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Subject: N-Ray Applications

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M. Merendunca, NRC 50-228

Use

Dear Marvin,

Sandy and I have come up with some applications for neutron radiography that we currently work on or which we have previously done:

1. To ensure correct assembly of small explosive devices.
2. To detect hidden corrosion in aluminum honeycomb components extensively used for aircraft construction.
3. Verification of weld integrity of space shuttle fuel tanks.
4. Detection of core material still remaining in the interior cooling passages of air-cooled turbine blades in aircraft engines. Incomplete removal of the core results in restricted flow through the cooling passages and possible failure of the overheated blade and engine.
5. Verification of the position of explosive charges and seating of o-rings in explosive bolt assemblies in aircraft, space and missile systems.
6. Determination of potting fill levels in encapsulated electronic filters in space and satellite systems.
7. Inspection of explosive shaped charges used in the booster separation system and of thrust engine welds used in the steering system of the space shuttle.
8. The discovery of washers installed in reverse order in a Titan 2 rocket servoactuator which would have otherwise resulted in a catastrophically failed launch.
9. Medical applications: inspection of cardiac pacemaker batteries, salt engines for timed release of drugs within the body, and phenolic hips.
10. Inspection of ordnance devices used in the canopy ejection escape system and in the sunburst decoys for fighter aircrafts.
11. Inspection of classified nuclear reactor elements and of towed sonar array components for nuclear submarines.
12. Failure analysis for military and civilian applications.
13. Inspection of various classified work for nuclear weaponry.

Additionally, the experiments performed under Expt. #116, Irradiation of hydrocarbon activation analysis samples, involve irradiated compounds used in the determination of oil levels in enclosed tanks.

I hope the above information will be of use to you.

Fred Meren

B/S

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Complete