



Figure 93: Detail of initiation near 45°. 180X

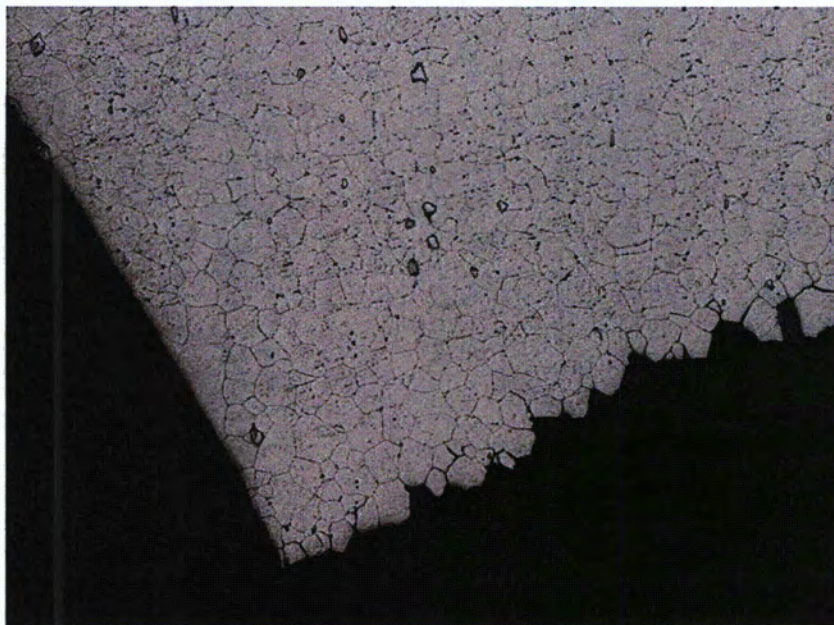


Figure 94: Same area as Figure 93 after phosphoric + nital etch. 180X



Figure 95: Detail of initiation near 225°. 180X

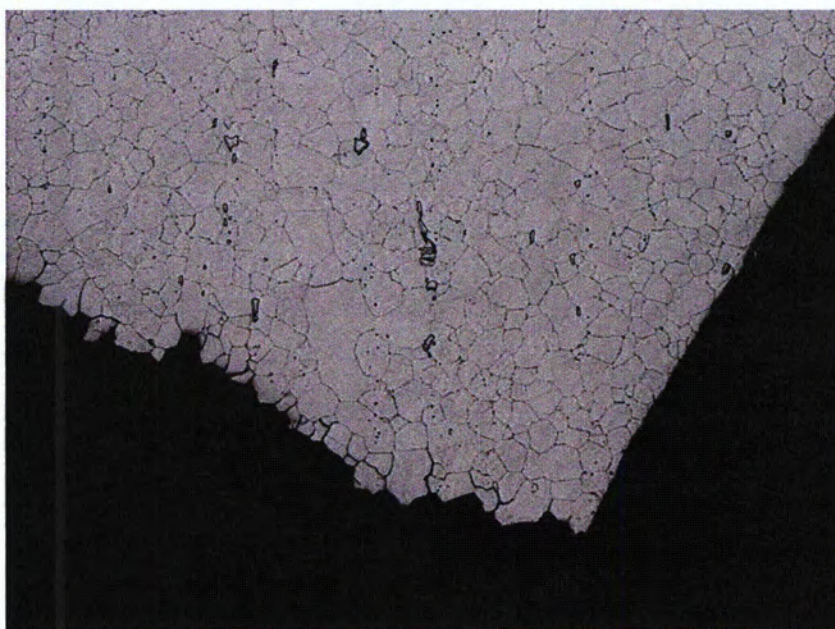


Figure 96: Same area as Figure 95 after phosphoric + nital etch. 180X

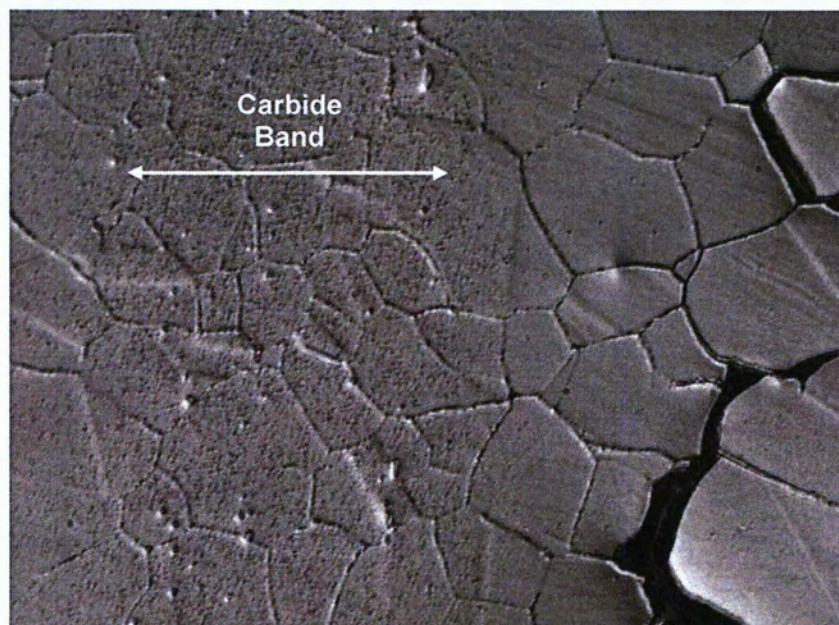


Figure 97: Typical microstructure after phosphoric etch, DIC, 660X.



Figure 98: Same area as Figure 97 after phosphoric + nital etch, DIC, 660X.

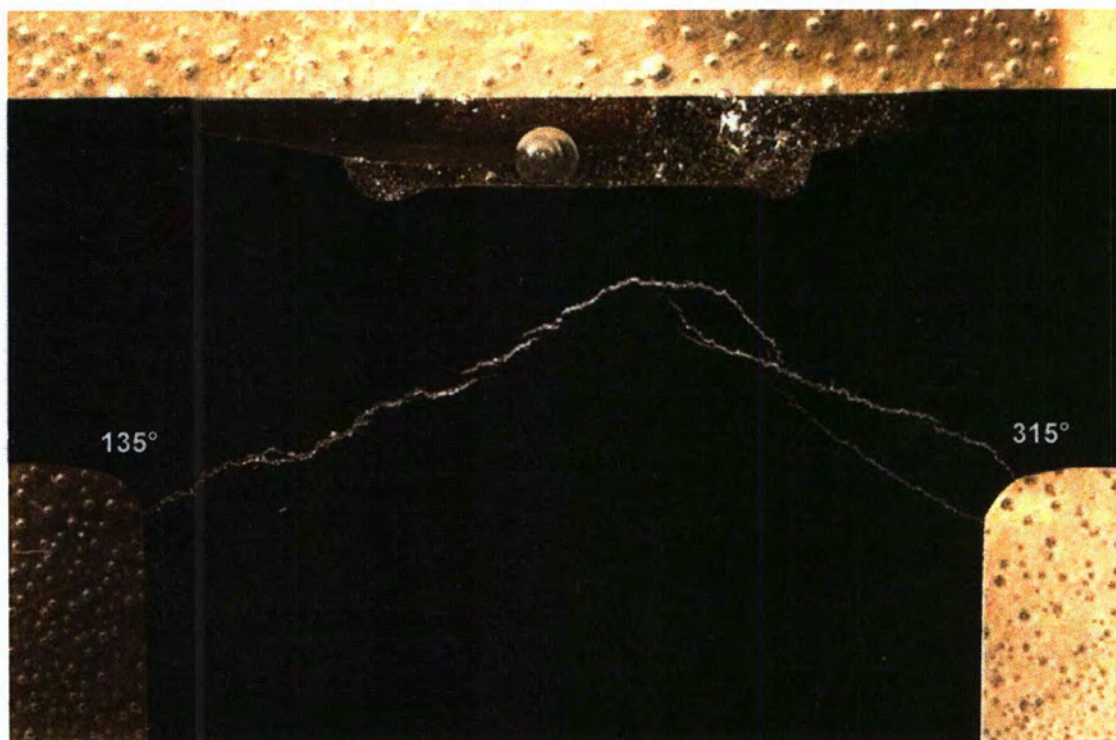


Figure 99: As-polished overview of 240°-7 cross section. 6X



Figure 100: Same area as Figure 99 after phosphoric + nital etch. Structure is banded, as evidenced by the presence of vertical streaks. 6X

