

Figure 3.5.6: Colorized representation of bottom surface of cladding (RCS side). Red area denotes area of maximum deflection.

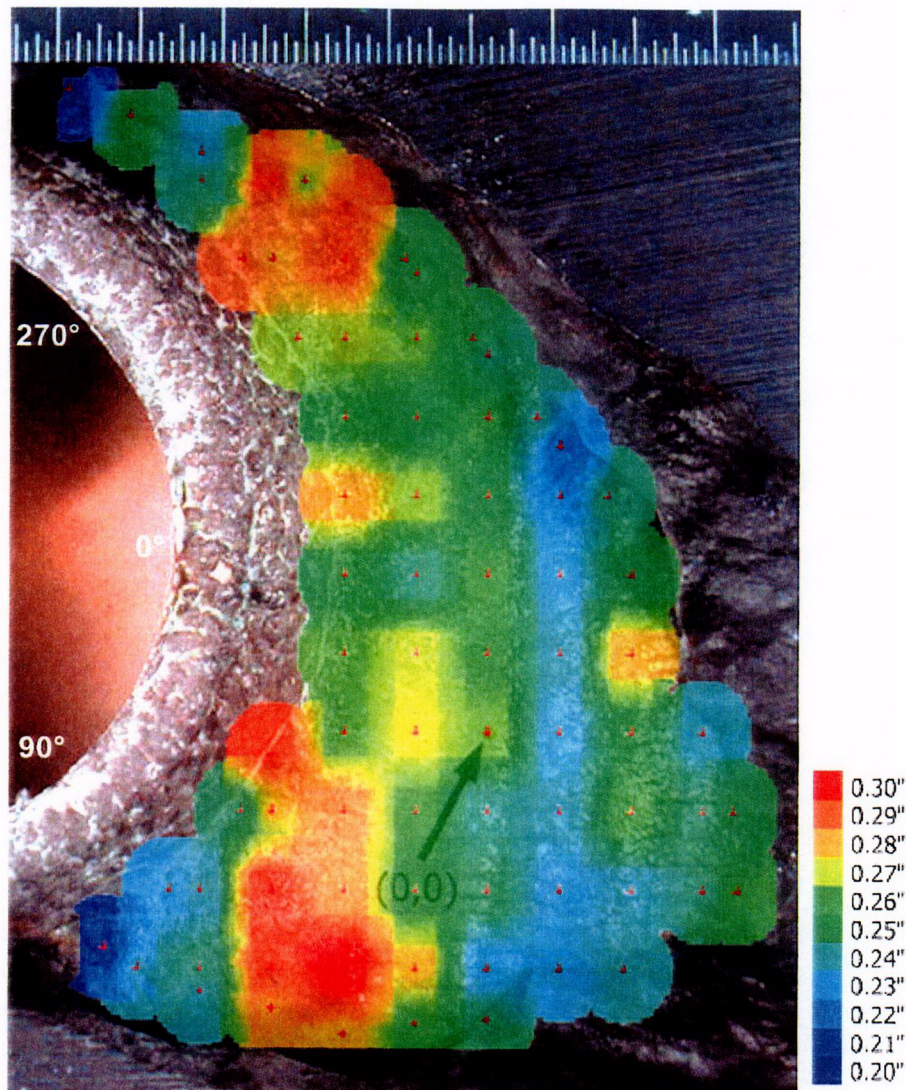


Figure 3.5.7: Exposed cladding surface with superimposed colorized thickness data. The thinnest areas of cladding occurred adjacent to the J-groove weld toward the 90° (0.202") and 270° (0.208") locations.

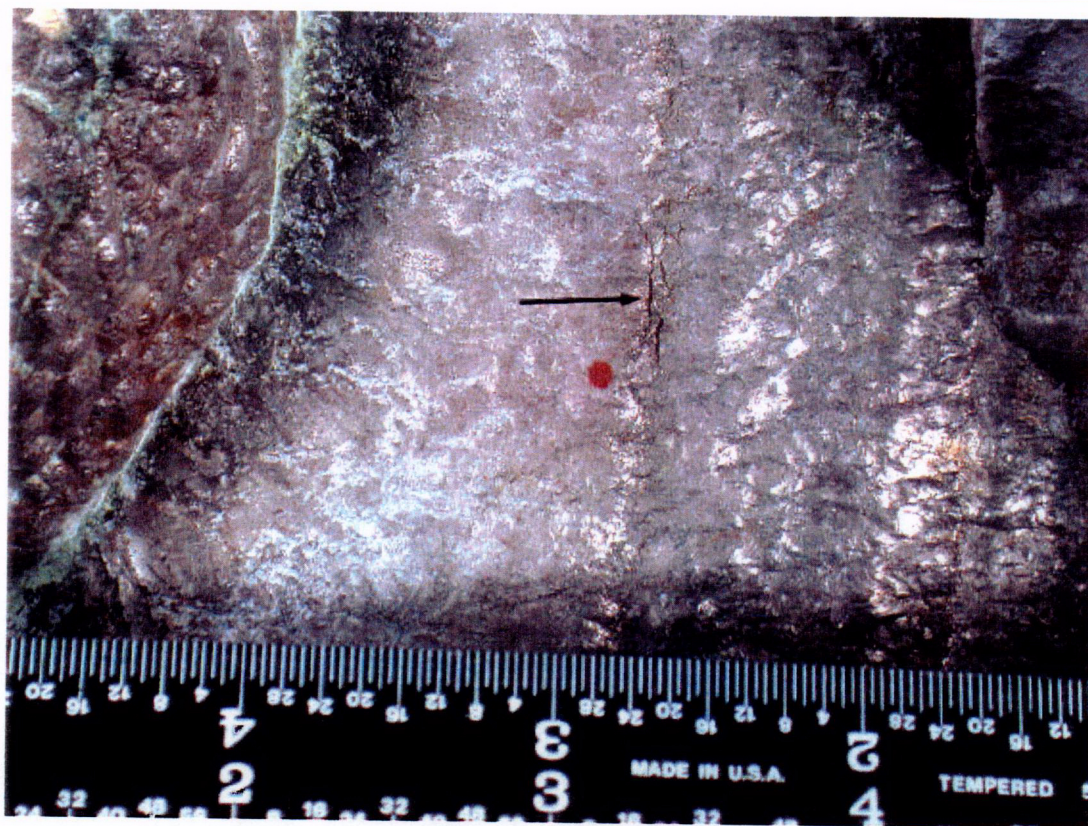


Figure 3.6.1: Photograph showing crack in exposed cladding in deflected region. Red dot indicates (0, 0) coordinates for thickness measurements.

