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Use of Medical and Dental X-ray Equipment for Nondestructive Testing

Industrial X-ray equipment is widely used for non-destructive testing to detect defects in metal joints, electrical terminal blocks, and other hardware. This equipment is employed in checking sealed assemblies.

Use of radiography frequently is a specification requirement and often serves to fulfill quality acceptance criteria.

In some instances where industrial equipment has not been immediately available, medical and dental X-ray equipment have been successfully used for hardware troubleshooting. Medical and dental X-ray equipment is available in a variety of voltage and current ratings with exposure times of the order of five seconds. (The short exposure time available may require consecutive exposures made at a rate dependent upon the type of X-ray head and its heat capacity as specified by the manufacturer.)

Possible uses of medical diagnostic and dental X-ray equipment are: (a) flaw detection in metal and plastic sheets; (b) detection of hardware interferences within sealed units such as relay cans and switch closures; and (c) flaw detection in wires, cables and wire harnesses.

Operation of medical and dental X-ray equipment must be restricted to thoroughly trained personnel and all prescribed safety requirements observed.

Notes:

1. Successful use of medical and dental X-ray equipment for hardware troubleshooting, where industrial equipment was not immediately available, has been reported; however, as far as known, there has been no standard, systematic usage of this type.
2. This development is essentially in the conceptual stage only as of the date of publication of this Tech Brief.
3. No further formal documentation is available. Inquiries may be addressed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas, 77058
Reference: B69-10553

Patent status:

No patent action is contemplated by NASA.

Source: Apollo Spacecraft Program Office
PC (RASPO, Downey, California)
Manned Spacecraft Center
(MSC-13389)

Category 01