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Scottish Home and Health Department



# Her Majesty's Chief Inspector of Fire Services for Scotland

Report for 1987







SCOTTISH HOME AND HEALTH DEPARTMENT

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Report for 1987

Presented to Parliament by the Secretary of State for  
Scotland

by Command of Her Majesty

October 1988

*EDINBURGH*

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£4.50 net

# Report 1987

of R J Knowlton Esq, CBE, QFSM, FIFireE, FBIM To the Right Honourable  
Malcolm Rifkind, QC, MP, Her Majesty's Secretary of State for Scotland.

Sir,

I have the honour to submit my Report on the Fire Services in Scotland for the  
year ended 31 December 1987.

I have the honour to be,

Sir,

Your obedient Servant,

R J KNOWLTON

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# Section A General

## Inspections

1. The normal programme of annual inspections of the eight Scottish brigades was carried out and, in addition, the Scottish Fire Service Training School was formally inspected for the first time.
2. For the second year, practical drills and exercises during inspections were limited in some brigades due to the ban on co-operation with the Inspectorate by members of the Fire Brigades Union. The ban resulted from the Union's disagreement with the changed role of the Inspectors in England and Wales and this was resolved in July. The later inspections were, therefore, completed without the potential difficulties which have been responsible for a limitation on practical activities during inspections recently, but the pattern of inspections was not changed to enable a uniform type of inspection to produce comparable and consistent results. It is expected that the normal full programme of activities during inspections will be resumed in 1988.
3. Although the limited practical activities of the last two years have reduced opportunities to gauge the operational effectiveness of parts of some brigades, there was ample evidence to indicate that the general standard of efficiency is being maintained throughout Scotland and that significant improvements have been achieved in some areas. These have resulted from initiatives taken by Firemasters following examinations of local standards of cover and discussions with members of the Inspectorate, who have encouraged brigades to re-examine all their activities to make better use of available resources. Although the requirements of the 1985 Standards of Fire Cover Report, which prompted the brigades' reviews, were not substantially different from those of the 1958 Report which it replaced, the opportunity of a complete re-examination of brigades' structures, station locations and personnel was particularly valuable in setting a pattern for future development. All brigades have decided to review their fire cover arrangements regularly in future to take account of changes in population, road patterns and risk levels.
4. The normal pattern of reports to fire authorities was repeated in 1987 and this provided me with an opportunity for valuable exchanges with members of fire committees and fire boards on the development and progress of their brigades. I was also able to stress the important part which local authorities could play in increasing public awareness of the dangers of fire and in leading the campaign to reduce fire deaths in the home in Scotland.

## Fire Authorities and Firemasters

5. At the end of the year the following Firemasters were in post:

Central Region	Firemaster I S T Adam, GIFireE
Dumfries and Galloway	Firemaster J B Stiff, GIFireE FBIM
Fife Fire and Rescue Service	Firemaster J Thomson, QFSM FIFireE
Grampian	Firemaster A N Morrison, MIFireE
Highland and Islands	Firemaster D Grant, GIFireE
Lothian and Borders	Firemaster R J Edmonds, MIFireE
Strathclyde	Firemaster C B Halliday, MIFireE
Tayside	Firemaster A Winton, QFSM MIFireE

For the second year, there has been no change in the leadership of the Scottish brigades and once again I would like to record my thanks to the Firemasters and their senior officers for their co-operation with members of the Inspectorate during our

visits. There has been more discussion with senior officers in the last two years because of the changing role of the Inspectorate and this has been made more valuable because of the unchanged command of brigades and the willingness of all those involved in the discussions to take a completely fresh look at the nature of the service which is offered to the public and the way in which it is organised and provided. There is no shortage of initiative and drive in the leadership of brigades and there is an encouraging pattern of development and improvement in many areas.

**Honours and Awards**

6. The following received recognition in The Queen's Honours Lists:

*Member of the Most Excellent Order of the British Empire (Civil Division)*

Charles Goodwillie, Assistant Firemaster, Strathclyde Fire Brigade

*Queen's Fire Service Medal*

Alexander Winton MIFireE, Firemaster, Tayside Fire Brigade.

*The Fire Brigade Long Service and Good Conduct Medal* was awarded to 133 members of the Scottish Fire Service during the year.

7. I was pleased to be able to attend the presentation of Firemaster Winton's Medal in Dundee and to present some of the Long Service and Good Conduct Medals, on behalf of Her Majesty, during visits to brigades. I offer my sincere congratulations to all those whose service was recognised by awards in 1987.



# Section B Personnel and Administration

**Establishment and actual strengths** 8. The establishments and actual strengths of brigades are shown in detail in Table 1.

**Wholetime personnel—operational** 9. The total establishment figure for Scottish brigades on 31 December 1987 was 4,418, an increase of 39 on last year's total, while the actual strength of 4,327 was 31 higher than the 1986 figure. The difference of 91 between establishment and actual figures shows an increase for the second year, the equivalent number for 1986 being 83, for 1985 it was 75, and in 1984 it was 105. Taking the figures on the last day of the year gives a slightly misleading picture for the year as a whole since there is normally an influx of recruits for the training courses early in January in each year which reduces the shortfall.

10. During the year 133 members left the service and a breakdown of the reasons for their departure is given in Table 2. The number of medical retirements dropped to 63, from 65 in 1986, reversing the pattern which has been observed over the previous three years. This change may have been due, in part, to the standstill on medical discharges due to defective eyesight which was introduced in 1986 pending publication of a report by the Joint Working Party on Appointments Provisions. This report was expected to introduce new standards for eyesight and Firemasters agreed to await the conclusions of the Working Party before ordering retirements which were required only because of failing eyesight.

11. The difficulties over eyesight standards were considered to be so important and urgent that the section of the final report dealing with eyesight was produced and approved by the Central Fire Brigades Advisory Councils before the rest of the report was completed, so that it could be brought into effect at the earliest possible moment. The new visual standards for the fire service were issued to brigades in October 1987 and are expected to ease the problem of early retirements through failing eyesight by introducing an operational standard which will apply to whole-time and retained firefighters throughout their service. The entry requirement for whole-time recruits will be higher than this to allow for some deterioration before pensionable age is reached, without the need for premature retirement. This is expected to bring long-term savings in pension payments and avoid some promising careers being cut short by natural ageing processes which would not have a similar effect in many other forms of employment.

**Retained and volunteer personnel** 12. The part-time retained and volunteer establishments and strengths are:

	<i>Establishment</i>		<i>Actual Strength</i>	
	1986	1987	1986	1987
Retained	2,588	2,585	2,346	2,369
Volunteer	1,517	1,530	1,355	1,351

The reduction in retained establishment results from an increase in whole-time officer cover in one brigade with an equivalent reduction in the number of retained members. The increase in the actual strength of retained units is a clear indication of the success of efforts which have been made in several brigades to recruit up to establishment levels, particularly in areas where there is difficulty in maintaining full cover during working hours. The figure is higher than in any year since 1980 in spite of the financial pressures on employers who find difficulty in arranging to release employees without notice during the working day. In other isolated communities where there is little

local employment there are few able-bodied persons available in the community during the day because the majority have to travel to other areas for work. Firemasters are to be congratulated on the work which has been done to reach this satisfactory position.

13. The slight fall in the number of volunteers is not significant and must be seen against the background of the general improvements in volunteer units, both in numbers and standards, which have resulted from increased awareness of the benefits of self-help in the event of fire in small, remote communities as well as from the efforts of Firemasters. In three brigades—Grampian, Highland and Islands and Strathclyde—there are now female volunteer firefighters, 11 in all, who form a vital part of these small local units.

14. The work of the retained and volunteer members of brigades is vital to the safety of their communities and I would like to acknowledge their public spirit and devotion to duty in the inconvenient, often difficult, sometimes dangerous work which they do. The families and employers of these members suffer considerable disruption to their arrangements and their willing acceptance of this burden makes possible the standard of service which is achieved in rural areas.

**Control room (Non-operational staff)**

15. The number of staff in post in control rooms is now the same as the establishment figure, 189, and although there are transitional shortages and surpluses in individual brigades, these are balanced in the final total. There has been an increase of six in the establishment total, resulting from an increase of four in Central Region Fire Brigade and two in Dumfries and Galloway Fire Brigade following experience in operating new control rooms with more sophisticated equipment.

16. The surplus in Strathclyde's control room, following the rationalisation of five controls into one, has now been eliminated by natural wastage.

17. During the year, the Report of the Working Party on Control Room Training was issued to brigades, following approval by the Joint Training Committee of the Central Fire Brigades Advisory Councils. This Report confirmed and standardised the best practice in brigades in proposing a programme of training for new entrants to control rooms. Initial training will comprise three weeks of instruction in the control room and in the brigade on technical and procedural requirements as well as the background of fire brigade organisation and operations.

18. Several brigades are now using control room staff as crews for mobile control units to attend large or protracted incidents and this brings them closer to operational work. This improves their understanding of fireground needs, as well as enhancing the standard of communications with their parent control.

**Discipline**

19. During the year, 23 members of the service were charged with offences under the Fire Services (Discipline) (Scotland) Regulations 1985, involving a total of 32 charges. This is the second full year of operation of the new Regulations which came into effect on 16 December 1985 and the procedures are now well established. The majority of charges warranted a full hearing within the brigade, as opposed to a summary hearing, but no case needed to be remitted to the fire authority at the initial stage.

