RSSI

6332 West Dalton Street
Morton Grove, IL 60053-2723
708-965-1994
Fax 708-965-1991

July 6, 1995

Steven N. Baggett
Sealed Source Safety Section, MS T-8 F5
U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

VIA FAX 301-415-5369

RE: Temet USA Inc.
Mail Control Number 021676

Dear Mr. Baggett:

This letter is in response to our June 14, 1995 telephone conversation regarding an application for registration of the Environics Sensor Unit to be distributed to persons exempt from license by Temet USA Inc.

1) Pursuant to 10 CFR 32.26(b)(8), the total quantity of byproduct material expected to be distributed in the Sensor Unit annually is 3.2 Ci.

2) The labeling shall contain the text in Section III.C. of our application dated 31 May, 1995. Please disregard the label artwork showing different text.

3) We are revising the safety analysis performed pursuant to 10 CFR 32.27. The safety analysis in Section III.L. of our application describes storage of multiple units in our stockroom which serves as the distribution center. In the analysis it was assumed that 10 units are stored at all times.

In the revised safety analysis it is now assumed that as many as 25 units may be present at all times and it is possible that a brief period may occur when up to 1,000 units are stored for up to one week. The dose to an individual from the storage of these quantities is calculated as follows:

For continuous storage of 25 units:
(2,000 hours per year)(4 x 10^{-8} rem/hour-unit)(25 units)
= 2 x 10^{-3} rem/year
For one week storage of 1,000 units:
(40 hours/year)(4 x 10^{-8} rem/hour-unit)(1,000 units)
= 1.6 x 10^{-3} rem/year

When these doses are added, the total dose to an individual is 3.6 x 10^{-3} rem/year. This conservative estimate is below the

RSSI

0.005 limit in 10 CFR 32.28 Column I. These doses are to individuals who are working in a licensed facility. Distribution and short term storage at other sites will result in doses to any individual lower than this estimate.

Other portions of the safety analysis for storage in this fire-protected stockroom are unchanged.

4) Copies of all records of quality control tests performed by the manufacturer in Finland shall be retained by Temet USA Inc. Temet USA Inc. shall perform the following quality control tests on 100 percent of Sensor Units prior to transfer to persons exempt from license:

a) Visual inspection and external dimensional verification to confirm that Sensor Unit is as described in the registry sheet.

b) Leak test Sensor Unit inlet and outlet to confirm that leakage does not exceed 0.005 μCi.

c) Verification that labels are correct.

5) A letter dated 29 March, 1994 and previously submitted with an earlier application was inadvertently attached to the application dated 31 May, 1995. It was not intended that this letter be attached to the application and we are asking that it be separated from the application.

In response to your questions, this letter described tests performed for the Army at the Edgewood Arsenal. In these tests, Sensor Units were exposed to chemical agents to which the Sensor Unit might be exposed to in the field. Following exposure, the Units were leak tested. The only documentation available from the Edgewood Arsenal is the one page attachment to the 29 March, 1994 letter indicating that no leakage was detected equal to or above 0.005 μCi counted in a C-14 window on a liquid scintillation spectrometer.

If you have any further questions or require additional information, please call me at 708-965-1999.

Sincerely,

Eli A. Port, CHP, CIH, P.E.

baggett01.ltr

SENSOR UNIT QUALITY CONTROL CHECKS

SN_____ DATE:__/__/__
Initials

A) Results of visual inspection and external dimensional verification for conformance with registry sheet:

(1.5 cm L x 11 cm W x 4.5 cm H) _____

B) Leak test results (< 0.005 μCi) _____

C) Label Verification

I. Sensor Unit label _____
II. System Label _____
III. Package Label _____

Reviewed by

_____

Date:__/__/__

Temet USA Inc.

US Nuclear Regulatory Commission
Attn: Sealed Source Safety Section, MS T-8 F5
(Mr. Steve Baggett)
11545 Rockville Pike
Rockville, MD 20852

13 July 95

Re Temet USA, Inc. Mail control number 021676

Dear Mr. Baggett,

This letter is in response to a recent telephone call from Mr. Michael Perkins of your office. He raised two issues in his call.

1). Mr. Eli A. Port, RSSI, our consultant is authorized to make commitments regarding license conditions and device registration for Temet USA, Inc. and should be contacted if there are questions or requests for information.

2. Mr. Perkins indicated that drawings are needed but did not specify which drawings the NRC still requires. It was my understand the drawings previously submitted in the Application for Device Registration, were sufficient. Mr. Port has informed me that he has been attempting to reach both you and Mr. Perkins regarding Mr. Perkins' request and has received no responses to his telephone messages. Please call Mr. Port to discuss Mr. Perkins' request for drawings.

It was my understanding that the device review for the Sensor Unit could be completed quickly when the second set of information, Mr. Port submitted was received by your office. The need to have the Sensor Unit approved and registered is becoming critical If you have any further questions or require additional information, pleas call Mr. Port at 708-965-1999.

Thank you in advance for any help you can render to expedite the approval.

Sincerely,

Richard C. Krahe
Program Manager

Richard C Krahe

cc:
RSSI, Mr. Port
Environics Oy

737 Walker Road, Suite 1, P.O. Box 439, Great Falls, VA 22066 U.S.A.
Telephone: (703) 759-6000 Telefax: (703) 759-6067

45-51

Temet USA Inc

June 5, 1995

Steven M. Baggett
Sealed Source Safety Section, MS T-8 F5
U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

RE: Application for Registration of Environics Oy Sensor Unit
Mail Control Number 021676

Dear Mr. Baggett,

A request for the radiation safety evaluation and registration of the Environics Sensor Unit detector module is attached. This information reactivates mail control number 0211676 and supplies additional information requested by your office in conversations with Eli Port, our consultant, and myself.

This is also a request for a license pursuant to 10 CFR 30.26 to distribute the Sensor Unit to persons exempt from license pursuant to 10 CFR 30.20.

If you have any questions or require additional information about either application for device registration or the license to distribute to persons exempt from license please contact myself at 703-759-6000 or Eli Port at 708-965-1999

Sincerely,

Richard C. Krahe
Program Manager

737 Walker Road, Suite 1, P.O. Box 439, Great Falls, VA 22066 U.S.A.
Telephone: (703) 759-6000 Telefax: (703) 759-6867

Request for Radiation Safety Evaluation and Registration

of the

Sensor Unit Chemical Agent Detector Module

Temet USA Inc.
737 Walker Road
Great Falls, VA 22066
(703) 759-6000

II. SUMMARY DESCRIPTION

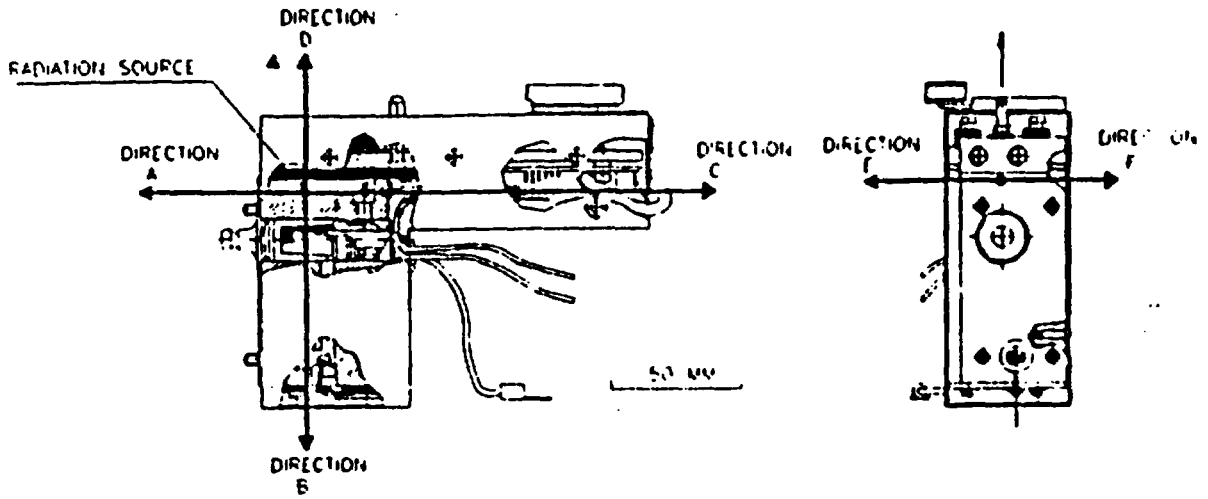
A. Written Description

The Sensor Unit (Pack) is manufactured in Finland by Environics OY and will be distributed in the United States to persons exempt from license by Temet USA Inc. The Sensor Unit is a detector module that is incorporated into instrumentation systems to detect harmful and toxic gases and vapors. It has the ability to detect life and health threatening hazards and enables the taking of protective action. These hazards include common chemical warfare agents such as nerve and blister agents and on-the-job hazards such as waste anesthetic gases and products of combustion. The Sensor Unit will be used in larger portable and fixed systems and is normally not separated from the larger system except for replacement. The Sensor Unit in the larger system only moves as a component of the system.

