

MATERIALS LICENSE

Amendment No. 03

ORC

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee

1. RES Company
dba Apollo Fire Detectors Limited
2. 1749 E. Highwood
Pontiac, Michigan 48340

In accordance with letter dated
June 11, 1996,

3. License Number 21-23805-02E is amended in
its entirety to read as follows:

4. Expiration Date September 30, 2002

5. Docket or
Reference No. 030-32698

6. Byproduct, Source, and/or
Special Nuclear Material

7. Chemical and/or Physical
Form

8. Maximum Amount that Licensee
May Possess at Any One Time
Under This License

- A. Americium-241

- A. Foil source
(Amersham Model
AMM-1001 or NRD
Foil Model A-001)

- A. Not applicable
(See Condition 10)

9. Authorized Use

Pursuant to Section 32.26, 10 CFR Part 32, the licensee is authorized to distribute smoke detector devices specified in Condition 10 to persons exempt from the requirements for a license pursuant to Section 30.20, 10 CFR Part 30, or equivalent provisions of the regulations of any Agreement State.

CONDITIONS

10. The following smoke detector devices may be distributed pursuant to this license provided the amount of americium-241 contained in the device does not exceed the amounts specified in the following table:

Device ModelMaximum Quantity per Device

Series 60A
Series XP95A
TP90

1.0 microcurie
1.0 microcurie
1.0 microcurie

11. This license does not authorize possession or use of licensed material.
12. The licensee may distribute only from its facility located at 1749 E. Highwood, Pontiac, Michigan.

060030

9611060192 961022
PDR ADOCK 03032698
C PDR

ML00
cyst RIII

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number 21-23805-02E

Docket or Reference Number 030-32698

Amendment No. 03

CONDITIONS

(Continued)

13. The licensee shall file periodic reports as specified in Section 32.29(c), 10 CFR Part 32.
14. Except as specifically provided otherwise by this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Application dated March 2, 1992;
 - B. Letter dated March 3, 1992;
 - C. Letter dated June 15, 1992;
 - D. Letter dated June 25, 1992;
 - E. Letter dated July 8, 1992;
 - F. Letter dated July 21, 1992;
 - G. Registration Certificate NR-160-D-101-E;
 - H. Letter dated November 26, 1993;
 - I. Letter dated January 10, 1994;
 - J. Letter dated June 11, 1996, re:OEM Marketing; and
 - K. Letter dated June 11, 1996, re:Changes to Material Specifications.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

8/24/96 8/26/96
9/13/96 SWK CB

DATE: October 22, 1996

BY:

Original signed by:

Susan L. Greene
Medical, Academic, and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety
Office of Nuclear Material Safety
and Safeguards
Washington, DC 20555

R. Skaggs

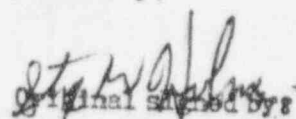
-2-

5. Submit a complete renewal application (with proper fee) or termination request (no fee required) at least 30 days before the expiration date on your license. You should receive a reminder notice approximately 90 days before the expiration date. Continued distribution of products containing radioactive material after your license expires is a violation of NRC regulations.
6. In accordance with 10 CFR 30.36, request termination of your license if you plan to permanently discontinue activities involving distribution of products containing radioactive material.

You will be periodically inspected by NRC. Failure to conduct your program in compliance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC may result in enforcement action(s) against you. This could include issuance of a notice of violation; proposed imposition of a civil penalty; or an order suspending, modifying, or revoking your license as specified in the "General Statement of Policy and Procedures for NRC Enforcement Actions," (NUREG-1600).

If you have any questions, please feel free to contact me at (301) 415-5799.

Sincerely,


Original signed by:

Stephen W. Holmes
Medical, Academic, and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety
Office of Nuclear Material Safety
and Safeguards

Docket No. 030-32698

Enclosure: Amendment No. 03

DISTRIBUTION:

License File 21-23805-02E

NMSS r/f

IMNS c/f

IMAB r/f

TWRich

LWCamper

Region III

DOCUMENT NAME: G:\RES.CJB

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

OFFICE	IMAB:NMSS	<input checked="" type="checkbox"/>	IMAB:NMSS	<input checked="" type="checkbox"/>					
NAME	SWHolmes	<input checked="" type="checkbox"/>	SLGreene	<input checked="" type="checkbox"/>					
DATE	08/9/96		08/13/96						

OFFICIAL RECORD COPY

October 22, 1996

Apollo Fire Detectors Limited
ATTN: Robert E. Skaggs
Radiation Safety Officer
1749 E. Highwood
Pontiac, Michigan 48340

Dear Mr. Skaggs:

Enclosed is Amendment No. 03 amending NRC License No. 21-23805-02E in its entirety. A copy of your revised Registration Certificate, which has been approved, will be forwarded to you under separate cover.

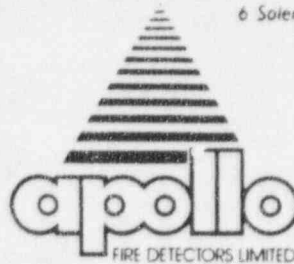
Please review the enclosed document carefully and be sure that you understand all the conditions. If there are any errors or questions, please contact me so that appropriate corrections and answers can be provided.

