

Introduction to Radiographic Testing

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Radiography has long helped us see what lies beneath the surface.

At Kennedy Space Center, we use radiographic testing to diagnose potential problems in Shuttle and ground support equipment.

Radiographic testing uses radiation, usually in the form of x-rays or gamma rays, to give us a picture of an object's interior. X-rays and gamma rays pass through the material to expose the sensitive film on the other side. The ability of radiation to penetrate the material depends upon the material's composition and mass. Denser areas of parts will appear as lighter images on the x-ray film.

Working with radiation can be hazardous. Our highly trained NDE inspectors follow strict regulations regarding the handling, monitoring, and use of radioactive materials.

Here NDE inspectors prepare to x-ray a weld within an Orbiter Maneuvering System, or OMS, pod. Each pod contains one OMS engine and the hardware needed to pressurize, store, and distribute the propellants for maneuvering.

The inspectors position a portable x-ray unit in front of the weld to be inspected and place radiographic film behind the weld.

While carefully monitoring radiation levels with a survey monitor, one of the inspectors turns the key on the control unit to x-ray the weld.

We also use computed tomography, or CT, scanning to inspect objects, either singly or in large quantities, for discontinuities.

The objects are inspected within a shielded room. An NDE inspector remotely operates the CT scanner and manipulates the objects from the safety of the control room.

The CT scanner detects variation in x-ray transmission through the object at different angles as it is moved and rotated through the path of the radiation beam.

The computer reconstructs this information into a three-dimensional picture of the object. Slices of the picture easily reveal discontinuities.

Radiographic testing, along with other NDE methods, is essential for the safe launch and return of the Shuttle, its payload, and crew.