Air is drawn through the Sensor Unit by an externally mounted sampling pump. Air is heated, flows through an ionization chamber containing a 160 μCi Am-241 source in a source bed and into a detector chamber adjacent to the source bed. The source bed also incorporates a heater and the sampling passages. The current in the detector chamber is affected by ion capture by particles and gases passing through the ionization chamber. The analytical system in which the Sensor Unit is incorporated includes software to perform analyses for selected gases and aerosols.

The source, ISO/ANSI classification C64646, is cut and shaped to fit in the ionization chamber in the source bed. A fiberglass/epoxy resin composite chamber cover is bolted to the source bed locking the source into position. The source bed assembly is partially shielded with 1 mm lead and fastened into the stainless steel Sensor Unit housing with stainless steel screws. The Sensor Unit is 15 cm long, 11 cm wide, and 4.8 cm high. The Sensor Unit is then t installed in a larger system with the heater and detector electrically connected to the analysis system. In a typical application, a semiconductor detector is attached to the outside of the Sensor Unit. The source in the Sensor Unit has no on-off mechanism, and radiation levels are constant during both use and storage. Radiation levels at 10 cm from the Sensor Unit surface are less than or equal to 30 μrem/hr. The only openings into the ionization chamber are 3 mm ports, too small for human access.

B. Drawing:



III. DETAILS OF CONSTRUCTION AND USE.

A. Conditions of Use

The Sensor Unit is typically installed in and used with a larger analytical system to detect hazardous gases and aerosols. It can be used with its analytical support equipment either as a portable survey instrument or in a fixed monitoring location. It is designed to operate in temperature ranges from -30°C to 55°C at relative humidities ranging from 0 to 95% and can withstand harsher environments than its human operator can survive.

The components of the Sensor Unit related to radiation safety including the Teflon source block, the ionization chamber cover made of fiberglass/epoxy resin composite and stainless steel fasteners and housing, are capable of resisting corrosive atmospheres. Because of the absence of moving parts in the ionization chamber, it can withstand vibrations in excess of those which are likely to be encountered in use and that can be sustained by associated support equipment.

Users of the Sensor Unit in an analytical system will include trained military and civilian personnel who will use the Sensor Unit under conditions ranging from battlefield conditions where chemical warfare agents will be monitored to surgical theaters where waste anesthetic gases will be monitored. Vibration exposures will be incidental to the handling and transportation. When used in a fixed monitoring mode, users will be near the device when setting it up and relocating it. In survey applications, the user carries the system. It is unlikely that the Sensor Unit can be

incorporated as a component at any product other than the analytical system with which it is used. The expected useful life of the Sensor Unit is in excess of ten years.

B. Details of Construction

Figure 1. gives the dimensions and final shape of the source cut from Al/Ni 2 stock. Figure 2. illustrates how the source fits in the ionization chamber in the Teflon source block and how it is held in place by the fiberglass/epoxy resin composite cover with its Teflon gasket (Figure 3). The source block also contains a heater to maintain an operating temperature of 35°C or above and air passages to route the sampling stream through the heater, the ionization chamber and to a detector chamber outside the source bed. Figure 4. illustrates the source bed installed in the stainless steel Sensor Unit which has no openings except for gas flow and cabling. The source is constructed of americium-241 oxide in a gold/palladium matrix minimizing the potential for uptake of americium from a bare source. The source itself is an alpha/low energy gamma emitter and is partially shielded with lead to reduce radiation levels to those described in Section III.F. *Note: All dimensions are given in millimeters*

