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DUPLICATE INSPECTED 4

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The Technical Cooperation Program (TTCP)

Technical Panel Annual Meeting

Materials Group TP-5

Evaluation of Samples Using Ultrasound Imaging

William R. Davis

Dr. Ignacio Perez

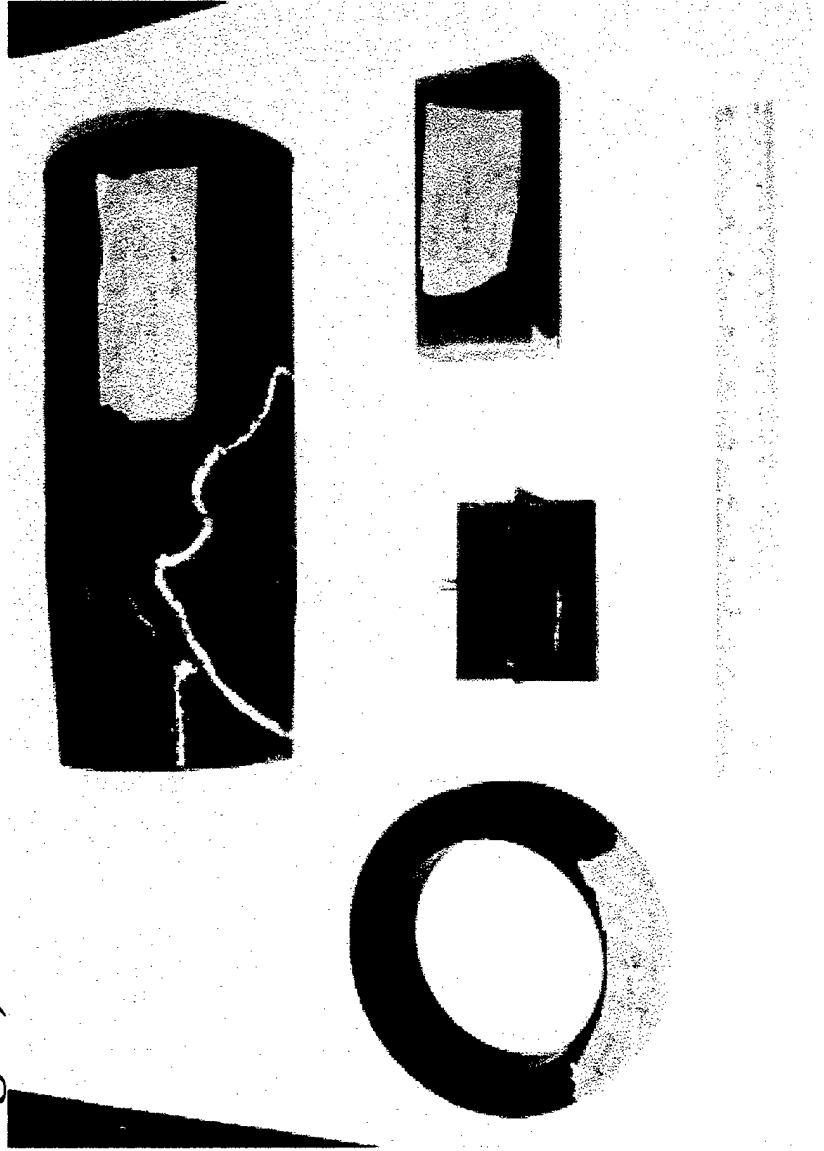
16 - 20 October 2000



TCCP Sample Evaluation

RESEARCH &
ENGINEERING

**RAH66 Quill Detector Face Drive Shaft (top), Quill Shaft
(bottom left), small brace (bottom center), and flex beam
(bottom right)**





TEAM

TCCP Sample Evaluation

**RESEARCH &
ENGINEERING**

RAH 66 Quill Shaft 7/8" thick by 6" dia. By 1 1/8" high ring.



7/8" x 6" x 1 1/8" TCCP Sample Evaluation

RAH 66 Quill Shaft 7/8" thick by 6" dia. By 1 1/8" high ring.