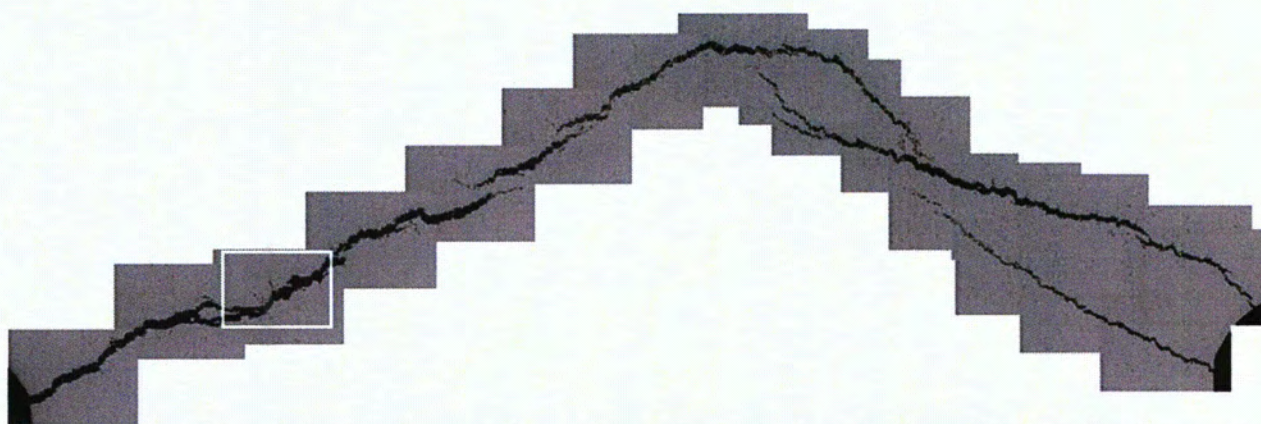


Figure 101: As-polished micrograph montage of crack. Area inside white box is shown at higher magnification in Figure 102. 13X



Figure 102: Higher magnification detail of Figure 101, as-polished. 120X



Figure 103: Detail of initiation near 315° after etching. 180X

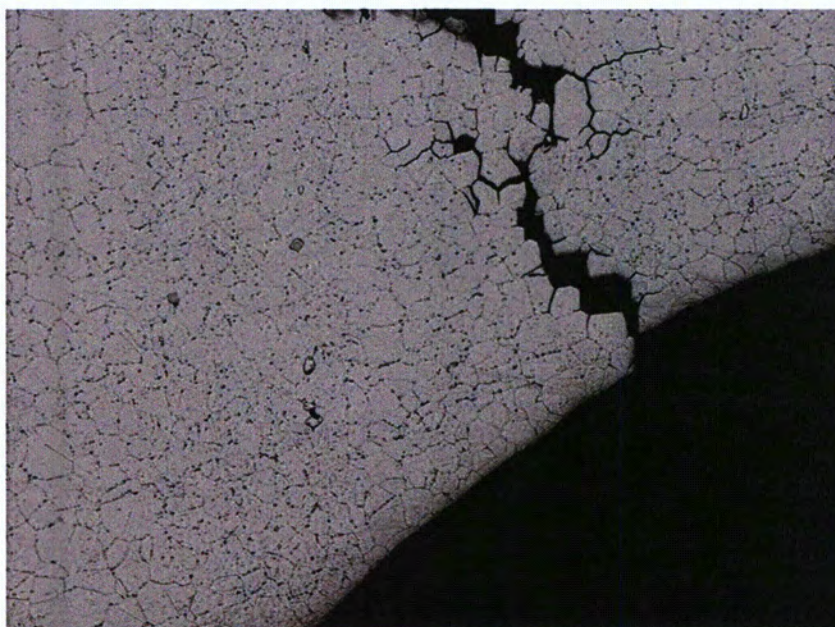


Figure 104: Second crack near 315° after etching. 180X



Figure 105: Detail of initiation near 135° after etching. 180X



Figure 106: Typical appearance of intermittent duplex grain structure (i.e. large grain in center of micrograph), DIC. 90X

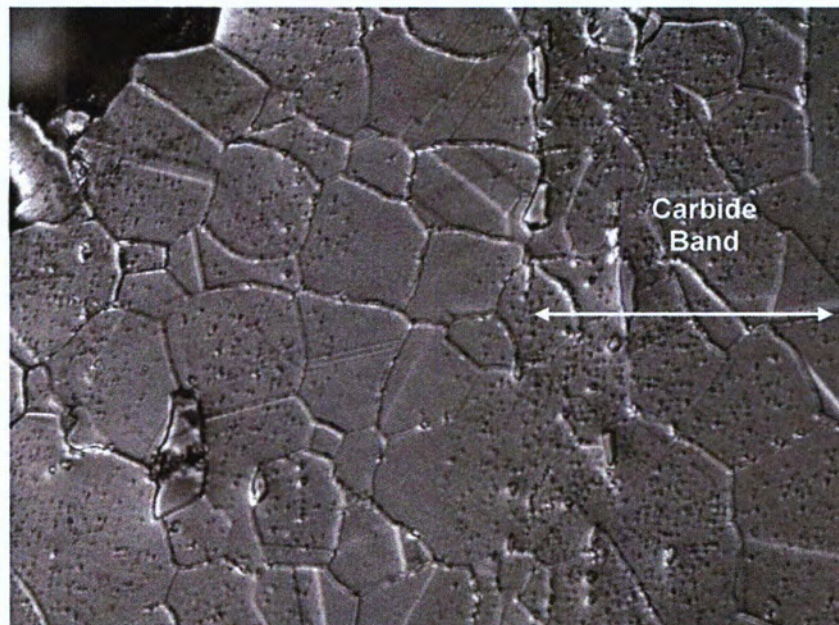


Figure 107: Typical microstructure after phosphoric etch, DIC, 660X.

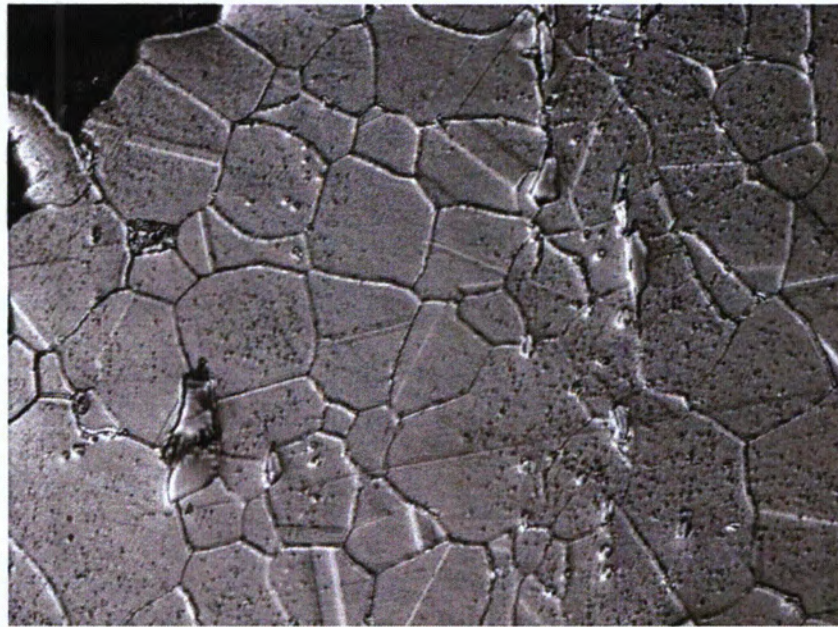


Figure 108: Same area as Figure 107 after phosphoric + nital etch, DIC, 660X.