20. The punishments awarded were:

Caution:	2
Reprimand:	5
Stoppage of pay:	13
Dismissal:	3

In addition, one member was discharged for misconduct without being charged under the Discipline Regulations following the procedure for Summary Dismissal in the revised Discipline Regulations which came into effect in December 1985.

21. Considering the high standards of discipline and behaviour required by brigades of their members, which include actions off duty on some occasions, this level of disciplinary action is commendably low and shows that the reputation of the service is being maintained in spite of widespread criticism of the behaviour of young men in many other fields.

#### Health

22. There was an improvement in the average number of days lost due to sickness, from 5.13% in 1986 to 4.5% in 1987. The figures for the previous three years were 1985—4.5%, 1984—4.39% and 1983—5.12%, so there is little change in the pattern of levels of sickness. As usual, a small number of long-term absences through illness had a disproportionate effect on the percentage figure of some individual brigades.

23. A detailed survey of injuries causing an absence of three days or more was conducted in brigades from January to September. This showed that tripping or falling and lifting or carrying were the main causes of such injuries and occurred as follows:

(a) Number of persons sustaining injury on duty resulting in absence of three days or more:	215
(b) Number included at (a) who sustained injury at a fire:	94
(c) Number included at (a) who sustained injury at a special service:	4
(d) Number included at (a) who sustained injury during training:	23
(e) Number included at (a) who sustained injury engaged in other act:	94

A comparison between the results of this survey and that conducted last year (which looked at injuries causing an absence of two weeks or more) shows that while the percentage figures for (e) are the same in both surveys (43%), there are marked differences between the percentage figures for other categories. These indicate that while there is a higher percentage of injuries at fires and special services causing absences of three days or more (46% compared to 34%), the more serious injuries involving two weeks' absence or more are twice as common during training as minor injuries (23% compared to 10.7%).

24. While these initial surveys provide valuable indications of the potential value of such analysis, it is necessary to examine trends over a longer period and the survey will continue for a further two years. In the meantime, Firemasters have been informed of the most common categories of accidents causing injury and encouraged to intensify training in techniques and procedures aimed at reducing accidents of all types.

25. An important part of the campaign against accidental injury is the elimination of strains caused by unfitness and lack of suppleness. Most brigades now have physical training instructors who were trained at the Home Departments' school at Kirkham, but the widespread introduction of a full fitness training regime whilst on duty has been delayed pending the publication of a full report on the subject by the Joint Training Committee. This will be based on the findings of a research study conducted by the Chelsea College of Physical Education which examined large numbers of firefighters over an extended period to determine their capabilities, needs and methods of assessment of fitness.

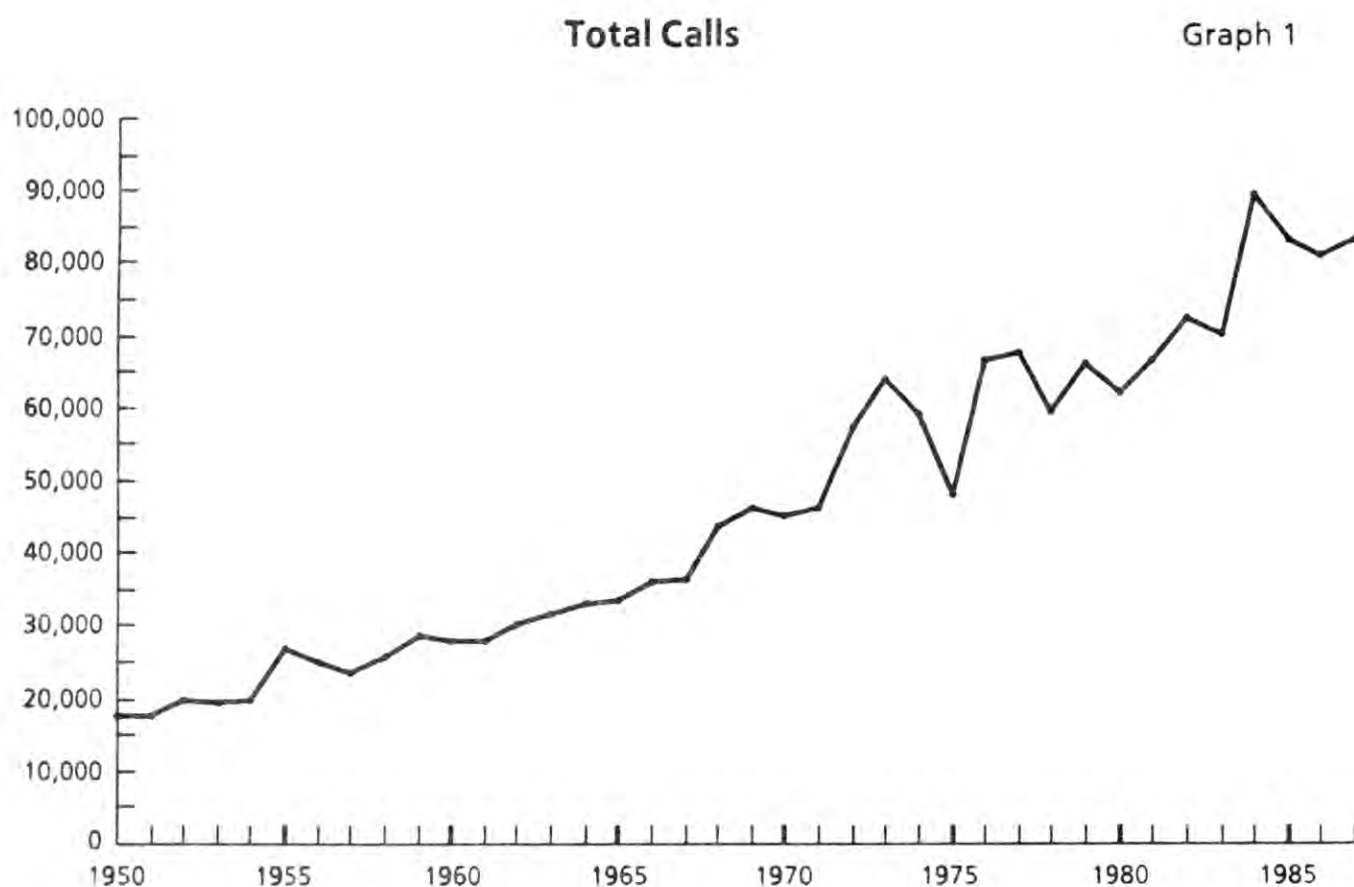
26. Widespread discussion of health and fitness standards in connection with the anticipated JTC report and the report of the Working Party on Appointments Provisions, both of which are expected to be published early in 1988, has highlighted the importance of the role of medical advisers in brigades. Three medical advisers from brigades have taken part in the Working Party and their direct experience of everyday problems of recruitment medical examinations, routine screening and medical discharges was invaluable to the formation of future policy. In addition, the eight medical advisers to the Scottish brigades have formed a group which meets regularly to discuss current health problems and to agree on standards for records and other subjects of mutual concern. This co-operation has eliminated a number of inter-brigade medical difficulties and will prepare the ground for the more extensive involvement of medical checks in occupational health schemes which are being considered in many brigades.

**Pensions** 27. The Firemen's Pension Scheme (Amendment) Order 1987 which came into force on 1 October 1987 amended the Firemen's Pension Scheme to allow regular firemen who would not be able to earn the maximum ordinary pension by their retirement date to elect to purchase extra benefits under the Scheme. There are other qualifying conditions and certain time limits. Firemen who were serving on or after 28 October 1981 and who have since retired may also apply subject to certain conditions to increase their personal and dependants' benefits.



# Section C Operational

**Fires and other emergencies** 28. After two successive years of falling numbers of calls for fire brigade assistance, following the peak in 1984, there was a slight rise again in 1987. This is illustrated in Graph 1 which clearly shows the steady increase in activity by brigades since records started in their present form after the denationalisation of the fire service.



