



Life Safety Products by MTI Industries

December 15, 2003

Anthony Kirkwood
United States Nuclear Regulatory Commission
11555 Rockville Pike
MS: T8F5 RM: T8J10
Rockville, MD 20852

Subject: Response to your Email and Letter of 12/1/03

Dear Anthony:

In response to your letter dated 12/1/2003, I have enclosed answers to your questions about our license application.

Item 1) A package was send to you on 12/4/03 with a letter agreeing to all the terms conditions set out in the previous applications.

Item 2) Garvan has a current ISO 9001-2000 issued on Jan 16, 2003. A copy is on page 2 of the Garvan packet that is attached. The Source manufacturer also has ISO 9001-2000, see page 3 of Garvan packet.

Item 3) QC. See Page 1 from Garvan packet.

Garvan's factory is monitored by VDS (Germany), QAS (Australia), BSI (UK), DVN (Denmark) and UL (USA).

To confirm manufactured product conforms to the design and safety criteria, UL has one surveillance audit every year end, plus 6 factory visits for production inspection, and additional sampling testing done in USA.

UL audits the production, QC/QA process, sample test based on the following two documents:

- product design / test procedure -- issued by UL;
- our (Garvan) production quality manual -- approved by UL.

MTI will contract with U.L Follow Up Services (F.U.S.) for any other inspection criteria that is required, as this is part of the service U.L. now provides.

Item 4) See pages 48-49 of Garvan packet.

We use MIL Standard 105E level II as a sampling criteria (attachment #G, 2 pages), Major value is 1.5 and Minor value is 2.5. For example, if the Lot size is 1000 pcs., according to "J" vector, we will randomly choose 80 pcs for inspection. For Major inspection criteria, if 3 pcs are found to be defect, this lot of goods is accepted; if 4 pcs are found to be defect, this lot of goods is rejected. The same rule applies to Minor inspection criteria.

Item 5) We wish to distribute Smoke alarms that require batteries. The Series / Model 1001 units are the same construction as those distributed by Hemisphere Forwarding. Model numbers vary but include SA-668 and SA-668S etc. We will not distribute any "Screw In 120 volt" smoke alarms.

#E-P.3

9. Quality Control

(a) During our production, We have:

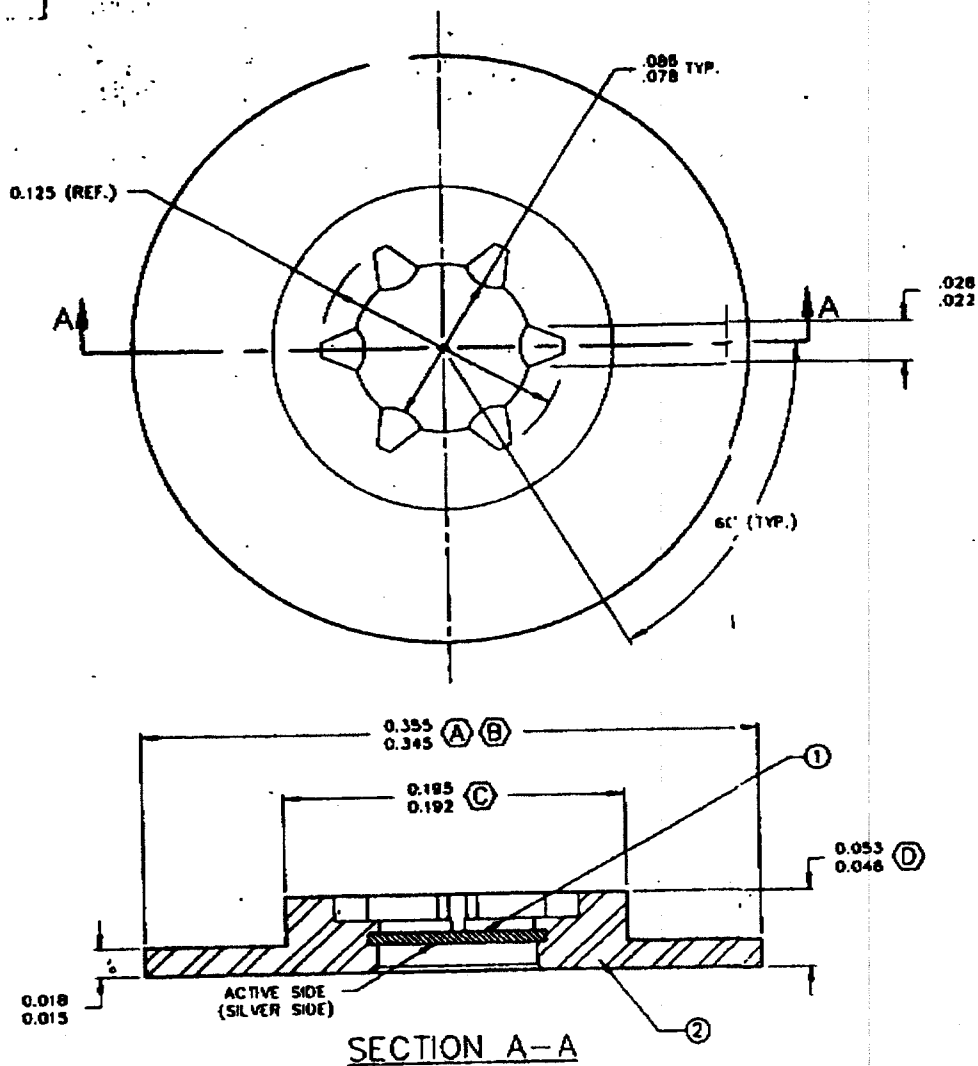
- Inspection for incoming Material.
- Inspection on PCB Component.
- IC lead Soldering inspection.
- Audibility test.
- Sensitivity test
- 4 hrs burn-in test.
- final inspection.
- final sampling inspection.

Details, "see attachement D"

(2) ~~see "attachement E"~~

#Z-P.4

196361



A	DIMENSION ERROR CORRECTED	28MAY87 0872
	0.353/0.347 WAS 0.353/0.347	
B	0.355/0.345 WAS 0.353/0.347	10JUN87 0872
C	0.195/0.192 WAS 0.193/0.190	10JUN87 0872
	ACTIVE SIDE NOTE ADDED	10JUN87
D	0.083 WAS 0.082	15JUN87 0872
E	ITEM NO., DESCRIPTION, ETC. ADDED	24FEB88 0787

2	Holder, Part Number 280210		Platinum sized
1	Amerishar - 1st Source dtd. AMM0527	3401072	amershar
ITEM	DESCRIPTION	DWG. NO.	MATERIAL

DESIGNED BY	N/A	PART NO.	196361	Amershar AMERSHAR CORPORATION 2030 S. Clearbrook Dr. Arlington Heights, IL 60005 (312) 503-8300
MATERIAL	N/A	PROJ. NO.	N/A	
DATE	N/A	BY	DATE	
DESIGN	MJC	23Sep86		
DRAWN	CWS	14Oct86		TITLE
CHECKED	OLE	17Oct86		G.A. of Source Assembly 196361
REV	NA	NA		THIS DRAWING IS THE PRIVATE AND CONFIDENTIAL PROPERTY OF AMERSHAR CORPORATION AND MUST NOT BE LOANED, COPIED, OR REPRODUCED
APPROVED	MJC	17Oct86		
DATE				
				Dwg. No. C Sheet 1 of 1 196361

#E-P.5

NRC QUESTION :

Additionally, send us a legible description of the ion chamber. Include in the description the material of construction, method of attachment of the foil source to the chamber, method of attachment of the ion chamber to the chamber support, the electronic board and to the plastic decorative housing. We would also like a sample detector (with radioactive source removed) contained in its point of sale package for our evaluation.

GARVAN'S ANSWER :General Construction Details

This chamber is held captive and soldered to the PCB after being tightened. The Chamber and PCB Assembly are held into the Plastic Housing with plastic snaps, and 2 plastic center posts which pass through the PCB. This center post is the Housing for a screw which holds the plastic assembly together. A label is placed onto the Smoke Detector to provide all required marking for the device (ie Company Name, Address, Model Number, etc.) This Smoke Detector is sealed and not intended to be opened by the Public for service or cleaning.

