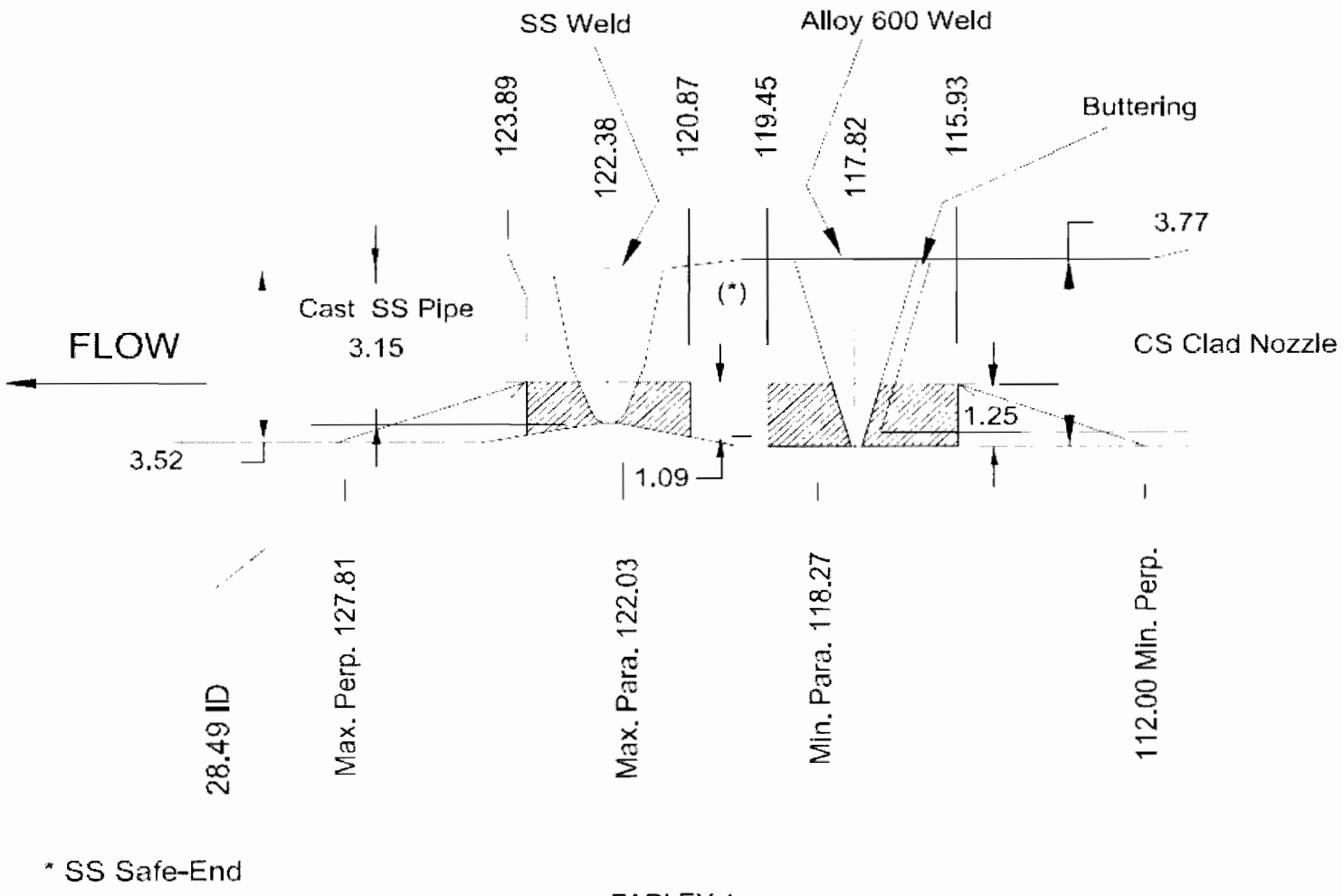
As indicated in the response to Question 3b, SNC has no plans to fund the fabrication of additional mock-ups. The Farley vendor has successfully performed multiple examinations including sizing at a few plants. These examinations were performed to ASME Section XI, Appendix VIII requirements as amended by NRC rulemaking.

