



Figure 5. Sectioning of fragment 4A.  
 (a) Initial cuts showing the locations of drilling for chemical composition determination. Photo ID: DC18129-R3E16.  
 (b) Sectioning showing separated fracture surfaces and the portion used for tensile testing. Photo ID: DC18129-R5E3.



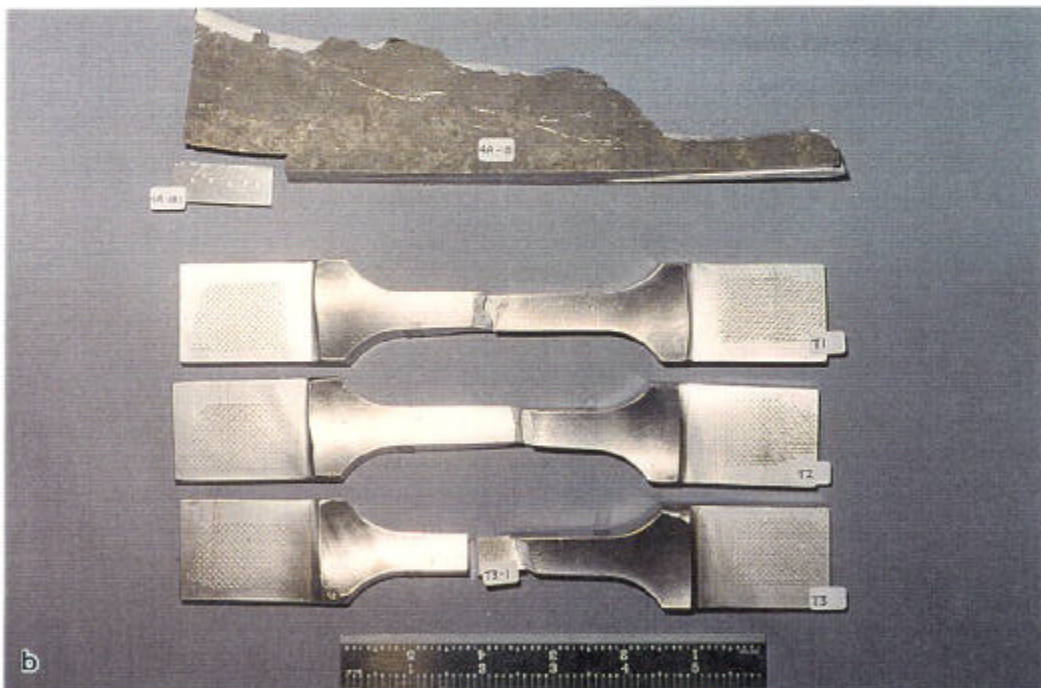
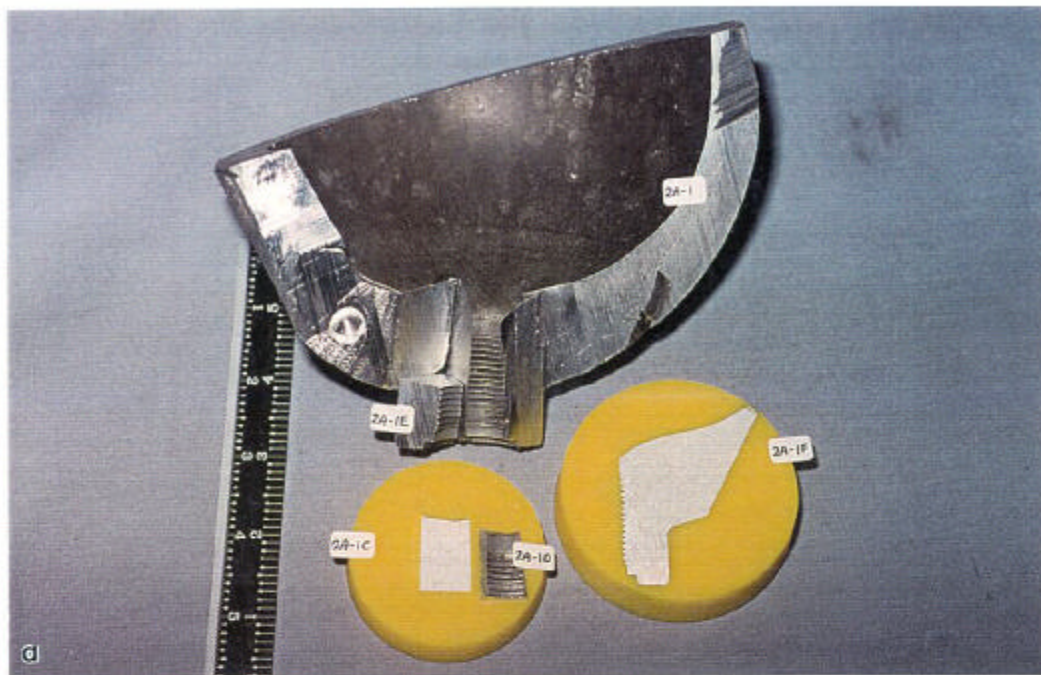