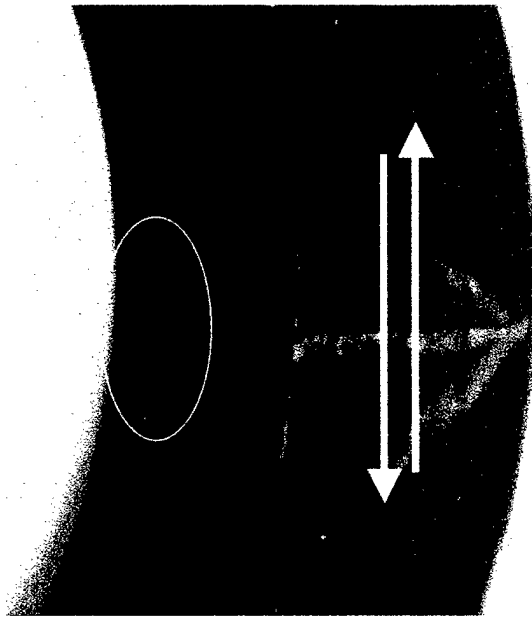


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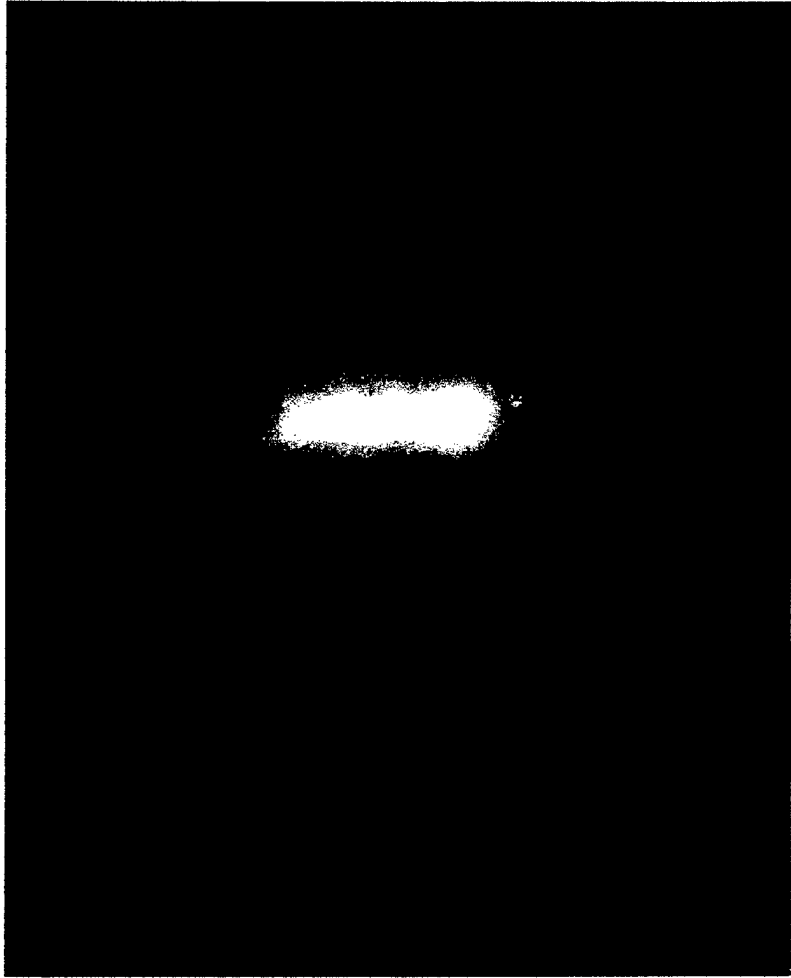
TCCP Sample Evaluation



RAH 66 Quill Shaft is a 7/8" thick by 6" diameter by 1 1/8" high ring. A 1 MHz 1.5" diameter transducer was used in through transmission mode. This shows a full height disbond 1/2" wide.



13 14 15 16 17 18





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TCCP Sample Evaluation

**RESEARCH &
ENGINEERING**

RAH66 Quill Detector Face (Dr) Shaft Examined by through transmission. Thickness is 1/2 inch to 1 inch. Height 12.5 inch, 5 3/4 inch diameter