Please be advised that you must conduct your program involving radioactive materials in accordance with the conditions specified in your NRC license, representations made in your license application, and other rules, regulations, and orders of the U.S. Nuclear Regulatory Commission, now or hereafter in effect, to include the following:

1. Comply with applicable NRC regulations in 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material"; 10 CFR Part 32, "Specific Domestic Licenses to Manufacture or Transfer Certain Items Containing Byproduct Material"; and other applicable regulations.

NOTE: Licensees authorized to distribute or initially transfer products containing byproduct material must also possess a valid possession license issued either by NRC or an Agreement State(s) which authorizes possession and use of byproduct material.

2. Distribute only those products containing radioactive material which are specifically authorized in your license.
3. Notify NRC in writing within 30 days of any change in mailing address (no fee is required if the location of radioactive material remains the same).
4. Request and obtain appropriate amendments if you plan to change control or ownership of your organization, change locations of distribution of products containing radioactive material, or make any other changes in your program which are contrary to the license conditions or representations made in your license application and any supplemental correspondence with NRC. A license fee may be charged for the amendments if you are not in a fee-exempt category.



6 Solent Road, Havant, Hampshire, England. PO9 1JH

Tel. National: (01705) 492 412
Fax: National: (01705) 492 754
Tel. International: +44 1705 492 412
Fax International: +44 1705 492 754
Telex: 86292 Apollo G.

30 September 1996

Mr Steven Holmes
US Nuclear Regulatory Commission
Mail Stop 6H3
#1 White Flint No
11555 Rockville Pike
Rockville MD 20852
United States of America

Dear Mr Holmes

I am writing with reference to our recent telephone conversation regarding the new grade of steel that we will be using to make the foil holders in our ionisation smoke detectors. I can confirm that any statements on the drawings I have provided regarding reproduction or disclosure to third parties without written consent from Apollo Fire Detectors can be disregarded.

Can I also take this opportunity to advise you that the address of our company will be changing on 14 October 1996. Please find included with this letter information cards detailing the change of address as well as one of my business cards. The current fax and telephone numbers will remain unchanged.

Yours faithfully

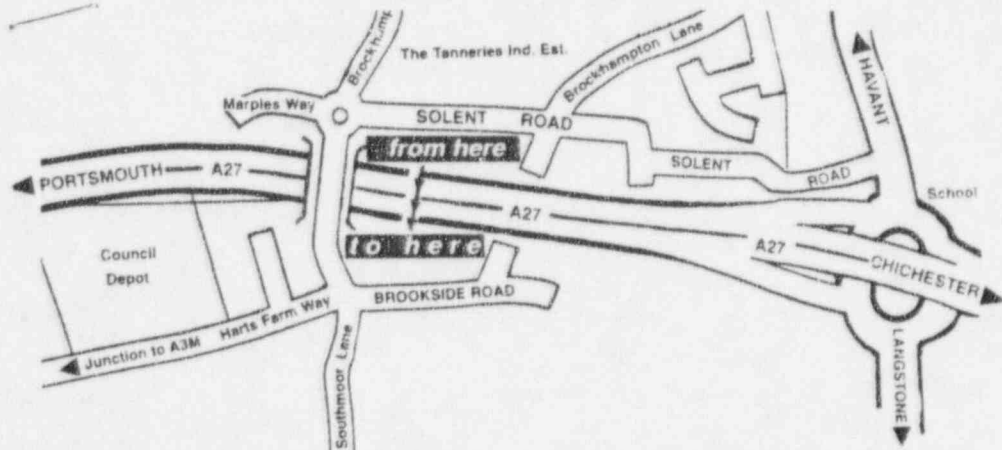
Dr Robert Dudley
Technical Manager



CHANGE OF ADDRESS

on 14th October 1996

we are moving across the road to
36 Brookside Road, Havant, Hampshire. PO9 1JR



The British Fire Protection
Association Limited
BFPSA



FOR THE MANUFACTURE OF FIRE DETECTORS



THE QUEEN'S AWARD FOR EXPORT ACHIEVEMENT



QUALITY SYSTEM CERTIFICATE NO 612
ADDRESSED TO BS 5754 PART 1 (1990) BY 1990

A
HALMA
GROUP
COMPANY

REQUEST FOR SUPPLIES

TO: Sandra Kimberley
License Fee and Debt Collection Branch
Division of Accounting and Finance
Office of the Controller
US Nuclear Regulatory Commission
Washington DC 20555-0001
UNITED STATES of AMERICA

Tel: 001 301 415 6096

Fax:



FOR THE MANUFACTURE OF FIRE DETECTORS



THE QUEEN'S AWARD FOR EXPORT ACHIEVEMENT

apollo

FIRE DETECTORS LIMITED

A
HALMA
GROUP
COMPANY

Tel. National: (01705) 4924
Tel. International: +44 1705 4
Telex: 86292 Apollo G
Fax: (01705) 492754
VAT No: GB 339 0553 5

