

COST  
ACTION C17:  
BUILT HERITAGE:  
FIRE LOSS TO  
HISTORIC  
BUILDINGS:  
FINAL REPORT

Part 2

R | Research  
Report

TECHNICAL  
CONSERVATION,  
RESEARCH AND  
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# R | Research Report

COST Action C17:  
Built Heritage: Fire Loss  
to Historic Buildings:  
Final Report

Part 2  
Appendices

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Ingval Maxwell OBE

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TECHNICAL  
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# CONTENTS

## **Annex 1: Fire Lists**

List of International Fire Incidents in Historic Buildings: Compiled by Ingval Maxwell	3
List of Scottish Fire Incidents in Historic Buildings 1996–1998: Compiled by Ingval Maxwell	15
List of Scottish Fire Incidents in Historic Buildings 2003–2006: Compiled by Ingval Maxwell	26
England List of Historic Building Fires 2002–2006: Compiled by Steve Emery	30
List of Bulgaria Historic Building Fires with an emphasis on the period 1985–2003: Compiled by Prof Petar Hristov	35
Spanish Historic Building Fires 1991–2006: Compiled by Mariana Llinares	36
Case studies: Important Fires in Norway Over the Last 20 Years. Einar Karlsen	37

## **Annex 2: Case Studies**

US Fires in Historic Buildings 1999–2003: Selective Custom Narratives on Fires Involving Museums, Libraries, Planetariums, Historical Properties and Churches: Prepared by: Marty Ahrens, Fire Analysis and Research Division, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471	39
Gasthofs Löwen, Oberrohrdorf: 20 November 2005: Daniel Rusch	44
Stadtkirche St. Nikolaus: Daniel Rusch	45
Altäre, Kanzel, Orgel: Daniel Rusch	46
Fresken der Gotik und der Renaissance: Daniel Rusch	47
Fire in St Peter’s Church, Oisterwijk, Netherlands: 27 May 1998: jacques Akerboom	48
Report And Conclusions On The Cowgate Fire, Edinburgh: 19 Dec 2003 Report and Conclusions on the Cowgate Fire, 19 December 2003 as recorded following discussion at the UK World Heritage Committee Meeting, June 2003	52
Edinburgh Old Town and New Towns World Heritage Site Reactive Monitoring Report on Fire in December 2002: Historic Scotland	53
Edinburgh Old Town Fire Report: Frank White, November 2003	56
Fire in the Duchess Anna Amalia Library, Weimar, Germany: 2 September 2004	60
Fire In The Windsor Building, Madrid, Spain: 12 February 2005: Mariana Llinares, Miguel Gómez-Heras	61
Brand der Kirche in Bremgarten: 24. März 1984: Die Stadtkirche brennt: Daniel Rusch	64
Porvoo Cathedral, Finland: Roof Fire 29 May 2006: Martti Jokinen	65
Porvoo Church Finland: Roof Fire Damage: Photo Essay: Marti Jokinen and Seppo Pekurinen	66
St. Petersburg, Russia: Trinity Cathedral’s Domes Destroyed by Fire: 25 August 2006: Milosh Puchovsky	70
Orthodox Church in Kamienica, Bieszczady Region, Poland, burnt down: 13 September 2006	72
Fire Test On A Standing Georgian Dwelling: No. 12 Chatham Row, Bath, 2 March 1967 RF Little, Chief Building Inspector, Bath City Council	73
Edinburgh: 3 Fire Protection Schemes: Photo Essay: Per Rohlen	81

Roros: Fire Protection Scheme: Photo Essay: Per Rohlen and Ingval Maxwell	85
Stave Kirk: Fire Protection Scheme: Photo Essay: Per Rohlen	90
<b>Annex 3: COST Action C17 Promotional Flyer</b>	93
<b>Annex 4: COST Action C17 Members Co-ordinates</b>	94
<b>Annex 5: Self Evaluation Summary: Ulla Priha</b>	141
<b>Annex 6: External Evaluation Report: Dennis Davis</b>	149



## FOREWORD

Through the ready cooperation, goodwill and considerable effort by all involved, the four year COST Action C17 programme has largely met the original aims as set out in the Memorandum of Understanding. This has been economically managed in a collaborative multi-disciplinary, multi-national manner. The programme has also benefited from detailed exposure to a wide variety of related practical projects that were studied on-site.

The Action has readily, and freely, built upon members' current research initiatives and knowledge. In support of the agreed intentions, this approach has also resulted in the production of an appropriate range of newly published material arising from activities in Bulgaria, the Nordic countries, Scotland, England and Switzerland.

The programme has served to promote the use of data, methodologies and management systems to assist a broader clientele achieve a necessary balance between fire engineering needs and conservation requirements to assist in the future preservation of the European built heritage. Such an audience, as originally intended, has included property owners; public asset managers; official bodies; fire brigades and fire authorities; fire industry equipment manufacturers and suppliers; professional and technical bodies; building and artefact conservation interests; insurance companies; heritage bodies and organisations; and the tourist industry.

Considerable national and international influence has emerged through the work of the members. They have frequently reported a widespread positive reaction by authorities in their countries on how the Action outcomes have impacted on current thinking on the topic. Whilst the original programme has been successfully achieved, the results of a good deal of associated research activity, well beyond the scope of the initial intentions, have also been gathered. Although most of the collated material has been made available on the Action's web site <[www.heritagefire.org](http://www.heritagefire.org)>, the considerable body of researched material, information, guidance and data emanating from the Action's work is also being made available through these publications and the associated CDRom.

Particular thanks are due to all contributors who supplied papers, presentations and illustrations throughout the life of the Action. Their contributed efforts and support have led to the creation of a remarkable body of new work on the topic.

**Ingvál Maxwell, OBE**

Director

Technical Conservation, Research and Education

Historic Scotland

Chairman COST Action C17:

Built Heritage: Fire loss to Historic Buildings

Edinburgh

August 2007

# ANNEX 1

## FIRE LISTS

A number of lists of fires occurring in Historic Buildings have recently been compiled. They are set out in this Annex.

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### List of International Fire Incidents in Historic Buildings: Compiled by Ingval Maxwell

Significant losses have occurred to the built heritage, and its contents, through the effects of fire have been experienced world-wide over the years.

In the USA, it is estimated that over the period 1980 - 1993 some 30,000 heritage related fires occurred, amounting to a level of loss in the region of \$40 million in value. In these properties, only one third had detection apparatus, and less than 10% were fitted with sprinkler protection.

In Canada, with an average of 30 incidents per annum, some 316 museum, art gallery and library fires occurred between 1982 and 1993, creating an estimated loss of almost \$17 million. Other incidents, such as that at St George's Church in Halifax, Nova Scotia revealed the vulnerability of major historic structures to fire. Here, arson by children caused \$3 million worth of fire damage in June 1994. In line with other countries, the Canadian authorities are concerned about the level of loss.

Illustrating the scale of this loss, the following list has been compiled from a variety of printed sources, including newspapers, magazines, the web and through personal contacts. Particular attention was paid to compiling as much information as possible over the duration of COST Action C17 - from the beginning of 2003 to the end of 2006.

#### *Pre 2000 Significant Historic Fires in Heritage Properties*

**1. Alesund, Norway**

800 buildings destroyed 23 January 1904  
11000 people left homeless, rebuilt in 4 years  
(Journal of Scottish Architecture ARCA 1 May 1999 p69/71)  
(Web page artnouveau-net.com 13 March 2002)

**2. Empire Theatre, Nicholson Street, Edinburgh**

1892 music hall stage and orchestra pit destroyed 9 May 1911. Auditorium survived due to use of innovative safety curtain  
AHSS Journal Spring 2004 p19 Article by John Knight:  
"The Edinburgh Empire Fire of 1911"

**3. Stadtkirche, Bremgarter, Switzerland**

1249. Spire fire during restoration 24 March 1984. Arson  
E-mail Daniel Rusch, Zurich 190 Oct 2005

**4. Proveantgarden, Copenhagen, Denmark**

February 1992 Stored materials fire

**5. Odd Fellow Palace, Copenhagen (1795), Denmark**

April 1992. Cigarette fire

**6. Christianborg Palace, Copenhagen, Denmark**

First burnt down 1794 (Rebuilt 1810)  
Main Palace burnt down 1884

**7. Christianborg Palace Church, Copenhagen, Denmark**

1826 (Restored 1996)  
Stray firework, burnt down June 1992  
Cost 110 million Dkr (£5m)  
(Europa Nostra Awards 1998 brochure)

**8. Redoutensal, Hofburg Palace, Vienna, Austria**

November 1992. Cause unknown. Cost £60m

9. **Lundby Church, Goteborg, Sweden**  
February 1993. Arson
10. **Yuma Art Museum, Yuma City, Arizona, USA**  
Replacement cost \$2.5 million 1993  
<http://cpmonline.com/yumaart.html>
11. **Church of Madonna della Grazie, Bellinzona**  
Fire gutted 31 December 1996  
KGS PBC PCP Forum 3/2003 p 36 - 43
12. **US Treasury Building, Pennsylvania Avenue, Washington DC, USA (1869)**  
Roofing repairs fire/water damage 26 June 1996  
[www.digizen.net/member/mspress/trfire1.htm](http://www.digizen.net/member/mspress/trfire1.htm)
13. **Altstadt, Junkerngasse 35-43, Berne Switzerland**  
Major fire in historic centre of WHS destroyed 30 January 1997  
KGS PBC PCP Forum 3/2003 p 22 - 29
14. **St Brandon's Parish Church, Brancepeth, Durham, England 12th - 15th C**  
Major fire, totally gutted 16 September 1998,  
Restored February 2004 (£3.4 million)  
Ecclesiastical and Heritage World Issue 17, February 2004
15. **Cathedral, Turin, during preparations to show the Turin Shroud, Chapel**  
1998 Possible electrical fault causing major structural fire damage to drum and cupola  
(Reconstruction scheme)  
AJ 20 December 2004
16. **18th C Masonic Lodge, Saffron Walden, Essex, England. 1720.**  
Almost totally destroyed 12 July 1999
17. **Pont de la Chapelle Lucerne, Switzerland**  
1300 AD bridge destroyed 18 August 1993. Approx 30% saved, remainder since reinstated with fitted fire protection. Cost £2.2m
18. **Bridgeport Train Depot, Huntsville, USA**  
1917. Fire gutted almost-complete 3-year \$350,000 renovation programme on 11 September 1999.  
NFPA e-mail details, 10 November 1999.
19. **Norwegian Stave Kirks**  
40 churches destroyed by fire 1992-94. Arson.  
Prior to 1992 loss rate ran at 1 church per year.  
(Europa Nostra Newsletter No. 2 / 2000)
20. **Kulla of Jashar Pasha, Kosovo**  
Early 19th C, destroyed by 'local Serbs directed by civilians' in May 1999  
(US ICOMOS Newsletter No. 4 July-August 2000)

## 2000

1. **Tangley House, Hampshire, England**  
Life and house loss, February 2000.  
Brief details included in article on the Colvin Fire Prevention Trust.  
(Autumn 2003 edition of Historic House (p22))
2. **St Paul's Church Deptford, England 1712-30**  
Major internal fire during works in progress resulting from an electrical failure May 2000 (One month after rehabilitation work started)  
(Building Design 15 April 2005) (Article on completed project)
3. **All Saint's Church, West Dulwich, England 1892**  
Electrical fault leading to loss of roof, windows and damage to masonry. £5.9 million refurbishment programme completed 2005.  
(Museums and Heritage Issue 1 /2005)

**4. Lexington Presbyterian Church, Lexington, Virginia, USA 1850**

Completely fire destroyed 18 July 2000 as a result of hot-work paint-stripping off the wood. \$2.5 million damage. Spire collapse and interior gutted.

Web page [www.lexva.com/LexPresFire1.htm](http://www.lexva.com/LexPresFire1.htm)

**2001**

**1. University of Kentucky Administration Building, USA 1882**

Major fire damage to interior 15 May 2001. Archival records partially saved and taken to drying centre in Chicago. Web page [www.uky.edu/Libraries/Special/uarp/UA/UKhist/AdminFire.htm](http://www.uky.edu/Libraries/Special/uarp/UA/UKhist/AdminFire.htm)

**2. Sophieshal, Vienna, Austria**

Early 20th C fire gutted interior resulting from roofing works. August 2001

E-mail contact August 2001 and WWW details

**3. Salem United Methodist on Linden Church, Allentow, USA**

c1900 Badly damaged resulting from Copper roofing repair works 22 August 2001

E-mail contact 25 August 2001

**4. DownTown, Nassau, Bahamas**

Bay Street Market, c1700 Pompey Museum (part) and British Colonial Hotel destroyed 5 September 2001

E-mail contact 7 September 2001

**5. Sodra Rada historic Church dating from 1310. October 2001**

Accidental fire leading to destruction of church decorated with medieval paintings

SPAB News Vol. 24 No 2 May 2003

**6. St John's Anglican Church, Lunenburg, Nova Scotia, Canada. 1753**

Virtually destroyed 1 November 2001. Halloween arson E-mail contact and web page South Shore Genealogical Society

12 November 2001

**7. Peterborough Cathedral, England**

Severe smoke damage to medieval painted ceiling and organ. Suspected arson 22 November 2001

Web page 23 November 2001

**8. Cathedral of St John the Devine, New York City, USA**

Serious roof fire, E-mail contact 18 December 2001

18 December 2001

**9. St Ignatius Chapel, Fort Leavenworth, Kansas, USA 1889**

Fire gutted burnt out shell: 16 December 2001

National Historic Landmarks Network, Vo.V No. 1 Spring 2002

**2002**

**1. Fairmount Waterworks, Philadelphia, USA 1815**

Extent of fire damage unknown no structural damage: 1 January 2002. Completed major \$27 million Building refurbishment September 2001 with restaurant due to open Spring 2002

E-mail contact 2 January 2002

**2. 61 Bridge Street, Chester Rows, Chester, England from 17th C**

January 2002 fire in block resulting in 2 historic buildings being seriously fire damaged (Article by Steve Emery, English Heritage)

Fire Prevention Fire Engineers Journal p20 February 2004

**3. Cinematheque Francaise Archive, Paris, France**

National Archive of historical Cinema documentation (12,382 storage boxes of items), Bibliotheque du Film, destroyed by fire 22 January 2002 at a storage firm (Recall Intradis), Roye, Near Paris

Sight and Sound p24-25 August 2002

**4. Quarantine Station isolation hospital, North Head, Sydney, Australia 1832 February 2002**

Destroyed following 2nd blaze in weeks.

SPAB News Vol. 24 No. 2 May 2003

5. **Casulon Plantation two-storey Antebellum house, Walton County, Good Hope National Register of Historic Places house, USA 1824**  
Intense fire 26 March 2002 in Heart-pine structure. Suspected arson  
E-mail contact 28 March 2002

6. **Burakuden Hall, Muko, Japan. Early 15th C wooden shrine. September 2002**  
Part destroyed  
SPAB News Vol. 24 No. 2 May 2003

### **2003**

1. **Chariot of Glory, the Hermitage, St Petersburg, Russia. January 2003**  
Severe damage in 8 hour fire after being hit by firework  
SPAB News Vol. 24 No. 2 May 2003
2. **Dzerzhinsky Naval college, St Petersburg Admiralty Complex, St Petersburg, Russia. 18th C. January 2003 Severe damage in 8 hour fire**  
SPAB News Vol. 24 No 2 May 2003
3. **Luneville Chateau, NE France. Baroque mansion. January 2003**  
Destroyed, suspect electrical fault  
SPAB News Vol. 24 No. 2 May 2003
4. **Londonderry, Tilly & Henderson Shirt Factory, Northern Ireland. January 2003**  
Demolished after a series of fires  
SPAB News Vol. 24 No. 2 May 2003
5. **Research School of Astronomy & Astrophysics, Mount Stromlo Observatory, Cotter Road, Weston ACT 2611, Canberra, Australia.**  
Significant fire loss of astronomical observatories 17 January 2003 during major bushfire resulting in:
  - Yale-Columbia Dome destroyed
  - The Great 50" Melbourne Telescope destroyed
  - Workshops destroyed
  - The 30" Reynolds Telescope Dome destroyed
  - The 74" Dome destroyed
  - The Old Uppsala Schmidt Dome destroyed
  - Oddie Telescope Dome destroyed
  - Laser Range Station destroyed
  - Administration Building destroyed
  - The Library destroyed
  - Directors Residence destroyed
  - Tea Room destroyed
  - Web page photo record from Bradley Warren
  - [www.mso.anu.edu.au/~bewarren/Bushfires/Firephotos.html](http://www.mso.anu.edu.au/~bewarren/Bushfires/Firephotos.html)
6. **West Side Snyder Town Square, Surry County, Texas, USA**  
1905 building fire destroyed and collapsed February 2003  
(In recent years nearby Newton County Courthouse also badly fire damaged)  
Web page [www.texasescapes.com](http://www.texasescapes.com)
7. **Brighton West Pier, England 1866. Arson March and May 2003**  
Part destroyed  
SPAB News Vol. 24 No. 2 May 2003
8. **Holme House, Burnley, Lancashire, England from 15th C. April 2003**  
Severe damage after being targeted by arsonists twice in two weeks  
SPAB News Vol. 24 No. 2 May 2003

- 9. Glienicke Jagschloss 17thC hunting lodge, Berlin, Germany April 2003**  
Roof and upper floors destroyed due to hot-work in progress  
SPAB News Vol. 24 No. 2 May 2003
- 10. New Zealand Fire Service Report**  
15 historic buildings destroyed by fire each year  
93% lacking any fire detection systems  
SPAB News Vol. 24 No. 2 May 2003
- 11. Pincents Maor Hotel Cruck Barn, Calcot, Berkshire, England. June 2003**  
15th C barn destroyed in 35 minutes  
SPAB News Vol. 24 No. 4 November 2003
- 12. North Carolina State Capitol Building, USA**  
1840. Near miss fire during hot working on copper roof. Limited damage affecting Old House and Senate Chamber  
COST C17 web page 18 July 2003
- 13. Oxney Grange, Peterborough, England August 2003**  
14th C empty house badly damaged. Suspected arson.  
SPAB News Vol. 24 No. 4 November 2003
- 14. Pratapur Temple, Swyambhunath Buddhist Shrine, Kathmandu, Nepal**  
1646. Temple interior and contents destroyed. WH site.  
The Times 7 August 2003
- 15. National Motorcycle Museum and Display Areas, Solihull, England (Opened 1984) 600 out of 850 motorcycles destroyed in £8m fire 15 September 2003; 3 of 5 display areas and 2 of 13 conference hall ruined to £6m value. Suspected cigarette end at goods entrance. 12-18 month recovery anticipated.**  
Museums Journal, p9. October 2003
- 16. Babington House Spa Building, Frome, Somerset, England Grade II listed**  
Fire damaged reception area and roof. Suspected electrical fault 9 October 2003  
Fire Prevention Fire Engineers Journal December 2003
- 17. Bridges of Madison County, House, USA (Film links)**  
Suspected arson in serial attacks
  - Wooden House destroyed 6 October 2003
  - Wooden Bridge destroyed 2002
  - Wooden Bridge destroyed September 2003Fire Prevention Fire Engineers Journal December 2003
- 18. West Kenzie Street Warehouse, Chicago West Side Historic Park District, USA**  
Warehouse damaged in large fire 9 October 2003  
Fire Prevention Fire Engineers Journal December 2003
- 19. Babington Hall, Frome, Somerset, England Georgian Grade II listed (Hotel and spa) Suspected electrical fault fire damaged reception area and spa**  
Fire Prevention Fire Engineers Journal December 2003
- 20. Thingwall Hall, Liverpool, England 1848 Grade II listed**  
Suspected arson, severe damage to 1st and 2nd Floors 5 November 2003  
Fire Prevention Fire Engineers Journal December 2003
- 21. National Gallery, London, England**  
Basement storeroom 25% destroyed 7 November 2003. No art works damaged.  
Fire Prevention Fire Engineers Journal December 2003
- 22. Presbyterian Church, Front Street, Exeter, Mass, USA 1845**  
Furnace explosion leading to loss of timber building 24 November 2003  
(Fire Station less than 1 minute away)  
Fire Prevention Fire Engineers Journal December 2003

**23. The Elm, 9093 Elk Grove Blvd, Sacramento, USA**

Basement fire in 100 year old wooden building caused by vagrant, extinguished by sprinkler system  
16 December 2003  
E-mail S Kidd/NFPA 18 December 2003

**24. Christ Church, Ebbw Vale, South Wales**

Grade II listed Spire badly fire damaged December 2003  
Fire Prevention Fire Engineers Journal p5 February 2004

**25. 19th C Hay Shed St Fagans Museum of Welsh Life, Cardiff.**

1870 (acquired 1977) Grade II listed. Roof and contents destroyed. Arson. BBC News/South East Wales  
[http://news.bbc.co.uk/2/low/uk\\_news/wales/south\\_east/2952154.stm](http://news.bbc.co.uk/2/low/uk_news/wales/south_east/2952154.stm)

**2004**

**1. 300 Spring Street, Jefferson, USA**

Several buildings in city block, including 1880's building recently renovated at a cost of \$1 million, destroyed  
11 January 2004  
Web page  
[www.courier-journal.com/localnews/2004/01/12in/wir-front-fire](http://www.courier-journal.com/localnews/2004/01/12in/wir-front-fire)

**2. Crown Public House, Sandon, Essex, England 18th C**

Severe damage to single storey extension following kitchen fire 7 January 2004  
Fire Prevention Fire Engineers Journal p4 February 2004

**3. The Blue Anchor Public House, Aberthaw, South Glamorgan, Wales 600 year-old thatched public house. Severely fire damaged in kitchen chimney fire. 20 February 2004**

Fire Prevention Fire Engineers Journal p3 March 2004

**4. Kosovo Violence 19 March 2004**

E-mail from Gustavo Araoz [[garaoz@usicomos.org](mailto:garaoz@usicomos.org)] ICOMOS US 19 March 2004

Dear Bureau and Executive Committee,

Unfortunately since Wednesday, there have been renewed clashes in Kosovo and again heritage has apparently been also a victim. According to an article I found this morning on Agence France Presse - over 16 churches have already been destroyed - some from medieval times. There have also been attacks on mosques in Serbia-Montenegro - but I do not know whether any of these are historic buildings.

I am writing to our colleagues of 'Cultural heritage without borders' based in Sweden who have an office in Kosovo and have been working there for years now to get some more information. With best regards  
Gaia

Extract from article.

'Wednesday night, Serbian demonstrators burned mosques and other Muslim buildings in the three largest Serbian cities, including the capital of Belgrade. Press releases informed that the violence in Kosovo is spreading to Serbia, where on Thursday, thousands of Serbs blocked access to Novi Sad in the northern region of Voivodine' 'Mercredi soir, des manifestants serbes ont brûlé des mosquées et autres bâtiments musulmans dans les trois plus grandes villes de Serbie, dont la capitale Belgrade. Les violences du Kosovo déteignent sur la Serbie, où des milliers de Serbes ont bloqué jeudi soir un grand axe près de Novi Sad, en Voivodine dans le nord du pays, ont rapporté des agences de presse'

Main article Friday 19 March 2004, 8h09

Kosovo: 16 églises serbes détruites, 31 personnes tuées agrandir la photo BELGRADE (AFP) - Sixteen Orthodox Serb monasteries and churches, most of them jewels of medieval architecture, were destroyed in Kosovo since the outbreak of violence Wednesday, announced the Orthodox Church. A previous estimate, released in the afternoon of Thursday, listed fourteen demolished churches. Since then, Albanian extremists have burned the Orthodox churches of Donja Slapasnica and Brnjak. Manifestations against anti-Serbian violence are expected on Friday throughout central Serbia. In Pristina, UN guards and soldiers of the Multinational Forces (Kfor) used tear gas on Thursday to disperse groups of Albanians setting the Church of St Nicholas on fire. According to the Church, all religious buildings in Prizren (Southwest) and its surroundings were burned: the Churches of

- Bogorodika Ljeviska (11th century),
- St Geroge,

- St Geroge Runovis & Saint Spas,
- the Monastery of the Holy Archangel and
- the Episcopal Palace.

Among the other buildings demolished are the churches of:

- St Uros in Urosevac,
- St Nicholas in Kosovo Polje,
- St Catherine in Bresje, St Nichiolas in Belo Polje,
- St John in Pec,
- the Ascension in Djakovica and
- St Nichilas in Gnjilane.

In addition, the church of St Ilija in Vucitrn and the Devic Monastery were also burnt. This information was not contained in the church press release.

Since 1999, more than 150 Serb churches and monasteries have been destroyed in Kosovo by the Albanians, According to a UN estimate, 31 have died and 500 wounded in the Kosovo violence since Wednesday. Hundreds of Serbs have been evacuated by the UN Mission in Kosovo (Minuk) and the NATO forces (Kfor).

More manifestations are expected .....

**5. Central Manezh Exhibition Hall, Red Square, Moscow, Russia**

Monument to Russia's victory over Napoleon in 1812. Destroyed March 2004

Moscow City Government allegedly demolishing decaying historic buildings to make way for new safe development.

SPAB News Vol. 25 No 2 May 2004

**6. Wardington Manor, Oxfordshire, England Grade II. 16thC -1920. Extensive damage to medieval wing. 16 April 2004**

SPAB Cornerstone Vol. 26 Number 4 2005

**7. Fleece Inn, Bretford, Worcestershire, England**

14th C NT owned. Chimney fire spreading to thatched roof and first floor

SPAB News Vol. 25 No. 2 May 2004

**8. Howfields, Stapleford Tawney, Essex**

Late 17th C house. Empty since c1980's. Destroyed by fire in 2003.

SPAB News Vol. 25 No. 2 May 2004

**9. Anna Amalia Library, Weimar, Germany**

World Heritage Site. Severe fire damage 2 September 2004, damaging the roof, Rococo Hall (1761-66) and 40,000 books

Various press reports September 2004

**10. Biedenharn Museum, Riverside Drive, Monroe, USA**

Arson attack 27 September 2004. Office destroyed with extensive smoke and water damage elsewhere.

Conservation DistList Inst 14 October 2004

**11. Hafodunos Hall, Llangernyw, North Wales**

1861-66 Grade 1 Listed designed by George Gilbert Scott. Badly neglected and due for restoration with enabling development for 90 holiday homes, totally destroyed by fire early October 2004. Suspected arson.

AJ 28 October 2004

**12. Harbin New Synagogue, Harbin, China**

1921 1,233 sq m building for 800 worshippers undergoing restoration prior to opening as museum of Jewish history and culture. Half of newly restored dome destroyed. Fire started by construction workers 11 November 2004.

NFPA e-mail 11 November 2004

**13. Gretzenbach, Switzerland**

Underground garage fire with roof collapse killing 7 fire-fighters. No sprinkler installation, 27 November 2004

Numerous news agencies. Eurosprinkler e-mail 29 November 2004



**14. Ditzingen, Germany**

Garage fire 25 cars destroyed. 27 November 2004  
Eurosprinkler e-mail 29 November 2004

**15. LaSalle Bank Building, 135 South LaSalle Street, Chicago, USA**

1930's high rise un-sprinklered building. Fire started on 29th floor and extended to the 30th floor.  
6 December 2004  
Eurosprinkler e-mail 8 December 2004

**16. Laurel Grove Baptist Church, Fairfax County USA.**

1884 clapboard church destroyed  
Washington Post 23 December 2004

**2005**

**1. Weisbaden SCA (Multi-national Paper Co.) Works Fire Station; Germany**

Fire started in power charger in brigade equipment building resulting in severe damage to equipment and building.  
Eurosprinkler e-mail 21 January 2005

**2. Ulm-Wiblingen Volunteer Fire Station, Germany**

Short circuit created a roof fire causing 50,000 Euro damage  
Eurosprinkler e-mail 21 January 2005

**3. St Johannis Church, Gotteingen, Germany**

The Göttingen fire brigade in Germany reports that fire has destroyed the north tower of the recently renovated St. Johannis church. The fire broke out early on Sunday 23 January 2005 and rapidly spread to the church tower. The fire brigade extinguished the fire in the 72 metre high tower but special cranes had to be brought in to lift off the heavy weathervane before it fell. In April the 14th century church was to celebrate the end of a €3.3 million renovation programme. Fortunately nobody was hurt. A young man and a boy have been arrested and admitted arson.  
Eurosprinkler e-mail 24 January 2005

**4. Allerton Castle, North Yorkshire**

The BBC reports that on Saturday 22 January 2005 fire broke out at Allerton Castle in North Yorkshire. Over 100 fire-fighters attended but were unable to prevent the collapse of the roof and first floor. Allerton Castle is the most important Gothic Revival stately home in England and is the 18th century home of Prince Frederick, the Duke of York.  
Eurosprinkler e-mail 24 January 2005

**5. 5 storey building, Place Kleber, Central Strasbourg, France**

Fire started in ground floor Patisserie and spread rapidly up lift shaft to others floors and the roof.  
22 February 2005  
Eurosprinkler e-mail 7 March 2005

**6. Maison Sainte Germaine Home, 15th Arrondissement, Porte de Versailles, Paris, France**

2nd floor bedroom fire attended by 100 fire-fighters on 5 April. 1 fatality.  
Eurosprinkler e-mail 7 April 2005

**7. Naksan-sa Buddhist Temple, Yangyang, South Korea.**

1,300 year old temple destroyed in forest fire engaging thousands of fire-fighters 200km east of Seoul.  
The Times 6 April 2005

**8. Pierre et Vacances Hotel, Val Thorens, France**

Unsprinklered hotel totally destroyed after kitchen fire on 12 April 2005.  
Eurosprinkler e-mail 18 April 2005

**9. Paris-Opera Hotel Paris, 9th Arrondissement, Paris, France**

22 people killed, 60 injured in major fire on 15 April 2005 in 6 storey building with 1 staircase.  
Eurosprinkler e-mail 15 April 2005

**10. Hotel Carnot, Nancy, France**

2 people killed in fire in town centre hotel.  
Eurosprinkler e-mail 28 April 2005

**11. Tote Building, Catford, London**

Totally fire gutted 1930's unique building (just proposed for listing) suspected arson. 19 May 2005  
Building design 27 May 2005

**12. Rand Club, Johannesburg, South Africa**

105 year old building and contents destroyed 16 June 2005. Founded in 1897 by Cecil Rhodes, housed many relics of early days of South Africa's industrial development. Suspected electrical fault.  
Scotsman 17 June 2005

**13. Northam Library, Devon, England**

Total loss of building and 90% books. Fire thought to have started by sun's rays setting fire to leaflets through action of a hands-free magnifier.  
The Times 17 June 2005

**14. Biblical Art Centre Museum, North Dallas, USA**

Major fire involving 120 fire-fighters 28 June 2005. Multi-million dollar fire with many works of art lost, included the Miracle at Pentecost.  
Eurosprinkler e-mail 4 July 2005

**15. US Museum losses**

Between 1999 and 2002 some 60 museum fires were reported annually at a combined loss of \$1million/annum. Faulty electrical equipment was considered the main cause. – John Hall Assistant Vice-president for Fire Analysis and Research, NFPA.  
Eurosprinkler e-mail 4 July 2005

**16. Schloss Elmau, Krueen, Bavaria, Germany**

Major fire destroyed most of 1916 hotel 7 August 2005. Fire started with faulty electric blanket. Damage estimated at millions of Euros  
Eurosprinkler e-mail 8 August 2005

**17. St Mary's Lodge, Stoke Newington, London, England**

c1840 Victorian mansion in Conservation Area. Considerable internal fire damage 17 August 2005. Inconclusive cause.  
SPAB Cornerstone Vol. 26 Number 4c 2005

**18. Cottages, Stanford in the Vale, Oxfordshire, England**

17th C listed 6 cottage row thatched roof fire. Low pressure water hindered fire fighting operations  
SPAB Cornerstone Vol. 27 Number 1 2006

**19. Little Choppins, Suffolk, England**

Grade II listed 15th C timber framed open hall farmhouse suffered thatch roof fire thought to be caused by sparks from wood burning stove. Roof destroyed Summer 2005.  
SPAB Cornerstone Vol. 27 Number 1 2006

**20. McKinney Cotton Mill, Texas USA**

Roof fire successfully extinguished by 5 year old sprinkler system in 100 year old cotton mill  
Texas Courier Gazette 29 August 2005

**21. 8 rue du Roi, 3rd Arrondissement, Paris, France**

5 storey apartment block accidental fire killed 7 people. Used as a squat by immigrants. Purchased by city authorities and due renovation 29 August 2005  
Similar fire occurred 25th August killing 17 people  
Eurosprinkler e-mail 30 August 2005

**22. Southend Pier, Essex, England**

1889 - 1929. 1.3 mile long Victorian Pleasure Pier: 130 feet destroyed by fire. Suspected arson.  
9 October 2005  
The Scotsman 11 October 2005

**23. Aardman Animation Warehouse, Bristol, England**

Victorian listed warehouse and 30 year history of film production (Wallace and Gromit) destroyed in gutted building. 12 October 2005  
The Scotsman 11 October 2005

- 24. Gartenstadt Railway Museum, Nuremberg, Germany**  
 1,500m<sup>2</sup> Hall destroyed (roof collapsed) with 24 trains badly damaged or destroyed 16 October 2005.  
 Eurosprinkler e-mail 24 October 2005
- 25. The Reluctant Panther Inn & Restaurant, Manchester, Vermont, USA**  
 3 storey 1850's wooden structure totally destroyed 29 October 2005.  
 Berlin Fire Safety Members e-mail 9 November 2005
- 26. School fires in the UK – Report in Civic and Public Building Specifier October 2005 p16-17**  
 2,000 schools damaged by fire each year with 70% being caused by arson. Costing £55million/annum  
 (Peaking in 2002 at £97million)  
 Every week a school is lost to fire  
 A school has a 1 in 8 chance of a fire each year  
 25% of all major fires are in schools  
 50% of all offenders guilty of arson are aged 15-19 years  
 Half of all school fires start during the day
- 27. Trinity School, West 91st Street, New York, USA**  
 Founded in 1709. Fire established in 2 rooms 13 November 2005 resulting in smoke damage to 200 boxes  
 of paper archives.  
 NY Times 4 December 2005
- 28. Gasthofs Lowen, Oberrohrdorf, Switzerland**  
 200 year old redundant restaurant destroyed as a result of (children) arson: 20 November 2005  
 E-mail Daniel Rusch, Zurich 22 November 2005
- 29. Scandic Bergen City Hotel, Bergen, Norway**  
 Small room fire set by drunken arsonist. 26-27 November 2005. Extinguished by sprinkler system (modern  
 building)  
 Eurosprinkler e-mail 28 November 2005
- 30. 20 Avenue Mathurin Moreau, 19th Arrondissement, Paris, France**  
 Fire in 8 storey apartment building, 10 injured. 2 apartments and a lift destroyed 29 November 2005  
 Eurosprinkler e-mail 1 December 2005
- 31. Lord Northbrook's Country House, Woodlands Hampshire, England**  
 80% roof and 1st Floor, and 50% ground floor destroyed in accidental fire. Severe difficulty in obtaining  
 water due to remote location. 4 December 2005  
 The Times 5 December 2005
- 32. Redwood Library and Athenaeum storage facility at Dedham, Massachusetts, USA**  
 2 adjacent buildings to temporary storage facility destroyed by fire and Library archive of 500 Colonial  
 maps and 4,999 17th-18th C books badly water damaged 6 December 2005.  
 NFPA e-mail 6 December 2005
- 33. Converted Barn, Kallnach, Berne, Switzerland**  
 Converted timber barn into apartments. Suspected candle fire. Building unable to be saved.  
 12 December 2005  
 Eurosprinkler e-mail 20 December 2005
- 34. Hilton Hotel, Central Brussels, Belgium**  
 Single room fire on 14th floor controlled by sprinkler. Minor damage. 17 December 2005  
 Eurosprinkler e-mail 20 December 2005
- 35. Former Hotel Royal Splendid d'Aix-les-Bains, France**  
 Converted 5 storey apartment block of 15 apartments destroyed and may require demolition.  
 17 December 2005  
 Eurosprinkler e-mail 20 December 2005
- 36. Peterhof Summer Palace, St. Petersburg, Russia**  
 19th C Palace badly damaged and gutted during restoration work. No cause identified.  
 22 December 2005  
 A J Gallagher & Co e-mail 28 December 2005

**2006**

1. **Pilgrim Baptist Church, 3301 S. Indiana Avenue, Chicago, USA**  
Louis Sullivan 1891 Church (originally a Synagogue) Chicago Landmark destroyed 6 January 2006.  
Chicago Tribune 7 January 2006
2. **5 storey Apartment building, Canebiere, Central Marseilles, France**  
Major fire from central stairway. 25 injured.  
Eurosprinkler e-mail 13 January 2006
3. **Historic Farm, Reinertonishof, Schonwald (Schwarzwald-Baar-Kreis) Germany**  
400 year old Hapsburg farm destroyed by arson by 2 youths who cut down trees on access road to hinder access by Fire Brigade 21 January 2006. Damage estimated at Euro millions.  
Eurosprinkler e-mail 25 January 2006
4. **San Cristobal de la Laguna, Tenerife, Spain**  
17th C baroque Casa de Salazar, residence of the Bishop of Tenerife. Part of World Heritage Site of la Laguna. Destroyed and neighbouring Diocesan Library and National University of Distance Learning damaged 23 January 2006. Suspected electrical fault. Fire-fighting access hindered by railings in front of building.  
COST C17 member e-mail 24 January and Eurosprinkler e-mail 25 January 2006
5. **Vosshaus, Eutin, Lubech, Germany**  
18th C home of Rector Johann-Heinrich Voss (now Hotel and Restaurant) Badly damaged with loss of many valuable paintings 29 January 2006. Cause unknown. Damage estimated at Euro millions.  
Eurosprinkler e-mail 31 January 2006
6. **Komsomolskaya Pravda Newspaper Offices, Pressa Complex, Ulitsa Pravdy, Moscow, Russia**  
1930's Soviet Brutalist-style offices 80% damaged in \$2 million fire. Banned literature library, photo archive and Stalin's show trials transcripts destroyed in major blaze 14 February 2006.  
[www.telegraph.co.uk/news](http://www.telegraph.co.uk/news) 15 February 2006  
The Moscow Times 15 February 2006
7. **Tithe Barn, Frindsbury, Rochester, Kent, England**  
14th C Grade I listed 13-bay barn subjected to second fire (first fire 4 years ago destroyed 4 of the 13 bays) Possible arson 14 February 2006.  
SPAB Cornerstone Vol. 27 Number 1 2006
8. **Honeypot Hill Farm, Suffolk, England**  
Grade II listed early 16th C cottage destroyed by fire thought caused by heat from wood-burning stove.  
SPAB Cornerstone Vol. 27 Number 1 2006
9. **Bonded Warehouse, Quayside, Newcastle, England**  
Listed 19th C warehouse destroyed by fire 24 March 2006.  
BBC News update 24 March 2006
10. **Beaulieu Tide Mill, New Forrest, England**  
Grade II Listed 16th C tide mill recently renovated. 80% roof destroyed. Arson. March 2006.  
SPAB Cornerstone Vol. 27 Number 2 2006
11. **St Michaels and All Angels Church, Newburn, Newcastle, England**  
Grade I listed 11th C tower and Norman Nave + Chancel. Roof destroyed, interior and Belfry severely damaged. March 2006  
SPAB Cornerstone Vol. 27 Number 2 2006
12. **Churches in England and Wales**  
ODPM Arson report to SPAB:  
112 incidents in 2004  
148 incidents in 2003  
103 incidents in 2002  
215 incidents in 1994

ODPM Accidental fires report to SPAB;

93 incidents in 2004

74 incidents in 2003

92 incidents in 1999

93 incidents in 1995

40 incidents in 1994

SPAB Cornerstone Vol. 27 Number 2 2006

**13. Hotel Central, Rue de Meaux, 19th Arrondissement, Paris, France**

Fire spread from 2nd to 5th storey, 1 person killed, 1 April 2006

Eurosprinkler e-mail 4 April 2006

**14. Thatched Cottage, East Boldre, New Forest, Hampshire, England**

Single storey cottage severely damaged by fire. No suspicious circumstances. Occupants (Ken Russell) alerted by smoke alarm. 3 April 2006

The Scotsman 4 April 2006

**15. Thatched Cottage, Lower Shiplake, Oxfordshire, England**

£3m newly renovated thatched cottage containing oak beams from one of Nelson's ships, destroyed by fire 8 April 2006. Cause unknown.

