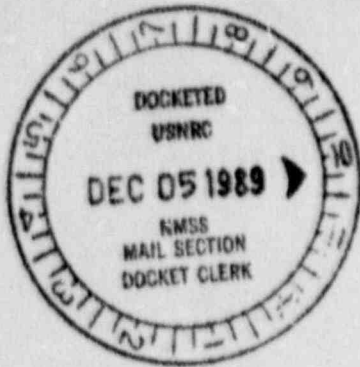


P1-37 70-938  
**RETURN TO 396-SS**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
MEDICAL DEPARTMENT  
ENVIRONMENTAL MEDICAL SERVICE



77 MASSACHUSETTS AVENUE, 20B-238  
CAMBRIDGE, MASSACHUSETTS 02139

November 30, 1989

Uranium Fuel Licensing Branch  
Division of Fuel Cycle and Material Safety  
NMSS  
Washington DC 20555

Attention: Dr. A.L. Soong

Dear Dr. Soong:

MIT hereby requests amendment to SNM-986 to cover the planned purchase of 5 Reuter-stokes RS-C3-2510-114 Fission Counter/Chambers for use as neutron detectors in our proposed ALCATOR C-MOD fusion installation. Attached is a two-page manufacturer's description of these devices. Each contains 1.3 gm of  $^{235}\text{U}$  in the 93%  $^{235}\text{U}$  enriched uranium present. The total amount of  $^{235}\text{U}$  present in the 5 detectors will be 6.5 gm.

The Fission Counter/Chambers will be stored and used under the direct supervision of Dr. Catherine Fiore in our Plasma Fusion Center. They will be used to detect and quantitate neutrons in the vicinity of the ALCATOR C-MOD currently under construction. They will be housed in secure areas and guarded against unauthorized removal. They will be included in our inventory control monitoring program. All uses of these detectors will be subject to authorization and control by the MIT Radiation Protection Committee. All current conditions of the SNM-986 license will be adhered to.

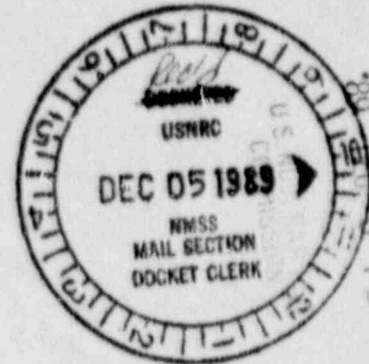
Please don't hesitate to contact the undersigned at (617) 245-6600 if further information is required.