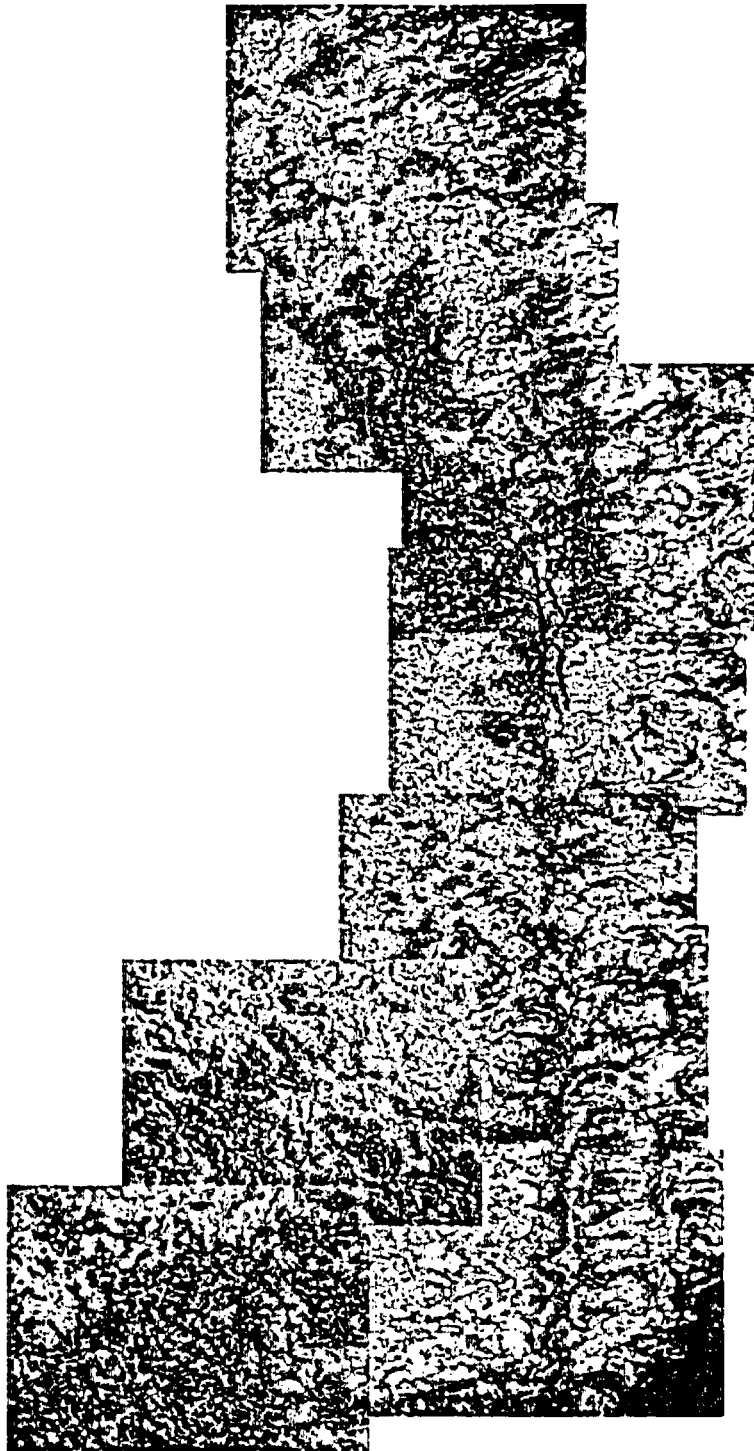


Figure 3.6.2: Mosaic showing cracking in exposed cladding. 2X

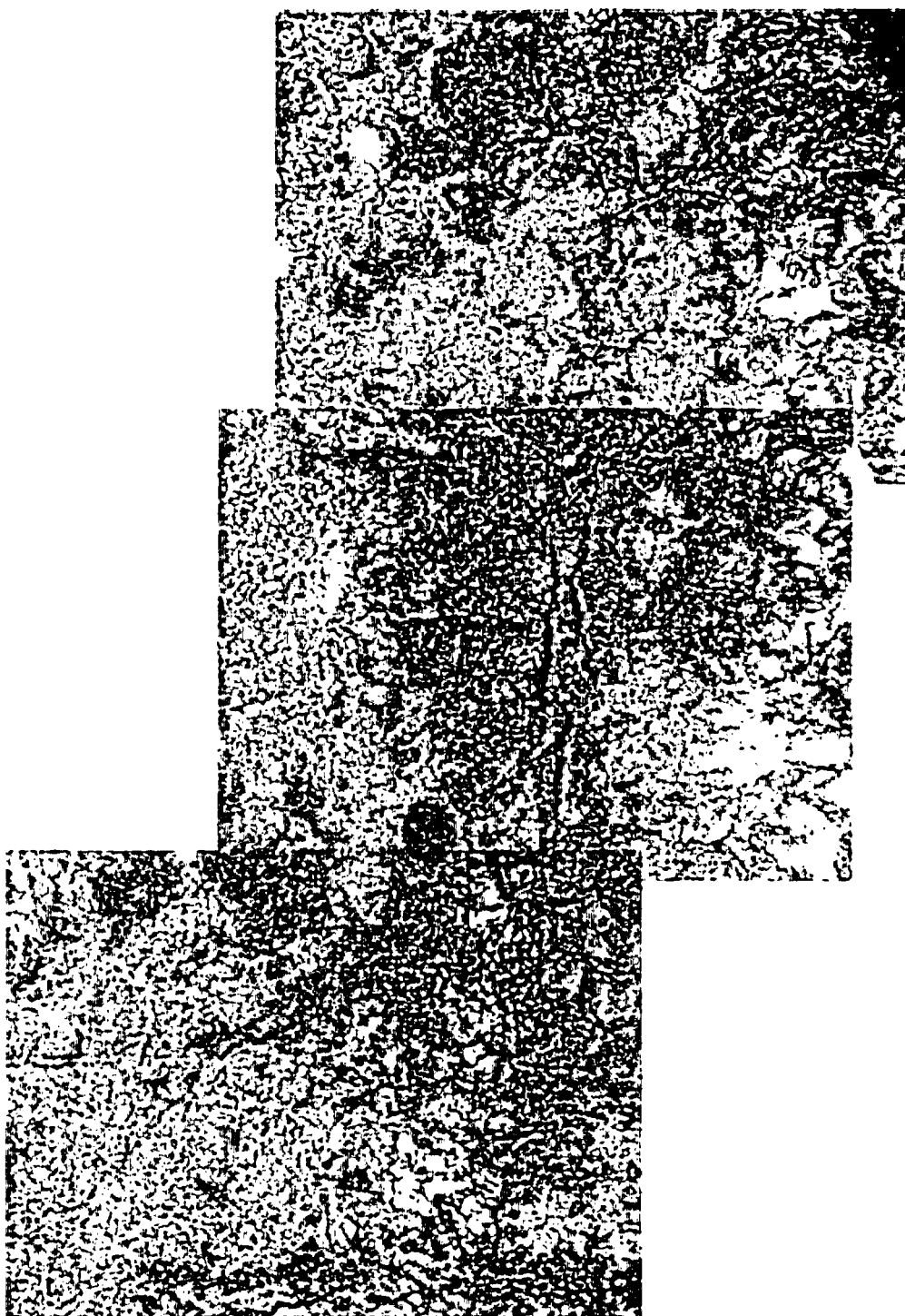


Figure 3.6.3: Higher magnification view of cladding crack in bulged region. ~4X

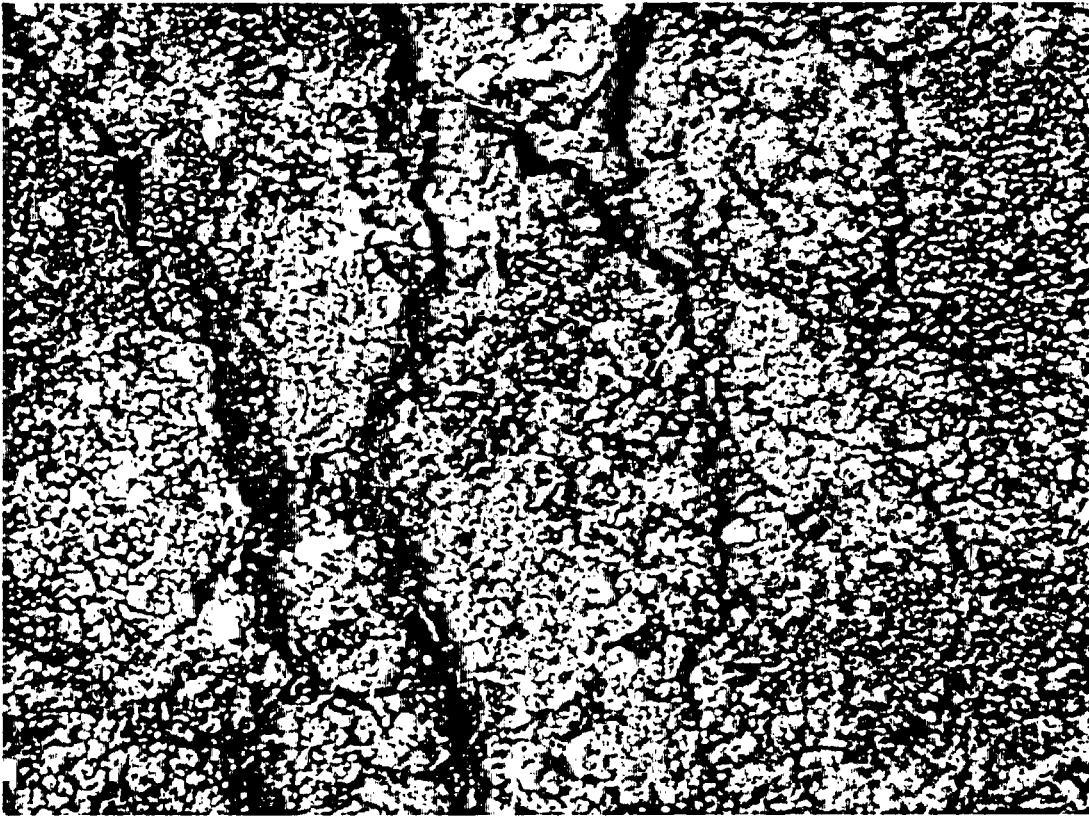


Figure 3.6.4: Higher magnification photograph of crack near center bulge. 25X

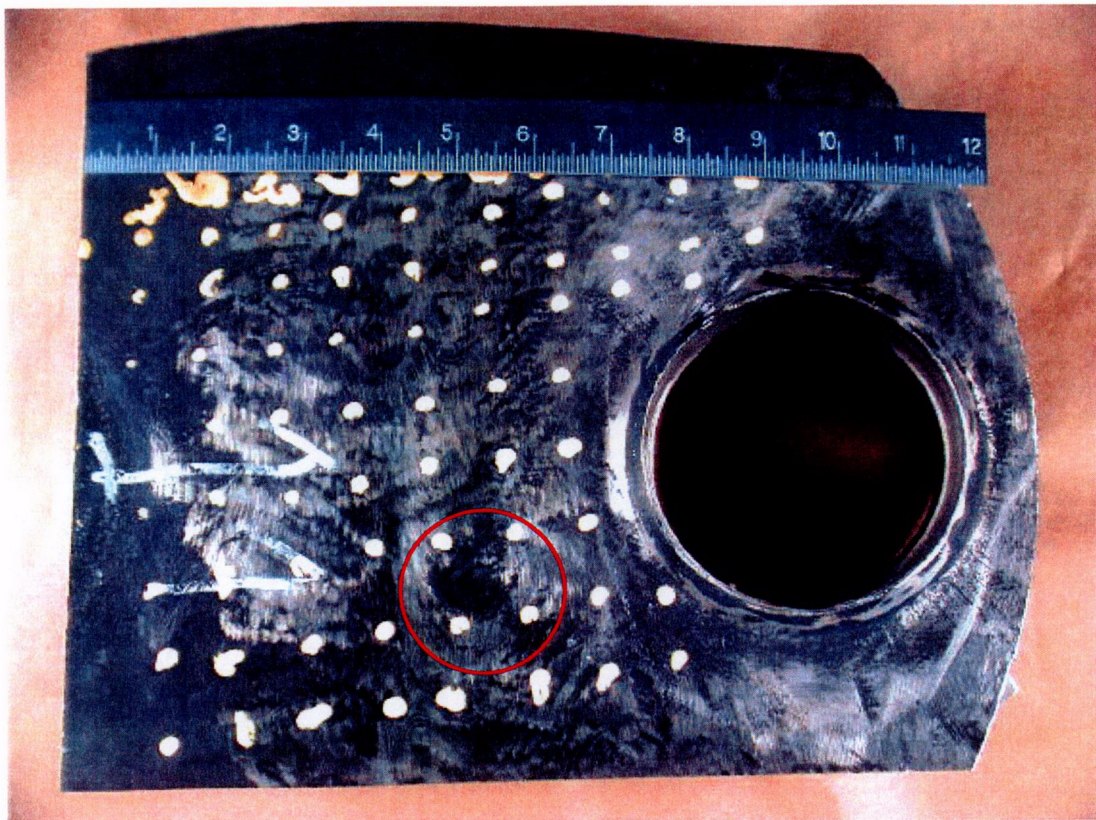


Figure 3.6.5: Low magnification photograph of the cavity underside. The red circle shows the area of maximum deflection. The white dots were applied at Davis-Besse for the UT thickness measurements. The two parallel lines toward the left indicate the Nozzle 11 position, which is outside the photo on the left. This maximum bulging area is shown at higher magnification in the next figure.

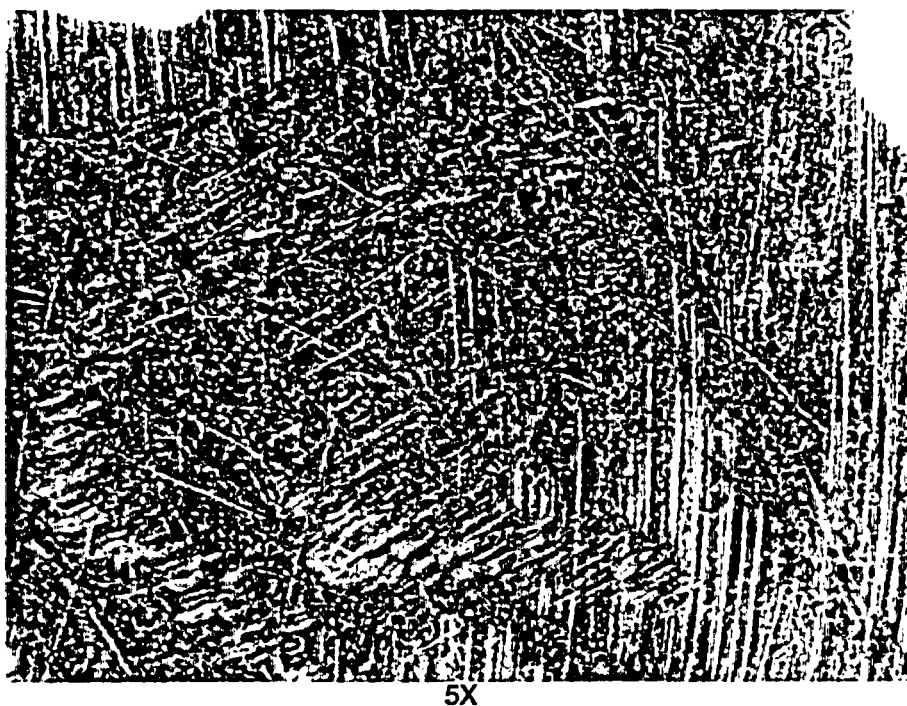
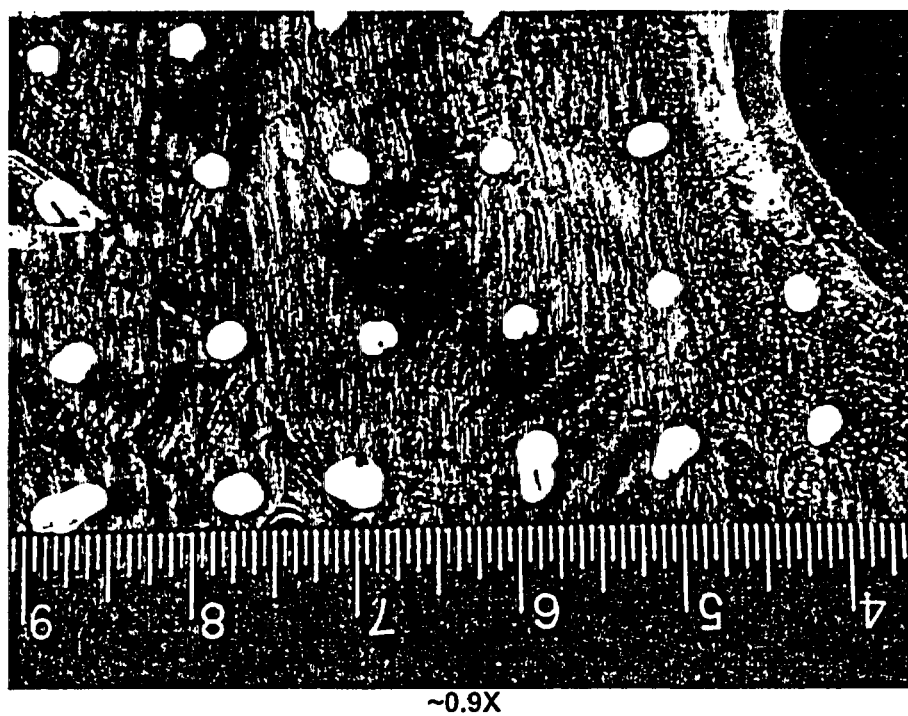
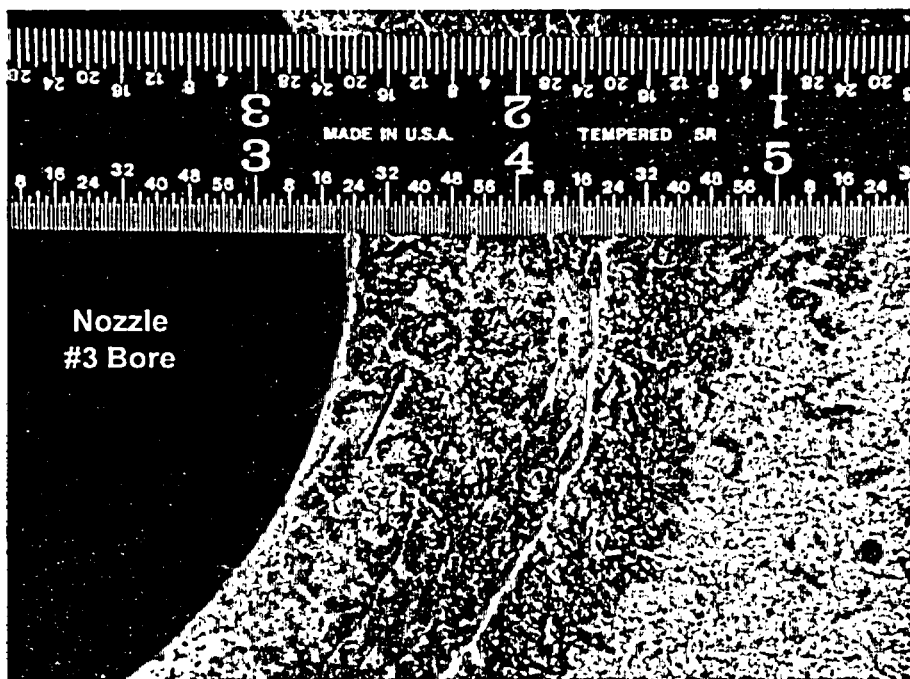