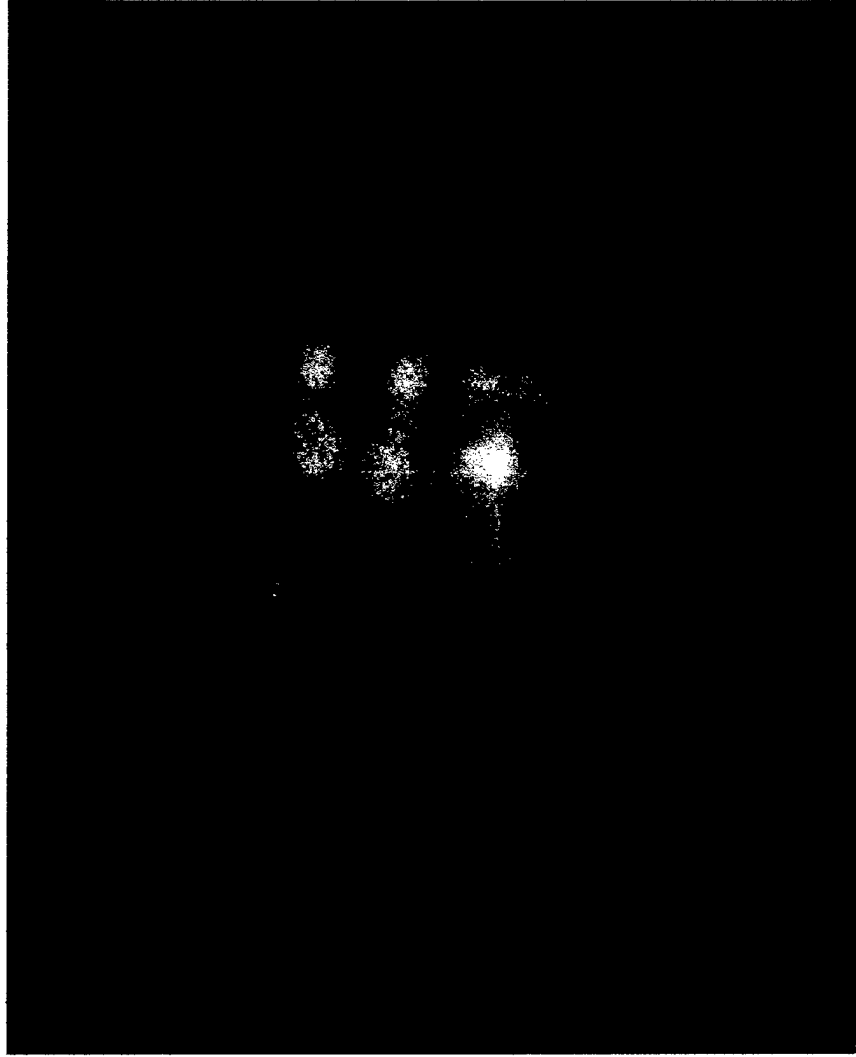
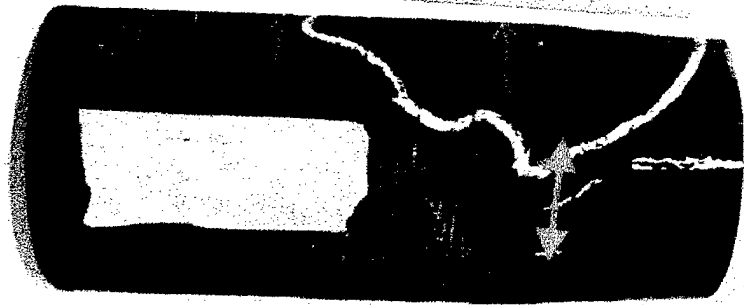




