Previous model number: 2024-200

N2024-220
Drum Decommissioning Piece Monitor

Introduction

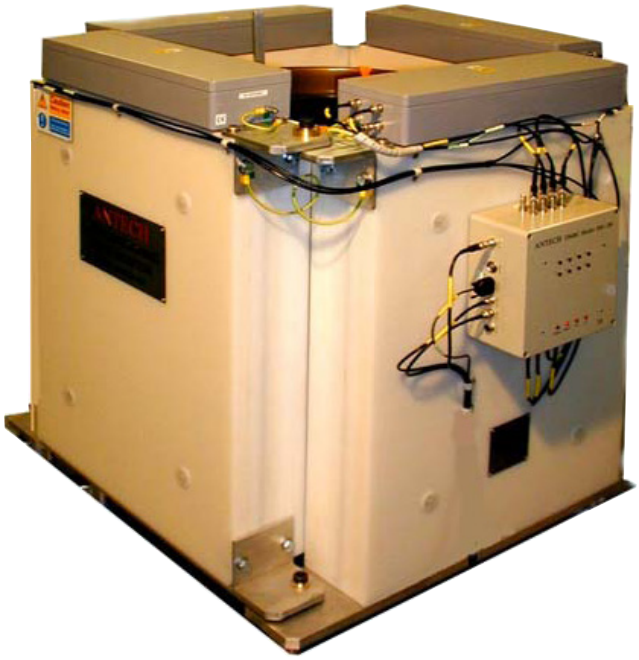
The N2024-220 Decommissioning Piece Monitor is a transportable efficient neutron assay instrument for the monitoring of intermediate level Plutonium Contaminated Material (PCM) waste arising from decommissioning operations. Waste is loaded into a 200 litre drum fitted with a containment barrier. The monitor surrounds the drum and measures its PCM content.

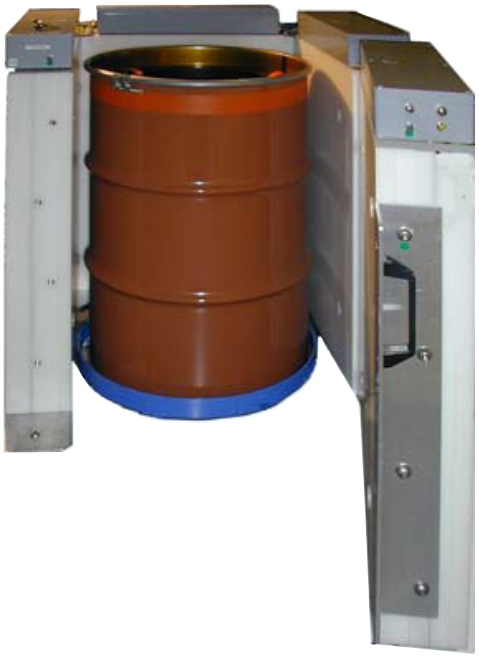
The monitor is modular in construction and utilises standard proven ANTECH hardware and software. It consists of four neutron detector panels, each of which is fitted with six neutron detectors and a single amplifier is mounted on a trolley. The front panel of the monitor also functions as a door to enable drums to be loaded and removed. An 8-Channel De-randomising Mixer Buffer Counter (DMBC) combines the signals received from each of the detector panels and outputs a single pulse train to the counting electronics.

Normally, the mixer unit is connected to an N1003 Time Correlation Analyser that functions as a neutron counter, analyser and source of high voltage and low voltage DC supply. The N1003 is operated under computer control (from a host computer) and can be remote from the monitor. The system can be operated with other neutron counting electronics.

Features

- Large measurement chamber that will accept size-reduced pieces within a 200 litre drum
- Measurement chamber can be constructed to accommodate any drum size up to and including 400 litres
- Front detector panel also serves as a door to enable loading and unloading of 200 litre waste and calibration drum
- DMBC eliminates counting losses and reduces dead time especially at high count rates
- Counting electronics, personal computer and printer are included
- One junction box/amplifier unit per panel provides a high voltage connection to the detector tubes and low voltage and signal connection to the amplifier





Benefits

- The chamber is housed on a transportable trolley with locking castors for safety and stability
- Non-interchangeable connector types prevent misconnection
- Provides a complete passive neutron assay system when used with a Multiplicity Shift Register with INCC-B32 software or the N1003 Neutron Time Correlation Analyser with Passive Neutron Coincidence Counting Software.
- Operable in conventional shift register (coincidence counting) mode or totals neutron counting mode

Specification

Dimensions (H x W x D) (including mixer unit)		1110 mm x 970 mm x 970 mm (43.7 in x 38.19 in x 38.19 in)
Detector tubes		24 x ^{3}He detector tubes
Detector dimensions (L x diameter)		25.4 mm diameter x 750 mm length at 4 atm pressure (1 in x 29.53 in)
Bare chamber detection efficiency		~10 %
Operating voltage		~1800 volts
Weight (approx.)		370 kg (815.71 lb)
Die-away time		~100 µs
Electrical connections	**High voltage**	SHV
	Supply for head amplifiers	TNC
	Signal output	BNC
	Mixer RS-232 output	9p male ‘D’ tyre
Lower limit of detection		Indicative lower limit of detection of between 60 - 100 mg $^{240}Pu_{effective}$ in coincidence counting mode equivalent to between ~ 1 – 2 g total WG Pu in a 10 minute measurement time (for a coincidence background of no greater than 0.05 /s)
Compliance	**Safety**	Conforms to European Union Directive 72/23/EEC (EN61010-1: 2001)
	EMC	Conforms to European Union Directive 2004/108/EC BS EN 610000-6-4:2001 Emissions BS EN 6101-6-2:2001 Immunity