Metro 10 April 2006

**16. Charles Dickens' Bleak House, Viking Bay, Broadstairs, England**

Built 1810 privately owned house, formerly Dickens house and museum. Badly damaged by fire 9 April 2006.

BBC News web site 9 April 2006

**17. Porvoo Cathedral, Finland**

13thC Cathedral roof destroyed and gable wall left unstable following suspected arson attack 29 May 2006

Eurosprinkler e-mail 30 May 2006

**18. Flims Old Town, Graubunden, Eastern Switzerland**

A quarter of the old town – 14 buildings (7 houses and 7 stalls: 1 building listed of historic significance) – destroyed at estimated value of €10 million (10-15 million Swiss Francs), on 7 June 2006. Cause unknown

Eurosprinkler e-mail 9 June 2006

**19. Trinity Cathedral, St Petersburg, Russia**

1835. Major fire leading to total loss of 80m high dome and cupolas. Work in progress with fire starting on scaffolding 25 August 2006.

Elmundo.es web posting + e-mail from COST C17 member Miguel Gomez Heras 25 August 2006

**20. 6 Burlington Gardens, London, England**

Formerly Royal Academy Museum of Mankind in adjacent building to the RA. Significant damage to roof of empty building. Cause unknown. 29 August 2006.

BBC News web release 30 August 2006

**21. Eastern Orthodox Church, Kamienica, Bieszczady Region, Poland**

1802 wooden church totally destroyed 13 September 2006. Cause unknown

COST C17 e-mail from Marian Ornat 16 September 2006

**22. Philberts Manoa, East Hanney, Wantage, England**

14th C manor house roof badly damaged following chimney fire 5 October 2006.

BBC News web release 6 October 2006

**23. Shooting Range, Budapest University of Technology and Economy, Budapest, Hungary**

Ammunition holding rubber wall major fire in University premises in St Gellert Quay No. 1. 3 firemen fatalities and 7 injuries.

COST C17 e-mail from Monika Hajpal 19 October 2006

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### List of Scottish Fire Incidents in Historic Buildings 1996-1998: Compiled by Ingal Maxwell

The under-noted list of fire in Scottish historic properties is by no means exhaustive. The data was compiled as a result of a trawl of press clippings that was started towards the end of 1996, supplemented by information contained in the Scottish Civic Trust's Buildings at Risk database.

This unusual method of gathering research material stems from the fact that it is impossible to extract data on fires occurring in historic buildings from official sources. Although this deficiency is recognised by the authorities, it is unlikely that the reporting procedure will be changed to enable the easier extraction of relevant data in the future. The current method of data gathering will therefore continue.

#### Fires of Unknown date

1. **Knightsbridge House, Deerpark, Livingston**, 1831, B listed. Badly damaged by fire in early 1970s. (Buildings at Risk Register)
2. **21a and 22 Adelphi, Aberdeen**, 1815 and early C19, B and Unlisted respectively. Both buildings gutted by fire in 1970s. (Buildings at Risk Register)
3. **Corskie, Banff**, early C18, B listed. c1980 fire in hay barn damaged south end of house. (Buildings at Risk Register)
4. **Greenlaw House, Castle Douglas**, 1741, A listed. Gutted by fire in early 1980s. (Buildings at Risk Register)
5. **Brabstermire House, Canisbay, Caithness**, Early C19, Delisted May 1995. Suffered fire in mid 1980s. (Buildings at Risk Register)
6. **St. Helens, 474 Perth Road, Dundee**, 1850, B listed. Ground floor flat in main building suffered a fire before 1989. (Buildings at Risk Register)
7. **Woodlee Hospital (main block), Lenzie**, 1871-5, B listed, fire damaged at some time between evacuation of the building in 1987 and July 1990 (Buildings at Risk Register)
8. **Former Erskine Church, 15 Bank Street, Annan**, 1834-5, B listed. Noted as fire damaged a few years ago in May 1990 entry (Buildings at Risk Register)
9. **31, Muirryhall Street, Coatbridge, North Lanarkshire**, 1898, C(S) listed. Small recent fire noted in August 1990 entry. (Buildings at Risk Register)
10. **Craig House (latterly Craig School) Crosshouse, near Kilmarnock**, 1780s, B listed. Noted as subject to vandalism and fire damage in July 1990 entry (Buildings at Risk Register)
11. **Towerview Unit, Leverndale Hospital, 510 Crookston Road, Glasgow**, late C19 / early C20, A listed. Recreation Hall noted as extensively damaged by fire in August 1993 entry (Buildings at Risk Register)
12. **Corston, Morton reservoir, near Mid Calder, West Lothian**, Unlisted. Destruction of barn by fire noted in December 1993 entry. (Buildings at Risk Register)
13. **Baldovan House, Strathmartine, Dundee**, early C18, B listed. In September 1990, house noted as recently fire damaged. (Buildings at Risk Register)
14. **Ballumbie House, Ballumbie, Dundee**, 1810, B listed. Noted in September 1990 entry as fire-ravaged. (Buildings at Risk Register)
15. **Links House, Mid Yell, Yell, Shetland**, 1770, B listed. Fire damage to interior noted in November 1990 entry. (Buildings at Risk Register)
16. **Dalquharran Castle, Dailly, South Ayrshire**, 1789-1792, A listed. Fire and vandalism had caused loss of roof and interiors, as noted in May 1990 entry. (Buildings at Risk Register)
17. **Former Church of Scotland (The Tower House), Castlebay, Barra**, 1892-3, Unlisted. Recent severe fire damage noted in May 1990 entry. (Buildings at Risk Register)
18. **Craighead Mill, Lesmahagow, Lanarkshire**, C19, Unlisted. Recent serious fire noted in November 1991 entry. (Buildings at Risk Register)
19. **1-9 Falcon Square (Falcon Foundry), Inverness**, c1840-50, C(S) listed. Fire c1990 caused demolition of nos. 1-6. (Buildings at Risk Register)

20. **Mill of Forse, near Latheron**, early C19, Unlisted. Noted in November 1994 that building was roofless as a result of a fire. (Buildings at Risk Register)
21. **Lathallan House, by Falkirk**, C19, Unlisted. Noted in September 1994 entry that fire has occurred in recent years. (Buildings at Risk Register)
22. **Former Dolphin Arts Centre, 7 James Street / Greenhead Street, Glasgow**, 1890-93, B listed. Fire damage occurred between 1993 and 1997. (Buildings at Risk Register)
23. **Linside Mill (former boxing shop), Anchor Mills, Seedhill, Paisley**, 1859, B listed, west end roof burnt some years prior to 1993 (Buildings at Risk Register)
24. **The Clyde Estuary Hotel, 78 Princes Street, Ardrossan**, mid C19, B listed. Fire damage led to demolition threat in 1994. (Buildings at Risk Register)
25. **Spoonish House, Lochmaddy, North Uist**, c1804, B listed. A recent disastrous fire noted in January 1993 entry. (Buildings at Risk Register)
26. **77-83 High Street, Airdrie, North Lanarkshire**, 1911, C(S) listed. Noted as fire damaged some years ago. (Buildings at Risk Register)
27. **Former Dundyan Manse, Oxford Street, Coatbridge**, 1905, Unlisted. Noted as partly roofless due to fire damage. (Buildings at Risk Register)
28. **44-48 Main Street, Kilsyth, North Lanarkshire**, Unlisted. Fire damaged sometime between 1984 and 1994. (Buildings at Risk Register)
29. **11,15,17, The Avenue, Girvan, South Ayrshire**, late C18, C(S) listed. Fire damage to parts of building noted in 1996 entry. (Buildings at Risk Register)
30. **Stromeferry Hotel, Stromeferry, near Plockton**, C19, Unlisted. Part of building roofless following recent fire. (Buildings at Risk Register)
31. **Kirkhaven (Former Trinity Duke Street Parish Church), 176 Duke Street, Glasgow**, 1857-8, A listed. Recent fire noted in Buildings at Risk Register.
32. **Rosewell Institute, Carnethie Street, Rosewell, Midlothian**, 1917, B listed. Fire damage to former bar off main hall significant. (Buildings at Risk Register)
33. **The Colwyn, 868 Great Northern Road, Woodside, Aberdeen**, c1830, B listed. Rear roof subject to fire damage. (Buildings at Risk Register)
34. **Corrour Lodge, Loch Ossian, Rannoch Moor**. Historic Victorian Shooting Lodge. Fire gutted and to be replaced by modern £3m lodge. [No date of fire established in report.] (Daily Mail 12 May 1998)
35. **Tay Hotel (Mathers Temperance Hotel) Dock Street, Dundee** Fire destroyed early 1990's and still at risk May 2004 (Courier 4 May 2004)

#### **Pre-1980 fires**

1. **Castle Tioram, Moidart**. c13th C polygonal plan castle. Interior destroyed by fire in 1715 by Clanranald clan chief to prevent it falling into Government hands.
2. **Sauchie Tower, Alloa**, early C15, A listed, scheduled monument. Gutted by fire c1775. (Buildings at Risk Register)
3. **Penicuik House, Penicuik**, 1761, A listed. Gutted by fire in 1899. (Buildings at Risk Register)
4. **St Clements (Steeple) church , St Mary's Tower, Dundee** Gutted by fire 1841 (Dundee Courier 27 May 2000)
5. **Ketternear House, Kemnay**, c1566, B listed, gutted by fire in 1919 (Buildings at Risk Register)
6. **Glenlair House, Near Kirkpatrick Durham**, C19, B listed. Badly damaged by fire in 1928. (Buildings at Risk Register)
7. **Corrour Estate Lodge, Fort William**, destroyed by fire 1936 (Ian Begg Architects)
8. **Castlewigg, near Whithorn**, C16, B listed. destroyed by fire in 1938. (Buildings at Risk Register)

9. **Barnbarroch House, Whauphill, near Wigtown**, 1780, B listed. Guttled by fire in 1941. (Buildings at Risk Register)
10. **Auchingray House, 101, Forrestfield Road, Caldercruix, near Airdrie, North Lanarkshire**, 1820s, C(S) listed. Badly damaged by fire in 1947. (Buildings at Risk Register)
11. **Old Mill, Caterine, Ayrshire**. 1787 twist mill. Totally fire destroyed 23 May 1963. (internal minute 16 November 2004)
12. **Mavisbank House, Polton, Midlothian**, 1723-7, A listed, scheduled monument. Fiercely ravaged by fire in 1973. (Buildings at Risk Register)
13. **Logie House, Pitcaple, Gairloch, Aberdeen**, 1680, B listed. Destroyed by fire 1974 and threatened with demolition April 1997 (Evening Express 25 April 1997) Part restored August 2006 (Aberdeen Evening Express 17 August 2006)
14. **Barkly House, Braehead, Cromarty**, late C18, B listed. Guttled by fire. (Buildings at Risk Register)
15. **Old Mill, Caterine, Ayrshire**. 1787 Twist Mill Fire gutted and demolished 23 May 1963

#### Fires in 1982

1. **Ballumbie House Hotel, Dundee**. c1810, B listed. Fire gutted. Possible restoration into 14 flats 6 Dec 2001. (Evening Telegraph and Post 6 Dec 2001)

#### Fires in 1984

1. **Earls Lodge (Formerly Buchaness Cottage), Boddam, Near Peterhead**, 1840, B listed, fire left building roofless (Buildings at Risk Register)

#### Fires in 1985

1. **Tower of Dunmore Castle, Tarbert**, C19, B listed, destroyed by fire (Buildings at Risk Register)
2. **Trumland House, Rousay, Orkney**, 1870-73, B listed, badly damaged by fire, interior gutted (Buildings at Risk Register)
3. **Rannoch Lodge, Bridge of Gaur, Perthshire**, mid C18, B listed. Guttled by fire. (Buildings at Risk Register)
4. **Leethland, Glenpatrick Road, Elderslie, near Paisley**, 1930, C(S) listed (downgraded from B after fire damage). Destroyed by fire. (Buildings at Risk Register)

#### Fires in 1986

1. **St Machar's Cathedral, Aberdeen**, A listed. (Buildings at Risk Register)
2. **Edinburgh Castle Piping School**, A listed.
3. **Charleton House, Montrose**, early C19, B listed, fire which broke out during hotel conversion work destroyed much of the interior, including staircase (Buildings at Risk Register)

#### Fires in 1987

1. **Cullen House, South Tower, Cullen, Banff**. A listed. (Buildings at Risk Register)
2. **Ca d'Oro Building, Glasgow** A listed. (Buildings at Risk Register)
3. **Dunbar Parish Church**, B listed
4. **Greenmount Hotel, Greenmount Road North, Burntisland**, 1860, B listed. (Buildings at Risk Register)
5. **Tarbat House, Kildary, near Invergordon**, 1787-1902, A Listed, gutted and roofless following fire. (Buildings at Risk Register)
6. **Cullen House, Banffshire** A listed 16th C. Guttled south tower/west wing 1987

#### Fires in 1988

1. **Liberton House** A listed. (Buildings at Risk Register)



#### Fires in 1989

1. **Guthrie Street, Edinburgh.** (Buildings at Risk Register)
2. **Chalmers Memorial Church, Anstruther** Delisted 1991. (Buildings at Risk Register)
3. **6-14 John Finnie Street, Kilmarnock**, built 1874 as Operetta House, B listed. Severely damaged by fire. (Buildings at Risk Register)
4. **Bellevue Hotel, Queen's Road, Dunbar**, B listed 1896-7. Severely damaged by fire. (Buildings at Risk Register)

#### Fires in 1990

1. **Old House of Orchill, Dunblane.** (Buildings at Risk Register)
2. **York Place Tenement, Edinburgh** A listed. (Buildings at Risk Register)
3. **Edinburgh University Students Union** B listed. (Buildings at Risk Register)
4. **Lomond Castle (formerly Auchenhughish), Balloch**, 1865, B listed, destroyed by fire (Buildings at Risk Register)
5. **Netherkirkton House, Neilston Road, Neilston**, mid C19, B listed, extensively damaged by fire June 1990 (Buildings at Risk Register)

#### Fires in 1991

1. **Grand Theatre, Stockbridge** (Cinderella's) B listed. (Buildings at Risk Register)
2. **Portmore House, Eddleston** A listed. (Buildings at Risk Register)
3. **Palace Hotel, Princes Street, Edinburgh** Demolished
4. **Ascog House, Rothesay** B listed
5. **West George Street Building, Glasgow** B listed. (Buildings at Risk Register)
6. **Marr Lodge, Braemar.** 1896. B listed. Central block gutted 1991. £4m loss

#### Fires in 1992

1. **Ferryhill North Church, Aberdeen**, B listed.
2. **Broughton House, Kirkcudbright** A listed
3. **Old Court House, Dunfermline**
4. **Newton House, Near Elgin, Moray**, 1793, B listed. Roof and interior gutted by fire in February 1992. (Buildings at Risk Register)
5. **Nicholson Square Tenement, Edinburgh** B listed
6. **Queensgate Hotel, Inverness** B listed
7. **Wrangholm Hall, Motherwell** De-listed August 1997
8. **Pitfour Castle, Glencarse** (minor), A listed,
9. **Strathleven House, Alexandria, Dumbartonshire**, C18, A listed. Two fires (one started in west wing) caused extensive internal damage and destroyed roof and chimney stacks. (Buildings at Risk Register)
10. **Seafeld Arms Hotel, Keith** B listed
11. **Kilnside House, Paisley** B listed. Delisted 1995
12. **Old Corn Exchange (Marina Cinema), Kirkstyle/Tower Dykeside, Hawick**, 1860s, Unlisted. Gutted by fire. (Buildings at Risk Register)
13. **Butler's Lodge, Glasserton, Whithorn**, mid C19, B listed. Badly fire damaged in February 1992. (Buildings at Risk Register)
14. **Former Counting House, Anchor Mills, Seedhill, Paisley**, 1874, B listed. Serious fire in May 1992. (Buildings at Risk Register)

15. **Torsonce House, Stow** 22 Jan 1992, 1886 David Bryce Jnr; Roof and upper storey destroyed, internal partitions at south end collapsed into basement, precarious external walls left without bracing. (Reconstruction described in SSCR Journal Nov 1996 Vol. 7 No. 4 p15-19 Simpson & Brown Architects)

#### **Fires in 1993**

1. **A and S Henry Building, Victoria Road, Dundee**
2. **Beach Ballroom, Aberdeen** B listed
3. **Chapel Works (former George Morton's Bottling Plant), Eastern Road, Montrose**, 1795, A and B listed buildings on site, suspicious fire caused some damage (Buildings at Risk Register)
4. **1, 2 and 3 Park Gardens, Glasgow** 1855, A listed, fire damaged and most of fine interiors destroyed (Buildings at Risk Register)
5. **Linside Mill (former boxing shop), Anchor Mills**,
6. **Seedhill, Paisley**, 1859, B listed, east end roof burnt July 1993 (Buildings at Risk Register) Mid Dykebar, Grahamston Road, Paisley, 1909, B listed. (Buildings at Risk Register)
7. **Strathleven House, Alexandria, Dumbartonshire**, C18, A listed. Damage to roof caused by fire started by a blow torch. (Buildings at Risk Register)
8. **Ardenvohr House Stables and Tower, Rhu, Dumbartonshire**. 1858 (17th C tower) Roof fire occurring during restoration works. (Helensburgh Advertiser 13 May 2004)

#### **Fires in 1994**

1. **Scotstoun West Parish Church, Victoria Drive, Glasgow**, B listed.
2. **Aberuchill Castle, Comrie** A listed
3. **Lanrick Castle, Doune**, from 1803, B listed. Building derelict before fire. (Buildings at Risk Register)
4. **Kilkerran House, Crosshill, Maybole**, A listed
5. **Lochailort Inn, Lochailort, Highlands**
6. **Kilmarnock Infirmary** B listed
7. **Stirkoke House, near Wick**, 1858, B listed. Building, already derelict, gutted by fire on 18 June 1994. (Buildings at Risk Register)
8. **Foley House, Isle of Bute** Delisted 1997
9. **Skibo Castle, Dornoch, Sutherland** B listed
10. **Woodbank House, Balloch, Dunbarton** 18th C A Listed (Buildings at Risk Register) (The Lennox Herald 14 May 1999)
11. **St. Peter's College, Cardross**, 1966, A listed, malicious fire spread through Kilmahew House, destroying much of interior (Buildings at Risk Register)
12. **Former stables to Castlemilk House, Barlia Terrace, 59 Machrie Road, Glasgow**, c1800, A listed, severely damaged by vandalism and fire. (Buildings at Risk Register)
13. **Bridgend Mills and Millhouse, Dalry, North Ayrshire**, c1877, B listed. Roof of mill destroyed by fire in May 1994. (Buildings at Risk Register)
14. **Sherbrooke St Gilberts Church, Glasgow**. B listed Total burnout. 28 July 1994. £2.8 million reinstatement costs. (AHSS Magazine No 5 Spring 1997)

#### **Fires in 1995**

1. **Caldwell House, Lugton, Renfrewshire**, from 1773, A listed. North east wing of house gutted by fire on 3 January 1995 while owners away. (Buildings at Risk Register)
2. **North Church, Dumbarton**
3. **Hunter House, East Kilbride**
4. **Rockvilla School, Possil Road, Glasgow**, B listed.

5. **Dunblane Hydro** (small fire in sauna) B listed
6. **Crawford Priory, Cults, near Cupar**, 1809, B listed. Large fire in early August 1995 to already ruined building. (Buildings at Risk Register)
7. **Cambusnethan Priory, Wishaw, North Lanarkshire**, 1819, A listed. Fire in September 1995 badly damaged already derelict, roofless building. (Buildings at Risk Register)
8. **Knightsridge House, Livingston** (derelict) B listed
9. **Aberdeen Academy Belmont Street, Aberdeen** A/B listed
10. **Rhindmuir House, Swinton, Glasgow** (derelict) B listed
11. **Carriages Restaurant, 1050 Great Western Road, Glasgow**, 1897, B listed. Guttered by fire in Summer 1995. (Buildings at Risk Register)
12. **Stanley Mills, Stanley, Perthshire**, from 1786, A listed. Former office block and carding room guttered by fire in July 1995. (Buildings at Risk Register)
13. **Ferguslie Threadworks stables and store, Paisley and Johnstone Canal, Paisley**, c1850, C(S) listed. Partly guttered by fire in October 1995. (Buildings at Risk Register)
14. **Knightsbridge House, Deerpark, Livingston**, 1831, B listed. Serious fire damaging roofs and floors. (Buildings at Risk Register)
15. **British Ropeworks, Lloyd Street, Farme Cross, Rutherglen**. 1912, B listed. Severe fire damage 1995 - threatened demolition January 1998 (The Reformer 21 January 1998)
16. **Greens Playhouse, Dundee**. Art deco 1936. B listed. Totally guttered August 1995. £8.5m rebuild cost. (Evening Telegraph & Post 30 October 1997)
17. **Moy House, West Moray**, mid C18, A listed; destroyed August 1995, guttered and roofless- originally built by Colyn Williamson (also builder of the White House, Washington). Future uncertain 1997

#### Fires in 1996

1. **Mitchell Library, Glasgow** B listed
2. **British Ropes Factory, Rutherglen** B listed
3. **Gartsherrie Academy, 30 Academy Street, Coatbridge, North Lanarkshire**, 1870, B listed. Fire damage has resulted in building no longer being wind and water tight. (Buildings at Risk Register)
4. **Philipburn House (Hotel), Selkirk**
5. **Duke of Gordon Hotel, Kingussie** Delisted 1986
6. **Hallside School, Rutherglen**
7. **Kilbarchan School, Renfrewshire** C listed
8. **Potterton House, Grampian**
9. **Coodham House, Symington, South Ayrshire**, 1831, A listed. Fire in August 1996 caused severe damage to the roof and upper floor of a building that was already derelict. (Buildings at Risk Register)
10. **Kirkoswald Parish Church, Kirkoswald, Ayrshire** A listed
11. **Treesbank Stables, Ayr Road, Kilmarnock**, c1770, C(S) listed. Roof destroyed by fire. (Buildings at Risk Register)
12. **Kinfauns Prish Church, Kinfauns, Perthshire**, 1868-9, C(S) listed. Leadworkers set fire to roof while repairing building. (Buildings at Risk Register)
13. **Lodge House, Arkleston Cemetery, Paisley**, C19, Unlisted. Roof destroyed by fire. (Buildings at Risk Register)
14. **Baronald House (now Cartland Bridge Hotel) stables, early C19, C(S) listed**. Fire damaged in April 1996. (Buildings at Risk Register)
15. **6 Rhughasinish, South Uist**, c1900, B listed. May 1996 house reduced to a shell after fire. (Buildings at Risk Register)

16. **Mill Inn, Dunottar Avenue, Stonehaven**, late C18, B listed. Guttered by fire. (Buildings at Risk Register)
17. **Middleton House, Midlothian**, 18th C, 22Dec 1996; fireplace flue to timber linings
18. **Towans Hotel, Prestwick**. 95% destroyed by fire 1996. B listed Threatened demolition May 1997 (requested by owner ). (Kilmarnock Leader 15 May 1997). Also, report stating hotel 95% guttered and the remains fire damaged (Ayr Advertiser 19 March 1997)
19. **Woodbank Hotel, Balloch, Dumbarton**. A Listed. Guttered by two fires 1996, roofless. (The Lennox Herald 16 May 1997 + Buildings at Risk Register)

#### **Fires in 1997**

1. **Stewart Park Pavilion, Aberdeen** (restored 1993)
2. **Carolina House, Dundee** 1869 B listed Fire guttered roof destroyed 1997 (restored 2001) (Refurbishment Projects Vol 12 No. 87 April 2001)
3. **Hallgreen Castle, Inverbervie, Kincardineshire** B listed
4. **Bankend Farm, Cumnock** B listed
5. **Edinburgh University Staff Club** (minor) C listed
6. **Cara Mill, South Ronaldsay, Orkney**, late C18, C(S) listed, destroyed by fire to leave roofless shell (Buildings at Risk Register)
7. **Newhall House, Penicuik** C17, B listed. Chimney burnt through to set alight to roof, 16 Jan 1997
8. **Inverbervie Castle Mearns** 5 Jan 1997; electrical heater
9. **Forth Rail Bridge; South Pier Pontoon** 14 April 1997 9pm. A listed. Materials stored on the workers scaffolding. No structural damage to the masonry or the metal cantilever structure. (The Scotsman 15 April 1997)
10. **The Heckling Shop, Robert Burns House, 4 Glasgow Vennel, Irvine, Ayrshire**. B listed. 18th c museum operated by North Ayrshire Council. £7000 Arson damage to thatched roof, 8th April 1997. (The Herald 10 April 1997)
11. **Lennoxlove House, Haddington, East Lothian**. A listed. Ground Floor Oak Room – fire started with discarded cigarette in chair following German insurance salesman dinner, 20 May 1997. Seven 17th c paintings destroyed (including 1698 family portrait by Julian Frans de Geest on loan from Holyrood Palace), and damage of £100000. (The Times 22 May 1997)
12. **Loch Lomond Distillery Bonded Warehouse, Alexandria, Vale of Leven**. 1 of 6 unlisted mid 19th C brick bonds totally guttered; 2,500 barrels of whisky destroyed – 3 June 1997. Cause unknown. (The Scotsman 4 June 1997)
13. **Poultry, Castle Avenue, Uddingston, South Lanarkshire**. B Listed. Arson 2 May 1997, extensive damage to roof. (Hamilton Advertiser 8 May 1997)
14. **Mrs Archibald Coats Girl's Hostel (Memorial Home), Weighhouse Close, Paisley**. B Listed, late 1890's by T J Abercrombie. Totally fire guttered. 21 June 1997. (Paisley, Renfrewshire & Gryffe Weekly News)
15. **Templars Hall, Bank Street, Irvine**. C Listed 1880. £20000 damage following arson attack 28 June 1997. (The Irvine Herald 4 July 1997)
16. **The Institute (Disco), Maxwellton Road, Paisley**. c1880. A Listed. Totally fire guttered, £500000-£750000 damage, 8 July 1997. (The Paisley Daily Express 10 July 1997). Former Halftime School (The Institute), 2 Lounsdale Road, Paisley, 1887, B listed. Guttered by fire on 3 July 1997 (Buildings at Risk Register). Are these the same building??
17. **Granton House, Moffat**. A Listed. 1830/40 Walter Newall. Totally fire guttered 15 August 1997. (Annandale Series Moffat News 21 August 1997)
18. **Meldrum House Hotel, Oldmeldrum**. 17th C. B listed. Refurbished 1992-93. Kitchen fire and smoke damage (deep fat frier) 20 July 1997. (The Ellon Times & East Gordon Advertiser 24 July 1997)
19. **Scotstoun Church, Glasgow**. 19th C. B listed. Totally guttered, arson attack 5 November 1997. (Evening Times 7 November 1997)

20. **Novar House, Evanton**, B listed, Smoke damage to 6–12 paintings Dec 1997/Jan 1998 (Internal papers HSCC 04/2)
21. **Cullen House, Banffshire**. 16th C. A listed. East Wing, First Floor Drawing Room; settee, floor fire/smoke damage, 27 August 1997. (Evening Express 28 August 1997)

#### **Fires in 1998**

1. **People's Palace, Glasgow** A listed
2. **Stables to former Larbert House (Royal Scottish National Hospital) Old Denny Road, Larbert**, B listed. Major fire damage in January 1998. (Buildings at Risk Register)
3. **Caledonian Hotel, Bannatyne Street, Lanark**. C Listed. Derelict property fire damaged; (previously fire damaged some years ago), arson, 30 January 1998. (Lanark Gazette 5 Feb 1998)
4. **Crown Court, Union Street, Aberdeen**. Listed. (Poundstretchers) February 1998. Aberdeen Evening Express 22 April 1999
5. **Crescent Hotel, Bon Accord Crescent, Aberdeen**. Archibald Simpson designed terrace, A Listed. Upper stairwell and floors damaged during redecoration works, 15 March 1998. (Press and Journal 16 March 1998)
6. **Luscar House, Dunfermline**. 1838 B Listed. Derelict and due to be converted into hotel. Fire gutted, but east side saved, arson suspected, 18 March 1998. (The Courier and Advertiser 19 March 1998)
7. **Connell and McIntosh Joiners, Gateside Place, Kilbarchan**. B listed. Operating workshop totally gutted to shell. Risk of fire spread to other cottages controlled, 16 March 1998. (Johnstone & Linwood Gazette 19 March 1998)
8. **Westwood House, Balthayock Estate, Kilfauns**, Carse of Gowrie. B listed 1825 thatched property destroyed following fire during a gale in March 1998. Proposal to rebuild for sale January 2005. (Press and Journal 18 January 2005)
9. **Arnage Castle, Ellon, Aberdeenshire**. B listed. Extensive damage to stairwell, roof and North Wing all under first phase of restoration. Suspected hot works in operation near electrical cupboard where all services enter building, 25 May 1998. (Grampian Fire Brigade fax report to HS TCRC 26 May 1998)
10. **Townhead Blochairn Church, Glasgow**. 1865–66. A Listed. Early pointed church of French inspiration. Nave and aisles fire gutted. Spire damaged. Section 13 (Dangerous Building) notice served. Agreed grant aided repairs to repair spire HBC 29 May 1998. (HBC(98)39 mtg 315 papers).
11. **New Inn Hotel, Ellon, Aberdeenshire**. (Victorian.) C listed. Damage to roof and upper floors. Suspected services fault 1 June 1998. (Press and Journal 2 June 1998)
12. **Victoria Mill, Haddington**. Pantile roof damage over mill wheel shed. Cause unknown. 2 June 1998. (The East Lothian Courier 5 June 1998)
13. **Grange Cricket Pavillion, Edinburgh**. B listed. 1896. Minor fire during grant aided work in progress. Damage to Committee Room. 8 July 1998. (Edinburgh Evening News 9 July 1998)

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#### **List of Scottish Fire Incidents in Historic Buildings 1998–2002: Compiled by Ingval Maxwell**

##### **1998**

1. **Ballencrief House, Aberlady**. 1580–1730. Major fire damage leading to total gutting 1868. Restored 1999. Edinburgh Evening News 4 November 1999.
2. **Archerfield House, North Berwick**. Robert Adam. Interiors fire damaged 1960's. Daily Mail 3 November 1999.
3. **Hoddam Parish Church, Hoddam Cross**. Burnt out, £14 – 17000 damage, 2/3 February 1975. Annandale Observer 16 October 1998
4. **Crown Hotel, Banff** 1980 Fire leading to demolition. (1780 Plaque salvage article) Press and Journal 28 June 1999
5. **Lothian and Borders Fire Brigade information** Between 1985 and 1990 fire affected 2848 homes, 151 shops and stores, 69 offices, 66 warehouses, 58 factories and 24 hotels in the region. The Scotsman 3 March 1991

6. **Mayfield Church, Edinburgh.** 1875. Burnt out, £50000 damage 11 January 1969. Mayfield 100, Mayfield Church Publications Committee 1975
7. **Conan Doyle Bar and Four storey tenement, York Place, Edinburgh.** The Scotsman 3 March 1991
8. **Inglis Green warehouse, Edinburgh.** Guttled and demolished. The Scotsman 3 March 1991
9. **Uptown Disco, Nicholson Street, Edinburgh.** Guttled and demolished. The Scotsman 3 March 1991
10. **24 Caledonian Crescent, Dalry, Edinburgh.** Top floor flat gutted. Evening Times 6 April 1994
11. **Duke of Gordon Hotel, Kingussie.** Hotel reopened summer 1998, following June 1996 fire. Press and Journal 3 August 1999