Figure 6. Additional sectioning of fragments 2A and 4A.  
(a) Fragment 2A, neck region. Photo ID#: DC18129-R6E7.  
(b) Fragment 4A, mechanical property samples.  
Photo ID#: DC18129-R6E5.

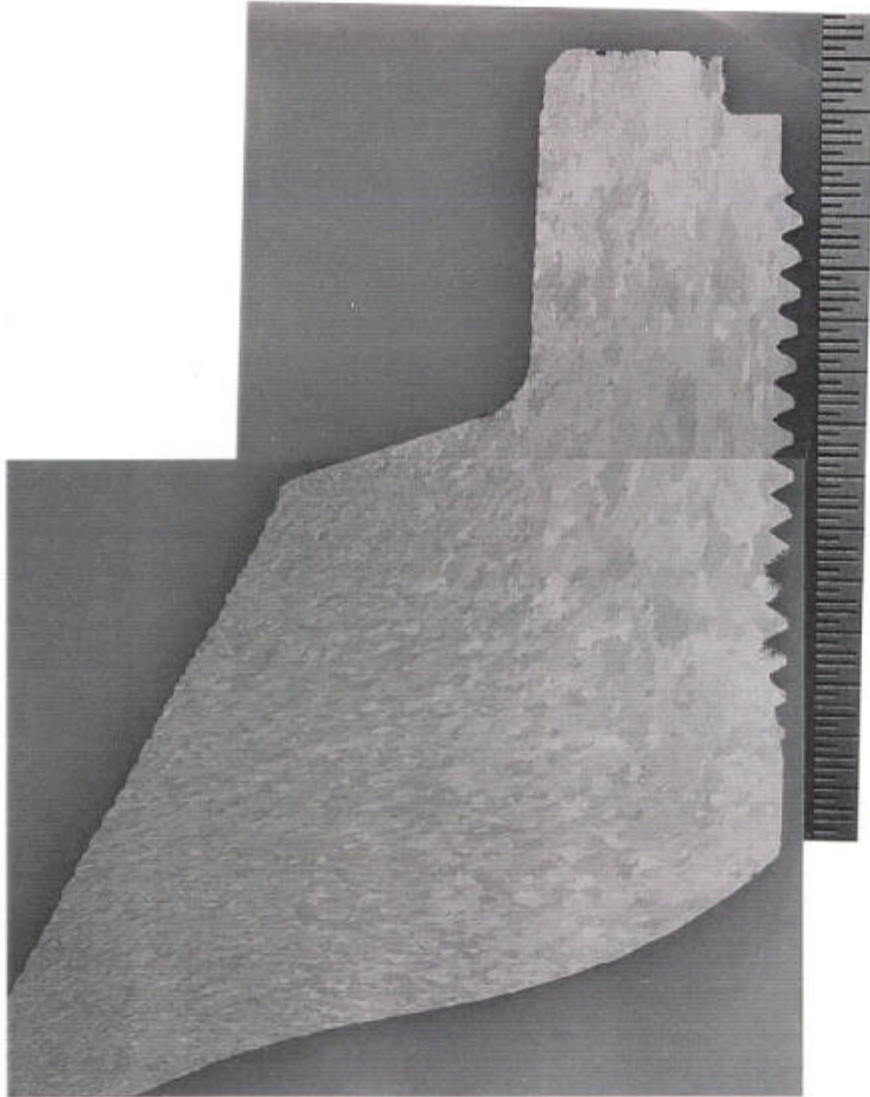


Figure 7. Section 2A-1F showing the microstructure in the neck region. Note the scale is in 0.05 inch increments. HF-H<sub>2</sub>SO<sub>4</sub>-H<sub>2</sub>O