Ionization Chamber Construction Details

• (Refer to attached parts explosion)

- | | |
|-----------------------|------------------|
| A. Outer Chamber: | Material - Steel |
| B. Receiver Plate: | Material - Steel |
| C. Plastic insulator: | ABS plastic |
| D. Foil Source: | Americium 241 |
| E. Source Holder: | Material - Steel |
| F. Sensor holder: | Steel |

(Item D swedged into Item E by Amersham and received as a mounted sealed source, referred to as "Source" in the following)

Assembly Procedure Flows as Follows:

1. The source, Item D-E is received, after leak testing, for Assembly into the sensor holder (Item F). The outer edge of the source (Item E) is swedged against the inner lip of sensor support, Item F, in four places, displacing metal on both pieces which causes a strong interference fit between the two parts. Extreme care is taken to avoid any displacement or damage of the

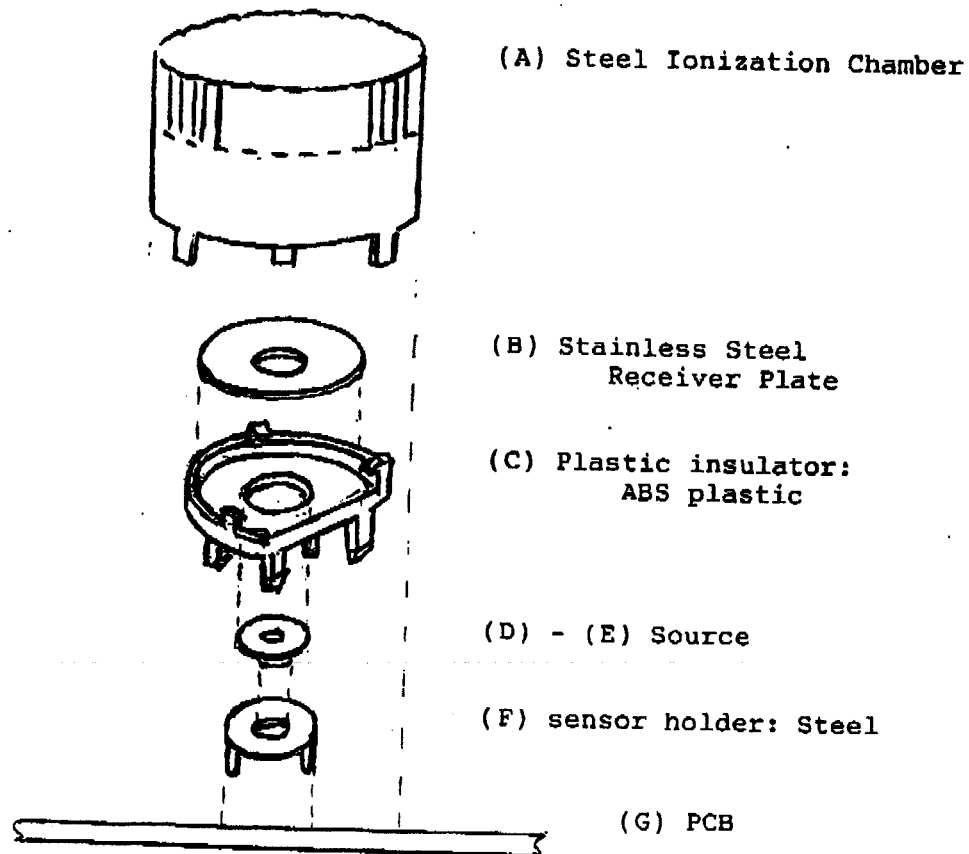
#E-P.5

foil, during this process. All Swedging done in assembly is on the very outermost edge of Item E and well away from the foil. 100% inspection at this point. Any damaged or leaky sources are returned to Amersham.

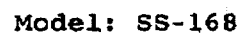
2. The source and holder are placed into the plastic insulator, Item C, and covered with the receiver plate, Item B. The whole source unit (B,C,D,E,F) is soldered to PCB. This receiver plate is held in place by an over hanging edge on the insulator, and is secured by soldering to IC pin.
3. The sub-assembly of Items B,C,D,E, and F then has Ion Chamber Cover, Item A, placed over the entire assembly and is held in place by soldering to PCB. This completes the Ion Chamber as a sub assembly, and will be referred to as the 'Ion Chamber' in the following. 100% visual inspection is preferred at this point.
4. The addition of the Ion Chamber completes the assembly process for the PCB with the exception of setting smoke sensitivity, which is done by adjusting a variable resistor on the PCB. This assembly 100% visual inspected.
5. The Chamber and PCB Assembly are place inside a plastic "Base" and snapped into position.
6. The Smoke Detector "Cover" is added, and 2 screws are attached from the back of the base, through the PCB secured by threads into the cover.
7. The outer plastic is wipe tested (see wipe test procedure).
8. The Smoke Detector is powered up and functionally tested, and 100% visually inspected at this point.
9. The unit is packaged in the point of sale packing and than into a master pack of 20 to 40 units (depending on Model Number)

#E-P.7

GARVAN ENTERPRISES LTD.
Smoke Detector Ionization Chamber



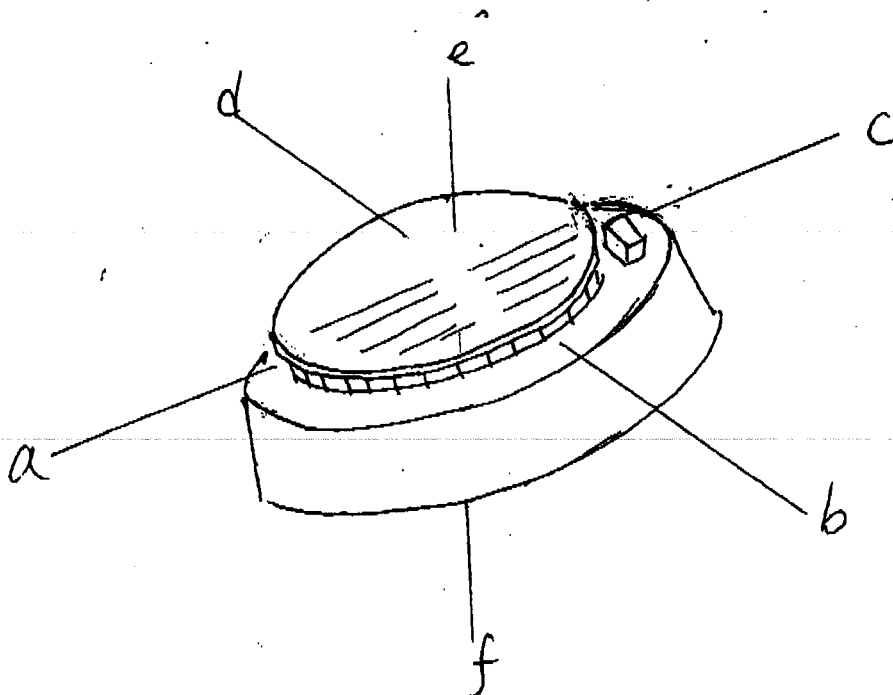
NOTE : C & D: Source and Hoder as received from Amersham.
Amersham Model AMMK1235.




#E-P.11

		POSITION					
		a	b	c	d	e	f
distance	5 cm	0.02	0.007	0.0001	0.006	0.00009	0.00001
	25 cm	0.001	0.0004	0.00001	0.0004	0.00002	0.00001
		Rad/year (approx.)					

Dose rate is based on Thermoluminescent dosimetry.