#### Press Cuttings from August 1998

1. **Forth Rail Bridge Bothy.** (1889) A listed. Fife side bothy, 17 August 1998. The Scotsman 18 August 1998
2. **Dean Castle, Assloss Cottage, Kilmarnock.** Empty premises Arson, 18 August 1998. The Kilmarnock Standard 21 August 1998
3. **Acanthus Restaurant, Waverley Station, Edinburgh** A listed Guttled, 28 August 1998. Eye witness account
4. **Spiers Warf, Glasgow.** (1868) A listed. Roof fire, 42 flats in conversion written off, 4 Sept 1998 Glasgow Herald 5 Sept 1998
5. **Caledonian Brewery, Slateford Road, Edinburgh** (1869) B listed. Major fire gutted (? £100k)? Arson 3 October 1998. The Scotsman 5 October 1998, Evening News 5 + 7 October 1998
6. **Methodist Church, Bell Street, Airdrie** B listed. Front door fire. Arson, 18 October 1998. Airdrie & Coatbridge Advertiser 21-27 October 1998
7. **Marine Hotel, Muchalls, Kincardine** B listed. Building due for demolition and closed 10 years ago. Reception area destroyed in suspected arson, 8 November 1998. Aberdeen Press and Journal 9 November 1998 + 5 June 1999
8. **St Philip's Church, Regent St, Joppa, Edinburgh** listed. (Replacement church for one previously destroyed by fire 1877) Building totally fire gutted. Roofing work in progress, 3 December 1998. Evening News 4 December 1998 + Evening News 11 November 1999 + Evening News 21 February 2001 (Rebuilding works)
9. **Douneside House, Tarland, Aberdeenshire.** Listed. Small internal floor and wall fire caused by hot-working. 10 December 1998. Grampian Fire Brigade Fax information 10 December 1998
10. **41? Union Street, Aberdeen.** (Poundstretchers) C Listed. Badly fire damaged in 1998. Worker killed during internal collapse of floors during salvage work on 21 January 2002. Press and Journal 28 April 2005

#### 1999

1. **Barncluith House, Hamilton, Lanarkshire.** Listed. Smoke, ground and first floor damage. Cause unspecified. 1 January 1999. The Herald/The Express 2 January 1999.
2. **Loch Sunart Hotel, Strontian.** Two story building destroyed. Cause unspecified. 1 January 1999. The Express 2 January 1999
3. **James Watt Building, Clober Bleach Works, Cloberfield, Milngavie.** Listed 18th C  
Empty since 1996. 6 arson attacks in previous 6 months. Arson, then demolished due to unsafe state. 28 February 1999. Milngavie & Bearsden Herald 5 March 1999
4. **Edinburgh University Medical School, Teviot Place, Edinburgh.** Listed. Victorian. Laboratory experiment gone wrong £500,000 damage. 6 March 1999. Edinburgh Evening News 8 March 1999
5. **South Fort Street, Leith.** Listed B. Care Centre destroyed £320,000 damage. Arson. Culprit jailed for 6 years. Edinburgh Evening News 17 September 1999
6. **Weensland Mill, Weensland Road, Hawick.** B listed. Arson, declared a total write-off. 6 April 1999. Internal minute M Watson 7 April 1999/The Scotsman 8 April 1999
7. **Fileworks, Chappell Street, Barrhead.** Unlisted 19th C Unknown cause £100000 damage possible demolition required 15 April 1999. Barrhead News 22 April 1999

8. **Crombie Mills, Aberdeen.** Dating from 18th C? Suspected arson 14 June 1999 Former mill museum, to be developed as urban village. Roof removed to make safe. Press and Journal 17 June 1999
9. **St Salvador's Church Hall, Church Street, Dundee** 1868 Fire in adjacent premises (W Heyder + Son) burnt against Hall party wall. Suspected arson 1 July 1999. Dundee Evening Telegraph 2 July 1999.
10. **Golf Hotel, Crail** 18thC. Oldest Licensed premises in Scotland destroyed by fire 13/14 July 1999. S. Kidd e-mail/ Daily Telegraph 16 July 1999/ The Herald 14 July 1999
11. **Wiston Lodge Stables, Biggar** B Listed Victorian stone and slate stable destroyed 3 August 1999. Arson. Carlisle Gazette 12 August 1999
12. **Chapel Royal, Stirling Castle.** Boiler house electrical controls. 17 August 1999. Stirling Observer 20 August 1999.
13. **Badenoch Victoria Hall, Kingussie.** B Listed 1887. BBC filming in progress. Guttered 2 August 1999. Press and Journal 3 August 1999.
14. **Kellie Castle, Arbirlot, Arbroath.** A listed. Chimney fire. Roof and first floor damage. 6 October 1999. Press & Journal 7 October 1999
15. **Jamaica Street Post Office, Glasgow.** Listed. Major incident leading to total gutting of 5 storey block. 14 November 1999. The Herald 15 November 1999.
16. **Gairloch Sands Hotel, Gairloch.** 100 year old timber built. Refurbished and about to reopen. Destroyed 10 December 1999. Daily Record 11 December 1999.
17. **India Tyre Company Factory, Inchinnan** 1929-30 art deco office. Entrance vestibule vandalised and fire damaged (date unknown) HBC grant application; Mr Hislop Architects; 12 October 1999 (Ref HFL/B/SU/40)

## 2000

1. **Eglinton Arms Hotel. Ardrossan, Ayrshire** c1806 B listed. Vacant. Badly damaged. Arson suspected. 31 January 2000. The Scotsman 2 February 2000.
2. **St Brandon's Church, Boyndie, Banff** 19th C. Fire gutted 21 February 2000. The Banffshire Journal 23 February 2000.
3. **Craigmillar Primary School, Edinburgh** 1935 B Listed, closed December 1999. Arson. Stock cupboard room destroyed 29 April 2000. School contains John Maxwell murals. Edinburgh Evening News 1 May 2000. The Herald 6 May 2000.
4. **United Reform Church, Fraserburgh** 1803 B Listed. Arson. Building totally gutted 26 May 2000. Scottish Daily Express + Daily Mirror 27 May 2000
5. **Paton's Mill, Chapel Works/Bond, Montrose** 19th C A Listed. Arson Guttered central mid-range 29 June 2000 Internal minute Mark Watson – A Dakin 29 June 2000; Montrose Review 6 July 2000
6. **Larchfield Works, Larch Street, Dundee** 1866 by Robertson and Orchart Engineers. Guttered 17 July 2000. Internal minute Mark Watson – A Dakin 17 July 2000
7. **Mrs Archibald Coates Memorial Home, Weighhouse Close, Paisley** B listed Roof destroyed by fire 1998. Threatened partial demolition 4 August 2000. The Paisley Daily Express 4 August 2000
8. **39-45 Union Street, Aberdeen** Listed. Fire damaged ground floor shops and roof February 1998. Repair notice served 2 August 2000. Press and Journal 3 August 2000
9. **Castlemilk Stables, Glasgow** 1800 Fire damage 1994 Arson. Restoration proposed August 2000. Evening Times 21 August 2000
10. **Taynuilt Station, Oban** 1879 by John Anderson. B listed pending major developments. Destroyed 19 September 2000 creating £250,000 damage. Arson suspected. The Herald 21 September 2000
11. **St Margaret's Church, Restalrig, Edinburgh** 1837 Arson – roof and Staircase destroyed. The Evening Times 6 February 201
12. **Charleton House, Montrose** B listed. Empty and unused Fire damaged c. early 2000 ? pending demolition application by owners. Scotland on Sunday 24 February 2002

## 2001

1. **Donnas Castle, Glendaruel, Argyll** Scots Baronial. A listed Guttered 15 January 2001 Suspected arson. Scotsman 15 +16 January 2001
2. **Logie School, Dundee (Harris Academy Annex, Blackness Road, Dundee)** 1929 Butterfly-plan School B listed (Adjacent to Tayside FB HQ). Arson Serious Fire, possible demolition 13 March 2001. E-mail Dundee City – HS 14 March 2001. The Courier/Press and Journal 15 March 2001
3. **Bellevue Hotel, Dunbar** Demolition plans 25 September 2001 (Fire burnt out shell 4 February 1989) Evening Times 25 September 2001
4. **Main Street, Cumbernauld** B listed WL Gilmore & Co (Fire gutted property May 2000) demolition plans 28 February 2001 Kilsyth Chronicle 28 February 2001
5. **Morgan Academy, Dundee** A listed. Hot roofing work Fire Gutted 21 March 2001. E-mails Dundee – HS 21/22 March 2001
6. **India Street, Edinburgh** 1819 A listed. Third floor flat gutted. 12 May 2001. Evening Times 12 May 2001
7. **Edinburgh Castle Barrack Block, Edinburgh** PIC property. Roof damage during installation of water tank – hot working. 5 June 2001. Evening News 5 June 2001
8. **The Garison, Millport, Cumbrae.** 18th C fire gutted, roof destroyed. 17 June 2001. Arson. Largs and Millport Weekly News 22 June 2001
9. **Lauriston Church, Edinburgh.** 1859. C Listed. Extensive damage. Suspected arson. 29 June 2001 Edinburgh evening Times 5 July 2001.
10. **Bower Building, Glasgow University.** c1900. A Listed. Extensive £7m damage Historic books lost 24 November 2001. Unknown cause? fireworks. The Scotsman 25 October 2001

## 2002

1. **Lanrick Castle, Callander.** B listed. Demolished by owner as being dangerous 18 February 2002. Had been empty and vandalised over 50 years. Fire damaged c1993. Daily Mail 20 February 2002
2. **Bank, Bank Street, Alexandria.** ? C Listed. Fire damaged. Arson and vandalism. Lennox Herald 22 March 2002
3. **Charleton House, Montrose** A Listed. 19th C. Significant internal fire damage in abandoned structure following a series of previous fire and vandalism. Suspected arson. The Courier and Advertiser 6 July 2002 Application for consent to demolish reported The Courier and Advertiser 8 August 2002
4. **Friends Provident, Princes Street, Edinburgh?** Listed. Serious internal fire during evening 23 July 2002. Cause unknown. Edinburgh Evening News 24 July 2002
5. **Markinch Station Engine Shed, Fife** B Listed. (Station 1846) Destroyed 27 July 2002. Suspected Arson. The Courier and Advertiser 29 July 2002
6. **North Merchiston Primary School, Edinburgh** Fire destroyed and demolished 27 September 2002 Hot working (Herald and Post 3 Oct 2002)
7. **Edinburgh Cowgate** Fire destroyed 11 buildings, cause unknown 7-8 December 2002



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### List of Scottish Fire Incidents in Historic Buildings 2003–2006: Compiled by Ingal Maxwell

Recognising the impossibility of obtaining statistic for official sources as to the scale and extent of fire loss to the Scottish built heritage a system of keeping a note of Scottish Fires from newspaper cuttings was initiated. The under-noted list specifically addresses the four year period during which COST Action C17 was operational. It is recognised that not all fire incidents are attended by the Fire and Rescue Services and that not all incidents that are will be reported in the local or national press.

Though imperfect in many ways, by keeping a note of what has been picked up and noted by Historic Scotland's Press Cutting Service, this list of 66 reported incidents starts to reveal some of the scale of that loss in Scotland over the 48 month period during 2003–2006.

#### 2003

1. **Moat Brae, 61 George Street, Dumfries.** 19th C B listed. Home of J M Barrie (Peter Pan) Arson fire gutted and vandalism. Scottish Express 17 January 2003. Dundee Courier and Advertiser / Daily Telegraph 18 January 2003
2. **Sauchiehall/Garnet Street, Glasgow** 1900/08 B listed Fire gutted. 29 January 2003. Daily Express 31 January 2003
3. **7-8 Park Terrace Youth Hostel, Glasgow** A listed. Attic fire damaged and water damage 15 February 2003 Letter communication and BBC TV News. £1 million refit required and reopened 18 June 2004. Evening Times 18 June 2004.
4. **Wee Windaes Restaurant, High Street, Edinburgh** WH Site. Internal fire damage. 4 March 2003. Scotsman Edinburgh News.com 5 March 2003
5. **Monreith House, Port William** A listed. Extensive roof damage from suspected damaged chimney stack. 19/20 April 2003 Galloway Gazette 25 April 2003
6. **Springburn Academy, Mansel Street, Glasgow** B listed. Arson. Fire gutted and likely to be demolished. 5 May 2003. The Evening Times 6 May 2003: To be demolished. The Evening Times 30 May 2003, Springburn Herald 4 June 2003
7. **Tannahill's Cottage, Queen Street, Paisley.** B listed 18th C. Electrical fault, totally gutted and historic contents completely lost 6 June 2003. Paisley Daily Express 7 June 2003. Hope to restore. Paisley & Renfrewshire Extra 12 June 2003  
To be rebuilt: Paisley Daily Express 12 January 2004
8. **Dangerfield Mill, Carding House, Hawick** A listed. Fire gutted and possible pending demolition 7 June 2003. Hawick News 18 July 2003
9. **Former Salt store, Cockenzie, Edinburgh.** C(S) Listed. Suspected arson in unused building pending solution for its survival. 25 June 2003. Internal HS e-mail 26 June 2003.
10. **St Mary's Church, Leslie.** B listed. c1853. Fire gutted £373,000 damage. Arson. ? May 2003. The Courier 30 June 2003. £500K rebuild approved Fife Leader South Edition 14 July 2003
11. **Jackson's Restaurant, Jackson's Close, High Street/Cockburn Street, Edinburgh.** A listed 18th C. Kitchen gutted. Restaurant smoke damaged. 29 June 2003. Edinburgh Evening News Online 30 June 2003
12. **68(?) Dundas Street, 2nd Floor Flat, Edinburgh.** B listed. WHS. Internal HS e-mail 29 July 2003
13. **Dangerfield Mill, Upper Mill Buildings, Hawick** A listed. Serious fire gutted and possible pending demolition 12-13 July 2003. E-mail exchanges Scottish Borders Council/Historic Scotland 16-18 July 2003. Hawick News 18 July 2003
14. **Grant Lodge, North Campbell Street, Elgin.** 1750 B Listed. Vertical fire damage section through building. Smoke, heat and water damage of historic archive. Suspected arson. 26 July 2003. BBC News Web page 26 July 2003. Salvage details; Northern Scot 1 August 2003.
15. **Gardenstone Arms Hotel, High Street, Laurencekirk** 1638 C(S) Listed. Empty building (on market since 1998) severely fire damaged, gable subsequently demolished. Suspected arson. (0533hrs) 17 August 2003. GFB Deputy Firemaster e-mail 19 August 2003. (To be demolished. Mearns Leader 30 July 2004)
16. **Holyrood Royal Park, Edinburgh.** WHS. Brushfire. Suspected arson. Evening News 23 August 2003

17. **Duke Street, Leith, Edinburgh.** WHS? Arson attack on adjacent empty Warehouse spread to 2 Georgian tenement blocks causing considerable damage. 24 August 2003. The Evening News 25 August 2003
18. **Traprain Law Iron Age Fort, Haddington, East Lothian.** Scheduled Ancient Monument. 2 week underground brush fire started by cigarette. 6-20 September 2003 East Lothian Courier 12 September 2003, The Evening News 22 September 2003.
19. **Sports Pavilion, Edinburgh Academy, Edinburgh.** ? B Listed. 1897. Fire gutted from kitchen/tea area located fire. 16 October 2003 The Evening News 20 October 2003.
20. **Candlemaker Row, 1st Floor flat, adjacent Greyfriars Bobby Bar, Edinburgh.** WHS. ? Listed. Living Room destroyed. Suspected electrical failure. 21 October 2003. Edinburgh News.com 22 October 2003
21. **Balmoral Hotel, Princes Street, Edinburgh** A Listed. Minor fire in linen basket 30 October 2003. The Herald 3 November 2003
22. **Lunga House, Ardfern, Oban** ? Listed historic mansion. 1st, 2nd floor and roof fire. Cause unknown 27 December 2003. Press & Journal 30 December 2003.

#### 2004

1. **Crair Airfield, HMS Jackdaw, Fife** Scheduled AM. WWII Naval Airfield. Large Rubbish fire spread out of control and damaged hay barns 10 January 2004. St Andrews Citizen 16 January 2004
2. **Glendoch House Hotel, Langbank** B listed. Totally fire gutted following Kitchen fire 23 January 2004. The Scotsman 24 January 2004
3. **Dunblane Hydro Hotel, Dunblane** B listed 1878 Hydropathic 209 room Hotel (now Hilton). 3rd and 4th floors badly damages from linen cupboard fire 5 February 2004. The Scotsman 6 February 2004.
4. **Clashbenny Farm Cottages, Errol Estate, Carse of Gowrie** 19th C derelict cottage row of 4 houses and outbuildings. Arson, February 2004. To be demolished. Dundee Courier 15 April 2004
5. **Auchtergaven Parish Church, Bankfoot, Perthshire** A listed 1812 with 1906 additions. Totally fire gutted, only walls left standing. Fire thought to have spread from nearby bonfire. 25 February 2004. The Courier 27 February 2004. £1million damage. Perthshire Advertiser 27 February 2004. Decision taken to replace with a new church 26 October 2006. Press and Journal 26 October 2006
6. **Westerfield, High Calside, Paisley.** 1880. Castlehead Conservation Area, Paisley. Unoccupied mansion totally fire gutted. Arson. 25 March 2004. Paisley Daily Express 26 March 2004
7. **St Margaret's Church, Easter Road, Edinburgh.** B listed. 1884. Vacant building due to be renovated. Suspected arson. 8 April 2004. Evening News 9 April 2004.
8. **Guthrie Church, Easter Road, Edinburgh.** C listed. 1881. Fire damaged April 2004. To be converted into 8 dwellings. Evening News 11 August 2004
9. **Fetteresso Castle, Stonehaven.** B listed. Converted into 7 luxury apartments 1992. Fire damage to central section ground, first and second floor, resulting from radiant heat fire from central heating boiler, 24 April 2004. E-mail 26 April 2004.
10. **Kildrum Primary School, Arbonhill, Cumbernauld.** Listed. 1960's building, pending demolition, destroyed following arson attack 1 June 2004. Kilsyth Chronicle 9 June 2004.
11. **Dalhousie Castle, Bonnyrigg, Midlothian.** A listed 13th C. 2 hour fire with smoke damage. Suspected ventilation area/electrical fault. 20 June 2004. Press and Journal 21 June 2004
12. **Hartwood Hospital, Shotts.** Listed 1895 mental hospital closed 1998. Major 6am fire in empty building, cause unknown 28 June 2004. Wishaw Press 30 June 2004.
13. **Mains Castle, Caird Park, Dundee.** A listed, 16th C restored 1970's. Entrance cupboard fire. Suspicious circumstances. 18 July 2004. Press and Journal 19 July 2004
14. **Broadfield (Hospital) House, Port Glasgow.** A listed, 1869. Gutted by massive fire 17 July 2004. Suspected arson. To be converted into luxury flats. Greenock Telegraph 2 August 2005.
15. **Harbourmaster's House, Kirkcaldy.** B Listed. Derelict, fire gutted 16 August 2004. Fife Free Press 20 August 2004

16. **Littlemill Distillery, Bowling.** 18th C. Redundant disused warehouses fire gutted. Arson. 4 September 2004. Clydebank Post 9 September 2004, Lennox Herald 10 September 2004
17. **Thompson's Solicitors, George Street, Edinburgh** 18th C Edinburgh New Town WHS. Office fire in Conference Room suspected faulty air conditioning unit. 13 October 2004. Evening New 13 October 2004
18. **Burns Monument, Kay Park, Kilmarnock.** A listed. 1878 2 storey monument/tower by Robert Samson Ingram. Severe fire damage and partial (50%) collapse. Suspected arson. 19 November 2004. The Herald/Daily Record 20 November 2004. £4m repair bill: The Scotsman 10 Feb 2006
19. **Elgin Place Congregational Church, Pitt/Bath Street, Glasgow.** A listed Greek revival classical building, 1865, by John Burnet. Converted into nightclubs. Totally fire gutted 26 November 2004. Cause unknown. The Herald 27 November 2004. (Building demolished 26-27 December 2004)
20. **Olympia Cinema, Bridgetown, Glasgow** B Listed 1911 in use until 1974, disused. 1 fatality sleeping rough in building 30 November 2004. Dundee Courier 1 December 2004.
21. **Fairniee House, Galashiels.** Birthplace of Alison Cockburn (Poet: Flowers of the Forest) Part fire damaged 19 December 2004. The Herald 20 December 2004.
22. **George Douglas Brown Birthplace, Ochiltree, Ayrshire.** B Listed (Author: The House with the Green Shutters) Fire Gutted ? 2004. ? press clipping

#### 2005

1. **East Hurler House, Barrhead Road, Glasgow.** B listed. 1763 badly damaged by arson over years to be developed in £2.5 million residential scheme. Evening Times 29 January 2005
2. **Preston Lodge, Bonnygate, Cupar, Fife.** Category A-listed. Severe Damage to roof. 10 March 2005. E-mail 11 March 2005. The Courier 10 March 2005
3. **Hippodrome Cinema, Bo'ness.** Category A-listed. Minor fire and smoke damage following arson attack 26 April 2005. Linlithgow Today 29 April 2005
4. **Strathmartine Hospital Annex, Dundee.** B-listed. Stage, hall and 20% roof destroyed in £30,000 damage arson attack 31 May 2005. Culpit sentenced to 12 months restriction of liberty. Press & Journal 30 June 2006
5. **Church, Nithsdale Drive, Pollokshields, Glasgow.** B(?) Listed. Fire gutted disused church, possible demolition consequences. Suspected arson. 21 July 2005. Evening Times 22 July 2005
6. **Leadburn Inn, Leadburn, Penicuik** 1777. Drovers Inn. Destroyed by fire and demolished following a car crash into the building, and fire 12 November 2005. Building pending renovation. Scotland on Sunday 13 November 2005.

#### 2006

1. **5 Drummond Place, Edinburgh** A listed. Christmas tree light fault leading to burnt out 1st Floor Drawing Room with associated loss of original Scottish works of art. 0130 hrs 1 January 2006. The Scotsman 2 January 2006
2. **7 Albert Street, Dundee.** Entire 19th C four storey tenement block and stairwell fire gutted 11 February 2006. One fatality. Suspected arson. The Courier 13+14 February 2006
3. **Flemington Inn, Burnmouth, Berwickshire.** One and a half story modernised 19th C Inn totally destroyed. Suspected arson 21 February 2006. The Scotsman 22 February 2006
4. **Couper Institute, Cathcart, Glasgow.** 19th C Building. Fire on West side extension destroyed of building in MP's offices causing £160,000 damage, 26 February 2006. Cause unknown. Evening Times 27 February 2006: Damage repair cost reported at £270,000 Glasgow Evening Times 29 November 2006
5. **Rialto Cinema, Gray's Lane, Dundee.** 1928 B listed cinema closed in 1962. Fire in auditorium. Building currently under renovation to be converted into children's play centre. 11 March 2006. Press & Journal + Dundee Evening Telegraph 13 March 2006
6. **Lathallan House, Falkirk.** B listed 1826 Tudor style mansion. Totally gutted on 27 May 2006. Empty and unused building under discussion for conversion into apartments. Cause unknown, suspected arson. Linlithgow Gazette 2 June 2006

7. **Kennerty Mill, Peterculter, Aberdeen.** Water powered historic Oatmeal mill, closed c1970's, extensive damage and destruction of antique machinery. Suspected arson 28 May 2006. Aberdeen Evening Express 29 May 2006.
8. **Cotton Mill, Monifieth, Angus.** Listed. 3 storey derelict mill building being part converted into flats fire gutted. Possibly caused by contractors hot cutting equipment, combined with hot weather. 31 May 2006. Courier and Advertiser 2 June 2006.
9. **The Border Hotel, Kirk Yetholm, Roxburghshire.** Family living area of 250 year-old thatched roofed building destroyed. Fire door prevented fire spread. Possibly caused by work on thatched roof 7 June 2006. BBC News website 8 June 2006.
10. **Stirling Sheriff Court, Stirling.** Listed 19th C Courthouse. Fire-bombing arson damage to main doors and fire exit, 7 June 2006. Press & Journal 9 June 2006.
11. **Sugar Warehouse, James Watt Docks, Greenock, Inverclyde.** A listed 1886. Central section of warehouse (30-40%) affected - destroyed floors, east gable and superstructure of 10 bays to eaves level, cast iron columns severely damaged 12 June 2006. Cause unknown. c £100k damage. BBC News web release 13 June 2006.
12. **Maclay Student Halls of Residence, Park Terrace, Glasgow.** A listed Building in Conservation Area. Roof fire leading to gutted interior, cause unknown in building under renovation. £3 million damage. 13 June 2006. BBC News web release 13 June 2006.
13. **The World's End Tenement, Royal Mile/St Mary's Street, Edinburgh.** WHS. Common stairwell fire caused by clothing stored in bags on stair resulting in considerable smoke damage 11 August 2006. The Scotsman 11 August 2006
14. **Preston School (Former), Glenrothes, Fife.** C listed redundant Victorian building, fire gutted 10 October 2006. Arson. Courier & Advertiser 12 October 2006.
15. **Balbirnie House Hotel, Markinch, Fife.** C(S) listed. 3 storey building, 1 hour suspected arson fire started in linen cupboard 20 December 2006. BBC News web release 21 December 2006
16. **The Buttery Restaurant, Argyle Street, Glasgow** 1856 B listed. Badly damaged by kitchen fire. 23 December 2006. The Herald 27 December 2006.

**England List of Historic Building Fires 2002-2006: Compiled by Steve Emery**

Date	Time	Property	Use	Address	Cause	Other info	Estimate of damage
16/07/1996		Grade 2* Bedstone Court	School	Bucknell, Shropshire SY7 0BG	Unknown	Main building destroyed	Rebuilt 1998
		Grade 1 Peterborough Cathedral	Cathedral	Peterborough	Arson	Stacked Chairs, candle	Considerable smoke damage
13/01 2002	0100	Grade 2 * 69-71 Bridge Street	Shops & Flats	Chester Rows	Electrical	Lateral spread at roof level	£3m +
17/01/2002	0600	Weymouth Methodist Church	Church	Weymouth Methodist Church, Weymouth, Dorset	Arson?	8 jets, 4 hosereels, aerial, 30 BA	
09/04/2002	Early evening	Cottage	17th C Thatched cottage	Anna Lane North Ripley Hampshire		5 pumps Open water New thatch	Roof destroyed Salvage undertaken
26/08 2002	10.00	Bear Steps	Shop	Shrewsbury	Hot works	Tar burning on flat roof	Aug 2002
06/12/2002		Hinchelsea House	Wooden house	Hinchelsea House Brockenhurst Hampshire			
30/01/2003	2240	Chapel Drove	16th C Thatched cottage	Chapel Drove Horton Heath Hampshire	Chimney	Vertical firebreak attained within 1 hour 2 Jets, 2 hosereels 4 BA. 70 firefighters	Half of roof destroyed & collapsed
07/02/2003	0930	Thatched house	Private Thatched House	Cumberland Lodge Milton Lilbourne Pewsey Wiltshire	Electrical	14 appliances 60 Fire- fighters	Thatch allowed to burn out. L shaped roof £400,000 +
17/02/2003	1500	Grade II Thatched house	Private house	Cake street Old Buckenham Norfolk		50 Fire- fighters	
29/03/2003	midday	Thatched Cottage	Private Cottage	Coombe Florey Taunton Somerset	Steam Train	6 Pumps	Roof Destroyed
31/12/2003	0900	Bickford Arms	Thatched Public House	Bickford Arms Brandis Corner Holsworthy Devon	Chimney	10 pumps, rapid fire spread across roof	Roof and first floor destroyed
12/03/2003		Ogdens dairy farm	Farmhouse	Ogdens dairy Farm Ogden Hampshire		9 Pumps 4 Hosereels 30 BA	

29/03/2003		Back Lane cottage	Cottage	Back Lane Vernham Hampshire		4 pumps 1 Hosereel	10% of thatch destroyed
7/04/2003			Cottage	Poplar Lane Brangore Hampshire		10 Pumps 1 Jet, 6 Hosereels, 40 BA 70% of thatch destroyed 20mx10m	
6/05/2003		Meadow Cottage	Thatched Cottage	Meadow cottage Forton Andover Hampshire			Severe damage to roof, first floor and 70% of ground floor
20/10/2003		Apple Tree Inn	Public House	Apple Tree Inn Redlynch Hampshire		Building works in progress	
25/03/2005	1200	Fleece Inn	Public House Owned by NT	Fleece Inn Bretforton North Cotswold Worcestershire	Chimney		Whole roof and first floor destroyed 20% ground floor destroyed
25/5/2004	0300	Ashton-under-Lyne Market Hall	Market hall with 100 stalls	Tameside Greater Manchester	Unknown	Shell preserved	50% loss of trade to surrounding businesses
2/06/2004		Packbridge Cottage	Thatched Cottage	Packbridge Co Martin Hampshire	Chimney	Premises destroyed	10 pumps
14/10/2004	0030	Hafodunos Hall,	Derelict House Grade 1	Llangernyw, Wales	Arson	Culprits caught & custodial sentences given	£8m
22/07/2004	1700	Shackleton Hall	Snooker Club & shops	Church Street, Colne Lancs			
13/08/2004		Ramsgate Library	Library	Ramsgate	Arson?	Poor water supplies Archives rescued from basement	
16/08/2004	0800	Wardington Manor	Grade 1 Private House	Oxfordshire	Faulty Flue	History of poor electrics	Roof completely destroyed
11/12/2004	1608	Thatched House	Private House	Copes Lane Bramshill Hampshire	Chimney	7 pumps	Roof and first floor severely damaged
12/12/2004	2340	Thatched cottage	Private Cottage	Mock Beggar Lane Ibsley Hampshire	Chimney	70 Fire-fighters	

30/12/2004		Tofte hall	Grade II Private house	Sharnbrook, Bedfordshire	Candle	Christmas decorations	Whistler painting destroyed
21/01/2005	0420	Mansfield College	Grade 1 Refectory	Oxford	Smoking materials	Several seats	Library above saved
22/02/2005	0900	Stoke Rochford Hall,	Grade 1 Conference Centre	Lincolnshire	Electrical	Open water supplies	
23/02/2005	0204	Allerton Castle	Grade II Castle	North Yorkshire	Chimney	Building works in progress	23/2/05 0204
25/02/2005	1730	Lansallos Church	Church	Polperrow, Cornwall	Arson	History of vandalism	Completely destroyed
6/04/2005		Thatched Cottage	Private house	32 Cambridge road Stanstead Mountfitchet	Chimney	7 pumps	Roof destroyed
11/04/2005		49 Northbrook	Shops & Flats	49 Northbrook road Newbury Berkshire RG14 1DT		Fire spread to adjacent buildings	Rear outbuildings collapsed
28/04/2005		Thatched Cottage	Private cottage	Hampshire		10 pumps, 6 specials, 70 fire-fighters	Roof destroyed. Ambulance, police & fire-fighters made human chain for salvage
31/04/2005		Marlborough College, Wiltshire	College dormitories	Marlborough College,			
Marlborough Wiltshire	Hot Work	Blow lamp used by contractors sealing felt roof lit combustibles below	Roofs destroyed £450,000				
31/07/2005		Appletree Cottage	Private Cottage	Appletree Cottage Godshill Hampshire		Roof badly damaged by fire	
21/0820/05	00.30	3-5 Church Green	Thatched cottages	3-7 Church Green Stanford in the Vale Oxfordshire SN7 8LQ	Kitchen fire	Fire spread along thatched roofs to all cottages in terrace	Roofs destroyed
28/08/2005	23.00	17th C Stable	Thatched stable used as attached garage Oxfordshire	Oxford road Old Marston Oxfordshire	Arson?	10 pumps, car removed from garage	Thatch destroyed
18/09/2005	23.00	Dury Cottage	Grade II Thatched cottage	Aythorpe Roding Chelmsford Essex		2 fire-fighters injured	Thatch destroyed

10/10/2005		Southend Pier	Grade II Pier	Southend Pier Southend Essex	Arson	3rd serious fire since it was built	Buildings destroyed
18/10/2005	20.50	Herman De Stern Centre	Convalescent Home, former theatre	Herman De Stern Centre Seafront Felixstow		Roof and first floor badly damaged. Gable ends demolished for safety reasons	
20/10/2005	1600	Eden cottage	Thatched cottage	Eden Cottage Fowlmere Cambridgeshire	Electrical	40 fire-fighters	Roof destroyed
17/12/2005	2027	2 semi detached cottages	Thatched Cottages	Lyndhurst road Godwincroft Bransgore Hampshire		120 fire-fighters, water carrier & TL	Roofs & first floor seriously damaged
20/12/2005	1700	Cottage	Thatched cottage	Norwich Road Mulbarton Norfolk		9 pumps & TL	Roof destroyed
21/11/2005		St Barnabus Church	Grade II church	The Parish Church of St Barnabus Sea Road Bexhill on Sea East Sussex		Fire on ground floor spread to roof	Stained glass windows saved
12/12/2005	22.09	Withycombe Village Road	Thatched House	Withycombe Village Road Exmouth Devon	Chimney	Chimney fire spotted by policeman and brigade called as it spread to thatch	6 pumps, HP fire extinguished before destruction
22/12/2005	02.30	Bradford Abbas	6 x Thatched Cottages	Bradford Abbas Sherborne Dorset		Four cottages severely damaged	
25/12/2005	2030	Semi detached cottages	Thatched cottages	Lyndhurst Road Godwincroft Bransgrove	Chimney	2 cottages severely damaged	120 fire-fighters
28/12/2005	Evening	Sturmer	Thatched house	The Street Sturmer Haverhill Essex	Chimney	Roof destroyed	Domestic hosereel frozen. 40 fire-fighters
04/01/2006	1355	Grade II Public House LBS 43260	Thatched Inn	The Rising Sun Worminghall Road Ickford Bucks	Chimney	Successful stop	Salvage undertaken, Live electrics hampered fire fighting
29/01/2006	1531	Thatched Cottage	Thatched cottage	Blissford Road Blissford Fordingbridge Hampshire		30% of roof destroyed	70 fire-fighters



30/01/2006	1930	Grade II House LBS 249122	17th C timber framed Thatched House	Chiltern View Tetsworth Thame Oxfordshire	Chimney	50% roof destroyed	Fire fought internally & externally successful stop
30/12/2006	1209	Thatched House	Detached thatched house	Merryfield Lane Ilton Ilminster Somerset	Spark from flue of woodburning stove	Thatch & first floor severely damaged	2 Jets, 3Hrj, 6BA
01/02/2006	1658	Thatched House Grade II LBS 114515	Pair thatched semis	20 Stambourne Road Toppesfield Essex	Chimney	100% roof destroyed. 4 HRJ CABA	
02/02/2006	pm	Public House Grade II LBS 308113	16th C Thatched Inn	White Lion Radford Semele Leamington Spa Warwickshire		Thatch destroyed and collapsed into inn	
07/02/2006	1900	Thatched farmhouse	Thatched Farmhouse	Higher Northcott Ashreigney Chumleigh Devon		12 pumps	
07/02/2006	evening	Thatched Cottage	Detached Thatched cottage	East Morden Bere Regis Dorset		100 fire- fighters	50% of building destroyed
10/02/2006	1330	Grade II Thatched Cottage LBS No. 313798	17th C Thatched Cottage	Edington Cottage Edington Wiltshire BA13 4QR	Chimney Flue for woodburning stove	6 pumps	Roof destroyed
22/02/06	2300	Manor House	Old Rectory	The Old Rectory Saintbury Hill Vale of Evesham		6 pumps	80% of house destroyed £1m +
26/02/2006	am	Grade II Thatched Public House LBS No. 88650	Late 15th or early 16th C thatched public house	The Diggers Rest Woodbury Salterton Devon EX 5 1PQ			Roof destroyed building severely damaged

Date and time of outbreak

Place (location, country)

Type of structure/Use at time of fire

Cause of fire (if known)

Estimate of damage (% destroyed, cost in cash, details of artefacts)

Any other information: Fire-fighting problems/water supply issues/access to fire scene

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**List of Bulgaria Historic Building Fires with an emphasis on the period 1985-2003:  
Compiled by Prof Petar Hristov**

1. **109 “Ruski” Boulevard, Etropole.**  
Post Chamber, State, unknown, yes. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
2. **16 “Ekzarh Josif” Str. Sofia.**  
Central Synagogue, State, Fire as a result of oxygen welding, yes. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
3. **2 “10 July” Str. Gabrovo.**  
“Dechkova Kashta” Museum, Municipal, unknown, 19.6.1905. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
4. **kv.5, p.639, Provadia.**  
“Sara Hjusein” Mosque, Mufti’s property, carelessness, 25.5.1985. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
5. **6 “Sv.Obretenov” Str. Provadia.**  
Cultural Center, Municipal private, arson of an outer ornamental element, 11.4.1990. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
6. **5 “Altanla Stojan” Str. Kotel. Ethnographical Museum, “Kjorpeevata kashta”,**  
Municipal, damaged chimney-stack, 20.3.1992. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
7. **“Asen Zlatarov” Str. Pazardjik.**  
The Old Post Chamber, State, unknown, 1993. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
8. **Village of Iskrets, Village of Iskrets.**  
“Sv.Ivan Rilski” Secondary School, Municipal, unknown, 1995. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
9. **“Cherno More” Str. Balchik.**  
Temelkov Inn, Private, unknown, March, 1996. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
10. **“Dunavska” Str. Lom.**  
Former building of the Local Military Command, State, unknown, 22.5.1997. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
11. **Park along the Danube, Bidin.**  
Theatre Hall, Municipal, Dressing-room, 06.11.1997. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
12. **4 “R.Daskalov” Str. Blagoevgrad.**  
Residential, Private, ignition of combustibles in a basement, 1998. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
13. **2 “Vitosha” Str. Sofia.**  
Court Hall, State, Fire in a store room, 1999 and 2001. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
14. **Village of Slalovitza, Village of Slalovitza.**  
Museum of Alexander Stamboliiski, Municipal, unknown, 27.7.2000. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
15. **387 “Tzarigradsko Shose” Boulevard, Sofia.**  
Park-museum “Vrana”, the buildings are private property of Simeon Sakscoburgotski and the park is a municipal property. Ignition of a leafage in a dung-hill, September 2002. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.
16. **4 “Javor” Str. Sofia.**  
Museum of Malchika, Municipal, unknown, 19.12.2002. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.

