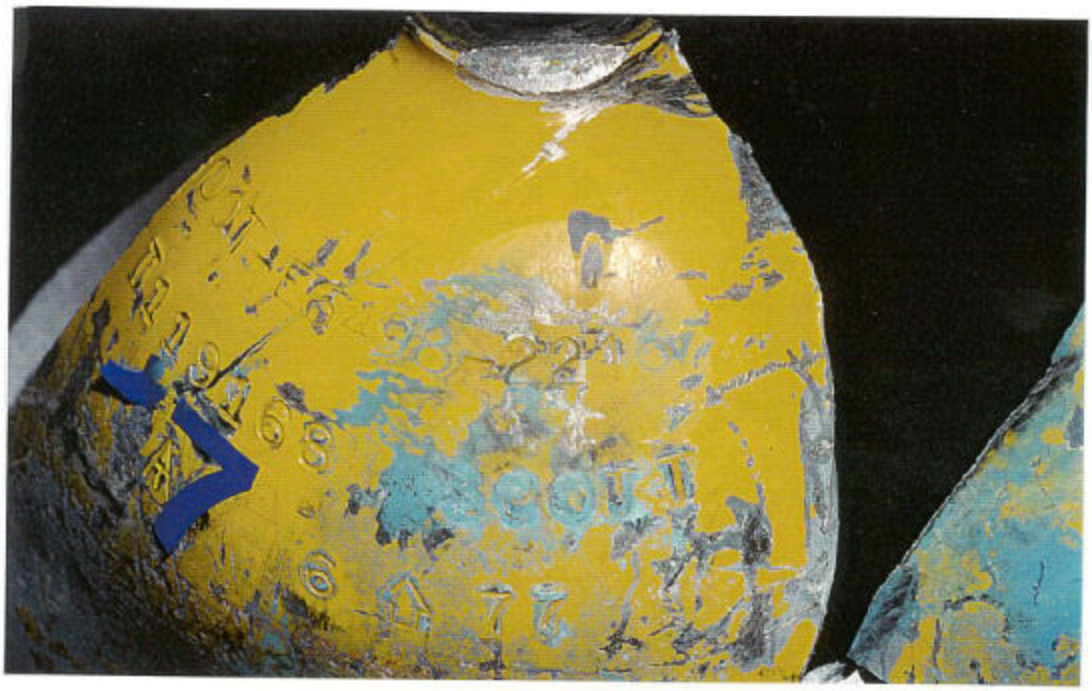
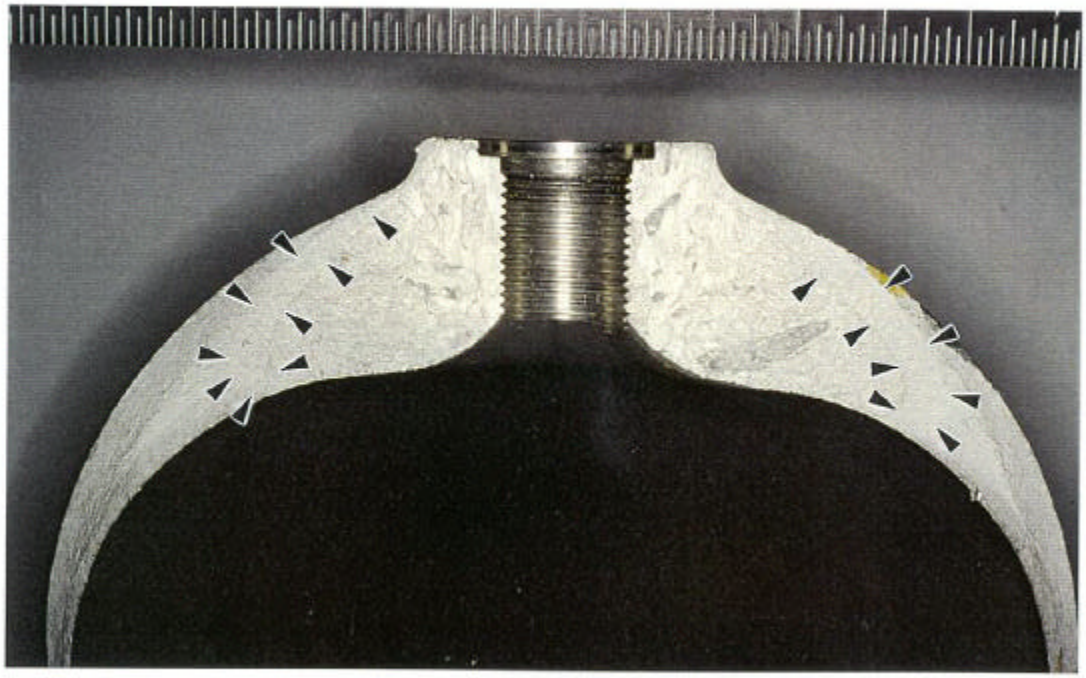