NOT VALID WITHOUT PURCHASE ORDER NUMBER

PURCHASE ORDER

NUMBER

009557

THE ABOVE ORDER NUMBER MUST BE QUOTED ON ADVICE NOTES AND INVOICES SUBJECT TO OUR STANDARD CONDITIONS OVERLEAF

DEPARTMENT Technical		EXPENSE CODE 70-6702	SUPPLIER'S CONFIRMATION REFERENCE: N/A	ORDER DATE 6 August 1994	DATE FOR DELIVERY N/A
No.	SUPPLIER'S PART No.	DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
1	T-9E10	Application Fee For An Amendment to Apollo's License No 21-23805-02E	N/A	US\$ 990	US\$ 990
		UB Goods In, No items will be delivered.			
ARE THESE HAZARDOUS GOODS <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			REASON REQUIRED/ COMMENTS US Approvals		
			TOTAL: US\$ 990		
			VAT @ %		
			TOTAL INCL VAT US\$ 990		
HEALTH & SAFETY APPROVAL *		APO FORM REFERENCE 108964	THIS ORDER HAS ALREADY BEEN FAXED/PHONED THROUGH <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		ORIGINATOR (PRINT) Dr. Robert Dancy EXT. NO: 2802
					MANAGEMENT APPROV <i>R. Dancy</i>

WHITE SUPPLIER YELLOW GOODS IN GREEN ORIGINATOR PINK ACCOUNTS

CONDITIONS OF ORDER

In the following conditions of order, "the Company" means Apollo Fire Detectors Limited.

1. In the event of stoppage of work at the Company's premises due to force majeure, fire, explosion, strike, lockout, flood, riot, civil commotion, government action or other cause whether similar or dissimilar or in the event that the Company finds it necessary to adjust its programmes, deliveries shall be at the Company's request be partially or wholly suspended by the contractor until resumption is requested by the Company.
2. The Company reserves to itself the following rights:
 - a. At any time to cancel this Order if not completed to its satisfaction and in accordance with the conditions of this Order within the times specified overleaf without any liability to the Company as regards any undelivered or uncompleted portion of the Order.
 - b. Without prejudice to the generality of the foregoing at any time without any liability to the Company to cancel any outstanding Balance of the Order if any goods in any two consignments fail to comply with the requirements of this Order whether such failures to comply with the requirements of this Order be accounted breaches of conditions of warranty.
3. The Company reserves the right either to reject or retain at the Company's option deliveries made in excess of the quantities ordered.
4. The Company reserves the right if, at the option of the Supplier, goods are delivered earlier than requested, to make payment for those goods as if they had been delivered on the due date.
5. The Contractor shall remain solely liable for and shall indemnify the Company in respect of any liability, loss or proceedings whatsoever arising under any statute or under Common Law, for injury to any person (including injury resulting in death) and for any damage to any property and also for any consequential loss which the Company may suffer thereby which arises out of or in consequence of the execution of this Order and is occasioned by negligence or default on the part of the Contractor or his servants or agents.
6. The Contractors shall be responsible for making good, free of charge, any defects through defective material or workmanship which may develop in the goods when supplied and/or within a period of 12 months of receipt of such goods.
7. Acceptance of this Order implies full endorsement of the terms and conditions on it and overrules any differing conditions which may appear on the Contractor's quotation or Order acknowledgement or similar document unless by written agreement with the Company.
8. The rights reserved hereby shall be in addition to and not in substitution for the Company's rights at Common Law and pursuant to Statute.
9. The company, its customer representatives and BS auditors shall be afforded the right to verify at source that material conforms to specified requirements. For this purpose reasonable access to all manufacturing premises shall be permitted during working hours for such reasons.

CONDITIONS OF RELEASE

This order is subject to:

- A The conditions as specified by Apollo Fire Detectors Limited Quality Requirements detailed in AFD/0001 - "Requirements for suppliers". A Certificate of Conformity is required.
- or
- B The conditions of BS6001 Part 1 as issued by the British Standards Institution. A BSI approved Certificate of Conformity is required.
- or
- C Your own inspection and subject to inspection and acceptance by Apollo Fire Detectors Limited Quality Assurance Department.

LICENSE FEE REQUIREMENTS

ATTN: S. Kimberley, T-9E10
LICENSE FEE AND DEBT COLLECTION BRANCH
DIVISION OF ACCOUNTING AND FINANCE
OFFICE OF THE CONTROLLER
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

301-415-6096

TYPE OF ACTION

- ☐ NEW LICENSE
☐ RENEWAL OF LICENSE
☒ AMENDMENT TO LICENSE

REQUESTED DATE

6/11/96

LICENSE NUMBER

21-23805-02E

CONTROL NUMBER

021856

RES Company
ATTN: D. Robert Dudley
Technical Manager
6 Solent Road
Havant, Hampshire
England PO9 1JH

I. APPLICATION FEE DUE

Your request for a licensing action is subject to the fee(s) in the category(ies) noted below in accordance with Section 170.31 of the enclosed Federal Register notice. Payment of the fee is required prior to the issuance of the license, renewal, or amendment.

FEE CATEGORY	APPLICATION	RENEWAL	AMENDMENT
3H	\$	\$	\$ 990
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$

FEE(S) DUE \$ 990
PAYMENT RECEIVED \$ -0-
AMOUNT DUE \$ 990

☒ Your request was received without the prescribed application fee.

☐ We received your Check No. _____ in the amount of \$ _____. Payment of the additional fee noted above is required.

