NRC FORM 7 (8-2010) 10 CFR 110 — U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR NRC EXPORT OR IMPORT LICENSE, AMENDMENT, OR RENEWAL

(See Instructions on Pages 4 and 5)

Rec'd

PART A. FOR NRC USE ONLY	☑ PUBLIC OR ☐ NON-PUBLIC	DATE RECEIVED FEB 22 2011 JC
LICENSE NUMBER XCOM1221	DOCKET NUMBER 11005920	ADAMS ACCESSION NUMBER

PART B. TO BE COMPLETED FOR ALL LICENSES, AMENDMENTS, OR RENEWALS

(If more space is needed to complete any of the items, use Pages 3-4 first, and then attach additional sheets, if necessary.)

1. NAME AND ADDRESS OF APPLICANT/LICENSEE	1a. NAME OF APPLICANT'S CONTACT	1b. APPLICANT'S REFERENCE NUMBER
Mirion Technologies (IST) Corporation 200/300 IST Center 315 Daniel Zenker Drive Horseheads, NY 14845	David M. Stewart	DMS0006
	1c. PHONE NUMBER: (607) 562-4345	1d. FAX NUMBER: (607) 562-4392
	1e. E-MAIL ADDRESS: dstewart@mirion.com	

2. TYPE OF ACTION REQUESTED *(Check One)*

☑ EXPORT (Parts B, C, E) ☐ IMPORT (Parts B, D, E) ☐ AMENDMENT/RENEWAL Existing License Number:

3. CONTRACT NUMBER(S)	4. FIRST SHIPMENT DATE	5. LAST SHIPMENT DATE	6. PROPOSED EXPIRATION DATE
C83-MH76DWI6754	10/15/2011	10/15/2012	12/01/2012

PART C. TO BE COMPLETED FOR EXPORT LICENSES, AMENDMENTS, OR RENEWALS

(If more space is needed to complete any of the items, use Pages 3-4 first, and then attach additional sheets, if necessary.)

7. NAME(S) / ADDRESS(ES) OF SUPPLIERS AND/OR OTHER PARTIES TO THE EXPORT	8. NAME(S) / ADDRESS(ES) OF INTERMEDIATE FOREIGN CONSIGNEE(S)	9. NAME(S) / ADDRESS(ES) OF ULTIMATE FOREIGN CONSIGNEE(S)
Windhover Industries 1068 Woodlyn Farm Way Lancaster, PA 17601	Windhover Industries EOR 2nd Floor, Onoda Building Suginami-Ku, Tokyo 166-0003 (JAPAN)	Japan Atomic Energy Agency (JAEA)* ~~Japan Atomic Energy Research Inst.~~ Tokai Research & Development Center Shirakata, Shirane 2-4 Tokai-mura Naka-gun, Ibaraki-ken 319-1195 (JAPAN)
7a. FUNCTION(S) PERFORMED/SERVICE(S) PROVIDED	8a. INTERMEDIATE USE(S): intermediate sales trasnfx	9a. ULTIMATE END USE(S): Material Test Rx Monitor

10. DESCRIPTION OF RADIOACTIVE MATERIALS, SEALED SOURCES, NUCLEAR FACILITIES, EQUIPMENT, OR COMPONENTS; FOR NUCLEAR EQUIPMENT INCLUDE TOTAL DOLLAR VALUE OF EQUIPMENT FOR EXPORT	10a. MAX TOTAL VOLUME / ELEMENT WGT (KG), OR TOTAL ACTIVITY (TBq)	10b. MAX ENRICHMENT OR WGT %	10c. MAX ISOTOPE WGT (KG)
quantity 3 two inch ex-core fission chambers for monitoring thermal neutron flux in the range of 6.0x10^5nv to 1.4x10^10nv to be used for monitoring the Japanese Material Test Reactor [redacted]	does not contain SNM	does not contain SNM	does not contain SNM

Rec'd

11. FOREIGN OBLIGATIONS (BY COUNTRY AND BY PERCENTAGE OF MAXIMUM TOTAL VOLUME)

FEB 22 2011 JC

NRC FORM 7 (8-2010)

*See e-mail dated April 13, 2011.