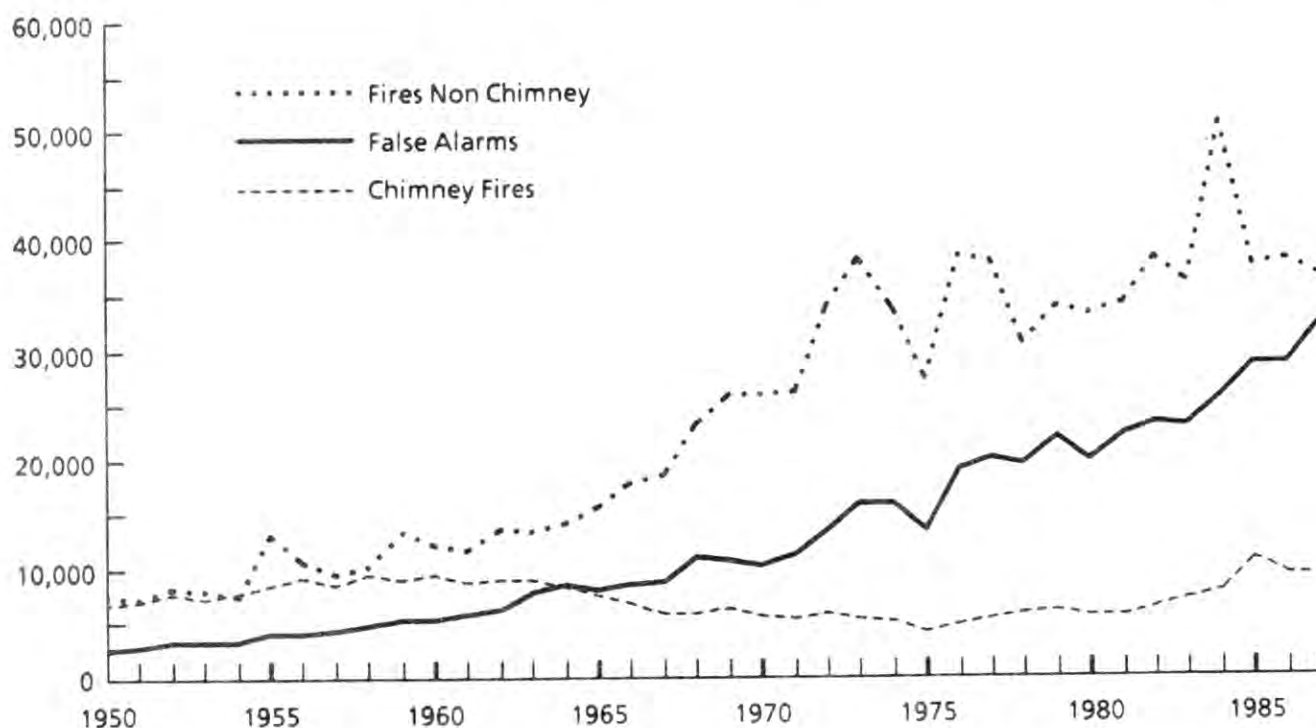
29. A detailed breakdown of the types of call by brigade is given in Table 3, which also categorises the fires by the number of pumps required to fight them. A comparison of this table with the equivalent figures for the previous year shows that while the number of fires in each of the three categories, ie occupied building fires, secondary fires and chimneys, has decreased, the number of false alarms in all three categories, ie good intent, apparatus fault and malicious, has increased.

30. A breakdown of the types of fire call over the last 38 years is given in Graph 2. The most significant trend which can be observed in this graph is the sharp rise in the total number of false alarms in relation to actual fires over recent years, which

if it is maintained at the present rate of increase will mean that there are more false alarms than fires by the end of the decade.

## Breakdown of Calls

Graph 2



31. The effect of this increase on the work load of brigades is shown in Graph 3, which illustrates the proportions of different types of calls. False alarm calls now form 38.6% of all calls compared to 35.1% last year. Special services remain at the same level, 6.5%, but all the fire related calls formed a lower proportion of the work load of brigades compared to the previous year.

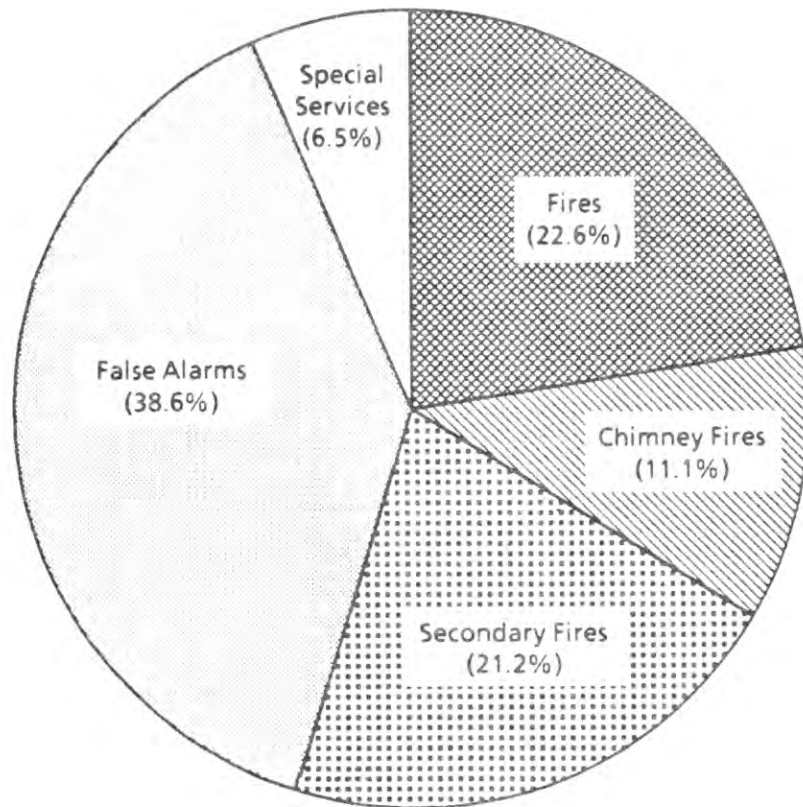
32. The total number of false alarms, 32,054, is now greater than the total number of calls received in any one year before 1965 and clearly represents a serious problem in terms of wasted resources and availability for genuine calls to incidents. An analysis of the proportions of each type of false alarm call is shown in Graph 4

33. The highest proportion of false calls is now malicious for the first time since records were started in their present form in 1982. Previously calls with good intent formed the largest element in false calls (41.3% last year against 36.1% malicious calls and 22.6% faulty apparatus). While the time spent in responding to false calls of all types is equally wasteful, good intent calls are welcomed because they indicate the public's increased watchfulness and willingness to give early alert which can be very beneficial in reducing life and financial losses.

34. Malicious calls, however, are totally anti-social and the fact that they can lead to unattended genuine incidents, road accidents involving deaths and injuries and the dissipation of scarce local government resources does not appear to be brought home to those who make such calls. The increase of penalties on conviction appears to have little beneficial effect, probably because the rate of detection is fairly low until new telecommunications technology allows quicker tracing of the point of origin of calls. Only Dumfries and Galloway, Highland and Islands and Tayside brigades show a reduction in malicious calls, all others showing an increase, with Strathclyde having a 33% increase on an already high figure.

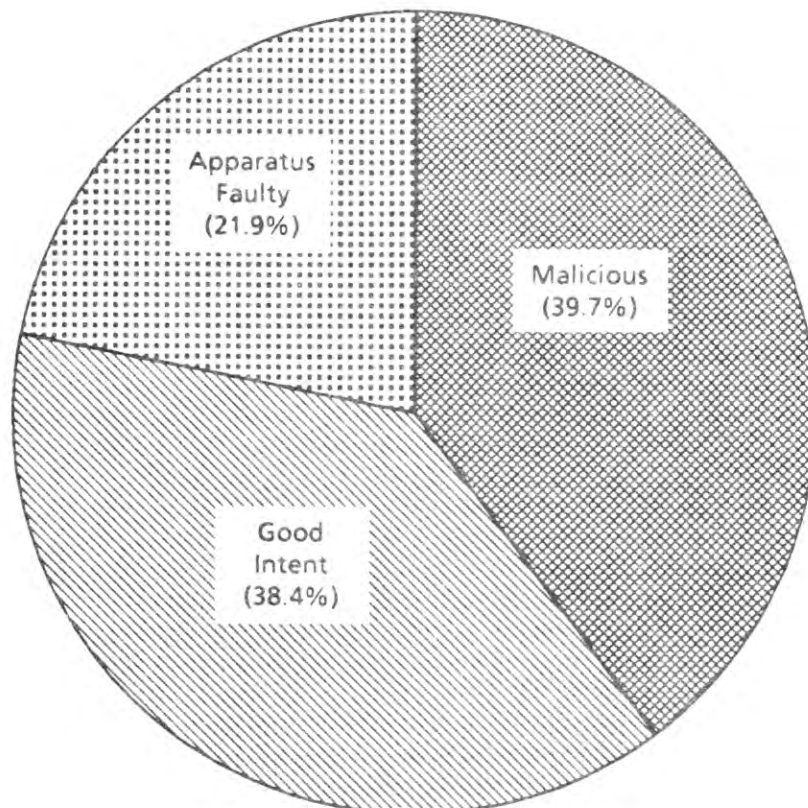
Type of Call

Graph 3



Type of False Alarm

Graph 4



35. The variations in levels of activity in types of call by brigade are shown in the table below. The picture is broadly similar to that shown last year except for the increases in false alarms noted in the previous paragraph. The table shows that there are now three brigades with over 40% of their activity involving false alarm calls, compared to one brigade, Lothian and Borders, whose false alarm calls were above 40% of their work last year. There was also an increase of special services in Dumfries and Galloway from 9% to 12%.

Type of Call by Brigade (Percentage) (Figures are rounded to the nearest whole number and do not necessarily add to the 100%).

Brigade	Total Fires	Chimney Fires	Secondary Fires	False Alarms	Special Services
Central	23	14	20	39	4
Dumfries and Galloway	23	29	8	28	12
Fife	22	14	18	41	5
Grampian	26	23	16	28	7
Highland and Islands	16	47	13	19	6
Lothian and Borders	26	6	20	43	6
Strathclyde	21	6	24	42	7
Tayside	28	12	25	28	7
All Brigades	23	12	20	39	7

**Fatalities** 36. The number of fire fatalities, 168, is three above the 1986 figure and is the third highest since 1950, being exceeded only in 1979, (175) and 1985 (171). UK and international figures for the same period are not yet available, but it is clear that Scotland's deplorably high place on the historical table of deaths in relation to population has been maintained.