(a)

(b)

Figure 2: **Neck Stampings**
(a) Exemption, serial number and first hydrostatic test.
(Photo ID: DC18234-R2E3)
(b) Inspection markings
(Photo ID: DC18234-R2E5)



(a)

(b)

Figure 3: **Detail of the fracture surface at the cylinder neck.**
(a) Fracture surface at cylinder neck (Photo ID: DC18234-R2E29)
(b) Detail of fracture surface at the neck. (Photo ID: DC18234-R2E6)
Note the beachmarks shown at the arrows.

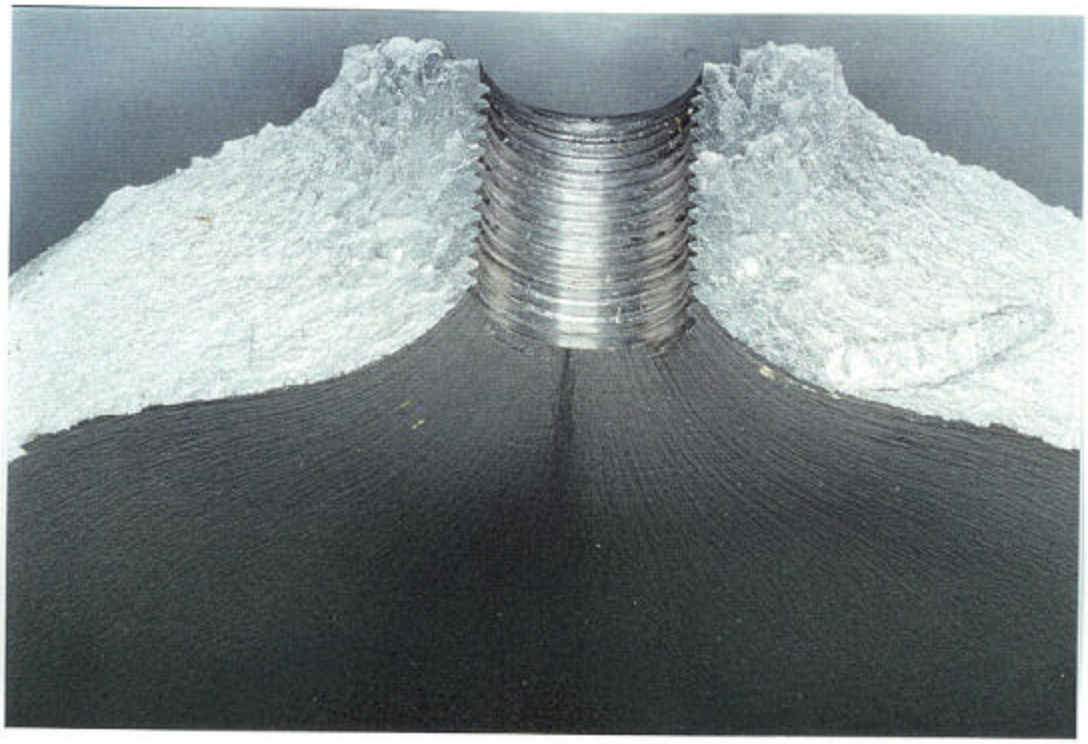


Figure 4: **Folds or cusps at the cylinder neck.**
Note axial and circumferential orientations of the folds on the inner wall of the cylinder.

