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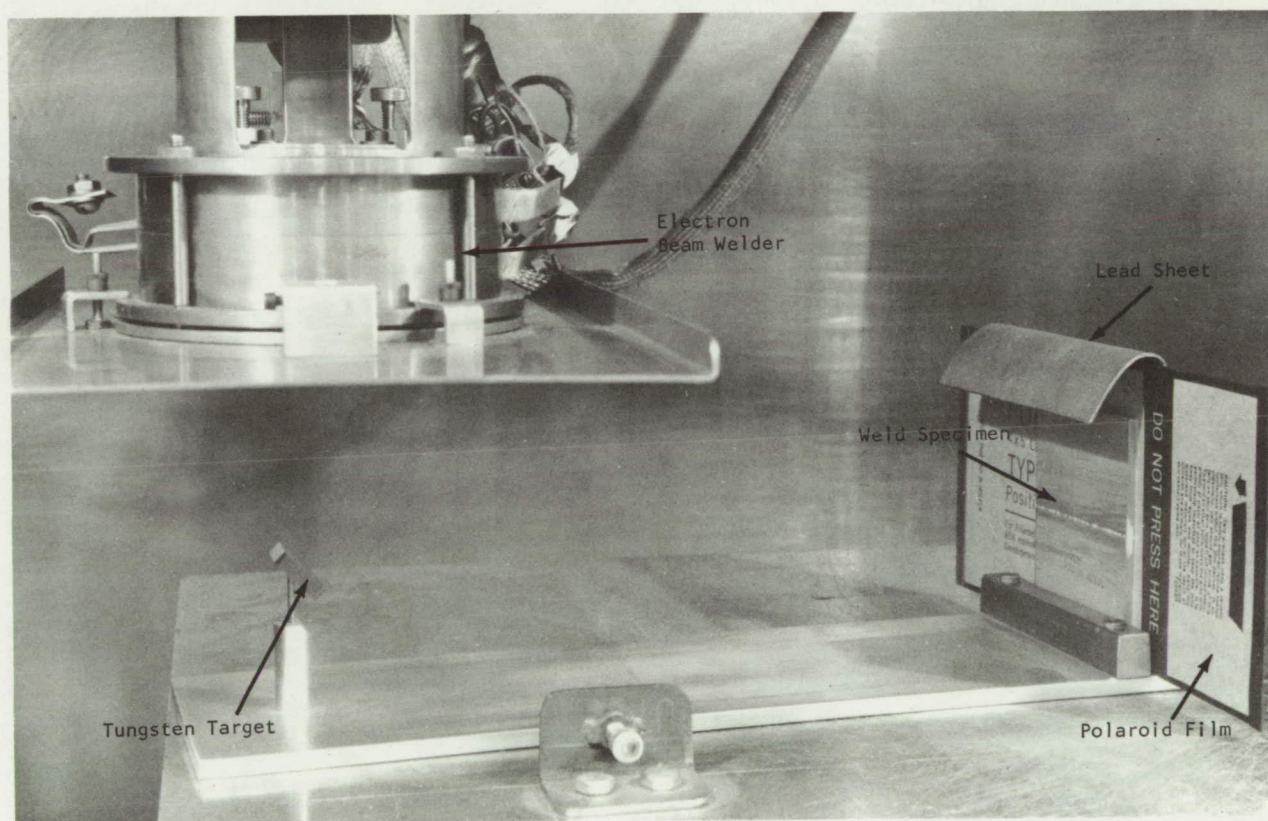
Brief 67-10216

NASA TECH BRIEF



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Electron Beam Welder X-Rays Its Own Welds



The problem:

To devise a technique to use the beam of an electron beam welder to X-ray its own welds. It was desirable to provide the operator with the means for making a rapid check of weld quality without removing the welded material from the vacuum chamber. Prior methods of checking welds required several hours.

The solution:

A tungsten target produces X-rays when hit by an electron beam. These X-rays are directed at the weld specimen and recorded on Polaroid film.

How it's done:

A weld specimen is placed in a fixture, as shown, in the vacuum chamber of the welder. Polaroid film

(continued overleaf)

is placed immediately behind the specimen, backed with a lead sheet. When the beam is directed at the tungsten target in the chamber, X-rays are generated and pass through the weld and expose the film. The film can be developed in 10 seconds after removal from the vacuum chamber.

Notes:

1. Once weld settings and positions have been determined, the rest of the run can be finished with a high degree of assurance that quality will match that of the sample.
2. Inquiries concerning this innovation may be directed to:

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Patent status:

No patent action is contemplated by NASA.

Source: W. A. Roden
of General Dynamics/Convair Division
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