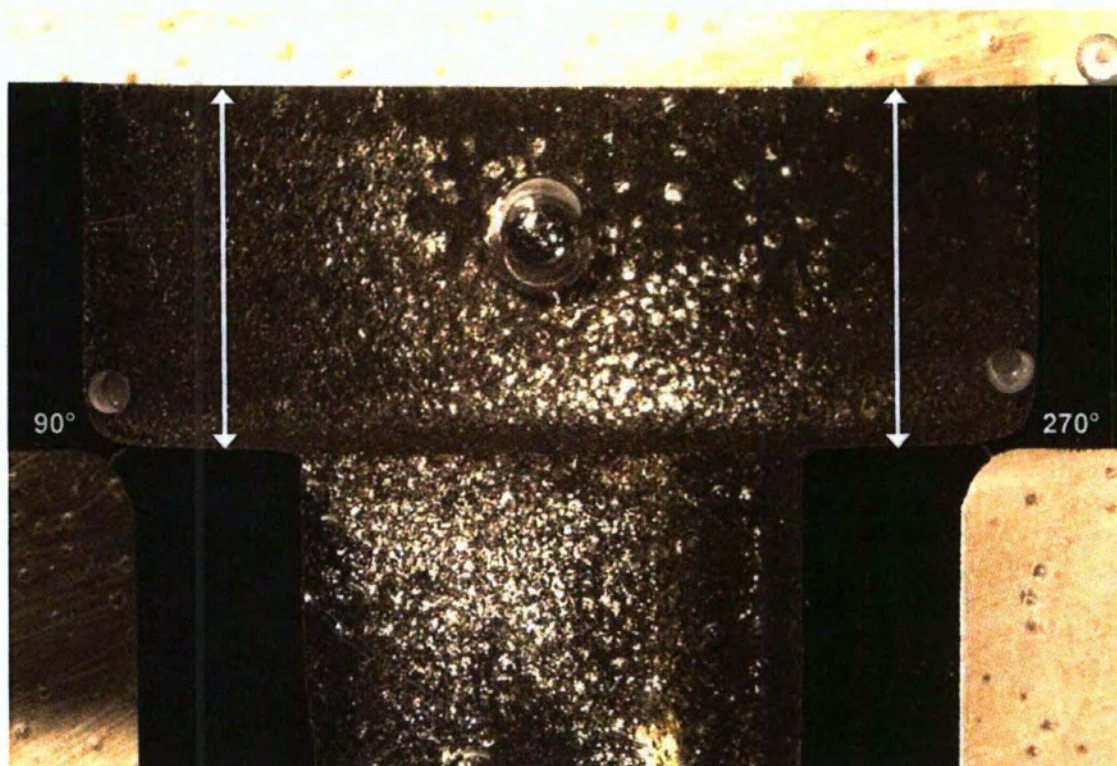


Figure 109: As-polished overview of 300°-1 cross section. Arrows show depth of the EDM plunge cut. 6X

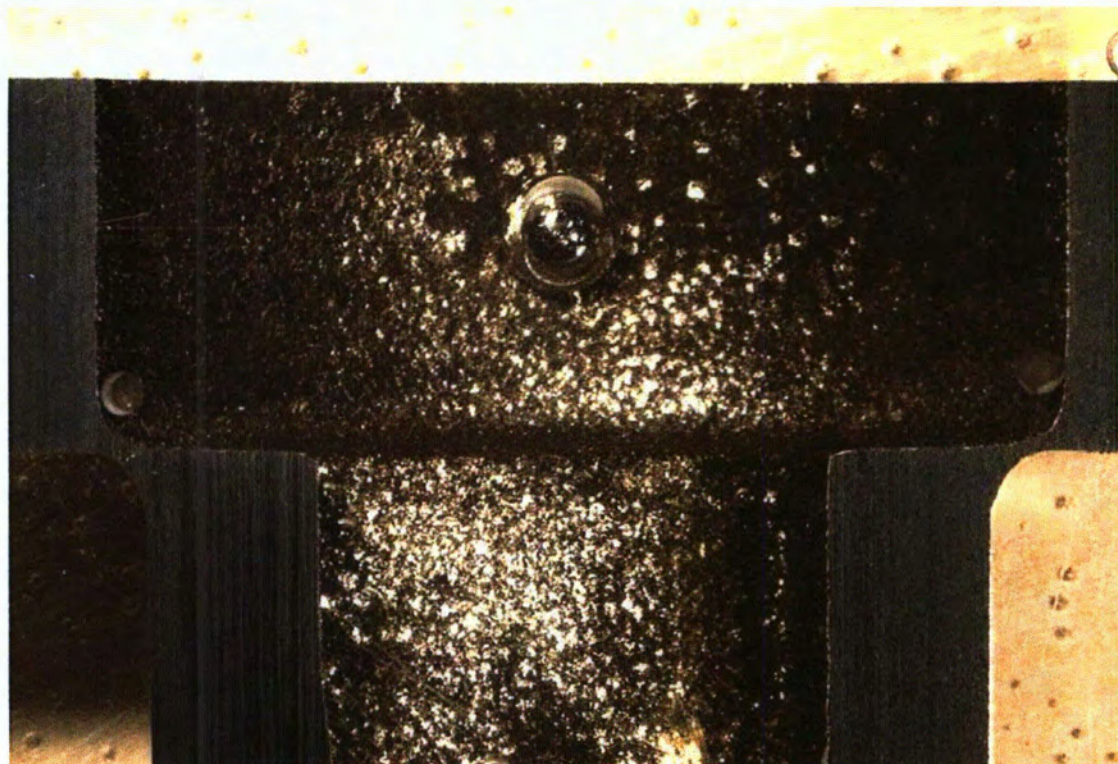


Figure 110: Same area as Figure 109 after phosphoric + nital etch. Structure is banded. 6X