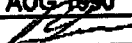
Attachment #F - P.1

GARVAN ENTERPRISES LIMITED				
Principles of Inspection & Handling Procedure for Incoming Material	REF. NO :		REVISION :	
	ISSUE DATE :	30 AUG 1990	REVISE DATE :	
	APPROVED :		PAGE NO :	25
<p>1) Unless specified, all incoming material should be sampling checked.</p> <p>2) Sampling plan : Follow MIL STD 105 D general inspection level II AQL 1.5 major 4.0 minor.</p> <p>3) All equipments used should be within calibrated period. Beware of zero adjust when necessary.</p> <p>4) All material should be rejected if not conform to our standard.</p> <p>5) All rejected goods should be sign off by QC/QA supervisor and he may decide what action should be taken.</p> <p>6) The QC/QA supervisor may request MRB to make the final decision if he wants to.</p> <p>7) IQC record should be maintained for future reference. For plastic/ metal/ paper materials, IQC record is kept in China plant. For electronic parts, IQC record is kept in H.K. office.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

#F-P.2

GARVAN ENTERPRISES LIMITED				
General Inspection and PCB Component Insertion and Soldering <div style="text-align: right; padding-right: 10px;">100% Inspection</div>	REF. NO :		REVISION :	
	ISSUE DATE :	30 AUG 1990	REVISE DATE :	
	APPROVED :		PAGE NO :	33
<p>1.0 PURPOSE</p> <p>1.1 This procedure described is to assure the inspectors know how to do correctly.</p> <p>2.0 SCOPE</p> <p>2.1 This applies to all PCB.</p> <p>3.0 PROCEDURE</p> <p>3.1 All components are mounted in the correct locations and position.</p> <p>3.2 All components are securely mounted.</p> <p>3.3 All wiring has been made mechanically secure and properly soldered in place.</p> <p>3.4 The entire detector assembly is free from extraneous solder dripping or any other foreign materials.</p> <p>3.5 Metal Work and component leads are not deformed, too long, too short, or bent such as would possible result in a short circuit once the unit has been installed.</p> <p>3.6 Use a pencil or an (arrow) label to point out the defects found and send to repair.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

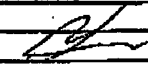
#F-P.3

GARVAN ENTERPRISES LIMITED				
IC Lead to Electrode Soldering Inspection	REF. NO :		REVISION :	
	ISSUE DATE :	30 AUG 1990	REVISE DATE :	
100% Inspection	APPROVED :		PAGE NO :	34
<p>1.0 PURPOSE</p> <p>1.1 This procedure described is to assure good solder joint on IC lead.</p> <p>2.0 SCOPE</p> <p>2.1 This applies to all models.</p> <p>3.0 PROCEDURE</p> <p>3.1 Visually check that:</p> <ul style="list-style-type: none"> a/ The electrode plate is fitted on the support. b/ Good solder joint on IC lead. c/ The electrode plate is clean. <p>3.2 Return the rejected unit to production for rework.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

#F-P.4

GARVAN ENTERPRISES LIMITED				
Audibility Test	REF. NO :		REVISION :	
	ISSUE DATE :	30 AUG 1990	REVISE DATE :	
100% Inspection	APPROVED :		PAGE NO :	39
<p>1.0 PURPOSE</p> <p>1.1 This procedures describes test to ensure sound output level from smoke detectors conforming to UL requirement.</p> <p>2.0 SCOPE</p> <p>2.1 This procedure applies to all models of UL-listed smoke detector.</p> <p>3.0 EQUIPMENT</p> <p>3.1 Sound level test stand. 3.2 Sound level meter model (Simpson. Model 884S2A) 3.3 A 12 inch long ruler.</p> <p>4.0 PRELIMINARY INSTRUCTION</p> <p>4.1 Battery level of the sound meter has to be checked before operation. 4.2 Set up sound level meter as follows: - Range : 110 Weighting : A Responses : FAST 4.3 The distance between detector buzzer surface to the sound level meter MIC is 1 foot. 4.4 Re : Audibility test location The sound level of each detector is tested on the production line in a shield, non-sound reflective room approx. 4'X4'X7'. If the sound level is 102 db or over, the unit is passed. For those passed units, we separate it in different lots. Each lot is not more than a thousand units. Then take sampling check according to MIL STD 105D General Level 2 AQL 1.5. The test is performed in a room 17'X18'X12'. The accepted sound level is 102 db or over.</p> <p>5.0 TEST PROCEDURE</p> <p>5.1 Pick up a smoke detector and place it on the test platform. 5.2 Connect the unit to the tester. 5.3 Push and hold the 2 push-on buttons simultaneously for 1 second. 5.4 Reject the unit if the tester's breakdown indication lamp light and alarm sound. Stick a label mark 24 to the unit. 5.5 Return the rejected units to production for rework and recalibration.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

#F-P.5

GARVAN ENTERPRISES LIMITED				
Audibility Test <div style="text-align: right; padding-right: 20px;">100% Inspection</div>	REF. NO :		REVISION :	A
	ISSUE DATE :		REVISE DATE :	2 JAN 91
	APPROVED :		PAGE NO :	40
<p>5.0 TEST PROCEDURE</p> <p>5.1 Pick up a smoke detector and place it on the sound test stand, with the horn or piezo right under the sound meter.</p> <p>5.2 Push and hold the test button. Unit should go into alarm within 5 sec.</p> <p>5.3 Reject the unit if the unit fails to alarm within 5 sec, stick label mark 18 at the back of the unit. Go back to 5.1.</p> <p>5.4 Check that the sound level output from the alarming unit is at least 102dB. The unit can be moved horizontally on the test stand in order to obtain the largest output.</p> <p>5.5 Reject the unit that gives out less than 102dB sound output. Stick label mark 20 at the back of the unit.</p> <p>5.6 Release the test button. Unit should stop alarming within 5 sec.</p> <p>5.7 Reject the unit if it does not stop alarming. Stick a label mark 17 at the back.</p> <p>5.8 Return the rejected units to production for rework and recalibration.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

#F-P.6

GARVAN ENTERPRISES LIMITED				
Sensitivity Test	REF. NO :		REVISION :	
	ISSUE DATE :	30 AUG 1990	REVISE DATE :	
Sampling Inspection	APPROVED :	<i>[Signature]</i>	PAGE NO :	41
<p>1.0 PURPOSE</p> <p>1.1 This procedure described is to assure sensitivity of the smoke detector are within UL requirement.</p> <p>2.0 SCOPE</p> <p>2.1 This procedure applies to all models of UL-listed smoke detectors.</p> <p>3.0 EQUIPMENT USED</p> <p>3.1 A lamp socket. 3.2 UL 217 smoke box. 3.3 An Anemometer. 3.4 A digital Multimeter. 3.5 A kerosene Lamp.</p> <p>4.0 PRELIMINARY INSTRUCTION</p> <p>4.1 The smoke box has to be cleaned at least once per day. 4.2 Use the anemometer to measure the air velocity. 4.3 Use Dmm to measure the power supply.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		


#F-P.7

GARVAN ENTERPRISES LIMITED				
Sensitivity Test	REF. NO :		REVISION :	
	ISSUE DATE :	30 AUG 1990	REVISE DATE :	
Sampling Inspection	APPROVED :		PAGE NO :	42
<p>5.0 TEST PROCEDURE FOR GREY SMOKE AND BLACK SMOKE.</p> <p>5.1 The test is to be conducted in an ambient temperature of 23 +/- 3°C (73.4 +/- 5F) at a relative humidity between 10-70 percent.</p> <p>The air velocity in the test compartment is to be maintained at 30-35 ft/min (0.15-0.18 m/s), as measured 1 in. (25.4mm) in front (upstream) of the middle section of the detector with a hot wire anemometer, or equivalent air velocity measuring instrument. The velocity measurements is to be made with the detector removed.</p> <p>The units are to be energized from a source of specified supply voltage and placed in the chamber in the specific orientation as per illustration.</p> <p>The smoke box cover is then to be closed and the blower fans are to be energized. The beam is to be adjusted such that the output of the photovoltaic cell as measured on the microammeter indicates 100 uA.</p> <p>Following this adjustment, each unit shall be subjected to three trials using gray smoke. Smoke shall be gradually introduced and circulated throughout the smoke test chamber.</p> <p>The meter shall be observed continuously to insure that a slowly increasing uniform smoke density is being produced.</p> <p>The reading from the microammeter connected to the photovoltaic cell shall be recorded at end of 5 seconds continuous alarm from the detector under test. The smoke source shall then be removed and the box shall be cleared of smoke prior to the next trial.</p> <p>The gray smoke as generated from a burning wick should be introduced at approximately the rate of 0.2 to 0.4 percent obscuration per foot per minute. The black smoke as generated from a kerosene lamp should be introduced at approximately the rate of 0.8 to 2.0 percent obscuration per foot per minute.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		