etch. Photo ID: DC18129-PAL-1,2-7/28/98.



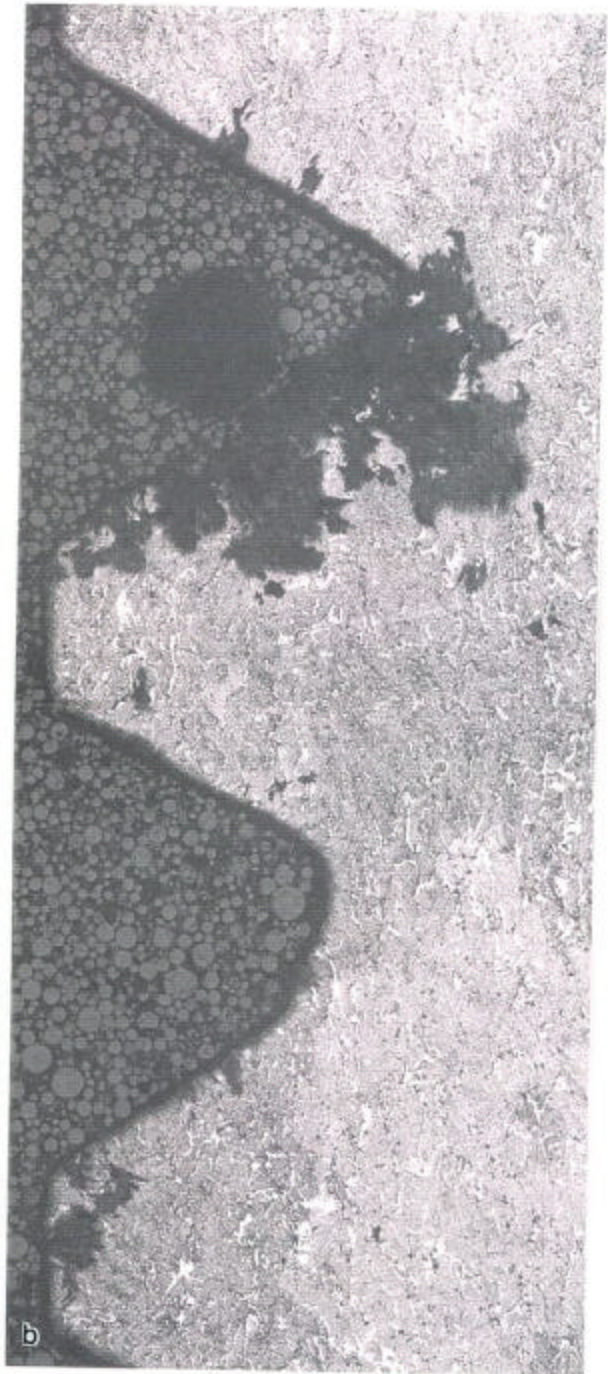


Figure 8. Close-up of thread area shown in Figure 7.  
(a) 50X. Photo ID: DC18129-PAL-5,6-7/28/98.  
(b) 50X. HF-H<sub>2</sub>SO<sub>4</sub>-H<sub>2</sub>O etch. Photo ID: DC18129-PAL-9,10-7/28/98.  
Note the corrosion pitting damage to the thread area.