(Photo ID: DC18234-R4E15)

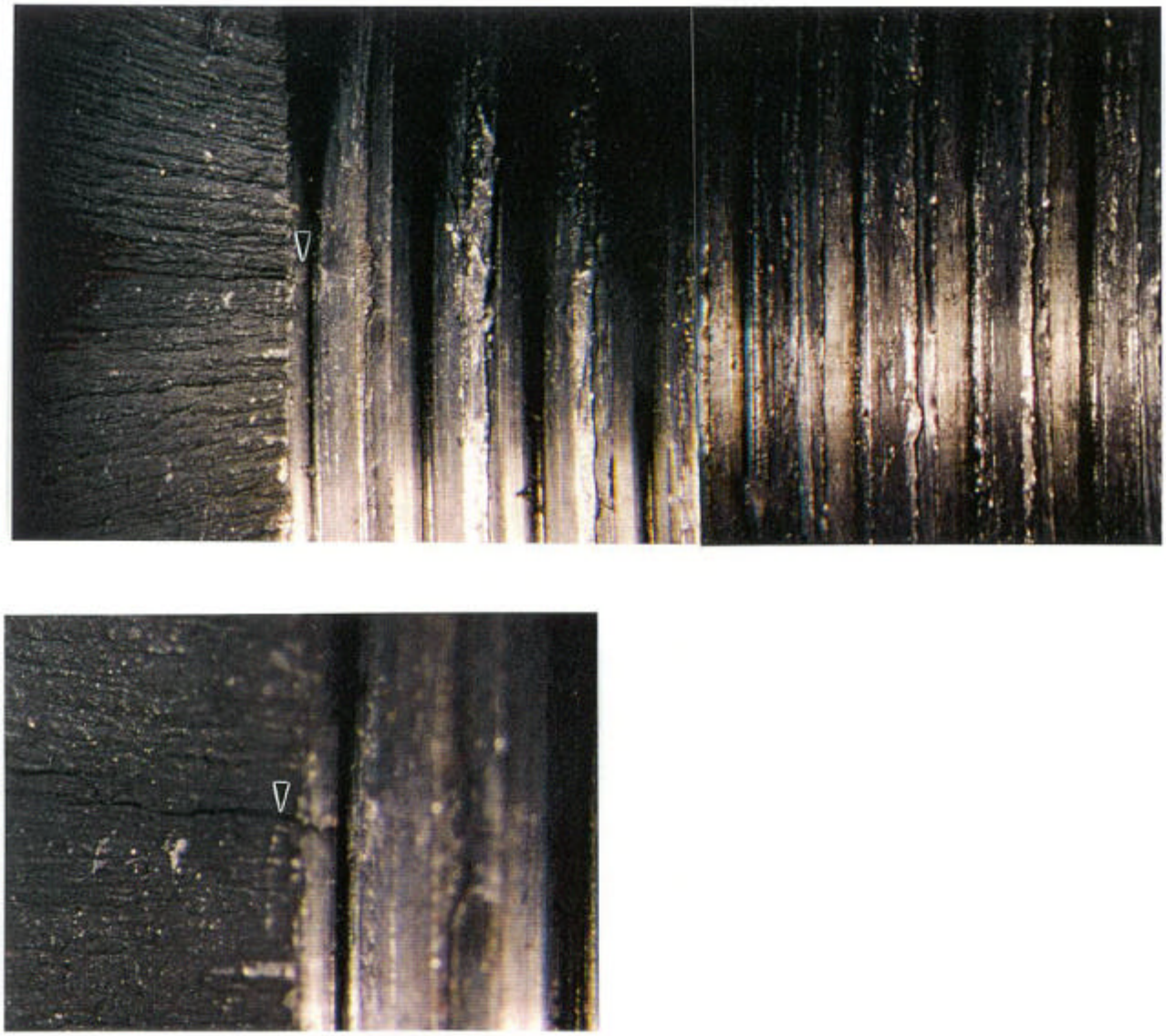


Figure 5: **Crack from a neck fold, extending across the lowest thread.** (Photo IDs: DC18234-R5E7, -R5E12, -R5-E15)
Note the crack shown at the arrows.

Figure 6: **Sectioning of cylinder fragment 2A to remove mechanical test specimens.**

(Photo ID: DC18234-R6E11)

Figure 7: **Sectioning of the cylinder neck region.**
Specimens 1A-1 and 1A-2 were cut from the neck for fractography. Specimen 1A-3 was cut behind 1A-2 for hardness testing and metallography.