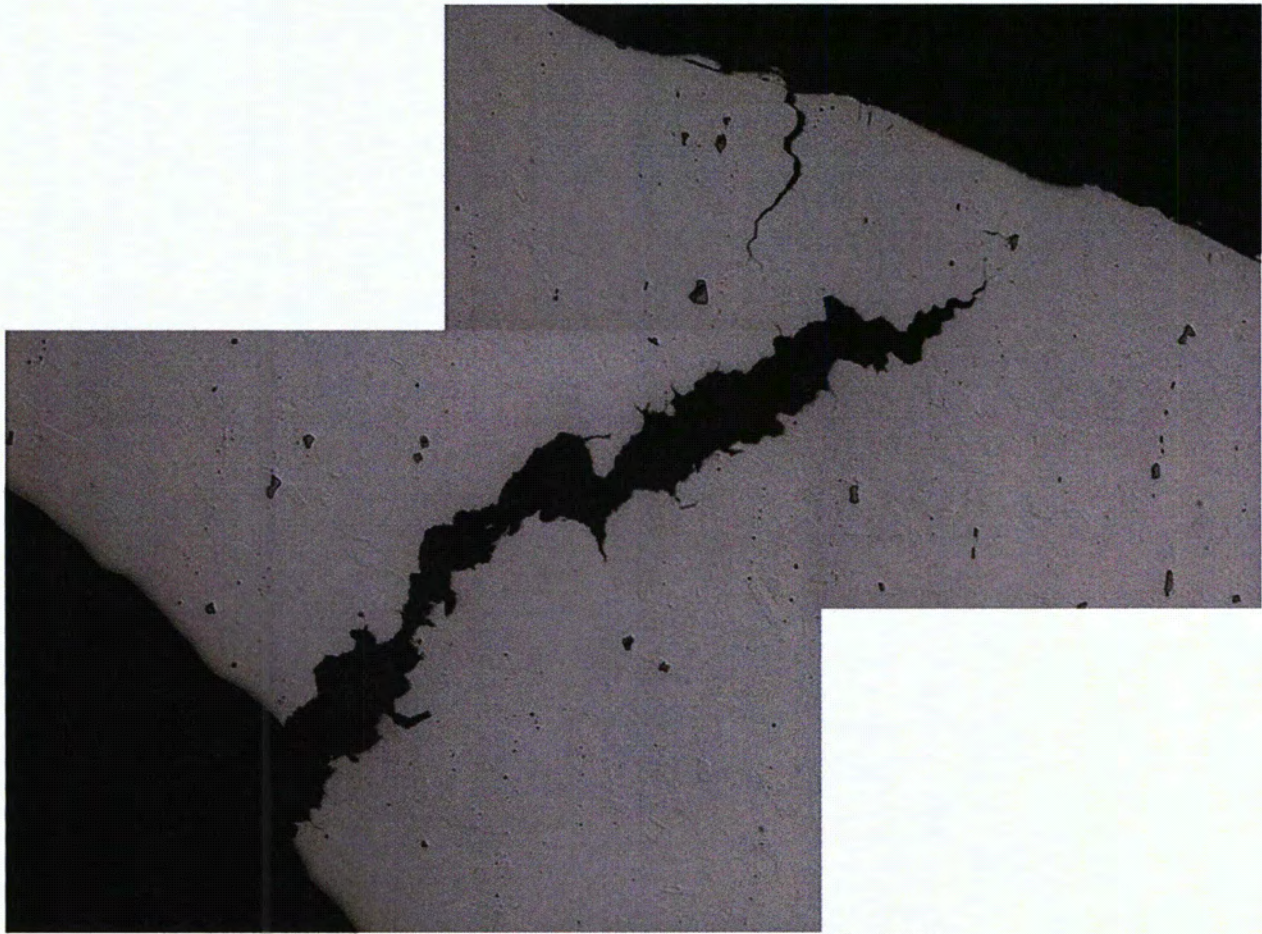


Figure 111: Detail of initiation near 90°. 180X

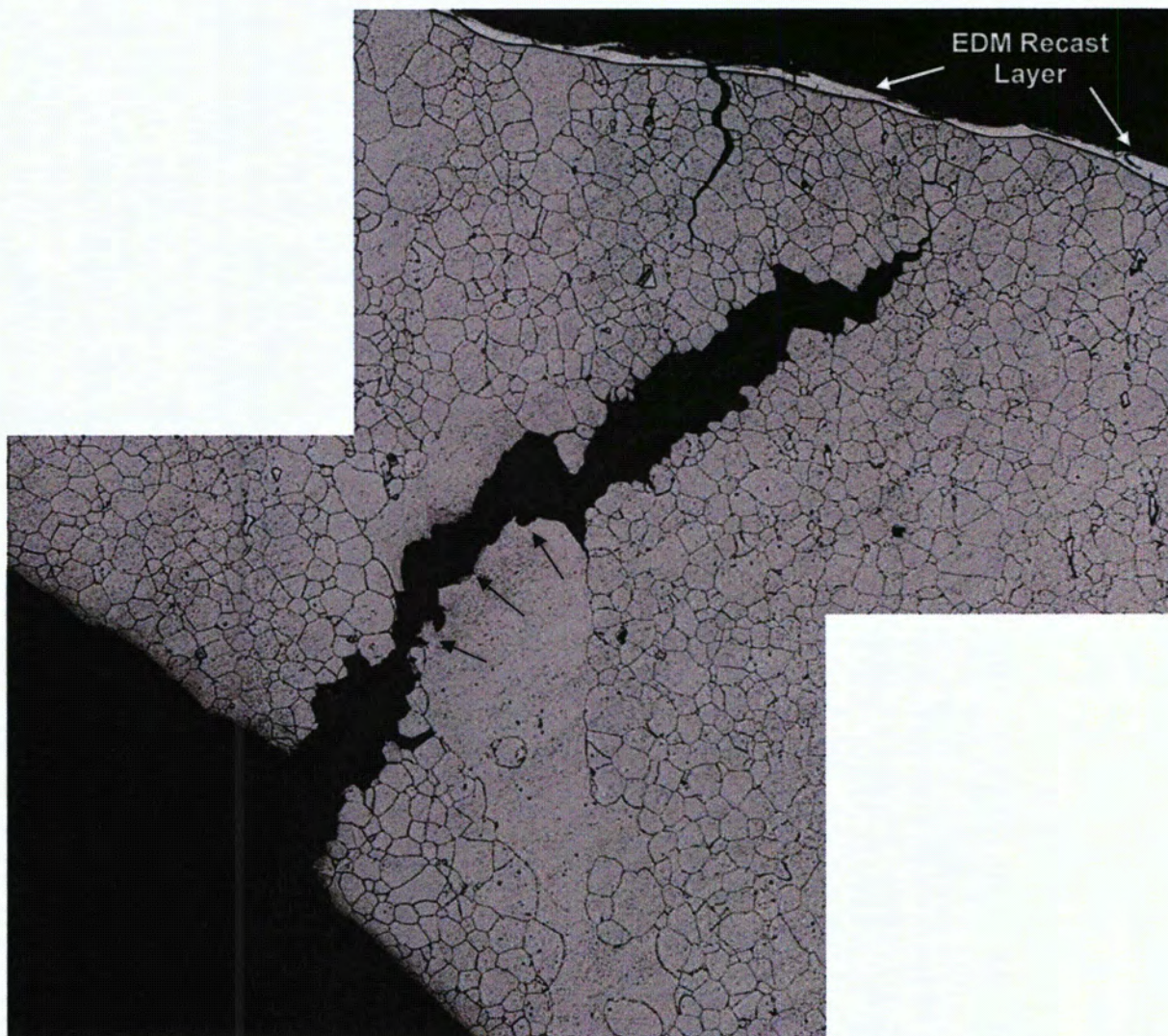


Figure 112: Same area as Figure 111 after etching. Cracking is intergranular, except for transgranular cracking through one large grain (arrows). 180X