☐ Your request will increase the scope of your license program. Therefore, your request is subject to the application fee(s) noted above. Refer to Section 170.31 and Footnote 1(d)(2).

☐ Your license expired prior to the receipt of your application for renewal. Therefore, your request is subject to the application fee(s) noted above. Refer to Section 170.31 and Footnote 1(a).

MAKE PAYMENT OF THE FEE(S) TO THE U.S. NUCLEAR REGULATORY COMMISSION AND MAIL THE PAYMENT TO THE ADDRESS LISTED AT THE TOP OF THIS FORM. IF WE DO NOT RECEIVE A REPLY FROM YOU WITHIN 30 CALENDAR DAYS FROM THE DATE LISTED BELOW, WE SHALL ASSUME THAT YOU DO NOT WISH TO PURSUE YOUR APPLICATION AND WILL VOID THIS ACTION.

SIGNATURE -- LICENSE FEE ANALYST

LFDCB

LFDCB

Distribution:

DATE

OC/GAF/LFARB (LF-3.27) S/F

7/24/96

R/F CC: S. Kimberley HQS

ref rdapo188 wri



6 Solent Road, Havant, Hampshire, England PO9 1JH

Tel. National: (01705) 492 412
Fax. National: (01705) 492 754
Tel. International: +44 1705 492 412
Fax. International: +44 1705 492 754
Telex: 86292 Apollo G.

030-32678

11 June 1996

Ms Susan Greene
US Nuclear Regulatory Commission
Mail Stop 6H3
#1 White Flint No.
11555 Rockville Pike
Rockville MD 20852
United States of America

Dear Susan

Ref : NRC License No. 21-23805-02E, OEM Marking

We have had requests from three of our customers to badge our Series 60A and XP95A range of detectors with their company name and logos. Included within these product ranges are two NRC licensed ionisation smoke detectors, the Series 60A conventional detector, part number 55000-250, and the XP95A analogue addressable monitor, part number 55000-550. I would like to request an ammendment to our NRC licenses to include details of these companies and their part numbers for our products. The table below lists the company, the product, their part number and the Apollo part number.

Company Name	Product	Company P/N	Apollo P/N
FIRECOM	S60A ion	FP600-250	55000-250
FIRECOM	XP95A ion	FP950-AI	55000-550
National Time & Signal	XP95A ion	D900-ION	55000-550
Gamewell	S60A ion	71034	55000-250

The details of each companies name and postal address are given on the copies of the product label drawings enclosed with this letter. In addition to the product label drawings, I have enclosed a copy of the drawings that detail the point of sale packaging label.

Page 1 of 2



021856

ref rdapo188 wri



Can I ask you to review the enclosed information and ammend our NRC licenses accordingly.
Please advise me of the cost implications to Apollo at your earlist convenience. Should you
require any further information, please do not hesitate to contact me.

Yours faithfully

A handwritten signature in black ink, appearing to read "R. Dudley".

Dr Robert Dudley
Technical Manager



JAMES L. SA

FINISH

CHANGE DATE & SIGNATURE:

CHANGE, DATE AND SIGNATURE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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COMPONENT SCHEDULE

[illegible]

CAD

DESIGN
APPROVED
APPROVED
CHECKED
DRAWN

DATE	TITLE
10/10/1964	10/10/1964
10/11/1964	10/11/1964
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10/15/1964	10/15/1964
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1/22/1965	1/22/1965
1/23/1965	1/23/1965
1/24/1965	1/24/

SERIES 60A IONIZATION
DETECTOR LABEL

DRG. No	39117-322
---------	-----------

DO NOT REMOVE LABEL

22.00

R 1.00

3.50

MINIMUM SPACING

60.00

NOTE

1. CHARACTER HEIGHT, STROKE & SPACING TO BE SHOWN

IMPORTANT NOTE

2. ISSUE No. TO BE ADDED IN ACCORDANCE WITH U.I. INSTRUCTIONS

3. ANTI-TAMPER SLITS TO BE ADDED AS FIGURE A

FIGURE A.
NOT TO SCALE



DO NOT SCALE

IF IN DOUBT - ASK

METRIC DIMENSIONS

THIRD ANGLE PROJECTION

38,00

Gamewell 

THIS DETECTOR CONTAINS RADIOACTIVE MATERIAL AND
HAS BEEN MANUFACTURED IN COMPLIANCE WITH U.S.
NRC SAFETY CRITERIA IN 10 CFR 32.27. THE PURCHASER
IS EXEMPT FROM ANY REGULATORY REQUIREMENTS.

NRC LICENSE No.21-23805-02E

AMERICIUM 241 0,9 MICROCURIES

16,00

R0,50

ISS. MOD. D.C.N.

CHANGE, DATE AND SIGNATURE

SPECIFICATION

MATERIAL

REFER TO NOTES

TOLERANCES

 $\pm 0,2$

UNLESS STATED

FINISH

SCALE

4:1

CLEAN & TIDY


DESIGN
APPROVED

TITLE

APPROVED

 GAMEWELL IONIZATION
DETECTOR LID PACKAGING

CHECKED

DRG. No.

DRAWN

39117-523

CAD

© This drawing specification is the property of Apollo Fire Detectors Limited and may not be
reproduced or disclosed to a third party without the written permission of the company.