**17. 8 “Cap.D.Spisarevski” Str. Dobrich.**

Building of a former High School, State, unknown, 26 fires, the last ones on 05.07.2002 and 14.03.2003. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.

**18. 18 “Major Vekilski” Str. Dobrich.**

Museum of the writer Jordan Jovkov, Municipal, unknown, 27.2.2003. National Service “Fire and Security Safety” Database of the Ministry of Inner Affairs of Bulgaria.

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**Spanish Historic Building Fires 1991–2006: Compiled by Mariana Llinares**

**1. Covadonga Cinema. Madrid, 28 February 1991.**

The building had been closed during three years, before a big fire destroyed it. In 1997 it disappeared due to town-planning influences.

**2. Español Theatre. Madrid, 14 July 1991.**

The origins of the Spanish Theatre go back to the XVIth century. It was completely devastated by a fire in 1802, then reconstructed in 1807. The building suffered another fire in 1975, which destroyed the stage and part of the auditorium.

**3. El Liceo Theatre. Barcelona, 31 January 1994.**

Built between 1845–1847 it was the biggest European theatre of its era. In 1861 a fire destroyed the auditorium and the stage, being reconstructed later. In 1994 it suffered a big fire, after which only the foyer and the shape of arch of horseshoe stayed in foot. It was reconstructed leaving what had not been burned and recreating the room as in the original construction. The curtain of the stage caught fire with the spark of a welding torch that a worker was using to repair the scenery. It rapidly spread over the wooden structure of the roof and of the old stage machineries and drop cloths.

**4. Calderón Theatre. Madrid, 4 March 1995.**

Built between 1915 and 1917, it was one of the first buildings constructed in the city with a structure of armed concrete and emergency exits. After the fire all the dressing rooms and part of the wings were destroyed.

**5. San Antón College and Church. Madrid, 14 November 1995.**

Located in Madrid town centre, the building dates back to the XVIIIth century. It was practically destroyed because of a large fire.

**6. Casino. Madrid, 23 November 1999.**

The building dates from the beginning of this century and it was declared a Monument of Cultural Interest in 1993. A large fire rendered the gymnasium and the sauna of the building useless in 1999.

**7. Real Monasterio de S. Joaquín y Sta. Ana (Convent). Valladolid, 21 December 2000.**

The building dated to the XVIIIth century, and was declared a Monument of Cultural Interest in 1956. The fire began in a wing of the convent of Cistercian nuns and affected a total of 500 m<sup>2</sup> of the roof and floors, which were destroyed. Whilst the building lodged valuable works of art, which were not damaged, the emerging damages were estimated at more than €150.000.

**8. Gothic Church La Merced. Burgos, 21 April 2001.**

Built during the XVth and XVIth centuries, and located in the historical centre of Burgos. The fire destroyed the principal altarpiece, the roof and the vault. It started in the altarpiece, and spread rapidly over the rest of the building, because many things were made of wood. The largest altar (1879) was of neo-gothic style, from the XIXth century as well as the vault and the roofs.

**9. Mezquita de Córdoba, 6 July 2001.**

Building from VIIIth century it is part of the World Heritage. The fire began in the room where the historical files were kept, and destroyed up to 5 % of the files about the monument (XIXth century, just after the sale of Church lands), but not the most ancient ones. The safety system worked correctly.

**10. Palacete Bake Eder o Casa de los Aznar, de Guetxo, 13 October 2001.**

Built in 1901, classified as monumental set of special protection by the Basque Government. In October 2001 it suffered a fire after several years of abandonment. At present it is still empty and in ruins.

**11. Palau de Mar. Barcelona, 15 February 2002.**

12. It is an ancient building in the port of Barcelona which currently houses the Museum of History of Catalonia. The fire started in the files placed in the last plant.

**13. Buenavista Palace. Málaga, 8 March 2002.**

Built in the XVIth century and declared a National Monument in 1939. At present it houses the Museum Picasso. The roof next to the principal façade burned, causing it to collapse and the fall bringing down the coffered ceiling of the galleries around the central courtyard. The fallen structure was made of metal (from interventions of various ages) and wood with largely restored coffered ceilings. The rest of the building did not suffer structural damage.

**14. Country House Unanue-Zar. San Sebastián, 25 March 2003.**

The most ancient country house Unanue-Zar in San Sebastian, with nearly 800 years of history, was devastated by the flames after the firemen ran out of water when they had almost controlled the fire. The fire started in a wooden fireplace of the building. The owners of the building blamed the firemen for the entire destruction of the country house because they took an hour and a quarter to fill up the tank wagon. The firemen admitted that their intervention was interrupted during half an hour because of “problems of water supply”, although it “was not determinant” in the result of the disaster. An expert states that “San Sebastian loses an average of 7.5 old country houses a year”. In the city of Guipúzcoa 700 country houses were recorded at the beginning of the XXth century, and only “a hundred” of them remain at present.

**15. Ancient jail. Alcalá de Henares, Madrid, 10 June 2003.**

Considered historical and protected building. Prefabricated units arranged in the courtyard burned. The fire might have affected (but it did not) the women’s ancient jail.

**16. San Cayetano Church. Madrid, 7 August 2003.**

Built during the XVIIth century, the temple was set on fire during the 1936 Civil War. A small fire took place inside the church belfry. A few planks began to burn at 23.30 hrs. This provoked a small fire that needed the intervention of firemen. Neither victims nor material damages were caused.

**17. Old building in historic city centre. Las Palmas de Gran Canaria, 5 December 2005.**

One of the most ancient buildings of Las Palmas historical centre, that was abandoned for some time, was destroyed by a fire. The fire took place due to an electrical spark as soon as the Christmas lights were lit.

**18. Sede del Obispado en Tenerife, 23rd January 2006.**

The building, which dates back to the XVIIth century, was one of the most emblematic in all the Canary Islands, and was an essential part of the town’s old centre. It was declared part of the World Heritage Site by UNESCO in December 1999. The Prime Minister of the Canary Islands Government declared that the most probable hypothesis to explain the origin of the fire was that of a short circuit. The fire was detected at about 12.00 hrs and the building was immediately evacuated. Firemen from several towns, and two helicopters, took part in the fire-fighting. They managed to control the flames in the building at about 17.00 hrs. By that time the fire had spread to the contiguous Diocesan bookstore, and two of its three plants had already burnt. The fire was out of control and the wooden roofs complicated the fire-fighting operations and adjacent houses had to be evacuated. Despite the extent of the fire, the historical files of the building were not in danger as they were kept in a fireproof bunker.

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**Case studies: Important Fires in Norway Over the Last 20 Years. Einar Karlsen**
**Fires before December 2002****Erkebispegården (The Archbishop’s Palace) Trondheim, 18 August 1983**

Two storage buildings dating from around 1800 in the eastern part of The Archbishop’s Palace were totally destroyed by fire. Arson is a likely cause. An irreplaceable collection of items from the cathedral (archaeological finds, plaster casts, stone-carvings, etc) and the exhibits at the newly opened War Resistance Museum were lost in the fire. The two buildings were re-built in a modern architectural style, and are now used for offices for the bishop and an archaeological museum.

**Kabelvåg, 8 December 1991**

11 houses were totally destroyed in a fire in the wooden town Kabelvåg. The cause of the fire was arson.

**Fantoft Stavkirke (stave-church), 6 June 1992**

Fantoft stave-church was one of 29 remaining stave-churches in Norway. In the Middle Ages, there were about 1000 stave-churches in the country. The church had been moved to its present location in the 19th century. The cause of the fire was arson. “Greven” (“The Count”) Varg Vikernes was convicted for this and other church fires. Fantoft stave-church has been rebuilt using modern tools.

**Drammen Teater (theatre), 10 December 1993**

Drammen Theatre was one of the best-preserved old theatres in Norway, built in 1871. The cause of the fire was arson. Exterior stone walls of the theatre were standing after the fire. The theatre has been rebuilt. The main public spaces were reconstructed as before, with some adaptations.

**Innsetkirke (church), 3 November 1995**

Innset was one of the most important post-reformation churches in Norway, dating from the early C17. The cause of fire in this wooden church was arson. The church has been rebuilt, with reference to some stylistic elements from the old church.

**Fires after December 2002**

**Trondheim, 7 December 2002**

About 2/3rds of a block in the old wooden centre of Trondheim was totally destroyed. The block consisted mainly of wooden buildings from the 1840s. The indirect cause of the fire was probably fluctuations in the power supply, causing failure of a thermostat for a pan with cooking oil. The area is now being rebuilt in a modern architectural style. Some old stone cellars will be preserved as part of the project.

**Gjerpen kirke (church), Skien, 11 November 2003**

The gallery and organ in this medieval church were totally destroyed. The rest of the interior and interior items were damaged by heat, soot and water from the fire-fighting. The cause of the fire was arson. There was an automatic fire detection system installed in the church. This contributed to early fire-fighting by the local fire brigade and limited the extent of the damage.

**Trelastlager (timber yard) Schweigaards gate, Oslo, 26 November 2003**

This protected building was totally destroyed, except the main façade. It was built in 1911 and was the only remaining evidence of the timber export industry, that for several centuries dominated large areas of the city. The building contained shops for second-hand goods. The cause of the fire is yet unknown. A potential cause is an open fire lit by alcoholics. The art nouveau façade on the street will be reconstructed, as a copy of the original.

**Important fires in Sweden**

- Katarina Church, 17 May 1990
- Södra Råda Church, 2001
- Jönköping, 2001

**Important fires in Finland**

- Tyrvää Church, 2001

## ANNEX 2

### CASE STUDIES

A number of case Studies concerning fires in Historic Buildings have been collected by the Action during its work. They are set out in this Annex

#### **US Fires in Historic Buildings 1999-2003: Selective Custom Narratives on Fires Involving Museums, Libraries, Planetariums, Historical Properties and Churches**

*Prepared by: Marty Ahrens, Fire Analysis and Research Division, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471*

##### **Michigan historical museum, 2000**

Lightning hit the cupola area of this seasonal historical museum's roof, starting a fire that ultimately destroyed the building. The 7,200 square foot, single-story wood frame structure had asphalt shingles on a roof frame of laminated wood beams. The cupola in the center of the roof had metal flashing around its top and rose above the trees nearby. The building contained a meeting room, an office, an auditorium, a boiler room, and a central lobby with a birch bark canoe and long house on display. It was built in 1977 and had been closed since the fall. Power and heat were shut off. Although a smoke detection system was installed in the building, it had not been working for several years because of a lack of funds for repairs. No suppression system was present.

At about 3:20 a.m., an employee of another agency reported smoke in the area. Due to fog, she could not identify the location of the fire. She also reported that a thunderstorm with a number of lightning strikes had occurred between 11:30 p.m. and midnight. Arriving firefighters found a fully developed fire with flames 30 to 40 feet above the cupola area. The front door and windows blew out and the structure collapsed during the initial size-up. No loss figures were provided.

##### **Minnesota library, 2000**

At 11:16 p.m., the fire department responded to a fire in a three-story library of masonry construction. The library was part of an educational complex. Arriving firefighters heard alarms but initially did not see smoke, although they did smell plastic. The fire panel showed heavy smoke, and they found smoke coming from a locked room in the basement. They encountered more doors and heavier smoke. They began to ventilate the basement, first and second floors, and had to remove the windows because the windows did not open. Investigators determined that the fire originated in the area of the electrical fan and cable television electronic equipment in the video control room. Flame damage was confined to the room of origin, and smoke damage was confined to the floor of origin. Property damage was estimated at \$2 million. The property did not have sprinklers.

##### **Florida planetarium, 2001**

At about 5:00 a.m., a monitoring company alerted the fire department to a fire in the planetarium at a museum complex. The planetarium was built with non-combustible construction, including a concrete slab and concrete walls. The structure measured 114 long by 112 feet wide and had a complete fire alarm system. Although parts of the museum were sprinklered, the planetarium was not. (Plans had been made for a retrofit.) A wooden stage area inside was 16 feet long, nine feet wide, and covered by carpeting. An electrical malfunction under the stage led to the ignition of the stage's timber framing and carpeting. More than half of the stage was consumed, and heat and smoke rose to the domed ceiling of the planetarium. A star projector and audio-visual computers were destroyed. Most of the damage was to the planetarium and its lobby, although the museum itself also suffered smoke damage. When firefighters arrived, the fire had almost burned out. Firefighters had difficulty locating the fire because of the building's unusual layout. However, when they did find it, they were able to quickly complete extinguishment with a 1.75 attack line. Damage to the \$8 million structure was estimated at \$1.5 million. Damage to the \$1.5 million contents was estimated at \$1 million.

##### **Historic home, 2002**

At about 11:30 a.m., firefighters were called to a fire at a two-story, timber-frame historic house with shake shingles on the roof. The structure was 75 feet long by 30 feet wide. The property had no fire detection or suppression equipment. Workers had been burning a brush pile near the structure, and flying embers or sparks landed on the roof over the first floor porch, igniting the shake shingles. Conditions were very dry. Because they had no communication equipment, workers had to go to a neighboring property to call the fire department, adding about 15 minutes to the fire department response. Damage to the \$225,000 structure was estimated at \$200,000. Damage to the \$110,000 contents was estimated at \$25,000.

## *Church Fires*

### **Massachusetts church fire, 1999**

A fire that began in the rear of a three-story timber-frame building had brought all three rear porches to the ground by the time firefighters arrived in response to a neighbor's 3:42 a.m. 911 call. Radiated heat from this fire spread and ignited the adjacent timber-frame church, resulting in \$2 million in direct property damage. The unsprinklered church had a brick veneer. The presence or status of a fire detection system was unknown.

### **California church fire, 1999**

At 2:10 a.m., a police officer responding to an intrusion alarm radioed the fire department to report a church fire. The two-story, wood frame and heavy timber structure had a steeply pitched roof. No automatic fire detection or suppression systems were present. Firefighters encountered heavy smoke and heat when they entered the building and encountered a number of separate fires in the pews and rear rooms. Flammable liquids had been intentionally ignited in multiple locations at the church. Police arrested an individual they witnessed running from the building. The building, valued at \$1.5 million, sustained \$750,000 in direct property damage. The contents, valued at \$250,000, were completely destroyed.

### **Virginia church fire, 1999**

At about 7:00 a.m., an occupant of this church with attached day care center called 911 to report a fire. The single-story wood frame structure had a brick veneer. The smoke detection system operated, and a central station also received the alarm. No fire suppression system was present. Arriving firefighters found nothing showing, but continued to investigate. An occupant smelled smoke, and firefighters encountered moderate smoke as they entered further into the structure. The fire was found in a hallway at the side of the building. The fire was knocked down, hot spots were located and extinguished, and extensive overhaul was done because of overhead extension. The fire began in the area of a fluorescent light fixture and HVAC duct in a false ceiling over a storage closet. Damage to the \$500,000 structure was estimated at \$10,000. The contents, valued at \$250,000, sustained \$2,500 in damage.

### **Iowa church, 1999**

An arsonist set a fire in the basement under the altar area of this one-story brick, protected wood frame church. The fire was reported at 4:54 a.m. The structure measured 120 feet long by 50 feet wide. No automatic fire suppression system was present, and the presence of smoke alarms or a detection system was unknown. The fire resulted in an estimated \$2,200,000 in direct property damage. An arrest was made in the days following the fire.

### **Massachusetts church, 1999**

At 12:20 p.m., the automatic heat detection system notified the fire department of a fire at this wood frame and heavy timber structure. No automatic fire suppression system was present. Originally built as a church in the early 1800s, it was being used for religious education and for church offices. Classes were underway at the time of the fire. A juvenile confessed to intentionally using matches and a candle to start a fire in a wastebasket in the first floor office. The fire extended up the wall, into the ceiling voids, across the ceiling and spread through vertical openings into the attic and roof area. The structure, valued at \$750,000, and its contents, valued at \$75,000, were completely destroyed. One firefighter suffered a pulled muscle.

### **California church, 1999**

One of the church members opening up the property called 911 at about 7:00 p.m. to report a fire in this single-story structure built with heavy timber, wood joist floor framing, wood roof framing and asphalt shingles on the roof. The church had a ground floor area of 10,400 square feet. No automatic fire detection or suppression systems were present. Someone had poured lighter fluid on the altar and lit it. Hanging curtains and varnished wood behind the altar fueled the fire further. Flames quickly spread to and across the stained and varnished ceiling. A witness reported the fire racing across the ceiling less than two minutes after the fire was discovered. Officials estimate that the structure was fully involved within 12 minutes of ignition, due largely to the highly combustible walls and ceiling. The structure, valued at \$100,000, was destroyed.

### **Oklahoma church, 1999**

At 4:49 a.m., a passing police officer radioed a report of a fire in this three-story church. Much of the structure was made of masonry construction with built up heavy timber roof trusses. The sanctuary was made of ordinary construction with heavy timber trusses. It had a ground floor area of 3,880 square feet. No automatic fire detection or suppression equipment was present. The fire started in a stud void in the basement under the platform of the sanctuary. An electric arc in a service cable at a large junction ignited structural wood. The fire burned into the void and vented out the basement and sanctuary windows before it was detected. The electrical service did not have circuit breakers or fuses. The structure, valued at \$1,330,000 and its contents, valued at \$200,000 were destroyed.

**Michigan church, 2000**

At 10:17 p.m., a passerby with a cell phone alerted the fire department to a fire in this single-story wood frame church. The structure was 91 feet long by 32 feet wide. It had cement block walls and a wood truss roof with asphalt shingles. No automatic fire detection or suppression systems were present. An electrical fault in the wiring resulted in the ignition of attic insulation and structural framing. No one was in the building at the time of the fire. Fire had burned through the roof before it was detected. It spread through the attic and consumed the entire roof. The property loss was not reported.

**Virginia church, 2000**

At about 3:00 a.m., a neighbor reported a fire in this single-story church. The L-shaped structure was built of ordinary construction. It had brick walls, a slab floor, and asphalt shingles on the wood-framed roof. No automatic fire detection or suppression systems were present. Fires had been intentionally set in multiple areas. The structure, valued at \$500,000, and its contents, valued at \$200,000, were destroyed.

**New Jersey church, 2000**

A passer-by reported a fire at this wood-frame church at 6:03 a.m. The structure was 150 feet long and 200 feet wide. It had a stone block exterior and a slate roof covering. No automatic fire detection or suppression equipment was present. Firefighters arrived three minutes after the alarm was received to find the structure fully involved. An investigation discovered three separate areas of origin and the use of flammable liquids in this incendiary fire. The fire is believed to have burned for 30–45 minutes before it was discovered. The structure, valued at \$2,000,000, incurred \$1,000,000 in damage. The contents, valued at \$600,000, were completely destroyed.

**Washington church with day-care center, 2000**

At 4:15 p.m., a roofer reported a fire at this operating, one-story, wood-frame church. The roof covering was of torch-down and asphalt shingles. The building had no automatic fire detection or suppression equipment. A propane torch used in a roofing operation ignited attic insulation. Workers tried to extinguish the fire for about two minutes before ceasing attempts and notifying authorities. The fire spread through the attic space. Damage to the structure, whose value was unreported, was estimated at \$900,000. The contents, valued at \$400,000, were completely destroyed.

**Kentucky church, 2000**

At 10:44 a.m., a roofing crew reported a fire at this wood frame church. The structure was 70 feet long, 70 feet wide, and had two – three stories. Walls were wood and brick, and the roof was covered with asphalt shingles. The building was in operation during renovation. No automatic fire detection or suppression equipment was present. The roofing crew was using a propane torch to apply rubber roofing to a flat portion of the roof. The torch came to close to the eaves, resulting in the ignition of wood and shingles. The fire was discovered within three – four minutes of ignition, and reported to 911 within five – ten minutes after it was detected. The structure, valued at \$1,500,000, incurred \$800,000 in direct property damage. The contents, valued at \$250,000, incurred \$200,000 in damage.

**Texas church, 2000**

At 11:25 p.m., a passerby reported a fire in this one-story heavy-timber church. The structure had rock walls, wood roof framing, and a wood roof deck. The roof was covered with asphalt shingles. No automatic fire detection or suppression equipment was present. The church was closed for the night. Two individuals had burglarized the church and poured gasoline in the sanctuary. They lit the gasoline and fled. Flames spread to combustible furnishings and up to the roof. The structure was fully involved when firefighters arrived. The building ultimately collapsed. The structure, valued at \$1.5 million, and its contents, valued at \$500,000, were totally destroyed.

**Nebraska church, 2000**

At 11:34 p.m., a passing police officer reported a fire at this one-story stone and wood church. No automatic fire detection or suppression equipment was present. The hot water heater wiring in the basement malfunctioned, resulting in the ignition of wood nearby. The fire spread up a wall into the ceiling and crawl space between the basement and the first floor. The fire department could not get to the fire itself or pull the meter because the wires were still hot. The structure, valued at \$150,000, and its contents, valued at \$50,000, were totally destroyed.

**Arkansas church, 2000**

At about 7:30 a.m., a passerby called 911 to report a fire in this one-story, wood frame church with brick walls and a lightweight wood truss roof covered with asphalt shingles. The church was unoccupied at the time. The remodeled church had two separate buildings that shared a common attic. No automatic fire detection or suppression equipment was present. A short in the building's electrical system led to the ignition of materials in the attic. The fire spread throughout the attic and into its concealed spaces. Firefighting was complicated by poor radio communications. One crew did not receive the command to leave the building. Four firefighters were injured when the wood trusses failed and the roof collapsed. The structure, valued at \$410,000, and its contents, valued at \$45,000, were totally destroyed.



**Ohio church, 2001**

At 4:33 a.m., a patrolling police officer reported a fire in this one-story wood frame church. The church was 100 feet long and 60 feet wide. It had a brick veneer, wood roof, a wood roof deck, and asphalt shingles on the roof. No automatic fire detection or suppression equipment was present. A lightning strike ignited the roof and fire spread through the attic area. The structure, valued at \$1,000,000, and its contents, valued at \$300,000, were totally destroyed.

**Texas church, 2001**

At 1:09 p.m., a passer-by used a cell phone to report a fire in this wood church with brick veneer. The building was on a concrete slab, and its roof framing and roof deck were wood. No automatic fire detection or suppression equipment was present. A flammable liquid had been used. Fires were intentionally set in two different areas, an audiovisual room and a storage room. The audiovisual room fire spread horizontally into offices, upward in to the ceiling and into the vaulted ceiling of the sanctuary. The storage room fire spread out the doorway and through the hallway, damaging two other rooms. The structure, valued at roughly \$4.3 million, sustained \$750,000 in direct property damage. The contents, valued at \$500,000, sustained \$250,000 in damage.

**Ohio church, 2001**

At 12:10 a.m., a passerby called 911 to report a fire in this three-story, wood-frame church. The church had a brick exterior. Its floor framing, roof framing and roof deck were wood, and its roof was covered by asphalt shingles. No automatic fire detection or suppression equipment was present. Investigators determined that the fire had been intentionally set in the basement. The fire spread up through the floors to the attic. The structure, valued at \$364,000, and its contents, valued at \$30,000, were totally destroyed.

**Missouri church fire, 2001**

At 7:05 a.m., a passer-by called 911 to report a fire in this one-story church. The mostly metal building had some wood framing. The walls were metal and sheetrock, the floor framing was wood joist and concrete, and the roof framing, roof deck and roof covering were metal. The building was closed at the time of the fire. No automatic fire detection or suppression equipment was present. Accelerants had been used to intentionally start fires in the pastor's and secretary's offices. The structure, valued at \$850,000, and its contents, valued at \$150,000, were totally destroyed.

**Pennsylvania church, 2001**

After spending about ten minutes looking for the source of smoke, roofers called 911 at 12:14 p.m. to report a fire in this two-story stone church. The construction was described as "ordinary." The floor framing, roof framing and roof deck were wood, and the roof was covered with slate. No automatic fire detection or suppression equipment was present. The pastor was the only one present in the church at the time of the fire. The roofers had been using a twenty pound cylinder and propane torch to solder copper roofing materials near the steeple when wood framing and roofing materials ignited. Firefighters found access to the fire difficult because it was in a concealed space. Master streams were used to extinguish the blaze. The structure, valued at \$1,000,000 sustained about \$310,000 in direct property damage. The contents, valued at \$500,000, incurred \$150,000 in damage.

**Pennsylvania church, 2001**

While getting the church ready for evening services, building occupants discovered a fire when lower floor curtains were ignited by embers falling from the ceiling. They raced to the firehouse across the street and reported the fire at 5:49 p.m. The church, two-three stories high, was built of stone and heavy timber. It was 100 feet long and 75 feet wide. Its floor framing, roof framing, and roof deck were wood; the roof covering was asphalt. No automatic fire detection or suppression equipment was present. A breakdown of knob and tube wiring in the ceiling under above the second floor mezzanine led to the ignition of wood joists and roofing materials. Firefighters arrived to find the attic heavily involved. The roof collapsed into the main chapel. The structure, valued at \$200,000, and its contents, valued at \$100,000, were totally destroyed.

**New Hampshire church, 2002**

At about 6:20 p.m., the fire department was called to this three-story wood and masonry church. The church was 60 feet long and 30 feet wide. It was closed at the time of the fire. Smoke alarms were present in part of the church, but no automatic suppression system was present. A juvenile member of the congregation had used a lighter to ignite paper in various areas of the church, including the entry way and Sunday School. Charges were filed. The structure and its contents, with a combined value of \$400,000, incurred \$25,000 in direct property damage, with most of the loss due to smoke damage.

**Michigan church, 2002**

At 5:12 a.m., a motorist called 911 to report smoke from an address across from this single-story wood frame church. The church is comprised of two buildings 75 feet long and 30 feet wide connected by a structure 10 feet wide. Built

as a school in 1901, the main floor contained 12 rooms. A basement was also present. No automatic fire detection or suppression equipment was present. Some renovations were being done although no permit had been pulled. The church had about 30 members. A 39 year old homeless member of the congregation had been using the church office as a makeshift residence.

Firefighters saw smoke was coming from the center of church and found heavy fire in one corner of the building. The homeless man, who was impaired by drugs, was on the floor in fetal position and in cardiac arrest when he was found in the outer office in front of the room where he was staying. Investigators determined that he had gone about 11 feet toward the exit when he collapsed with 17 feet left to go. He was transported to the hospital and pronounced dead at 6:01 a.m. Investigators determined that this unintentional fire started in a trash container in the coat room. The structure, valued at \$200,000, and its contents, valued at \$30,000, were totally destroyed. One firefighter was injured.

#### **New Jersey church, 2002**

At 12:30 p.m., a church occupant called 911 to report a fire. The church was built of ordinary construction. It was 30-35 feet high, 100 feet long and 200 feet wide. The walls were decorative block, the floor framing and roof deck were wood, the roof framing was steel and wood, and the roof was covered with slate shingles. The fire detection system included both smoke and heat detectors, but it was disabled because work was being done on the alarm system. Wet pipe sprinklers protected basement areas including the kitchen and storage. Dark grey smoke was coming from the heavily involved church when firefighters arrived at the scene. Operations were shifted to an exterior attack because of the severity of the fire. The roof collapsed at about 1:00 p.m., and the fire was brought under control at around 4:05 p.m. Investigators determined that heat from an electrical short in BX. electrical wire cable ignited wood between the floor of the first floor and the ceiling of the basement. Because the fire began above the sprinklers, they did not play a role. The number of heads, if any, that opened was undetermined. The structure, valued at \$6,500,000, incurred \$3,000,000 in damage. The contents, valued at \$3,500,000, incurred \$1,500,000 in damage.

#### **Texas church, 2003**

At 12:46 a.m., a passerby reported a fire at this 4,000 square foot church. The one-two story structure had a brick veneer, and the walls, roof framing and roof deck were wood. No automatic fire detection or suppression system was present. Additional resources, including all off-duty personnel and mutual aid from several communities were requested while the first companies were en-route. Arriving firefighters found fire coming from the middle of the roof over the sanctuary. After forced entry, they found good visibility, but large amounts of fire in the upper classroom, top of the sanctuary, and in the church attic. Two preconnected hoses were initially used, one for an exterior attack on the roof, and the second on the interior. Water started to run low within five minutes, the fire had not abated, and the structure was showing signs of failure. As firefighters exited the structure, the roof over the sanctuary collapsed. Firefighting shifted to a defensive attack. They were able to use a hydrant 1100 feet away. Mutual aid companies also brought tankers with additional water. Communications were hampered because some of the responding departments did not have the same radio channel, and some firefighters did not have personal radios. The fire was caused by a lightning strike that ignited wood in the center portion of the attic. Property damage was estimated at \$600,000. The original value was not reported.

## Gasthofs Löwen, Oberrohrdorf: 20 November 2005

Daniel Rusch



So sieht der «Löwen» nach der Brandnacht aus (Foto: mz/esw)

Drei Buben zündeten den «Löwen» an. Ein Grossfeuer zerstörte am Freitagabend die oberen Geschosse des ehemaligen Gasthofs «Löwen» in Oberrohrdorf. Verursacht wurde der Brand durch drei zeuselnde Knaben im Alter von 12 Jahren. Zwei von ihnen erlitten eine Rauchvergiftung und wurden ins Spital nach Baden eingeliefert.

«Als wir beim brennenden «Löwen» eintrafen, schossen die Flammen lichterloh aus den Fenstern des Hauses», schildert Kastor Vogler, Kommandant der Feuerwehr Rohrdorf die schlimmen Minuten vom Freitagabend. Um 17.50 Uhr hatten Anwohner den Brand im seit zwei Jahren leerstehenden Gasthof Löwen gemeldet.

Obwohl die Feuerwehr rasch zur Stelle war, konnte nicht verhindert werden, dass der Dachstock total ausbrannte. «Das Haus ist über 200 Jahre alt, die vielen alten Balken fingen sofort Feuer und die Flammen breiteten sich rasend schnell aus», sagt Feuerwehrkommandant Kastor Vogler. 120 Männer der Feuerwehren Rohrdorf und Stetten sowie der Stützpunktfeuerwehr Baden waren am Brandplatz im Einsatz.

Unter dem Kommando von Einsatzleiter Stefan Erdin, Vize-Kommandant der Feuerwehr Rohrdorf, konnte ein drohender Übergriff der Flammen auf die benachbarten Gebäude verhindert werden. Die Feuerwehrmänner hatten das Grossfeuer den Umständen entsprechend rasch unter Kontrolle und konnten das historische Gebäude löschen. Trotzdem entstand Sachschaden von mehreren hunderttausend Franken.

### ***Zeusler konnten sich selbst befreien***

Nun ist klar: Das Feuer wurde von drei Buben im Alter von 12 Jahren «gelegt». Das Trio war am Freitagnachmittag durch ein offenes Fenster in den Gasthof eingestiegen. Im zweiten Stock zündeten die Knaben dann nebst Kerzen auch Papier an, was schliesslich den Brand auslöste. Die Knaben konnten sich noch rechtzeitig in Sicherheit bringen.

«Die Buben können von Glück reden, dass sie es noch nach draussen schafften im beissenden Rauch», sagt Gemeindeammann Anton Merki. «Die Feuerwehr wusste ja nicht, dass noch Personen im leerstehenden Haus waren.» Zwei der jungen Zeusler erlitten eine Rauchvergiftung und mussten ins Kantonsspital Baden gebracht werden.

«Offenbar stiegen immer wieder Kinder und Jugendliche in den alten Gasthof ein, hielten dort eine Art «Jugendtreff». In einem der Säli spielten sie sogar Darts», weiss Rudolf Woodtli, Info-Chef der Aargauer Kantonspolizei.

### ***Brand weckt grosse Emotionen***

Traurig steht Sonja Banz, Enkelin des legendären «Leue-Sepp», der den Gasthof jahrelang führte, vor der Brandruine. «Ich wuchs in diesem Haus auf, kenne jeden Balken, jeden Nagel – das tut weh».

Auch Alt-Wirtin Elisabeth Konrad (90), die zusammen mit ihrem Mann Josef elf Töchter im Gasthof grosszog, berührt der Brand stark: «Auch wenn der Löwen nicht mehr in unserem Besitz ist – dass ich jetzt im hohen Alter erleben muss, wie so viele schöne Erinnerungen einfach abbrennen, bewegt mich nun schon sehr.»

Der Brand im «Löwen» weckt im Dorf Emotionen. Das markante historische Gebäude steht unter Denkmalschutz und prägt den alten Dorfkern von Oberrohrdorf. Eine Arbeitsgruppe, der auch Besitzer Bruno Kuhn sowie Gemeindeammann Merki angehören, hat sich in letzter Zeit zum Ziel gesetzt, das Haus wieder als Wirtschaft auf die Beine zu bringen. «Ich hoffe sehr, dass dieses Feuer nicht das Todesurteil für den Löwen ist», sagte Ammann Anton Merki. Schon einmal – im Jahr 1758 – war der «Löwen» total abgebrannt und dann wieder neu aufgebaut worden. (mz/esw/pbl)

## Stadtkirche St. Nikolaus

*Daniel Rusch*

Die Stadtkirche St. Nikolaus stammt in ihren ältesten Teilen aus dem Jahre 1343 und erhielt ihre heutige Form in mehreren Bauphasen. An ihrer Stelle stand schon seit dem 11. Jahrhundert, also rund 200 Jahre vor der Stadtgründung, eine Kirche. Im Verlaufe der Zeit wurde diese mehrmals erweitert. 1343 fiel sie einem Brand zum Opfer. Nach dem Brand errichtete man 1343 zuerst den Turm, danach die Kirche. Dabei kam auf dem Grundriss der alten Kirche das neue Kirchenschiff zu stehen, und östlich davon entstand als Anbau der neue Chor. Später erfolgten verschiedene An- und Umbauten. So wurde um 1400/1420 auf der Nordseite ein Kapellentrakt mit zwei Kapellen angefügt, den man dann um 1450 als Seitenschiff (Synesiusschiff) in die Kirche einbezog.

Mit dem Bau der Sakristei 1532 und deren Aufstockung 1575 erreichte die Kirche das heutige Bauvolumen. Die Glockenstube des Turms wurde 1742/43 aufgestockt und mit einem neuen Spitzhelm versehen. Das Spätrenaissance-Portal an der Südwand stammt aus dem Jahre 1617. Das Hauptportal samt Vorzeichen wurde 1804 errichtet.

Die Innenausstattung der Kirche ist weitgehend barock. Dennoch ist das gotische Raumempfinden erhalten geblieben.

Am 28. März 1984 geriet die Kirche während der Renovationsarbeiten in Brand. Turm- und Kirchendach, Orgel und Orgelempore sowie ein Teil der Altäre wurden ein Raub der Flammen. Die Kirche konnte aber nach den zuvor aufgenommenen exakten Plänen wieder aufgebaut werden. Am 6. Dezember 1987 fand die feierliche Einweihung statt.



## Altäre, Kanzel, Orgel

*Daniel Rusch*

Der Hochaltar wurde 1697 erneuert. Das Altarbild von Franz Karl Stauder stellt die Himmelfahrt Marias dar. Es ist flankiert von überlebensgrossen Statuen der Kirchenpatrone St. Nikolaus und Maria Magdalena.

Die vier Seitenaltäre des Hauptschiffes, der Michaels-, Muttergottes-, Josephs- und Agatha-Altar, waren das Werk des Künstlers Lorenz Schmid aus den Jahren 1779/80. Sie fielen 1984 dem Kirchenbrand zum Opfer und sind heute rekonstruiert.