5b. NRC RAI

Provide a discussion of your vendor's participation in ID depth-sizing demonstrations that may have been independent of the PDI program. If available, include a description of the specimens (ID surface waviness, configurations, and materials) and cracks, types of tests (blind or not-blind), differences between the procedures and personnel used for the demonstrations and those being proposed for examining the subject welds, a summary of results and RMSE values, and the organization sponsoring and/or proctoring the demonstrations.

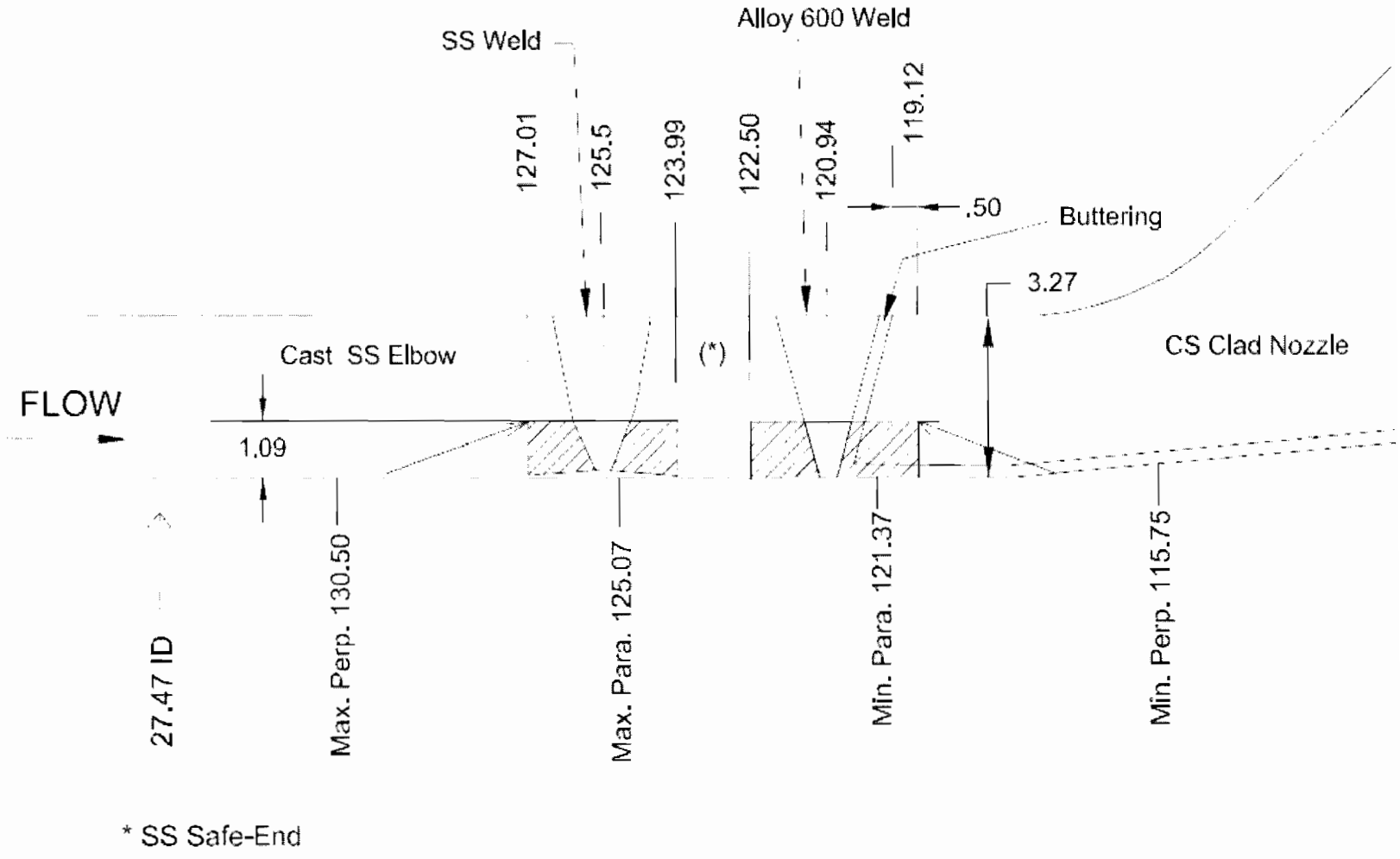
SNC Response to NRC RAI 5b

Farley is using the same vendor as Braidwood-1 and -2. Exelon responded to the NRC in their RAI question 3(b) to this issue as documented in letter RS-11-087, dated June 6, 2011 (ML111580106). SNC confirmed with that vendor that their information is still valid.