Figure 3.6.6: Higher magnification photographs of cavity underside in area of maximum deflection. No cracks were observed in this area.



Looking at J-groove weld bore near 10°. ~1.2X



Top view of J-groove weld crack near 10°. ~1.4X

Figure 3.6.7: Photographs showing axial crack in nozzle #3 J-groove weld near 10°.

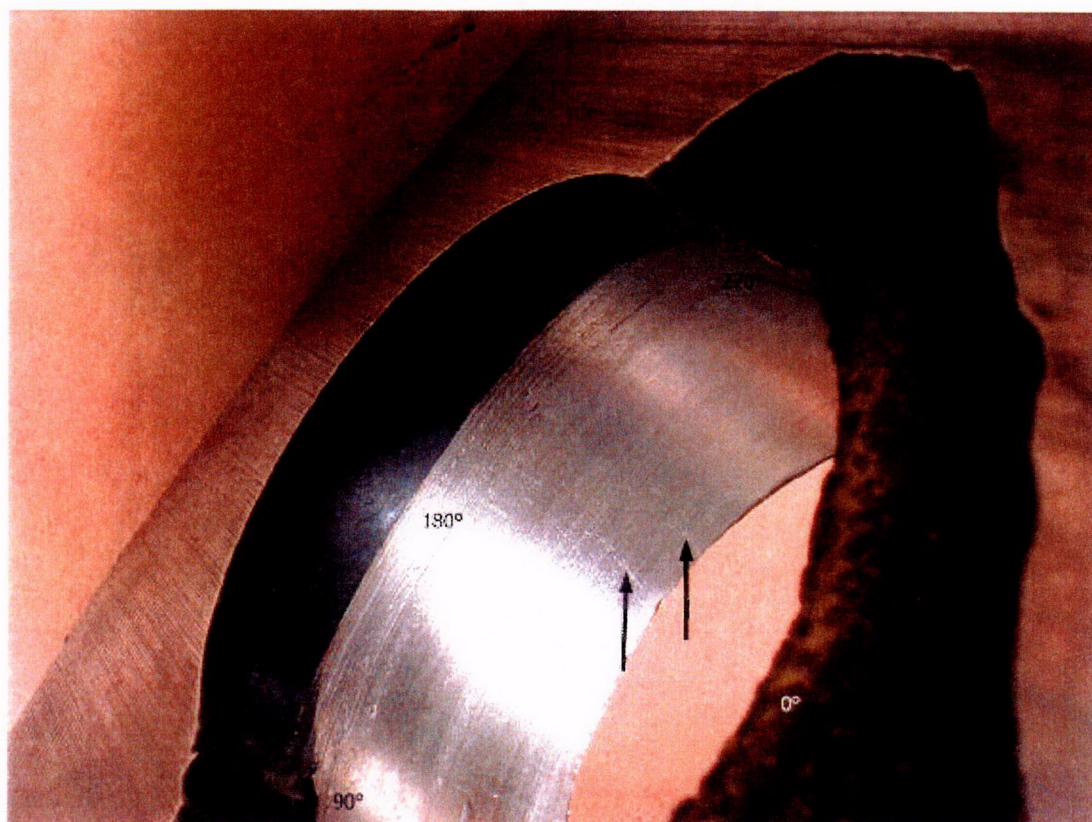
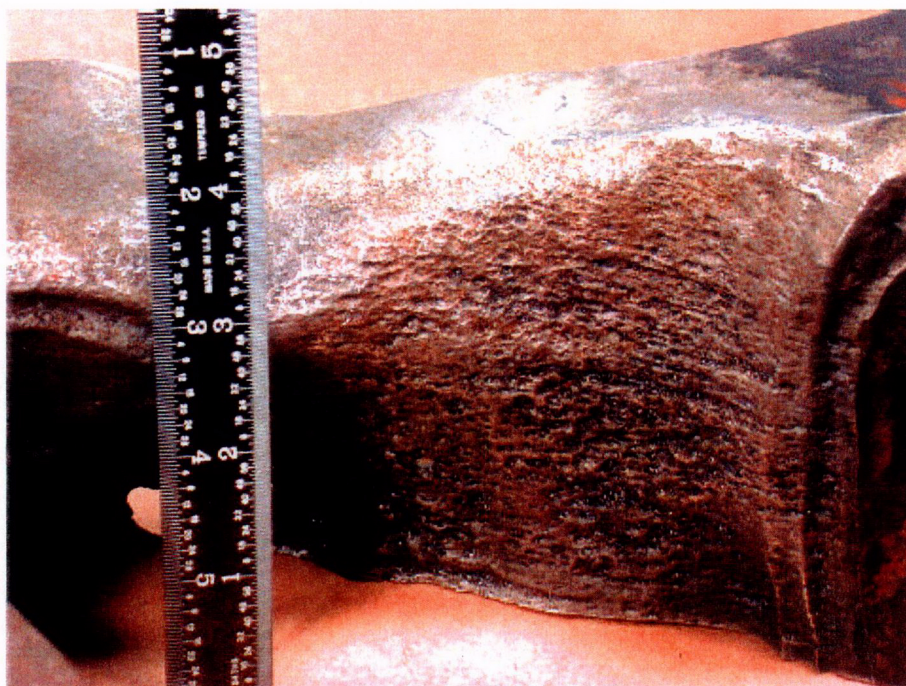
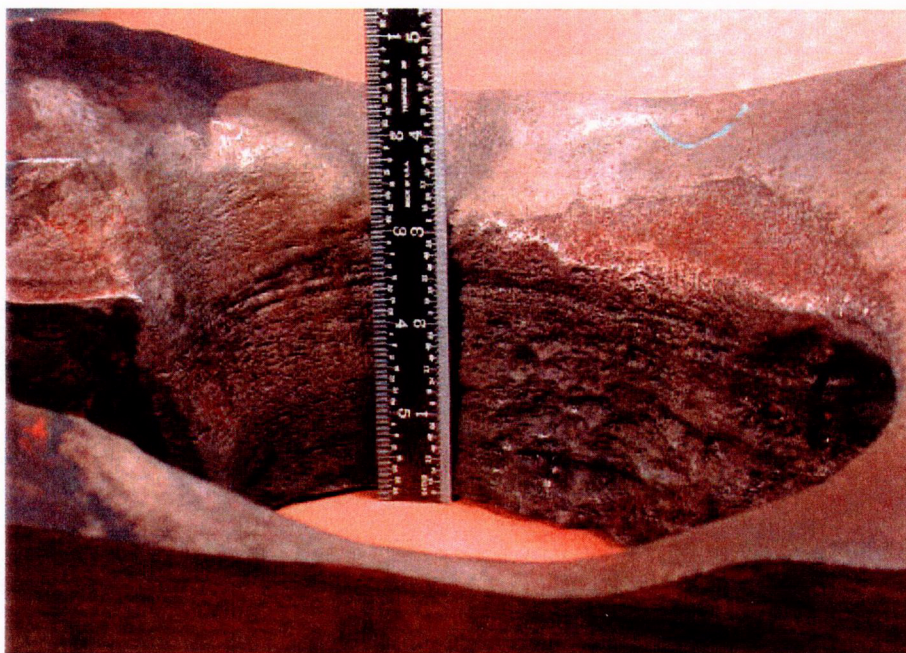


Figure 3.6.8: Axial cracks located on J-groove weld bore near 180°. ~0.75X

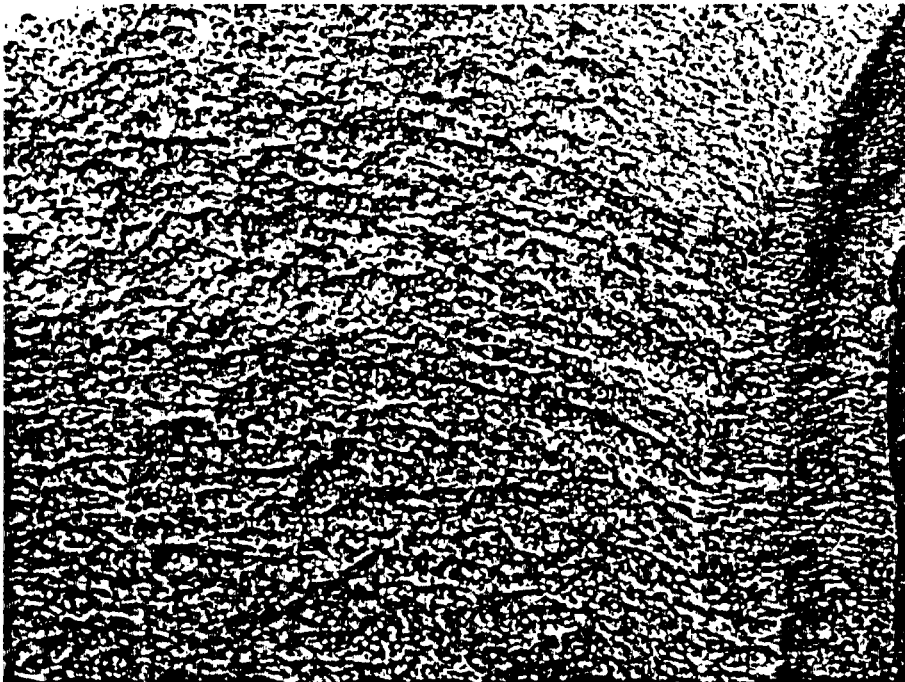


Looking toward 90° ~0.7X



Looking toward 270° ~0.5X

Figure 3.6.9: Low magnification photographs of cavity sidewall.