#F-P.8

GARVAN ENTERPRISES LIMITED				
4 Hrs Burn-in Test	REF. NO :		REVISION :	
	ISSUE DATE :	30 AUG 1990	REVISE DATE :	
Sampling Inspection	APPROVED :		PAGE NO :	46
<p>1.0 PURPOSE</p> <p>1.1 This test is intended to discover any infant mortality problem.</p> <p>2.0 SCOPE</p> <p>2.1 This test applies to model 1001 smoke detector.</p> <p>3.0 PRELIMINARY INSTRUCTION</p> <p>3.1 Make sure the lamp socket is powered by 120V ac.</p> <p>3.2 2 Units per shift is subject to the Burn-in Test.</p> <p style="padding-left: 40px;">Sensitivity and audibility reading is recorded before and after the Test. The measured sensitivity of the two units shall be within the specified limits $\pm 0.25\%$ per foot obscuration. The sound level is within the specified limit.</p> <p>4.0 TEST PROCEDURE</p> <p>4.1 Place 1 unit into the lamp socket and place a light bulb into the unit.</p> <p>4.2 The light bulb must be on. If it is not lighted, check whether the bulb is burnt or not. If it is good, reject the unit, stick a label mark 23.</p> <p>4.3 Alarm for 1 sec. is permitted while energizing.</p> <p>4.4 Reject the unit if it alarms more than 1 sec. Stick a label mark 16 at the back of the unit.</p> <p>4.5 Push the test button, the unit should alarm.</p> <p>4.6 Reject the unit if it doesn't alarm within 5 sec. Stick a label mark 18 at the unit back.</p> <p>4.7 Check that the LED should flash while alarming.</p> <p>4.8 Reject the unit if the LED does not flash. Stick a label mark 19.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

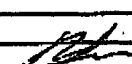
#F-P.9

GARVAN ENTERPRISES LIMITED				
4 Hrs Burn-in Test	REF. NO :		REVISION :	
	ISSUE DATE :	30 AUG 1990	REVISE DATE :	
Sampling Inspection	APPROVED :		PAGE NO :	47
<p>4.9 Mark the time on a label and stick to the unit under test. The units should not give out any alarm during Burn-in. When the time is up and the units are ready to release, put a tick '✓' on the label to indicate that the units can be taken away.</p> <p>4.10 Reject the unit if it alarms within the Burn-in period. Stick a label MARK 16 at the unit back.</p> <p>4.11 Return the rejected units to production for rework and recalibration.</p> <p>NOTE : If 2 units pass, release that shift's batch. If 2 units fail, return the batch to production for rework. If 1 unit fails, test another 6 units. If one or more than one units fail at the second trial. Return the batch to production for rework. If all 6 units pass, release the batch.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

#F-P.10

GARVAN ENTERPRISES LIMITED				
Final Inspection and Testing	REF. NO	:		REVISION
	ISSUE DATE	:	30 AUG 1990	REVISE DATE
	APPROVED	:		PAGE NO
48				
<p>Final inspection and test will ensure that all specified inspections and tests on incoming and inprocess production have been carried out to specified requirements and that the finished product conforms to specified requirements in all respects.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

#F-P.11

GARVAN ENTERPRISES LIMITED				
Final Inspection <div style="text-align: right; padding-right: 20px;">100% Inspection</div>	REF. NO :		REVISION :	A
	ISSUE DATE :		REVISE DATE :	02 JAN 91
	APPROVED :		PAGE NO :	49
<p>1.0 PURPOSE</p> <p>1.1 This procedure describes inspection performed is to assure correct labelling and good quality finished unit.</p> <p>2.0 SCOPE</p> <p>2.1 This procedure applies to all models of UL-listed smoke detectors.</p> <p>3.0 TEST PROCEDURE</p> <p>3.1 Pick up a unit and check</p> <ul style="list-style-type: none"> a/ any label missing. b/ any incorrect label. c/ any label torn. d/ any label illegible. e/ date stamp missing. <p>3.2 Check</p> <ul style="list-style-type: none"> a/ marred / damaged plastics. b/ dirty cover. <p>3.3 A label with number block is to be stick on the top of the ion chamber. A mark is written on the number block when passing each test station. By looking at the number of station passed, the final QC will know that the unit has conduct all checks.</p> <p>3.4 Return the units to production for rework and reinspected.</p>				
DISTRIBUTION		NAME	FUNCTION	
		LAM	DIRECTOR	YAU
		HUI	DIRECTOR	
		HO	QA	

#F-P.12

GARVAN ENTERPRISES LIMITED				
Final Sampling Inspection	REF. NO :		REVISION :	
	ISSUE DATE :	30 AUG 1990	REVISE DATE :	
	APPROVED :		PAGE NO :	50
<p>1.0 PURPOSE</p> <p>1.1 This procedure describes inspection performed is to assure the batch is within our quality level.</p> <p>2.0 SCOPE</p> <p>2.1 This procedure applies to all models of UL-listed smoke detectors.</p> <p>3.0 EQUIPMENT USED</p> <p>3.1 Sound level meter (Simpson. Model : 884S2A)</p> <p>3.2 Sound level test stand.</p> <p>3.3 A variable AC supply.</p> <p>3.4 A Ruler.</p> <p>4.0 PRELIMINARY INSTRUCTION</p> <p>4.1 Battery level of the sound meter has to be checked before operation.</p> <p>4.2 Set up sound level meter as follows :-</p> <p style="margin-left: 20px;">RANGE : 110</p> <p style="margin-left: 20px;">WEIGHTING : A</p> <p style="margin-left: 20px;">RESPONSE : FAST</p> <p>4.3 The distance from the horn to the sound level meter is 1 foot.</p> <p>5.0 TEST PROCEDURE</p> <p>5.1 Randomly pick out the cartons from the batch.</p> <p>5.2 Pull out the unit from carton.</p> <p>5.3 Pick up a unit and check.</p> <p style="margin-left: 20px;">a/ any label missing.</p> <p style="margin-left: 20px;">b/ any incorrect label.</p> <p style="margin-left: 20px;">c/ any label torn.</p> <p style="margin-left: 20px;">d/ any label illegible.</p> <p style="margin-left: 20px;">e/ date stamp missing.</p>				
DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

#F - P.13

GARVAN ENTERPRISES LIMITED			
Final Sampling Inspection	REF. NO :		REVISION :
	ISSUE DATE :	30 AUG 1990	REVISE DATE :
	APPROVED :	<i>[Signature]</i>	PAGE NO : 51
Sampling Inspection			

- 5.4 Check
 a/ marred / damaged plastic.
 b/ dirty cover.
- 5.5 Push and hold the test button. Unit should go into alarm within 5 sec.
- 5.6 Reject the unit if the unit fails to alarm within 5 sec. Stick a label mark 18 at the back of the unit. Go back to 5.5.
- 5.7 Check that the sound level output from the alarming unit is at least 100dB. The unit can be moved horizontally on the test stand in order to obtain the largest output.
- 5.8 Reject the unit that gives out less than 100dB sound output. Stick a label mark 20 at the back of the unit.
- 5.9 Release the test button. Unit should stop alarming within 5 sec.
- 5.10 Reject the unit if it does not stop alarming. Label the unit label mark 17 at the back.
- 5.11 Connect the unit to the socket, place a light bulb into the unit. The light bulb must be on. Reject the unit if the bulb is not on. Stick a label mark 23.
- 5.12 Return the rejected units to production for rework and reinspected.
- 5.13 Randomly pick 2 units for sensitivity test and sensitivity test nature test. If 2 units pass, release the batch, if 2 units fail, return the batch to production for rework and for sensitivity test. If all 6 units pass, release the batch. If 1 or more units fail, return the batch to production for rework and recalibration.

DISTRIBUTION	NAME	FUNCTION	NAME	FUNCTION
	LAM	DIRECTOR	YAU	PROD
	HUI	DIRECTOR		
	HO	QA		

Attachment G - P.1

2003-12-3 16:39

GARVAN ENTERPRISES LTD

NO. 978 P.2

MIL-STD-105E抽樣計劃
MIL-STD-105 SAMPLING PLAN
樣本代碼表(SAMPLE SIZE CODE)

批量(LOT)	特殊檢驗水準(SPECIAL INSPECTION LEVELS)				正常檢驗水準 GENERAL INSPECTION LEVELS		
	S-1	S-2	S-3	S-4	I	II	III
2 TO 8	A	A	A	A	A	A	B
9 TO 15	A	A	A	A	A	B	C
16 TO 25	A	A	B	B	B	C	D
26 TO 50	A	B	B	C	C	D	E
51 TO 90	B	B	C	C	C	E	F
91 TO 150	B	B	C	D	D	F	G
151 TO 280	B	C	D	E	E	G	H
281 TO 500	B	C	D	E	F	H	J
501 TO 1200	C	C	E	F	G	J	K
1201 TO 3200	C	D	E	G	H	K	L
3201 TO 10000	C	D	F	G	J	L	M
10001 TO 35000	C	D	F	H	K	M	N
35001 TO 150000	D	E	G	J	L	N	P
150001 TO 500000	D	E	G	J	M	P	Q
500000以上	D	E	H	K	N	Q	R

#G-P.2

MIL-STD-105E

正常检验单次抽样计划表 (主抽样表)

SINGLE SAMPLING PLAN FOR NORMAL INSPECTION (MASTER TABLE)

样本数	允收品质水准(AQL)																									
	0.010	0.015	0.025	0.040	0.065	0.10	0.15	0.25	0.40	0.65	1.0	1.5	2.5	4.0	6.5	10	15	25	40	65	100	150	250	400	650	1000
	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re
A	2																									
B	3																									
C	5																									
D	8																									
E	13																									
F	20																									
G	32																									
H	50																									
I	80																									
J	125																									
K	200																									
L	315																									
M	500																									
N	800																									
O	1250																									
P	2000																									

表示用箭头下方第一组抽样方案(若样本数大于批数时,即进行全数检验) Ac: 表示判定允收件数; Re: 表示判定拒收件数。
 表示用箭头上第一组抽样方案(若样本数大于批数时,即进行全数检验)。

2003-12-3 16:33

Item 6) Please disregard I was confused when I sent you the Kite Mark information. Item 2 is what I should have sent.