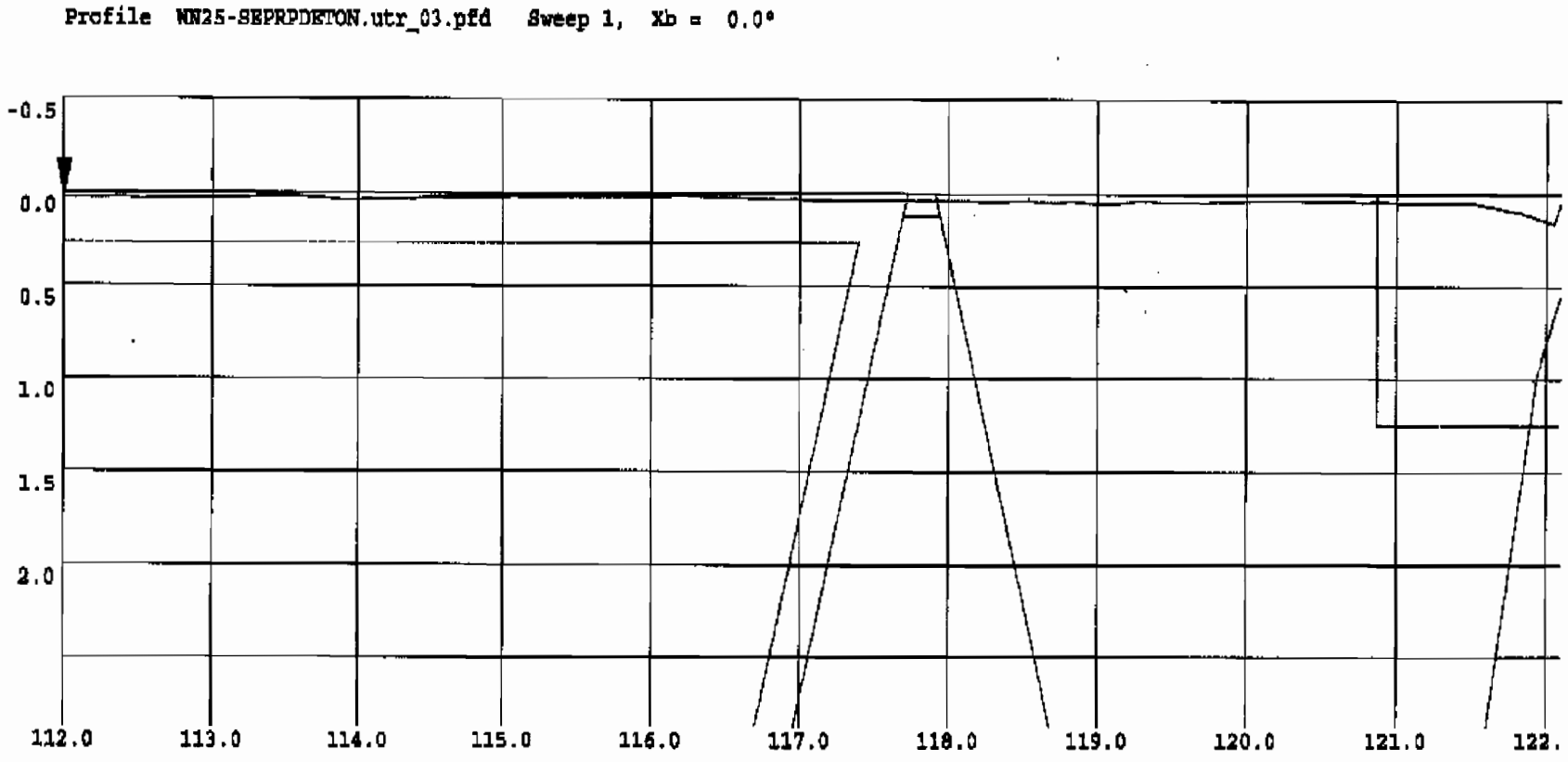


* SS Safe-End

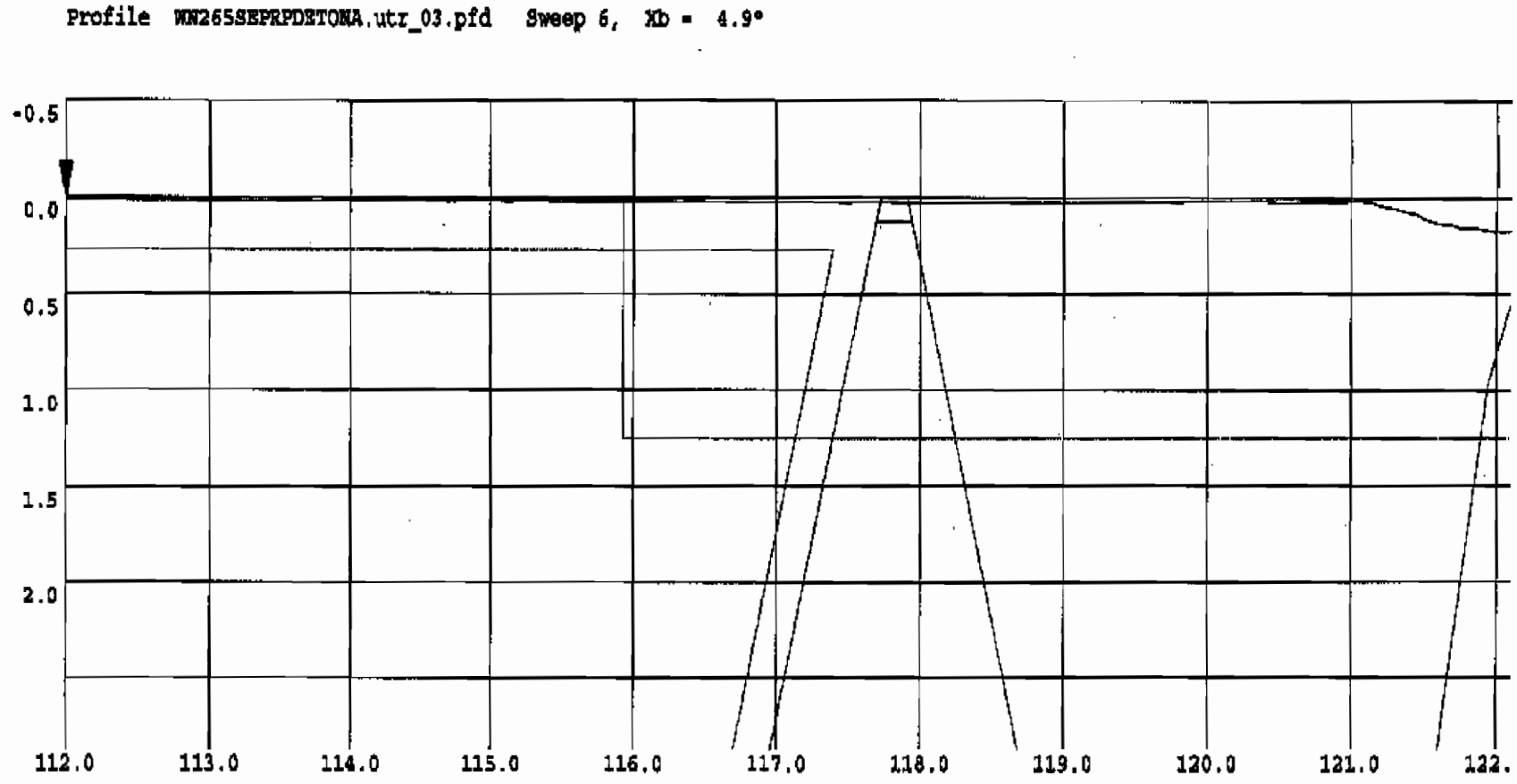
FARLEY 1
OUTLET SAFE END DETECTION SCANS
25° ALA1-4100-1DM
145° ALA1-4300-1DM
265° ALA1-4200-1DM
FIGURE 1