Sidewall detail near 90° (nozzle #3 bore to right). ~1X

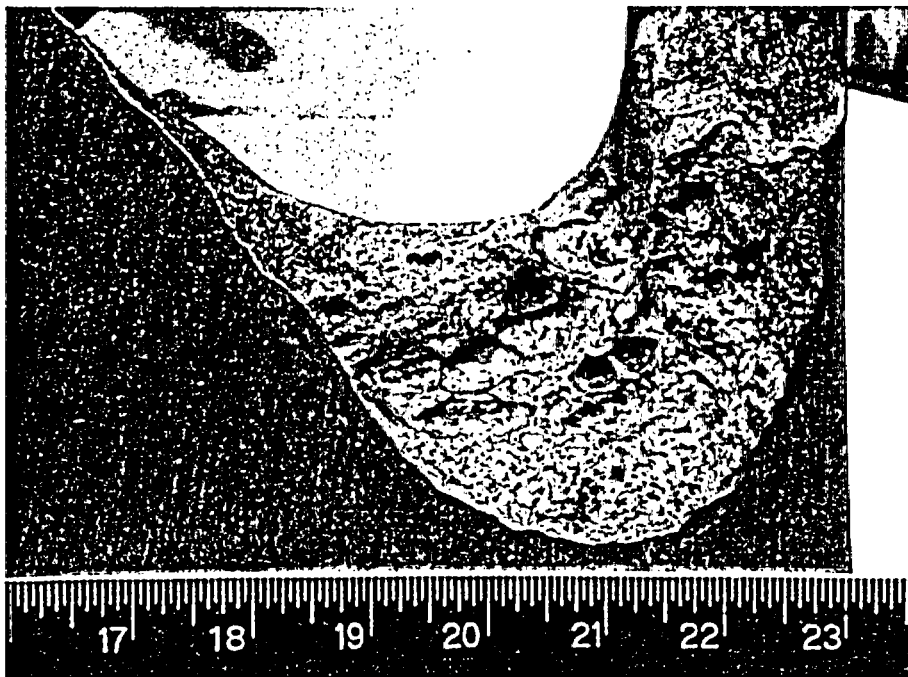


Sidewall detail near 270° (nozzle #3 bore to lower left). ~1.2X

Figure 3.6.10: Higher magnification photographs taken near the nozzle #3 bore.



Detail of side wall near 270°. ~1.7X



Looking up at cavity nose. ~0.7X

Figure 3.6.11: Photographs showing the cavity sidewall near 270° (top) and looking up at the cavity nose (bottom).

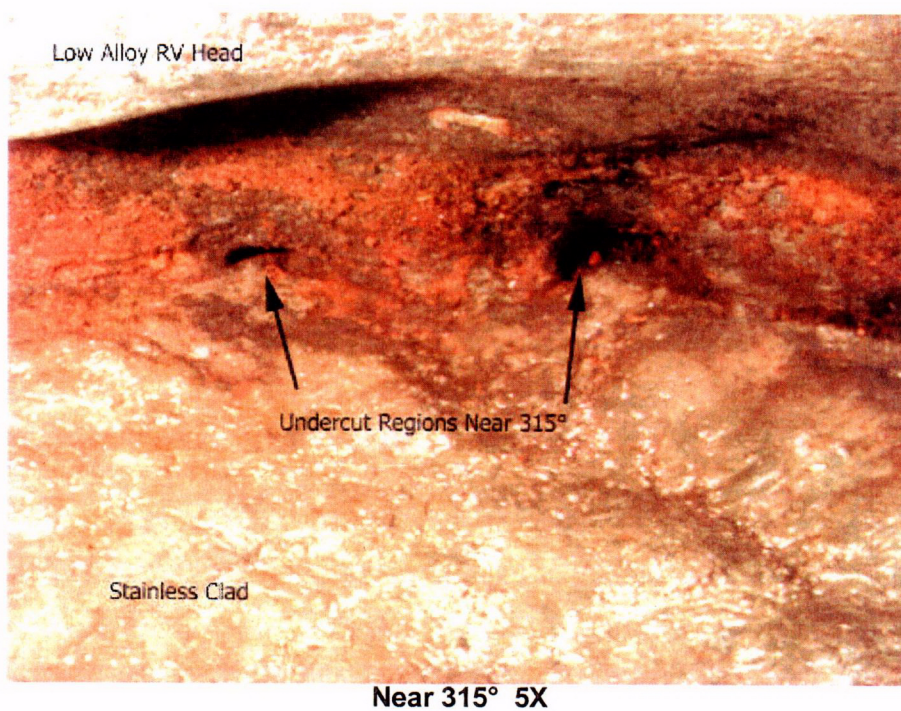
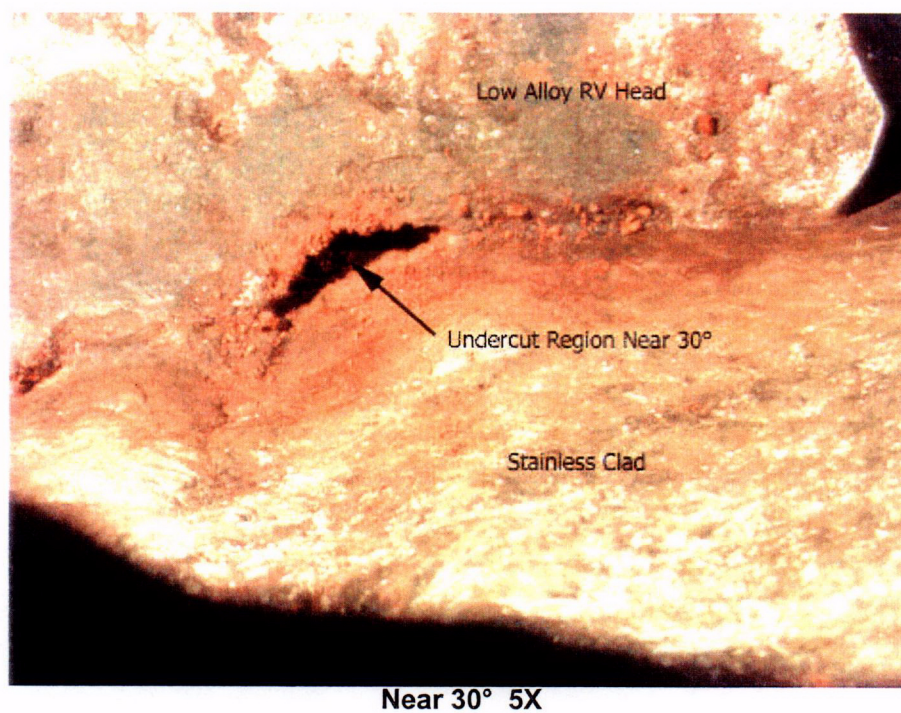


Figure 3.6.12: Photographs showing undercut regions of cavity near 30° (top) and 315° (bottom).

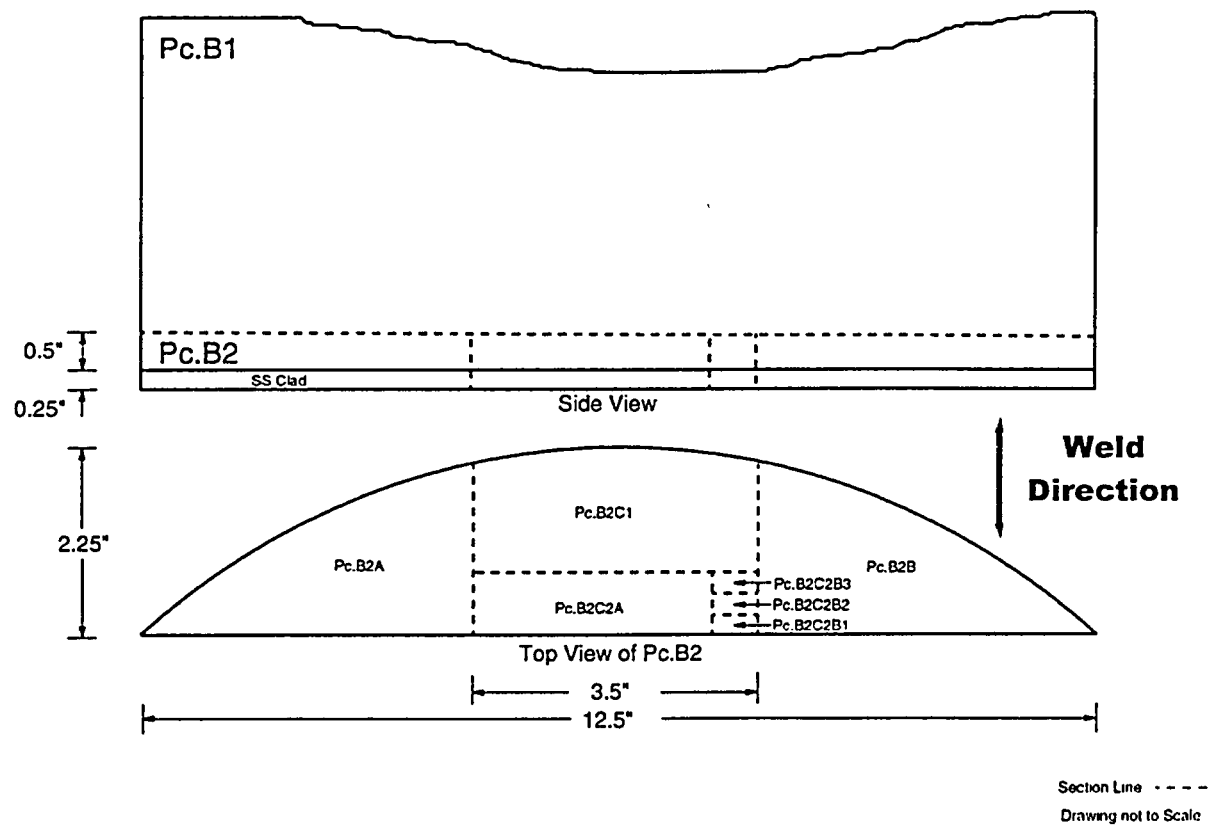


Figure 4.1.1: Schematic showing section locations and sample identifications for Block "B".

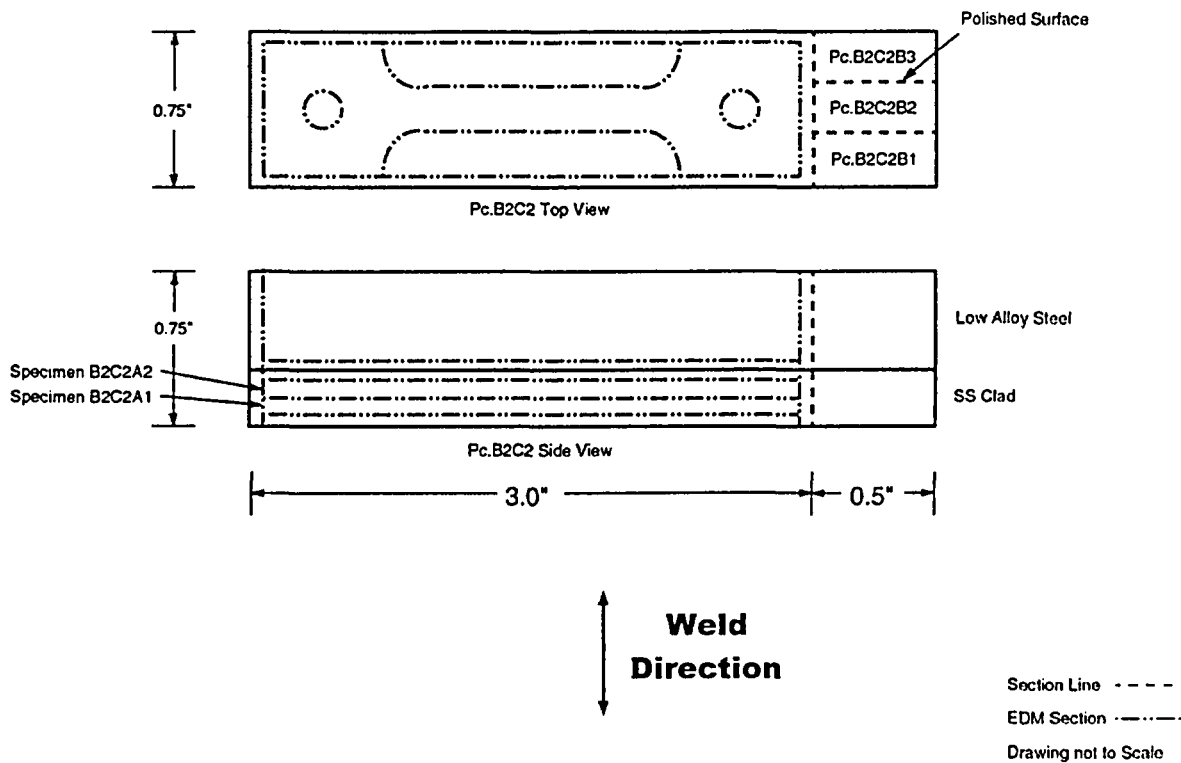


Figure 4.1.2: Schematic showing tensile specimen locations. The polished surface of piece B2C2B3 (met sample) is also indicated.