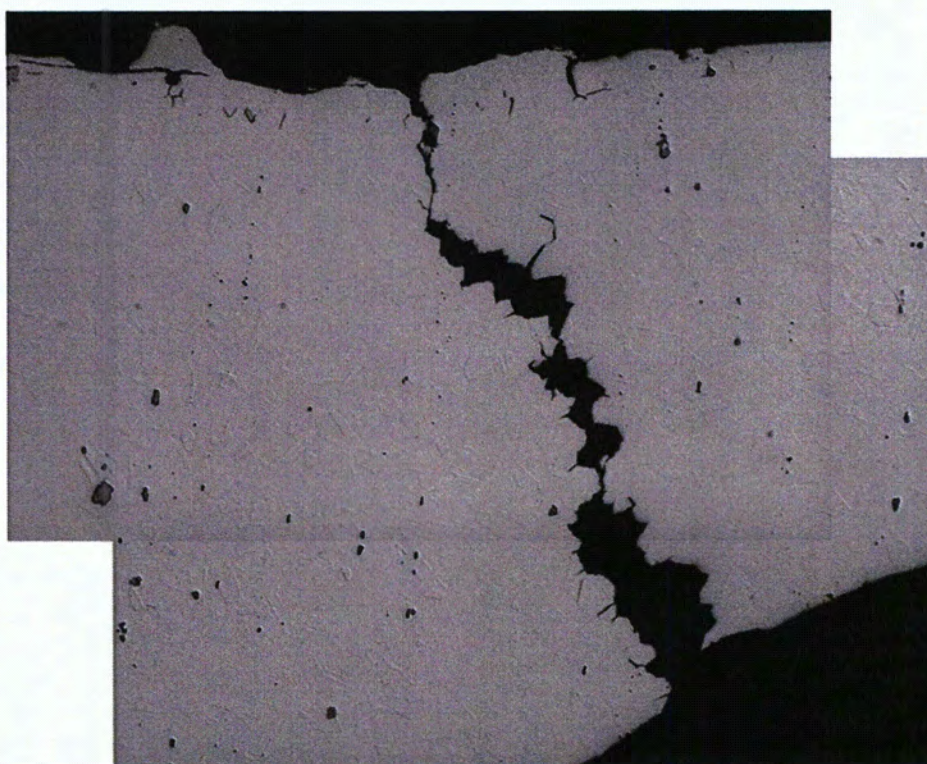


Figure 113: Detail of initiation near 270°. 180X

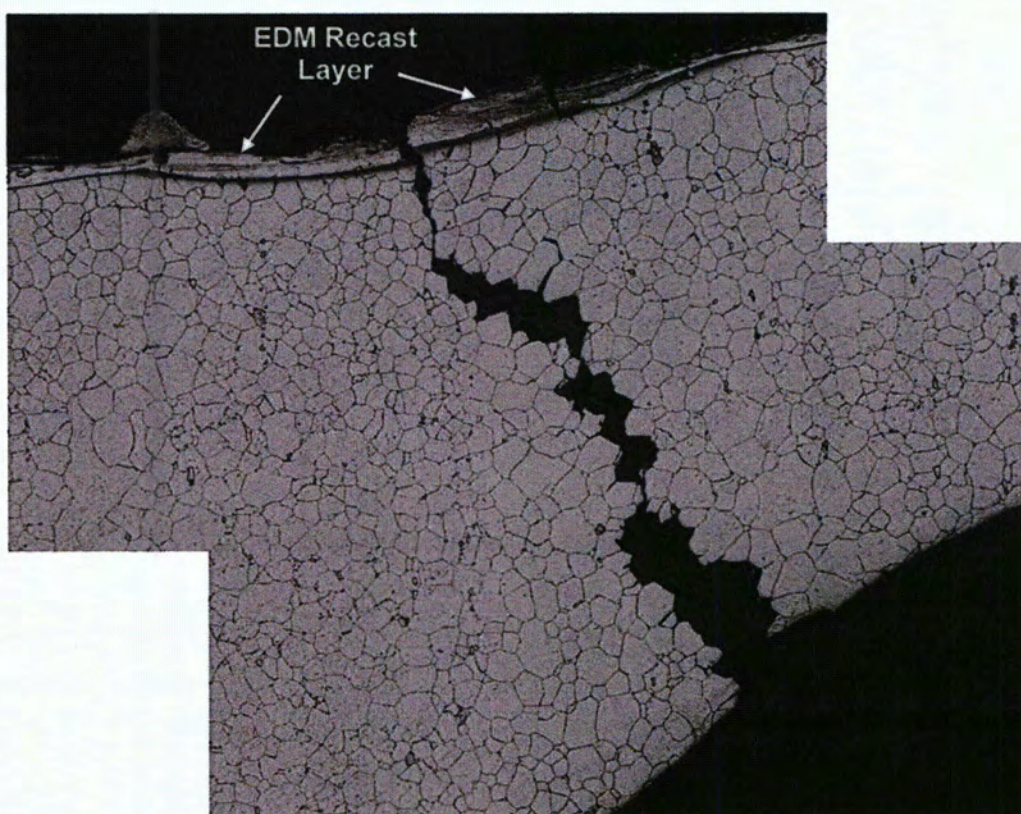


Figure 114: Same area as Figure 113 after etching. 180X

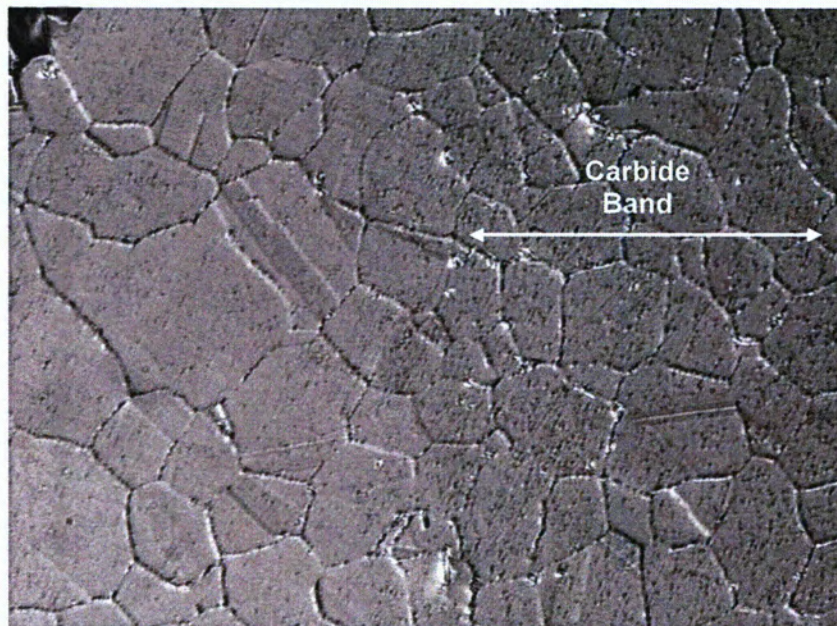


Figure 115: Typical microstructure after phosphoric etch, DIC, 660X.

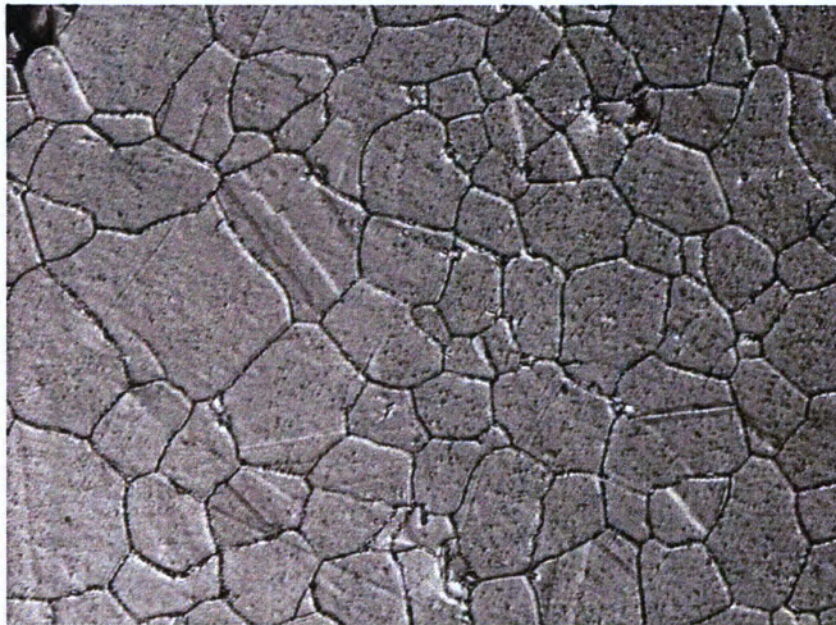


Figure 116: Same area Figure 115 after phosphoric + nital etch, DIC, 660X.

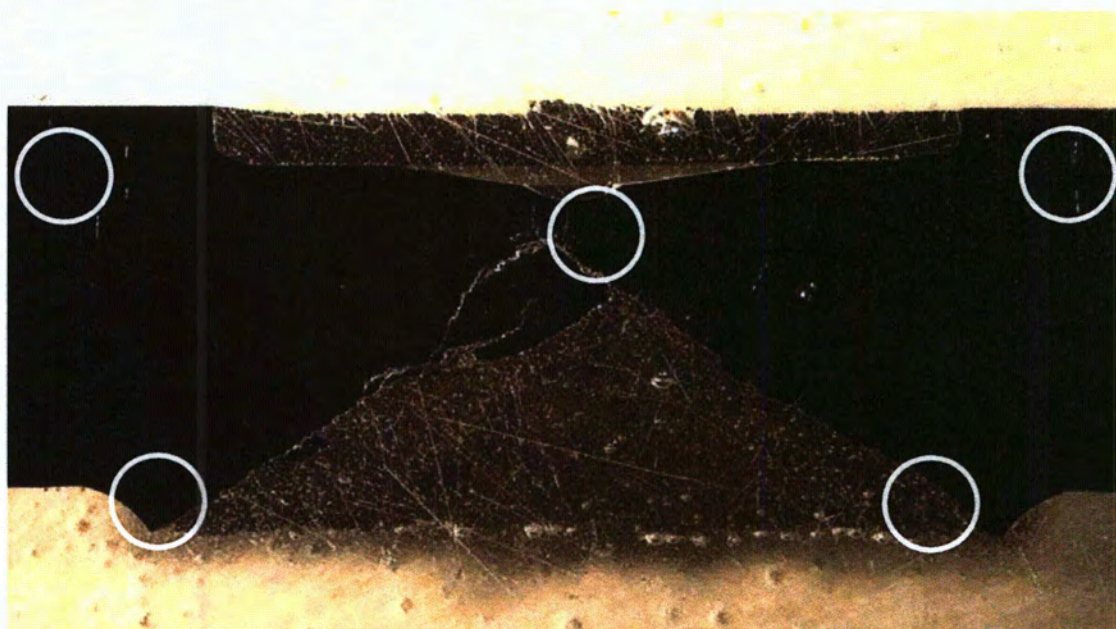


Figure 117: Photograph showing the microhardness locations for 120°-2.

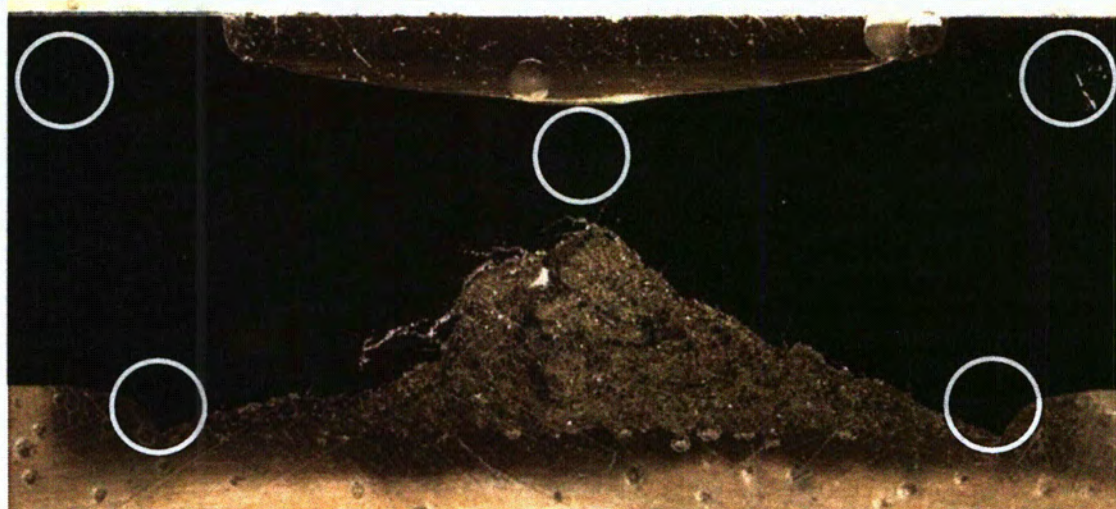


Figure 118: Photograph showing the microhardness locations for 120°-6.