**Fatalities**

**Graph 5**



37. The details are given in Table 4 and are divided by brigade into age groups and locations. A separate table gives the number of fatalities in each month in each brigade. This shows an expected pattern of increasing numbers as winter approaches,



with the number falling in spring, except that May showed an abnormal number, mainly due to deaths in Strathclyde.

38. Although the over-60 age group is still by far the largest in proportion to numbers in the population, as shown in the table below, there are significant variations in the pattern shown by last year's figures which are given in brackets for comparison.

Fatalities by Age

Age	Population (1986)	Fatalities	Fatalities per 100,000 population
0-5	389,861	(10) 18	(2.56) 4.62
6-10	309,651	(1) 5	(0.32) 1.61
11-20	792,106	(7) 11	(0.85) 1.39
21-40	1,523,575	(24) 24	(1.60) 1.58
41-60	1,147,700	(34) 38	(2.95) 3.31
61+	958,120	(89) 72	(9.28) 7.51
Total	5,121,013	(165) 168	(3.21) 3.28

39. While the broad pattern is similar to that in previous years, the increase in the proportion of people in their active years who succumb to fire is a trend that needs to be watched carefully. It has been noted in previous Reports and may need to be considered in relation to target populations for future fire prevention publicity and education. The fact that 23 children below 11 years of age died in fires in 1987 compared to 11 in the previous year must be a matter of deep concern to us all.

40. The part of the table showing where people died also repays careful study because of the high incidence of deaths from fire in flats or tenements compared to those in houses, bungalows or maisonettes. This contrast is actually greater than that shown in 1986 and although the figures are not adjusted to take account of the relative numbers of each type of dwelling, there is a clear picture of increased risk of death in flats and tenements in spite of the fact that it might be expected that there would be an earlier alarm if the person at risk was unable to call for assistance. There has also been a marked increase in the number of fire deaths in vehicles, 13 against seven in 1986, but this may not be borne out by subsequent reports which are able to take account of more detailed investigations into causes of death in individual cases. In initial brigade reports it is not always clear whether the death which occurs in a vehicle on fire is the result of natural causes, accident or fire and it is necessary to use national statistics, usually collated about one year later, to ensure that the actual cause of death has been finally determined and taken into account.

41. These national statistics also show quite clearly that a high proportion of deaths in fire (about 78%) occur in private homes although only about 13% of fires occur in dwellings of all types. All the legislation and most of the effort of the fire prevention departments of fire brigades is aimed at protecting members of the public from the dangers of fire when they are not at home. If we are to have any real effect on the numbers of deaths from fire in Scotland we must make greater efforts to educate and alert the public to fire dangers in their own homes or to reduce the likelihood of fires developing into life-threatening incidents.

42. Increasing the fire awareness of the whole population and reducing the number of avoidable fires is likely to take at least a generation. It is heartening to be able to report that a number of other measures offer the possibility of quicker effects, if they are actively pursued and given public support. These are aimed at (i) reducing the likelihood of fire, (ii) reducing the severity of fire should it occur and (iii) giving early warning of a developing fire so that escape is possible.

43. The likelihood of fire can be reduced and loss of life significantly reduced if cigarettes are made in such a way that they will not ignite domestic furnishings if they are carelessly discarded. A high proportion of the deaths in fire in Scotland result from cigarettes being dropped on to beds or furnishings by people who are under

the influence of alcohol. Education in fire awareness can have little effect in such circumstances and the only effective way forward is to make the cigarettes less likely to ignite materials with which they come into contact and the materials less readily ignitable. Recent research in the United States of America shows that it is possible to make safer cigarettes on existing machinery, giving an 80–90% reduction in the propensity of the experimental cigarettes to ignite fabrics as compared to existing cigarettes.

44. The severity of a fire can be reduced if certain filling materials used in upholstered furniture are replaced by less hazardous materials and if covering materials are less readily ignitable. Polyurethane foam has long been recognised as a material which burns readily and very fiercely giving off great heat and toxic fumes. It has contributed to the rapid spread of many fires in domestic property which resulted in multiple fatalities and a replacement foam with safer fire properties has long been sought. A new foam has now been developed which will have a major effect on the fire and fume potential of upholstered furniture but if it is to have an impact on life losses, it is essential for it to be required in all new furniture and for better covering materials offering greater resistance to accidental ignition to be used with it.

45. The rapid introduction of safer cigarettes and furniture, with their great potential for saving life, will come only if public pressure forces manufacturers to adopt new materials and technology. There is likely to be resistance from those who have financial or other commercial interests in maintaining the present types of materials and manufacturing methods and it may be necessary for a combination of legislation, revised standards and consumer pressure for the full benefit of these developments to be achieved.

46. In the meantime, the best hope for the householder is to ensure that if a fire does occur accidentally or through carelessness, the occupants of the building will receive early warning enabling them to escape before the fire reaches serious proportions. Even if cigarette manufacturers agree to modify their products quickly and furniture is sold only if it conforms to safety standards, there will be a long period during which the more dangerous materials continue to be used in domestic buildings. The best means of detecting fire at an early stage is to fit a device which reacts to the presence of smoke in the atmosphere and gives an automatic audible alarm. Such devices are now widely available at low cost and many brigades have been conducting campaigns to encourage their use.

47. As a result of these campaigns and with the support of local authorities and some newspapers, large numbers of smoke detectors have now been fitted in flats, tenements and houses and many housing authorities have agreed to fit smoke detectors in all their housing stock. Some building companies have also arranged to fit smoke detectors as part of the standard fittings in all new houses, since the cost is negligible in relation to building costs. This development is a major step forward in that it will directly improve the chances of escape for the families who are protected by smoke detectors and possibly their neighbours who will receive an earlier warning of fire. There is also a secondary benefit in that the campaigns have drawn attention to the dangers of fire. In some cases brigades have concentrated their efforts on areas where risks of fire death are known to be high. They have also visited old or infirm people and offered to supply detectors free as a result of public subscriptions to provide supplies of suitable types of equipment.

48. Firemasters are to be commended for their work in the smoke detector campaigns which offer real hope in the face of what had seemed to be an intractable problem of the increasing numbers of deaths from fire in Scottish homes. It is necessary, however, to sound a warning note as a result of experience in other countries which have followed a similar course. Norway, Sweden and the USA have experience of smoke detectors in domestic properties over a number of years and there is early evidence that a drop in the number of deaths has occurred as a result. A recent survey in the City of Dallas, conducted over a period of four years and involving more than 12,700 dwellings in areas selected for high incidence of fire, showed that, three years after installation, many of the detectors were not working. In 60% of tenant-occupied

homes and 36% of owner-occupied premises the detector was ineffective because the battery had not been replaced or a fault in the detector had not been rectified. It is essential, therefore, that the efforts to encourage the fitting of detectors should be parallel to a programme to ensure that detectors, once fitted, are kept in working order or the value of the earlier campaigns will have been thrown away. Complacency after fitting a detector can be just as dangerous as failure to have a detector and periodic reminders of the need to fit new batteries and test detectors regularly will have to be a part of the pattern of future public service announcements. Smoke detectors are cheap, simple, reliable and effective and, with very little maintenance, a battery once a year and a five second test once a week, offer the saving of many lives.

49. Last year's Report drew attention to the number of fire deaths which were associated with persons who were in deprived circumstances or recently released from prison or mental hospital. As a result of that indication of groups who were particularly at risk, a number of organisations concerned with the care of these groups have improved their training arrangements to draw particular attention to the dangers of fire in these situations. In other cases, the physical provisions for housing people in these categories have been re-examined to minimise the risk of fire and danger to life.

50. It must be stressed that smoke detectors, with all their potential for saving life if properly maintained, may not be able to improve the chances of escape for those who are handicapped, deaf, or incapable through illness or abuse of drugs or alcohol, unless some special additional measures are taken to help to safety those who are unable to respond or leave the building unaided.

51. The proportional rate of fire deaths by brigade in Scotland is shown in the table which follows. Once again it must be stressed that a change in small numbers in a single year's figures can be misleading but a figure for the previous six years' average is given for comparison.

Fatalities by Brigade Area

Brigade	Fatalities 1987	Fatalities per 100,000 population		Fatalities per 100,000 population 1983-84	
		1987	Average over previous 6 years		
Central	17	6.25	2.59	Netherlands	0.61
Dumfries and Galloway	4	2.72	2.52	Norway	1.45
Fife	12	3.48	2.15	Sweden	1.57
Grampian	12	2.39	2.47	France	1.65
Highland and Islands	5	1.83	6.55	UK (incl. Scotland)	1.97
Lothian and Borders	21	2.48	2.83	Canada	2.51
Strathclyde	83	3.56	3.24	USA	2.59
Tayside	14	3.56	2.76	Hungary	3.18
Scotland	168	3.29	3.27		

52. International figures for comparison are not available for the same period. The most recent figures are those for 1984 which are incomplete because some countries shown in previous tables are not given. A selection from those figures gives a reminder of Scotland's position in relation to some other countries. The USA and Canada are commonly regarded as having the worst consistent fire death record in relation to population over a long period, but, in international tables, a UK figure is given, not Scotland's alone, and this masks the true Scottish record.