(Photo ID: DC18234-R3E15)

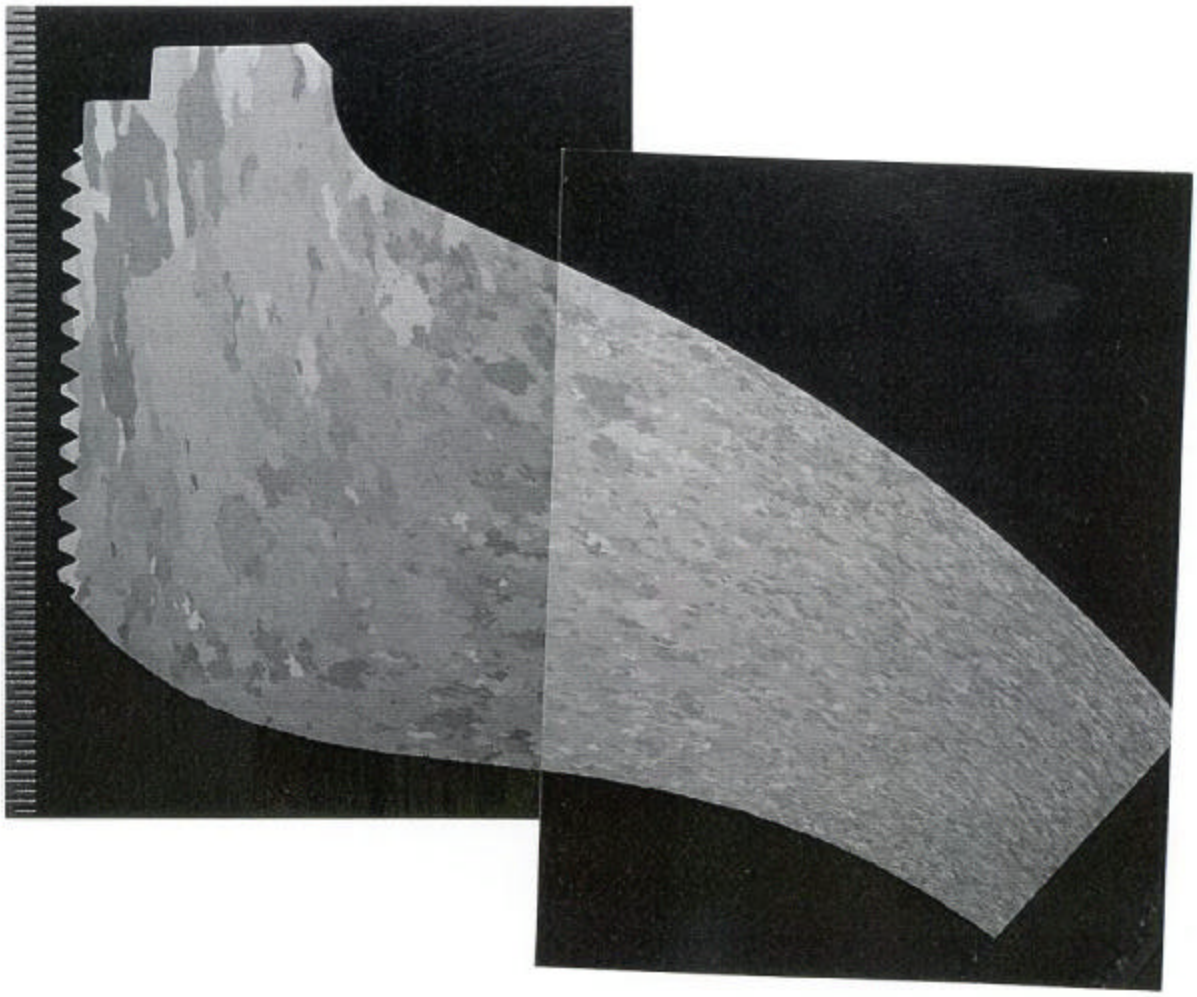


Figure 8: **Metallographic section of the cylinder neck, specimen 1A-3.** From the thick section near the threads toward the cylinder sidewall, there is significant reduction in grain size and an increase in grain aspect ratio. The grains are oriented in the forming direction of the cylinder.

Magnification: 2.7x
Etchant: 1% HF (aq)
(Photo ID: DC18234-PAL-11,-12-7/12/99)