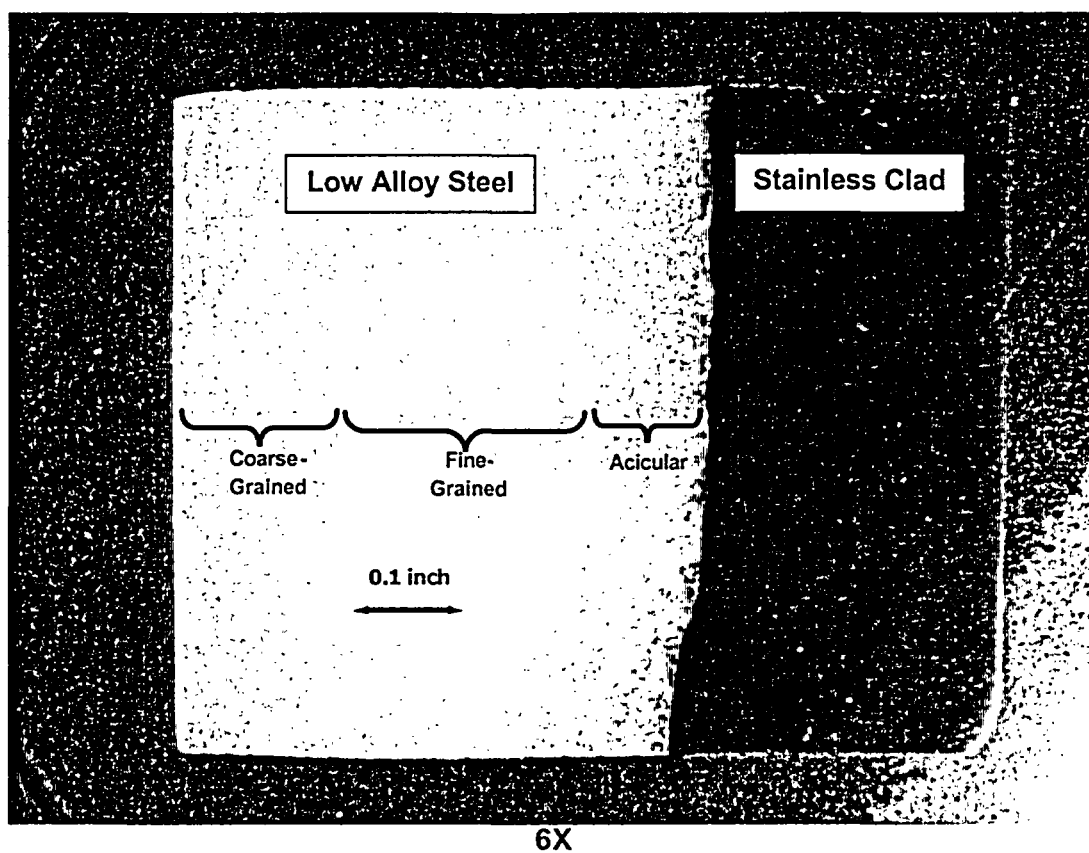


Figure 4.2.1: Macro photograph of Sample B2C2B3 showing the low alloy steel/stainless steel interface and various grain structures within the low alloy steel HAZ.

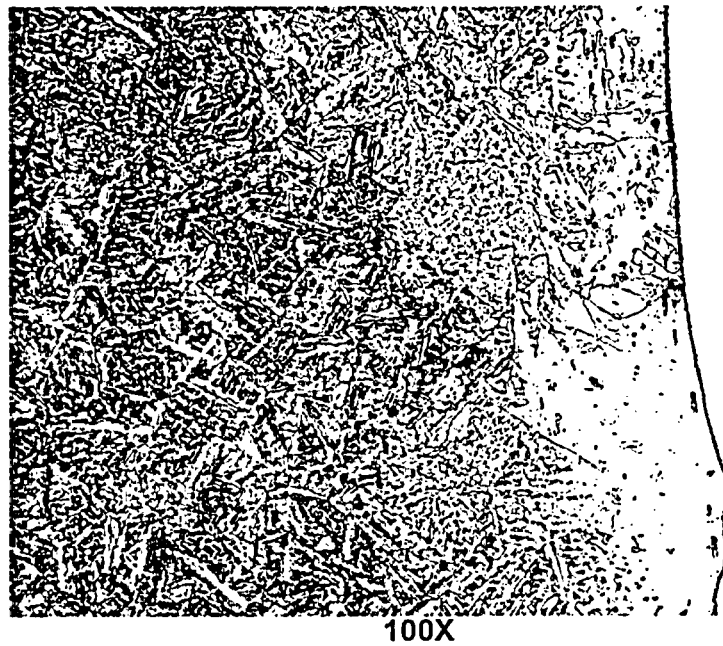
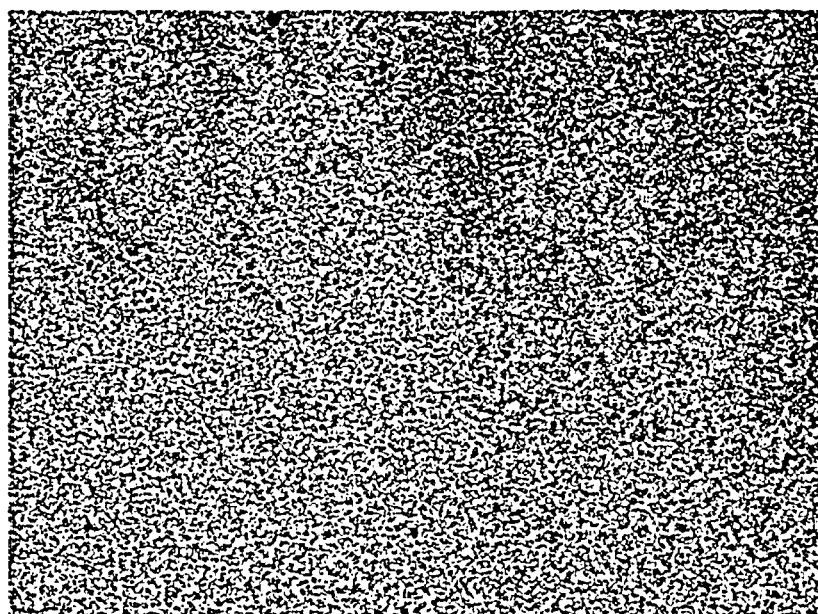
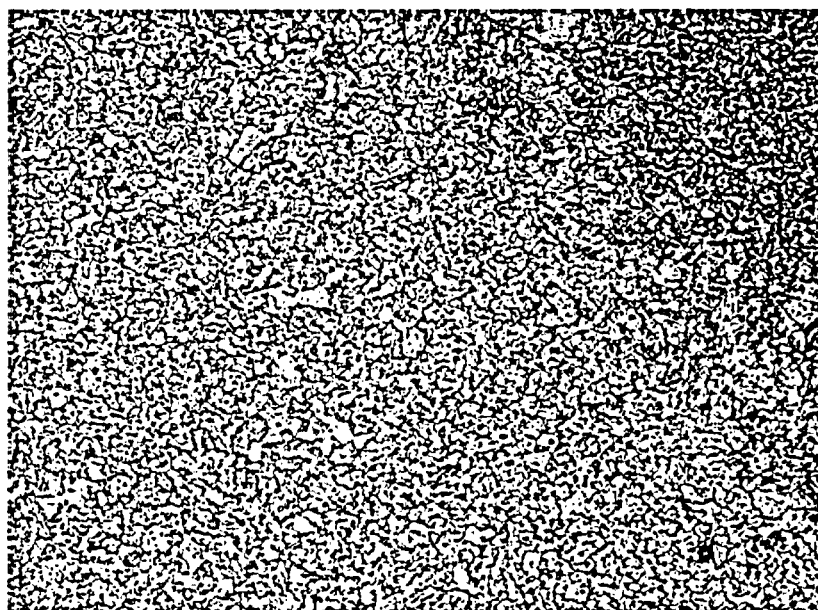