53. Firemasters continued to study the underlying causes of fatalities during 1987 but the results of their investigations served to reinforce the lessons which had been learned from earlier studies, rather than reveal new factors not previously suspected. The circumstances most commonly revealed by these studies were that victims lived alone, suffered from the effects of alcohol, started the fire by discarding smoking

materials and were just as likely to die during working hours as during the night. As a result of the interest generated by the special investigations into fire deaths, several brigades have mounted campaigns of education and house visits aimed specifically at groups or areas known to contain numbers of people likely to be at high risk. It must be stressed, however, that once a person is under the influence of alcohol, the effects of education, training and preventive measures are almost entirely lost and as previously stated, even smoke detection does not assist someone who is incapable of intelligent response.

**Rescues** 54. During the year, 579 persons were rescued from fires by fire brigade crews compared to 669 in 1985 and 922 in 1986. In addition, 566 persons were extricated from vehicles following road accidents and a further 899 were rescued or released from other dangerous situations. There have been considerable improvements in the type of rescue equipment provided for fire brigade crews in Scotland in recent years, particularly for dealing with rescues where fire is not involved. The level of expertise reached by brigades who are so equipped is now high as a result of intensive training as well as actual experience at incidents. The next stage of this process, which is being started in most brigades, is to improve casualty handling techniques and co-operation with ambulance, police and hospital staffs so that the efforts of all services are directed towards considerations promoting the recovery of the victim as soon as the first rescue attempt is started and to ensure consistent treatment by these agencies at all stages of the operation. This requires knowledge of the capabilities and limitations of other aid agencies and a conscious decision to collect and pass on information which may be essential to maintaining vital functions and assessing hospital treatment which may follow.

55. An extension of the normal rescue role of brigades has taken place in Grampian Region where the Brigade is now equipped and trained to deal with rescues from cliffs or high structures, such as radio masts and oilrigs. Once again, co-operation and communication are essential to success and the rescue teams work closely with coastguards and police in their training and in actual incidents.

**Road accidents** 56. The consistent rise in the number of road accidents attended by brigades has ended with a slight fall being recorded in 1987 when there were 1,556 attendances, compared to 1,568 in 1986 and 1,448 in 1985. Although there were several serious accidents, usually on newly-opened sections of dual carriageway permitting higher speeds, there have been no multiple crashes involving large numbers of vehicles as witnessed several times during the year in England and it is to be hoped that brigades will not be required to deal with such major catastrophes.

**Fire damage** 57. The estimated cost of fire damage in Scotland in 1987 was £53 million according to figures collated by the Association of British Insurers. The figure for 1986 was £68 million so that there was a significant improvement and a return to the level of loss which has been sustained since 1981. The figure for England and Wales also showed a reduction from £449.5 million in 1986 to £407.5 million in 1987, giving Great Britain totals of £455.5 million for 1986 and £460.5 million for 1987. Although this level of estimated direct fire loss represents a severe drain on the country's resources, some small comfort can be taken from the fact that the general trend is downwards when the effect of inflation is taken into account, as illustrated in the following table.

Estimated Direct Fire Losses in Millions of Pounds Sterling

Year	1980	1981	1982	1983	1984	1985	1986	1987
Scotland	40.2	50.0	50.3	59.2	43.4	50.4	68.0	53.0
England and Wales	429.1	306.6	340.4	506.4	510.2	399.2	387.5	407.5
Total GB	469.3	356.6	390.7	565.6	553.6	449.6	455.5	460.5

58. Total losses resulting from fires are many times greater than these figures which do not take account of the many other losses which inevitably follow serious fires. Lost orders and exports, company failures and job losses invariably come with serious



industrial fires in addition to the toll in human lives, injuries and misery which cannot be measured in financial terms.

59. Extracts from fire loss tables compiled by the insurance companies and collated by the Fire Protection Association indicate, in the table which follows, the enormous financial impact of a single fire on the economy of Scotland and on the Region in which it takes place. There were eight fires causing more than £1 million direct loss including one of over £7 million in June.

<b>High financial loss fires in Scotland in 1987</b>		
	January	
	27	Public House, Dundee, Tayside £351,000
	30	Hotel, Aboyne, Grampian £258,000
	February	
	25	Bar and Disco, Hamilton, Strathclyde £487,000
	March	
	3	Fancy Goods Wholesaler, Glasgow £1,410,000
	13	Furniture Warehouse Undergoing Redevelopment into Shops and Offices, Glasgow £600,000
	April	
	5	Dwelling, Glasgow £360,000
	13	Unoccupied Warehouse, Glasgow £1,085,000
	21	Cold Store, Montrose, Tayside £1,250,000
	May	
	7	Animal Feed Manufacturer, Dunfermline, Fife £750,000
	June	
	1	Hotel, Burntisland, Fife £417,000
	12	Glaziers, Dunfermline, Fife £1,150,000
	15	Furniture Manufacturer, Glasgow £1,185,000
	17	Dwelling, Cullen, Grampian £667,000
	27	Micro-electronic Component Manufacturer, Glenrothes, Fife £7,250,000
	July	
	5	School, Denny, Central £500,000
	August	
	10	Plastic Processing Factory, Tayside £535,000
	28	Electricity Generating Station, Harris, Western Isles £1,100,000
	September	
	15	Hotel, Lerwick, Shetland £685,000
		Shops, Grampian £1,750,000
	October	
	1	Department Store, Glasgow £450,000

8	Farm, Cardenbridge, Dumfries and Galloway	£442,000
31	Nylon Yarn Manufacturer, Kilbirnie, Strathclyde	£570,000
November		
4	School, Dundee, Tayside	£325,000
December		
4	Farm, Munlochy, Highland and Islands	£356,000
18	Potato Store, Banff, Grampian	£262,000

# Section D Supplies and Services

## Transport

60. At the end of December 1987 there were 420 pumping appliances and 84 special appliances in service with Scottish brigades, a reduction of two pumping appliances and three special appliances on last year's figures. There were also 75 pumping and seven special appliances in reserve to cover breakdowns, accidents, major overhauls, etc. Most of the vehicles now in service with brigades are of modern design and maintained to a high standard and the general level of provision and replacement of vehicles is very satisfactory. This has been achieved despite restrictions on spending programmes and Firemasters and fire authorities are to be commended for the success of their long-term planning and consistent progress in this vital sphere.

61. Workshops managers and their staffs also play a very important part in the refurbishment and maintenance of firefighting vehicles and their equipment, a task which becomes increasingly complex as the range and sophistication of firefighting and rescue techniques improves to take advantage of new engineering and technological advances.

## Equipment

62. While every advantage is taken of new developments which improve the capability of brigades and the safety of crews, most of the equipment in use is basic and well-proven, since the nature of fire does not change. As with firefighting and rescue vehicles, equipment and tools must be ready for immediate use at full load with no prospect of failure. This is made possible only by rigorously-followed programmes of regular and systematic testing, using standard tests which have been agreed nationally. Such a system is essential to the confidence which crews must have in all their equipment and this is underlined by the formal records of tests which are maintained scrupulously in all brigades.

63. Research and evaluation is, however, a continuing feature and new projects frequently result from reports of incidents or catastrophes in other countries or in trials of equipment developed abroad. There is a very open and free exchange of information and ideas between firefighters throughout the world and this enables brigades in Scotland to benefit from experiences far wider than those resulting from incidents here.

## Uniform and personal equipment

64. Because of the high cost of implementing changes in uniform for all members of brigades and the well-proven nature of much of the personal equipment used, developments tend to take place over a long period. Field trials have been carried out on a number of items including helmets, protective gloves, portable radio and breathing apparatus communication sets. In addition, the Study Group on the Protection of Firemen from Toxic Hazards has been considering the design and safety features of a one-piece chemical protection suit, which is intended to simplify decontamination after use. The Experimental Unit at the Fire Service College, Moreton-in-Marsh, acts as a liaison centre on research and evaluation carried out in brigades throughout the UK as well as undertaking its own projects and this helps to avoid duplication of effort and repetitive testing.

## Water supplies

65. Half of the Scottish brigades have now completed their hydrant standardisation programmes and the number remaining to be converted, replaced or abandoned in other brigade areas is quite small, representing an insignificant proportion of the total number of hydrants. Although the standardisation programme continues, its pace is largely dictated by the need for replacement of old water mains and the remaining unconverted hydrants are now of little practical significance.

**Premises** 66. The pace of building replacement programmes has slackened because of the consideration being given to the locations of stations, following the reviews of fire cover standards in 1986. Some brigades have replaced all their old stations and are now able to concentrate on improving the facilities for training at stations and in providing showers at retained stations which have not previously been able to offer such facilities. A number of improvement schemes have been going forward and the only major opening during the year followed a full-scale modernisation of the whole-time station at Dunfermline. For the previous 16 months, crews had been operating from the local Divisional Police HQ while the upgrading work was in hand. It is a tribute to the forbearance and co-operation of both services that this temporary arrangement worked well and that service to the public was not affected during the period of the closure of the fire station.

67. In a number of other brigade areas work was started on headquarters and station projects and the usual programmes of maintenance and refurbishment were carried out to ensure that buildings remain in a satisfactory condition. There is a very wide range of different types of premises used by brigades from small huts housing volunteer units' equipment to major headquarters, stores, training and workshops buildings covering several acres in urban areas. While there is sometimes difficulty in maintaining the appearance of buildings or in effecting necessary repairs because of limitations on finance in local authorities, fire service buildings in general are of an appropriate standard for the needs of brigades.