In this process please contact David Buddingh at (630) 961- 4504 and he will get you the answers you need.

Sincerely,



Tom Wisniewski
President

Encl:

49 Pages from Garvan

Garvan Enterprises Ltd. ISO 9001:2000

AEA Technology Manufacturing Ltd., who is the radioactive source manufacturer, upgraded to ISO9001:2000 in Nov 2003. (Attached ISO certificates)

- Specification of radioactive source; (attachment #A, 11 pages)
- NRC registration of sealed source; (attachment #B, 4 pages)
- Source leakage test plan; (attachment #C, 3 pages)
- Radioactive source test report; (attachment #D, 1 page)
- Chamber Constitution, radiation level labeling & installations (attachment #E, 11 pages)
- Quality control. (Attachment #F, 13 pages)

David Buddingh

Subject: FW: Mini smoke alarm

-----Original Message-----

From: Garvan Enterprises [mailto:sale@garvan.com.hk]

Sent: Wednesday, December 03, 2003 4:08 AM

To: davidb@mtiindustries.com

Cc: tomw@mtiindustries.com; Raymond Lam

Subject: Re: Mini smoke alarm

Dear David,

Refer to your enquiry, we try our best to provide the following information to you:

(1) Garvan Enterprises Ltd. obtained its ISO 9002:1994 certificate in year 2000, and upgraded to ISO 9001:2000 in Jan 2003, as to manufacture and design of smoke alarm.

AEA Technology Manufacturing Ltd., who is the radioactive source manufacturer, upgraded to ISO9001:2000 in Nov 2003. (Attached ISO certificates)

We have revised and updated our documents on:

- Specification of radioactive source; (attachment #A, 11 pages)
- NRC registration of sealed source; (attachment #B, 4 pages)
- Source leakage test plan; (attachment #C, 3 pages)
- Radioactive source test report; (attachment #D, 1 page)
- Chamber Constitution, radiation level labelling & installations (attachment #E, 11 pages)
- Quality control. (attachment #F, 13 pages)

(2) Garvan's factory is monitored by VDS (Germany), QAS (Australia), BSI (UK), DVN (Denmark) and UL (USA).

To confirm manufactured product conforms to the design and safety criteria, UL has one surveillance audit every year end, plus 6 times of factory visit for production inspection, and sampling test done in USA.

UL audits our production, QC/QA process, sample test based on the following two documents:

- product design / test procedure -- issued by UL;
- our production quality manual -- approved by UL.

(3) We use MIL Standard 105E level II as a sampling criteria (attachement #G, 2 pages), Major value is 1.5 and Minor value is 2.5. For example, if the Lot size is 1000 pcs, according to "J" vector, we will randomly choose 80 pcs for inspection. For Major inspection criteria, if 3 pcs are found to be defect, this lot of goods is accepted; if 4 pcs are found to be defect, this lot of goods is rejected. The same rule applies to Minor inspection criteria.

(4) MTI is distributing our smoke alarm model: SS-668 (battery powered unit). It is UL listed.

(5) Kitemark is a quality approved certificate by BSI, UK -- not relevant in the issue of USA.

Hope the above information is helpful.

Best regards,
Raymond Lam
President
Garvan Enterprises Ltd.

12/12/2003

[illegible]

TOTAL P.01



Management System Assessment.

Visit Report.

Visit Dates : 12-14 Nov 2003

Company : Shenzhen CIC-AEA Technology Manufacturing Co., Ltd.

LRQA Reference : H991002

Assessment Standard : ISO 9001:2000

LLOYD'S REGISTER QUALITY ASSURANCE

Form No. SD-2

Issue Date: 8/30/89

Revision Date: 2/8/99

Survey Date: 10/29/03

File

54964

SMOKE DETECTOR QUALITY ASSURANCE SYSTEM SURVEY FORM☐ Evaluation Visit☒ Surveillance Inspection Visit☐ Initial Survey☐ Resurvey (See Initial Survey dated _____)ApplicantCompany GARVAN ENTERPRISE LTDAddress 21 ST FL ROOM 16-17 WING HING IND BLDG83-93 CHAI WAN KOK ST TSUEN WAN N THONG KONGRepresentative MS. DAISY Y. H. KUAN Telephone 852-2402-8768Manufacturer (If different from above)Company Name GARVAN ENTERPRISE LTDFactory Address WAN CHU LIK ADMINISTRATIVE DISTRICTCHANG-PING DONGGUAN GUANGDONG511736 CHINARepresentative Mr. Roger Ma. Ks. Sun Telephone 0768-3977318Specification (UL Standard or Other) UL 539Individual Conducting SurveyName CHEN DONG QIANGTitle FIRSignature Chen Dong QiangDate Completed October 28, 03Inspection Center GUANGZHOUNo. 316Applicant's or Manufacture's Representative

Name



Title

Manufacturer Representative

12/03/03 16:25

Date: 2003/09/30 Time: 16:25:00

Page: 1 of 1

30-SEP-2003 12:27

AEA TECHNOLOGY LTD

052 25861600 P.01/11

Attachment # A - p.1



Company To Miss Law
Garvan Enterprises Ltd.
Fax No.
From Ted Pang
Return Fax No. 25861600
Date September 30, 2003
Total No. of 10
pages
Our Ref. No. 042253/02

AEA Technology Ltd.
Suite 3503, 35/Floor
China Resources Building
26, Harbour Road
Wanchai, Hong Kong
Direct: (852)25967722
Fax: (852)25861600
E-mail: Aliana_Wu@acat.com.hk

Facsimile

Dear Miss Law,

Please kindly find the attached:

- 1) Sources product specification of AMMQ6527 foil which is punched into discs & loaded into holders 288210 (drawing no. : 196361) to become AMMK5919.
- 2) Drawing of holder 288210 (drawing no. : 196361)

Best regards,

Ted Pang
Sales Manager

12/03/03

16:25

GARVAN ENTERPRISES LTD → 18475469007

NO.022

006

12/03/03 16:25

12/03/03 16:25

12/03/03 16:25

30-SEP-2003 12:27

AEA TECHNOLOGY LTD

852 25861600 P.02/11

#A-P.2

SPS No. 003
Issue No. : 1A
Page 1 of 6

AEA TECHNOLOGY PLC

OSA

SOURCES PRODUCT SPECIFICATION (SPS)

Title : Americium-241 Foil, Single Sided Discs type AMMQ6527

Date : September , 2003

Scope

This is specification for Am-241 alpha foil 2.38mm diameter discs.
Product Code AMMQ6527.

This document consists of 6 pages and the 3 drawings list in Section 2.

TOTAL 12/03/03 16:25

DATE: 12/03/03 TIME: 16:25

852 25861600 P.03/11

30-SEP-2003 12:27

AEA TECHNOLOGY LTD

#A-P.3

SPS No. 003
Issue No. 1A
Page 2 of 6

1. Details of Active Contents

Radionuclide Americium-241 (Am-241)

Nuclear data Half life 433 years

Major radiations: Alpha plus
60 keV gamma
12 - 22 keV X-rays

Activity: See list attached.

Form: See drawing No. ARC 10756/S

Radionuclidic purity:

Normal QC specification

2. Details of Foil Construction

Drawings ARC 10756/S
ARC 10757/S
SS/SK/1927

ARC drawings referenced above indicate the general construction of foil strip and discs. These drawings are cited on ANSI, ISO, and SPC documents.

Detailed specifications for AMQ 6527 is provided by SS/SK/1927 in conjunction with the attached specification sheet.