Figure 4.2.2: Typical low alloy steel microstructures near bond. 2% nital

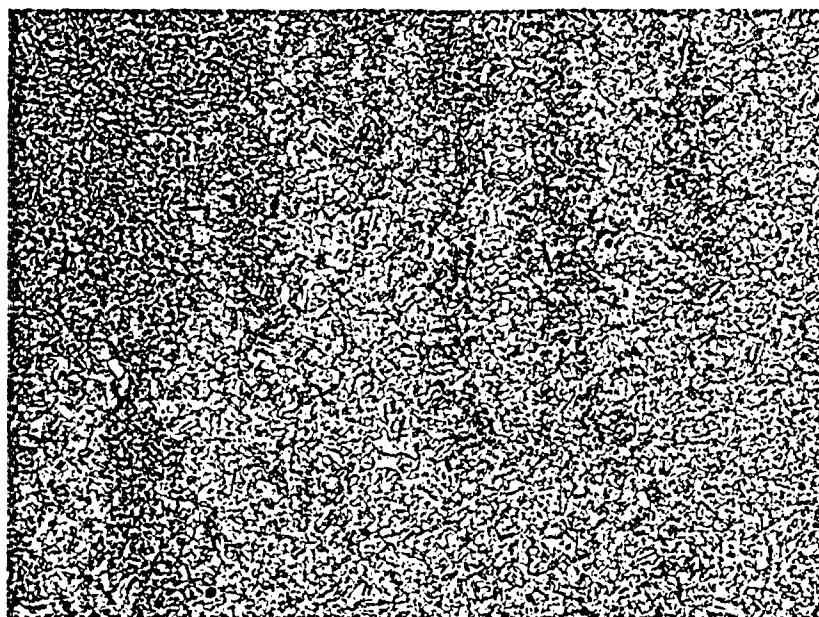


100X

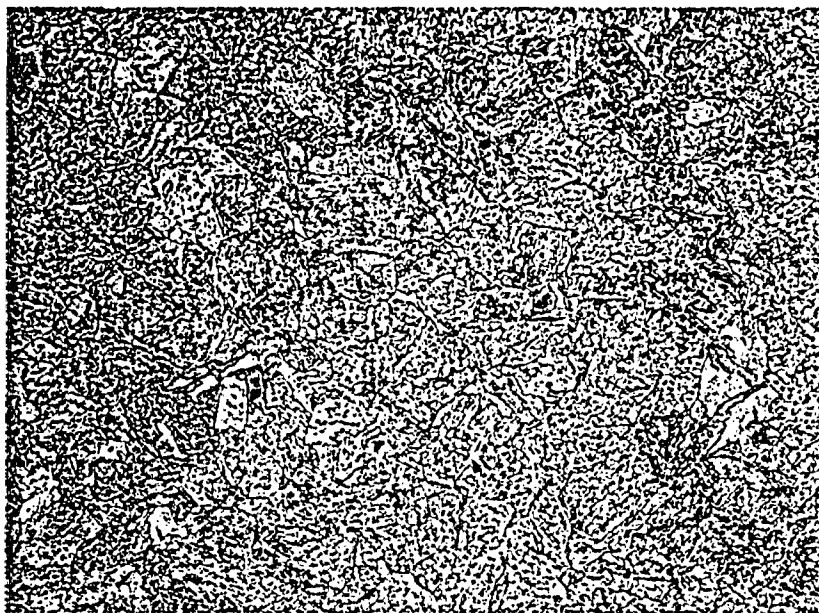


375X

Figure 4.2.3: Typical low alloy steel microstructures 1/4" from bond. 2% nital

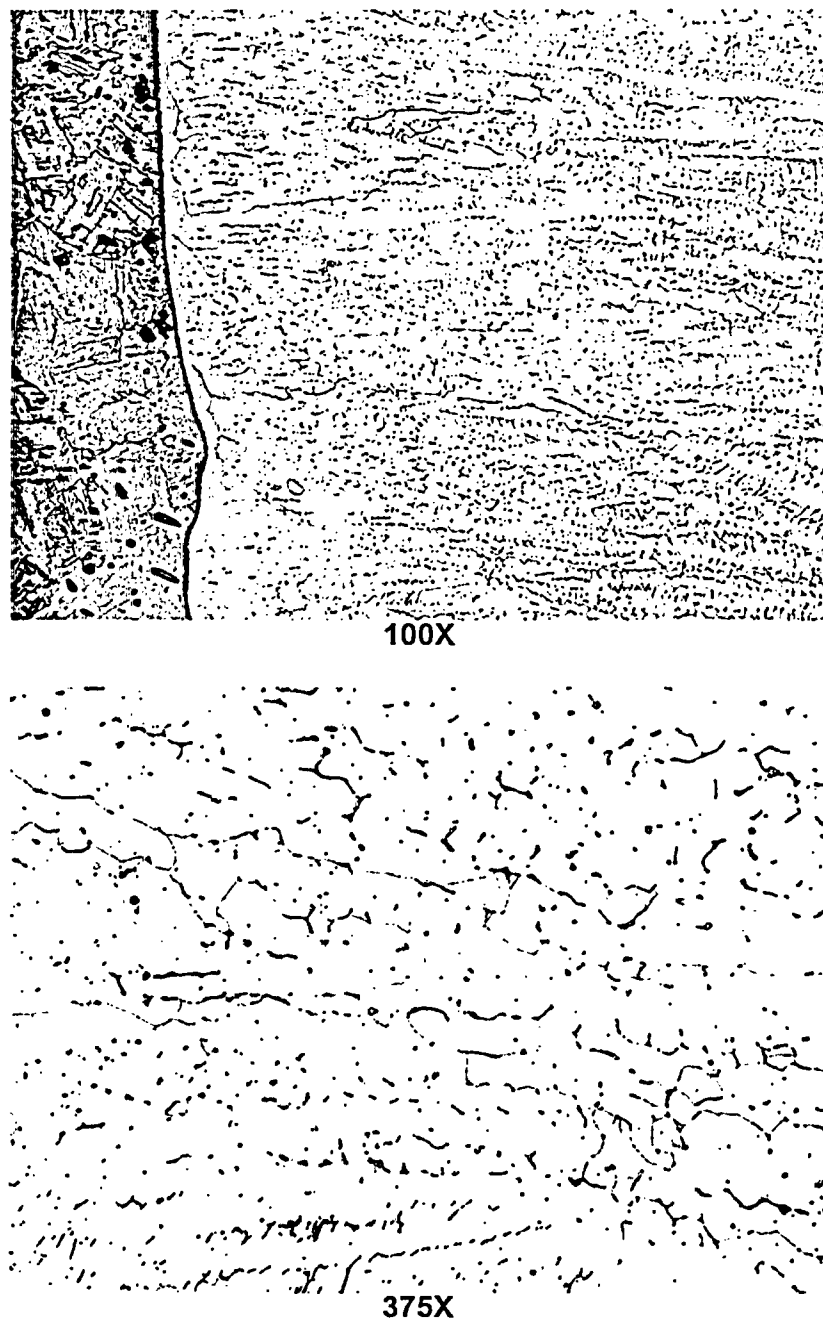


100X



375X

Figure 4.2.4: Typical low alloy steel microstructures ~1/2" from bond. 2% nital



**Figure 4.2.5: Typical cladding microstructures near bond.
(Acetic-nitric-hydrochloric etch)**

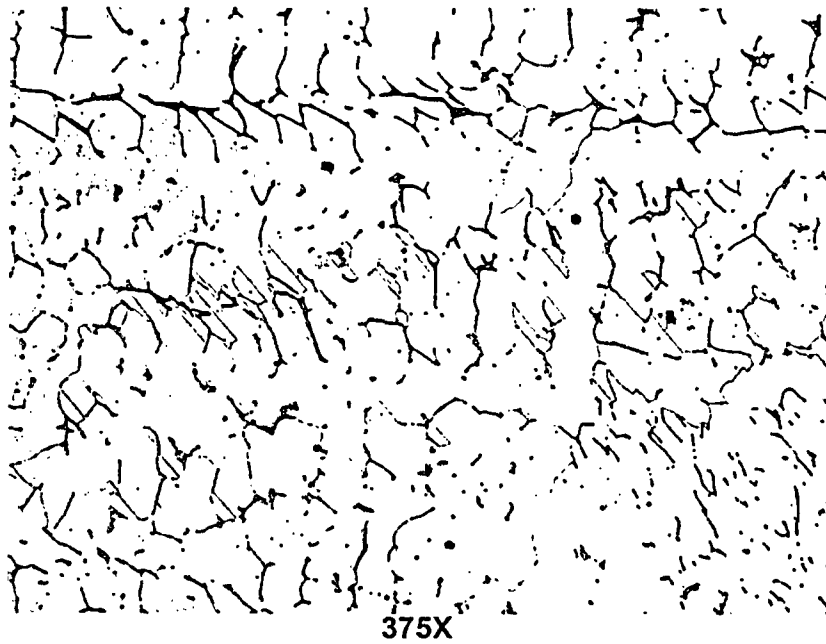
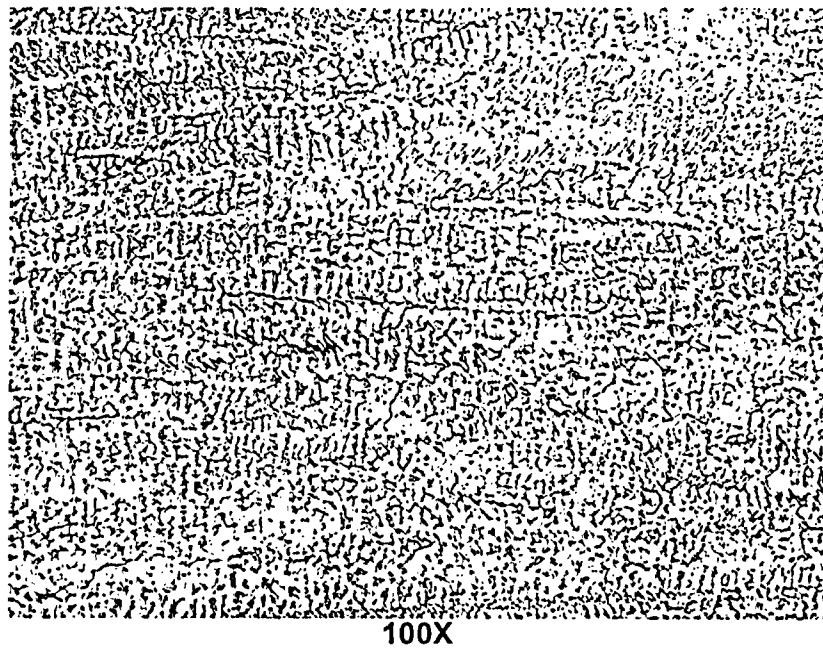


Figure 4.2.6: Typical cladding microstructures away from bond.
(Acetic-nitric-hydrochloric etch)

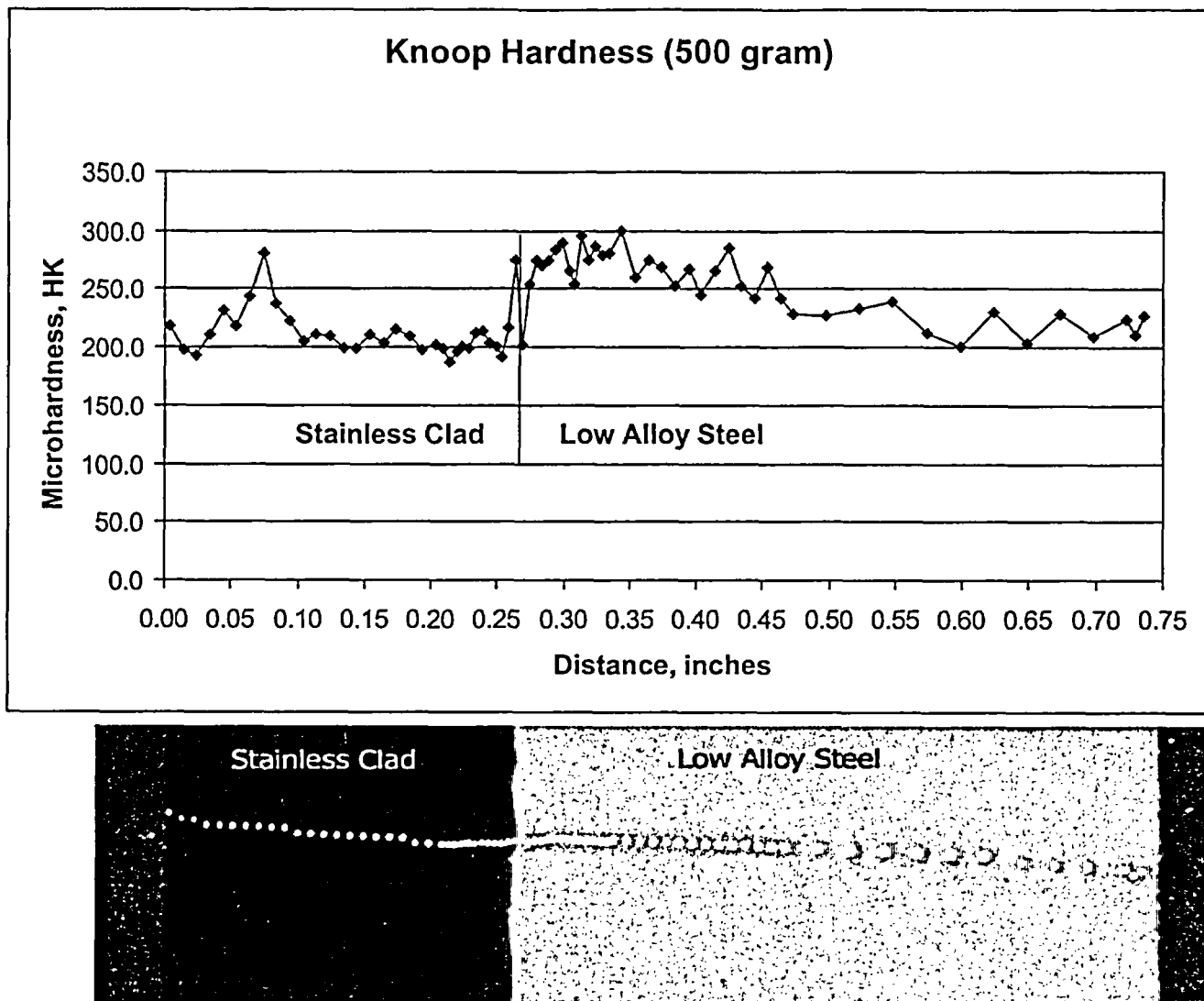


Figure 4.2.7: Microhardness data and low magnification photograph for Sample B2C2B3.