**Communications** 68. For the third year in succession the communications field has been concerned principally with the requirements of the World Administrative Radio Conference (WARC) and the introduction of new systems to meet international requirements. In spite of the need for the development of new techniques and the acquisition of many new sites for transmitting aerials, the changeover programme has been maintained, with the close co-operation of the Directorate of Telecommunications and the police and brigade communications teams.

69. In accordance with the programme, Fife and Tayside have completed the change to their new systems, Grampian and Lothian and Borders are near to completion and the remaining four brigades expect to be able to adhere to their final completion dates and be fully converted before the 1989 international deadline.

70. All brigades now have hand-held portable radio equipment for fire crews and many have completed the allocation of three sets for each pumping appliance which is the national standard. Expenditure on the essential changes for WARC have inhibited progress in some areas but there has been considerable improvement in the provision and use of this equipment in the last year. Several brigades have also completed standardisation of equipment to enable these radio sets to be used with breathing apparatus, which adds considerably to the ability of officers in charge of incidents to keep in touch with developments at a fire and to check on the safety of crews in dangerous situations.

71. Changes of frequency for handportable equipment and retained firemen's call-out systems are not included in the general programme of WARC equipment changes, although some brigades have included new call-out systems in the changes made to comply with the new frequency requirements. It is anticipated that handportable radio equipment will in future use ultra high frequencies (UHF) and the changeover will start once the 1989 programme has been completed. The comparatively short range of these radio transmitters means that it will be possible to use both new and old systems simultaneously during the period of transition, although communication will be possible only within each system.

72. British Telecom informed brigades that there was to be an increase in charges for telephone links outside the public switched telephone network and for maintenance of private wires and special facilities. The amount and timing of the proposed changes were expected to cause difficulties for brigades, in common with police and other emergency services. British Telecom also announced that licence fees for operating brigade radio schemes were to be increased very substantially on 1 April 1988, with

further increases envisaged in the next two years. The combination of these major price increases was a matter of considerable concern to all the emergency services and meetings have been arranged with the bodies concerned to try to improve the scales of charges and increase the notice given of future reviews of this sort.



# Section E Fire Prevention

**Summary** 73. Brigades in Scotland inspected a total of 70,984 premises for fire prevention purposes during 1987. This total is 8,956 above that for the preceding year and indicates a considerable increase in output by fire prevention departments. The number of building plans submitted for comment also increased from 9,355 to 9,997. Many brigades also conducted special campaigns through local organisations to encourage the supply and fitting of smoke detectors in private homes and by direct programmes of visits to houses in deprived areas. This type of work is difficult to measure in terms of successful visits or potential value to the public but it is probably more important to the safety of the community than legislative work which forms the bulk of the formal work of fire prevention departments. The drain on resources from such non-legislative visits is considerable and to be effective the programmes must be sustained over many years at a high level of concentration. Experience in other countries has proved that such efforts can be beneficial and every encouragement needs to be given to brigades and crews who are involved in these goodwill visits.

**Education and publicity** 74. The Scottish Home and Health Department sponsored the screening of fire prevention television commercials and the broadcasting of fire safety material on local radio over the Christmas and New Year period. A supporting news release was issued to press, radio and television agencies urging extra care over the festive season. A news release about fire safety was issued at the start of National Fire Safety Week (19-24 October 1987), and this was supported by local programmes in all brigade areas.

**Inspection and certification of premises** 75. The number of fire certificates issued under the Fire Precautions Act 1971 during the year was:

Factories	259 (195)
Offices, Shops etc	914 (648)
Hotels and Boarding Houses	178 (153)

The 1986 figures are shown in brackets.

In addition the number of fire certificates which were revised was:

Factories	334 (386)
Offices, Shops etc	608 (517)
Hotels and Boarding Houses	447 (449)

76. Whereas in the previous year the number of certificates being revised had shown an increase it is noteworthy that in 1987 the number of certificates issued has gone up in all categories. As the preparation and production of fire certificates is, by its very nature, a tedious and time-consuming job, fire prevention officers in brigades have obviously concentrated their efforts on this necessary aspect of their responsibilities.

77. Progress in certification is not always under the direct control of the brigade responsible because it may depend on negotiations between occupiers and the completion of building work by outside contractors. Since most brigades have virtually completed the main programmes of outstanding work in existing buildings, much of

the flow of work now depends on incoming notifications of building plans or alterations and revisions of existing documentation.

**Joint Fire Prevention Committee**

78. This Committee met twice during the year, its main aim being to consider the implications and requirements of the Fire Safety and Safety of Places of Sport Act 1987 and to carry out the work required on the review of guides to the Fire Precautions Act and commencement orders required for the Act. The Planning/ Legislation Sub-Committee was reconvened and met frequently during the year. Revised guides were drafted for fire safety standards in offices, shops and railway premises, factory premises requiring fire certificates and premises which fall into the non-certificated category. In addition, a new explanatory guide to the Fire Precautions Act was being prepared to help owners and occupiers understand their responsibilities under the Act.

**Scottish Consultative Committee**

79. The draft guide on fire precautions in existing houses in multiple occupation and hostels was finalised in the light of comments made at the consultative stage and it is expected that this will be published at an early date in 1988.

**Building Standards Advisory Committee**

80. The Inspectorate continues to be represented on this committee and is involved with its work on the major revision to the contents and format of the Building Standards (Scotland) Regulations. This work has been progressing through working parties on the main fire safety aspects of the Regulations: Part D—Structural Fire Precautions and Part E—Means of Escape from Fire and Assistance to Fire Service. A draft Technical Memorandum for use with the Building Standards (Scotland) Regulations 1988 was circulated to all interested bodies for comment in November, allowing until the end of March 1988 for replies.

**Health and Safety Executive**

81. During the year the Inspectorate were involved in the work of the Advisory Committee on Dangerous Substances which includes analysis of serious fires which are the subject of Health and Safety Executive reports. The link with HSE representatives serving on most of the joint committees of the Central Fire Brigades Advisory Councils which may have an influence on health, safety and welfare in the fire service is now firmly established and is proving beneficial in helping to resolve matters in the general safety field.

**Fire Safety and Safety of Places of Sport Act 1987**

82. The passing of this Act introduced a number of new responsibilities and concepts for brigades and seminars were arranged at the Fire Service College for Firemasters and senior fire prevention officers. The Act is to be implemented in a series of stages and the seminars were intended to ensure that brigades will be ready to introduce the necessary systems and records in a standard way at the appropriate time.

**Youth Fire Prevention Quiz**

83. The Chief and Assistant Chief Fire Officers' Association organises a national youth competition to encourage young people from schools and youth organisations to learn about fire safety and to take part in quizzes instead of having a final examination. Each brigade runs internal competitions to find a winning team to represent the Region or joint Brigade area. The teams from each brigade meet in a Scottish final to select a team to go forward to the national semi-finals and, it is to be hoped, the national final. The eight teams met in Edinburgh in June as the guests of the Lothian and Borders Fire Board and under the sponsorship of the Central Fire Liaison Panel. The main benefit of the competition is that hundreds of young people from all over the country study fire dangers and the means of preventing fire and meet in a happy atmosphere to compete with each other. The result of the competition is of importance to the competitors and their supporters and trainers, rather than to the success of the venture but the Scottish winners in 1987 were the 2nd Nairn Sea Scouts, representing the Highland and Islands Brigade area. This is the third successive competition to be won by a team from this Brigade area and the instructors and youth leaders are worthy of congratulation on this fine record.

# Section F Training

## Scottish Fire Service Training School

84. The main function of the Scottish Fire Service Training School is to train recruits for the fire service in Scotland. It also trains recruits from the Northumberland Fire and Rescue Service. However the School also uses its resources to provide additional courses to meet the training needs of the Scottish brigades and other organisations such as the Prison Service. The School is also used by non-fire service organisations as a teaching and conference centre when space is available. During 1987 the following courses were undertaken at the School, with the number of attendances shown in brackets:

Recruits' Course	(160)
Retained Firemen's Course	(33)
Retained Leading Firemen/Sub-Officers' Course	(23)
Whole-time Leading Firemen	(60)
Breathing Apparatus Instructors	(5)
Part-time Volunteers	(48)
Industrial Personnel	(26)
Specialist Legislation	(22)
Hospital Fire Safety	(33)
Road Traffic Accident Instructors	(11)
Prison Officers' Fire Prevention	(19).

85. During 1987, the School had its first annual inspection by the Scottish Fire Service Inspectorate, assisted by Mr David Dick, OBE (former Principal of Stevenson College, Edinburgh), who was able to give assistance in the evaluation of teaching methods. The School plays an important part in establishing standards of efficiency for all entrants to the Scottish Fire Service. It is important that its standards should be monitored and that its methods and equipment should be inspected in the same way as other branches of the fire service are examined each year, since its contribution to the overall efficiency of the service is so essential.