PLOT: GARVAN LTD 18475469007

DATE: 12/03/03 TIME: 16:25:00

PAGE 3 OF 11

30-SEP-2003 12:28

AEA TECHNOLOGY LTD

852 25861680 P.04/11

#A-P.4

SPS No. 003
Issue No. 1A
Page 3 of 6

Reference: Drawing 88/SK/1927

2.1 Material Specification (Figure 1)

C) Backing material	Silver 0.15 - 0.25 mm Thin gold alloy coverage (approx 1µm) to distinguish from active side.
D) Interface layer	Gold/palladium alloy approx 1µm.
E) Active matrix	Americium oxide/gold approx 1µm.
F) Face material	Palladium/gold palladium alloy laminate approx 2µm.

2.2 External Dimensions

B) Thickness (Fig 1)	0.15 - 0.25 mm.
J) Diameter (Fig 3)	2.38 ± 0.05 mm.
A) Burr (Fig 1)	0.05 mm.
K) Flatness (Fig 4)	0.05 mm.

12/03/03 16:25:00

DATE: 2003/09/03 TIME: 16:25:00

Page 4 of 11

30-SEP-2003 12:28

AEA TECHNOLOGY LTD

852 25861600 P.05/11

#A-PJ

SPS No. 003
Issue No. 1A
Page 4 of 6

Reference: Drawing SS/SK/1927

2.3 Finish (Figure 4)

M) Active Surface

Free from obvious blemishes.

L) Back surface

Thin gold alloy coverage
(approx 1um) to distinguish
from Active side.

N) Cutting Direction

Punched through back so that
any burr is on back surface.

2.4 Radioactivity

Active content

^{238}Pu maximum ($^{238}\text{Pu} \pm 20\%$).
Activity of foil strips checked
during production process
against Q 6527 standard and
foils then rolled to calculate
length which will give specified
activity.

Emission

Checked at foil stage before
blanking on air ionisation
chamber against Q6527 standard.

H) Peak Alpha Energy
(Fig 2)

4.5 MeV \pm 10%.

G) Peak Width
(Fig 2)

> 0.8 MeV.

11/01/03 10:10:00

DATE: 20/09/03 TIME: 10:10:00

PAGE 001/11

30-SEP-2003 12:28

AEA TECHNOLOGY LTD

052 25961680 P.06/11

#A-P.6

SPS No. 003
Issue No. 1 A
Page 5 of 6

3. Special Requirements

4. Manufacturing Procedures

In line with divisional QA Manual, ie materials, manufacturing (including measurement), procedures and process controls are specified and documented, see Product Dossier.

5. Documentation

Internally - full manufacturing records are maintained.

Externally (ie despatched with order) test report, handling instructions and despatch notes.

11/11/11 10:11:11

11/11/11 10:11:11

PAGE 1 OF 11

30-SEP-2003 12:29

AEA TECHNOLOGY LTD

852 25861688 P.07/11

#A-P.7

SPS No. 003
Issue No. 1A
Page 6 of 6

6. Testing and Inspection

ISO Classification: C64444

(Ref. ISO 2919 = BS.5288 = ANSI N542 1977)

Recommended Working Life: 10 years

Special Form: not applicable. See below 9.

Other: None

Inspection

Foil strip inspected for surface blemishes before blanking. Blanked discs sent to AC without any QC. All testing carried out at AC.

7. Application

Smoke detection.

8. Conditions of Use

Normal industrial laboratory and domestic environment. These sources should be visually checked and leak tested at least every 26 months (depending on usage) and records of these checks maintained.

9. Additional Information

Special Form: not applicable.

As diameter < 5 mm.

17/03/03 10:10:00 12/03/03

0010 2000/01/01 10:10:00 12/03/03

PAGE 001 11

30-SEP-2003 12:29

AEA TECHNOLOGY LTD

052 25061600 P.08/11

#A-P.8

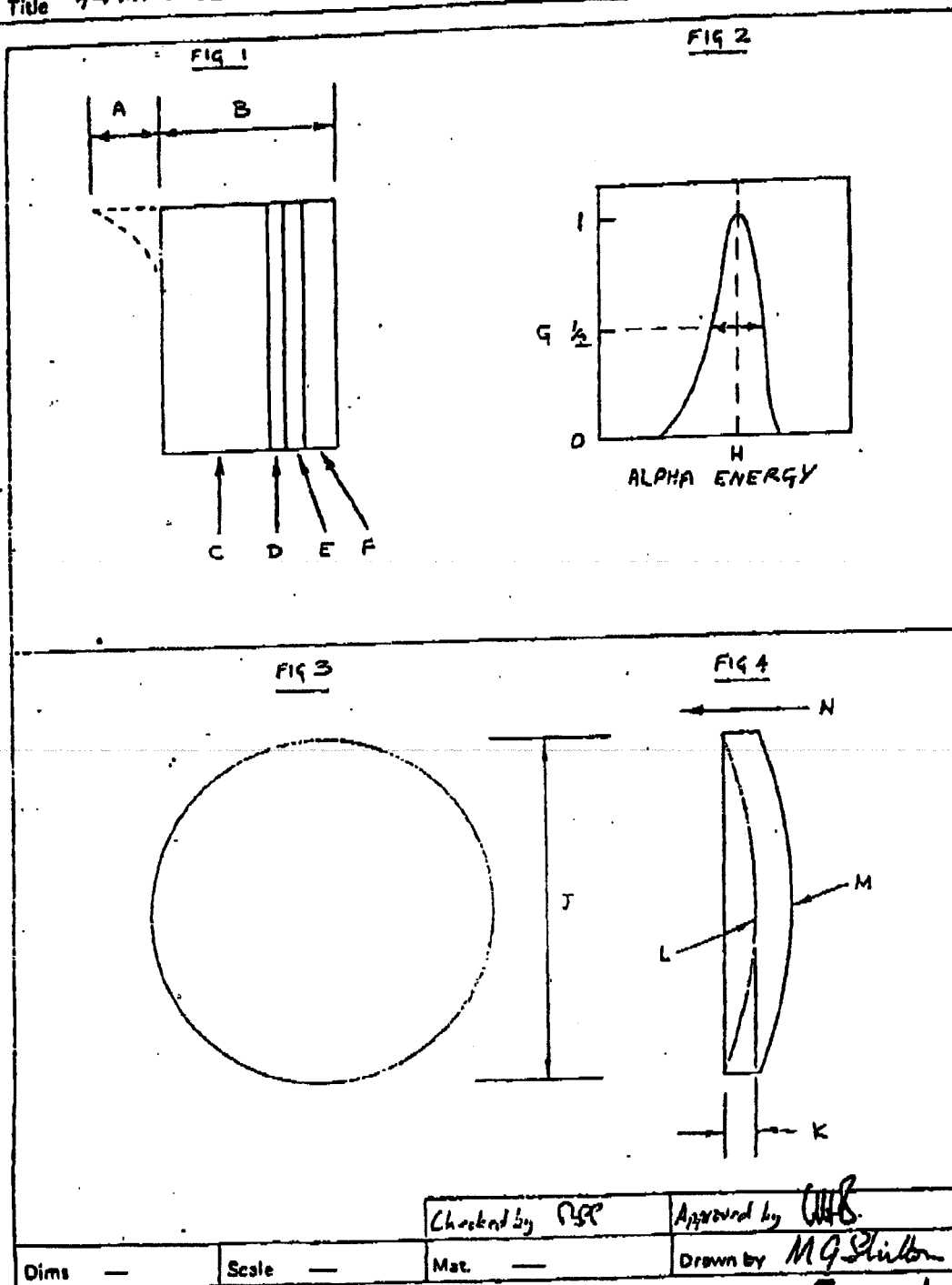
Amersham International plc
Amersham UK

Date 4/9/86

Drawing No. 55/52/19:

Title ALPHA DISC SOURCES - GENERAL SPECIFICATION

Issue No. 1



Checked by RSP

Approved by WJB

Dims —

Scale —

Mat. —

Drawn by MGS/100

Amersham

A1/GA/102

30-SEP-2003 12:29

AEA TECHNOLOGY LTD

052 25861680 P.09/11

#A-P.9

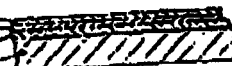
USED ON

No.

ARC10756/5

Section of active area

- A - Cover layer
B - Active layer
C - Backing layer
D - Substrate



- A - GOLD PALLADIUM ALLOY OR
GOLD PALLADIUM LAMINATE 0.0020R0.003mm
B - Americium Oxide plus Gold ~ 0.002 mm
C - Gold ~ 0.001 mm
D - Silver 0.20-0.25mm

Construction.