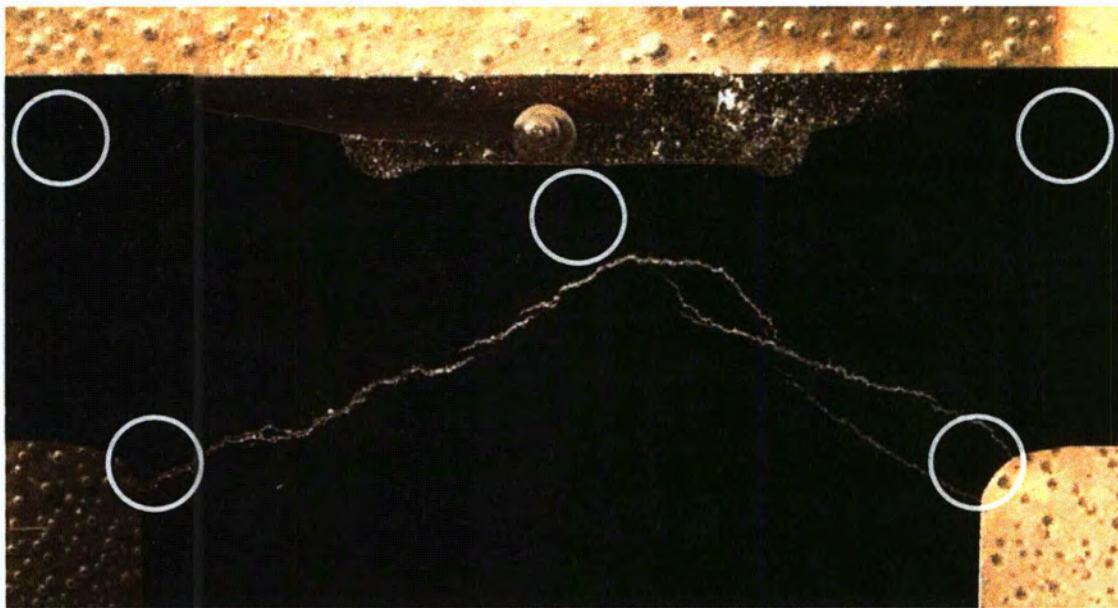


Figure 119: Photograph showing the microhardness locations for 240°-7.

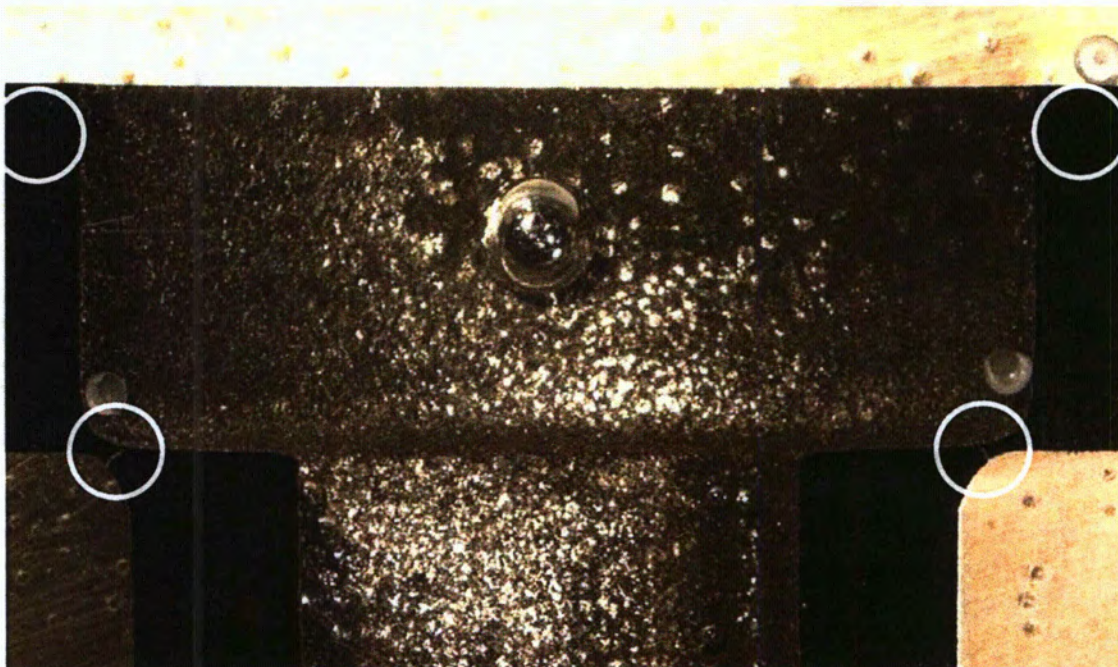


Figure 120: Photograph showing the microhardness locations for 300°-1.