86. After a prolonged period of absence through ill-health the Commandant of the School, Mr A Jones, OBE, QFSM, FIFireE, MBIM, retired in June. Mr C F McManus, QFSM, MIFireE, Assistant Chief Fire Officer at the Fire Service College and formerly Deputy Chief Fire Officer of Greater Manchester Fire Brigade was appointed Commandant, with effect from January 1988. I would like to record my appreciation for the good work done by Mr Jones as Commandant and to the Deputy Commandant and staff of the School for the way in which they maintained the School's work during the period of 15 months without a permanent Commandant.

87. The domestic staff at the School rarely receive public recognition for their work, although it is vital to the continued successful operation of training and to the health and welfare of all who use the School premises. It is particularly pleasing therefore to record that Miss Annie McCawley, a kitchen housemaid at the School for many years, was awarded the Imperial Service Medal in the Queen's Birthday Honours, in recognition of her long and valuable service to fire service interests in Scotland.

## Fire Service College

88. During the year a total of 283 students from Scottish brigades attended various courses at the Fire Service College. Attendances on courses, especially those at Moreton-in-Marsh, are a drain on the training budgets in brigades and it is commendable that the Scottish brigades try to take full advantage of the specialist and progressive training available for their personnel. The College has conducted a rigorous

reappraisal of its methods and aims and is improving the quality and content of courses to the benefit of students and staff alike. The College, like the Scottish Fire Service Training School, draws its instructional staff from fire brigades on secondment. Without the active support of brigades the College and the School could not maintain their very high standards and I commend the Firemasters who agree to periods of secondment for qualified officers from their brigades.

**Brigade Training**

89. The National Joint Council for Local Authorities' Fire Brigades has recently discussed a possible addition to the number of hours allocated to training for part-time retained personnel, at present two hours per week. It is considered that an additional hour per week is required to cater for the extended training programme necessary to cover the breadth of knowledge now required in the fire service. Fire authorities have been asked to consider the feasibility and acceptability of an additional hour's training, bearing in mind the cost implications and the effect on the free time of retained members. The Inspectorate will examine, with Firemasters, the possible implications for training arrangements and for training budgets of the proposed extension to retained members' training commitments.

**Fire Services Examinations Board**

90. In order to be qualified to apply for promotion to a higher rank, firefighters are required to pass examinations set by the Fire Services Examinations Board. The examinations for promotion to the ranks of Leading Fireman and Sub-Officer have both written and practical elements, while the examination for promotion to the rank of Station Officer consists of written papers only. In Scotland three Local Boards administer both the written and practical examinations for the Fire Services Examinations Board, with the practical tests for the Leading Fireman and Sub-Officer examinations taking place in the year following the written examinations. This system has been operating for a full year after the amalgamation of the Scottish Examinations Board with the England and Wales Board in September 1986.

91. The results of the written examinations are as follows (where appropriate, figures for the previous year are shown in brackets):

<i>Examination</i>	<i>Number of Candidates</i>	<i>Number of Passes</i>
Leading Fireman	236 (247)	84 (36)
Sub-Officer	169 (169)	42 (24)
Station Officer	243	15

The pass rates for the Leading Fireman and Sub-Officer's promotion examinations showed a healthy improvement over the previous year but while the percentage of those passing the Leading Fireman examination in Scotland—35.6%—nearly reached the average of 37.7% for the whole country, the percentage of those passing the Sub-Officer examination—24.9%—was well below the overall average of 34.3%. The number passing the Station Officer's examination was also better than in the previous year, but against the overall average of 15.2%, the Scottish pass rate was 6.2%. These pass rates are very disappointing although it was expected that the introduction of a new system would have an adverse effect in the early years. Firemasters are investigating their own candidates' preparation methods and support.

92. Results for the Scottish practical examinations in 1987 were significantly better than those for the rest of Great Britain and also show an improvement on previous years. The number of candidates was much lower than in recent examinations because of the smaller number of passes in the previous year's written examinations, which are a necessary qualification for entry to the practical tests at each level.

<i>Examination</i>	<i>Number of Candidates</i>	<i>Number of Passes</i>	<i>Pass Rate</i>	
			<i>Scotland</i>	<i>GB</i>
Leading Fireman 1987	83	58	70%	62%
1986	137	82	60%	58%
Sub-Officer 1987	97	70	72%	49%
1986	189	93	49%	54%

93. The number of qualifications resulting from the 1987 examinations was lower

than the average in recent years but most brigades have a large reserve of qualified candidates for promotion and the overall position in Scotland is satisfactory.

**The Institution of Fire  
Engineers**

94. Although not part of the statutory examination system, the Institution sets its own examinations and also provides technical information to members. It is recognised as making a valuable contribution to the professionalism of the fire service and in bringing together professionals in many fields which influence fire safety and fire protection. In Scotland the Institution of Fire Engineers is active and well supported, and six Branch meetings were held during 1987 covering a range of subjects. These included talks on the Manchester Airport disaster, the radio system changes for WARC, firefighting on specialised ships and a visit to the National Hyperbaric Unit at Aberdeen.



## Section G Miscellaneous

### Scottish Central Fire Brigades Advisory Council

95. At the Council meetings held on 5 June and 4 December, the chair was taken by Mr William K Reid, CB, Secretary, Scottish Home and Health Department and Lord James Douglas-Hamilton, MP, Minister for Home Affairs and the Environment at the Scottish Office respectively. The Council considered reports from the Joint Committee on Appliances, Equipment and Uniform; the Joint Committee on Fire Brigade Operations; the Joint Training Committee; the Joint Fire Prevention Committee; the Joint Pensions Committee; the Joint Committee on Fire Research; the Joint Committee on Fire Brigade Communications and the Scottish Fire Service Training School. The Council also considered papers on Fire Safety of Upholstered Furniture; the Joint Working Group on Chernobyl and the Joint Working Party on Appointments Provisions.

### Research

96. The Joint Committee on Fire Research considered a number of new fire-related projects and monitored the programmes of research carried out by the Research and Planning Unit of the Home Office and various outside agencies. The scope of fire research widens each year to enable the fire service to keep abreast of new developments in technology and materials.

97. Research is likely to be very costly and inefficient unless it is carefully planned and executed. With this in mind, the Research Committee has formulated a Strategic Plan for Fire Research which gives basic objectives for projects, outlines existing areas of study and notes possible future areas of research. This allows the preplanning and allocation of resources to ensure an efficient and cost-effective return. The plan is flexible enough to permit new urgent items to be added in the event of slow progress in other areas or to revise priorities within the spending programmes, if circumstances change.

98. During the year, the University of Surrey conducted a pilot scheme with a microcomputer fire training aid called VESTA. It is anticipated that, if the pilot scheme is successful, units will be issued to brigades for use with groups of children aged 8–11 years. The purpose of this fire package is to provide an enjoyable teaching aid for schools.

99. After several years of preliminary work Portsmouth Polytechnic presented stage 1 of a project entitled 'Human Behaviour in Fire: escape through smoke'. This research project is concerned with the psychological and physical factors influencing escape behaviour in fires and its aim is to determine the factors which may influence people who are escaping from fire in choosing internal escape routes.

100. A report presented to the Joint Committee on Fire Research gave the results of a study into the validity of smoke dispersal as a method of providing protection to escape routes. This indicated that neither powered nor natural smoke dispersal systems can achieve a satisfactory level of reliability.

101. Another fire safety research project undertaken during the year was a study of the optimal siting of smoke detectors in the corridors of non-domestic premises. The results of this research will be used in the revision of BS 5839: Pt 1: 1980.

102. The results of a study into the stresses imposed on the cardiovascular system of firemen by their work was presented to the Joint Committee on Fire Research. The study was carried out jointly by the Scientific Research and Development Branch

(SRDB) of the Home Office, the Department of Cardiology at St Thomas's Hospital, London and the London School of Hygiene and Tropical Medicine. It has provided sufficient evidence to conclude that fire service work does not increase the risk of heart disease.

**Civil Defence** 103. All eight Scottish brigades have now appointed Brigade Emergency Planning Staff Officers and work is progressing on the preparation of comprehensive plans for wartime contingencies. The two Zone Fire Commanders for Scotland, the Firemasters of Strathclyde and Tayside, have also appointed staff officers to deal with strategic emergency planning for their Zones, in co-operation with the other emergency services. Emergency Planning covers a wide spectrum and there is an increasing overlap between planning for wartime and peacetime disasters. This is a continuous task which brigades recognise as an important preparation for the possibility of serious emergency incidents. Experience in disasters throughout the world has shown that preplanning and exercises can mitigate the scale of disasters and ensure that appropriate relief is speedily available.

**Fire Services National Benevolent Fund** 104. There was a substantial increase in the amount of money raised for the Fund by Scottish brigades in 1987, £113,897 compared to £88,895 in the previous year. Every effort is made to keep administrative costs to a minimum, usually about 6% for the Fund as a whole, so the Scottish contribution is a significant sum. The total income for the Fund, including return on investments, was over £2 million. It was only in 1980 that £1 million was raised for the first time. Whilst it is not the intention to compare the efforts of individual brigades, it is appropriate to give special credit when this is due, and I offer my congratulations to Grampian, Highland and Islands and Dumfries and Galloway Fire Brigades for producing high levels of fund raising in relation to the number of members of each brigade.

105. The Fund's expenditure, which is collated for the whole of Great Britain, also rose by 10%. Several major maintenance projects were carried out at the short stay convalescent homes in Littlehampton, Sussex and Chudleigh, Devon, and the costs of grants to widows, orphans and the handicapped also increased.