The radionuclide as americium oxide, is contained uniformly distributed and sintered in a matrix of fine gold at temperatures in excess of 500°C. It is further contained between a gold coated substrate of pure fine silver and a front covering of NOBLE METAL SEE 'A' above by hot forging. The metal layers now continuously welded are extended in area by a power rolling mill to give required active and overall foil areas.

JOB No.

Testing for leakage and contamination

Each rolled length of foil is wipe tested over the entire surface, acceptance limit 0.005 nCi.

PROJECT No.

MATERIAL & SPEC

FINISH

SURFACE TEXTURE

APPROVED

DRAWN

REMOVE ALL BURRS

✓ UNLESS STATED

TCD.

DIMS.
IN

TOLERANCES — UNLESS STATED

CHKD.

SCALE

ISSUE

DATE

D.O.I.

MOD

APPD.

THE RADIOCHEMICAL CENTRE
AMERSHAM BUCKS

CONTRACTOR

TITLE AMERICIUM-241 ALPHA FOIL

DRG.

No.

ARC10756/5

NOT FOR PUBLICATION
THE INFORMATION ON THIS DRAWING IS NOT TO BE COMMUNICATED
EITHER DIRECTLY OR INDIRECTLY TO THE PRESS OR TO ANY PERSON
NOT AUTHORISED TO RECEIVE IT.

#A-P.10

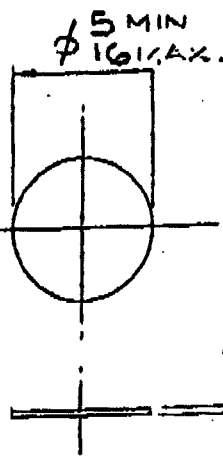
30-SEP-2003 12:30

AEA TECHNOLOGY LTD

852 25961600 P.10/11

NOT FOR PUBLICATION
THE INFORMATION ON THIS DRAWING IS NOT TO BE COMMUNICATED
EITHER DIRECTLY OR INDIRECTLY TO THE PRESS OR TO ANY PERSON
NOT AUTHORISED TO RECEIVE IT.

FOIL DISC BLANKED
FROM ROLLED SHEET
TO MPO14.



FACE:-

GOLD/PALLADIUM ALLOY OR GOLD-PALLADIUM LAMINATE.

ACTIVE LAYER:-

AMERICIUM OXIDE + GOLD

BACKING LAYER

GOLD



2 or 3 mm ENLARGED
SECTION
THRU FOIL

SILVER

SEE ARC 10756/5 FOR SPEC.

JOB No.

INDISPERSIBLE SOLID RADIOACTIVE MATERIAL

PROJECT No	MATERIAL & SPEC	FINISH	DATE	G	2.10.85	MS 363
				F	20.3.85	MS 333
DRAWN	REMOVE ALL BURRS	SURFACE TEXTURE	APPROVED	E	14.9.84	MS 300
				D	24.5.84	MS 294
TCD.	DIMS. IN	TOLERANCES - UNLESS STATED		C	8.10.82	MS 150
				B	10.9.82	MS 147
CHKD.	SCALE 5:1			A	21.1.85	
				ISSUE	DATE	D.O.J. MOD
APPO.	THE RADIOCHEMICAL CENTRE AMERSHAM BUCKS		CONTRACTOR			
	TITLE AMERICIUM 241 ALPHA FOIL DISC		DRG. No. ARC 10757/5			

12/03/03

16:25

GARUN ENTERPRISES LTD → 18475469007

NO.022

P15

UNIT: UNIT 10: 10/00/2010/00

UNIT: UNIT 10: 10/00/2010/00

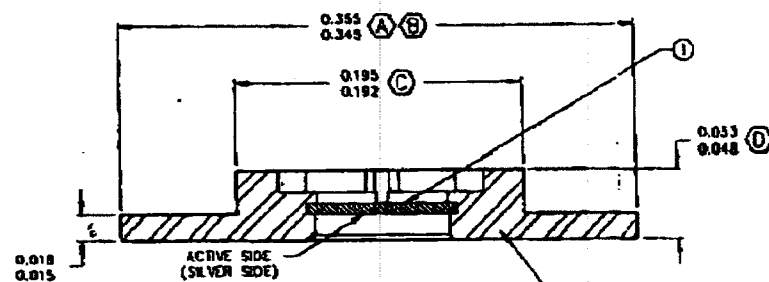
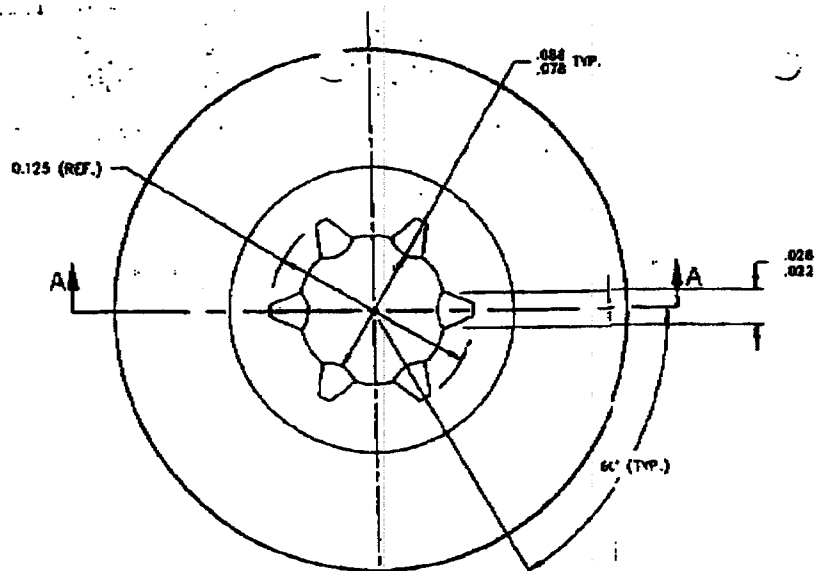
30-SEP-2003 12:38

REA TECHNOLOGY LTD

BS2 25861608

P.11/11

DIMENSION ERROR CORRECTED		REVISION
A	0.333/0.347 WAS 0.333/0.347	05MAY03 0000
B	0.333/0.345 WAS 0.333/0.347	10JAN07 0072
C	0.195/0.192 WAS 0.193/0.190	10JAN07 0072
ACTIVE SIDE NOTE ADDED		10JAN07
D	0.053 WAS 0.052	15JAN07 0072
E	REF NO. DESCRIPTION ETC. ADDED	20FEB08 0087



SECTION A-A

ITEM	DESCRIPTION	QTY. REQ.	MATERIAL
1	Holder, Part Number 258310		stainless steel
2	Amershar - 201 Source disk, AM40537	200000	composites

DESIGN NO.	196361	Amershar 1920 E. Commercial Dr. Chicago, Illinois 60605 (312) 663-6100
PROJ. NO.	N/A	
DATE	25861608	TITLE
BY	CHS	G.A. of Source Assembly 19636
CHECKED	DLE	
DATE	NA	
BY	NA	
DATE	NA	

P.11/11

#A-P11

P.11/11

TOTAL P.11

Attachment # B-P.1**AEA Technology Ltd.****Suite 1208 Central Plaza
18 Harbour Road, Wanchai
Hong Kong****Telephone : (852) 2596 7722
Fax : (852) 2586 1600****Fax To : Mr Raymond Lam****Page 1 of 2****Location : Garvan****Date 24 Feb 00****From : Ted Pang****c.c.**

Dear Mr Lam**Please find attached NRC certificate for our foil and assembly source. You should quote AMM1001H to NRC for the mounted foil source.****Best Regards
Ted**



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20540

#B-P.2

AMENDMENT NO. 1
CERTIFICATE OF REGISTRATION
AND SAFETY ANALYSIS SUMMARY
SEALED SOURCE

Manufacturer and Distributor

Amersham Corporation
2636 S. Clearbrook Drive
Arlington Heights, IL 60005

Sealed Source Model Designation

(Foil) AMM 1001
(Mounted Foil) AMM 1001H

Isotope

Americium-241

Maximum Activity

Up to 5 microcuries in 5 mm dia. disc.
and up to 50 microcuries/cm² of foil

In accordance with request dated September 20, 1979 this certificate is amended as follows:

Description of Foil Source

The general construction of foil, identified as model AMM 1001 is typically as shown in the sketch below. The radionuclide as americium oxide is uniformly distributed and sintered in a matrix of fine gold at temperatures in excess of 800°C. It is further contained between a backing of gold or gold/palladium alloy or palladium and gold by hot forging. The metal layers now continuously welded are extended in area by means of a power rolling mill to give required active and overall areas.