TCCP Sample Evaluation



**Quill Detector Face Bottom section –heavy thickness section
examined by through transmission at 2.25 MHz**

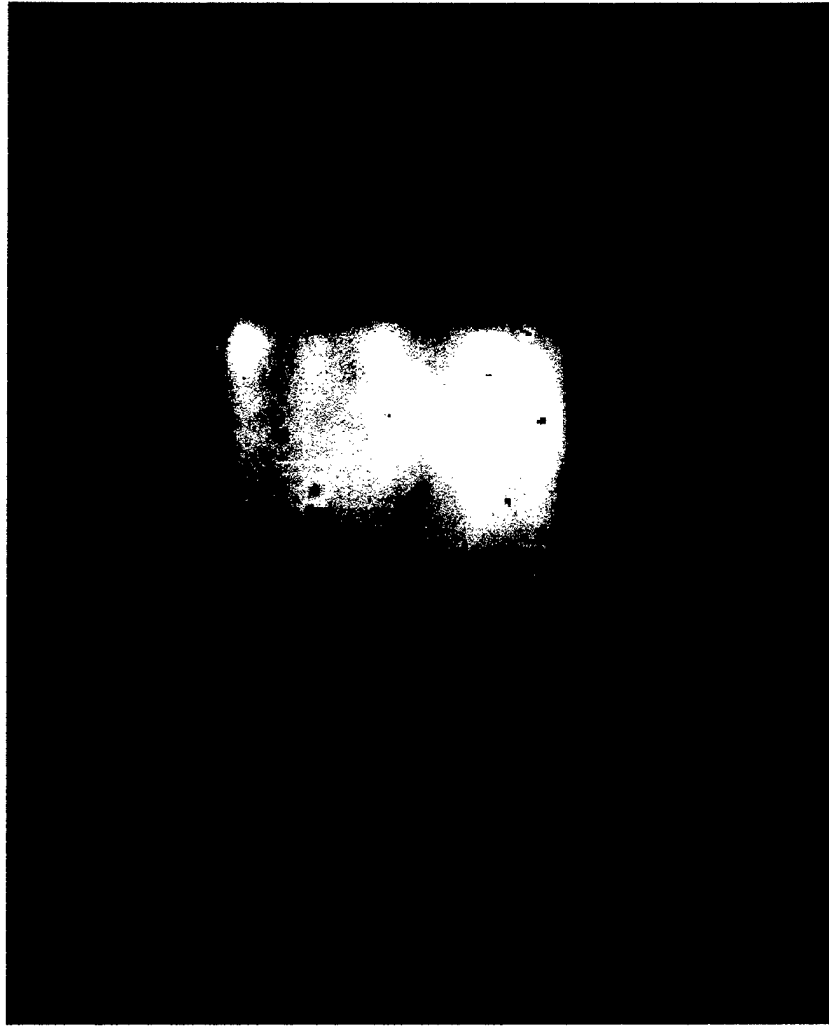




TCCP Sample Evaluation



RAH66 Quill Detector Face (Dr) Shaft imaged using a 2.5 MHz
1.5" diameter transducer in through transmission. The thin
Top Section is approximately 0.625 inch thick.

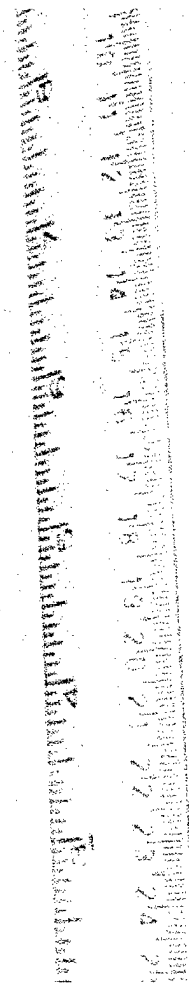
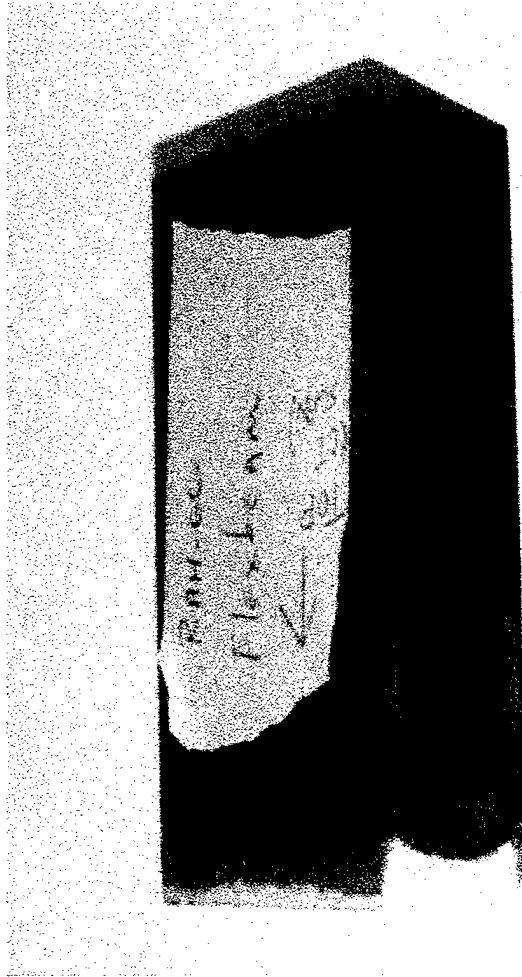




TCCP Sample Evaluation



The RAH66 Flex beam, 1.125" thick x 5.25" x 2.375"