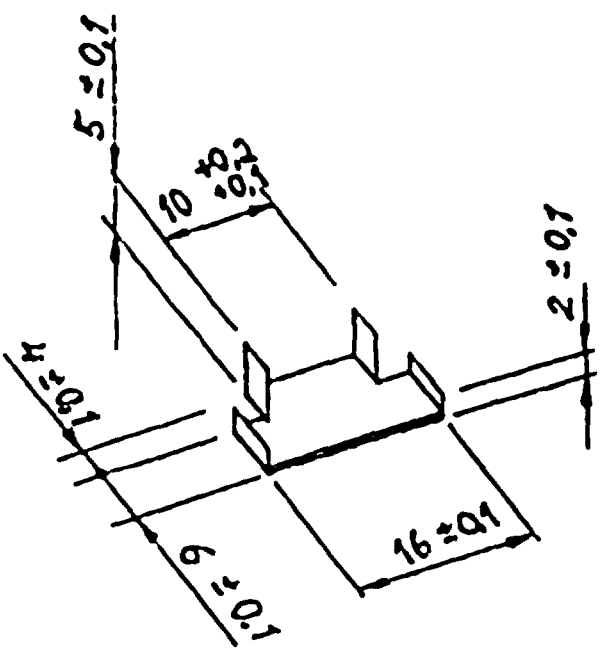


Figure 1- Dimensions and final shape of source
Scale 2:1

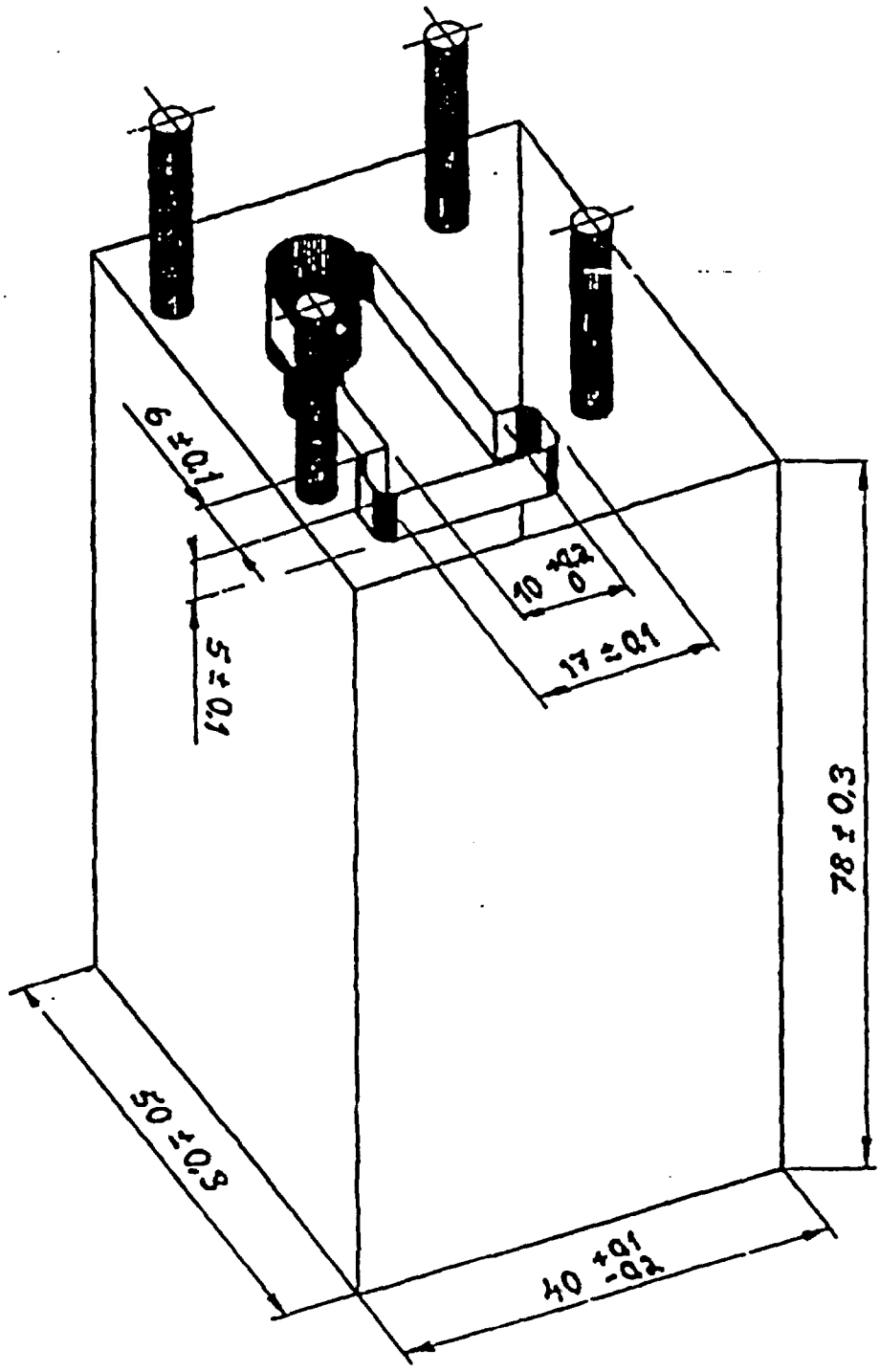


Figure 2 -Source Block

Scale 2:1

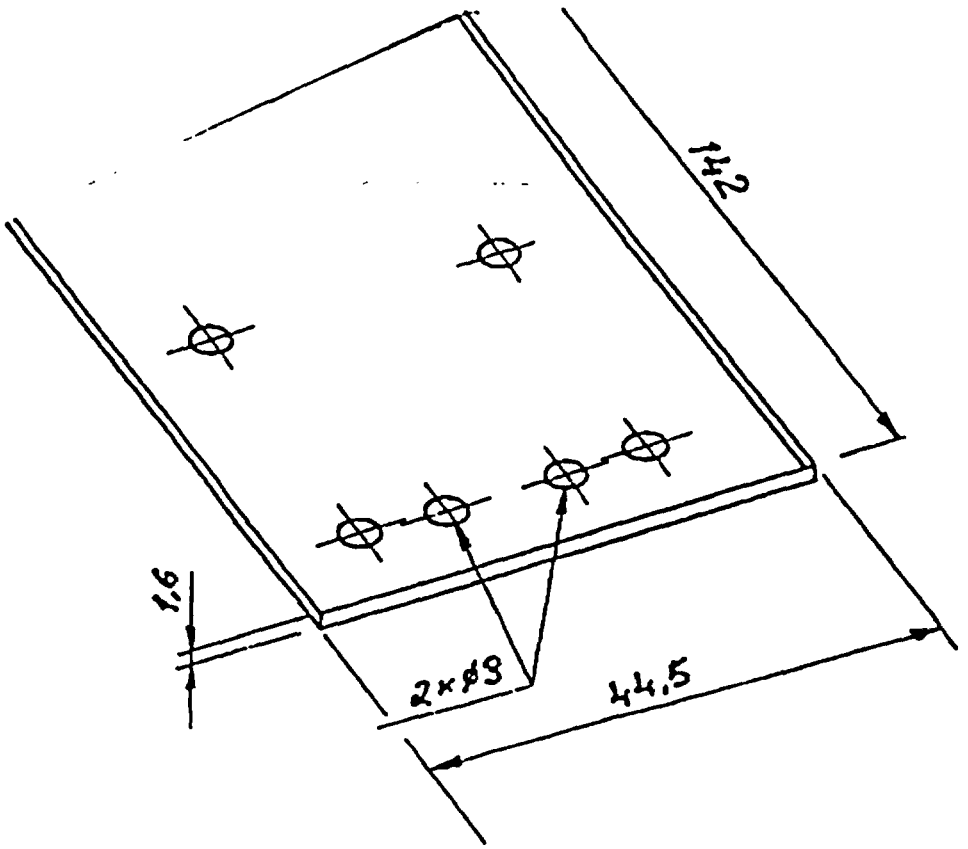


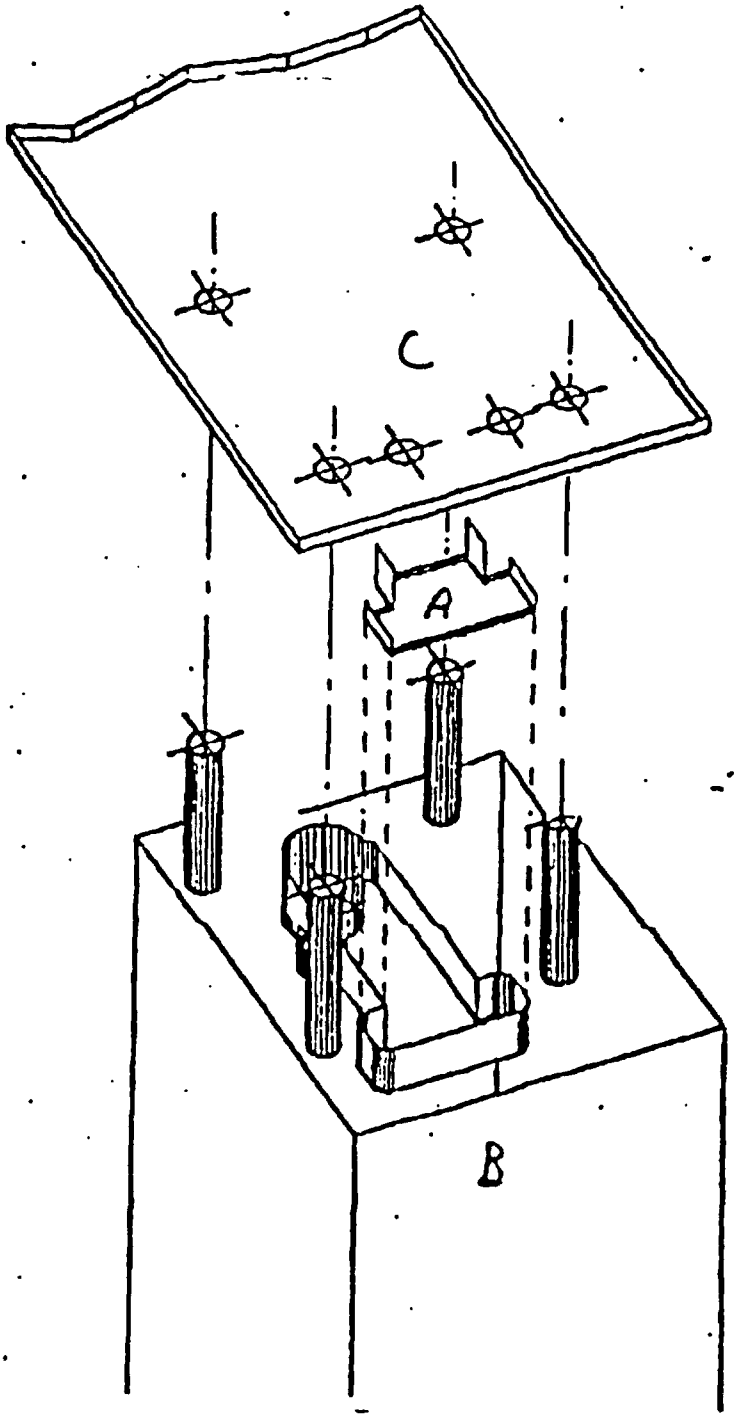
Figure 3 drawing of the fiberglass/epoxy resin cover
Scale 2:1