Die drei Seitenschiffaltäre von 1760 sind den Heiligen Sebastian, Synesius und den Heiligen Drei Königen geweiht. Der Mittelaltar birgt eine frühbarocke Synesiusstatue von Gregor Allhelg. Sie war, wie die vier weiteren Statuen, von einem älteren Altar übernommen worden. Das tabernakelförmige Altarreliquiar enthält den Schrein des 1653 nach Bremgarten überführten Katakombenheiligen Synesius.

Die Kanzel von 1630 ist ein Werk im Übergang zwischen Spätrenaissance und Barock. Der sechseckige Korb ist reich geschnitzt. Er wird abwechselnd durch korinthische Ecksäulen sowie Ziernischen mit den Statuen des Erlösers und der vier Evangelisten gegliedert.

Die Orgel und die Orgelempore wurden 1984 ebenfalls durch den Brand zerstört und danach neu errichtet. Die Orgel stammt aus der Werkstatt der Firma Metzler in Dietikon. Die Michaelsfigur im Orgelprospekt stammt aus dem 17. Jahrhundert.



## Fresken der Gotik und der Renaissance

*Daniel Rusch*

Im Zuge der Restaurierung der Stadtkirche begann man im Sommer 1983, die wieder entdeckten Fresken aus dem frühen 17. Jahrhundert freizulegen. Da brach am 24. März 1984 das Unheil der Brandkatastrophe herein. Im Chor zerstörte der Brand die Fresken gänzlich. Jene im Kirchenschiff aber konnten gerettet werden. Sie litten zwar ebenfalls Schaden, doch hat man sie nachträglich gesichert und zum Teil rekonstruiert.

Die Fenster sowie die Arkaden zum Seitenschiff sind mit phantastischer Scheinarchitektur gerahmt und überhöht. Im Rahmenwerk der Fenster erstreckt sich auf halber Höhe ein figürlicher Zyklus mit Christus und den Aposteln. Über den Arkaden-Umrahmungen schweben Passionsengel mit den Leidenswerkzeugen Christi. Den Chorbogen ziert eine monumentale Verkündigungsszene. Die Stirnwand des Synesius-Schiffes krönt eine Darstellung des Jüngsten Gerichts.

Aufgrund einer im Chor gefundenen (und durch den Brand zerstörten) Jahreszahl 1629 lassen sich die Malereien auf die Zeit um 1630 datieren. Stilistisch sind sie der Spätrenaissance zuzuordnen. Gemalt wurden sie von Paul Widerkehr (1580-1649), einem bis anhin wenig bekannten Bremgarter Künstler. Werke von ihm hat man 1965 auch in der Stiftskirche Schönenwerd und 1983 im Kloster Hermetschwil entdeckt. Seine Malereien in Bremgarten wurden bei der Barockisierung der Kirche um 1780 übertüncht.

Unter Widerkehr-Fresken im Chor, die beim Brand zerstört wurden, kamen spätgotische Fresken aus der Zeit kurz vor 1500 zum Vorschein. Es sind Reste eines Zyklus, der die zwölf Aposteln darstellt. Die überlebensgrossen Apostel stehen in Arkaden über schlanken Säulen. Sie sind in die klassische Apostelkleidung gehüllt. In den Händen halten sie ihr Attribut (Kennzeichen) sowie ein Schriftband mit einem Satz aus dem Credo.



## Fire in St Peter's Church, Oisterwijk, Netherlands: 27 May 1998

*jacques Akerboom*

One of the most important Dutch architects of the nineteenth century was Pierre Cuypers. Towards the end of this century, Cuypers worked in the service of the Dutch government and during that period was responsible for designing a large number of civic buildings which have become monuments in their own right. Many of his buildings, mostly designed in neo-gothic style, are now considered to be amongst the great buildings of that period. Examples of Cuypers' work include the Rijksmuseum and Central Station in Amsterdam.



In 1892, Cuypers, on the commission of the De Rothschild family, rebuilt a neo-gothic version of Castle De Haar at Haarzuilens near Utrecht on the foundations of an older medieval castle dating back to 1392. This is still the largest castle in the Netherlands. This remarkable reconstruction however, is now causing a major headache, since, after more than a hundred years, the building appears to be too heavy for its medieval foundations. The subsidence of the foundations and the resulting problems in the buildings above are being repaired with the aid of heavy state funding. The De Rothschild family, which still owns the castle, has also contributed significantly to the costs of restoration.

### ***The church in Trier (D) as an example***

The church of St Peter in Oisterwijk, in the southern Netherlands province of Noord-Brabant, was consecrated in 1897. This cruciform church, designed by Cuypers in neo-gothic style, was inspired by the 13th century Liebfrauenkirche in Trier, Germany. During an annual inspection in early 1998, an inspector of the Monumentenwacht Noord-Brabant noticed that a crack had appeared in the lead flooring at the same height as the belfry. It was causing a serious leak.

As is the case with most Dutch listed buildings, the recommendations of the Monumentenwacht were treated seriously and a plumbing firm was called in to deal with the problem. This small firm, employing two plumbers, had a good reputation, the owner of which would be personally responsible for the repairs. The week before, he had decided to retire, so it was to be one of the last jobs he worked on.

On 27 May 1998, the plumber scaled the roof of the church and started work around 12.30 p.m. The first mistake he made was to work with a naked flame on the roof of the church without anyone from the fire services being present, a fire-prevention requirement in the Netherlands.

### ***Overtured burner***

What the plumber didn't know was that a remembrance service was about to commence at 2 p.m. that afternoon, so when the bells suddenly struck up half an hour beforehand – as is the norm – he was so startled by the deafening noise that he put the burner he was working with down in its holder and went two levels down to wait for the bells to stop ringing. Anyone who's ever been in the vicinity of bells which start tolling all of a sudden will understand his reaction.



However, his second mistake was to leave the burner turned on unattended. So what happened next? As a result of the vibrations produced by the bells, the burner fell out of its holder onto the lead roofing. A mass of dust and grime had collected under the roofing, under which was a double layer of wood, which caught fire and began to smoulder. Ten minutes later or so, the plumber returned to find his burner on its side, but at that point there was no trace of any fire. After finishing his work for the afternoon, he came down to be told by bystanders that smoke was coming out of the church tower.

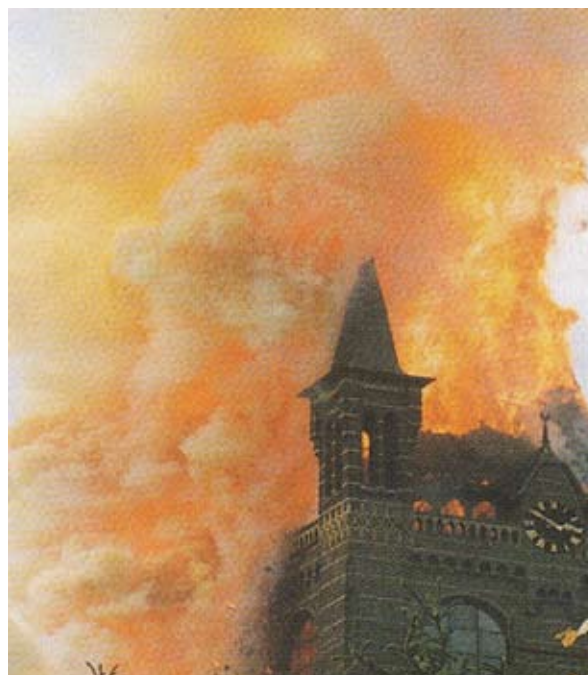
The plumber dashed back up the tower and grabbed the fire extinguisher in the belfry. A third mistake was that the extinguisher didn't work. Later, it turned out that the cylinder was empty and, despite the advice of the experts, had not been inspected for many years. The plumber panicked at this stage and in vain tried to put out the fire with his own clothes. The alarm had already been put out to the local fire brigade and eight minutes later or so they were on the scene. The chief fire officer immediately realised the seriousness of the fire and called in the fire-fighting services from Tilburg who would be better equipped to deal with the blaze.

The first priority of the fire services was the safety of the plumber. He refused to leave the belfry and kept trying to put out the spreading blaze himself. In the end he had to be forcibly evacuated with the aid of ladders and was taken to the local hospital in a state of shock. The consequences of this oversight on the part of the plumber will be dealt with later.

#### ***No sprinkler system***

No sprinkler system had been installed in the tower, which meant that the fire services had to tackle the fire from down below. Despite the use of heavy equipment, they were unable to prevent the spire and the tower below from being completely gutted. Parts of the church which had been hit by burning debris had also been extensively damaged. The rest of the building sustained considerable water damage.



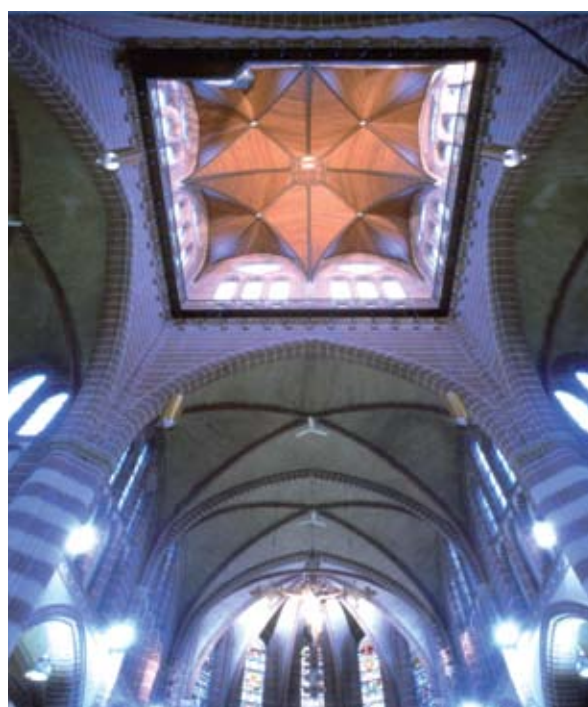


The overall damage was estimated at approximately 2.7 million euros. The lion's share of the restoration costs were underwritten by the insurance company.

However, there is yet another twist to the story. The church had taken out its fire insurance policy with Donatus, the largest insurance company dealing with churches in the Netherlands. Although full costs for the damage could have been recouped from the plumber, it was decided not to do this and the insurance company underwrote the damage in full.

If damages had been recovered from the plumber, then that would undoubtedly have put him out of business and cleaned out his pension, as he was insufficiently insured for this kind of catastrophe.

One reason that the insurance company decided not to recover damages from the plumber was that the man in question had served as an outstanding craftsman for the last 40 years and, working as a small family business, had never received any complaints about the standard of his restoration work. Even in the hard-nosed world of insurance, it's still possible to find people with fellow-feeling.





***Restoration complete***

The restoration of the church is now complete and the work was carried out in full in the charge of a recognised and well-established Dutch restoration company, Nico de Bont in Vught. The company is a member of a cooperating body for all large restoration contractors in the Netherlands, the Vakgroep Restauratie.

This time, the installation of a proper sprinkler system had been thought of and the sprinkler heads that have been fitted into the walls will go a long way to preventing a repeat of such a catastrophe in the future.

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## Report And Conclusions On The Cowgate Fire, Edinburgh: 19 Dec 2003

*Report and Conclusions on the Cowgate Fire, 19 December 2003 as recorded following discussion at the UK World Heritage Committee Meeting, June 2003*

The Old and New Towns of Edinburgh were inscribed on the World Heritage List in 1995.

A blaze affected a part of the Old Town area of Edinburgh (Cowgate) on 7 December 2002. On 19 December 2002, ICOMOS received a letter from the Scottish Minister for the Arts indicating that the fire had affected only 13 out of the World Heritage Site's nearly 4,500 historic buildings. It was considered that the overall quality of the World Heritage Site remained intact. Historic Scotland, working closely with the local authority to give assistance in developing a remedial action plan for the area affected, provided a more detailed report on 20 January 2003. This report underlined that the impact of the fire was limited to less than 1% of the whole area of the World Heritage Site, and that the most important historic buildings in the area escaped damage. Only two listed buildings (buildings identified by the State as meriting individual protection), out of some 3,500 listed buildings in the World Heritage Site, were directly affected.

However, the report stated that the fire did destroy an important part of the Edinburgh townscape at the junction of two streets, an area that had been the subject of significant C18 and C19 urban design projects. The report also stressed that the re-development of the site quickly became a subject of public debate. The reconstruction of some of the demolished buildings or the reinstatement of the frontage to an earlier appearance are among the options that may be considered in the development plan. Redevelopment will not commence until a proper assessment of the remaining structures and the archaeological and architectural significance of the site has been carried out and a development plan agreed with the City Council.

Scottish Ministers also stressed that the City Council is committed to ensuring that any redevelopment of the area will take full account of the character and the surviving medieval street pattern of this part of the World Heritage Site. The City of Edinburgh Council assumed control of the area under its powers relating to unsafe structures and public safety. Its aim was to keep demolition to a minimum, but in view of the considerable structural damage caused by the fire, a number of unlisted buildings and parts of the two Category C listed buildings were demolished.

### ICOMOS

ICOMOS stated that the challenge was now to address the consequences of the fire in the light of the designation of the area as part of the World Heritage Site. ICOMOS also agreed that stating that a significant part of the Old Town was destroyed did not correspond to the truth, since only 13 buildings were involved and the loss of structures of particular architectural interest remain modest. However, the fire has resulted in the destruction of a highly important sector of the city, and buildings that contributed to the strong character of the streetscape and fabric of the Old Town, for which Edinburgh was inscribed as a World Heritage Site, have been lost. ICOMOS also noted that a full archaeological survey would take place as soon as the site is safe. ICOMOS expressed the hope that, in due course, a conservation plan or equivalent will be put together to guide the redevelopment of the site through informing debate on options to be considered, and that the approach will take account of ICOMOS International Charters, such as the Charter of Krakow of 2000 on Historic Towns.

Decisions (27 COM 7 (b) 81) taken at the UK World Heritage Committee meeting in June 2003

- Thanks to be passed on to the national authorities as well as the local authorities for their prompt and brave action undertaken during the blaze and immediately after
- The close co-operation of the Edinburgh City Council and Historic Scotland in developing a remedial action plan for the area was noted
- A note was taken that stakeholders are studying a conservation plan for the site, and that any redevelopment of the area affected will take full account of the character and medieval pattern of this part of the World Heritage Site
- ICOMOS requests that Scottish Ministers provide, by 1 February 2004, a report on this matter and on any development proposals in the boundaries and buffer zone of the site, for examination by the Committee at its 28th session

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## **Edinburgh Old Town and New Towns World Heritage Site Reactive Monitoring Report on Fire in December 2002**

*Historic Scotland*

This report on the impact of the fire which took place in the Edinburgh World Heritage Site in December 2002 has been prepared by Historic Scotland on behalf of Scottish Ministers.

In the UK, responsibility for the built heritage in Scotland has been devolved to the Scottish Executive, which is answerable to the Scottish Parliament. Historic Scotland is the part of the Scottish Executive with responsibility for the preservation of the built heritage of Scotland.

### ***Edinburgh Old and New Towns World Heritage Site***

The historic centre of Edinburgh, including the Old Town (of which the present plan has its origins in the C12) and the New Town, which began in the mid C18, was inscribed on the World Heritage Site's list in 1995 on the basis of cultural criteria (ii) and (iv), as it represents a remarkable blend of the two urban phenomena: organic medieval growth and C18 and C19 town planning.

### **Architectural history of the site**

The Cowgate follows the line of a medieval thoroughfare in a valley running parallel with the High Street to the North, and linking the Grassmarket with the Cowgate Port (St Mary's Wynd) at the eastern extremity of the Old Town. With the later growth and subsequent overcrowding of the city in the later eighteenth century, the Cowgate lost much of its status. Consequently, it was spectacularly bridged in 1789, with a 19-arched structure which simply bulldozed its way through the district in a straight line to link up with the recently built North Bridge.

However, this was a Bridge with a difference. Houses and shops were planned to be built up against the structure so that only one arch, the Cowgate Arch, remained open. The result was an astonishing 'megastructure', conceived by Robert Adam but built by Robert Kay. Adam had proposed and built such self-financing 'bridge streets' elsewhere, including most famously at Pulteney Bridge, Bath. The planned street around the Edinburgh structure reflected the Bridge Trustees' ability to buy up the land. On the west side of the bridge they were more successful than elsewhere, and so they created Blair Street which leads straight down to the site of the fire.

On South Bridge itself a long street of ashlar stone houses was built in a simple style but, crucially, to a comprehensive design. This was the first time that 'palace-fronting' on this scale had been achieved in Edinburgh. Some of these buildings have since been altered and the south-west end pavilion was demolished altogether in the creation of Chambers Street in the 1870s.

The South Bridge building demolished after the fire was fundamentally a steel-framed rebuilding, with a new frontage to South Bridge of 1929 with an original pedimented seven storey gable to the Cowgate attached, and the rear elevation surviving in part. This has all been completely lost.

Moving down to the Cowgate itself, the collection of fire-damaged buildings remaining includes the ground floor arcade of an 1823-4 warehouse, designed to mesh architecturally with the South Bridge. There are various earlier, but probably not medieval, structures behind this long façade built on their medieval burgage property lines. There is a possibility also that a remnant of Adam Square, designed by John Adam in 1760-5, exists on the site and also that of a C19 Dissenting Church.

### ***The Fire***

A major fire broke out in part of the Edinburgh Old Town on the evening of Saturday 7 December. The fire was tackled by 80 fire-fighters in 19 appliances, and was only brought under control early on Monday 9 December, some 36 hours after it started. The cause of the fire has proved impossible to identify.

### ***Impact of the Fire***

Thanks to the efforts of the emergency services in mounting a very effective fire control operation, the impact of the fire was limited and the most important historic buildings in the area escaped damage. Moreover, the overall impact of the fire on the World Heritage Site as a whole was limited, contrary to some media reports circulating at the time. Only two Listed Buildings (buildings identified by the state as meriting individual protection) out of some 3,500 Listed Buildings in the World Heritage Site, were directly affected. The limited extent of the area affected by the fire may be seen from the map of the World Heritage Site. It is worth noting that the affected area covers less than 1% of the area of the whole World Heritage Site.

That said, the fire did destroy an important part of the Edinburgh townscape at the junction of the two streets, the Cowgate and South Bridge, involving buildings on different levels with a complex history of development. Indeed, the area had been the subject of significant C18 and C19 urban design projects. The largest building to be damaged formed a key part of this development. However, it had been very much altered in the two centuries since it was built, and at the time of the fire was considered only to merit the lowest level of state protection afforded to individual buildings, as did the neighbouring complex of buildings onto the Cowgate. All of the buildings were privately owned.

### ***Management of the World Heritage Site***

Day-to-day responsibility for the management of the Edinburgh WHS rests with the City of Edinburgh Council, which recognises the outstanding universal value of the World Heritage Site in its conservation and design objectives and policies detailed in the Central Edinburgh Local Plan and Conservation Strategy. The Edinburgh World Heritage Trust, an independent voluntary organisation, has responsibility for assisting with the repair of historic properties in the World Heritage Site and delegated responsibility for monitoring issues. Individual property owners within the WHS are responsible for the maintenance of their respective properties, including arranging adequate buildings insurance to cover damage in the event of fire, flood, etc.

### ***Demolition and recording***

The condition of the buildings affected by the fire was assessed by the City Council's Structural Engineers, in consultation with the City Archaeologist and Historic Scotland Buildings Inspectors. The majority of the buildings were subsequently substantially demolished in the interests of public safety. However, proper arrangements had been put in place by the City Council to record the buildings that were to be lost, and to record the underlying archaeology in advance of the redevelopment of the site.

The ground floor arcade of one of the demolished historic buildings, home of the well-known Gilded Balloon Theatre, an Edinburgh Festival venue, has been preserved in situ and will be protected during the continuing clearance works. Material from the demolished buildings is being removed from the area under the watching brief of the City Council, and the Edinburgh World Heritage Trust.

An Outline Historical and Analytical Assessment has been prepared for the Edinburgh World Heritage Trust and Statement of Significance is being prepared. This will inform those responsible for the clearance of debris from the site and the development brief for its redevelopment. A laser digitised plan of the site has been prepared and the site is being continuously photogrammetrically recorded.

### ***Disaster planning***

The general disaster planning arrangements put in place by the City Council operated very well, but the organisations responsible for the day-to-day management of the site will be reviewing their disaster planning procedures in the light of experience. It is also proposed to add risk assessments to the management plan for the World Heritage Site. Advice on fire detection and fire suppression in historic buildings in general has been published by Historic Scotland. A database of outstanding historic buildings in Scotland is being compiled as a joint project with Scottish Fire Brigades to guide fire-fighters in such emergencies. Historic Scotland are working on a Technical Advice Note that will provide information to historic buildings owners and others on damage limitation strategies, such as liaison with Fire Brigades and other issues.

### ***Redevelopment of the area***

Edinburgh City Council is working with Historic Scotland and the Edinburgh World Heritage Trust to develop a plan for the area affected by the fire. There are issues of insurance to be determined and it is too early to say exactly what form the plan will take.

The re-development of the site quickly became a subject of public debate, focussing on the arguments for either a modern intervention or a more contextual building. The reconstruction of some of the demolished buildings, or reinstatement of the frontage to an earlier appearance are among the options which may be considered in the development plan. Other options should also be explored, not least because reconstruction on a site of entirely lost buildings is not usually considered good conservation practice and is discouraged by international conservation charters.

However, redevelopment will not commence until a proper assessment of the remaining structures, and the archaeological and architectural significance of the site has been carried out and a development plan agreed with the City Council.

The City Council is committed to ensuring that any redevelopment of the area will take full account of the character and the surviving medieval street pattern of this part of the World Heritage Site.

***Conclusion***

The impact of the fire was limited both in terms of the overall area of the World Heritage Site and the number of buildings of outstanding historic or architectural importance.

The overall international architectural and historic quality of the World Heritage Site remains intact.

The redevelopment of the demolished properties will take full account of the character and archaeological, architectural and historic significance of this area of the World Heritage Site.

## Edinburgh Old Town Fire Report

Frank White

November 2003



**LOTHIAN AND BORDERS FIRE BRIGADE**

COMMUNITY SAFETY GROUP

### LOCAL AUTHORITY LIAISON OFFICER

Assistant Divisional Officer Frank White

**Address of Incident:** Livingroom Public House / Club Loca,  
235-237 Cowgate, Edinburgh, EH1 1JD

**Date and Time of Incident:** 7 December 2002 at 2013 hours

**Date and Time of Call to Investigate:** 7 December 2002 at 2051 hours

**Description of Premises:** The fire-damaged site forms an area of the historic Old Town of Edinburgh and is bounded by the Cowgate, South Bridge, Guthrie Street, Hasties Close and Chambers Street. The properties vary in height from single to seven storeys. The area forms part of a designated World Heritage site dating from the C16 with substantial developments taking place from the C17 and C18 to the present day, including conversions and subdivision of a large department store to commercial, leisure and domestic habitation. The buildings were of traditional construction for the period, mainly stone and timber, with both pitched slate roofs and modern flat roofs with asphalt coverings.

**Situation Found on Arrival:** On arrival fire-fighters were at work inside Club Loca with Hose Reels and Ladders tackling a well established fire behind a partitioned wall, into a converted lift shaft area. The fire had spread to all the lower areas of this shaft and was travelling vertically within the shaft and horizontally behind a breezeblock wall. This area is the premises of Art in Partnership.

Leading Fire-fighter S Webster was sent by myself to investigate further routes to this fire. He informed me that fire-fighting teams were already at work in that area and other teams were also at work on the South Bridge under the command of Station Officer M Crowe. There was no sign of fire within Club Loca beyond what was already established.

On meeting with the Fire Commander and being appraised of the ongoing situation the decision was made to withdraw crews for a safety briefing. This decision was based on information indicating a severe fire within floor and ceiling voids, as seen by thermal imagery cameras and from crew de-briefings.

Following more information coming forward as to the conditions inside the premises, and on the visible indication from outside the premises, a decision was made to evacuate the complete building and contain the fire by the use of Water Towers from the Cowgate.

As the safety of the building was in severe doubt I was assigned to fire-fighting operations until I was relieved at 0500 hours. I did not undertake the role of Fire Investigation until 0900 hours on Monday 9 December. The building was still in an unsafe condition at this time.

<b>Supposed Cause of Fire:</b>	In my opinion the most likely causes of fire based on the evidence available would be
	1 Electrical origin; within the area of the lift shaft/void, exact cause unknown
	Although I cannot exclude
	2 Accidental Act; by the occupier, exact cause unknown
	3 Malicious/Wilful Act; by person/persons unknown
<b>Investigating Officer:</b>	Assistant Divisional Officer F W White, Community Safety Department
<b>Police Investigating Officer:</b>	Police Liaison St Leonards Police Station, Edinburgh

On that night, appliances of the Lothian and Borders Fire Brigade were mobilised to what was to become one of the largest fires in the Brigade's history involving a range of C18, C19 and C20 buildings, many of historic interest. The fire involved 5 interlinked buildings containing 13 premises, which included Licensed Premises, Nightclubs, Shops and Offices. The footprint of the building measured approximately 60m x 60m, with buildings ranging from 5 to 7 floors, serviced from adjoining road levels at Ground (Cowgate) and Fourth Floor (South Bridge). The buildings were of traditional construction for their period and consisted mainly of stone walls, timber floors, part pitched, boarded and slated, part flat roof construction. Over a number of years renovation had taken place within a number of buildings which had resulted in knock through access between buildings for people and additional services. In addition, there were numerous void/ducted areas that ran vertically and laterally throughout many of the buildings. These renovations inevitably played a major part in the very rapid spread of fire throughout the buildings.

Due to the extensive building(s) footprint and the congested nature of access, it was decided to concentrate fire-fighting efforts in surrounding the fire and minimising fire spread to adjacent heritage buildings. Fire-fighting operations continued throughout the night and at 1109 hours on Sunday 8 December 2002 the Stop message was sent to Brigade Control.

Dampening down of the fire continued for a further forty-eight hours, with elements of concern centring around the stability of the building due to the loss of vertical and horizontal supporting structures.

### ***Legislative Controls***

These premises have been subject to the Fire Precautions Act 1971, The Licensing (Scotland) Act 1974 and other forms of licensing inspection. The buildings which comprise the development range from areas initially built in the C18 and added to over the years until around 1940s when the major use of the upper areas was as a large department store.

As a department store, the premises were under the control of one owner who had sole responsibility for the development and of the internal arrangements, subject to the Building Controls of the time. During this period a sprinkler system had been installed and subsequent use of the premises became better controlled by The Offices, Shops and Railway Premises Act 1963. Like most other premises of this type competition was great and in the late 1970s the department store closed and the building was acquired for development.

In 1980, in one of the first multi-use commercial developments to be planned in the City of Edinburgh utilising an existing building, the developers encouraged a number of businesses into the development.

As a result of liaison between Building Control and the Fire Authority in Edinburgh, the initial redevelopment was well documented and plans of the individual premises were clearly delineated. During the next few years, many of the original occupiers vacated or altered their premises. Some premises have had as many as 5 occupancy changes over the years, with subsequent occupiers making minor alterations to suit the new use of their area. Each successive change, whilst recorded in the Fire Certificate, changed the original layout, with some occupiers discovering that lower floors for which they were paying sizeable business rates were not being put to profitable use. To reduce the rateable value, these areas were closed off, reducing the occupier's rateable value. These areas were now effectively removed from certifiable use and Fire Certificates were amended accordingly.

This practice became more common and so the internal shape of the building was altered piece by piece. Those areas that had been sealed off from the original building now formed sizeable void areas through which service ducts and cables ran.



Further internal changes, whilst not classified as structural changes, necessitated changes to ventilation, an action which required access being made to the previously sealed void areas. Fire Authority involvement in this area was restricted to commenting on fire stopping through floor levels.

The existing void areas and the creation of new void areas for services, combined with the frequent change of occupiers, can perhaps go some way to explaining why the development of the fire between buildings was so rapid, a fact collaborated by fire-fighters in their eye witness accounts.

### **Investigation Conclusions**

As part of the Brigade's Incident Management Structure, a Fire Investigation Officer was mobilised to the fire on receipt of the first assistance message. In line with established protocols, it was decided to form a team and to invite all interested parties to share in the investigation process. With the Fire Brigade acting as the lead, a group of investigators representing the Police Forensics and the many insurance companies who covered the business losses were able to gain access to the buildings for a preliminary investigation on the Monday morning following the fire.

As the site was deteriorating and the safety of the investigating team was being compromised, investigators had to abandon all efforts to gain access to the area of interest. Eventually the Health and Safety Executive put in place additional control measures for the safety of the demolition site. Most of the buildings were occupied at the time of fire, which made it possible for the team to confirm that their preliminary findings on the seat of the fire were accurate. The investigators were able to track down the seat of the fire to an area in and around a series of voids, which had once contained a lift and ancillary mechanical equipment, which the team were keen to inspect further. However, the safety issues previously mentioned made it impossible to remove sections of walls and floorings.

The main site of the fire investigation centred on the area of the Livingroom Public House, adjacent premises Club Loca and Art in Partnership, at Ground and First Floor levels. Initial investigations showed severe damage to the area at the First Floor level of the Livingroom Public House within, and surrounding, a disused converted lift shaft/void area containing large ducting and power supplies for heating and ventilation. The renovations and reconstruction of this part of the premises has been undertaken over a long period of time with varying standards of materials, construction methods and fire stopping.

From subsequent statements by members of staff and fire-fighters who attended at the scene, the room of origin and the development of the fire is most likely to have been within the converted lift shaft/void area. The point of ignition and the source of ignition would have required further extensive forensic investigation, but due to the severe hazards presented to the fire investigators, and the time restraints imposed by the emergency demolition to the façade on the South Bridge, there was a wide radius of error around this possible room/area of origin.

The initial fire investigation was directed towards a room at Ground Floor level which was used as a store area, but additionally housed an ice making machine which had been destroyed by fire. Early indications suggested this as the lowest point of burning, but statements and further evidence show this room was searched at the onset of fire-fighting operations and showed no signs of fire.

A member of staff was working within the area of the room of origin of the fire prior to discovery, but the statement produced indicated no reason as to the cause of fire. Further forensic evidence to exclude any accidental actions by the occupier or malicious actions by other unknown persons could not be carried out to a satisfactory conclusion, again due to the dangerous condition of the premises.

The investigation found, at the First Floor level within the converted lift area, redundant electrical fuse boxes and power lines in a derelict state. There is no confirmation as to whether this was live at this time as the power to all the properties was disconnected by Scottish Power remotely during fire-fighting operations for safety reasons. This area was also used to house the ducting for the ventilation system servicing the Livingroom Pub and Club Loca. In addition it may possibly have housed the fume extraction ducting from the kitchen.

### ***Investigating Officer's Comments***

#### *Preventative Measures*

The collaboration of Fire Safety Officers, Operations Planning and Owners of Premises and Buildings where similar conditions may exist should continue beyond Fire Certification or Licence of individual properties. This collaboration should involve adjoining properties even if they fall out-with any formal or legal remits, and should include The City of Edinburgh Council, City Development, Building Control and Planning Departments.

***Contributory Factors***

The subsequent rapid development and spread of fire may have been restricted to a smaller area, or avoided, had adequate barriers including building separation, fire stopping and fire compartmentation been in place. In addition, the lack of suitable stopping led to unrestricted fire spread throughout the adjoining properties, both vertically and laterally. The fire continued via large void areas, some one metre deep, at floor and ceiling levels and through openings in walls, such as doors and windows, which were inadequately fire stopped or enclosed during changes to the properties. These changes included the conversion of what appeared to have been a courtyard bounded by old tenement properties, into licensed premises. The rapid unseen spread of fire and the dangerous conditions that were developing within the First Floor level and surrounding area resulted in the emergency evacuation of all the building and the re-siting of all fire-fighting appliances to a safer area.

During the investigation it was noted that a sprinkler system had been installed under the ownership of J & R Allan. The system had been de-commissioned during renovations and conversions for the change of use to Places of Entertainment. Had the system remained in place, and been fully operational, the fire damage to the surrounding properties would have been significantly reduced.

The fire was eventually detected by automatic smoke detectors in a remote area of the surrounding properties owned by Edinburgh University. Had smoke detection been installed throughout the premises of the Livingroom Public House the additional early warning may also have reduced the damage to the surrounding properties. The actuation of the manual fire warning system installed in the premises resulted in the safe evacuation of all members of staff and members of the public.

***Additional Historical and Analytical Assessment of the Fire Damaged Buildings.***

The Edinburgh World Heritage Trust has commissioned a detailed report by Addyman Associates Ltd.

**FIRE INCIDENT LOG**

*Cowgate, Edinburgh, Sat 7 December 2002*

The demand on Lothian and Borders Fire Brigade resources was substantial. From 2011 hours on 7 December to 1813 hours on 11 December in excess of 180 individual appliance movements occurred from the initial fire-fighting teams to the final crew leaving after assisting with damping down operations. Arrangements were left in place for the return of Height Appliances to assist the demolition company.

At the height of the incident, twelve Pumping Appliances, five Height Appliances and two Specialist Appliances attended the Cowgate and South Bridge, with Firemaster Brian Allaway assuming command of the incident with over eighty fire-fighters tackling the fire. Additional Height Appliances from Fife Fire and Rescue Services and Strathclyde Fire Brigade attended under mutual assistance arrangements.

The Brigades command structure was instigated, resulting in the mobilisation of twenty four senior officers over the weekend. Officers returning to duty on a voluntary basis supplemented the command structure. Thirteen officers were initially deployed to the incident and the Brigades Logistical Support Centre.

During the evening of 7 December, four Control staff members dealt with all appliance and officer mobilisation, in addition to effectively dealing with all other fire calls. Over the weekend, 7th and 8th Control dealt with 150 other fire calls. The Brigade maintained a fire cover response throughout the incident.

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### **Fire in the Duchess Anna Amalia Library, Weimar, Germany: 2 September 2004**

The Duchess Anna Amalia Library in Weimar, Germany is one of the world's great cultural institutions. Founded in 1691, the library holds over a million books and significant rare book and manuscript collections, including medieval manuscripts, Martin Luther's Bible, the world's largest collection of Goethe's Faust, and other treasures. It has been inscribed as a UNESCO World Heritage Site.

On 2 September 2004 the library suffered a terrible fire, and over 30,000 irreplaceable books were lost. Another 40,000 books were damaged by smoke and water. German Culture Minister Christina Weiss has said, "The literary memory of Germany has suffered severe damage. A piece of the world's cultural heritage has been lost forever."

In response to the fire, the organization "American Friends of the Anna Amalia Library" has been formed. This has been formed in consultation with American colleagues and also Dr. Michael Knoche, the Director of the Anna Amalia Library. The "American Friends" will be a corporate member of the "Gesellschaft Anna Amalia Bibliothek e.V."

The intention is to show clear American support for the library at this difficult time.

*Ronald D. Patkus*

Associate Director of the Library for Special Collections Liaison to the German Studies Dept. Vassar College



*Duchess Amalia Library, Weimar, Germany: upper level damage following fire (Photo: P Rohlén)*

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## **Fire In The Windsor Building, Madrid, Spain: 12 February 2005**

*Mariana Llinares, Miguel Gómez-Heras*

This presentation has been prepared based upon public information taken from newspapers and the Internet. There are currently no official documents as the case is subject to a legal investigation.

### ***Building Description***

- Completed 1979, eighth tallest building in Madrid
- Upper floors: rental office space
- Ground floor: commercial
- 106m high, 32 storeys (850 sq.m. each) plus 5 storeys of basement
- Two floors of plant/services on 2nd and 17th floors, which also acted as fire compartmentation breaks
- Structure: perimeter steel frame supporting curtain wall with concrete columns on north and south façade below 17th floor. Reinforced concrete columns with concrete central core housing stairs and lifts. Floors of reinforced concrete bi-directional ribbed slab on composite steel beams in an east-west direction. 20m crane installed on the top of the building, supported by the central core, for the works which were carried out to adapt the building to current regulations and to renovate the façades

### ***Building Standards***

The Windsor Building was built to 1970s standards. The building was being refurbished at the time of the fire, with a building permit obtained in 2003. New buildings in the Region of Madrid must fulfil both national regulations (dating back to 1996) and regional regulations (dating back to 2003). As is the case with most European codes, active measures do not play an important role in Spanish codes. For example, the regional codes of Madrid do not require sprinkler protection for buildings with an evacuation height of less than 100m, so active measures in Windsor building were limited to fire hoses, a dry riser system, and automatic detection and alarm.