60.00

TABLE A9

FINISH

CHANGE DATE & SIGNATURE

CHANGE, DATE AND SIGNATURE

MEMO

COMPONENT SCHEDULE

[illegible]

CAD

DESIGN
APPROVED
APPROVED
CHECKED
DRAWN

TITLE

XP95A IONIZATION
DETECTOR LABEL

DRG. No.	39117-553
----------	-----------

DO NOT SCALE

IF IN DOUBT - ASK

METRIC DIMENSIONS

THIRD ANGLE PROJECTION

38,00

NATIONAL TIME
& SIGNAL CORPORATION

THIS DETECTOR CONTAINS RADIOACTIVE MATERIAL AND
HAS BEEN MANUFACTURED IN COMPLIANCE WITH U.S.
NRC SAFETY CRITERIA IN 10 CFR 32.27. THE PURCHASER
IS EXEMPT FROM ANY REGULATORY REQUIREMENTS.

NRC LICENSE No.21-23805-02E

AMERICIUM 241 0,9 MICROCURIES

16,00

R0,50

ISS. MOD. D.C.N.

CHANGE, DATE AND SIGNATURE

SPECIFICATION

MATERIAL

REFER TO NOTES

TOLERANCES

 $\pm 0,2$

UNLESS STATED

FINISH

SCALE

4:1

CLEAN & TIDY

apollo
FIRE DETECTORS LIMITED

DESIGN
APPROVED

TITLE

NATIONAL TIME IONIZATION
DETECTOR LID PACKAGING

APPROVED

CHECKED

DRG. No.

DRAWN

39117-555

CAD

© This drawing specification is the property of Apollo Fire Detectors Limited and may not be
reproduced or disclosed to a third party without the written permission of the company.

DO NOT SCALE

IF IN DOUBT - ASK

METRIC DIMENSIONS

THIRD ANGLE PROJECTION

38,00

FIRECOM, Inc.

THIS DETECTOR CONTAINS RADIOACTIVE MATERIAL AND
HAS BEEN MANUFACTURED IN COMPLIANCE WITH U.S.
NRC SAFETY CRITERIA IN 10 CFR 32.27. THE PURCHASER
IS EXEMPT FROM ANY REGULATORY REQUIREMENTS.

NRC LICENSE No.21-23805-02E

AMERICIUM 241 0,9 MICROCURIES

16,00

R0,50

ISS. MOD. D.C.N.

CHANGE, DATE AND SIGNATURE

SPECIFICATION

MATERIAL

REFER TO NOTES

TOLERANCES

 $\pm 0,2$

UNLESS STATED

FINISH

SCALE

4:1

CLEAN & TIDY



apollo
FIRE DETECTORS LIMITED

DESIGN
APPROVED

TITLE

APPROVED

FIRECOM IONIZATION
DETECTOR LID PACKAGING

CHECKED

DRG. No.

DRAWN

39117-532

CAD

ref rdapo188 wri



Tel. National: (01705) 492 412
Fax. National: (01705) 492 754
Tel. International: +44 1705 492 412
Fax. International: +44 1705 492 754
Telex: 86292 Apollo G.

11 June 1996

Ms Susan Greene
US Nuclear Regulatory Commission
Mail Stop 6H3
#1 White Flint No.
11555 Rockville Pike
Rockville MD 20852
United States of America

Dear Susan

Ref : NRC License No. 21-23805-02E, Changes to Material Specification

I need to advise you that we have been forced into making a change to the stainless steel used in our NRC licensed ionisation smoke detectors. These products are designated by the Apollo part numbers 55000-250, 55000-251, 55000-550 and 57000-500. The requirement for this change will, in my view, require an ammendment to Apollo's NRC licenses.

The change in material specification concerns the foil holder assembly used to contain the radioactive Americium 241 sealed source. The stainless steel originally specified by Apollo to be used to manufacture this assembly was Bedini 316S16. The testing that was undertaken by the United Kingdom's National Radiological Protection Board was carried out on samples fitted with this particular steel. Copies of the reports produced by the NRPB were supplied to the NRC as part of the original license application.

A recent European Directive on health and safety has greatly reduced the amount of Selenium that can be used within steels. Selenium is toxic to humans and can be fatal if absorbed in high enough concentrations. It can enter the respiratory system by inhaling the dust produced by machining operations that are typical to an engineering production environment. Consequently the use of Bedini 316S16 has virtually finished within Europe because it can only be machined under special conditions.

Page 1 of 2



FOR THE MANUFACTURE OF FIRE DETECTORS



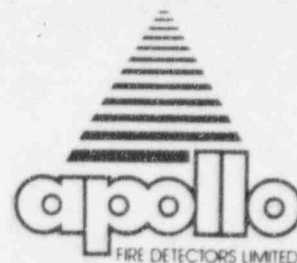
THE QUEEN'S AWARD FOR EXPORT ACHIEVEMENT



QUALITY SYSTEM CERTIFICATE NO. 014
ADDRESS TO BE SUPPLIED BY THE MANUFACTURER



021856



Apollo has identified an alternative steel to replace the Bedini 316S16 material. The new steel is defined by the British and European standard BS EN 10088, a copy of the key material content information is included with this letter. Consequently, we have commissioned the NRPB to repeat all of the Nuclear Energy Agency testing using samples of detectors fitted with foil holder components made from this new steel. I enclose a copy of the two test reports produced by the NRPB. One report details test results for detectors fitted with Amersham sealed sources and the other report details test results for detectors fitted with NRD sealed sources.