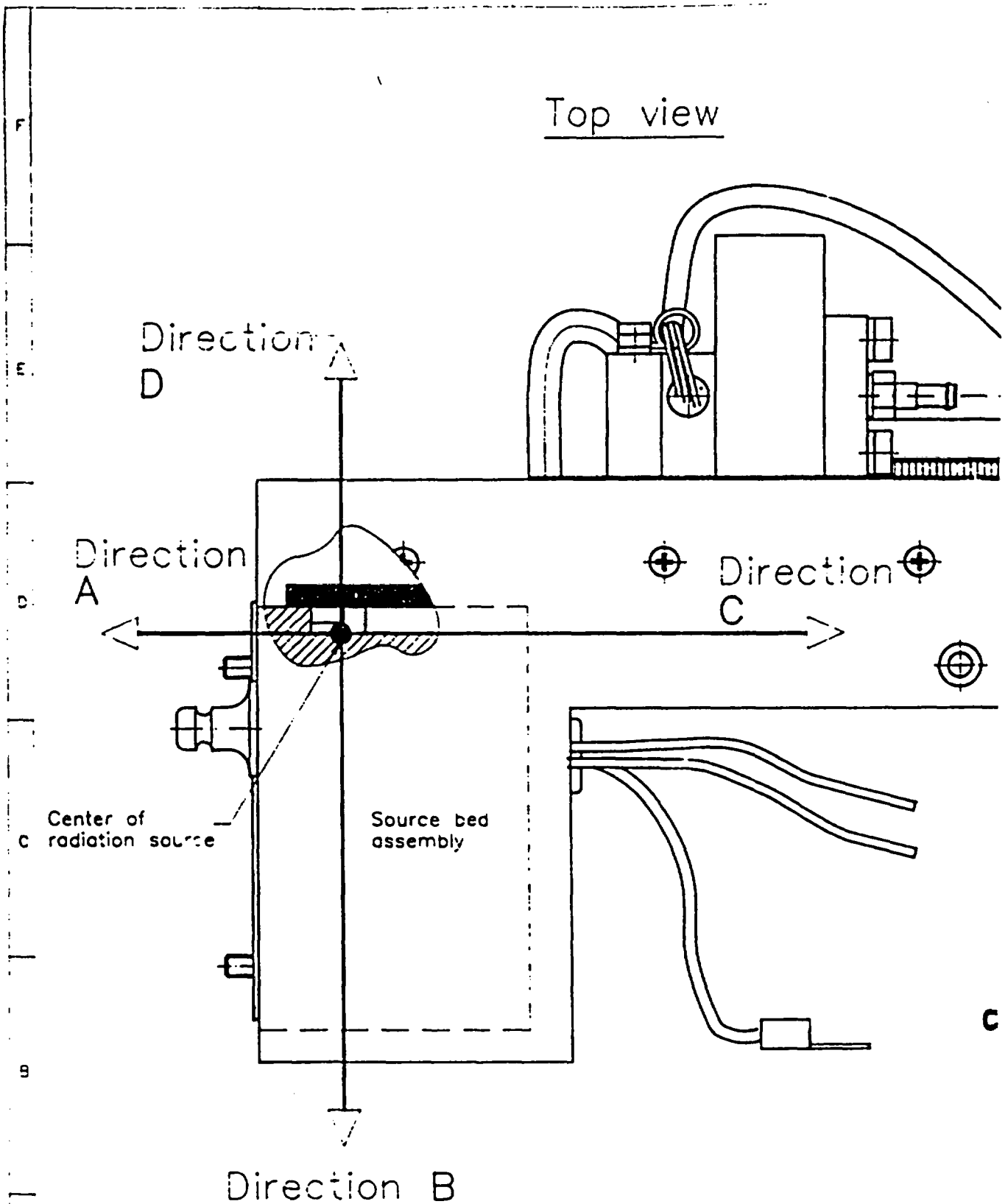
Figure 4- See Attached Source bed installed in stainless steel Sensor Unit
Scale 1:1

C. Labeling

Each Sensor Unit and associated equipment will be labeled to comply with the requirements in 10 CFR 32.29(b). Sensor Units will have durable, legible, readily visible self-adhesive Lexan film labels on their external surface containing the following:

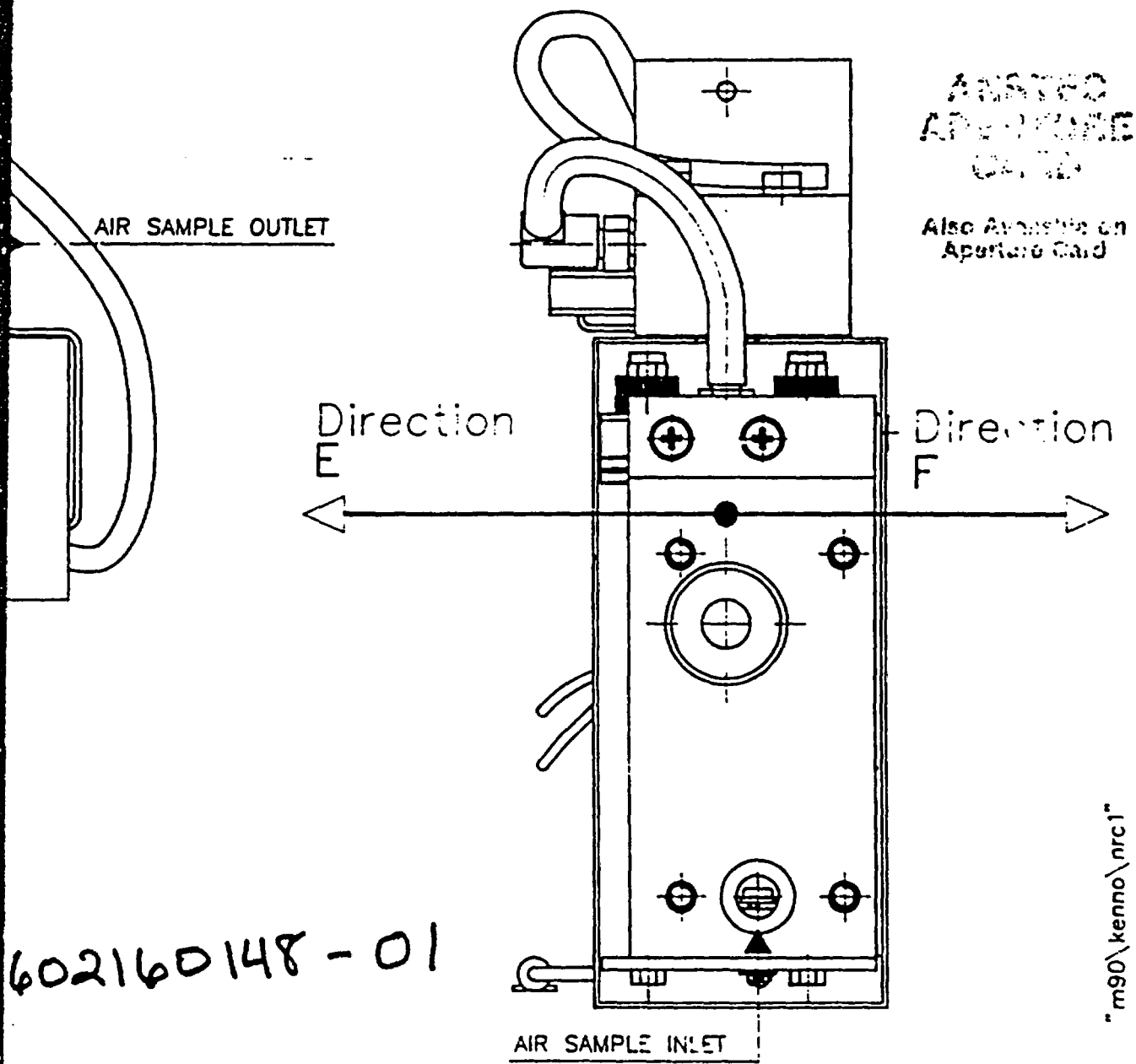
Contains Radioactive Material Am-241, 160 μCi. This Sensor Unit is authorized for distribution to persons exempt from license by Temet USA Inc.


C
A
B



Versio Rev.	Muutos Description	Muuttaja Drawn	Pvm. Date	Koord. Coord.	Lukum. Pcs

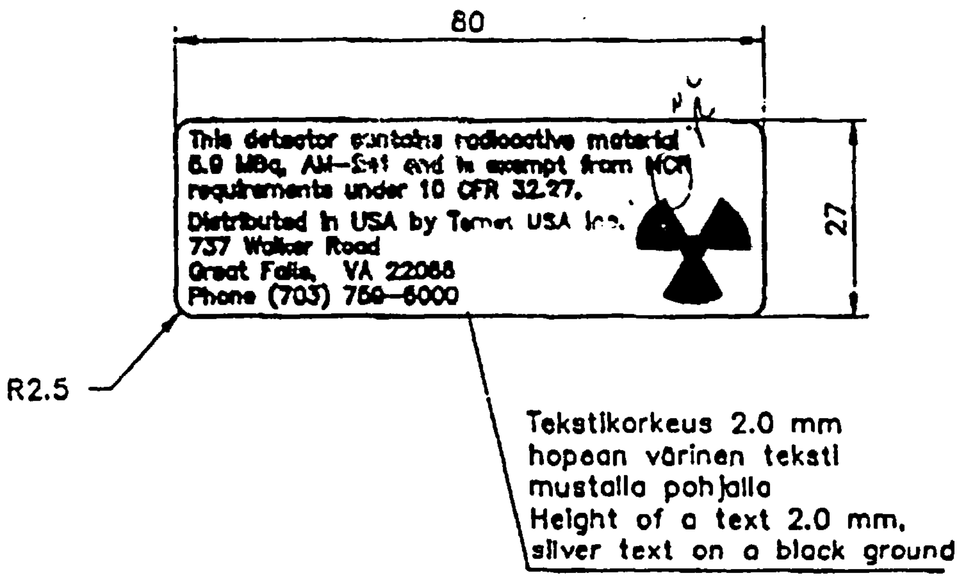
Front view



602160148-01

"m90\kenno\nrc1"

Osa/no Part/No	Osan tai kokoonpanoryhmän nimitys Part or Group	Piirustuksen ja osan no Drwg and Part No	Laatu Material	Muoto, mitat, malli Shape, Dimensions, Code				Massa/osa Weight/Part kg	Kpl Pcs
				Osan ehdes työvaroineen Material incl. working allowance					
Yleistoleranssit General tolerances	Massa Weight kg	Tilaaja Client			Suunn. Design	JL	271094		
		Liittyy Related		Suhde Scale 1:1	Piirt. Drawn	JL	271094		
					Hyv. Appr.	TK	271094		
ENVIRONICS OY MIKKELI FINLAND		Valmiste Product	The M90 CWA Detector Sensor Pack Unit		Piir. no Drwg No			Versio Rev.	
		Nimitys Title	Picture 1		Korvaa no:n Supersedes drwg		Korvattu no:lla Superseded by drwg		



Polykarbonaatti s=0.25 Ilmataustalla

Osa/no Part/No | Osan tai kokoonpanoryhmän nimitys Part or Group | Piirustuksen ja osan no Drwg and Part No | Laatu Material | Muoto, mitat, malli, koodi Shape, Dimensions, Code | Massa/kpl Weight/Part kg | Kpl Pcs

Yleistoleranssit General tolerances | Massa Weight kg

Tilaaja Client

Liittyy Related: M90-D1

Suunn. Design	JL	030894
Piirt. Drawn	JL	030894
Hyv. Appr.		