### ***Refurbishment Works***

A new external staircase was being constructed for emergency evacuation and to carry new electrical wiring. Three-hour fire resistant materials to protect the steel structure of the façades was being retrofitted on the fourth to the fourteenth floor. Vertical shafts and cavities were being sealed to avoid fire spread through them. This was complete on the fourth to the fourteenth floor. Vertical fire protection was in the process of being installed along the perimeter slab edge to avoid fire spread through façades. Smoke detectors were being replaced floor by floor. A new sprinkler system was also being installed. At the time of the fire, the pipe network had been finished but the heads were not yet installed, so they did not work.

### ***The Fire***

The fire took place on the night of 12 February 2005 and spread quickly. At three thirty in the morning, part of the curtain walls of the façade collapsed. The fire revived and spread both upwards and downwards. The fast propagation of fire in the upper section of the building led to the breaking of the curtain wall, and severely damaged the steel columns in the façades, causing their deformation and collapse. Some of the floors were dragged down, and part of the collapsed structure rested on the upper technical floor. Unexpectedly, fire spread downwards to the lower section of the building, maybe first through wiring shafts, through the slab edge or other openings, which subsequently spread horizontally through the interior. The fire was extinguished after eighteen hours. Between five and six million litres of water were needed.

### ***The Condition of the Structure following the Fire***

Forty eight hours after the fire was extinguished, the building was examined by experts. Some bays adjacent to the façades in the lower section of the building were on the point of collapse. Steel columns were severely deformed due to a long and direct exposure to fire. Bays parallel to the north façade were also badly damaged where concrete slabs had lost much of their load bearing capacity. In other areas of this section of the building, concrete columns show different kinds of damage, from concrete spalling to signs of cracking.

Damages in the central core were not so important. In the upper section of Windsor Building, bays adjacent to the façades almost totally disappeared. The debris accumulated on the upper technical floor. Metallic frames hung over the perimeter. Next floors and concrete columns parallel to north façade had also collapsed over the technical floor. Some adjacent buildings were damaged because of the impact of façade elements.

### **Conclusion**

The Fire Brigade was probably informed too late. The fact that 30 to 35 minutes elapsed from the initial alarm in the control room to the first fire attack played an important role in allowing the unsprinklered fire to grow out of control. Fire gradually spread downwards through service or other penetrations. Events have shown that the concrete structure gave an outstanding rating of about holding for 18 hours of fire. A more robust structure and less severe fire conditions, as well as protecting the steel structure in addition to the presence of concrete columns in north and south façades, contributed to a better behaviour of the lower storeys of the building. Furthermore, sealing of concealed spaces and fire-fighting reaching up to the 13th floor also improved the building's behaviour to fire. However, there are still many unknown factors.

### **Heritage Value**

The fire at the Windsor Building makes us consider the definition of historic buildings. Historic buildings are not only 'old buildings'. Any building that is a landmark in the architecture of a city and has a value for the population could be considered a historic building. Historic and heritage value is not a numerical concept, but the result of the people's perceptions. Skyscrapers are one of the highlights of C20 architecture, communicating values of modernity and power. Skyscrapers are landmarks that *encourage* tourism in many cities of the world. They are, in the community view, the real heritage items of the last century.

### **Materials behaviour (Concrete)**

The sound concrete structure prevented the total collapse of the Windsor Building. While steel will melt in a fire (eg World Trade Center collapse), reinforced concrete resists higher temperatures without total loss of strength. Nevertheless, fire-damaged concrete acts in a similar way to that found in stony materials. Of particular importance are

- Loss in compressive strength
- Cracking and spalling
- Destruction of the bond between the cement paste and the aggregates
- Gradual deterioration of the hardened cement paste
- On heating above 300° C, concrete discolours, depending mainly on iron content
- At 300° C, strength reduction would be in the range of 15–40%
- At 550° C, reduction in compressive strength would typically range from 55–70% of its original value
- At 550° C, calcium hydroxide dehydration takes place. Calcium hydroxide is a hydration product of most Portland cement

### **Memorialisation of fire and disasters**

There are instances throughout Europe where decisions have been taken to retain at least a part of a structure damaged by fire, as a material witness to the events. From the Second World War, this includes the Victoria and Albert Museum in London, Royal Garrison Church in Portsmouth, Coventry Cathedral and the Kaiser Wilhelm Church in Berlin. The Windsor Building was the subject of an unsuccessful initiative to be kept as a memorial; to be kept, as a journalist said, as

*'A monument to the spirit of our time, evocation of the insecure feeling that permanently pesters us, homage to the failings of humans, its present state should be respected as the wake of our particular Titanic.'*



*Windsor Building during the fire* Photo source: [http://www.whatreallyhappened.com/spain\\_fire\\_2005.html](http://www.whatreallyhappened.com/spain_fire_2005.html)



*Windsor Building during the fire* Photo source: [http://www.whatreallyhappened.com/spain\\_fire\\_2005.html](http://www.whatreallyhappened.com/spain_fire_2005.html)

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## Brand der Kirche in Bremgarten: 24. März 1984: Die Stadtkirche brennt

*Daniel Rusch*

“Die Katastrophe ist kaum in Worte zu fassen: Die Bremgarter sind um das Wahrzeichen ihrer Stadt, die stolze Stadtpfarrkirche, beraubt. Nur noch angeschwärzte Mauern rund um das Kirchenschiff und dreiviertel des Turmes zeugen davon, dass hier seit 1249 eine stattliche Kirche stand.” So schrieb ein Augenzeuge nach dem Brand der Stadtkirche am 24. März 1984.

Die Kirche wurde damals seit mehr als einem Jahr renoviert. Am Morgen des Unglückstages hatte man den Dachstuhl mit einem Holzschutzmittel imprägniert. Am frühen Nachmittag versuchten Arbeiter, eine vorstehende Holzschraube mit einer Trennscheibe abzuschneiden. Der Funkenwurf entzündete die noch immer vorhandenen Dämpfe der Imprägnierflüssigkeit. Innert weniger Minuten breitete sich der Brand über den ganzen Dachstock aus, griff auf den Innenraum und den Turm über. Die Feuerwehr war, trotz des Einsatzes von Lösch-Helikoptern machtlos. Die Kirche und der Turm brannten vollständig aus, die Glocken schmolzen und stürzten hinunter.

Im Innern der Kirche wurden Orgel, Empore und ein Teil der Altäre ein Raub der Flammen. Zum Glück im Unglück war das meiste Mobiliar zur Restauration ausgelagert und blieb daher verschont. Völlig zerstört wurden die Aufbauten der Seitenaltäre des Hauptschiffes. Die drei Altäre des Seitenschiffes wurden zwar beschädigt, konnten jedoch später wieder restauriert werden.

Anfängliche Befürchtungen, die Brandruine müsse gänzlich abgetragen werden, bestätigten sich nicht. Die Kirchgemeinde beschloss im Juli 1984 den Wiederaufbau der Kirche. Als Grundlage für die Rekonstruktion dienten die exakten Pläne, die vor Beginn der Restaurierung aufgenommen worden waren. Im Kirchenschiff konnten die Wandmalereien aus der Spätrenaissance gesichert und teilweise rekonstruiert werden. Jene im Chor waren jedoch nicht mehr zu retten und mussten abgetragen werden. Dabei kamen die spätgotischen Malereien aus dem ausgehenden 15. Jahrhundert zum Vorschein.

Am 6. Dezember 1987 konnte die Kirche feierlich wieder eingeweiht werden.



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## Porvoo Cathedral, Finland: Roof Fire 29 May 2006

*Martti Jokinen*

Whilst the last recorded fire in the medieval Porvoo Cathedral (50 km east from Helsinki) was in 1708, it was set on fire again by an arsonist after midnight on 29th May 2006. One hour later flames were discovered by a passing taxi driver who called the fire brigade. The fire detection system failed because it was installed under the roof in the attic and fire was on the roof outside.

The fire destroyed all the wooden parts of the shingle roof (which was quite new) and the timber roof structure (dating back to early 18th century). The interior was quite well saved due to the ceiling vaults being made of brick. This natural compartmentation prevented the fire from spreading inside the nave. The medieval decorations from the 15th century on the ceiling also survived well despite some soot and water damage. Even the valuable organ remained functioning well.

Porvoo Cathedral is one of the most important churches in Finland. The oldest part of it dates to the end of the 13th century or beginning of the 14th century. It was enlarged in the middle of the 15th century and has remained as such until the fire.

The arsonist was an 18 year old man, a musician and a fan of a Norwegian heavy metal band. He had already set fire to two churches in Norway. After fire the arsonist went voluntarily to the police the next day. When setting the church on fire he was very drunk, and possibly had also taken drugs.

The fire brigade used too much water to extinguish the blaze. Officials who visited Porvoo early in the following morning, when church was still burning, asked fire brigade to stop fighting the fire and let the church burn as the jetting of cool water onto the hot stone surfaces was creating damage and cracks. According official experiences, most of Finland's medieval churches can survive such a fire without any major damage occurring, except for losing the roof. This has happened many times before in other buildings.

Due to the use of too much water, problems were created in the decorated ceiling. The water seeped through the vault to create increased humidity in the interior. For conservation reasons the soot and dust needed to be removed whilst the structure was still wet. As drying out starts, it is possible that the ceiling plaster will start to detach and a lot of the original medieval decoration could be lost.

There was a lack of cover in the fire detection system. All the devices were installed inside the church building. It is thought that by adding two smoke detectors outside the building the total loss of the roof could have been prevented.

As Porvoo Cathedral is situated in the middle of the old wooden town, the fire brigade made an excellent job of saving the city by preventing fire spreading into it.

The estimated cost of the reconstruction is estimated at between €6-10 million. Planning of the repair has already started, and the church is currently protected from the weather by scaffolding and a temporary roof.







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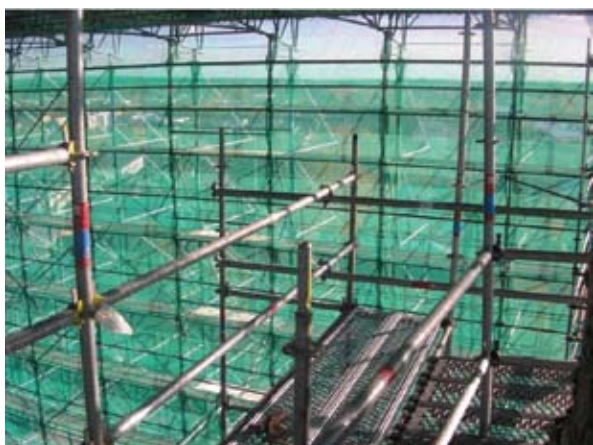
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## St. Petersburg, Russia: Trinity Cathedral's Domes Destroyed by Fire: 25 August 2006

*Milosh Puchovsky*



The magnificent domes of the landmark 19th-century Trinity Cathedral were all but destroyed in a blaze that erupted at the top of the stately building on 25 Aug. 2006. The restoration of the cathedral will take years, experts say.

Preliminary reports blamed the incident on builders contracted to carry out restoration works on the site. Reportedly, the fire broke out after someone had thrown a cigarette butt on the scaffolding. If those reports prove true, the firm will be held liable for the damage.

The fire hit the 19th-century cathedral in St. Petersburg early on Friday evening, bringing down the main cupola atop the majestic church in Russia's former Imperial capital and sending clerics scurrying to save treasured icons. Fortunately, all those icons and other valuables were safely removed from the cathedral to be deposited partially in the Hermitage, and partially at the Alexander Nevsky Lavra (Monastery).

However, the recent scandal that flared up after a theft of masterpieces worth millions of dollars was revealed at the Hermitage, casts doubts on the safety of treasures within the walls of St. Petersburg's famous museum: Larisa Zavadsкая, the curator responsible for the pieces in the Hermitage, died suddenly when the inventory began. Her husband and son and a family friend have been charged in connection with the thefts.

Meanwhile, Vera Dementieva, head of the committee for protection of historic monuments, told a news briefing on Saturday, a day after the fire at Trinity, that the head of the construction firm contracted to carry out restoration works at the cathedral had suffered a heart attack after the fire broke out.

The damage wreaked by the fire is estimated at over 1.6 million rubles, according to preliminary calculations.

The blaze erupted in the early evening and burned through scaffolding outside the soaring blue central dome of the Trinity Cathedral, a duty officer at the Russian Emergency Situations Ministry said.

Russian television showed the central dome collapsing and one of four smaller cupolas surrounding it — painted a striking light blue and in some cases spangled with gold stars — also being devoured by the fire. A crowd of parishioners watched the domes of their beloved cathedral engulfed in flames with tears in their eyes. Fundraising for restoration was launched immediately.

Fire-fighters battled desperately to save the domes. Ironically, the emergency ministry's helicopters were not called in until the fire services realized that their ladders were not long enough to reach the top of the dome.

Although Russian television reports showed the main dome collapsing, fire officials later tried hard to play down the damage and hailed the fire-fighters' work. A spokesperson for the St. Petersburg emergency directorate refuted earlier media reports which claimed that at least two domes of the Trinity Cathedral had been destroyed. "None of the domes have collapsed. Only the roofing has been destroyed," Grigory Gorbunov assured the public on Saturday, addressing a news conference in St. Petersburg.

Earlier Gorbunov said that a criminal investigation into the fire had been launched.

Governor Valentina Matviyenko has pledged to restore the cathedral within the shortest time possible.

Trinity Cathedral was built between 1828 and 1835 to a design by Vasily Stasov. The main dome of the cathedral was the second-largest wooden cupola in Europe. Writer Fyodor Dostoyevsky was married there. The building was used as a storehouse during the Soviet era and was returned to the Russian Orthodox Church in 1990. The cathedral is included in UNESCO's World Heritage List.

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**Orthodox Church in Kamienica, Bieszczady Region, Poland, burnt down:  
13 September 2006**



On 13th September 2006 in the Komancza settlement of the Polish Bieszczady Region (East-South part of Poland) the wooden building of the Eastern Orthodox Church, dating back to 1802, went up in flames. The antique belfry of the church was the one and only part the fire fighters rescued.

The fire probably broke out in one of the church domes. The belfry escaped destruction. The fire gutted the church building leaving only the fragment of the wall and the doors leading to the belfry. The church equipment, among it the iconostas from 1832, was destroyed.

Built in 1802 the wooden Orthodox church of Komancza was consecrated 3 years later as Greek-Catholic Sanctuary. It was one out of the 3 preserved Orthodox churches constructed in the Eastern Regional Catholic style. The other two are located in the settlements: Turzansk and Rzepedz. From 1963 the Orthodox church of Komancza belonged to the Orthodox Church.

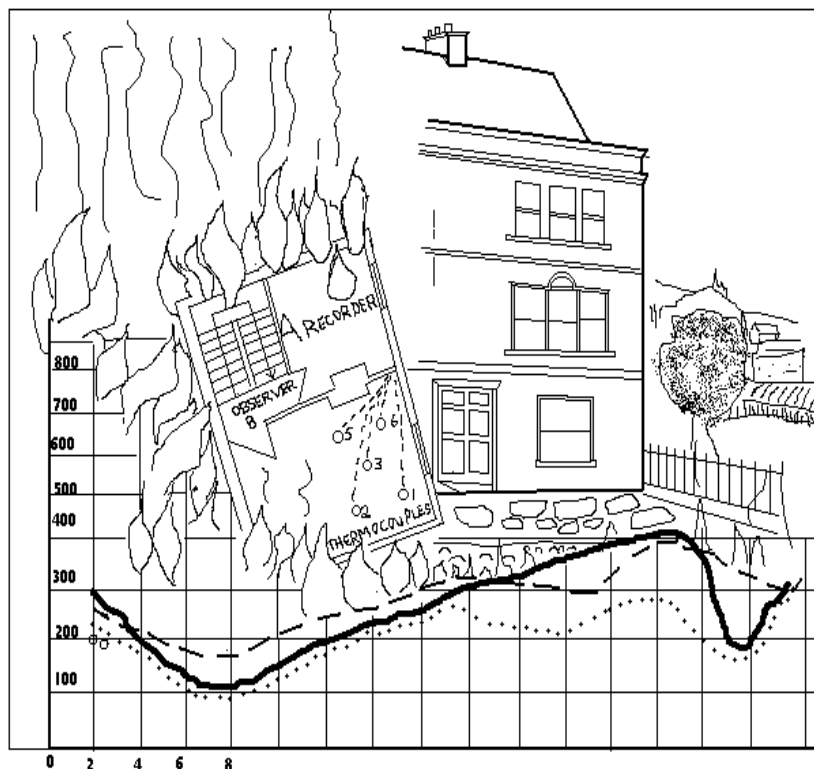
The boarded church consisted of the 3 main chambers, each of which was topped with the dome. The construction of the church based on the shape of the rectangle. There were small repairs carried out in the summer of 2002 and 2003.

Now the likely causes of the fire are being identified and losses are being assessed.

**Fire Test On A Standing Georgian Dwelling: No. 12 Chatham Row, Bath, 2 March 1967**

*RF Little, Chief Building Inspector, Bath City Council*

*Note that many of the technical testing methods described in this report will now have been superseded.*



**FIRE TEST ON A STANDING GEORGIAN DWELLING  
No 12 CHATHAM ROW, BATH**

A paper presented by RF Little. F.I.A.S:F.I.B.C.O:A.R.S.H:F.F.B.  
Chief Building Inspector Bath City Council



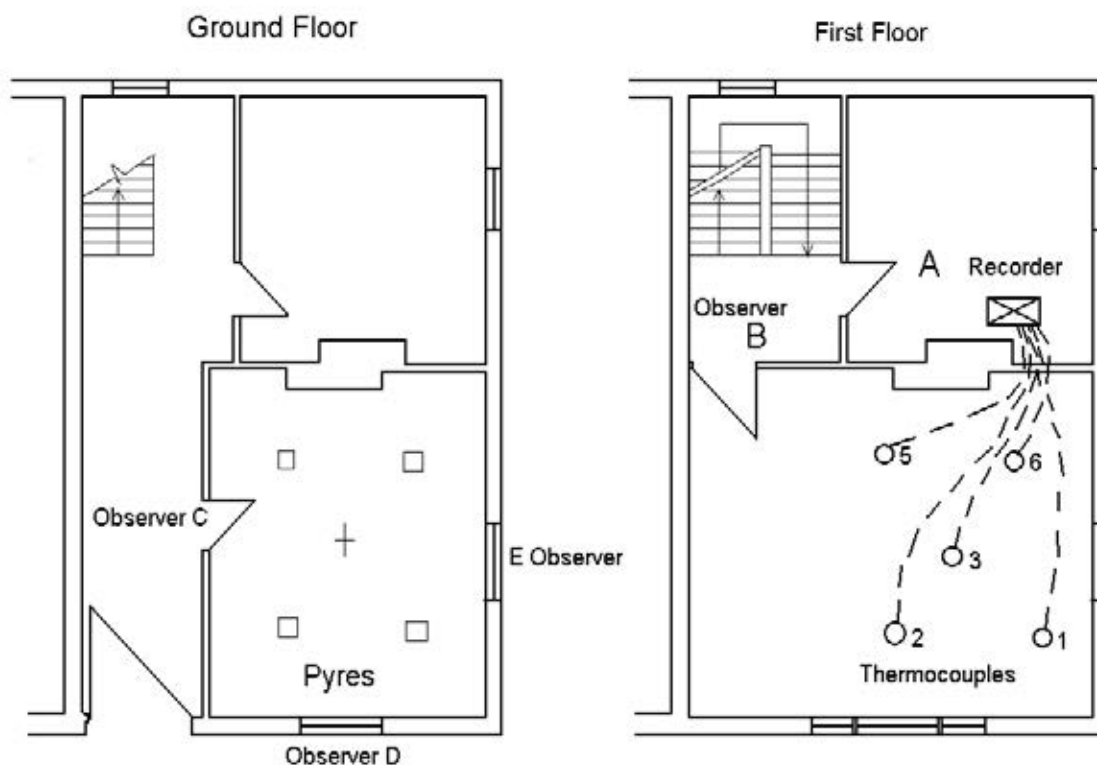


Figure 1 No. 12 Chatham Row, not to scale

**Report on a Fire Test of a Ceiling in a Georgian Dwelling House on 2 March 1967**

The test was carried out by Bath City Council under the supervision of the Chief Building Inspector of the City Engineers Department and the Senior Fire Prevention Officer of the Bath Fire Brigade.

Observers from other authorities included

- Mr WH Cutmore, Ministry of Housing and Local Government
- Mr PMT Smart, Ministry of Technology & Joint Fire Research Organisation
- Mr Gibbs, Home Office, Fire Prevention Department
- Senior Building Inspectors from neighbouring authorities
- Senior Fire Prevention Officers from neighbouring authorities

At the time of the test (1967), no amendments to the English Building Regulations Part E had been made. The Regulations referred to are those current at that time.

**Reason For Test**

With the need to provide more units of accommodation, many large multi-storey houses previously occupied by one family were being converted into separate dwellings. In most cases, it was impossible to comply with the degree of fire resistance required by the Building Regulations, or the provision of non-combustible elements of structure. It therefore follows that applications for relaxation or dispensation of the Building Regulations were sought in the majority of cases.

In a building of three or four storeys which was to be converted into flats or maisonettes, if alternative means of escape could be achieved at parapet or roof level, and the main means of escape was protected by walls and doors having half hour fire resistance, it was considered that the provisions of Building Regulations E5, E9 (7), E10 and E12 were unreasonable for the following reasons

- A ceiling consisting of at least 1 inch thick plaster on laths, with square-edged flooring over joists 2 inches thick, will provide half hour fire resistance, which is a reasonable time for vacating the rooms of a building in case of fire

- The British Standard 476 *Fire tests on building materials* sets out conditions which are far more severe than those actually experienced in a room of a dwelling when a fire occurs
- Compliance with the Regulations would not be possible, economically or structurally, in this type of building

In order to test this theory, it was necessary to simulate the behaviour of a typical domestic fire, from the time of ignition, through the build-up period, for at least 30 minutes and then having extinguished the fire, to examine the condition of the ceiling and the floor above, and having established that the theory is correct, to use such information to support future applications for relaxation of the Building Regulations where similar conditions occur.

The house chosen was No.12 Chatham Row and was an end-of-terrace house, built about 1760 and comprising a basement, with an open area at the front, to one side and to the rear, and three additional storeys. The external walls were of 5 inch thick Bath ashlar stone. The interiors of the rooms were lined with timber panelling to a height of 3 feet above floor level and plastered above.

The wall separating the ground floor room (the one under test) and the entrance passage was constructed of lath and plaster on a timber studding.

- The floors were seven inch by one inch square edged flooring on eight inch by two inch joists
- The ceilings were constructed of one inch plaster on laths with ornate cornices
- The roof of timber trusses and rafters with slate covering
- The house on plan measured twenty seven feet by eighteen feet, while the room (the ceiling of which was under test) measured twelve feet, five inches by thirteen feet and was nine feet high

#### ***Measures Taken Prior To The Test***

A visit was made to the Fire Research Station at Boreham Wood to ensure that the test would be similar to tests carried out by the Joint Fire Research Organisation (JFRO), and the preparations were made strictly in accordance with the advice given at that visit.

Firstly, the room was brought up to the standard one would expect to achieve after conversion, except for decoration, and this entailed the following work

- Reglazing the windows and replacement of sash cords to enable the windows to operate normally
- Testing the key between the ceiling plaster and the laths, and infilling cracks in the plaster
- Replacing floorboards in the room over the test room
- Re-floating a concrete hearth in the room over the test room
- Covering the partition wall between the test room and ground floor passage with quarter inch insulation board and plasterboard to ensure half hour fire resistance
- Infilling the door panels and covering the whole internal surface of the door with quarter inch insulation board to give half hour fire resistance and increasing the door stops to a thickness of one inch

In addition, it was necessary to provide a suitable fire load, and the JFRO indicated that it was desirable to have a fire load of five to six pounds per square foot of floor area. Better results would be obtained if this was provided by cribs of rough cut timber rather than by articles of furniture.

Four cribs were prepared. Each crib weighed 216.67lbs. which gave a fire load of 5.67 lbs. per sq. ft. of floor area. In addition to this imposed fire load, each wall had the original panelling to a height of 3 inches above the floor level. The floor covering was removed from the floor of the room over the test room with the exception of a narrow strip of standard hard board covering a crack between two floor boards. It was essential that the temperatures during the test were accurately recorded and accordingly five thermocouples were installed in the ceiling of the test room to record the temperatures at a position 3 inches below the ceiling at intervals over the area of the ceiling.

#### ***Arrangements on the Day of the Test***

Recording instruments, to which the thermocouples were connected, were installed in the first floor rear room. The floor of the test room was covered all over with 1" of damp sand and at the points where the cribs were to stand, sheets of insulation board were placed on the sand. These measures were to ensure that the fire would not burn downwards and affect the floor structure. Four cribs were set up in the test room in the positions shown on the plan. The ignition pyre was built at a central point between the four cribs and trails led away to the cribs. The pyre and trails were of wood shavings, wood chips and sawdust and was 1' 6" high and the trails 6" high. Immediately prior

to the ignition of the pyre three pints of paraffin were poured on the pyre to simulate similar conditions to that of an overturned oil heater. The Fire Brigade Officer assumed responsibility for fire control during the test and also provided observers to record conditions during the test.

### ***Recording Equipment***

The test required that the temperature at five points, 3 inches below the ceiling, of the test room, should be measured at short intervals from the time of ignition of the fuel, affording the fire load, in that room. Thermocouples were used and the wire selected was nickel-chromium/nickel aluminium T1/T2.

### ***Duration Of Test***

In order to simulate as near as possible the conditions and development of a normal fire in a dwelling, it was decided to allow the fire to burn 45 minutes from the time of ignition. The reasons for this period being chosen are as follows

- In a normal domestic fire with oxygen supply limited to that found in a room with doors and windows closed, severe smoke logging occurs at an early stage and the fire could be self-extinguished through lack of oxygen. Under these conditions the ceiling of the test room would not be given a satisfactory test as maximum temperatures would not be reached. Therefore, a flow of air to the fire had to be guaranteed in order to ensure it would continue to burn. Accordingly, a 2 ½" gap was left above the top sash window from the beginning of the experiment and at zero + 3 minutes a gap of 3" was opened at the bottom of the lower sash window. This was at zero + 9 minutes, increased to 6". During the whole of the experiment the normal flue from the grate of the room was providing a cross draught.
- As the structure of the ceiling was to be tested for a period of at least 30 minutes under normal conditions appertaining at a domestic fire, and at the end of the first 15 minutes approximately, of such a fire, it is usual for a 'fall off' of temperature to occur until the fire is ventilated in some way, e.g. breaking of glass in a window, it was decided that the 30 minute period of test for the ceiling should take place after that initial 15 minutes period has passed. This meant that from the time of ignition of the pyre, to the time of completion of the experiment, a 45 minute period was indicated.
- Although, in some circumstances it would have been desirable to allow the fire to burn until the ceiling under test had collapsed, in this instance it was necessary to submit the ceiling to the heat from a normal domestic fire for a period of at least 30 minutes and then, if the ceiling still remained intact, to extinguish the fire and carry out a close examination of the fire damage done to the materials forming the construction of the ceiling and the floor above.
- The door and the partition wall, between the Test Room and the passageway from the staircase to open air, had been modified to conform with normal half hour fire resisting standards. A 30 minute fire test was, therefore, demanded and again the extra 15 minutes initial burning period, appeared to be indicated in order that the performance of the door and partition could be measured against that of the ceiling.

### ***Weather Conditions***

The day was dry with cloudy and bright periods. There was a slightly westerly wind. The front window of the room under test, faced west.

### ***Summary Of Test***

Zero: At 1205 hours the incendiary materials forming the ignition pyre and comprising wood chips, wood shavings and sawdust over which 3 pints of paraffin had been poured were ignited. When reference is made to this time in the following report it will be as 'zero'.

Zero + 2½: Within the first 2½ minutes the pyres and trails were burning well, with some build up of heat and then smoke became quite dense as oxygen in the air within the room was rapidly reduced.

Zero + 5: At zero plus 5 minutes some temperature reduction showed on the thermocouple readings and a very slight percolation of smoke occurred at the top of the half hour fire resisting door, into the passage. The window at this point of the room was opened 3" at the bottom in addition to the 2½" at the top, in order to encourage air circulation. The cribs were now alight at the bottom. Quite heavy smoke logging of the room was apparent but the cribs were still visible.

Zero + 7½: In the next 1/2 minutes (zero 5 - 7½) the top pane of the front window cracked in two places and all cribs were alight at the inner corners with smoke issuing from the tops. Temperatures started to take an upward curve.

Zero + 10: Temperatures continued to rise and a slight increase of smoke penetration was noticed around the top of the half hour fire-resisting door. The front window was opened another 3" at the bottom (6" in all) and flames were noted coming from the tops of the cribs at all inner corners. Vision across the room improved.

Zero + 12½: Continued rise in temperature. First signs of smoke on first floor - very slight percolation between the fireplace and the door, at base of wall. Cribs now burning well on inner surfaces. Side window glazing very hot.

Zero + 15: Temperatures still rising. Highest recorded at No. 3 thermocouple 327° C. Smoke percolation at 1/2 hour fire resisting door very slight. Small increase in temperature of door panels. Lower pane of front window cracked. Cribs burning well with flames 2' 6" high from inner surfaces. Good vision most of room but ceiling obscured by smoke.

Zero + 17½: One thermocouple showed slight decrease in temperature recorded (No. 5) others a slight increase. The Yale lock on the half hour fire resisting door, hot but bearable to touch. Slight percolation of smoke around the door jamb. Molten paint dripping from framework of front window and top pane cracked in the side window.

Zero + 20: Slight decrease in temperature readings of thermocouples 1 and 3. Increases on all others. Yale lock too hot to touch. Smoke becoming dense inside room and flames less visible, but cribs showing increased burning.

Zero + 22½: Increase all round in temperature recordings of thermocouples. Increase in smoke percolation around door stops and door jambs. Cribs well alight nearest door. Increased number of cracks in front top window. Severe discolouration of side window by smoke.

Zero + 25: Temperature reading of centre thermocouple (No. 3) same as zero + 22½. Slight decrease in reading from No. 5. All others slightly up. First signs of smoke through cracks between floorboards at a point immediately above the partition wall between the test room and the passage. Slight smoke also showing in corner of room at side of the door. Again over the passageway. No apparent increase in temperature of the half hour fire-resisting door frame but slight increase evident on panels. Fire in cribs sluggish. Sash cords to lower half of front window burnt through and window dropped. Glass only slightly broken away and a reduction of visible flame with a corresponding increase of smoke evident.

Zero + 27½: Considerable drop in temperature readings of thermocouples 1, 2, 3, & 4. Slight drop in case of No. 5. Smoke now coming through crack at end of another floorboard over the ground floor passage and some percolation of smoke into the Recording Room, first floor, rear. No smoke coming from around the door stops and jambs. Pegs removed from below top section of front window to simulate sash cords burning through. Window dropped and glass dislodged where cracks had already been apparent. Smoke seen to be issuing from cracks in walls and lintel over the side window.

Zero + 30: Sudden rise in temperature recording of all thermocouples other than No. 5. Smoke now increased from the base of both door jambs near landing at first floor level and also issuing in centre of room near the thermocouple (No. 3). Very slight smoke percolation around the half hour fire-resisting door. Flames in the room high and licking the ceiling. Slight flaking from ceiling, possibly distemper or similar decorative material. Bottom pane of glass in side window cracked.

Zero + 32½: Steady increase in temperature recordings of No. 1-4 thermocouples. Slight decrease in temperature recorded at No. 5. Smoke convected from window of room on fire below, through the unglazed first floor window. Signs of smoke from the top of the wooden wainscoting near front window. Paint softening on the top rail of the half hour fire-resisting door and smoke issuing under pressure from the Yale lock. Smoke also apparent from between the top of the door and the door stops. Cribs well alight and tops of window frames and frame around window opening burning.

Zero + 35: General rise in temperature recordings. In the case of No. 2, 3, 4, 5 from 80° C - 105° C, and No. 1 a very slight increase of 6° C. At first floor front room level considerable smoke percolation was apparent from around the sill of the front window. Smoke also percolating between the skirtings and the floorboards all along the wall between the front room and the centre of the room. The paint on the panels of the half hour fire-resisting door started to blister. The top pane of glass in the side window blown outwards by excessive pressures in the test room.

Zero + 37½: Rapid rise in temperature recorded. In the case of thermocouple No. 5 - 226°. Following a crash of glass breaking (side window - see Zero + 35) the smoke and heat entering by the first floor front window became less. Some smoke started to come up the staircase. A greater quantity of smoke apparent through the Yale lock on the half hour fire-resisting door and smoke around the door increased.

Zero + 40: Continued rapid rise in temperature recordings. 320°C in the case of thermocouple No. 1. Smoke percolation continued at first floor front room level and fire observed for the first time at the side of the front window. Heat through the unglazed windows, rising from the room below became intense. A slight increase of

smoke noticeable from the upper area of the door around the stops. Fire in ground floor room at peak with plenty of ventilation by way of the two windows which were now without glazing. Slight flaking of ceiling is still all that is apparent. No breaking down of separation.

Zero + 42½ : Highest temperature reached No. 3 thermocouple, 1000° C. All others, 895° C. or above. Fire still at its peak. Half hour fire door shows slight burning at the top. Upper panels still comparatively cool. The ceiling of the room was intensely white and appeared to be glowing. No signs of failure.

Zero + 45: Temperature still between 843° C and 987° C. The latter being the measurement at No. 3, thermocouple. Most smoke percolation at the first floor front room was between the chimney breast and the door. Smoke percolation also quite heavy around the base of the wainscoting panelling on the wall between No. 12 and No. 11 Chatham Row. Inspection afterwards showed that this smoke had entered the hollow partition wall around the door at ground floor level and had then risen into the void between the ceiling and floor above which was situated over the passage. The room was now becoming smoke logged. The half hour fire-resisting door was starting to warp at the top allowing smoke to pass more freely. The whole of the ceiling still apparently sound. None of the stopped in cracks had broken down. Cornices still in position. Fire still extremely hot but showing signs of being past its peak.

Zero + 45½: Temperature reading No. 1 thermocouple -765° C, a fall of 175° C. Ceiling still apparently sound.

### ***Extinguishing***

Zero + 46: Extinguishing of the fire commenced using 1" hose reel jet. This was augmented by 1/2 " jet. Steam produced, caused rapid cooling of the surface of the ceiling, and the first cracks appeared. These seemed to be in positions where original cracks had been repaired. Approximately 8 sq. ft. of ceiling then fell away and access of air to the ceiling void and exposed laths resulted in some of the laths, already conditioned by conducted heat, catching on fire. Extinguishment was carried out without undue disturbance of tested material, but water hitting the door surface caused the asbestos fibre board surface to split and curl. This same effect was produced where water hit panels of asbestos fibreboard which had been fitted over recesses which were suspected of not being up to half hour fire-resisting standards. The plasterboard covering the partition wall was damaged considerably during extinguishing because fire had entered the hollow partition and water had to be directed through into the hollows at various points causing spalling of the plasterboard and plaster of the partition itself.

### ***Observations during the test.***

The ceiling under test registered the passage of flame for the whole of the test period of 45 minutes. There was no sign of cracking, distortion or material breakdown during the whole of the test other than a brief period, in the early stages, when some initial flaking occurred on some parts of the surface of the ceiling eg distemper.

The fire had reached its peak at zero + 42½ and then the temperature curve had started to descend. At the peak period it was noted that the fuel cribs in the test room were almost exhausted having burned down to within 6" of the floor. It is, therefore, reasonable to assume that a continual drop in recorded temperature could have been expected had the fire been allowed to burn after zero + 46.

The treatment of the inner surface of the door and partition, between the ground floor passage and the Test room, to afford half hour fire-resistance was completely successful in spite of the fact that the plasterboard additional covering had not been skimmed with plaster to seal the joints. The penetration of the fire which did occur into the hollows of the laths and plaster partition over the door, was not through the protected surface but by way of the architrave over and to the side of the door opening. The fire thus by-passed the protection. Even so this must have occurred at the very late stages of the test as no flame was noticed on the floor above until extinguishing the fire in the test room well under way. It was then necessary to remove some of the lath and plaster surface of the partition in order to extinguish the hot spot.