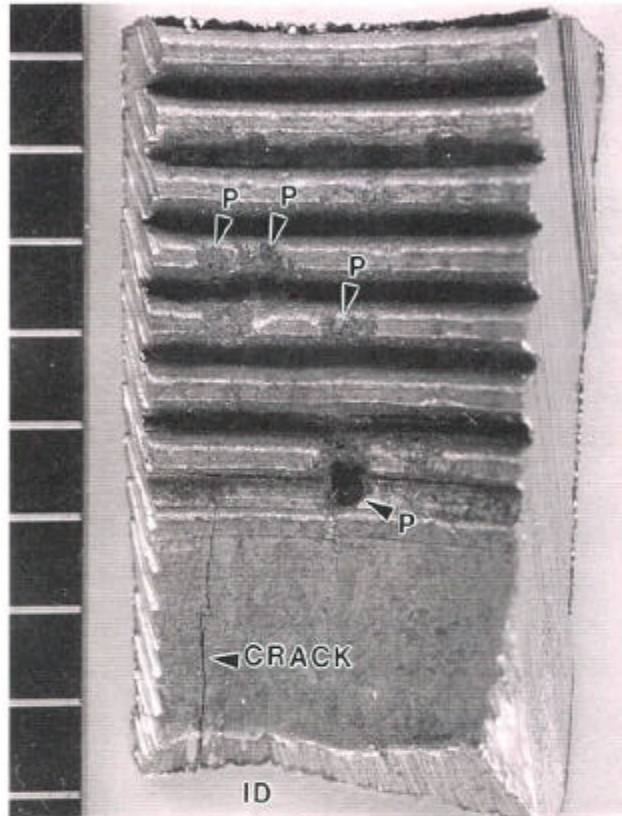


Figure 9. Close-up of portion of the inlet hole threads showing cracking and corrosion pits. Example pits are labeled "P". Scale is in 0.05 inch increments. Section 2A-1C was taken just behind this slice. Note that one pit forms a well-developed hole through this slice. Photo ID#: DC18129-TRS-1-8/5/98.