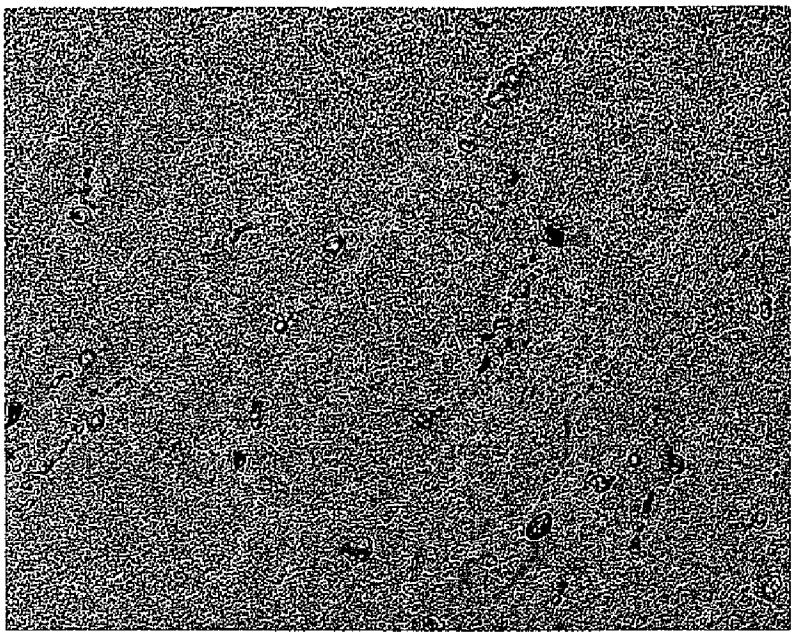


Figure 9: **Microstructure near cylinder neck, 500x.**
The structure is typical of AA6351 in the T6 condition.

Etchant: 1% HF (aq)
(Photo ID: DC18234-PAL-17-6/30/99)