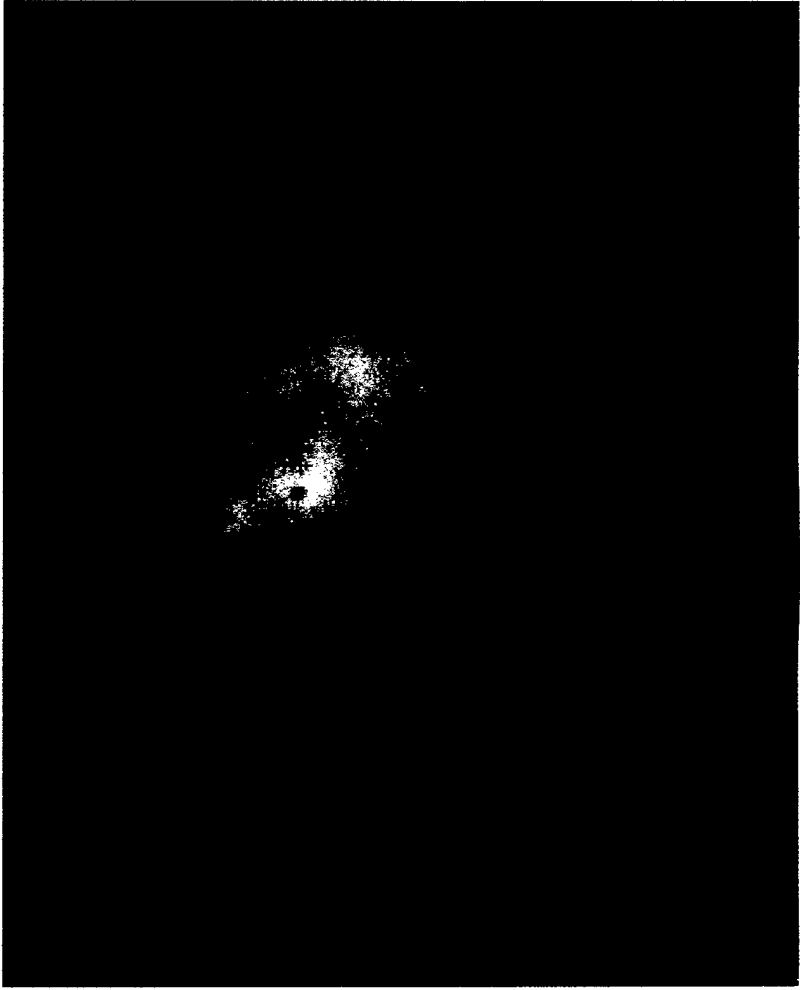
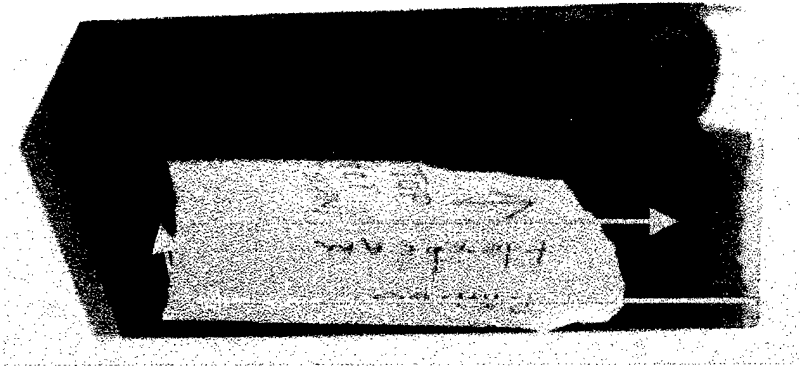




TCCP Sample Evaluation



RAH66 Flexbeam imaged using Through Transmission at
2.25 MHz shows a darker line of marceling near the top



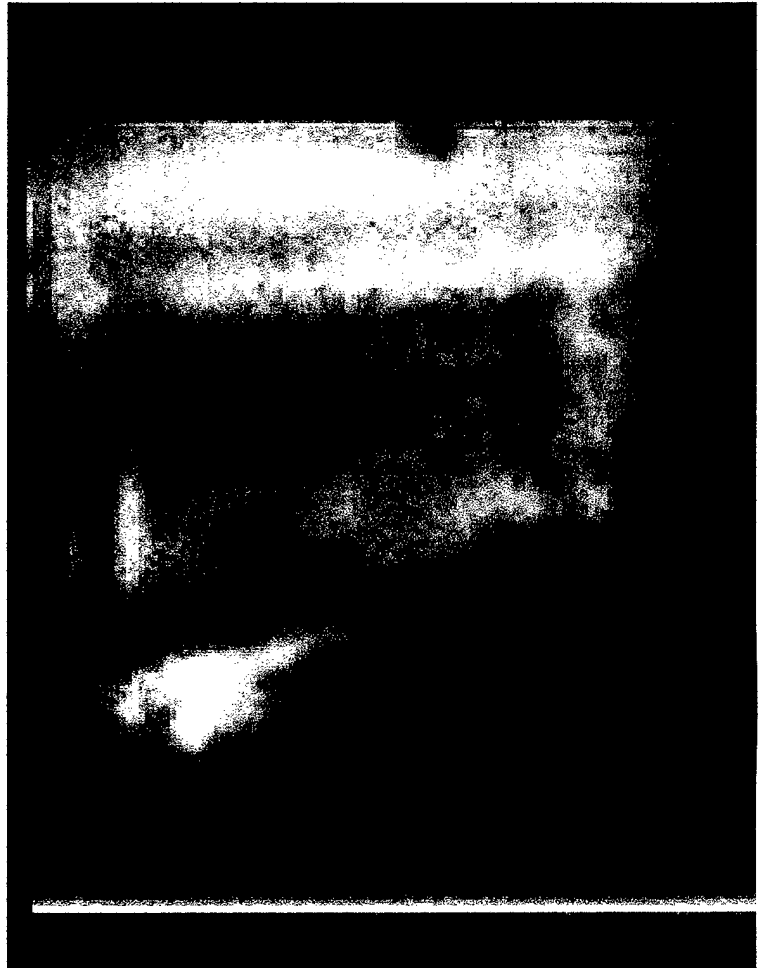
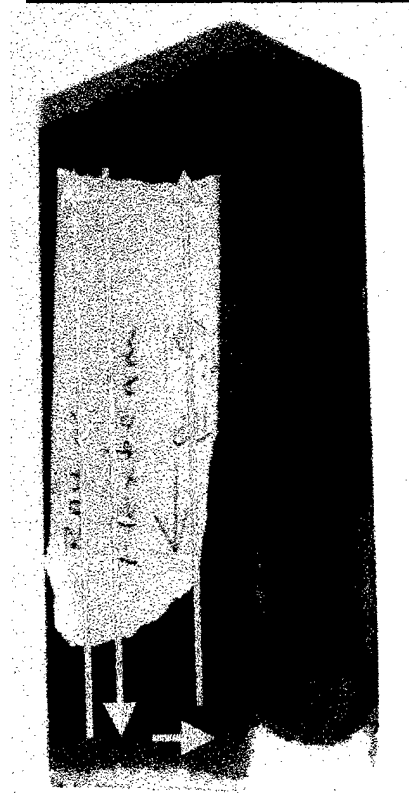