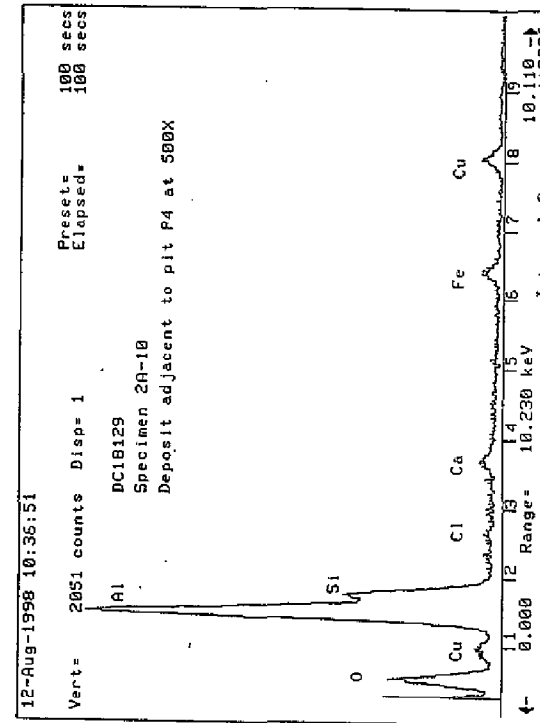
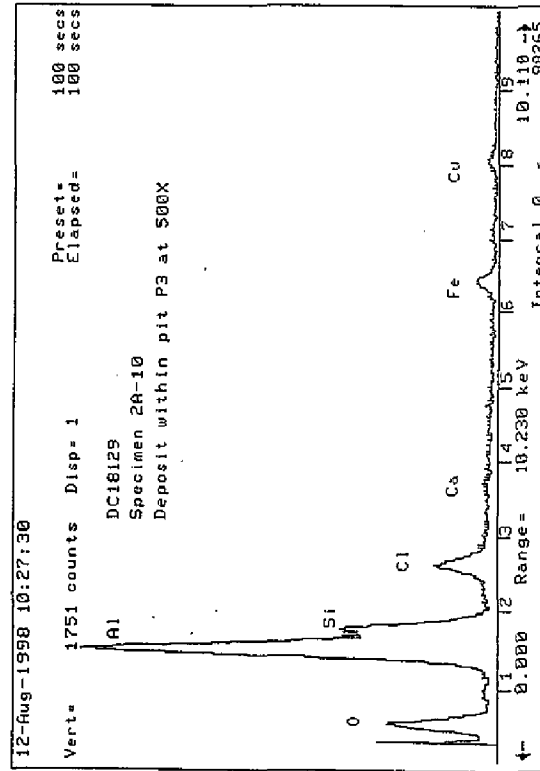
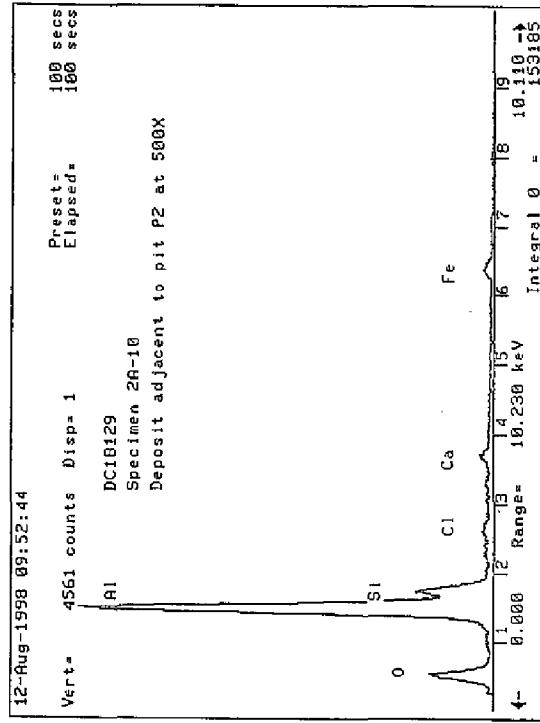
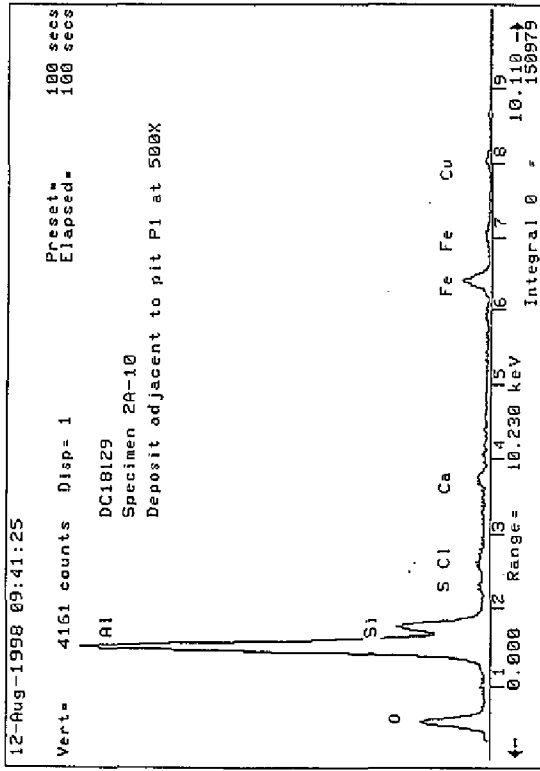


Figure 10. Energy dispersive spectra taken from at or near the pits shown in Figure 9.