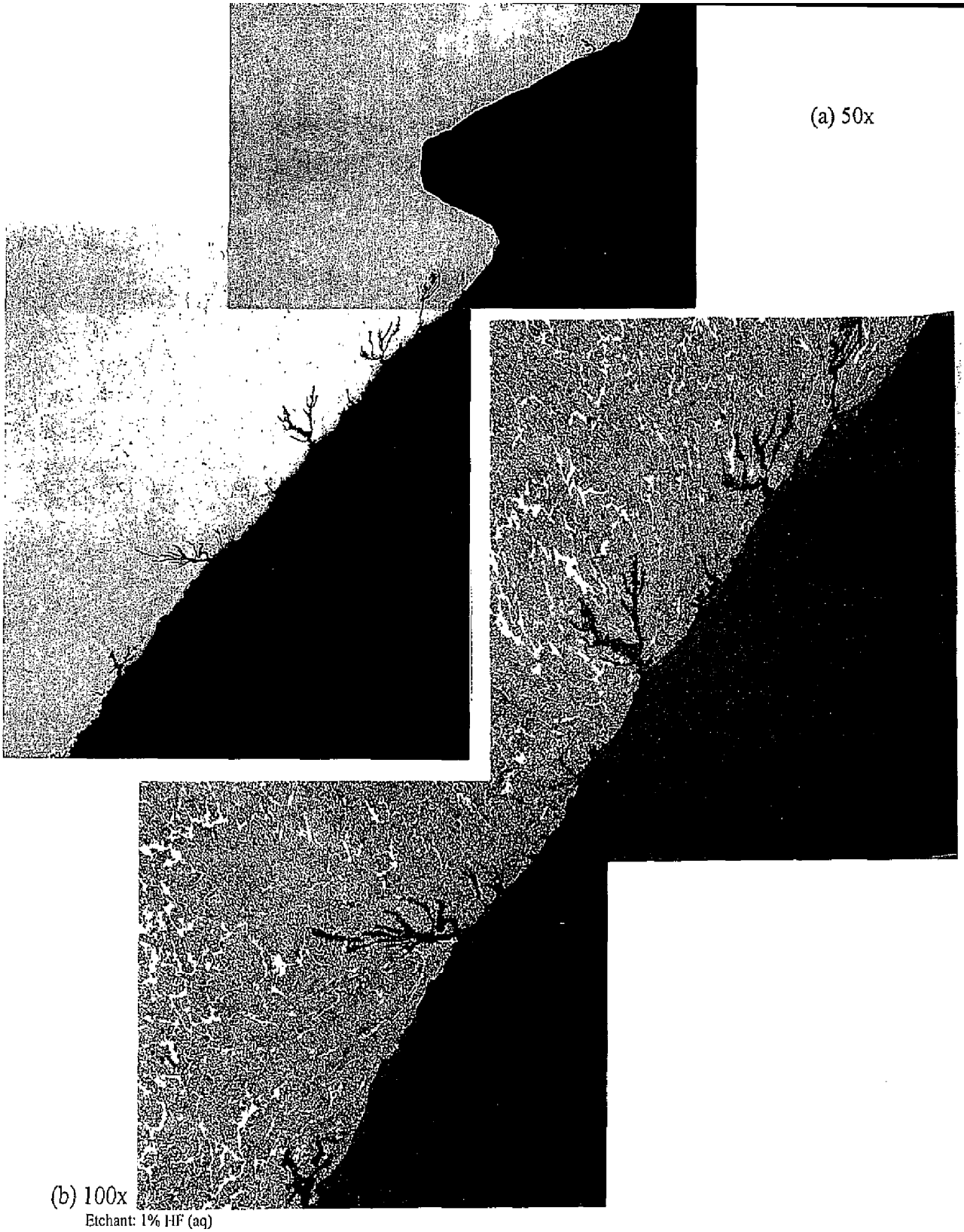
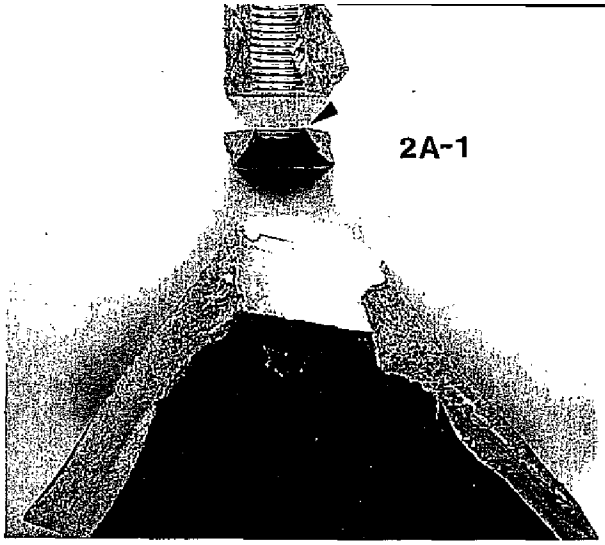
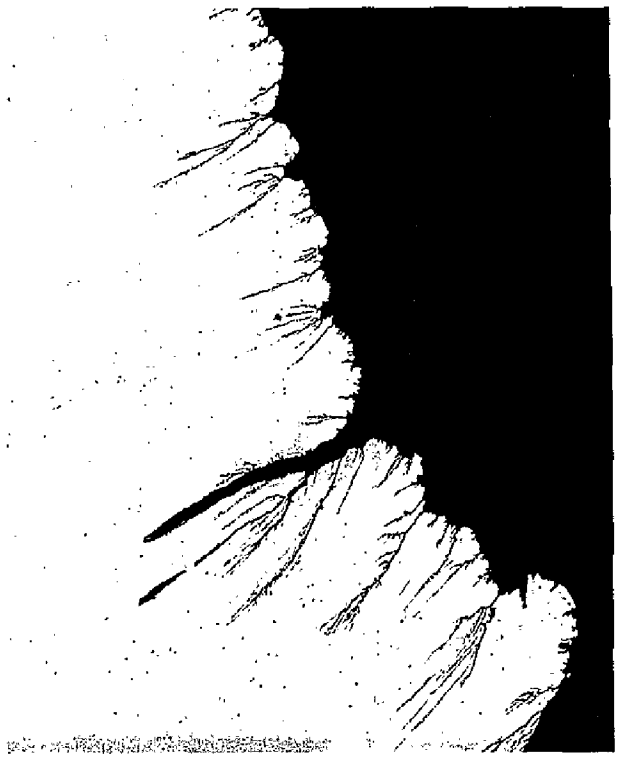


Figure 10: Branching cracks at the inside of the cylinder wall.

Photo IDs: (a) DC18234-PAL-3,-4-6/25/99
(b) DC18234-PAL-9-10-6/30/99



(a)



(b) (c)

Figure 11: Metallographic section at the base of the neck threads.
(a) The arrow indicates the plane of polish.
(Photo ID: DC18234-PAL-1-8/9/99)
(b) (c) Branching cracks extend from the base of the threaded region into the cylinder neck.
Magnification: (b) 50x, (c) 100x
Etchant: 1% HF (aq)
(Photo IDs: DC18234-PAL-3,-4-8/9/99)

Figure 12: Cracking parallel to a flat-faced fracture surface at the neck, 100x.

Etchant: 1% HF (aq)
(Photo ID: DC18234-PAL-11,-12-8/9/99)