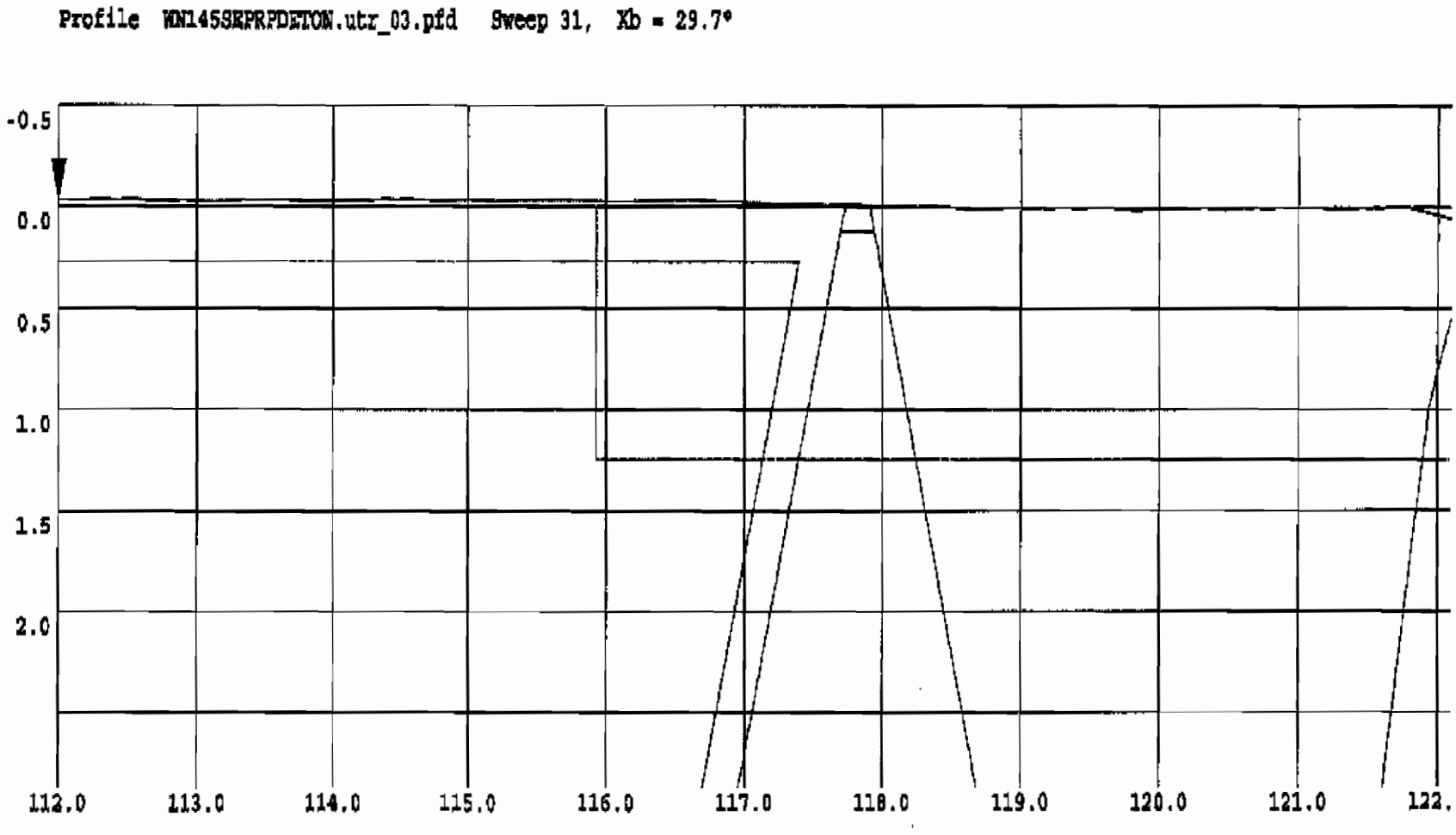
FARLEY 1
INLET SAFE END DETECTION SCANS
95° ALA1-4300-14DM
215° ALA1-4200-14DM
335° ALA1-4100-14DM
FIGURE 2



FARLEY 1
25° Hot Leg Loop 1
FIGURE 3



FARLEY 1
265° Hot Leg Loop 2
FIGURE 4



FARLEY 1
145° Hot Leg Loop 3
FIGURE 5