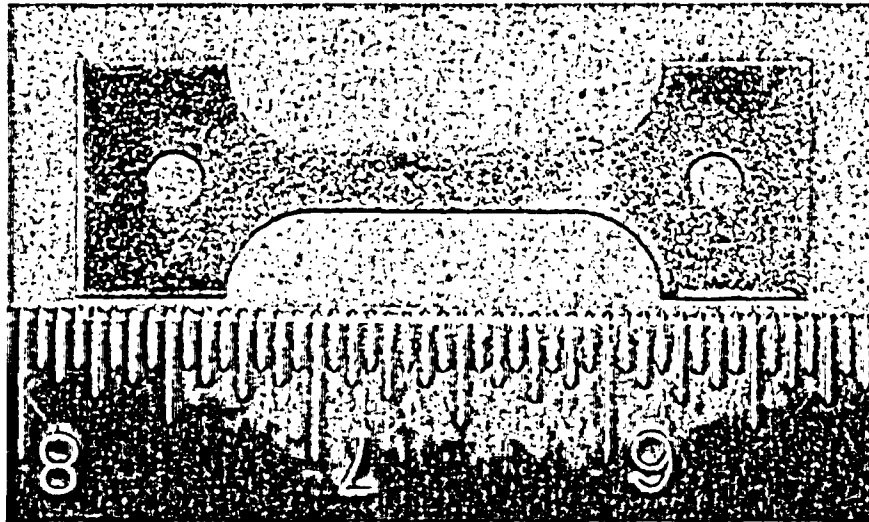
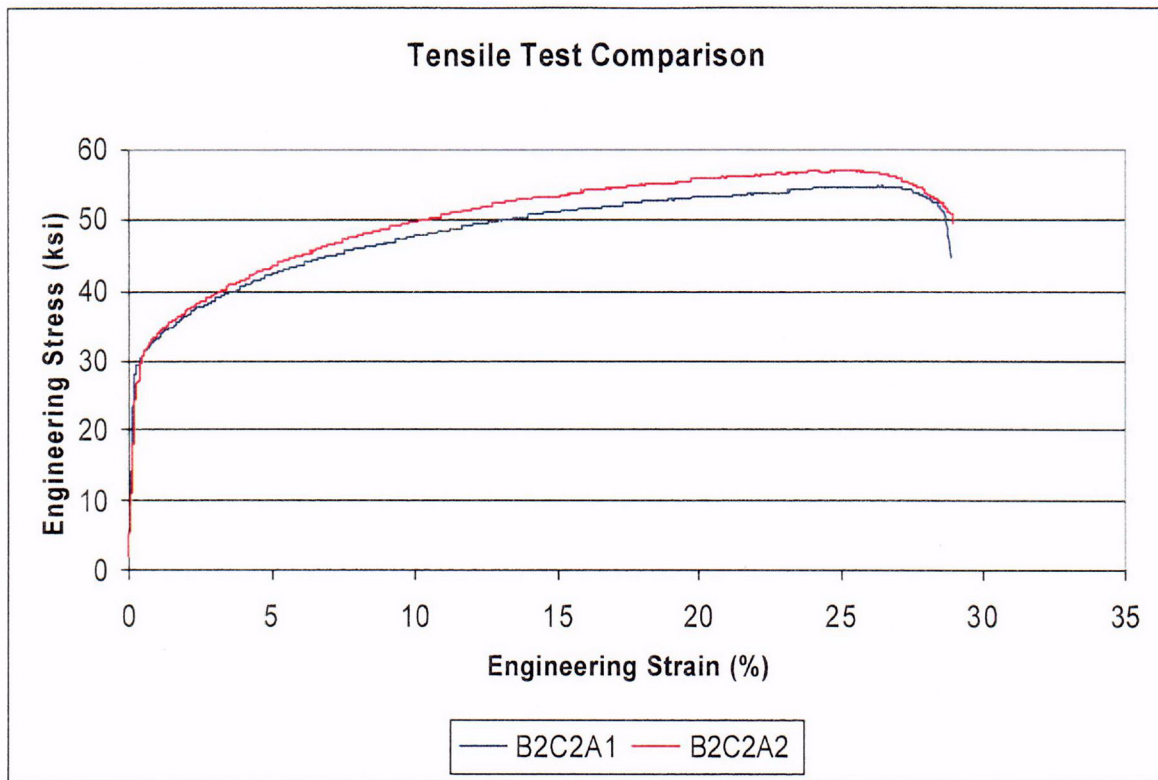
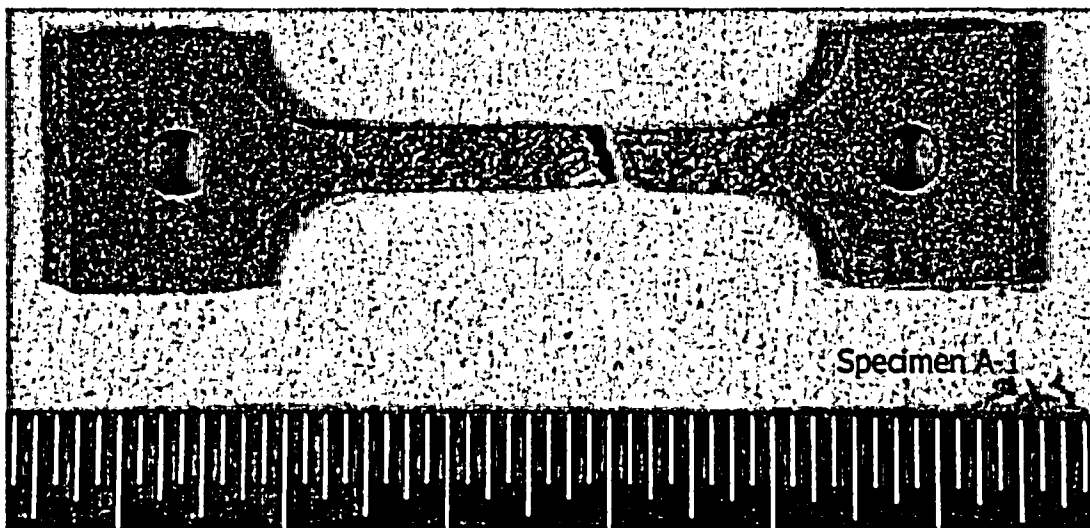


Figure 4.3.1: Tensile specimen design (dummy test specimen shown).

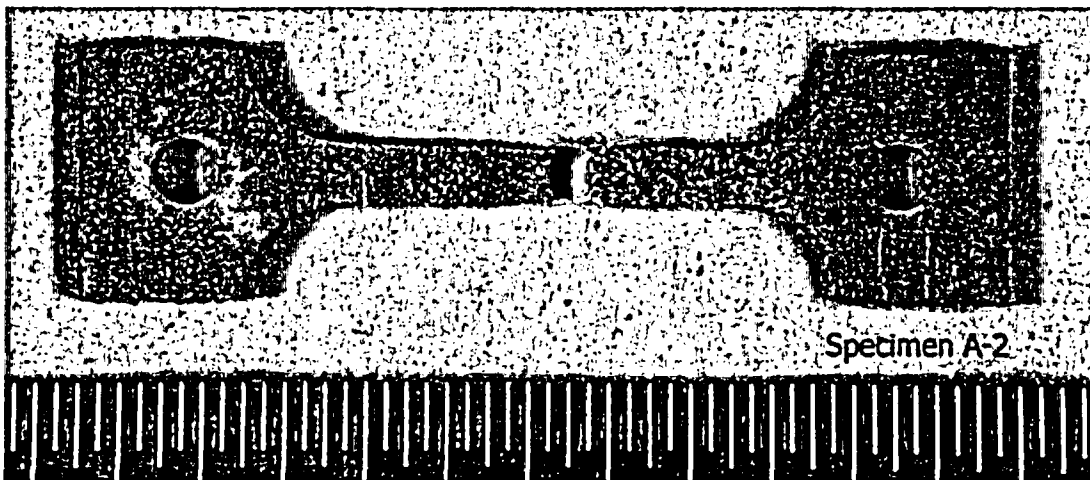


	B2C2A1	B2C2A2
UTS	54,800 psi	57,100 psi
2% Offset YS	30,500 psi	31,300 psi
Elongation	28.7%	28.7%
Reduction in Area	39.3%	34.3%

Figure 4.3.2: Tensile test results for specimen B2C2A1 (near RCS) and specimen B2C2A2 (near low alloy steel).

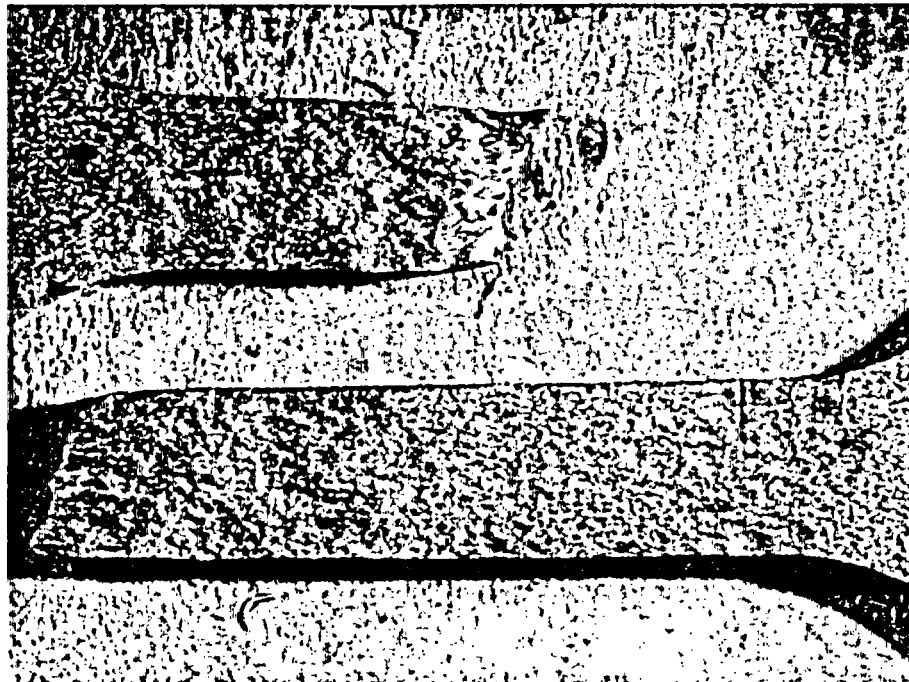


Specimen B2C2A1 ~1.8X

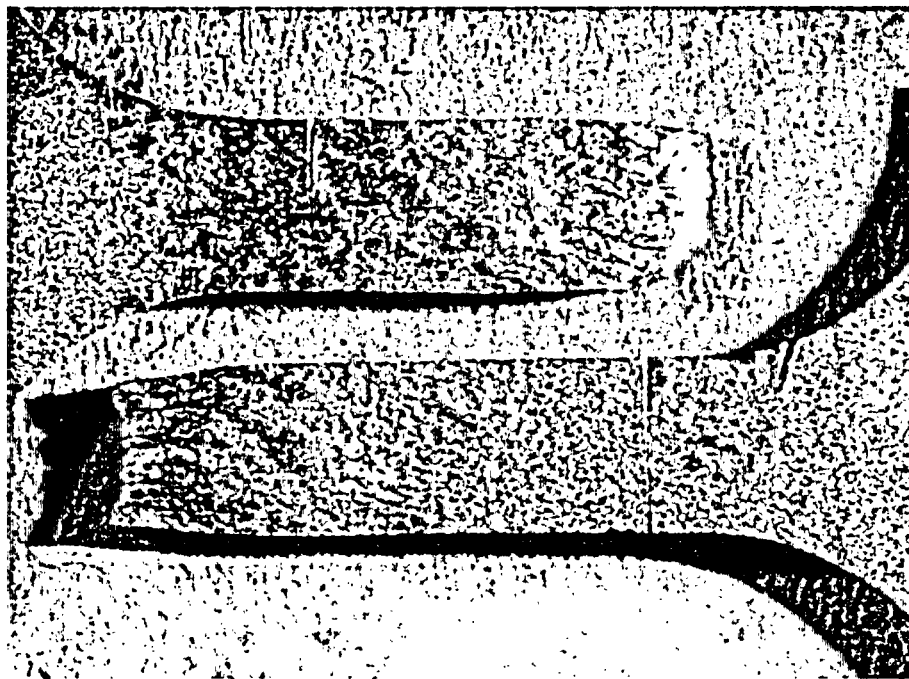


Specimen B2C2A2 ~1.8X

Figure 4.3.3: Low magnification photographs of tensile specimens after test.