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TCCP Sample Evaluation



RAH66 Flex beam in tank. One sided imaging of the ultrasound by reflection shows some near surface discontinuities near the end of the flex beam.

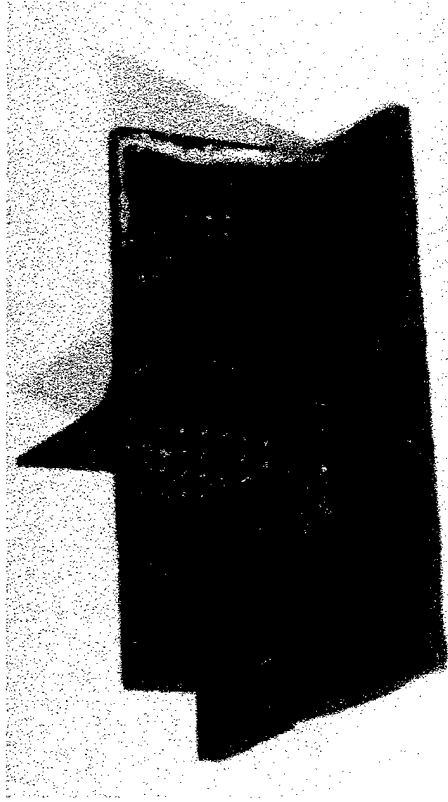
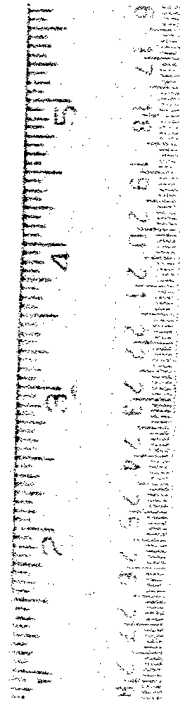
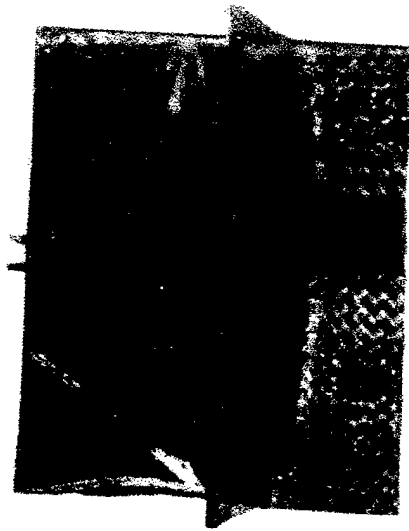