Suhde Scale: 1:1

ENVIRONICS OY
MIKKELI FINLAND

Valmiste Product

Piir. no Drwg No: 1004 07612

Versio Rev.: 0

Nimitys Title: Tarra Ilmaisimen koteloon
Sticker to outside the detector

Korvaa nron Supersedes drwg

Korvattu nrolla Superseded by drwg

m90\ilmtar

The external surface of the system in which the Sensor Unit is installed and its package shall contain readily visible labels with the following:

Caution, contains radioactive material. This Sensor Unit is authorized for distribution to persons exempt from license by Temet USA Inc. pursuant to 10 CFR 32.26. The Sensor Unit installed in this device contains Am-241, 160 µCi. The sensor unit is authorized for distribution to persons exempt from license by Temet USA Inc.

The detector in this system contains radioactive material and has been manufactured in compliance with USNRC safety criteria in 10 CFR 32.27. The purchasers is exempt from any regulatory requirements.

Label art work is attached.

D. Testing of Prototypes

The Sensor Unit installed in a military gas detector system was tested according to MIL-STD-810D for vibration and shock resistance. The testing report is attached

In the vibration test the Sensor Unit was subjected to wide band random vibrations on each of three perpendicular axes for 60 minutes per axis. Following the test the Sensor Unit functioned normally without any changes that could adversely affect radiation safety.

In the shock test, the Sensor Unit in a gas detector system was dropped from a height of 122 cm onto each face, edge and corner, on a concrete floor covered with plywood. Following the drop test, the Sensor Unit functioned normally with no changes that could affect radiation safety.

In the temperature test, the Sensor Unit in a gas detector system was temperature tested for function at the extremes of temperatures to which it might be exposed. The Sensor Unit in the system was maintained at -30°C, function tested for normal operation and then heated to 55°C for three to five hours. The Sensor Unit and system functioned normally during the test and underwent no changes that could adversely affected radiation safety.

In the humidity test, the Sensor Unit was tested at relative humidities ranging from 10 to 95% and functioned normally with no changes that would adversely affect radiation safety. Engineering analysis indicates that there would be no changes in the Sensor Unit at 0-100% relative humidity that could adversely affect radiation safety. These tests were performed primarily to test the complete system for operability at humidity extremes.

E. Quality Control

The manufacturer of the Sensor Unit, Environics OY, is applying for ISO 9000 certification and all production is in accordance with military standard specifications. Quality control procedures for parameters that could affect radiation safety follows:

Visual inspection is performed on all components before assembly. Measurements to verify that dimensions are within tolerances will be performed for the foil, Drawing 1, the source bed, Drawing 2, the chamber cover, Drawing 3, and the sensor unit housing, Drawing 4.

Foils will be 100% leak tested before assembly. Foils must demonstrate less than 0.005 microcuries leakage for acceptance.

Assembled components will be visually inspected for proper assembly and fit.

10 percent of assembled Sensor units will be leak-tested in the United States by Temet before transfer to persons exempt from license. Foils must demonstrate less than 0.005 microcuries leakage for acceptance

All records of these tests will be maintained at Temet in the United States. Documentation will be verified for each unit before transfer to a person exempt from license.

F. Radiation Profiles

Measurements of external radiation doses were performed by the Finnish Centre for Radiation and Nuclear Safety. These measurements were performed on:

1. Doses outside a typical instrumentation system in which the Sensor Unit was installed
2. Doses outside the Sensor Unit, and
3. Doses outside the source bed component in the Sensor Unit.

A copy of the Centre's report, including measurement instrumentation data, is attached.

K. Leak Testing

Sensor Units are leak tested following assembly by the manufacturer. Sensor Units demonstrating any detectable leakage on external surfaces in excess of 0.005 μCi per Sensor Unit will be rejected. Ten percent of Sensor Units distributed by Temet USA will be leak tested. If any leakage above 0.005 μCi is detected on a leak tested Sensor Unit, distribution will be suspended until the cause can be identified and corrected.

L. Safety Analysis

The following safety analysis has been performed to determine compliance with the requirements in 10 CFR 32.27. External doses were calculated for several scenarios, including normal use and disposal of a Sensor Unit and the doses from distribution, servicing, and transportation.

For purposes of conservative calculations it is assumed that there is no additional shielding provided by the system in which the Sensor Unit is installed. External doses were measured at 10 cm by the Finnish Centre for Radiation and Nuclear Safety. The highest measured dose rate at 10 cm was 30 μrem per hour. The calculated doses at other distances are in the table below.

Distance (cm)	Dose Rate rem/h
5	9.3×10^{-5}
30	4×10^{-6}
100	3.9×10^{-7}
300	4×10^{-8}

It is assumed that during normal use of a Sensor Unit an operator will handle an instrumentation system containing the Sensor Unit for 500 hours, that the technician's hands will be 5 cm from the area of highest external dose rate, and that the major portion of the technician's trunk is 30 cm from the same area.

The dose to his hands is calculated as follows:

(500 hours/year)(9.3×10^{-5} rem/hr) = 0.046 rem/year.

The dose to his trunk is calculated as follows:

(500 hours/year)(4×10^{-6} rem/hr) = 0.002 rem/year.

These conservative results are below the values in 10 CFR 32.38, column I.

Multiple units may be stored in the stockroom of the distribution center. It is assumed that 10 units are stored at all times in this area and that individuals are three meters away from these 10 units for 2,000 hours per year.
The dose to an individual is calculated as follows:
(2,000 hours/year)(4×10^{-6} rem/unit)(10 units) = 8×10^{-4} rem/year.

These conservative results are below the values in 10 CFR 32.38, column I.

It is conservatively estimated that 100 instrumentation systems containing Sensor Units will require service or Sensor Unit replacement each year. Each service will require one hour during which the technician's hands will be 5 cm from the Sensor Unit surface with the highest external dose rate, and the trunk of the technician's body will be within 30 cm of the same surface.

The dose to the technician's hands is calculated as follows:
(100 hours/year)(9.3×10^{-5} rem/hour) = 9.3×10^{-3} rem/year.

The dose to the trunk of the technician's body is calculated as follows:
(100 hours/year)(4×10^{-6} rem/hour) = 4×10^{-4} rem/year.

It is assumed that a single truck driver could deliver up to 1,000 Sensor Units to the distribution center per year and that the driver would have each Sensor Unit three meters from the cab for eight hours.

The dose to the truck driver is calculated as follows:
(1,000 units)(8 hrs/unit)(4×10^{-6} rem/hr) = 3.2×10^{-4} rem/year.

These conservative results are below the values in 10 CFR 32.38, column I.

Because of the high economic value of systems containing the Sensor Unit, it is unlikely that a Sensor Unit will be casually disposed of. However, to conservatively estimate the external dose for disposal of a single Sensor Unit, it is assumed that a refuse truck picks up the Sensor Unit and that it is three meters from the driver for eight hours.

The dose to this refuse truck driver is calculated as follows:
(8 hrs)(4.0×10^{-6} rem/hr) = 3.2×10^{-7} rem.

During normal use of a single unit and in normal handling and storage of the quantities of Sensor Units likely to accumulate at any one location during distribution or servicing, it is unlikely that any significant dose commitment could result from the intake of the licensed material in Sensor Units. The analysis in NUREG/CR-1156 for disposal of larger quantities of Am-241 in similar sources in smoke detectors indicates that the probability is negligible that a person could receive a dose commitment in excess of the column I values from Sensor Units.