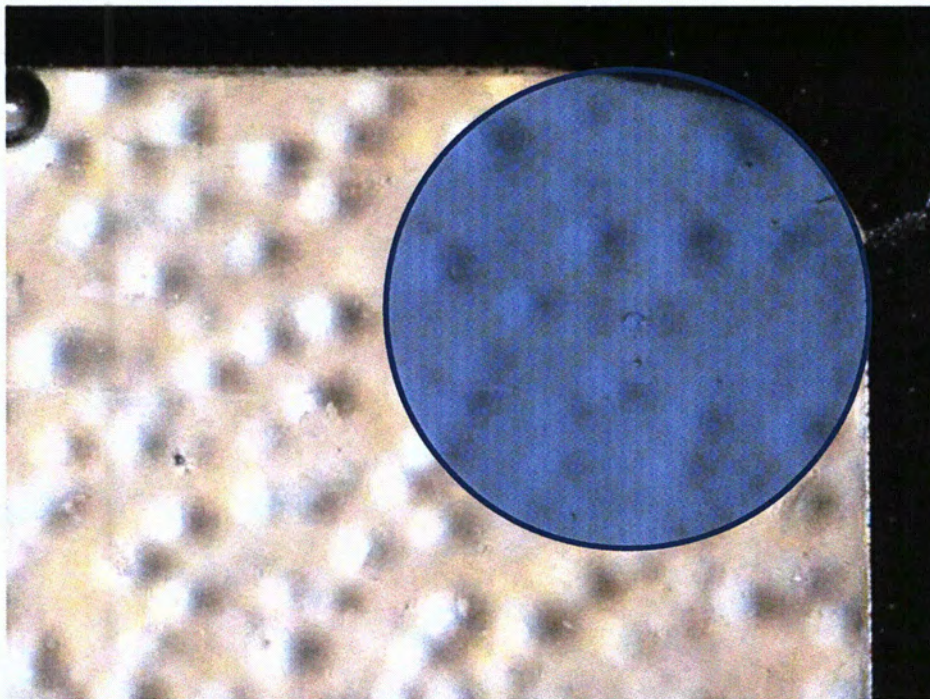


Figure 121: Bolt 240°-7 at 135°. Circle radius is 0.065". 20X

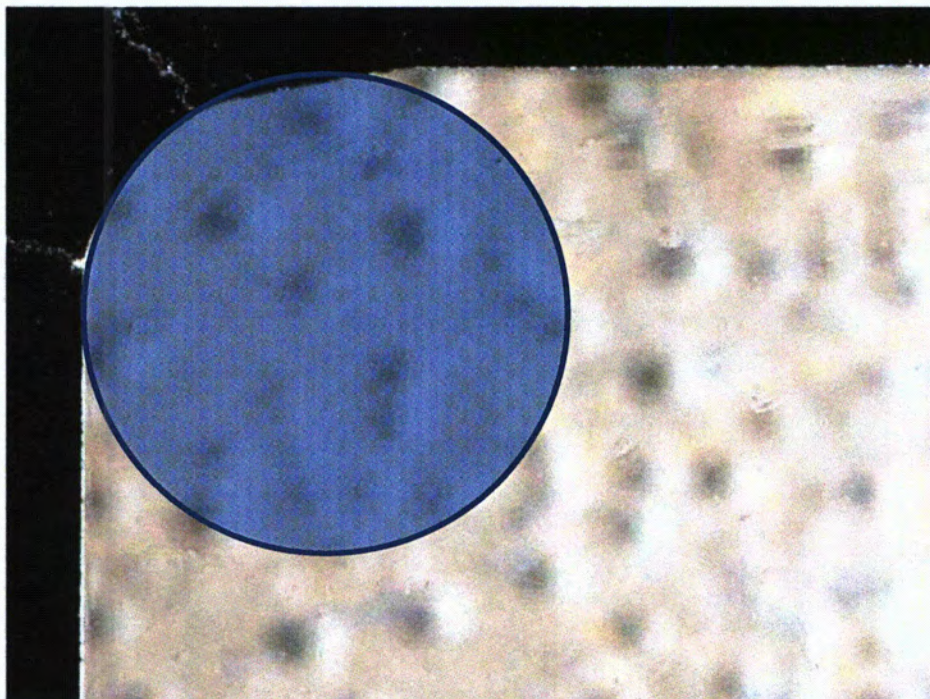


Figure 122: Bolt 240°-7 at 315°. Circle radius is 0.065". 20X

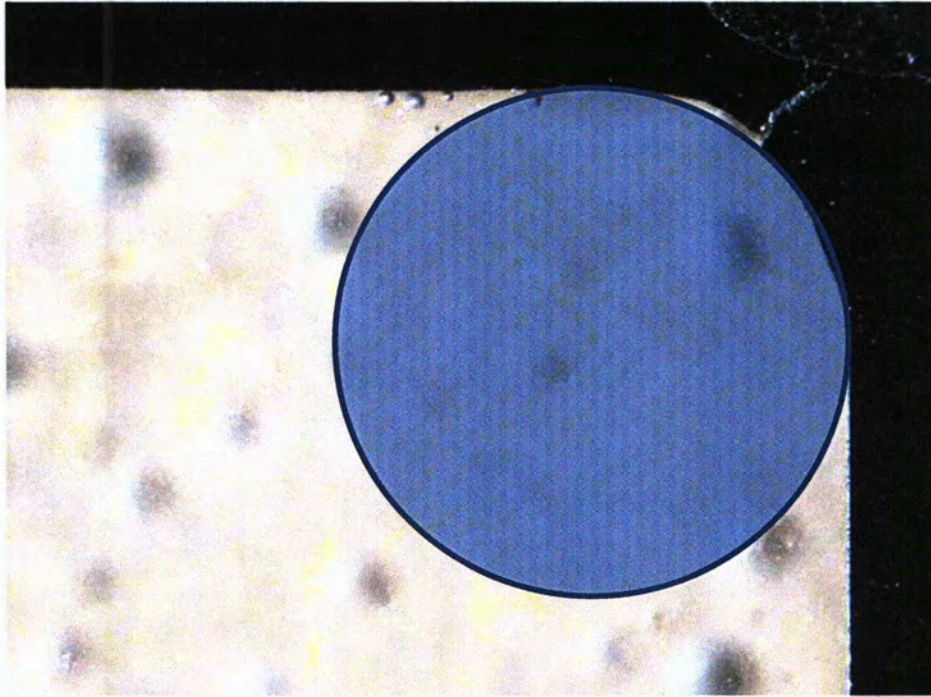


Figure 123: Bolt 300°-1 at 90°. Circle radius is 0.069". 20X

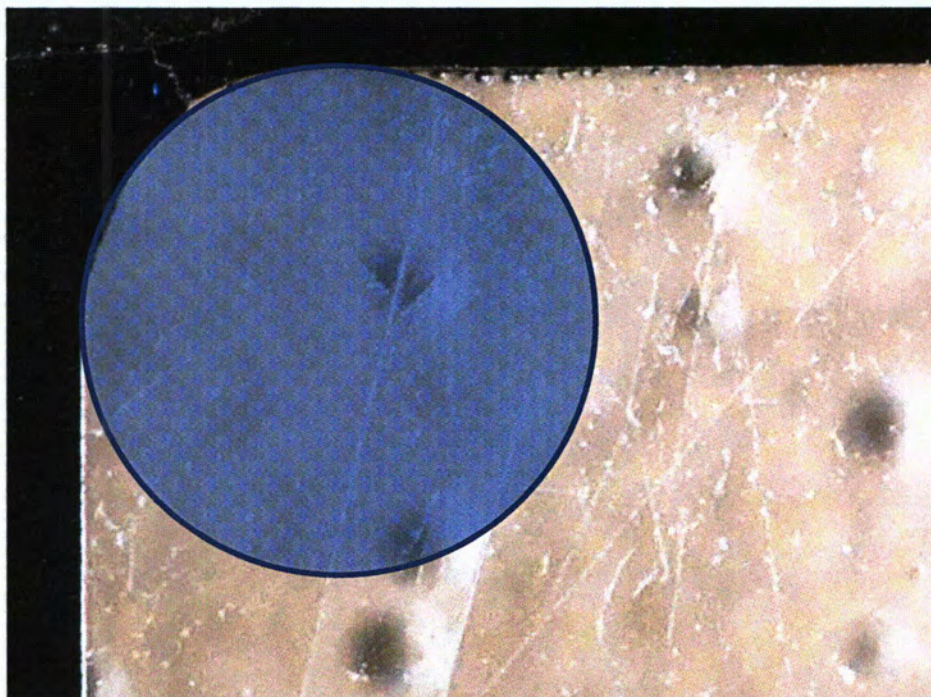


Figure 124: Bolt 300°-1 at 270°. Circle radius is 0.069". 20X

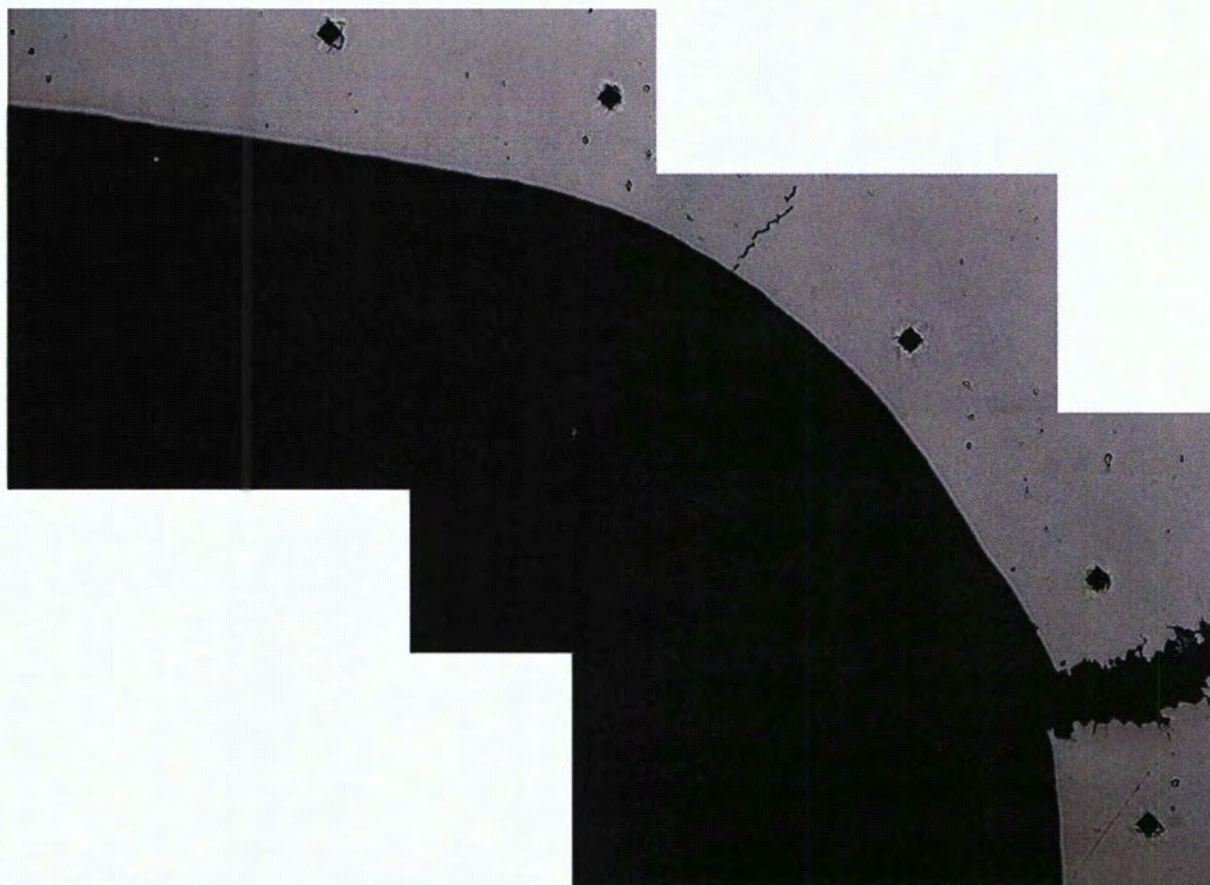


Figure 125: Higher magnification three-frame montage of bolt 240°-7 at 135°. Small diamonds are microhardness indents. As-polished, ~70X