**Fire Services Sports and Athletics Association** 106. At the Annual General Meeting of the Association Mr Howarth (Retiring Chairman) installed Firemaster D Grant as the new Chairman for 1987-88. This is the second time that a Firemaster from Highland and Islands has been appointed to this office since the formation of the Association in 1968. The Association has now been operating successfully for 20 years and plays a valuable role in maintaining morale in the service and fostering comradeship between brigades nationally and internationally. During the past year members of Scottish brigades have represented the service at international level and are firmly established with continental brigades through the European Fire Services' Sports Federation.

107. During the year Scottish brigades won a number of notable victories in national competitions which included a win by Highland and Islands' team over Greater Manchester in the final of the national football competition, and also a victory for the Scottish Volleyball team in the 10th National District Final at Humberside. There is a wide range of sports opportunities available to fire brigade members and there is full and active participation from Scotland in most of the sports. The complexity of the organisation which is required to achieve this high level of involvement is considerable and I wish to thank the many officials and helpers who devote so much of their free time to the work of the Association. One member of Strathclyde Fire Brigade, ADO Albert McLean, was so active and effective as a National Executive Committee member and Volleyball organiser that the Association chose him for their 'Man of the Year' Award. As he has now retired from the Brigade, this was a fitting climax to his many years of devotion to sport in the fire service.

**ESTABLISHMENT AND STRENGTH OF FIRE BRIGADES**

as at 31st December 1987

	CENTRAL		DUMFRIES AND GALLOWAY		FIFE		GRAMPIAN		HIGHLAND AND ISLANDS		LOTHIAN AND BORDERS		STRATHCLYDE		TAYSIDE		GRAND TOTALS	
	Establishment	Actual Strength		Establishment	Actual Strength		Establishment	Actual Strength		Establishment	Actual Strength		Establishment	Actual Strength		Establishment	Actual Strength	
		Male	Female		Male	Female		Male	Female		Male	Female		Male	Female		Male	Female
<b>Operational Personnel</b>																		
Firemasters	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8
Assistant Firemasters	1	1	1	1	1	1	2	2	1	1	2	2	5	5	1	1	1	15
Senior Divisional Officers	1	1	1	1	2	2	2	2	3	3	4	4	7	6	5	5	10	14
Divisional Officers Grade I	4	4	1	3	3	3	2	2	5	5	7	8	14	15	14	15	13	13
Divisional Officers Grade II	—	—	3	1	1	1	5	5	—	—	7	8	34	15	1	1	37	38
Divisional Officers Grade III	6	6	9	3	10	10	12	12	11	11	18	21	166	34	14	8	114	114
Assistant Divisional Officers	19	15	36	9	36	36	29	29	8	8	35	33	340	164	37	33	340	327
Station Officers	24	24	28	9	27	28	27	28	7	7	66	67	217	215	36	37	411	411
Sub Officers	32	32	60	8	60	57	38	38	13	13	97	104	1,526	278	44	44	569	574
Leading Firemen	148	149	238	56	238	233	149	143	48	47	430	416	1,482	482	263	254	2,858	2,780
Firemen	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Totals	236	233	380	94	372	372	267	262	95	93	670	663	2,217	2,217	410	395	4,418	4,327
<b>Control Room Staff</b>																		
Prin. F.C. Officers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Group F.C. Officers	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fire Con. Officers	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Sen. Fire Con. Operators	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Lead. Fire Con. Operators	8	3	8	10	3	5	8	6	8	9	12	10	44	4	9	2	107	15
Fire Control Operators	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Totals	17	5	17	15	3	14	17	—	13	—	25	7	67	7	18	3	189	26
<b>Part-time Retained</b>																		
Station Officers	4	—	2	—	2	2	11	12	13	11	5	4	8	7	7	7	50	45
Sub Officers	16	15	16	8	8	8	34	36	27	27	25	25	56	55	19	19	201	201
Leading Firemen	20	20	20	20	10	10	46	53	53	53	32	32	66	64	35	38	283	290
Firemen	160	130	157	151	92	79	369	339	284	260	233	219	519	472	237	183	2,051	1,833
Totals	200	165	112	193	99	—	460	440	378	351	295	280	649	598	298	247	2,585	2,369
<b>Part-time Volunteer</b>																		
Assistant Divisional Officers	—	—	—	—	—	—	—	—	6	6	—	—	—	—	—	—	6	6
Station Officers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sub Officers	—	—	—	—	—	—	4	2	99	99	—	—	—	—	1	1	102	102
Sub Officers	—	—	—	—	—	—	4	4	88	88	—	—	—	—	—	—	92	92
Leading Firemen	24	13	—	—	—	—	26	14	1,025	850	—	—	224	225	31	38	1,330	1,140
Firemen	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Totals	24	13	—	—	—	—	32	20	1,218	1,043	4	—	224	225	32	39	1,530	1,340
<b>WHOLETIME CONTROL ROOM</b>																		
PART-TIME RETAINED	236	233	380	94	372	372	267	262	95	93	670	663	2,217	2,217	410	395	4,418	4,327
PART-TIME VOLUNTEER	17	5	17	15	3	14	17	—	13	—	25	7	67	7	18	3	189	26
Totals	200	165	112	193	99	—	460	440	378	351	295	280	649	598	298	247	2,585	2,369
<b>GRAND TOTALS</b>	477	416	509	302	474	474	776	722	1,704	1,487	990	950	3,047	3,047	758	684	8,722	8,062

Table 1.



**SUMMARY OF FIRES AND SPECIAL SERVICES WHICH HAVE OCCURRED 1987**

Table 3

	Total Fires	Classification of fires by number of pumps used for firefighting purposes:						Chimney Fires	Secondary Fires	False Alarms			Special Service	Total
		(a) 1 pump	(b) 2 pumps	(c) 3/5 pumps	(d) 6/10 pumps	(e) 11/15 pumps	(f) Over 15			Good Intent	Apparatus Fault	Malicious		
Central	866	673	162	24	6	1	—	516	699	568	314	510	160	3,633
Dumfries and Galloway	468	311	144	13	—	—	—	57	157	295	92	185	237	2,013
Fife	1,038	1,015	17	5	1	—	—	655	877	724	386	870	255	4,805
Grampian	1,477	1,266	145	63	3	—	—	1,283	893	832	257	498	414	5,654
Highland and Islands	655	534	107	14	—	—	—	1,929	518	478	121	182	230	4,113
Lothian and Borders	3,720	2,476	704	537	3	—	—	925	2,869	2,444	982	2,782	816	14,538
Strathclyde	8,899	7,975	779	137	6	2	—	2,627	10,122	6,286	4,411	7,191	2,884	42,420
Tayside	1,678	1,600	64	14	—	—	—	699	1,474	666	471	509	425	5,922
Total	18,801	15,850	2,122	807	19	3	—	9,213	17,609	12,293	7,034	12,727	5,421	83,098



FATALITIES (Listing Age Groups and Locations) during 1987

Table 4

BRIGADE	Age Groups								Location—Dwellings					Location Other Buildings					Misc	
	Up to 5 years	6 to 10 years	11 to 20 years	21 to 40 years	41 to 60 years	Over 60 years	Total Fatalities	Flat—including Terrace/Tenement	Banglow—Semi or Detached	Maisonette	Standard Dwelling	Other Dwellings	Hospitals—Homes	Hotels and Boarding Houses	Caravans	Vehicles	Industrial or Commercial Premises	Open		
																				Jan.
Central	4	—	3	—	4	6	17	7	5	—	—	—	—	—	—	1	3	—	—	1
Dumfries and Galloway	—	—	—	1	—	3	4	3	—	—	1	—	—	—	—	—	—	—	—	—
Fife	4	1	—	3	—	4	12	9	—	—	—	—	—	—	1	2	—	—	—	—
Grampian	2	1	—	3	3	3	12	5	1	—	—	2	—	—	—	4	—	—	—	—
Highland and Islands	1	—	—	—	2	2	5	—	1	—	3	1	—	—	—	—	—	—	—	—
Lothian and Borders	—	—	1	4	6	10	21	9	9	—	—	—	—	—	—	2	1	—	—	—
Strathclyde	3	3	6	9	22	40	83	55	2	5	13	3	1	—	—	3	1	—	—	—
Tayside	4	—	1	4	1	4	14	5	—	2	5	—	—	—	1	1	—	—	—	—
Totals	18	5	11	24	38	72	168	93	18	7	22	6	1	—	2	13	5	—	—	1
Fatalities by Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total							
Central	2	6	4	2	—	—	1	—	—	—	—	2	17							
Dumfries and Galloway	—	—	1	1	2	3	—	—	—	—	1	—	4							
Fife	5	1	1	—	1	—	—	—	—	—	3	2	12							
Grampian	—	—	—	1	—	—	—	—	—	—	—	2	12							
Highland and Islands	—	—	1	—	—	—	—	—	—	—	2	2	5							
Lothian and Borders	6	1	—	1	1	1	2	2	2	2	2	3	21							
Strathclyde	13	10	11	4	8	5	4	6	4	5	6	7	83							
Tayside	4	—	—	—	3	—	—	—	3	—	—	4	14							
Totals	30	19	17	9	15	11	8	6	9	10	14	20	168							











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