Could I ask you to review the information I have provided and ammend our licenses accordingly. Please advise me of the cost implications to Apollo at your earliest convenience.

Yours faithfully

A handwritten signature in dark ink, appearing to read "R. Dudley".

Dr Robert Dudley
Technical Manager



National Radiological Protection Board, Northern Centre, Hospital Lane, Cookridge, Leeds LS16 6RW
Telephone: (0113) 267 9041 - Fax: (0113) 261 3190

CONSUMER PRODUCTS REPORT

Report number: NRPB/CP3/066

Report for: Ms D Fisher
Apollo Fire Detectors Limited
6 Solent Road
Havant
Hampshire
PO9 1JH

Subject: Testing of multistation ionisation chamber smoke detectors to NEA recommendations.

Sample: Series 60 multistation ionisation chamber smoke detector model number 55000-200

Date of report: 14 May 1996

INTRODUCTION

The model 55000-200 ionisation chamber smoke detector is a multistation device designed for industrial and commercial use and contains an (Amersham International?) americium-241 source with an activity of 33.3 kBq [0.9 μ Ci]. The detectors were tested for compliance with the requirements of the Nuclear Energy Agency, NEA^(ref. 1)

PRELIMINARY TESTS

1. Access to the source

Access to the source can only be gained by forcibly dismantling the detector.

2. Marking and Labelling

The base of the detector bears an adhesive label. This label carries details including the name and address of the manufacturer, the radionuclide installed in the detector and its activity together with instructions for disposal.

3. Dose Rate Measurement

A photon spectrum from a single smoke detector was accumulated using a shielded lithium drifted silicon detector. Dose rates were calculated using the known efficiency of the detector and appropriate dose rate conversion factors. The results were used to calibrate a low energy photon scintillation detector.

The maximum dose equivalent rate measured was $2 \times 10^{-2} \mu\text{Sv h}^{-1}$ at a distance of 0.1m from the surface of the detector. The NEA requires that the dose rate does not exceed $1 \mu\text{Sv h}^{-1}$ at 0.1m from the surface of the detector.

4. Surface contamination

Surface contamination was assessed by wiping each detector with methanol moistened swabs. The amount of contamination removed was assessed by measuring the transferred activity using an alpha scintillation detector. The following areas of the detector were checked:

- (a) The outer surface of the detector,
- (b) The inner surface of the ionisation chamber.
- (c) The radioactive source.

In all cases the estimated levels of radioactive contamination were less than 0.1 Bq cm^{-2} . The detector shall fail the initial tests if the level of contamination exceeds 0.37 Bq cm^{-2} .

ADDITIONAL TESTS

These tests are intended to simulate the damage and other effects caused by normal use, credible abuse and likely accidental damage. The test programme is detailed in reference 1. The integrity of the sources after each test was assessed principally by wipe testing as described above. The following areas of each detector was checked:

- (a) Inside of the ionisation chamber.
- (b) The source.

With the exception of the 600°C fire test and the 1200°C incineration test the results are given below.

Test	Activity transferred from the source after test (Bq)
Temperature	< 0.1
Impact	< 0.1
Vibration	< 0.1
Drop	< 0.1

A source is considered to have retained its integrity if the removed activity is less than 200 Bq.

FIRE TEST AT 600°C AND INCINERATION TEST AT 1200°C

The procedure and details of the apparatus used for the tests can be found in reference 1. The measured activities in each part of the apparatus after the test are given in the table below.

Test	Measured Activity (Bq)	
	600°C	1200°C
Vapour Trap	< 2.0	< 2.0
Filter	< 0.1	0.16 ± 0.04
Debris	< 0.1	-
Source and Holder	< 0.1	-
Total	< 2.3	0.16 ± 0.04

A detector is considered to have failed the 600°C fire test if the sum of the activity removed from the source exceeds 185 Bq.

For the 1200°C incineration test, a detector is considered to have failed if the activity in the vapour trap and on the in-line filter exceeds 1% of the source activity.

CONCLUSION

The model 55000-200 multistation ionisation chamber smoke detector performed satisfactorily in the NEA recommended tests. For complete compliance, a further label bearing the radiation trefoil symbol and the word 'radioactive' should be placed on top of the ionisation chamber.

Apollo Fire Detectors also produce several other Series 60 models of ionisation chamber smoke detectors, listed below:

55000-210 Integrating
55000-240 S.S.L. approved (Australian)
55000-250 U.L. approved (American)
55000-251 approved THORN (American)

These models are considered to be almost identical in construction to the 55000-200 with the exception of minor modifications to the electronics of the detectors. As the differences between the models of detector are minor, it is considered that the models identified above would behave similarly under test as the 55000-200 and are therefore also covered by this test report.



Sharon Ely

Reference 1. Recommendations for ionisation chamber smoke detectors in the implementation of radiation standards. Nuclear Energy Agency of the Organisation for Economic Co-operation and Development, 1977.