At no time during the whole of the test was the escape route from upper floors so affected by smoke or heat that it could not be used. The separation afforded by the half hour fire-resisting partition wall and door was adequate for the whole 45 minute period of the test. Although some smoke percolation occurred past the ends of floorboards in the front room at first floor level, no flame penetrated at any time through that area of the floor over the test room.

Considerable pressures were applied by hot gases both to the ceiling and the walls. This was most evident at zero + 32½ when smoke issued in the form of a horizontal jet from the Yale lock on the door, and at zero + 40 when the glass of the upper sash window at the side of the test room blew out with considerable force.

The fire followed the usual pattern which can be expected when a fire occurs in a room in domestic property in which there is a normal fire load, the fire has some ventilation and is not disturbed for some period by opening doors or breaking windows. In the case of this test there was an early rise in temperature, brought about by the paraffin

soaked pyre burning fiercely and then as the cribs became involved and oxygen in the atmosphere of the room became rare, a sluggish period followed.

This occurred during the first ten minutes after which, by increasing the flow of air over the window sill of the front window, more rapid combustion took place. A gradual rise in temperature for a further 15 minutes when again some smoke logging developed and temperatures dropped. This was at the time that sash cords burnt through, which were holding up the bottom section of the front window. When the top window section was dropped the new supply of air stimulated the fire and a general very rapid rise in temperature resulted culminating in the peak of 1000°C. being reached at zero + 41½. Fuel was at this time becoming exhausted and in the next 2 minutes a decline in temperature commenced. The heat of the test fire was sufficient to cause almost all of the 11/4" plaster skimming on the inside of the front wall of the room to leave the stonework.

#### ***Observations after the Test***

The ceiling under test withstood the application of heat from a normal fire load underneath for the whole of the 45 minute test period without any visible signs of deterioration. No cracks were apparent, and after the initial flaking of surface decorative materials no further spalling or flaking was noted. The plaster cornice around the room also remained intact, other than in one short section immediately above the front window where it cracked and dropped slightly.

When water was applied to the fire in the remains of the cribs, the steam created caused, after approximately half-minute, sudden contraction of the ceiling and cracks opened up at points where previously cracks had been undercut and sealed with plaster during the preparation period. A few moments later approximately 8 sq. ft. of ceiling plaster fell to the floor. It was noticed that although some of the laths had carbonised due to heat conducted through the plaster they were not on fire, but as soon as they were exposed small flames appeared on the carbonised surfaces. These had to be extinguished to prevent further damage and during the extinguishing, further collapses of ceiling plaster took place.

With greater exposure of the underside of the floor and the joists it was most apparent that the floorboards were undamaged and the lower edge of only some of the joists, although charred in places, the charring was not of sufficient depth to measure with any accuracy. A considerable portion of the laths still remained undamaged.

A composition gas pipe passing through the void between the floor and the ceiling was undamaged. In addition, an accumulation of small twigs and fibrous material, possibly collected by mice and in itself readily combustible, found in a void between floor joists, resting immediately on top of the laths supporting the plaster ceiling, was not damaged in any way by fire or heat.

The plaster decorative cornice around the room was intact after the fire on three sides of the room. In the case of the fourth side, it was only the section immediately above the front window that some signs of damage occurred. At this point the cornice cracked vertically and a section approximately 18" long dropped slightly but did not become dislodged.

Although during the whole of the 45 minutes covered by the test, some smoke did percolate into the passage and also into the first floor room above the test room, at no time was the movement of people prevented along the passage, up the staircase or around the rooms.

The fire, during the period of the test, did not penetrate the ceiling and floor structure to the room above. At zero + 58, after extinguishing had commenced, a small flame was noticed at a crack between floorboards which had been covered with a strip of standard hardboard. The hardboard was burning and flame started to travel rapidly over its surface. When the source of the flame was investigated it was found that the fire from the test room had penetrated the architrave of the door at a point over the top of the half hour fire-resisting door, and had then by-passed the ceiling of the test room by travelling up the hollow of the partition wall. This was also the route by which most smoke percolation occurred into the first floor room.

The partition and door which were converted to half hour fire-resisting standards stood up to the test remarkably well. Some percolation of smoke and heat by-passed the test ceiling by way of the hollow partition. This, however, would possibly not have occurred, had the partition been skimmed with plaster and cracks filled in accordance with normal procedure.

The door reacted extremely well. It was only at zero + 45 that the door began to warp and allow smoke to escape in increasing volume. When the remains of the asbestos fibreboard cladding was removed from the inner face of the door including the panel infills, some of the original green paint was still intact under the infills.

### ***Conclusions***

The fire resistance of a normal ceiling in a middle class Georgian house is such that it is capable of preventing fire from spreading to the floor above for at least a 30 minute period.

It is normal for vertical separation between rooms and exit routes to afford half hour fire-resistance. To be consistent, therefore, a ceiling between such rooms and rooms above should also be half hour fire-resisting and a fire resistance of one hour plus, as required in some circumstances by the building Regulations 1965, between floors, would appear to be excessive. It would appear that the tests applied under furnace conditions to ceiling and partitions, to assess fire resistance, is too stringent and does not simulate conditions as they really occur in a fire in a building.

Under the circumstances it would appear that the fire resistance of a sound Georgian ceiling does not require to be upgraded to one hour. Such an upgrading could result in the fire below the ceiling breaking out horizontally into the exit route and preventing escape by that route, before any warning of a fire is transmitted to persons living above.

### ***Acknowledgements***

Mr. A. E. Loveridge (then Chief Building Inspector, City of Bath)

The Chief Fire Officer, Bath Fire Brigade.

The Principal, Bath Technical College.

# Edinburgh: 3 Fire Protection Schemes

Photo Essay: Per Rohlen

## The photo essay considers:

• the installation and details of fire detection and suppression schemes in:

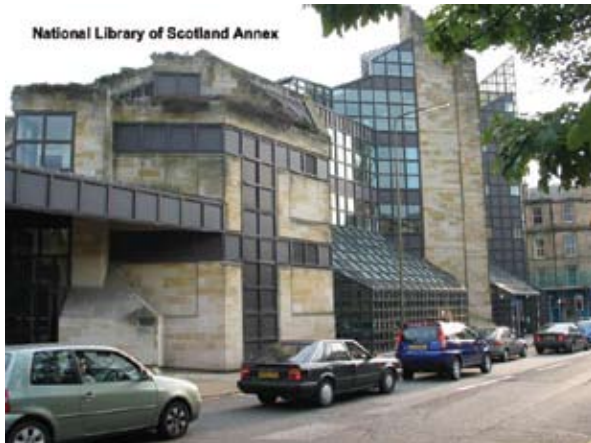
- The National Library of Scotland
- East Register house
- Newhalles House



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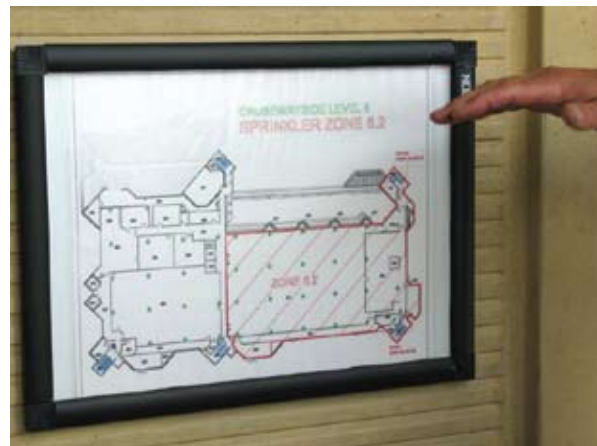
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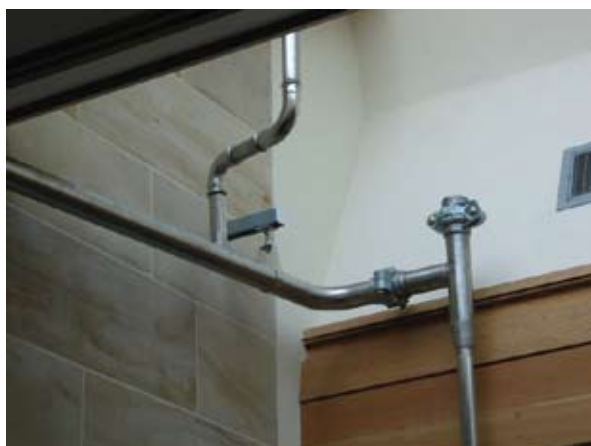
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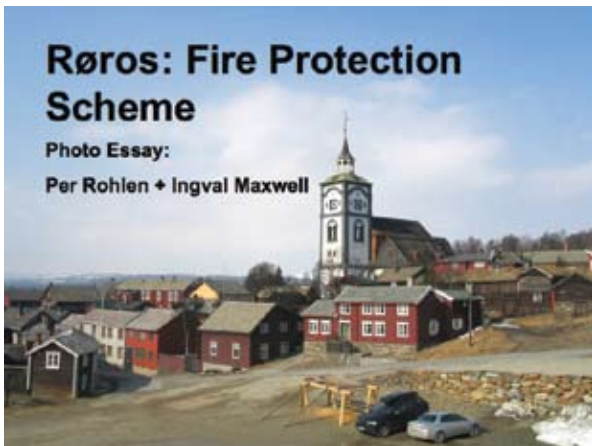
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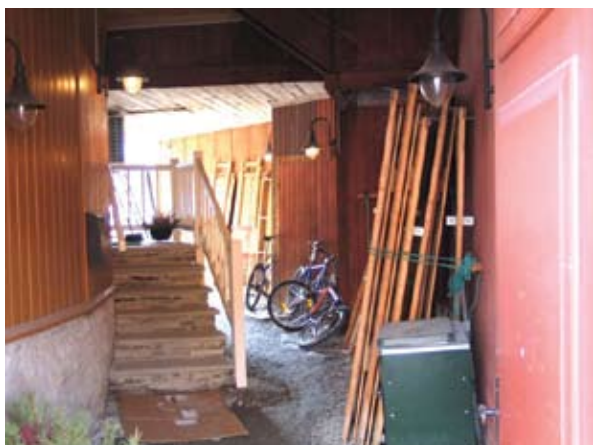
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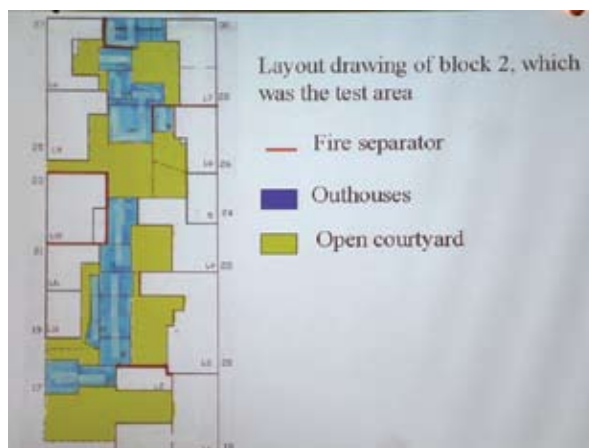


Layout photo of block 1

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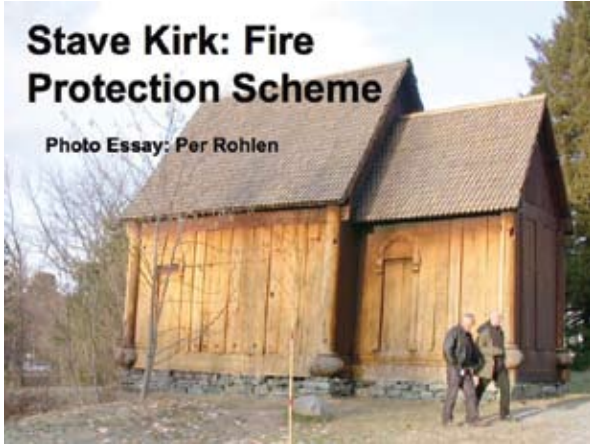


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# Stave Kirk: Fire Protection Scheme

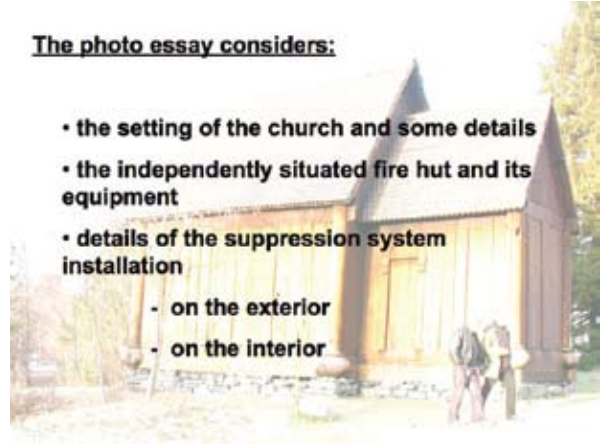
Photo Essay: Per Rohlen



1

## The photo essay considers:

- the setting of the church and some details
- the independently situated fire hut and its equipment
- details of the suppression system installation
  - on the exterior
  - on the interior



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# ANNEX 3

## COST ACTION C17 PROMOTIONAL FLYER

INGVAL MAXWELL

**European Science Foundation: COST Action C17**  
**Built Heritage: Fire Loss to Historic Buildings**

**Aim of the Action**

The intention of the Action is to address the significant physical and cultural loss of Europe's built heritage to the damaging effects of fire.

This will be achieved in a multi-disciplinary, multi-national manner, involving 19 countries, through the collaboration and integration of a variety of related projects. The Action will also build upon current research initiatives and recently published material. The 4 year programme was initiated in December 2002

The outcomes will be the promotion of data, methodologies, and management systems. This will assist a wide range of end-users balance fire engineering needs with conservation requirements in the future preservation of the European patrimony.

Web site: [www.heritagefire.org](http://www.heritagefire.org)



**Participating Countries**

- Austria
- Belgium
- Bulgaria
- Denmark
- Finland
- France
- Hungary
- Israel
- Italy
- Macedonia
- Netherlands
- Norway
- Poland
- Slovenia
- Spain
- Sweden
- Switzerland
- Turkey
- United Kingdom



Trondheim, Norway following the December 2002 fire.

**Each day one historic building in the EU is damaged by fire**

**Operational Framework**

The Action will consider the:

- Vulnerability of historic buildings to fire
- Risk assessment methodologies
- Protection of fabric and content
- Prevention of fire and fire spread
- Detection and suppression requirements
- Training and management of staff
- Insurance considerations



Water sprinkler installation, Schonbrunn Palace, Vienna



**Working Group Activities**

- 1 Data, Loss Statistics and Evaluating Risks**
  - Data and Fabric analysis
  - Qualitative Risk analysis
- 2 Available and Developing Technology**
  - Available technology (Fabric and materials)
  - State-of-the-art solutions
- 3 Cultural and Financial Value**
  - Financial data and risk
  - Loss recovery
- 4 Property Management Strategies**
  - Support for property managers
  - Staff training

Photos: Ingval Maxwell

Ingval Maxwell OBE, Chairman COST Action C17: April 2005

## ANNEX 4

### COST ACTION C17 MEMBERS CO-ORDINATES



#### COST Action C17

#### “Built Heritage: Fire Loss to Historic Buildings”

#### Management Committee and Working Group Members

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Born in Krems/Donau ( Lower Austria)

Education: Technical University Vienna – Civil Engineering, Diploma 1976,  
doctoral thesis on “*Indoor Climate Monitoring and Control in Historic Buildings*”, 1999  
Since 1992: Technical director of Schloß Schönbrunn Kultur- und BetriebsgesmbH.  
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Prof. André De Naeyer has been teaching architectural heritage preservation at the Hogeschool Antwerpen since 1975 and is the scientific coordinator of the interdisciplinary postgraduate course 'Preservation of Monuments and Sites' at the same institution. He also teaches 'Architectural Preservation', on part time basis, at University Gent (Fac of Engineering). He is full professor, teaching and researching in the field of:

- 'Theory and history of architectural and urban preservation'
- 'Conservation of traditional building materials and historic structures'
- 'Restoration and conservation techniques'
- 'Project and Design in restoration and conservation'.

He has more than 50 scientific publications to his name, and was invited professor at more than 20 European and American universities. He also has a long experience in private practice for preservation projects (more than 65 listed buildings, including Our Ladies Cathedral of Antwerp and many other historic churches and houses.) Within his practice, he has been confronted with different aspects of conservation and restoration of monuments and sites, including "*fire safety and protection*" aspects. He was promoter of three diploma theses in civil engineering on fire-control aspects in historic buildings, and is co promoting a doctoral thesis on "*Fire safety of wooden roof structures in heritage buildings.*" His research includes all technical aspects in preservation of traditional building materials, constructions and skills.

He is a member of different national and international bodies in the field of architectural preservation (ie ICOMOS / Arbeitskreis Theorie und Lehre der Denkmalpflege, München / Wissenschaftlich-Technischer Arbeitsgemeinschaft für Bauwerkserhaltung, Zürich / Koninklijke Commissie voor Monumenten en Landschappen, Antwerpen ).

He participated in many national and international research projects and he is/was active in several European Union programs as EUROCARE, Raphael, Culture 2000, and was also the Belgian delegate and Management Committee member of the E.U. COST Action C 5 "Urban Heritage – Building Maintenance" 1996-2000. Today, he is MC member and Belgian delegate in E.U. COST Action C 16 "Improving urban building envelop". He also is contributing within the E.U. FP5 Thematic Network FIRE TECH:"Fire Risk Evaluation to European Cultural Heritage" (Contract EVK4\_CT-2001-20006).

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Assoc. Prof. Petar Hristov, Ph. D., Dean of Scientific and Educational Complex “Legal Studies and Public Security” at Varna Free University since 2003. He is an associate professor in Risk and Safety Theories and International and National Security. In his professional experience he has specialization courses at Portucalense University Infante D. Henrique – Porto, Moscow Fire Safety Academy, Technical College at Kojaeli University – Turkey. He is a Corresponding member of World Academy of Sciences for Complex Security. He has published several research papers, articles and research reports at international forums and conferences in the field of globalization and security, risk assessment and safety theories. He has experience in the coordination of projects of the EC. Foreign languages: Russian, English.

**DENMARK** Will not be attending meetings

**Mr Kristian HERTZ**

(Intimated difficulties in attending meetings October 2004: offered to include as corresponding member 12 November 2004)

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Kristian Hertz participated in the forerunner project CIB W14 on Mount Athos many years ago, and his previous work has included studies of Roman and Phoenician concrete structures and their fire resistance.

Following recent Departmental changes in research strategy, in his duties as a Deputy Head of Department, he spends most of his time on research into fire exposed concrete structures, where he has developed a set of design methods for any structure of any concrete at any time of any fire.

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Sakari Mentu joined the National Board of Antiquities in 1990 as a restoration architect, since May 2003 as a temporary keeper. He has been working mainly on restoration of castles, fortifications and stone churches. Mr Mentu has also been involved in international co-operation projects.

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Martti.jokinen@nba.fi

Martti Jokinen joined National Board of Antiquities 1986 as a restoration architect. He started to work on wooden towns, industrial heritage and modern architecture. Currently he is responsible as a senior adviser for restoration of churches in Finland as well as for Finnish World Heritage Sites Verla Paper Mill and Petajavesi Church.

## FRANCE



**Mr Michel SCHAAAL** (Informed of death 14 May 2004)  
Pavillon des Jambettes  
Parc du Château de Versailles  
78000 Versailles  
FRANCE



## FRANCE



### **Monsieur Simon SINGER**

(MC position confirmed by National COST Co-ordinator: 7 March 2005)

Direction de la prévention et de la protection

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32 quai des Celestins

75004 PARIS

France

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Ingénieur des travaux de Paris responsable du bureau de l'ingénierie sécuritaire  
Direction de la prévention et de la protection.

## HUNGARY



### **Dr. Monika Hajpal**

(Informed of membership by COST Office 16 February 2005)

Laboratory of Building Physics

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No CV information available

## HUNGARY



### **Dr. Ákos TÖRÖK** (Nominated 13 May 2005)

Budapest University of Technology and Economics

Department of Construction Materials and Engineering Geology

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torokakos@mail.bme.hu

Ákos Török is Assistant Professor and head of Engineering Geology Division at the Budapest University of Technology and Economics, Hungary. He received an MSc degree in Geology, an MSc degree in Environmental Engineering (International Technological University, UNESCO, Budapest-Paris) and Ph.D. in Geology (Eötvös Loránd University, Budapest). He teaches courses and lectures on monument conservation, stone diagnostics, geology, engineering geology and environmental geology.

His research interest includes monumental stone decay, effect of air pollution on stone and fire related deterioration, mechanical testing of stones, weathering simulation tests, mineralogy, petrology and carbonate rock sedimentology. Project co-ordinator of international projects and he is a member of ICOMOS, IAEG, ISRM, IAS. He published 12 papers in books, 25 reviewed papers in international journals and 17 papers in conference proceedings.

## ISRAEL



**Dr Irena WASSERMAN**  
 (Membership Approved at MC Vienna: 6 Dec 2003)  
 National Building Research Institute  
 The Technion  
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 Israel  
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 wassermn@technion.ac.il

Dr. Irena Wasserman is a specialist on long-term durability of building materials exposed to the different aggressive environments: fire, salinity, acidity, etc. Since 1998, she is deeply involved in the research on historic building fabrics and technologies. Dr. Wasserman came to the Technion in 1990 from Kiev, Ukraine, to pursue her doctorate. After postdoctoral research at the Technical University of Munich, she returned to the Technion as a Research Fellow in 1997 at National Building Research Institute, where she also fills the function of Coordinator of the Knowledge Dissemination Unit. She is an active participant of conservation conferences across the world.

Dr. Wasserman was invited to assess the durability of the Historical Masonry Sea Wall in the Old City of Acre, declared a World Heritage Site in 2001, and to evaluate the reasons of a bulge appearance on the Temple Mount's Southern Wall in Jerusalem in 2002. Dr. Wasserman is carrying out the studies on the durability of the modern building materials and their compatibility with the historic fabrics.

## ITALY



**Mr Stefano MARSELLA** (Vice- Chairman MC)  
 Ministero Interno  
 Dipartimento Vigili del Fuoco  
 Direzione centrale risorse logistiche  
 Area VIII  
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Stefano Marsella, civil engineer, joined the Italian National Fire Services Department in 1988. After three years spent in Venice, working in the rescue and fire prevention services, he has worked in the central offices of the Department, involved in the prescriptive based rules drafting process.

He is author of publications about fire risks in building sites, safety of people with disabilities and protection of cultural heritage. He has organized meetings and seminars about performance based approach, safety of disabled people and protection of cultural heritage. Mr Marsella chairs the national working group "safety of disabled people" where are represented the major relevant associations and some research and university centres.

In 2003, he was promoted to the responsibility of the Fire services of the Arezzo Province.

## ITALY



### **Mr Vincenzo NUZZOLESE**

Polytechnic of Bari  
 Department of Architecture and Urban Planning  
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Vincenzo Nuzzolese is a Building engineer, Architect and Professor of Building Technology (Architettura Tecnica) at the Polytechnic of Bari. Previously, till 2000, co-ordinator of the activities and president of the Scientific Committee of the DAU-labs - Laboratories for Architecture and Urban Planning comprising: Computer Aided Design, Photogrammetry, Urban Planning, Models, Multimedia, Building Technology, Real Estate Market Observatory, is now scientific responsible of the activities of the Computer Aided Design laboratory (c/o DAU-Department of Architecture and Urban planning - Faculty of Engineering - Polytechnic of Bari - Italy).

Co-ordinator of research projects funded by the Italian National Council for Researches and Ministry of University and Scientific Research in the field of Computer Aided Architectural Design and Fire Safety in Buildings. Author of numerous monographs and papers presented at national and international Conferences on themes related to building technology, fire safety engineering, historical theatres and movie theatres. Author of the first manual on Fire Engineering published in Italy (titled: "Fire models for buildings").

Has spent study periods at M.I.T. (Massachusetts Institute of Technology - Cambridge, Mass.-USA), where he specialised in Computer Aided Architectural Design, and at NIST (National Institute of Standards and Technology - Gaithersburg - Md.-USA) where he developed experience on Fire Engineering techniques. His professional activity is mainly devoted to design, refurbishment and restoration of public premises, movie theatres and historical theatres. Is member of the study group formed by the Italian Ministry of the Interior to introduce Fire Safety Engineering techniques in the professional practice.

## MACEDONIA



### **Mrs Marideja PETROVA** (New member from 27 September 2004)

Head of "Lychnidos" Centre for Sustainable Value  
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As an Architect and Urban Planner Marideja Petrova is committed to Heritage protection in Ohrid, a World Heritage Site under the patronage of UNESCO. This place is a treasure of Historic Built Heritage and Cultural monuments with outstanding values of world significance, therefore the issue on "Built Heritage: Fire Loss to Historic Buildings" is of great importance.

## NETHERLANDS



### **Mr Jacques Akerboom**

(Membership Approved at MC Varna: 10-11 September 2004)

Monumentenwacht Noord-Brabant

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Jacques Akerboom is the managing director of Monumentenwacht Noord-Brabant and is also chairman of the National Management Board of Monumentenwacht Nederland.

He studied Public Administration in Tilburg. Prior to being appointed to his current position he worked as building conservation policy officer for the provincial authorities in Noord-Brabant.

He has published books and articles about cultural heritage and is editor-in-chief of Monumenten, the largest Dutch language circulation magazine on the subject. He also participates in many national and international organisations and working groups involved in the preventive conservation of cultural heritage. He is also a member of the secretariat of the working group for EU legislation and cultural heritage.

The Dutch Monumentenwacht was founded in 1973. The organisation's key objective is to prevent the decay of the cultural fabric through the implementation of preventive measures. Every year, more than 15,000 listed buildings in the Netherlands are inspected by professionals of the Monumentenwacht. For each inspection a detailed report is issued on the basis of which future maintenance of the historic building by the owner can be facilitated. During these inspections, small-scale repair work might also be carried out by inspectors. Larger-scale maintenance however, is only carried out by building contractors.

Monumentenwacht has since developed into the largest organisation of its kind in the Netherlands. A great deal of international interest has been shown in the concept over the last few years. In June 2004 Monumentenwacht received the European Nostra / European Union Award for cultural heritage.

## NORWAY



### **Mr Sjur HELSETH**

Directorate for Cultural Heritage

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Sjur Helseth was educated as an architect. After some years in an architect office, primarily working with restoring of industrial heritage, he joined Riksantikvaren in 1992. Riksantikvaren, the Norwegian Directorate of Cultural Heritage, is the governmental central office for tangible cultural heritage. At the start he was working with building-technical issues, but fire protection soon became his most important field.

During some years there was a huge activity in this field, funded by the government after a lot of arson attacks on churches. Sjur Helseth was responsible for research, development and testing of innovative technology on fire protection of cultural heritage, as well as installing fire protection in historic buildings.

Appointed Director of Conservation Department in 1996. After a reorganisation in 1999 his Department has the responsibility for all technical issues, including protection and conservation of all kinds of heritage, research and development including statistics, databases and standardisation, as well as international co-operation. He is also a member of the advisory Board for fire protection and security in museums.

## NORWAY



**Terje Olav AUSTERHEIM** (New member from 5 November 2004)  
(Formally approved by National COST Co-ordinator; MC position confirmed: 10 Feb 2005)

Direktoratet for samfunnsikkerhet og beredskap  
(Directorate for Civil Protection and Emergency Planning)

(No Address details)

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Profession: Director, Norwegian Directorate for Civil Protection and  
Emergency Planning

Education: Master of Science in Industrial Chemistry  
Business Economist

## NORWAY



**Mr Harald IBENHOLT** (Resigned 5 November 2004)

(Resignation formally endorsed by National COST Co-ordinator 10 Feb 2005)

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## POLAND



**Mr Marian ORNAT** (Official delegate on COST Council Website: 17 December 2004)

(Formally approved by National COST Co-ordinator; MC position confirmed: 8 Feb 2005)

Director

The Institute of Textile Materials Engineering

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Managing director of The Institute of Textile Materials Engineering ( Instytut Inżynierii Materiałów Włókienniczych) in Lodz (Poland).

### Education and Qualifications:

- Master of Science in Textile Engineering with trade specialization in mechanical processing of fibre, awarded by Technical University of Łódź in 1979.
- Doctor's thesis in progress at the Technical University of Łódź in the area of research into the structures of textile barrier products (1999).

### Areas of research interest:

- barrier textile materials for special uses, with special emphasis laid on fabrics for clean area,
- barrier and filter fabrics for use in medicine
- textile layer composites
- special technical and decorative textile fabrics among others: non-flammable items for interior of historical buildings

**SLOVENIA**

**Mr Andrej REBEC**  
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Andrej Rebec, Ph.D. graduated and defended his doctoral thesis at the *Faculty of Civil and Geodetic Engineering at University of Ljubljana*. At the beginning of his professional work he joined a construction enterprise as construction engineer firstly for works on site and later as designer. Later he was invited on Research Institute as a research engineer in the field of fire protection particularly specialized for structural behavior of fire exposed constructions. He has been head of the *Department of Building Physics at the Slovenian National Building and Civil Engineering Institute (ZAG Ljubljana)* since 1995. The department includes Fire Laboratory, Laboratory for Thermal performance, Acoustics Laboratory and Section for Fire Engineering. His professional work is closely related to the Section for Fire Engineering, that is among other tasks concerned with studies of how to provide buildings with passive and active fire protection measures, as well as with the structural analysis of buildings in post-fire situations.

He participates in many national research projects; in the last ten years he was a coordinator and active researcher in more than ten of them. He wrote some scientific articles about structural behavior of the fire exposed constructions. Within his practice he has been confronted with different aspects of an over-all fire protection strategy of different kinds of buildings. He is a member of different national and international bodies in the field of civil engineering and fire protection: *Certified Engineer* in the *Slovenian Chamber of Engineers* for the field of structural engineering and fire protection, a member of *Slovenian National Fire Protection Organization* and a member of *NFPA*.

**SLOVENIA**

**Dr Peter KRECIC**  
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Director of the Architectural Museum of Ljubljana from 1978; Curator of Industrial Design from 1973-78 on joining museum staff.

Fuzine Castle houses the administration and secretarial offices, documentation library, and the curatorial departments for old Slovenian architecture and town planning; industrial design; visual communications and electronic media design; photography and provides temporary storage facilities of museum material, along with a permanent exhibition of the work of Jozse Plecnik, architect, 1872-1957.

**SPAIN**



**Ms Mariana LLINARES CERVERA**

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Started working at the Eduardo Torroja Research Institute as an Architect in 2001 on the new Spanish Building Code. Since then she takes part in the achievement of the Fire Safety document of this Code. She started her PhD on Fire Risk Evaluation of historic buildings in October 2003.

**SPAIN**



**Mr Carlos VILLAGRA FERNANDEZ** (Deputy Approved at MC Varna: 10-11 September 2004)

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**SPAIN**

**Mr Luis VEGA CATALAN**

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(To be deputised for by Carlos Villegra Fernandez)

No CV information available

## SWEDEN



**Mrs Kerstin WESTERLUND BJURSTRÖM** (Chairman WG 3)

National Property Board Sweden  
(Statens fastighetsverk)  
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s-11328 Stockholm  
Mobile : +46 70 512 48 26  
kerstin-Westerlund Bjurström @telia.com

Senior Advisor in the field of cultural heritage and property management issues, National Property Board in Sweden. To protect the heritage from fire is a natural part of that.

### **Previous work:**

National Property Board in Sweden, Statens fastighetsverk as:

-Head of Cultural Heritage Issues 1998- 2003

-Chief property manager for the Royal Palaces and the Monuments 1993-98

The National Board of Public Building as:

-Chief property manager 1988-93

-Project manager for the building of the Museum for the Warship Vasa "The Vasa museum", the university library and students house at Stockholm University in Frescati etc 1977-88

-Chief project manager with special responsibility for planning and constructions for The Swedish Post Office Administration, The Swedish Tele communications Administration and The Swedish Board of Civil Aviation 1982-88

BJR arkitekter AB, 1963- 77 Architects work:

-Childrens Hospital and Block for surgery within the Akademic Hospital in Upsala

-Care center in Mölndal etc.

### **Special commissions:**

S.A.R. Swedish Architects Association president 1989-92

National Board of Art, vice president 1980- 93

Royal University of Art in Stockholm, member of the executive board 1990- vice president 1995-98

National Heritage Board in Sweden, member of the executive board 1993-99

The Society of St Erik vice president 1995-2003, president 2003-

The Council for Protection of the Beauty of Stockholm 1998-

ICOMOS Sveden, member of the board 1999-

The Kings Council for Property and Building Issues 2002-2003



## SWEDEN



### Mr Jan HOLMBERG

Royal Institute of Technology, Building Sciences  
 Department of building services Engineering  
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Jan G Holmberg, born 1935 in Stockholm. Eur.Eng. Chartered Engineer.

Education: B.Sc in Mechanical Engineering and Lic.Eng. in Building Services Engineering, Royal Institute of Technology, Stockholm.

Employment: 29 years at Theorells Consulting Engineers, Stockholm, the last 15 years as Chief Engineer. 5 years at K-Konsult as Engineering Director. Since 1992 MD at Haftcourt Ltd. London and Stockholm, specialists in Environment Control in Historic Houses and Museums.

Member of. CIBSE, London. ASHRAE, Atlanta. IIC, London. ICOM, Paris. ICOM CC and ICAMT (board member 1988-1994). Swedish Association of Engineers and Architects, Stockholm. Stockholm Building Association (board member 1973-1976). The Swedish Society of Heating and Air Conditioning Engineers (board member 1988-1991).

Some publications: Translation into Swedish of “The Museum Environment” by Garry Thomson, Butterworth 1992. “Light and Climate in Swedish Museums”, The Swedish Museum Association. “Tidens Tand”, handbook for preventive conservation, 1999, The National Heritage Board, Stockholm. “The Swedish Museum Storage Survey 1995-1997”, ICOM 11th Triennial Meeting in Edinburgh 1996. Roomvent Conference 1998 in Stockholm, “Air Change Rate Measurements at Schloss Schönbrunn, Vienna”. The Royal Danish Academy of Fine Arts, School of Conservation Silver Jubilee 1998 in Copenhagen, “The Museum Environment by Garry Thomson, still valid?”. The 6th Indoor Air Quality Meeting, Padoa 2004, “Monitoring of Air Infiltration in Museums”. IIC-Nordic Group, meeting in Sorö, Denmark 2004, “Development of Museum Storages in Sweden”

## SWITZERLAND



### Dr Alfred MOSER

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Alfred Moser is a Staff Scientist at the Buildings Technology Division of the Department of Architecture at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland. He directs the *Air & Climate* Group that engages in research in the field of numerical prediction of building airflow, heat transfer, and infrared radiation exchange. The group applies Computational Fluid Dynamics to indoor climate, sustainable housing, and fire safety in buildings.

Alfred Moser was born in Schaffhausen, Switzerland, and received his mechanical engineering diploma in 1966 from the ETH Zurich.

During 10 years of industry employment, he worked 6 years in the US and 4 years in Switzerland. In the research and development departments of the McDonnell Douglas Corporation in St. Louis, MO, and Long Beach, CA, USA,

he conducted wind tunnel experiments of high-lift devices on wing sections and developed numerical programs to analyze turbulent boundary layers on wings. Later, in the Gas Turbine section of Sulzer Corp. in Winterthur, Switzerland, he performed numerical simulation of transonic flow through turbine and compressor bladings.

In 1979, he returned to the Aerodynamics Department of the ETH. He obtained the degree of Doctor of Technical Sciences in Aerodynamics in 1984. He joined the Energy Systems Laboratory of the ETH as Chief Researcher thereafter.

He was international project manager (Operating Agent) of Annex 26, *Energy-Efficient Ventilation of Large Enclosures*, of the International Energy Agency, IEA, *Energy Conservation in Buildings and Community Systems* Program. Before, he directed Annex 20, of the same program. He participates in the COST Action C17, Built Heritage - Fire Loss to Historic Buildings, and before in the COST Action G3 on Industrial Ventilation. He is the national Swiss Coordinator in both Actions.

Alfred Moser is member of ASHRAE and AIAA, he is in the Advisory Committee of a number of international conferences. Together with Air Flow Consulting AG (ETH Spin-Off Company) and ANSYS Germany GmbH he organizes annual seminars on “CFD Flow analysis for industrial applications.”