NRC FORM 7
(8-2010)
10 CFR 110

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR NRC EXPORT OR IMPORT LICENSE, AMENDMENT, OR RENEWAL (Continued)

LICENSE NUMBER	DOCKET NUMBER	ADAMS ACCESSION NUMBER	
XCOM1221	11005920		☑ PUBLIC OR ☐ NON-PUBLIC

PART D. TO BE COMPLETED FOR IMPORT LICENSES, AMENDMENTS, OR RENEWALS

(If more space is needed to complete any of the items, use Pages 3-4 first, and then attach additional sheets, if necessary.)

12. NAME(S) / ADDRESS(ES) OF FOREIGN SUPPLIERS AND/OR OTHER PARTIES TO IMPORT	13. NAME(S) / ADDRESS(ES) OF INTERMEDIATE CONSIGNEE(S)	14. NAME(S) / ADDRESS(ES) OF ULTIMATE U. S. CONSIGNEE(S)

12a. NRC EXPORT LICENSE NUMBER(S) *(if applicable)*	13a. LICENSE NUMBER(S) / EXPIRATION DATE(S)	14a. LICENSE NUMBER(S) / EXPIRATION DATE(S)
	13b. INTERMEDIATE USE(S)	14b. ULTIMATE END USE(S)

15. DESCRIPTION OF RADIOACTIVE MATERIALS, SEALED SOURCES, NUCLEAR FACILITIES	15a. MAX TOTAL VOLUME / ELEMENT WGT (KG), OR TOTAL ACTIVITY (TBq)	15b. MAX ENRICHMENT OR WGT %	15c. MAX ISOTOPE WGT (KG)

16. FOREIGN OBLIGATIONS (BY COUNTRY AND BY PERCENTAGE OF MAXIMUM TOTAL VOLUME)

PART E. TO BE COMPLETED FOR ALL LICENSES, AMENDMENTS, OR RENEWALS

17. ADDITIONAL INFORMATION PROVIDED ON PAGES 3, 4, AND/OR ON SEPARATE SHEETS?	17a. COPIES OF RECIPIENTS' AUTHORIZATIONS PROVIDED?
☑ YES ☐ NO	☐ YES ☑ NO

18. CERTIFICATION: I, the applicant's authorized official, hereby certify that this application is prepared in conformity with Title10, Code of Federal Regulations, and that all information provided is correct to the best of my knowledge.

18a. PRINT NAME AND TITLE OF AUTHORIZED OFFICIAL	18b. SIGNATURE -- AUTHORIZED OFFICIAL	18c. DATE
David M. Stewart President, Mirion Technologies (IST) Corporation	David M. Stewart	02/16/2011

Recd
FEB 22 2011
JC

MIRION TECHNOLOGIES

Uncompensated Ionization Chambers

Fission Chambers

Sensitivity A/nv	Maximum Temp. °F	Tube Type
1.75×10^{-13}	850	WL-23071
1.4×10^{-13}	390	WL-23077
1.4×10^{-13}	300	WL-6376A
1.4×10^{-13}	300	WL-8073
3.0×10^{-14}	300	WL-6971A
2.6×10^{-14}	300	WL-6941A
1.4×10^{-14}	300	WL-7188

Application

This group of fission chambers is designed to detect thermal neutrons in the ranges of 1.4 to 1.4×10^6 neutrons/cm²/sec. when operated as a counter and 4×10^5 to 8.5×10^{10} as a chamber. These detectors are extremely rugged in construction. They are designed to meet Mil-S-901 for shock and Mil-Std-161 (type 1) for vibration, and may be operated in any position at rated temperatures. The WL-23077 consists of a fission chamber located in a vacuum tight housing. This unit is designed for use in high humidity and includes integral triaxial cable. The housing is electrically insulated from the chamber, thus minimizing ground loop pick-up problems.