Figure 126: Higher magnification three-frame montage of bolt 240°-7 at 315°. Small diamonds are microhardness indents. As-polished, ~65X

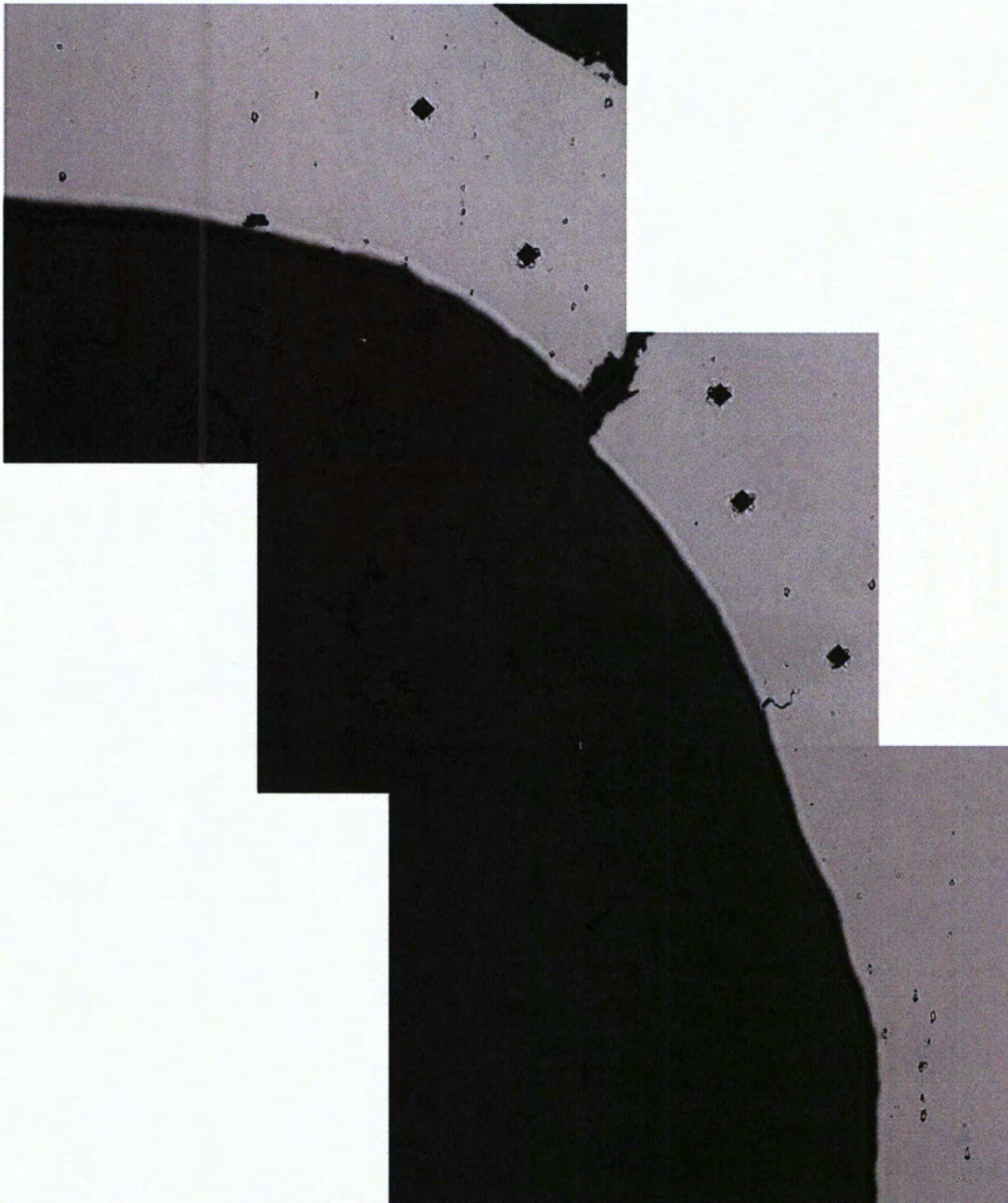


Figure 127: Higher magnification three-frame montage of bolt 300°-1 at 90°. Small diamonds are microhardness indents. As-polished, ~80X

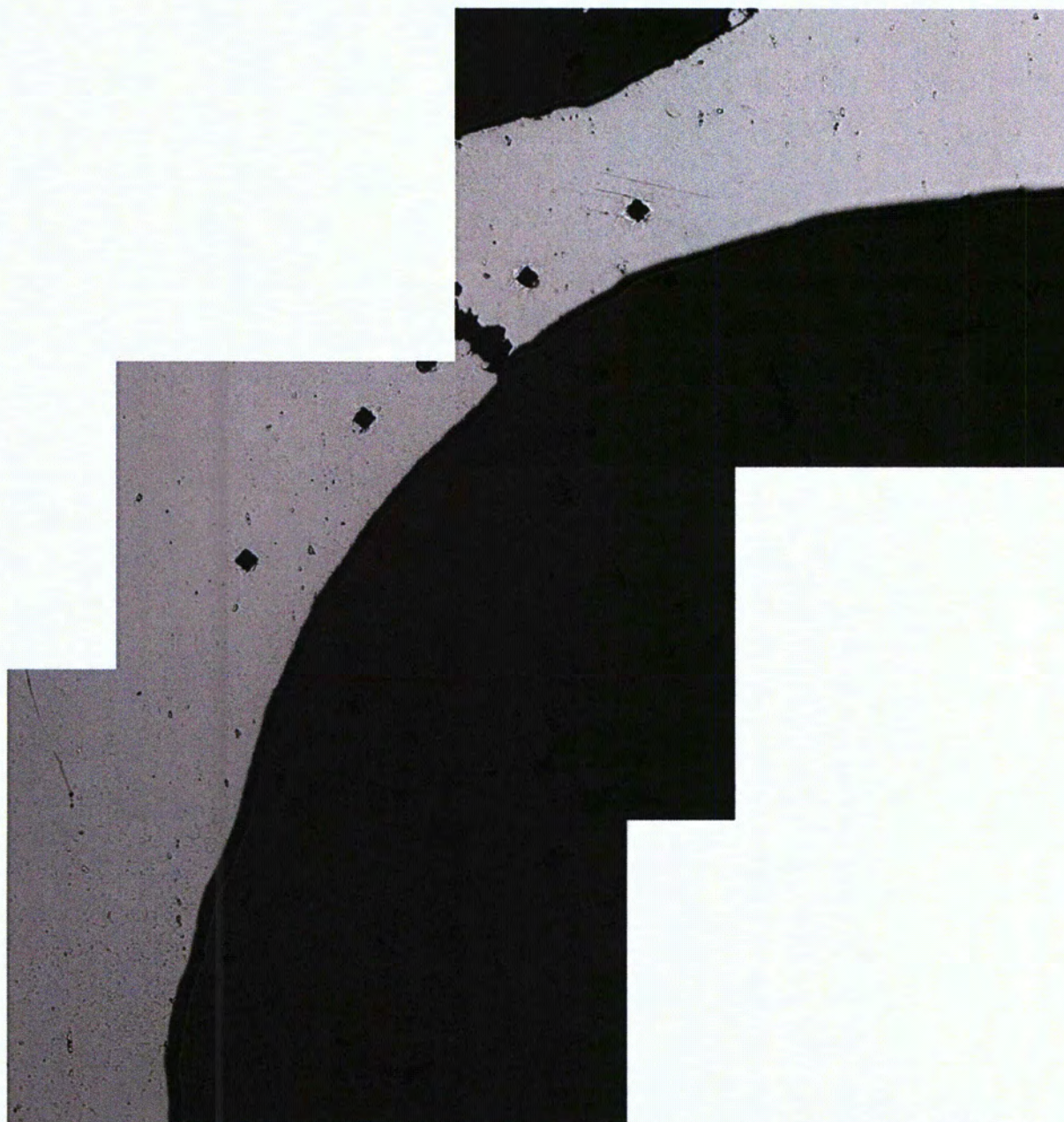


Figure 128: Higher magnification three-frame montage of bolt 300°-1 at 270°. Small diamonds are microhardness indents. As-polished, ~75X

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KEY WORDS: LOWER RADIAL SUPPORT SYSTEM, LRSS, CLEVIS BOLTS, ALLOY X-750, LOW TEMPERATURE CRACK PROPAGATION, INTERGRANULAR STRESS CORROSION CRACKING, IGSCC