Yours truly,

Frank Masse, CHP  
MIT Radiation Protection  
Officer

FXM/nlj  
enclosure

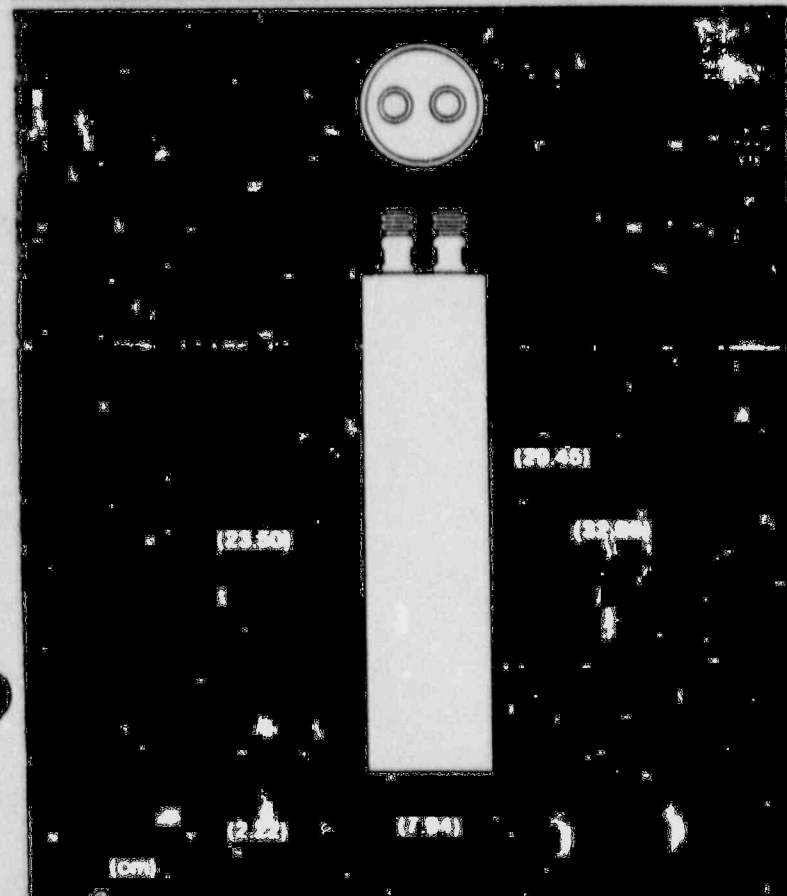
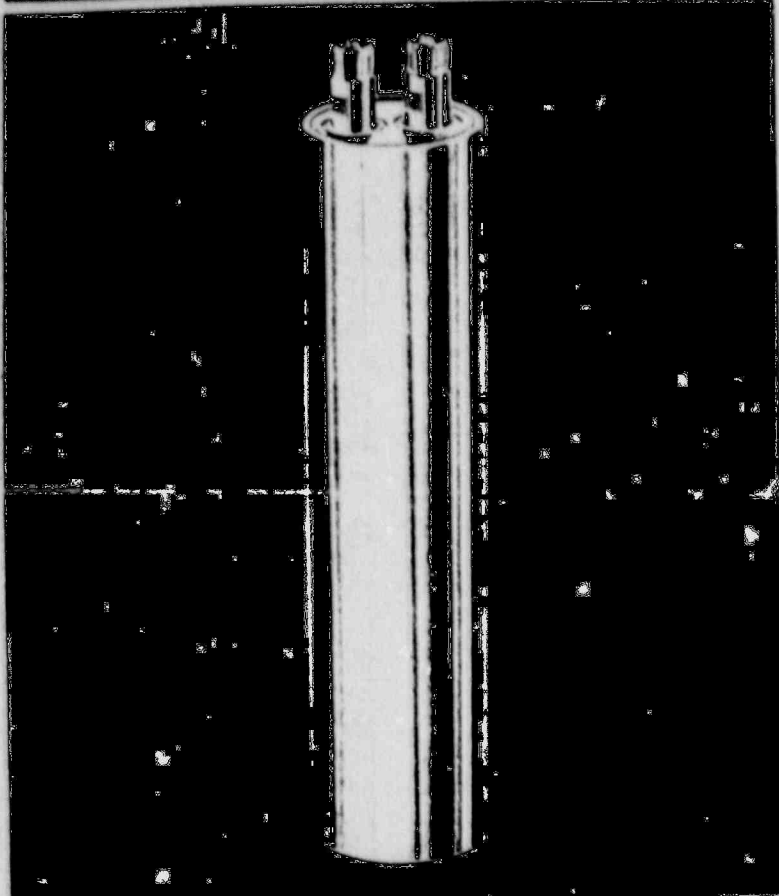
8912200176 891130  
PDR ADOCK 07000938  
C PDC



RECEIVED  
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY

DFD3

26/31



# RS-C3-2510-114 Fission Counter/ Chamber

For  
Reactor Control  
(Wide Range)

The RS-C3-2510-114 has proven itself as the standard high-sensitivity fission counter/chamber for wide range reactor instrumentation.

It is designed for measurement of the neutron flux levels from shutdown to full power of a nuclear reactor. The detector can be used to detect individual neutrons (counting mode) to  $10^6$  nv in the presence of incident gamma flux of  $10^6$  R/hr.

It can also be used as a wide-range neutron sensor in conjunction with mean-square-voltage (MSV) type circuitry over a range of  $10^4$  to  $10^{10}$  nv in the presence of incident gamma flux of  $10^6$  R/hr.

Operation, as specified here, is greatly dependent on associated electronics. All data presented here is based on measurements using a wide band pre-amplifier.

Concentric cylinders with uranium coatings provide the neutron sensitive area. Aluminum alloy is used in construction to minimize neutron absorption and residual activity. All seals are directly bonded ceramic to metal. Insulators are high-purity alumina ceramic and are designed to assure stable, long-term, noise-free operation of the chambers even at elevated temperatures.

A version of this chamber has a 40" sensitive length for core flux averaging in power reactors and is designated model RS-C3-2540-102.

\$2,100.00

Melissa Patterson