	Units	WL-6376A	WL-6941A	WL-6971A	WL-7188	WL-8073	WL-23071	WL-23077
Mechanical								
O.D., nominal	Inches	2.0	2.0	2.0	2.0	2.0	1.87	3.0 (note 5)
Length, nominal	Inches	11.5	11.5	11.5	11.5	11.5	15.87	12.5
Sensitive Length, nominal	Inches	6.0	6.0	6.0	6.0	6.0	10.0	6.0
Net Weight	Pounds	1.75	1.75	1.75	1.75	1.75	2.5	20.0
Shipping Weight	Pounds	12.0	12.0	12.0	12.0	12.0	15.0	50.0
Materials								
Outer Case	–	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	St. Steel	St. Steel
Electrodes	–	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	St. Steel	Aluminum
Insulation	–	Al_2O_3	Al_2O_3	Al_2O_3	Al_2O_3	Al_2O_3	Al_2O_3	Al_2O_3
Sensitive Material:								
Amount of U^{235} in U_3O_8	%	>90	>90	20	>90	>90	>90	>90
Thickness	mg/cm²	2.0	2.0	2.0	0.2	2.0	2.0	2.0
Total Quantity of U^{235}	Grams	1.68	0.41	0.36	0.087	1.68	2.15	1.68
Gas Fill	–	Ar-N	Ar-N	Ar-N	Ar-N	Ar-N	Ar-N	Ar-N
Gas Pressure	cm-Hg	76	76	76	76	76	76	76
Impedance								
Resistance, minimum (At Maximum Temp.)	Ohms	10^9	10^9	10^9	10^9	10^9	10^7	10^8
Capacitance	pF	150	140	150	150	150	283	1000
Maximum Ratings								
Voltage Between Electrodes	Volts	1000	1000	1000	1000	1000	1000	1000
Temperature	°F	300	300	300	300	300	850	390
External Pressure (note 1)	PSI	180	180	180	180	180	180	180
Thermal Neutron Flux	nv	3×10^{10}	8.5×10^{10}	6×10^{10}	2×10^{11}	3×10^{10}	2.7×10^{10}	10^{11}
Typical Operation as a Chamber (at approx. 25° C)								
Operating Voltage (note 3)	Volts	300-1000	300-1000	300-1000	300-1000	300-1000	300-1000	300-1000
Thermal Neutron Flux:								
Lower Limit (note 4)	nv	6.0×10^5	7.5×10^5	7.0×10^5	6.0×10^5	6.0×10^5	6.0×10^5	6×10^5
Upper Limit	nv	1.4×10^{10}	8.5×10^{10}	6×10^{10}	1.4×10^{11}	1.4×10^{10}	1.5×10^{10}	1.4×10^{10}
Thermal Neutron Sensitivity	A/nv	1.4×10^{-13}	2.6×10^{-14}	3×10^{-14}	1.4×10^{-14}	1.4×10^{-13}	1.75×10^{-13}	1.4×10^{-13}
Gamma Sensitivity	A/R/Hr	4.2×10^{-11}	3×10^{-11}	4.2×10^{-11}	4.2×10^{-11}	4.2×10^{-11}	6×10^{-11}	4.2×10^{-11}
Alpha Background	A	1.6×10^{-8}	4×10^{-9}	4.3×10^{-9}	1.6×10^{-9}	1.6×10^{-8}	2.0×10^{-8}	1.6×10^{-8}

Notes

1. The pressurizing atmosphere must be dry and non-corrosive.
2. The sensitivity given is with the alpha background counting rate of the naturally radioactive uranium adjusted to 5 counts/second. By varying the pulse height selector on the associated circuitry, or by use of high resolution circuitry, other sensitivities are available. (See Figure)
3. The minimum voltage required for saturation is dependent upon the incident neutron flux level.
4. The lower limit of operating range is determined by an inherent alpha background current.
5. The WL-23077 is provided with an integral triaxial cable 22 feet long, made of stainless steel and aluminum oxide. Various lengths are available.