National Radiological Protection Board, Northern Centre, Hospital Lane, Cookridge, Leeds LS16 6RW
Telephone: (0113) 267 9041 · Fax: (0113) 261 3190

CONSUMER PRODUCTS REPORT

Report number: NRPB/CP3/067

Report for: Ms D Fisher
Apollo Fire Detectors Limited
6 Solent Road
Havant
Hampshire
PO9 1JH

Subject: Testing of multistation ionisation chamber smoke detectors to NEA recommendations.

Sample: XP 95 Series multistation ionisation chamber smoke detector model number 55000-500.

Date of report: 14 May 1996

INTRODUCTION

The model 55000-500 ionisation chamber smoke detector is a multistation device designed for industrial and commercial use and contains an NRD (USA) americium-241 source with an activity of 33.3 kBq [0.9 μ Ci]. The detectors were tested for compliance with the requirements of the Nuclear Energy Agency, NEA^(ref. 1)

PRELIMINARY TESTS

1. Access to the source

Access to the source can only be gained by forcibly dismantling the detector.

2. Marking and Labelling

The base of the detector bears an adhesive label. This label carries details including the name and address of the manufacturer, the radionuclide installed in the detector and its activity together with instructions for repair or disposal.

3. Dose Rate Measurements

A photon spectrum from a single smoke detector was accumulated using a shielded lithium drifted silicon detector. Dose rates were calculated using the known efficiency of the silicon detector and appropriate dose rate conversion factors. The results were used to calibrate a low energy photon scintillation detector.

The maximum dose equivalent rate measured was $3 \times 10^{-2} \mu\text{Sv h}^{-1}$ at a distance of 0.1m from the surface of the detector. The NEA requires that the dose rate does not exceed $1 \mu\text{Sv h}^{-1}$ at 0.1m from the surface of the detector.

4. Surface contamination

Surface contamination was assessed by wiping each detector with methanol moistened swabs. The amount of contamination removed was assessed by measuring the transferred activity using an alpha scintillation detector. The following areas of the detector were checked:

- (a) The outer surface of the detector,
- (b) The inner surface of the ionisation chamber.
- (c) The radioactive source.

In all cases the estimated levels of radioactive contamination were less than 0.1 Bq cm^{-2} . The detector shall fail the initial tests if the level of contamination exceeds 0.37 Bq cm^{-2} .

ADDITIONAL TESTS

These tests are intended to simulate the damage and other effects caused by normal use, credible abuse and likely accidental damage. The test programme is detailed in reference 1. The integrity of the sources after each test was assessed principally by wipe testing as described above. The following areas of each detector was checked:

- (a) Inside of the ionisation chamber,
- (b) The source.

With the exception of the 600°C fire test and the 1200°C incineration test the results are given below.

Test	Activity transferred from the source after test (Bq)
Temperature	< 0.1
Impact	< 0.1
Vibration	< 0.1
Drop	< 0.1

A source is considered to have retained its integrity if the removed activity is less than 200 Bq.

FIRE TEST AT 600°C AND INCINERATION TEST AT 1200°C

The procedure and details of the apparatus used for the tests can be found in reference 1. The measured activities in each part of the apparatus after the test are given in the table below.

Test	Measured Activity (Bq)	
	600°C	1200°C
Vapour Trap	< 2.0	< 2.0
Filter	< 0.1	< 0.1
Debris	< 0.1	-
Source and Holder	< 0.1	-
Total	< 2.3	< 0.1

A detector is considered to have failed the 600°C fire test if the sum of the activity removed from the source exceeds 185 Bq.

For the 1200°C incineration test, a detector is considered to have failed if the activity in the vapour trap and on the in-line filter exceeds 1% of the source activity.

CONCLUSION


The model 55000-500 multistation ionisation chamber smoke detector performed satisfactorily in the NEA recommended tests. For complete compliance, a further label bearing the radiation trefoil symbol and the word 'radioactive' should be placed on top of the ionisation chamber.

Apollo Fire Detectors also produce several other Series XP 95 models of ionisation chamber smoke detectors, listed below:

55000-520 EM.C
55000-530 S.S.L. approved (Australian)
55000-540 I.S (BASEEFA APPROVED)
55000-550 U.L.

Also, in the TP90 range, the model 57000-500 UL (American) is identical in construction to the detectors in the XP 95 series and is also covered by this report.

These models are considered to be almost identical in construction to the 55000-500 with the exception of minor modifications to the electronics of the detectors. As the differences between the models of detector are minor, it is considered that the models identified above would behave similarly under test as the 55000-500 and are therefore also covered by this test report.



Sharon Ely

Reference 1. Recommendations for ionisation chamber smoke detectors in the implementation of radiation standards. Nuclear Energy Agency of the Organisation for Economic Co-operation and Development, 1977.



ISO 9002 FB 33485

March 15, 1996

To: Diane Fisher
Apollo Fire Detectors Ltd.

Tel: +44 1753 840 840
Fax: +44 1753 866 000

House of Technology (UK) Limited, 5-6 the High Street, Windsor, SL4 1LD, ENGLAND

Dear Diane,

Compatibility of steels Japan standard SUS316 and British standard 316S16

We have spoken to British Standards Institute and British Steel on this subject, these are extracts of their comments which are given to you in good faith but without liability.