B2C2A1 5X



B2C2A2 5X

Figure 4.3.4: Higher magnification photographs showing fracture location of tensile specimens.

Table 5.1: Sample identification listing for Piece A2A.

Sample ID	Location	Test Plan	Met	SEM
A2A1	A2A section at ~225°	No plan	--	--
A2A2	A2A section at ~170°-190°	Axial cracks at ~180°, see Table 5-2	1	--
A2A3	A2A section at ~135°	No plan	--	--
A2A4	A2A section at ~240°-350°	No plan	--	--
A2A5	A2A section at ~90°	Thin area of clad at 90° (met), see Table 5.3	1	--
A2A6	A2A section at ~350°-70°	Axial crack at 10°; circ. cracks at 20°-45°, see Table 5.4 through Table 5.10	4	4 (2 open cracks, 2 mounts)
A2A7	A2A section, contains exposed clad	Clad cracks; undercut regions, see Tables 5.11 and 5.12	6	4 (2 open cracks, 2 mounts)
A2A8	A2A section, contains cavity nose	No plan	--	--
A2B	Trimmed corner	No plan	--	--

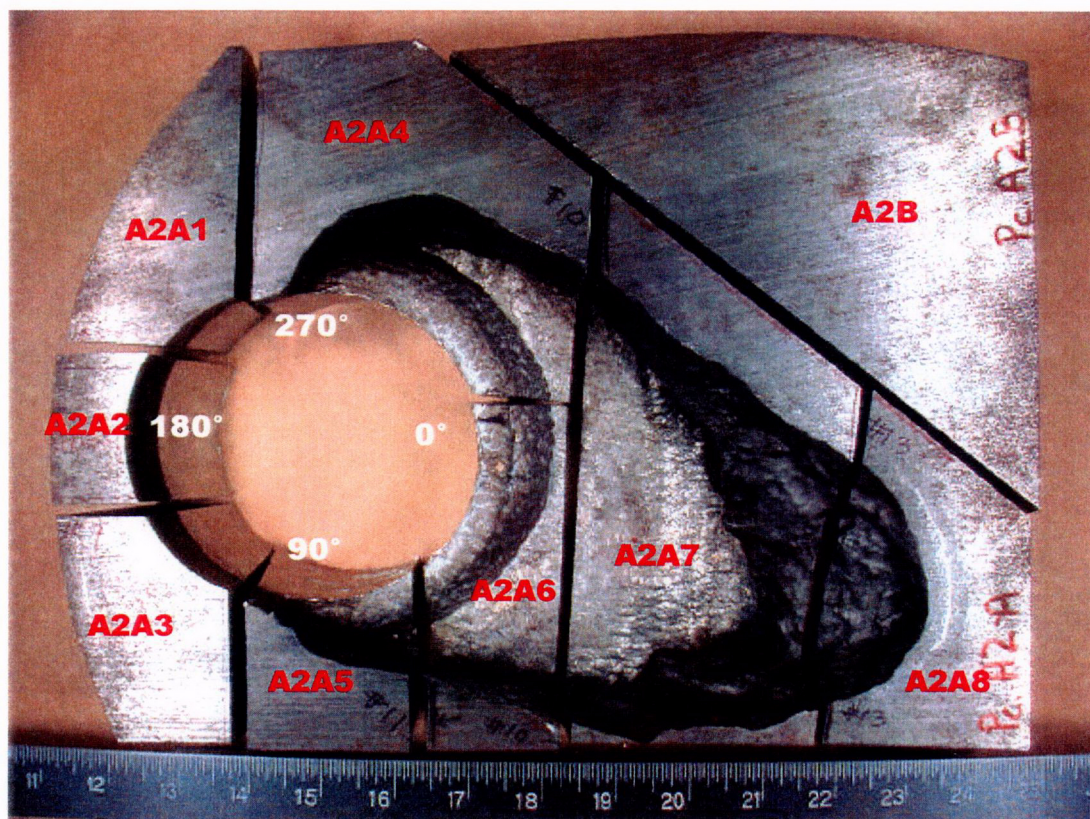


Figure 5.1: Sectioning of Piece A2A (lower portion of cavity) showing new sample identifications.

Table 5.2: Sample identification listing for Piece A2A2.

Piece ID	Location	Test Plan	Met	SEM
A2A2A	Upper portion of nozzle #3 bore	No plan	--	--
A2A2B1	Lower portion of nozzle #3 bore at ~190°	No plan	--	--
A2A2B2	Lower portion of nozzle #3 bore ~180°	No plan	--	--
A2A2B3	Contains axial cracks at ~180° in the J-groove weld.	Met sample through axial cracks	1	--
A2A2B4	Lower portion or nozzle #3 bore at ~170°	No plan	--	--

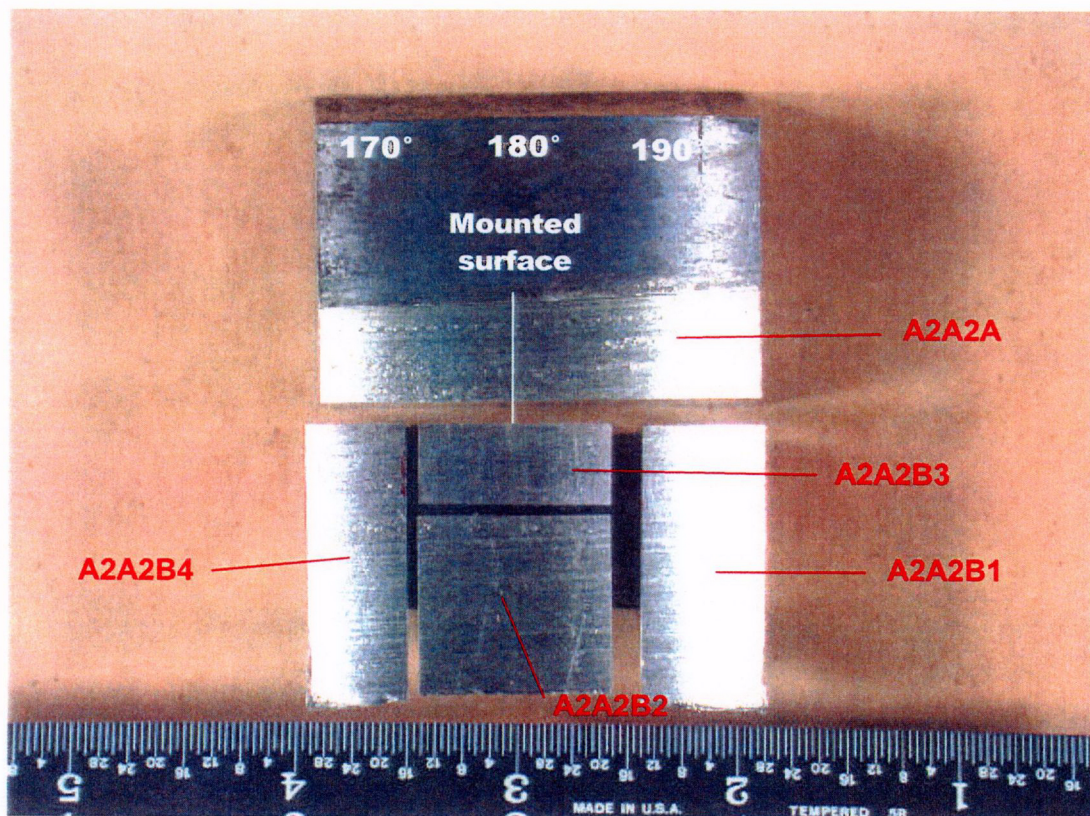


Figure 5.2: Sectioning of Piece A2A2, looking at the ID of the J-groove weld bore.

Table 5.3: Sample identification listing for Piece A2A5.

Piece ID	Location	Test Plan	Met	SEM
A2A5A	RV head near 90°	No plan	--	--
A2A5B	RV head clad near 90°	No plan	--	--
A2A5C	Thin region of clad near 90°	Met sample through thin region	1	--
A2A5D	J-groove weld and clad near 90°	No plan	--	--

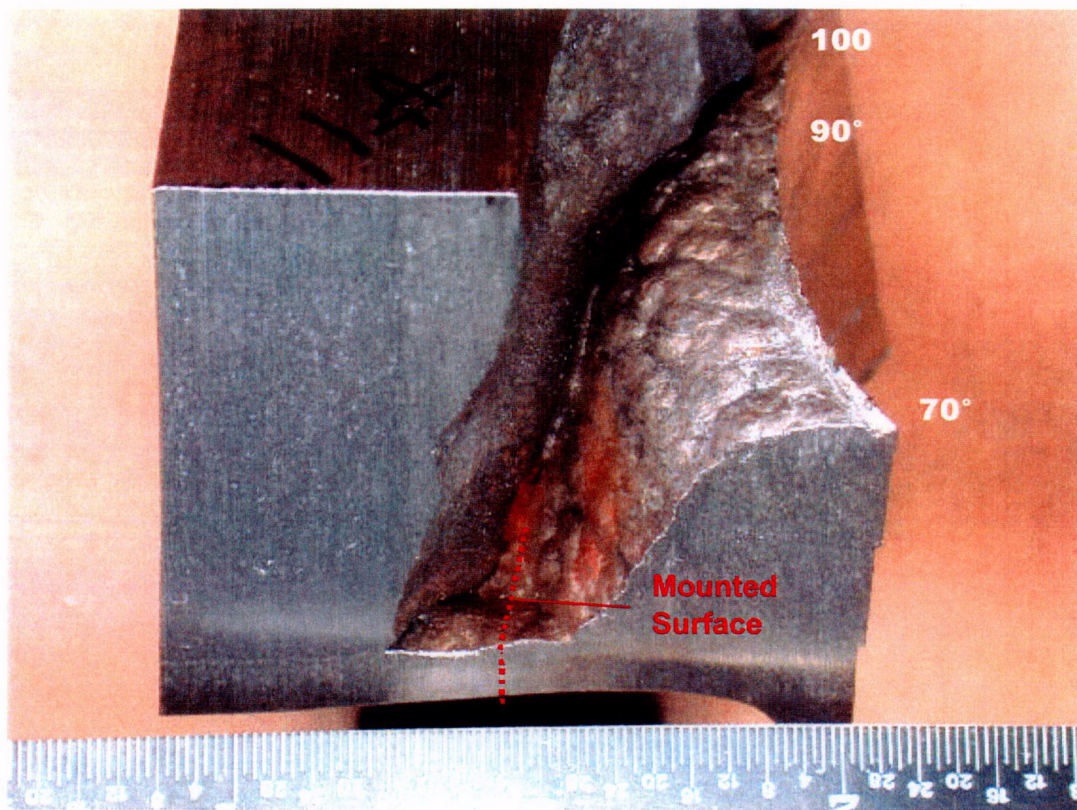


Figure 5.3: Piece A2A5 before sectioning. The mounted surface is indicated.