TACP Sample Evaluation



IAMT prepreg box, overhead and side views



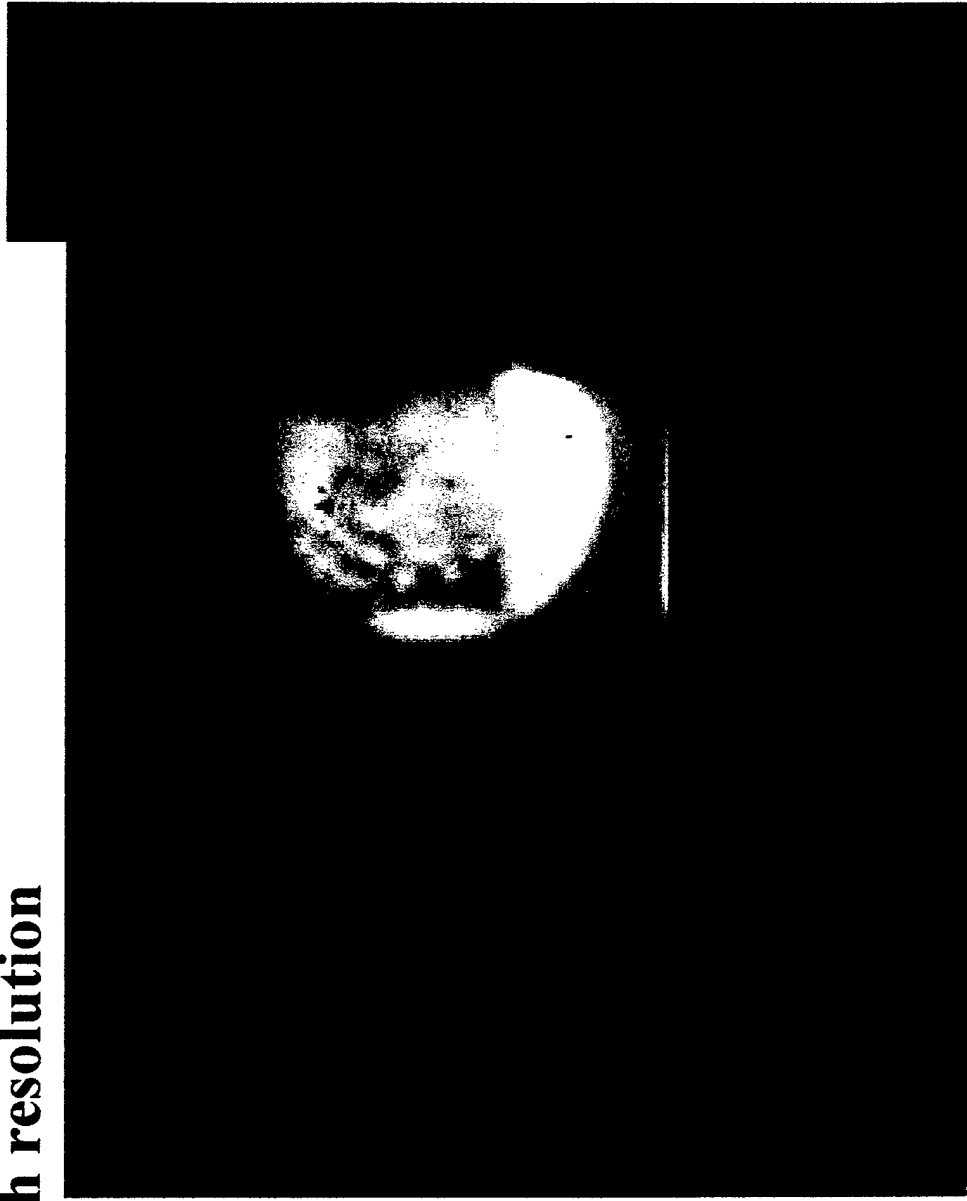
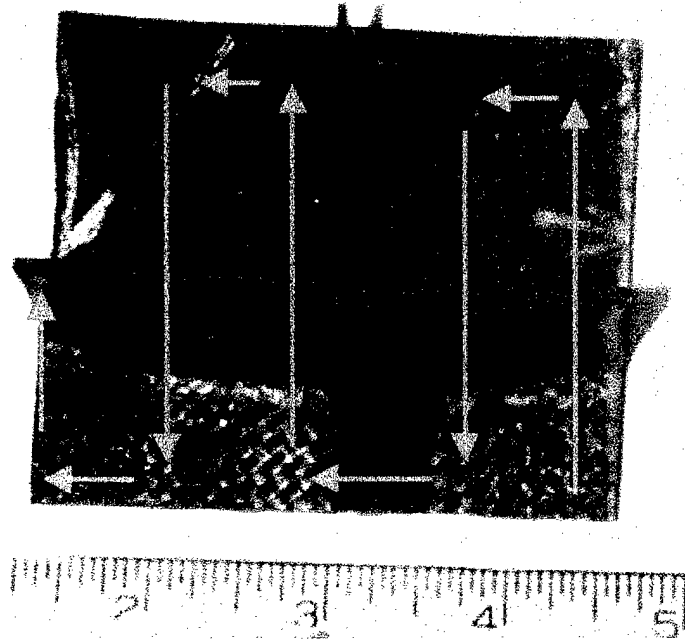