The Sensor Unit is a rugged stainless steel device containing no moving parts, and that could result in any significant in the effectiveness of the containment shielding or safety features under normal handling and use during the useful life of the product. Under battlefield conditions where conventional or nuclear weapons might result in damage to the Sensor Unit, the concurrent threat to individuals would be much greater than from any resulting compromise of radiation safety features of the Sensor Unit.

Fire is the most likely accident event that could affect a Ser t is conservatively assumed that ten Sensor Units are destroyed by fire in the distribution center s. m^3 and that 10^{-3} of the activity is released as respirable particles. Fire damage and emergency response- ventilation will result in at least a 10^2 reduction in concentration during the fire-fighting period. If an emergency responder fights a fire for eight hours and has a respiration rate of 1.2 m^3/hour, we can calculate the intake as follows:

$$\frac{(1.6\times10^{3}\ \mu Ci)(10^{-3})(10^{-2})(1.2 m^3/hr)(8\ hrs)}{(3\times10^{2}\ m^3)} = 5.1\times10^{-4}\ \mu Ci$$

NUREG/CR-1156 reports that uptake from salvage operations are likely to be lower than from firefighting activities.

The resulting dose commitments are shown in the table below.

Organ	Dose Commitment (rem)
Total body	1×10^{-2}
Liver	2×10^{-1}
Bone	2×10^{-1}
Lung	3×10^{-1}

The probability is negligible that in either normal use and disposal or in distribution transportation and servicing doses from the Sensor Unit would exceed the values in 10 CFR 32.28, column II or III would be exceeded. The most reasonable accident scenario would be a fire destroying ten instrument systems in a distribution center. The probability is low that even in the case of fire, the values in 10 CFR 32.28, column II will be exceeded and negligible that the column III values could be exceeded.

LCN CLOSERS
Part of worldwide Ingersoll-Rand

LCN Closers Division
Schlage Lock Co.
P.O. Box 100
Princeton, Illinois 61356-0100
815-875-3311
Fax 815/875-3222

September 30, 1994

Director of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Report, LCN Closers, Lic. #12-19544-02E

Gentlemen:

During the period of June 30, 1990 to June 30, 1994, LCN Closers transferred the following materials to purchasers exempt from regulatory requirements:

Product:	LCN Model SED-300 Integral Smoke Detector
Radionuclide:	2 ea. Americium Oxide (Am241) sealed source, .7 micro curie per detector
Total Smoke Detectors Transferred:	15,281
Total Sealed Sources Transferred:	30,562
Product:	LCN Model MED-300 Integral Smoke Detector
Radionuclide:	2 ea. Americium Oxide (Am241) sealed source, .7 micro curie per detector
Total Smoke Detectors Transferred:	4,570
Total Sealed Sources Transferred:	9,140
Grand Total Am241, .7 micro curie sealed sources in smoke detectors transferred to exempt purchasers:	39,702

If you require further information regarding this report, please contact me.

Sincerely,

Ray Schnarr
Radiation Safety Officer

RHS:rac
cc: U.S. Nuclear Regulatory Commission
Region III Office of Inspection and Enforcement
801 Warrenville Road
Lisle, IL 60532-4351

LCN CLOSERS
Part of worldwide Ingersoll-Rand

LCN Closers Division
Schlage Lock Co.
P.O. Box 100
Princeton, Illinois 61356
815/875-3311 Telex 72-3434
Fax 815/875-3222

March 1, 1991

Director of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Report, LCN Closers, Lic. #12-19544-02E

Gentlemen:

During the period of June 30, 1986 to June 30, 1990, LCN Closers transferred the following materials to purchasers exempt from regulatory requirements:

PRODUCT:	LCN Model SED-300 Integral Smoke Detector
RADIONUCLIDE:	2 ea. Americium Oxide (Am241) sealed source, .7 micro curie per detector
TOTAL SMOKE DETECTORS TRANSFERRED:	23,204
TOTAL SEALED SOURCES TRANSFERRED:	46,408
PRODUCT:	LCN Model MED-300 Integral Smoke Detector
RADIONUCLIDE:	2 ea. Americium Oxide (Am241) sealed source, .7 micro curie per detector
TOTAL SMOKE DETECTORS TRANSFERRED:	6,572
TOTAL SEALED SOURCES TRANSFERRED:	13,090

GRAND TOTAL Am241, .7 micro curie sealed sources in smoke detectors transferred to exempt purchasers: 59,498

If you require further information regarding this report, please contact me.

Sincerely,

Ray Schnarr
Radiation Safety Officer

RHS:rac
cc: U.S. Nuclear Regulatory Commission
Region III Office of Inspection and Enforcement
801 Warrenville Road
Lisle, IL 60532-4351

American Scitec, Incorporated
3505 Cadillac Avenue, Building J-5
Costa Mesa, California 92626
(714) 549-8680
FAX (714) 662-2008

10 June 1993

Director of Material Safety and Safeguards
U.S. Nuclear Regulatory Commission,
Washington D.C 20555

Ref: USNRC License # 04-21357-01E
10 CFR Part 32, 32.12 Material Transfer Report

PERIOD: 25 June 1988 through 10 June 1993

32.12(b)(1)

Residential Smoke Detectors

Model 168101-series=	1,658,153
Model 168102-series=	0
Model 168103-series=	0
Model 168104-series=	9,796
Model 168106-series=	184,424
Model 168108-series=	550
Model 168111-series=	94,862
Model 168112-series=	84,104
TOTAL =	2,031,889

32.12(b)(2)

Wing Wah Chong Investment Company, Ltd.
40 Lee Chung Street
Chai Wan, Hong Kong 9/2/83 To 7/5/90

Greaton Industries Limited
40 Lee Cheng Street
Chai Wan, Hong Kong 7/5/90 To 11/25/91

Shanghai Fenghua Radio Factory
238 Guang Xi Bei Road
Shanghai, P.R. China 11/25/91 To Present

Continued on Page 2

32.12(b)(3)
Americium-241 (Amersham Model AMM1001H Foil Source)

32.12(b)(4)
0.9 uCi +- .09 uCi/unit

32.12(c)(1) This report is filed five years following the preceding report on USNRC License # 04-21357-01E,

Respectfully,

R.R. Ludt
Operations Manager
American Scitec Inc.

cc - USNRC
Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596

SE

SECURITY ENGINEERING, INC.

P. O. BOX 746 CLEMMONS N C 27012 (919) 766-9902

product transfer file

December 14, 1992

License Fee and Debt Collection Branch
Division of Accounting and Finance
Office of the Controller
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Mr. Michael A. Lamastra
Section Leader

RE: License #32-16736-02E
#NR-0529D-102E

Dear Mr. Lamastra:

In September, 1991 we wrote a letter to the commission that was intended to request termination of our license to distribute smoke detectors. A copy of that letter is attached.

In September, 1992 Mrs. Patricia Vacca outlined several steps necessary to complete this termination. This letter and the enclosed documents are for that purpose.

1. We do want license #32-16736-02E to be terminated.

2. Please change device registration NR-0529D-102E to inactive status.

3. We do desire to permanently discontinue licensed activities.

4. **The last year that detectors were distributed was 1987. Only 900 detectors were shipped that year. We did renew our license in 1989, but have not manufactured or distributed any detectors since 1987.**

If you have questions or if I may be of further assistance, please do not hesitate to call me.

FEE EXEMPT

Very truly yours,

O. Nat Swanson

RECEIVED BY
Date 12/23/92
Log No. 2
By
Manufacturing Engineers
Date Completed 12/23/92