- Figure 11. Section 2A-1C taken parallel to the inlet hole, just below the threads.
- (a) Overall view of the section. HF-H<sub>2</sub>SO<sub>4</sub>-H<sub>2</sub>O etch. Scale is in 0.05 inch increments. Note cracks in Regions A and B. Photo ID: DC18129-PAL-18-7/28/98.
  - (b) Close up of Region A. 50X. HF-H<sub>2</sub>SO<sub>4</sub>-H<sub>2</sub>O etch. Note the folds on the surface. Photo ID: DC18129-PAL-18-7/28/98.
  - (c) Close up of Region A. 100X. Note the multiple branched cracks emanating from the folds on the surface. Photo ID: DC18129-PAL-21-7/28/98.
  - (d) Same as (c) in the etched condition. 100X. HF-H<sub>2</sub>SO<sub>4</sub>-H<sub>2</sub>O etch. Photo ID: DC18129-PAL-22-7/28/98.
  - (e) Close up of Region B. 50X.. Photo ID: DC18129-PAL-28,29-7/28/98.
  - (f) Close up of Region B. 50X.. HF-H<sub>2</sub>SO<sub>4</sub>-H<sub>2</sub>O etch. Photo ID: DC18129-PAL-30,31-7/28/98.

Note that due to instrument optics the micrographs 11b-f are mirror images of the corresponding regions in 11a.



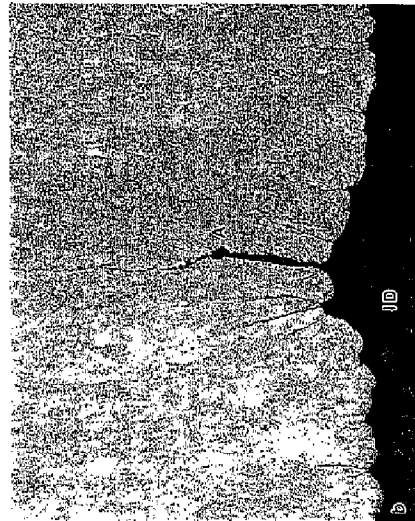
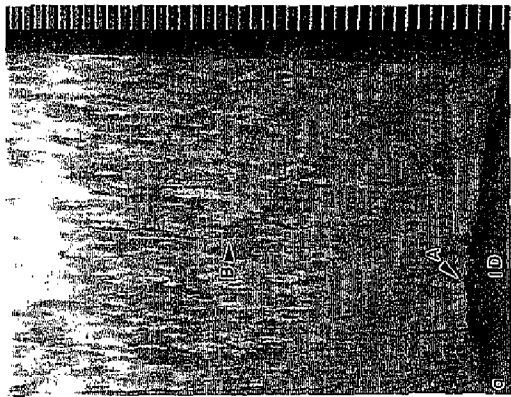
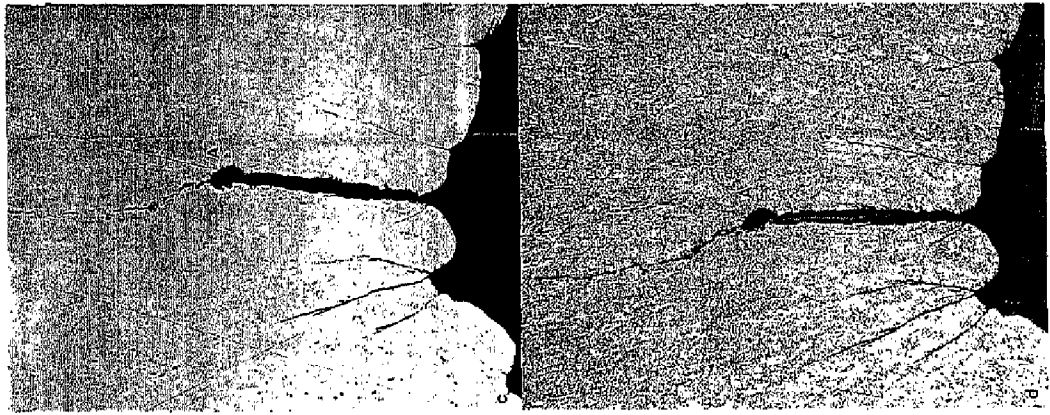
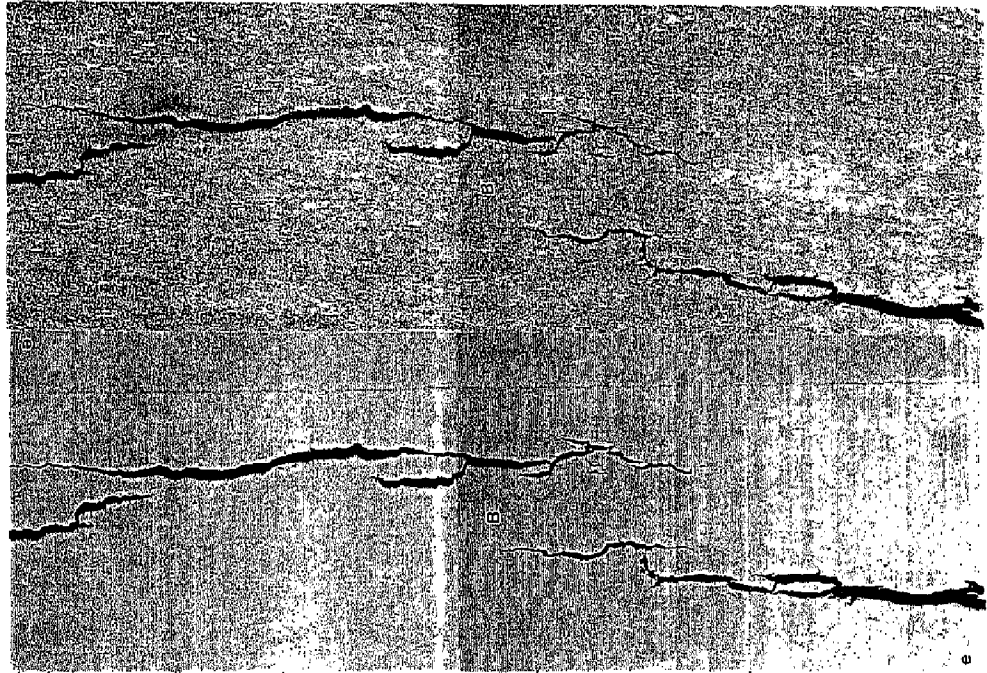