JAPANESE STANDARD STEEL SUS316
(the proposed alternative)

Grade	C	Si	Mn	P	S	N	Cr	Mo	Ni
JIS SUS316	0.08	1.00	2.00	0.045	0.030		16.0-18.0	2.0-3.0	10.0-14.0

JIS SUS316 is now being updated by BS to BS EN 10088 designation with the relevant grade now begin X5CrNiMo17-12-2 with the following chemical composition

Grade	C	Si	Mn	P	S	N	Cr	Mo	Ni
BS EN 10088 X5CrNiMo17- 12-2	0.07	1.00	2.00	0.045	0.015		16.5-18.5	2.0-2.5	10.0-13.0

Source: British Standard Institute: A.M Wadsworth (construction & materials Section)

BRITISH STANDARD STEEL 316S16
(your current steel)

Grade	C	Si	Mn	P	S	N	Cr	Mo	Ni
316S16	0.07	1.00	2.00	0.045	0.030		16.5-18.5	2.25-3.0	10.0-13.0

Source: British Standard BS 5770

COMPARISON

The corrosion resistance of such alloys depends mainly on the chemical composition. The elements Cr, Ni, and Mo are the most important to the corrosion resistance of grade 316 and provided the structure is kept austenitic with the balance of these elements, generally the higher the percentage, the better the corrosion resistance could generally be expected.

A comparison of the two grades shows that BS 316S16 has a higher min-max points for Cr, Mo and JIS SUS316 has higher min-max points for Ni. Generally steel producers melt on the "lean" side of these ranges so it is unlikely that the maximums will ever be reached.

This considered, it is probably true to say that a steel conforming to BS5770 SUS316 would have similar corrosion resistance by virtue of its chemical composition. This assumes the same degree of temper rolling or annealing condition and does not take into account the effects of other mechanical or thermomechanical effects, i.e. cold welding etc.

Source: British Steel (ASTAC): Mr Roger Crookes (Technical Advisory centre)

Chris Lonsdale.

R1201021

LICENSING TRACKING SYSTEM

DATE: 960626

PAGE: 1

LTS WORKSHEET

DOCKET NO : 03032698 LICENSE NO : 21-23805-02E STATUS: 0
MAIL CONTROL: 021856 RECEIPT DATE : 960625 ACTION TYPE: 4
DUE DATE : 960923
FED. GOVT : C INST. CODE : 23805 LICENSE REGION: 0
ISSUE DATE: ~~940124~~ ⁹⁶¹⁰²² ORIGINAL DATE: 920902 EXPIRATION DATE: 20020930
NAME : RES COMPANY DECOM FIN ASSUR REQD: N
SUBM: -
DEPT/BUREAU: DBA APOLLO FIRE DETECTORS LTD. CONT PLAN REQD: N APPRV: -
BUILDING : ~~(AIR PRODUCTS CO)~~
STREET : 1749 E. HIGHWOOD
CITY : PONTIAC STATE: MI ZIP: 48340
CONTACT PERSON: ROBERT E. SKAGGS PHONE: ~~313~~-332-3900
810-
PRIMARY PGM CODE : 03255 SECONDARY PGM CODES: _____
INSPECTION REGION: 3 PRIORITY CODE: 5 INSPECTION CATEGORY: E
RADIATION SAFETY OFFICER: ROBERT E. SKAGGS
STATES WHERE USE IS AUTHORIZED: 1 0 - ALL LISTED STATES
1 - SAME AS STATE IN ADDRESS
2 - ALL STATES
3 - NON-AGREEMENT STATES
AUTHORIZED STATES: _____ (USE ONLY IF ABOVE IS ZERO)
REPORTING IDENTIFICATION SYMBOL: _____
APPROVAL FOR: REDISTRIBUTION: N STORAGE ONLY: N
TEMPORARY JOB SITES: N INCINERATION: N
BURIAL: N
EXEMPTIONS: (1) _____ (2) _____

pls assign
SLG
SCH

(FOR LFMS USE)
INFORMATION FROM LTS

BETWEEN:

License Fee Management Branch, ARM
and
Regional Licensing Sections

Program Code: 03255
Status Code: 0
Fee Category: 3H
Exp. Date: 20020930
Fee Comments:
Decom Fin Assur Req'd: N

LICENSE FEE TRANSMITTAL

A. REGION Hots

1. APPLICATION ATTACHED

Applicant/Licensee: RES COMPANY
Received Date: 960625
Docket No.: 3032698
Control No.: 21856
License No.: 21-23805-02E
Action Type: Amendment

2. FEE ATTACHED

Amount:
Check No.: /

3. COMMENTS

Signed
Date

Boyle
7/2/96

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered ☒)

1. Fee Category and Amount: 3H \$ 990

2. Correct Fee Paid. Application may be processed for:

Amendment ☒
Renewal ☐
License ☐

3. OTHER

Signed
Date

Log	<u>Jul 1 HDS</u>
Remitter	<u>National Westminster Bank</u>
Check No.	<u>60-10-20</u>
Amount	<u>\$ 990</u>
Fee Category	<u>3H</u>
Type of Fee	<u>AMD</u>
Date Check Rec'd.	<u>8/12/96</u>
Date Completed	<u>8/12/96</u>
By	<u>96-56</u>

Steve Bayzette's action is M.
(Admin Change)