to Steve Baggett

REC'D DEC 18 1992

L 21470

RLR PAGE 1

DOMESTIC SHIPMENT HISTORY REPORT ** YTD ROLLING 12, ROLLING 12 VX, ROLLING 6 VX, ROLLING 3 VX

	JAN	FEB	MAR	1ST QTR	APR	MAY	JUN	2ND QTR	YTD	JUL	AUG	SEP	3RD QTR	YTD	OCT	NOV	DEC	4TH QTR	FULL YEAR	
FIRE SAFETY PRODUCTS:																				
SMK6/D																				
1983	0.0	0.0	0.0	0.0	0.0	0.0	16.6	16.6	16.6	35.1	36.0	31.1	102.2	118.8	26.8	32.9	67.6	127.3	246.1	
1984	29.2	37.4	35.7	102.3	22.4	21.3	84.3	128.0	230.3	40.8	43.0	64.1	147.9	378.2	123.3	98.1	172.1	393.5	771.7	
1985	62.1	93.0	70.3	225.4	33.0	38.9	70.3	142.2	367.6	111.4	67.0	118.4	296.8	664.4	40.1	51.4	44.8	136.3	800.7	
1986	33.1	59.7	77.0	169.8	37.0	20.2	47.1	104.3	274.1	58.2	58.3	90.4	206.9	481.0	70.1	34.1	60.1	164.3	645.3	
1987	33.9	50.5	45.8	130.2	39.6	26.9	36.3	102.8	233.0	36.1	66.8	35.6	138.5	371.5	70.7	47.7	32.8	151.2	522.7	
1988	30.1	38.4	63.8	132.3	24.5	43.7	67.8	136.0	268.3	38.7	54.5	85.9	179.1	447.4	74.7	60.9	40.6	176.2	623.6	
1989	39.5	18.2	32.9	90.6	18.0	41.4	40.4	99.8	190.4	34.6	28.0	29.9	92.5	282.9	44.0	41.9		85.9	368.8	
**	409.4	-33.5%	-42.8%	-47.7%																
SMK6DM															0.0	0.0	0.0	0.0	0.0	
1988	0.0	0.0	0.0	0.0	1.5	10.6	16.1	28.2	28.2	2.0	15.9	22.0	39.9	68.1	16.8	29.9	29.1	75.8	143.9	
1989	6.0	13.3	11.2	30.5	18.9	9.5	15.6	44.0	74.5	9.5	8.5	6.0	24.0	98.5	12.6	13.4		26.0	124.5	
**	153.6	33.8%	-36.1%	-53.4%																
SMK9															0.0	0.0	0.0	0.0	0.0	
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	151.3	1.5	43.8	196.6	196.6	40.6	0.4	0.0	41.0	237.6	
1989	0.2	-0.5	0.6	0.3	0.1	1.1	0.3	1.5	1.8	0.1	1.7	0.2	2.0	3.8	0.5	0.4		0.9	4.7	
**	4.7	-98.0%	-98.7%	-98.7%																
SMK12															0.0	0.0	0.0	0.0	0.0	
1987	0.0	0.0	2.4	2.4	0.0	0.0	0.0	0.0	2.4	0.0	1.1	1.7	2.8	5.2	0.2	1.2	0.4	1.8	7.0	
1988	0.2	0.5	0.9	1.6	0.4	0.3	0.9	1.6	3.2	0.3	2.0	4.8	7.1	10.3	0.9	3.8	3.8	8.5	18.8	
1989	0.4	0.7	0.7	1.8	0.5	0.7	1.2	2.4	4.2	0.6	2.9	1.9	5.4	9.6	2.6	2.5		5.1	14.7	
**	18.5	20.1%	-7.9%	-26.3%																
SMK18															0.0	0.0	4.0	4.0	4.0	
1989	2.2	1.4	2.7	6.3	0.2	0.0	0.4	0.6	6.9	0.0	1.5	2.6	4.1	11.0	0.0	0.0		0.0	11.0	
**	15.0	N/A	N/A	N/A																
SMK20															0.0	0.0	0.0	0.0	0.0	
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.4	1.6	1.6	0.3	0.5	0.1	0.9	2.5	
1988	0.0	0.1	12.8	12.9	0.0	0.6	0.0	0.6	13.5	0.0	0.0	0.0	0.0	13.5	0.0	0.0	0.0	0.0	13.5	
**	N/A	N/A	N/A	N/A																
SMK25															0.0	0.0	0.0	0.0	0.0	
1988	0.8	2.5	7.1	10.4	2.4	3.1	12.6	18.1	28.5	15.4	27.2	20.9	63.5	92.0	5.2	9.8	8.3	23.3	115.3	
1989	14.9	7.0	12.9	34.8	16.6	4.0	4.3	24.9	59.7	5.4	5.8	4.4	15.6	75.3	5.3	7.4		12.7	88.0	
**	96.3	-10.0%	-64.2%	-52.4%																
SMK30															0.0	0.0	0.0	0.0	0.0	
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	27.6	30.4	30.4	4.1	8.2	6.6	18.9	49.3	
1988	5.6	0.6	12.4	18.6	-1.2	0.0	1.9	0.7	19.3	0.3	-0.3	0.0	0.0	19.3	0.1	-0.9	0.0	-0.8	18.5	
1989	-3.0	-0.4	0.0	-3.4	6.2	0.6	24.1	30.9	27.5	1.0	5.6	0.7	7.3	34.8	0.1	0.0		0.1	34.9	INVENTORY DEPLETED
**	34.9	39.0%	N/A	N/A																

Black N Decker - 7/19/91
06.207047.02E

all obsolete versions are
similar to the SMK25 except
for minor cosmetic differences

SHIPMENT HISTORY REPORT -- SPECIALTY

YTD ACTUAL: MAY 91

** YTD ROLLING 12, ROLLING 12 VX, ROLLING 6 VX, ROLLING 3 VX

	JAN	FEB	MAR	1ST QTR	APR	MAY	JUN	2ND QTR	YTD	JUL	AUG	SEP	3RD QTR	YTD	OCT	NOV	DEC	4TH QTR	FULL YEAR
HEATERS																			
HF200U																			
1986				0.0			0.2	0.2	0.2	3.9	4.4	2.0	10.3	10.5	5.4	4.2	0.4	10.0	20.5
1987	0.6	-0.4	0.1	0.3	0.1	-1.3	1.0	-0.2	0.1	3.9	1.6	10.0	15.5	15.6	1.2	1.3	0.7	3.2	18.8
1988	0.8	2.3	-0.3	2.8	-3.1	0.1	0.6	-2.4	0.4	0.6	1.0	1.2	2.8	3.2	2.5	1.2	1.8	5.5	8.7
1989	1.6	0.8	0.3	2.7	-0.3	0.0	0.2	-0.1	2.6	0.6	0.4	1.4	2.4	5.0	1.5	1.1	0.6	3.2	8.2
**	N/A	N/A	N/A	N/A															
HF230U/G																			
1986				0.0				0.0	0.0	0.0	8.0	9.9	17.9	17.9	1.4	3.2	2.7	7.3	25.2
1987	5.2	2.0	-0.5	6.7	-0.2	0.4	1.5	1.7	8.4	3.4	12.6	7.8	23.8	32.2	3.9	7.1	2.4	13.4	45.6
1988	1.4	0.0	-0.3	1.1	-1.4	-0.1	-2.1	-3.6	-2.5	1.0	13.2	7.1	21.3	18.8	22.4	4.5	7.6	34.5	53.3
1989	3.0	0.0	0.0	3.0	-1.5	-0.4	0.4	-1.5	1.5	1.3	3.2	9.8	14.3	15.8	24.8	10.4	0.6	35.8	51.6
1990	0.0	-0.6	-3.4	-4.0	-0.2	0.1	0.3	0.2	-3.8	3.8	10.4	5.1	19.3	15.5	4.5	9.6	4.5	18.6	34.1
1991	2.3	0.8	0.1	3.2	0.1	1.4													
**	42.9	-7.5%	-362.9%	-145.7%															
TOTAL HEATERS																			
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	3.9	12.4	11.9	28.2	28.4	6.8	7.4	3.1	17.3	45.7
1987	5.8	1.6	-0.4	7.0	-0.1	-0.9	2.5	1.5	8.5	7.3	14.2	17.8	39.3	47.8	5.1	8.4	3.1	16.6	64.4
1988	2.2	2.3	-0.6	3.9	-4.5	0.0	-1.5	-6.0	-2.1	1.6	14.2	8.3	24.1	22.0	24.9	5.7	9.4	40.0	62.0
1989	4.6	0.8	0.3	5.7	-1.8	-0.4	0.6	-1.6	4.1	1.9	3.6	11.2	16.7	20.8	26.3	11.5	1.2	39.0	59.8
1990	0.0	-0.6	-3.4	-4.0	-0.2	0.1	0.3	0.2	-3.8	3.8	10.4	5.1	19.3	15.5	4.5	9.6	4.5	18.6	34.1
1991	2.3	0.8	0.1	3.2	0.1	1.4													
**	42.9	-17.8%	-417.2%	-145.7%															
FIRE SAFETY																			
SMK6/D																			
1983	0.0	0.0	0.0	0.0	0.0	0.0	16.6	16.6	16.6	35.1	36.0	31.1	102.2	118.8	26.8	32.9	67.6	127.3	246.1
1984	29.2	37.4	35.7	102.3	22.4	21.3	84.3	128.0	230.3	40.8	43.0	64.1	147.9	378.2	123.3	98.1	172.1	393.5	771.7
1985	62.1	93.0	70.3	225.4	33.0	38.9	70.3	142.2	367.6	111.4	67.0	118.4	296.8	664.4	40.1	51.4	44.8	136.3	800.7
1986	33.1	59.7	77.0	169.8	37.0	20.2	47.1	104.3	274.1	58.2	58.3	90.4	206.9	481.0	70.1	34.1	60.1	164.3	645.3
1987	33.9	50.5	45.8	130.2	39.6	26.9	36.3	102.8	233.0	36.1	66.8	35.6	138.5	371.5	70.7	47.7	32.8	151.2	522.7
1988	30.1	38.4	63.8	132.3	24.5	43.7	67.8	136.0	268.3	38.7	54.5	85.9	179.1	447.4	74.7	60.9	40.6	176.2	623.6
1989	39.5	18.2	32.9	90.6	18.0	41.4	40.4	99.8	190.4	34.6	28.0	29.9	92.5	282.9	44.0	41.9	29.3	115.2	398.1
1990	7.8	8.2	14.7	30.7	10.6	5.4	8.1	24.1	54.8	2.5	5.7	9.0	17.2	72.0	7.5	14.6	8.7	30.8	102.8
1991	3.0	31.6	24.7	59.3	0.0	-0.4													
**	115.0	-61.0%	-11.1%	-20.8%															
* **SMK6M**															0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0		1.5	10.6	16.1	28.2	28.2	2.0	15.9	22.0	39.9	68.1	16.8	29.9	29.1	75.8	143.9
1989	0.0	0.0	0.0	0.0	18.9	9.5	15.6	44.0	44.0	9.5	8.5	6.0	24.0	68.0	12.6	13.4	15.6	41.6	109.6
1990	4.6	4.5	2.0	11.1	1.0	12.5	17.5	31.0	42.1	39.0	25.0	22.4	86.4	128.5	-1.0	1.0	0.0	0.0	128.5
**	N/A	N/A	N/A	N/A															
SMK9															0.0	0.0	0.0	0.0	0.0
1988	15.3	20.1	45.8	81.2	0.0	0.0	0.0	0.0	81.2	151.3	1.5	43.8	196.6	277.8	40.6	0.4	0.0	41.0	318.8
1989	19.1	15.1	35.1	69.3	0.1	1.1	0.3	1.5	70.8	0.1	1.7	0.2	2.0	72.8	0.5	0.4	0.3	1.2	74.0
1990	0.4	0.6	1.1	2.1	1.1	0.7	0.5	2.3	4.4	1.1	0.0	0.0	1.1	5.5	0.0	0.0	0.0	0.0	5.5
**	N/A	N/A	N/A	N/A															