Figure 11.



- Figure 12. Fractography of section 2A-1A. Overall optical micrograph view shows the regions examined in the SEM. Photo ID: DC18129-TRS-1-6/25/98.
- (a) Region A showing the coating. 500X. Photo ID: DC18129-PAL-1-6/25/98.
  - (b) Region B showing deposits on the fracture surface. 500X. Photo ID: DC18129-PAL-3-6/25/98.
  - (c) Region C. 250X. Photo ID: DC18129-PAL-4-6/25/98.
  - (d) Region C. 1000X. Photo ID: DC18129-PAL-6-6/25/98.
  - (e) Region D. 250X. Photo ID: DC18129-PAL-8-6/25/98.
  - (f) Region D. 1000X. Photo ID: DC18129-PAL-11-6/25/98.
  - (g) Region E. 250X. Photo ID: DC18129-PAL-15-6/25/98.
  - (h) Region E. 1000X. Photo ID: DC18129-PAL-17-6/25/98.
  - (i) Region F. 250X. Photo ID: DC18129-PAL-19-6/25/98.
  - (j) Region F. 1000X. Photo ID: DC18129-PAL-21-6/25/98.
  - (k) Region G. 250X. Photo ID: DC18129-PAL-23-6/25/98.
  - (l) Region G. 1000X. Photo ID: DC18129-PAL-25-6/25/98.