- A - (i) Palladium ~ 0.002 mm
(ii) Gold ~ 0.0002 mm
B - Americium Oxide plus Gold ~ 0.002 mm
C - Gold ~ 0.001 mm
D - 0.20 - 0.25 mm
E - Gold - c. 0.001 mm

Date October 26, 1979

Reviewed By Joseph M. [Signature]
Concurrence Paul D. [Signature]

Date October 26, 1979



Underwriters Laboratories Inc.®

National Office (800) 472-8800

Maine New York (516) 271-8200

San Diego California (408) 585-2400

Research Triangle Park,
North Carolina (919) 549-1400

Camas, Washington (360) 817-6600

#B-P.3

a century of
public safety
est. 1896

GARVAN ENTERPRISES LTD
MR LAM
21ST FL ROOM 16-17
WING HING IND BLDG
83-93 CHAI WAN KOK ST
TSUEN WAN N T HONG KONG

Your most recent listing is shown below. Please review this information and report any inaccuracies to the UL Engineering staff member who handled your UL project.

UTGT July 9, 1998
Single-and Multiple- Station Smoke Alarms

GARVAN ENTERPRISES LTD
21ST FL ROOM 16-17 WING HING IND BLDG 83-93 CHAI WAN
KOK ST, TSUEN WAN N T HONG KONG
Single-station.

S4964 (N)

Type
SS, RV

Principle
Ion

Supply
Connection
Battery

Model Nos.
SS-168, -168S,
-668, -668S

LOOK FOR LISTING MARK ON PRODUCT

Replaces S4964 dated August 12, 1993.

889241001

H2273

Underwriters Laboratories Inc.®

811/0204188

7

For information on placing an order for UL Listing Cards in a 3 x 5 inch card format,
please refer to the enclosed ordering information.

UNDERWRITERS LABORATORIES INC.

A not-for-profit organization
dedicated to public safety and
committed to quality service

GARVAN ENTERPRISES LTD.

TITLE : SOURCE LEAKAGE TEST	NO.		
	DATE		
	PAGE		

Attachment #C-P.1

1.0 PURPOSE

1.1 To detect any leaky sources.

2.0 SCOPE

2.1 All Americium 241 sources have to be tested prior to use.

3.0 EQUIPMENT AND TOOL USED

3.1 Glass Petri Dish.

3.2 Cotton Swab.

3.3 Alpha Scintillator.

4.0 PROCEDURE

4.1 Pour 50 sources into a Glass Petri Dish.

4.2 Wipe each source with a Cotton Swab saturated in alcohol.

4.3 Check the Cotton Swab with an Alpha Scintillator for trace contamination.

4.4 If no contamination is found, pass all 50 sources on for further production processing.

4.5 If any contamination is detected hold to contents of the Petri Dish and locate the source, or sources which are leaking, for return to manufacturer. Retest all other sources in dish for further contamination prior to continuing with process.

#C-P.2

3.1.7 Radioactive source used is Americium 241 with maximum activity 1.0 uci

3.1.8 Since the alpha-emitting Am 241 is less than 1.0 uci, periodic leak testing is not required. However, the manufacturer has the procedure to ensure detectors are free from contamination.

3.3.11 The WIPE TEST procedure

1.0 Purpose

This is to ensure all ionization smoke detectors manufactured are free from radioactive contamination

2.0 Scope

This covers all ionization smoke detectors.

3.0 Procedure

All units are wiped clean with a soft cloth at final visual inspection to remove any dust or dirt. The cloth used for wiping will be replaced after every 500 detectors wiped. It will be tested to see if any trace of radioactive contamination found. If result indicates that contamination happens, that lot of detectors will be hold for careful re-examination to locate the suspect leakage detectors.

II. Receipt of Goods

Upon receipt of the goods, the following shall be performed:

- A) A visual inspection of the master shipping cartons (20 to 40 pcs) shall be performed as the truck or seagoing cargo section is being unloaded. The inspection will look for water damage or any other physical damage such as crushed boxes, etc. #C-P.3

B)

~~If any damage is detected, the following reference must be followed:~~

- 1) Look for any Smoke Detectors with damaged plastic cover or back. If no plastic damage is detected, file a shipping damage claim with the Freight Company. If damaged plastic is found, proceed to Number 2..
- 2) On Smoke Detectors which have suffered structural damage to the plastic case (cover and/or back) look to see if any damage has been sustained to the Ionization Chamber. If no Ionization Chamber damage is sustained, proceed with damage claim as in Number 1 above. If the Ionization Chamber (s) has been damaged proceed with extreme caution as outlined in Number 3.
- 3)
 - a. The primary hazard associated with Americium 241 is the possible ingestion of the AM241, either by inhalation of airborne particulate matter or by transfer of AM241 from hand or clothing to mouth. All precautions against accidental ingestion are to be followed.
 - b. Immediately contain the area of possible contamination and restrict the number of people with access to the minimum.
 - c. Immediately call the Orange County Health Care Agency, (OCHCA) Radiological Health Section, 1725 W. 17th Street, Santa Ana, California 92706. (714)-834-2127 (24 hour Emergency Number), and report the incident. State the maximum number or units suspected to be involved (damaged) to indicate the magnitude of the problem. Personnel from this Agency will respond to provide guidance in minimizing any health threat from the damaged detector sources.
 - d. Call the N.R.C. at (415) 943-3765 and report the incident and corrective action taken. Follow this call with written communications providing complete details of the incident, corrective action and ultimate conclusion. The Orange County Health Care Agency will supervise this written communication.
 - e. Notify the Shipping Agency of the damage and determine the cause and location of the damage. Further action shall be taken as deemed necessary by the O.C.H.C.A.
 - f. Notify the shipping party and take action to prevent any similar damage in the future.
 - g. All damaged Ion Chambers are to be returned to the manufacturer for disposal.

Attachment #1**SHENZHEN CIC-AEA TECHNOLOGY MANUFACTURING CO.,LTD**

UF-M(W)-08-1

SEALED RADIOACTIVE SOURCE TEST REPORTModel No. AMMK1235(WWC)Lot No. CC20030617

Customer Part No. _____

Quantity: 150,000pcsISO Classification C3222 C64646 (ISO 2919, GB4075/ANSI N542 1977/BS 5288 1976)Radionuclide: Am-241Active contents: Americium Oxide(Solid)Maximum activity: $\leq 0.99 \mu\text{Ci}$

Measured on: _____

Freedom from surface contamination

Method of test Method (ISO 1677-1977(E))Date of test June 24, 2003 : July 01, 2003Result of test < 0.5nCi per 10 source and assemblies

Freedom from leakage

Method of test Wipe (Smear) Test (ISO/TR4826-1979(E))Date of test June 24, 2003 : July 01, 2003Result of test <0.5nCi per 10 source and assemblies

We declare that we hold capsule approval certificate No.GB/367/S-85 in respect of this sealed source, issued on February 23, 1993 by United Kingdom Competent Authority.

We certify that this sealed source complies with requirements of ISO.1677 and that the above information is correct

Signature LAI CHAOHUADate July 01, 2003

Attachment #E-P.1

2. Recommended Use and Installation

(b) Where the detection device will be installed?

- See "MTI" Smoke Alarm Owners Manual

(2) location & (3) Installation.

. Details of Construction and Design.

(d) Details of the technique -----.

- Foil source is punched into disc and loaded into holder 288210 by the crimped edge of the holder.

- Quality control by:

(1) Wipe test A

The test is carried out on batches of 100-250 to ensure any loose contamination arising from cutting or other manufacturing procedure is < 0.005 MCi.

(2) Emission test

Am-241, α emission rate & energy checked using a Si surface barrier detector.

(3) Safety Performance testing ISO classification C64444

IAEA Special Form. Safety Series No.6.

For details, see "Amersham Info" - "Attachement A"

#E-P.2

.Radiation level.

- (a) Radiation dose rate profile , see
"attachment C"
- (b) highest level is 0.011 Rad/year.(approx)
at position a"
- (c) based on Thermoluminescent dosimetry.

7. Labelling

- (a) as shown:



- (b) this label on back of detector.

8. Instructions

see"

MTI " Owner's Manual.