XCOM 1221

WL-6376A
WL-6941A
WL-6971A

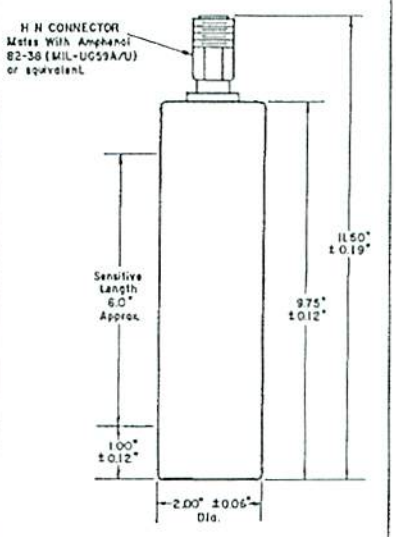

FIGURE 21

WL-7188
WL-8073

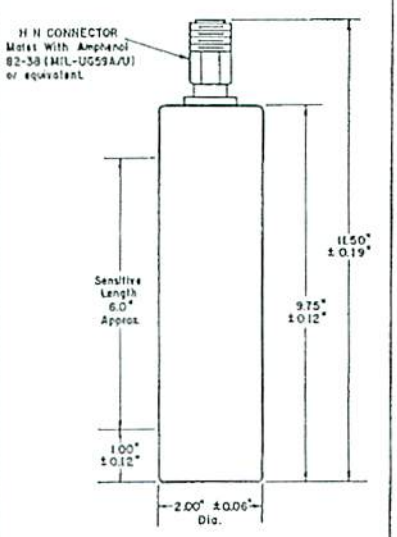

FIGURE 22

WL-23071

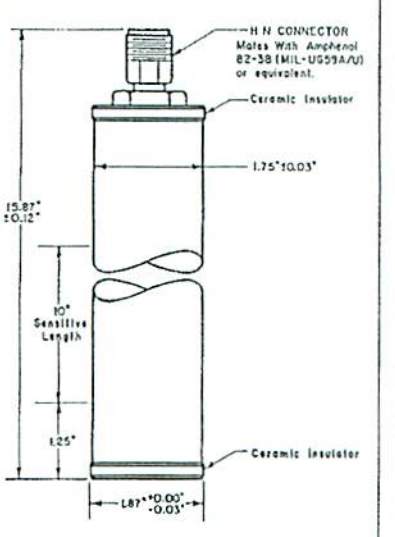

FIGURE 23

WL-23077

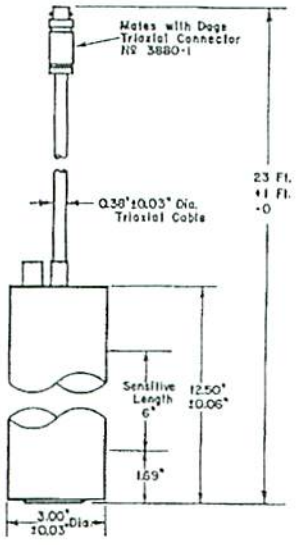

FIGURE 24

WL-6376A WL-7188
WL-6941A WL-8073
WL-6971A

TYPICAL SATURATION CHARACTERISTICS

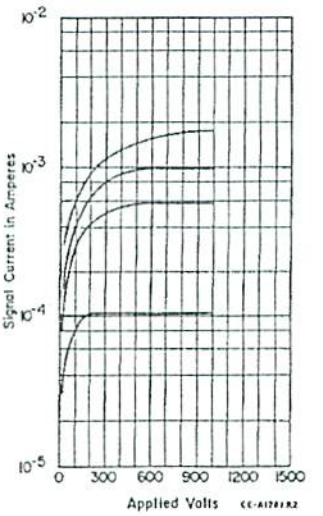

FIGURE 25

RANGE CHART

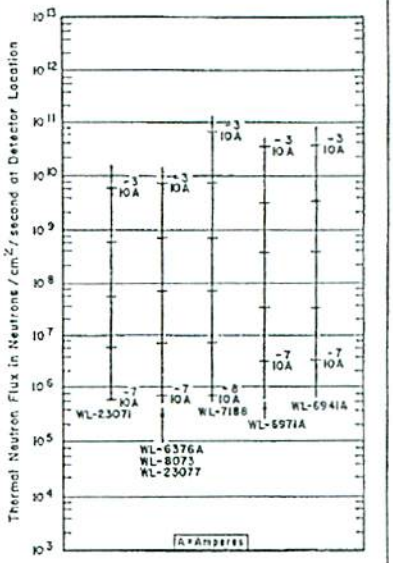

FIGURE 26

XCOM1221

Recd
FEB 22 2011
JC