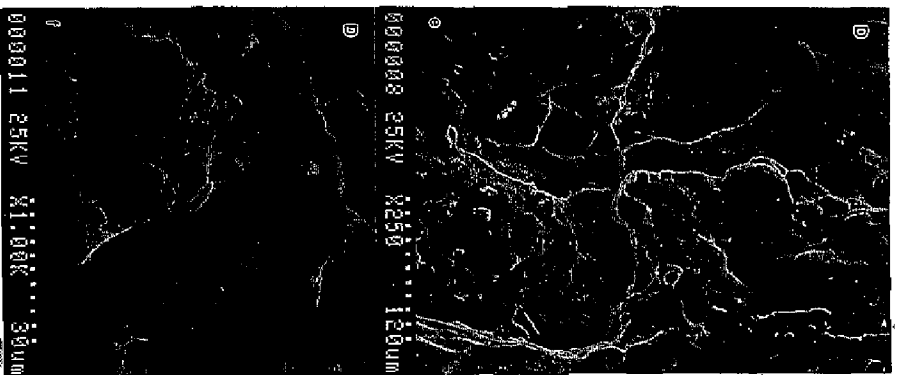
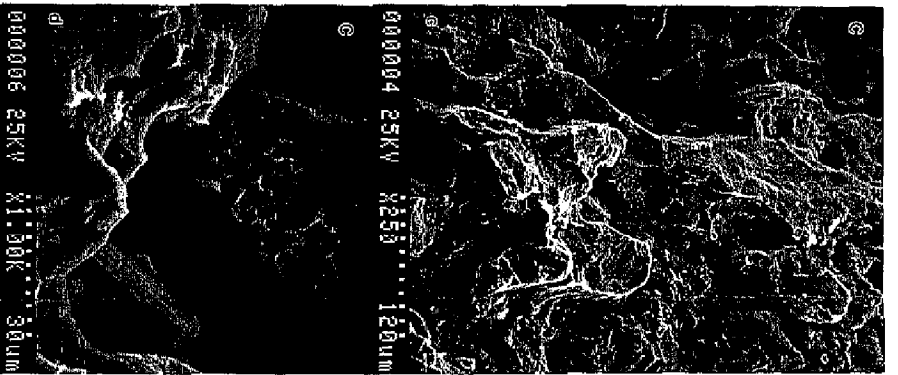
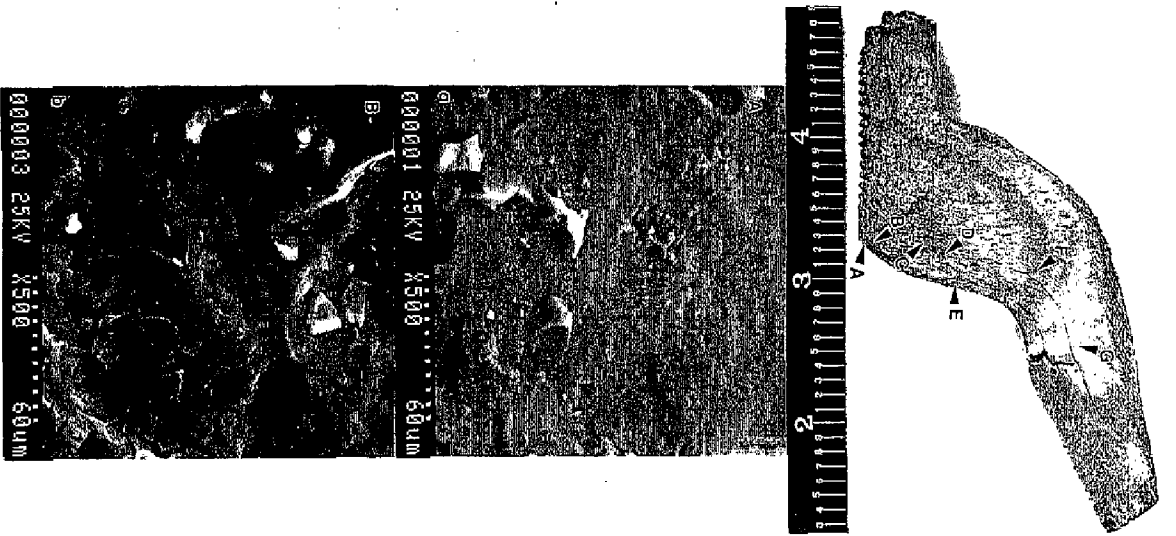


Figure 12.