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TACP Sample Evaluation



**IAMT prepreg box imaged in through transmission
using 5 MHz for high resolution**



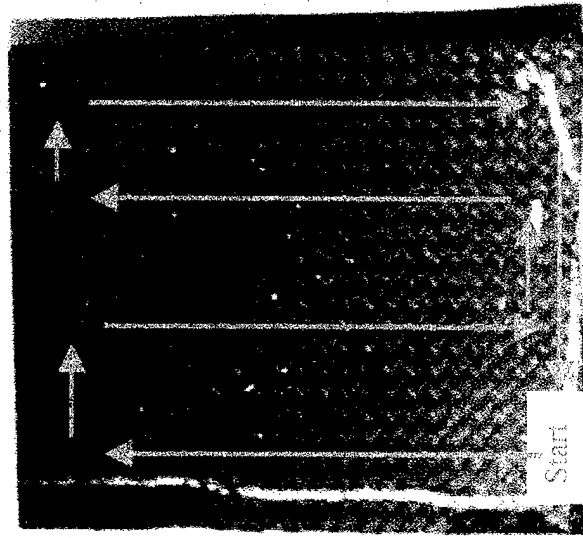


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TCCP Sample Evaluation



IAMT prepreg box imaged using the reflection camera in the tank. Back reflection imaging of the bottom of the part shows a discontinuity on one corner, and a surface discontinuity



10 11 12 13 14 15 16 17
18 19

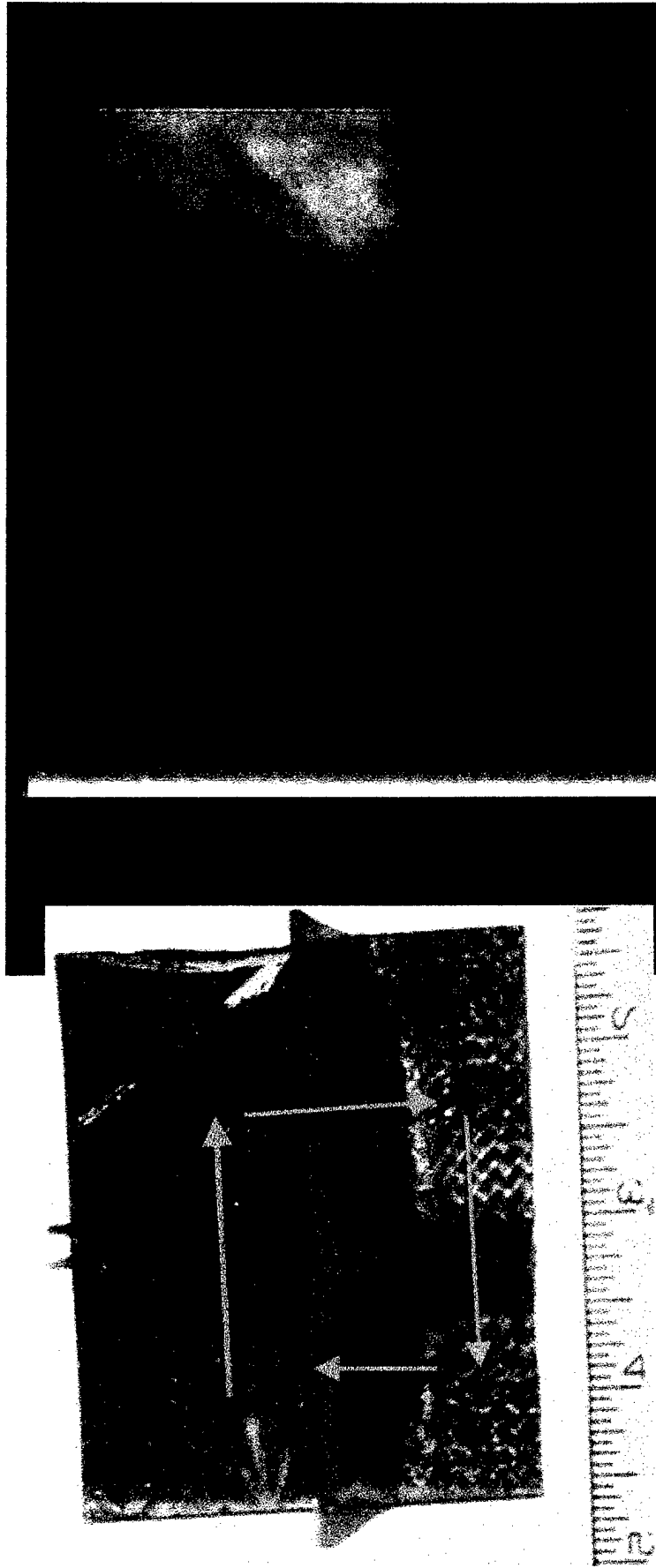


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TACP Sample Evaluation



IAMT prepreg box imaged by reflection in the tank. Back reflection imaging with an increased time delay shows the triangular machined area and the 4 ribs





TACP Sample Evaluation



3 cm thick balsa wood cored multilayer panel imaged
using 5 MHz ultrasonic reflection camera in reflection