* Same as SMK6D except for cosmetic picture on box

FILE: SPECSHIP

SHIPMENT HISTORY REPORT -- SPECIALTY

YTD ACTUAL: MAY 91 ** YTD ROLLING 12, ROLLING 12 V%, ROLLING 6 V%, ROLLING 3 V%

	JAN	FEB	MAR	1ST QTR	APR	MAY	JUN	2ND QTR	YTD	JUL	AUG	SEP	3RD QTR	YTD	OCT	NOV	DEC	4TH QTR	FULL YEAR	
SMK12															0.0	0.0	0.0	0.0	0.0	
1987	0.0	0.0	2.4	2.4	0.0	0.0	0.0	0.0	2.4	0.0	1.1	1.7	2.8	5.2	0.2	1.2	0.4	1.8	7.0	
1988	0.2	0.5	0.9	1.6	0.4	0.3	0.9	1.6	3.2	0.3	2.0	4.8	7.1	10.3	0.9	3.8	3.8	8.5	18.8	
1989	0.4	0.7	0.7	1.8	0.5	0.7	1.2	2.4	4.2	0.6	2.9	1.9	5.4	9.6	2.6	2.5	1.8	6.9	16.5	
1990	0.3	0.0	0.3	0.6	0.1	0.1	0.2	0.4	1.0	0.4	0.2	0.0	0.6	1.6	0.0	0.0	0.0	0.0	1.6	
**	N/A	N/A	N/A	N/A																
SMK18															0.0	0.0	4.0	4.0	4.0	
1989	2.2	1.4	2.7	6.3	0.2	0.0	0.6	0.6	6.9	0.0	1.5	2.6	4.1	11.0	0.0	0.0	3.7	3.7	14.7	
1990	2.6	0.4	1.1	4.1	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	4.1	
**	N/A	N/A	N/A	N/A																
SMK20															0.0	0.0	0.0	0.0	0.0	
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.4	1.6	1.6	0.3	0.5	0.1	0.9	2.5	
1988	0.0	0.1	12.8	12.9	0.0	0.6	0.0	0.6	13.5	0.0	0.0	0.0	0.0	13.5	0.0	0.0	0.0	0.0	13.5	
**	N/A	N/A	N/A	N/A																
SMK25															0.0	0.0	0.0	0.0	0.0	
1988	0.8	2.5	7.1	10.4	2.4	3.1	12.6	18.1	28.5	15.4	27.2	20.9	63.5	92.0	5.2	9.8	8.3	23.3	115.3	
1989	14.9	7.0	12.9	34.8	16.6	4.0	4.3	24.9	59.7	5.4	5.8	4.4	15.6	75.3	5.3	7.4	5.5	18.2	93.5	
1990	2.7	1.8	2.9	7.4	0.6	1.6	2.5	4.7	12.1	2.1	3.3	2.9	8.3	20.4	2.4	18.0	2.8	23.2	43.6	
1991	0.5	2.3	2.4	5.2	1.7	0.2														
**	41.1	-13.8%	-34.4%	-15.7%																
SMK30															0.0	0.0	0.0	0.0	0.0	
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	27.6	30.4	30.4	4.1	8.2	6.6	18.9	49.3	
1988	5.6	0.6	12.4	18.6	-1.2	0.0	1.9	0.7	19.3	0.3	-0.3	0.0	0.0	19.3	0.1	-0.9	0.0	-0.8	18.5	
1989	-3.0	-0.4	0.0	-3.4	6.2	0.6	24.1	30.9	27.5	1.0	5.6	0.7	7.3	34.8	0.1	0.0	-0.2	-0.1	34.7	INVENTORY DEPLETED
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
**	N/A	N/A	N/A	N/A																
SMK100																				
1989																	25.5	25.5	25.5	
1990	4.2	12.6	7.6	24.4	0.5	7.5	7.1	15.1	39.5	5.9	43.0	29.2	78.1	117.6	29.5	15.1	25.2	69.8	187.4	
1991	14.8	9.0	19.0	42.8	21.6	6.3														
**	225.7	289.8%	65.6%	200.6%																
SMK200																				
1990	0.0	0.0	1.1	1.1	0.1	0.1	2.7	2.9	4.0	0.6	0.4	5.6	6.6	10.6	0.8	0.3	0.7	1.8	12.4	
1991	0.9	0.9	1.3	3.1	3.6	0.2														
**	18.0	1284.6%	484.6%	292.3%																
SMK300																				
1989												19.4	19.4	19.4	79.5	48.8	19.8	148.1	167.5	
1990	3.2	1.3	0.8	5.3	0.1	0.6	0.9	1.6	6.9	0.4	0.4	0.6	1.4	8.3	0.5	0.3	1.8	2.6	10.9	
1991	0.2	0.5	0.2	0.9	0.3	0.4														
**	6.5	-96.3%	-86.8%	-40.0%																
SMK400																				
1990	0.0	0.7	3.9	4.6	0.3	0.5	3.7	4.5	9.1	1.1	2.6	8.8	12.5	21.6	4.0	2.0	0.3	6.3	27.9	
1991	0.1	-0.2	0.2	0.1	-0.1	-1.4														
**	21.1	290.7%	-120.4%	-127.7%																

* Not covered by this license. These are manufactured by Seatt Corp. and distributed under their license 12-1553702E.

FILE: SPECSHIP

DICON SYSTEMS LIMITED

719 CLAYSON RD., TORONTO (WESTON), CANADA M9M 2H4 (416) 745-6044 TLX 06-969667 FAX (416) 745-6938

May 11, 1990

United States
Nuclear Regulatory Commission
Washington, D.C.

Attention: Mr. J. Bruce Carrico
Medical, Academic and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Dear Mr. Carrico

Based on our records the following represents the ionization smoke alarms shipped through Sonwill:

	1983	1984	1985	1986	1987	1988
300B	38,000	49,000	30,000	80,000	80,000	74,000
SA4	6,000	8,000	13,000	40,000	40,000	37,000
330L	2,000	2,000	6,000	8,000	8,000	8,000
Total	46,000	59,000	49,000	128,000	128,000	119,000

Yours very truly
DICON SYSTEMS LIMITED

John Mallory

Am-241

Each Dicon smoke detector was authorized for not more than 5.5 microcuries, therefore the above table in activity translates as follows:

34,200	39690	27000	72000	72000	66000
5400	7200	11700	36000	36000	33300
1800	1800	5400	7200	7200	7200
41,400	53,100	44,100	115,200	115,200	107100

mCi