## TURKEY



**Mr Emin PEHLIVAN**

(Membership Approved at MC Varna: 10-11 September 2004)

Director

Fire & Rescue Department

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### Education

Kocaeli University, Machine Department

Anadolu University, Local Governments Faculty

Varna Chernorizets Hrabar University, Engineer Faculty, Fire Safety Department

### Professional Seminars & Workshops

- 1994 TMMOB–Chamber of Chemical Engineers –Ankara Branch – “Fire and Risk”  
Hannover, Germany “Establishment and Management of Fire Brigade Organizations”
- 1995 Oklahoma University, USA “Fight with Fire”
- 1996 Manchester, United Kingdom “Fire Economy”
- 1997 Amsterdam, Holland “Management and Organisation at Disasters”
- 1998 Budapest, Hungary “Fire Safety and Risk Analysis at Buildings and Industrial Institutions”
- 1999 Izmit, Marmara Earthquake Experience with living
- 2000 St. Gallen, Swiss Communication and Organisation at the Emergency Situation”  
Ankara, Turkey Member of the Commission of the State Planning Organisation on the Disaster
- 2001 Istanbul, Turkey “Reconstruction of new model of Turkish Fire Brigade System”
- 2002 Izmit, Turkey “Disaster Management and Training”  
Izmit, Turkey Union of Fire Brigade of France – “First Aid and Intervention to Traffic Accident”  
Izmit, Turkey Union of Fire Brigade of France “Intervention Technics Training to Fire”  
Izmit, Turkey Union of Fire Brigade of France “Searching and Rescue Training”
- 2003 Istanbul, Marmara University “Local Administrator’s Role related to reducing of Fire Risk”  
Izmit, Turkey “Fire Caution System”
- 2004 Kircaali, Bulgaria “Disaster Training Works”  
Istanbul, Bosphorus University “Emergency Management”  
Antalya, Turkey “Intervention Technics to Forest Fire”  
Istanbul, Bilgi University “NGO’s participate to Disaster Management”

### Professional Experience

1992-1994 Izmit Municipality, Manager of Fire Brigade Department  
1996- Kocaeli University, Teacher on the “Fire Brigade and Fire Safety”  
1994-2004 Izmit Metropolitan Municipality, Head of the Fire Brigade Department  
2004- Kocaeli Metropolitan Municipality, Head of the Fire Brigade Department

### Professional Membership

Chairman of the Kocaeli Fireman Union, Izmit  
General Secretary of the Turkish Fireman Union, Istanbul  
Member of the Turkish Fire Prevention Foundation (TUYAK), Istanbul  
Chairman of Foundation of Turkish Emergency, Rescue, Fire and Education (TAYEV), Ankara  
Member of Union of International Fire Chiefs, USA  
Member of International Fire Prevention Technical Committee, Swiss  
Member of Board of Directors of Balkan Fire Sports Federation, Bulgaria

### UNITED KINGDOM



**Mr Ingval MAXWELL OBE** (Chairman MC and WG 1)  
Historic Scotland  
Longmore House, Salisbury Place  
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Ingval Maxwell joined Historic Scotland’s predecessor Department (Ministry of Public Buildings and Works) as an Architect in 1969. Appointed Director of Technical Conservation, Research and Education in 1993, he has since initiated, and arranged publication of a wide variety of technical conservation building research projects, including topics on fire in historic buildings.

His membership of professional bodies includes Conservation Committees, Accreditation Panels, the ICOMOS UK Executive (from 2000-2006) and ICOMOS International Scientific Committee on Stone. He has created a number of conservation networks in Scotland, including the Scottish Historic Buildings National Fire Database, and is Convener of the Scottish Historic Buildings Fire Liaison Group. He represented the UK on the European Commission COST Action C5 programme “Urban Heritage, Building Maintenance” and is Chairman of the European Science Foundation’s COST Action C17 “Fire Loss to Historic Buildings”.

He was awarded an OBE in the 2003 Birthday Honours List for his work in Scottish building conservation.

## UNITED KINGDOM



**Mr Stewart KIDD** (Chairman WG 2)  
Loss Prevention Consultancy Ltd  
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Stewart Kidd is a loss prevention specialist with more than 30 years international experience in the application of modern risk management techniques in the protection of people and property. He has been involved in the protection of historic buildings and cultural resources since 1989.

He is a former Director of the UK's Fire Protection Association and was also Director General of the Home Office/ Association of British Insurers-funded Arson Prevention Bureau. He has a flourishing practice as a fire and security consultant, lecturer, author and expert witness, His client list includes many heritage organisations and privately owned properties in Europe.

Stewart is the author of five books: A Dictionary of Industrial Security; Fire Safety in Hotels- Recommendations for Europe, An Introduction to Physical Security, Fire Risk Improvement in Historic Buildings, and the forthcoming Fire Safety Management in Historic Buildings. He also edited the FPA's book Heritage Under Fire. He sits on a number of national and international standards committees including the NFPA's Cultural Resources Committee and is one of two UK representatives (and the chair of a working group) to the EC COST C17 Action. He was responsible for drafting the fire protection portions of a number of British and International Standards including those covering the maintenance of historic buildings and the protection of archives.

Stewart has a Master of Arts degree from the University of Aberdeen and a Master of Science degree from the University of Leicester and is a fellow of the Institution of Fire Engineers, a Fellow of the Institute of Fire Safety Managers, a Fellow of the Security Institute and is also a US Board-certified Protection Professional (CPP). In 2003 he was made elected a Fellow of the Society of Antiquaries of Scotland.

He is Past President of the Institute of Fire Safety Managers, a former Governor of the Institute of Risk Management, a Director of the Fire Industry Confederation, a Director of the Security Institute and its Vice Chairman.

**COST ESF SECRETARIAT    Until April 2004**



**Ilias Samaras**

Science Officer for COST Transport & COST Urban Civil Engineering  
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**COST ESF SECRETARIAT    From April 2004**



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**COST ESF SECRETARIAT**



**Marcus ZISENIS (From 16 May 2006)**

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**COST ESF SECRETARIAT**



**Ms. Isabel Silva BALLESTEROS**

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**TC Monitor    Until 17 February 2006**



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**TC Monitor    From 17 February 2006**



**Professor František WALD** (From 17 February 2006)  
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## Working Group 1 Members

### AUSTRIA



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### BULGARIA



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### BULGARIA



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Assist. Prof. Galina Mileva, M Sc. in Economics (Tourism) at Economic University – Varna – 1997. She works as an assistant in Scientific and Educational Complex “Legal Studies and Public Security” at Varna Free University since 1999. She is an assistant in Information and Information analysis in the sphere of public security. She has published several research papers, articles and research reports at international forums and conferences in the field of globalization and information society, information security and information analysis and risk assessment.

She has professional interests in built heritage protection, economical impacts of built heritage, property management and alternative tourism. She is working on doctoral thesis, which is focused on some organization and management aspects of built heritage protection system. She has experience in the coordination of projects of the EC. Foreign languages: English, Russian.

## FINLAND



**Mr Kalle REIVILA** (New member from 17 April 2004)  
(Resigned from Action 28 December 2004)  
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Kalle Reivila (Master of Social Sciences in Economics) has worked for Finland's National Board of Antiquities as a researcher since February 2004. Before this he has done statistical study for the Board and worked as an intern in Permanent Delegation of Finland to the OECD in Paris. He is currently studying economical impacts of built heritage and also actively involved in COST Action C17 "Fire Loss to Historic Buildings" issues, which deal with statistics and economic value (Working Groups 1 and 3).

## ITALY



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Einar Karlsen is an architect educated at The Birmingham School of Architecture England, 1975-78 and The Technical University in Trondheim, Norway 1979-81. He was working at various private architect offices in Oslo and Stockholm from 1981-1991. In the years 1992-1993 he was employed at the City Conservation Office in Oslo. Mr. Karlsen has been working at Riksantikvaren since 1993, since 1994 primarily with the fire protection of cultural heritage, particularly stave churches and historic wooden towns.

## NORWAY



**Terje Olav AUSTERHEIM** (New member from 6 August 2004)

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## POLAND



**Dr Eng. Dorota PUCHOWICZ**

(Membership Approved at MC Trondheim: 17 April 2004) (Resigned from Action April 2005)  
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The Institute of Textile Materials Engineering

May 2004: European Projects Coordinator in the Institute of Textile Materials Engineering

Nov.2000-April 2004: Staff member of the Laboratory of Fabric Flammability Testing

September 2000: Dr. Degree in Chemistry (Physical and Theoretical Chemistry)

1997- 2000: Technical University of Łódź PhD student in Photochemistry and Radiation Chemistry

Oct.1998-April 1999: Scholarship in the Department of Chemistry at University of Fribourg, Switzerland

1996: Masters Degree in Chemistry at Technical University of Łódź

## SLOVENIA



**Mrs Lenka MOLEK** (New member from 18 May 2004)

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Mrs Lenka Molek is an architect, who has worked as a conservator for the regional care and preservation of monuments as well as a researcher for the reconstruction of historic settlements and buildings at the Slovene Urban Planning Institute. Since 1988 she has been working for state organisations - at first for the National Cultural Heritage Protection Institute (ZVKD) and then, from 1994 onwards for the Ministry of Culture as an undersecretary.

She is active in the field of cultural heritage preservation, in particular protecting the heritage in the process of spatial planning and various construction works. She also covers the protection of heritage when spatial and development state planning acts are made. Furthermore, she takes part in creating regulations for spatial planning, construction and other similar works and making plans for protection and rescue for certain risks and data bases. In the international field she is involved in the technical co-operation programme of the Directory for Culture and Cultural Heritage at the European Council in behalf of Slovenia. As a Slovene representative she participates in many international programmes (INTERREG IN II B CADSES) preparing reports on applying conventions.

## SWEDEN



**Mr Erik EGARDT**

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Erik Egardt is a fire protection engineer stationed at the rescue services agency's (SRSA) main office in Karlstad. Fire protection in built heritage and fire detection and fire alarm systems are two of his specialities besides planning and coordination of the training and education of the Swedish rescue personnel in accident prevention and protection. He is presently involved in the coordination of two research projects. One in the field of quality control of performance based design of fire safety in buildings, and one in the field of lightning protection of sensitive structures with particular focus on lightning attachment. Erik graduated as a fire protection engineer at the university of Lund in December 1993, and from the SRSA's rescue services training course for fire protection engineers in December 1994. After the two graduations he served in the municipal fire brigade as a deputy fire chief and fire protection engineer for six years until he joined the SRSA in January 2001.

## SWITZERLAND

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**UNITED KINGDOM**



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**UNITED KINGDOM**



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Steve Emery joined Avon Fire Brigade in 1974 and spent fifteen years as an operational fire fighter. He then gained a wealth of experience as a Fire Safety Officer in Bath, a World Heritage City. He worked there for twelve years, developing innovative solutions to fire safety problems, which were sympathetic to the historic fabric.

In 2001 he was seconded to English Heritage as their Fire Safety Adviser. He provides advice on all matters concerning the protection of English Heritage's premises, staff, and other assets against damage caused by fire. He also provides advice to owners and property managers of Listed Buildings and Scheduled Monuments on all matters concerning the provision of fire safety measures in their buildings.'

He lectures at the Fire Services College and elsewhere on fire safety in historic buildings and counter disaster planning.

## Working Group 2 Members

### AUSTRIA



**Prof. Johannes LEGLER-DIESBACH** (New member from 19 May 2004)

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### BULGARIA



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**ITALY**



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**ITALY**



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Mirella Bindo is a Building engineer specialised in historical buildings restoration, fire safety in buildings and safety in buildings works. Her professional activity, developed at the “Studio di progettazione Bindo & Nuzzolese” in Bari, is mainly devoted to Fire Safety themes, movie theatres and historical buildings restoration. Has developed collaborations to research and didactic activities on Computer Aided Design and Building Restoration c/o the Department of Architecture and Urban planning - Faculty of Engineering - Polytechnic of Bari - Italy. Has spent study periods at NIST (National Institute of Standards and Technology - Gaithersburg - Md.-USA) where she developed experience on Fire Engineering techniques. As manager and technical director of OIKEMA s.r.l., a private firm, organises and is responsible for Courses on Fire safety in buildings, authorised by the Italian Ministry of the Interior and qualifying to practice professional activity in fire prevention design of buildings, and Safety in Buildings works, qualifying to practice as responsible of safety in building yards and within building design teams.

## ITALY



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Luca Nassi, civil engineer, joined the Italian National Fire Department in 1988. He spent eight years in Florence working in the rescue and fire prevention services. From 1998 he has been working in the fire department of Siena, having the responsibility of the provincial fire prevention office and following the restoration of many important heritage buildings in Siena, S. Gimignano, Pienza (UNESCO Sites).

He also worked for the central offices of the department, involved in several projects: developing training codes, introducing ISO 9000 in the fire department procedures, re-writing a new code for shopping malls. He is chairing a technical committee promoted by Santa Maria della Scala Foundation and the National Fire Department developing studies on the protection of cultural heritage and he is member of the ESF- Cost Action C17 “fire loss to historic Buildings”. He is a contract professor at the University of Siena, leading the course of “Sanitary and Environmental Engineering”.

## NORWAY



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**NORWAY**

**Mr Geir JENSEN** (New member from 6 August 2004)  
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Geir Jensen is currently Discipline Leader of The Fire Safety Engineering Division of Interconsult (COWI) independent company of consultants and affiliated member of the International Federation of Consulting Engineers - FIDIC. Serves the Directorate for Cultural Heritage of Norway and other state or private clients on fire safety protection of heritage structures, museum collections and historic industrial sites. He has participated and provided papers for conferences on fire analysis and protection of heritage (Risør, Krakow, Thessaloniki, Luxembourg and at ICOMOS at Trondheim and at Stavanger). He has authored articles on Fire Safety Engineering (paper at the Thessaloniki Conference addressed applications for heritage) and has developed engineering models for evacuation and smoke detection (Allsafe and G-Jet).

Mr Jensen has been responsible for projects in application research and development on novel solutions for fire safety of heritage - including fire safety protection concepts of historic buildings or museums involving strategies, safety plans, engineering, special applications, development, risk analyses, remote monitoring etc. He has developed concepts, solutions and products for the fire protection for stave churches 1981 to present. Examples cover water mist systems, high impulse exterior water mist monitors, lightning protection, tests of hand held extinguishers for museums/historic fabrics and smoke detection systems. He is specializing in fire protection of historic wooden town centres. He has initiated and conducted application research on thermal imaging cameras for monitoring historic sites and currently plan installations at several sites and town centres.

**POLAND**

**Dr Eng. Jolanta MUSKALSKA** (New member from 6 August 2004)  
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Jolanta Muskalska is a Scientist in The Institute of Textile Materials Engineering. Research activities concerning the environment protection and engineering (analytical studies, sludge purification, water management, emission to atmosphere, hygiene of work). Since 2003 she has been a scientist in The Laboratory of Fabric Flammability Testing. The Laboratory is accredited by Polish Centre for Accreditation (No AB029) since 1995 for flammability testing of textile products. 1997-2003 Dr. Muskalska was a Technical Manager in the Laboratory of Environmental Testing in The Institute of Textile Materials Engineering.

Her research activities and experiences are concentrated into the environment protection and safety, analysis of the emission of toxic products of material combustion to assess the toxicity of the resultant gases under conditions similar to those during fire involving specified materials, textile fabrics and elements of interior furnishings. Her Projects involve "Toxicity of textile materials combustion in the fire conditions" and "Test methods of floor coverings and their adjustment to Classification System implemented in European Union Countries".

## SLOVENIA



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## SPAIN



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Dr. Miguel Gómez-Heras, Doctor in Geology with “European PhD” mention. His thesis involved the study of thermal decay processes in building stone, including fire.

He has 5yrs plus heritage related experience in field and laboratory analyses of stone including pure research and consultancy to private enterprises and public bodies. He has experience in experimental acquirement design and patenting of an automatic cabinet for ageing of building materials by insolation. Co-author of more than 30 research papers, communications to conferences and consultancy reports, he has been awarded several educational prizes.



He is participating in several international projects with current collaborations with Portugal, Hungary and UK. He is presently enrolled in the project MATERNAS for heritage conservation of the Regional Government of Madrid and in a joint project between Queen's University of Belfast, Oxford University and City University to study the catastrophic decay of Oxford's limestones.

#### SWEDEN



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#### SWEDEN



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#### SWITZERLAND



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Daniel Rusch studied mechanical engineering at the Swiss Federal Institute of Technology ETH with majors in turbo machinery and fluid dynamics. In spring 2003 he received his Final Diploma in ME with the Willi-Studer price for the best diploma grade 2003 of the Department of Mechanical Engineering. At the same time he started his Ph.D. at the Institute of Fluid Dynamics of ETH supervised by Prof. Thomas Roesgen. His work focuses on turbulence models for the Computational Fluid Dynamics (CFD) simulation of fire scenarios. Mr. Rusch is author of a paper concerning vorticity dynamics in axial turbo machinery and co-author of two other papers in the turbo machinery field.

## SWITZERLAND



### **Dr Christian Del TAGLIA**

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1990-1996 Study of Mechanical Engineering, University of Rome “La Sapienza” (Italy)  
1996 Master Degree in Mechanical Engineering, University of Rome “La Sapienza” (Italy)  
1997-1999 Research Assistant at the Swiss Federal Institute of Technology Zurich (Switzerland)  
1999-2002 Ph.D. on Computational Fluid Dynamics of Combustion Processes, Swiss Federal Institute of Technology Zurich (Switzerland)  
Since 2002 Project Leader at Air Flow Consulting in Zurich (Switzerland). Air Flow Consulting AG is an engineering and consulting service company. The computer aided optimization of fire protection strategies is one of the main consulting services offered.

## UNITED KINGDOM



### **Mr Stewart KIDD** (Chairman WG 2)

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## UNITED KINGDOM



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Nick Jordan joined the Fire Service in South Wales in 1969. In 1982 he became the Deputy Senior Fire Safety Officer responsible for consultations regarding Planning and Building Regulations. Following a period of career development as the Brigade Senior Staff Officer he was appointed Senior Fire Safety Officer for the County of Gwent in 1992. During this period he worked closely with Building Regulation, Planning, Health and other local Authorities in the application of fire standards in premises including large listed buildings being converted for alternative use such as Hotels, Offices and Residential Care Premises.

In 1996 he was promoted to Divisional Commander where the activities included the development of emergency plans and the provision of fire fighting services for the cities of Cardiff and Newport. He joined the Royal Household as Fire Health and Safety Manager in 2000 and was responsible for all Fire, Health and Safety within the Occupied Royal Palaces Estate (Buckingham Palace, St. James Palace, Kensington Palace, Windsor Castle and other specific premises such as the Mews at Hampton Court). He was also appointed as Fire Safety Manager for the Palace of Holyroodhouse, Edinburgh and provided similar advice to the Households of other members of the Royal Family.

He joined the National Trust in January 2005 as Head of Fire Precautions and Emergency Procedures. Reporting to the Historic Properties Director in the Conservation Directorate, he is responsible for the development and implementation of strategies relating to fire and emergency planning at the 27,000 premises and 600 miles of coastline owned and managed by the Trust in England, Wales and Northern Ireland.

### Working Group 3 Members

#### BELGIUM



**Prof. André de NAEYER** (New member from 26 July 2004)

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#### FINLAND



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#### FINLAND



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## FRANCE



### **Monsieur Simon SINGER**

(MC position confirmed by National COST Co-ordinator: 7 March 2005)

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## ISRAEL



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## NETHERLANDS



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## NORWAY



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Architectural diploma- NTH Trondheim 1988.

Engineer, with Haaland & Thuestad as 1973 –1977.

Principal of architect firm Arkic as npa 1986 – 1997 (Limited company formed from own architectural and engineering firm)

Principal of architect firm Opus Arkitekter as npa since 1997 (Opus Arkitekter formed from merging Arkic as npa and Fjordplan architect offices) Responsible for Opus' planning and administration within housing, housing-areas, office and commercial buildings. Public projects within school, culture, health and social sectors.

He practices as a building surveyor in the event of damage for the Norwegian Natural Disaster Fund and Norway's insurance company, in addition to carrying out value and building surveying for Norway's banks and credit authorities.

Amongst many presentations he has given, two were offered during a seminar arranged by Riksantikvaren (Heritage authority) on listed buildings and insurance 22nd- 24th October 1997 in Hamar. The same topic was given to the estates-department in Gjensidige (Insurance firm) also in Hamar on 22nd May 2001, arranged by Gjensidige Hedmark; with a presentation on attitudes and administration of historic buildings for Haugesund Council and building industry given in Haugesund 2003

His Research work for Riksantikvaren (Heritage authority) has involved developing a guide to understanding insurance-agreement terms and documentation for use in relation to different damage levels to historic buildings, and developing models for repairing and rebuilding of damaged historic buildings with regard to insurance agreements.

## POLAND

### Konrad FIETKO

(Membership requested: 9 September 2004  
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## SPAIN



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## SWEDEN



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## SWEDEN



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H el ene Hanes is a conservator of the built environment at the University of Gothenburg, 1988-1991. After finishing her education she worked with Historic Buildings for National Board of Public Building.

She has since been involved in different projects at National Heritage Board, 1994-2001, among others concerning stone conservation, inventory of military constructions. Ms. Hanes has also been involved in international restoration projects in Estonia and Poland.

In 2002 Ms. Hanes joined National Property Board as conservator of Built Environment. The daily work includes care programs for Historic buildings, permissions for restoration work, programs for systematic fire protection work together with Per Rohl en, National Property Board.

## SWITZERLAND



**Mr Jerzy RESPONDEK**  
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## UNITED KINGDOM



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Longmore House  
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See Management Committee list for information



**UNITED KINGDOM**



**Mr Steve EMERY**

English Heritage  
National Monuments Record Centre  
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See Working Group 1 list for information

## Working Group 4 Members

### AUSTRIA



**Dr Wolfgang KIPPES** (Chairman WG 4)

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See Management Committee list for information

### AUSTRIA



**Prof. Johannes LEGLER-DIESBACH** (New member from 19 May 2004)

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A-2241 Schloß Schönkirchen  
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### ITALY



**Mr. Luca NASSI**

Ministry of Interior  
Fire Department of Siena  
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See Working Group 2 list for information

**NORWAY**



**Mr Torger KORPBERGET** (New member from 5 November 2004)  
 Blåkklokkeveien 51  
 2611 Lillehammer  
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**Work practice:**

Officers' training school – sergeant	1983-1984
Electronic warfare department – supplies/control officer:	1987-1989
Våpenskolen for hærens samband – forsøksoffiser:	1989-1990
Technical college of the army: leader of alarm division	1990-1994
Norsk tipping – security engineer:	1994-1995
Maihaugen – operating manager	1995-

**Courses and experience**

A number of different courses in alarm systems/HMS (leader of fire defence, first aid, etc). Courses in the field of conflict handling, personnel management. As leader of the alarm section, I participated in establishing an Army course centre for education (technical and operational) in alarm systems in order to secure the Army stocks and telephone installations. I instructed courses during 1993 and 1994.

At 'Norsk tipping' I worked with all aspects within security, including swindle on the systems. At Maihaugen I am security leader, with responsibility for safeguarding the museum's buildings and collections. I have been instructor for a number of courses in the field of fire defence in Norway.

**NORWAY**



**Terje Olav AUSTERHEIM** (New member from 5 November 2004)  
 Direktoratet for samfunnsikkerhet og beredskap  
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See Management Committee list for information

## SLOVENIA

**Mr Aleksander SPEC** (New member from 18 May 2004)

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## SWEDEN



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## SWEDEN



**Prof. Thorbjörn THEDEEN**

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## SWITZERLAND



**Dr Alfred MOSER**

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See Management Committee list for information

## SWITZERLAND

### Mr Rino BÜCHEL

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Bundesamt für Bevölkerungsschutz  
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## UNITED KINGDOM



### Mr Mike COULL (New member from 6 August 2004)

Heritage Coordinator  
Grampian Fire and Rescue Service  
19 North Anderson Drive  
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Scotland  
Tel: + 44 (0)12 24 788 795  
mike.coull@grampianfrs.org.uk

Mike Coull joined Grampian Fire Brigade in 1978. The majority of his service has been within the Operations function, however since 2001 he has served as the Health & Safety Advisor for the Brigade. This role was expanded to Risk Manager in 2002 and following a restructuring of Grampian Fire and Rescue Service, he is Group Manager for the Headquarters Group.

He is a member of the Historic Scotland chaired Scottish Historic Buildings Fire Liaison Group and is the coordinator of the Scottish Historic Buildings National Fire Database which was developed following a Pilot Project he undertook in 2001.

## UNITED KINGDOM



**Mr Chris HOOD** (New member from Feb 2004)  
Wormald Fire Systems (Informed of death on 21 September 2005)  
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Fax: +44 161 455 4406  
chood@tycoint.com

Commencing as a design apprentice in 1957 in the Fire Engineering Division of Mather & Platt, he has been involved in the design and installation of fixed fire protection systems ever since. Such activities have involved projects in Europe, the Middle East and USA.

His experience has taken into account all the many forms of fixed water based systems including foam systems, as well as gas extinguishing systems and which latterly has included Inergen.

His responsibility currently is as Divisional Engineering Manager for Wormald Fire Systems which amongst the many engineering matters includes the promotion of Wormald product and expertise in the market place, along with responsibility for the ISO 9001 Quality Management System and associated Certification Schemes.

Of recent date he has been taking the lead on behalf of Wormald Fire Systems in the development of sprinkler systems for heritage, domestic and residential properties along with the development of applications for water mist systems.

He is currently a member of the CEN TC191 WG5 working group for water mist, COST Action C17 WG2, and chairman of the BFPSA Specialist Water Systems Working Group in the UK.

## Corresponding Members

### Association of Castles and Museums Around the Baltic Sea

#### Ms Anne PARIKKA

Secretary of the Association of Castles and Museums Around the Baltic Sea  
The National Board of Antiquities  
Hame Castle  
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Link initiated September 2003 and formalised 13 November 2004

## CANADA

### Parks Canada

#### Mrs Susan Algie

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Canada

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Link initiated 7 June 2006

## EUROPE

### Comite Technique International de Feu (CTIF) Europe Commission



**Mr Dennis Davis CBE** (Approved at MC Varna: 10-11 September 2004)

Chairman  
Comite Technique International de Feu (CTIF) Europe Commission  
11 Private Walk  
Chester CH3 5XB  
Cheshire  
England  
Tel/Fax : + 44 (0)1244 323 177  
firstfirecall@aol.com

Dennis Davis, an Independent Fire Adviser, is a fire service specialist with nearly 39 years service and experience at both Chief Fire Officer and Chief Inspector level. A former President of both the UK Chief Fire Officers Association [CFOA] and the international Institution of Fire Engineers [IFE] he is the current UK Delegate to Comite Technique International de Prevention et d'Extinction du Feu [CTIF] and Chairman of CTIF's EU Commission

He serves the UK Engineering Council [ECUK] as an audit Review Panel member and has active interests in fire safety engineering and fire policy and practice, having been the principal technical adviser on fire service matters to the Government of Scotland. He is also a Companion of the Chartered Management Institute, a Chartered Engineer and 1 of only 4 Life Fellows worldwide of the IFE. His contribution has been awarded national recognition three times by HM The Queen.

**EUROPE**

**European Fire Sprinkler Network**

**Ms Bernadette Hartley** (Incorporated 6 July 2005)

European Fire Sprinkler Network

70 Upper Richmond Road

London

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Mob: +44 (0) 7778 844 741

BIHartley01@aol.com

<http://www.eurosprinkler.org>

The European Fire Sprinkler Network connects those in Europe who share its aim to improve fire safety through the greater use of fire sprinklers. Members regularly receive email updates on items of common interest, and can call on the Network for information and data to support local campaigns. The Network also supports a web site, which acts as a resource of information on fire sprinklers. Working with its members, the Network establishes contacts with those responsible for fire safety at a European level, so as to inform and educate them about the benefits of fire sprinklers.

**FINLAND**

**Federation of Finnish Insurance Companies**



**Mr Seppo Ilmari PEKURINEN**

(no address details)

[seppo.pekurinen@vakes.fi](mailto:seppo.pekurinen@vakes.fi)

Engineer Building construction 1973

Fire engineer (loss prevention) 1978

Federation of Finnish Insurance Companies: Manager, Loss prevention

Y-suunnittelu: Building constructor 1973-1978

Insurance Company Kansa-Group: Loss inspector 1978-1987

Insurance Company Tapiola-Group: Marketing Manager 1987-1993

Insurance Company Business-Kansa: Loss Manager 1993-1995

Insurance Company Sampo: Senior Manager Major Losses 1995-2000

Federation of Finnish Insurance Companies:

Manager, Loss Prevention 2000- Non-life insurance; Non-life losses; Non-life loss prevention methods. Special knowledge: arson, anti-crime, water damage, church fires prevention

**RUSSIA**

**Prof. Mikhail M LUBIMOV**

(Approved at MC Varna: 10-11 September 2004)

President of Academy

WORLD Academy of Sciences for Complex Security

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## RUSSIA

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Kachanov Sergey Alekseevich, doctor of technical sciences, the academician of the Russian Academy of Natural Sciences and World Academy of Sciences for Complex Security, Russia. The professor of a department in Academy of the state firefighting service and the assistant of the chief of Agency of monitoring and forecast of emergency situations of Russian Ministry of Emergency situations.

The head of the Russian scientific school aimed at creating of complex security systems, which include fire safety of potentially dangerous objects, hotels, theatres, cinemas, historical buildings and constructions. Under its scientific management in 2004 the first Russian educational center of creating and exploitation of security systems and life support of various objects, including historical buildings and constructions was created.

An author of more than 200 scientific works, among them there are 2 monographies, 5 national standards, 56 scientific reports and articles, which have been represented at International Workshops aimed at creation and exploitation of systems of monitoring and security management (fire safety and terrorism) and life support of potentially dangerous objects, hotels, theatres, cinemas and historical buildings and constructions.

Among the main scientific works there are monographies: «A telephone call in a saving service» Russian Ministry of Emergency situations, 2000 year and «Safety of information systems in conditions of globalization», «Radio and connection», 2003 year. GOST P (GOST R) 22.7.01-99 safety in emergency situations “Joint duty-dispatching service. (JDDS) The main concepts”; Methods of rating security systems and life support of potentially dangerous objects, buildings and constructions, Russian Ministry of Emergency situations, 2004. “New technologies of maintenance of complex safety of a city”, magazine “Security management. Struggle against terrorism”, 2004. “Automating systems of monitoring and security management and life support of buildings and constructions”, magazine “Fire safety” 2004. “Normative base in the field of projecting the integrated systems of safety, life-support and fire-prevention protection”, the catalogue “Building safety”, Russian information agency (RIA) “The industry of safety”, 2004. “Intellectual buildings- the safety of future”, magazine “The basis of safety of a life”, number 2, 2004. Repeatedly took part as an expert in an evaluation of security systems (fire safety and terrorism) and life support of various objects of historical inhabited and industrial purpose.

## RUSSIA

**Prof. Nickolai G TOPOLSKII**

(Approved at MC Varna: 10-11 September 2004)

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 International Informatization Academy  
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## **RUSSIA**

### **Dr Stanislav Yurevich BUTUZOV**

Academy of State Fire Service of Emercom of Russia  
129366,  
B. Galushkina str.,  
4., Moscow,  
Russia  
butuzov\_s\_yu@mail.ru  
(No telephone details)

Chief of scientific complex computer aided systems and information technologies of this Academy. Assistant Professor with area of scientific interests in mathematical modeling processes development of fires, development scientific bases computer aided systems of blast- fire safety of buildings and industrial buildings. The author of 87 scientific works and inventions.

## **SCOTLAND**



### **Scottish Historic Buildings Fire Liaison Group**

**Mr Paul BEATON** (Incorporated 30 September 2004)  
Secretary  
Scottish Historic Buildings Fire Liaison Group  
c/o Historic Scotland  
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Longmore House  
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The SHBFLG is a Scottish wide pan-interest body initiated by Historic Scotland to support the Agency's activities in addressing fire loss to the built heritage in Scotland. It meets as required to assist in the review of technical publications, exchange information and maintain a watching brief over the Scottish Historic Buildings National Fire Database project

## **SCOTLAND**

### **Scottish Building Standards Agency**

**Mr Jim McGonigal** (Incorporated 6 July 2005)  
Scottish Building Standards Agency  
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Livingston,  
West Lothian  
EH54 6GA  
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Jim.McGonigal@sbsa.gsi.gov.uk

The Scottish Building Standards Agency (SBSA) is an Executive Agency of the Scottish Executive to undertake the national functions related to the building standards system.

## UNITED KINGDOM



### **Historic Buildings Fire Research**

Co-ordinating Committee (HBFRCC)

**Ms Paddy ELSON** (Incorporated 30 September 2004)

Historic Buildings Fire Research Co-ordinating Committee

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EC1 2ST

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Paddy.elson@english-heritage.org.uk

The HBFRCC is a pan-UK Departmental structure established in the aftermath of the Windsor Castle fire to develop and share relevant official information regarding the effects of fire on historic buildings in Government care.

## UNITED KINGDOM

### **Donald INSALL CBE**

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England

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With a long-standing involvement in architectural conservation, and the effects of fire on historic buildings, Donald Insall has an extensive conservation knowledge and network.

## USA

### **NFPA Cultural Resources Committee**

#### **Ms Marilyn E. KAPLAN**

NFPA Cultural Resources Committee

Preservation Architecture

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preservationarchitecture@verizon.net

Marilyn E Kaplan is a principal with Preservation Architecture, an architectural firm specialising in historic preservation projects. She has worked in the public and private sectors in the field of historic preservation for more than 20 years, often consulting directly on code and fire-related issues. She has spoken nationally and internationally on the architectural challenges facing the integration of preservation and safety concerns.

Marilyn has served on the NFPA Technical Committee on Cultural Resources, is the President of the Historic Preservation Education Foundation, and holds board positions on other preservation organisations, including the Association for Preservation Technology Northeast Chapter. In 2001 she received a Presidential Citation from the Association for Preservation Technology International for her work in codes and life safety.

## ANNEX 5



**COST Office**

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**European Cooperation in the field of Scientific and Technical Research**

**ACTION COST C 17**  
**BUILT HERITAGE:**  
**FIRE LOSS TO HISTORIC BUILDINGS**  
**SELF EVALUATION SUMMARY N=18**

Helsinki 21.11.2006

Ulla Priha

## 1. Results versus objectives

**Do you think that COST Action C 17 achieved the general goal of COST, namely increasing European co-operation and interaction and improve European synergy in the field?**

### Results versus general objectives 4.4

(1-5: Bad, Poor, Fairly good, Good, Excellent)

Comments:

- The action has achieved its basic objective, which enabled it to enter into cooperation and exchange of European-wide experience among R&D units as well as practical approach in terms of complex protection of built heritage against fires. The Action will undoubtedly contribute towards much more intense cooperation between the units participating in the Action COST C-17 in the future.
- With the number of participating states, I feel the Action not only achieved its goal but actually exceeded it.
- I now have contacts in most European countries, who are trying to achieve the same goals in protecting historic buildings from fire, so we can share expertise and experience.
- The effective exchange of information and group working sessions has assisted to meet the general objectives
- sharing knowledge about fire phenomena in built heritage,
- experiences of different countries with the particular heritage objects in specific environment conditions are exchanged.

**Do you think that COST Action C 17 achieved its main objective to date from MoU**

### Results versus specific objectives 3.9

(1-5: Bad, Poor, Fairly good, Good, Excellent)

Comments:

- Yes, it has. A wide spectrum and variety of the undertaken and realized by particular WG problems paved the ground for achieving the aim established by MoU.
- Some objectives were perhaps too wide but in general they've been achieved
- With the number of participating states, I feel the Action not only achieved its goal but actually exceeded it.
- I believe this was met as fully as the Action could, given the lack of statistical information on the scale of loss through the fire reporting systems in some states.
- I think that the main objectives of the MOU have been achieved as far as possible.
- Some objectives were perhaps too wide but in general they've been achieved.
- main objectives how to combat heritage fires with several more or less invasive techniques were represented within wide field of fire protection.

## 2. Outcome and achievements

**Could you please describe the main outcome and the main achievements of the COST Action C 17 and the significance of these?**

### Outcome and achievements 4.1

(1-5: Bad, Poor, Fairly good, Good, Excellent)

Comments:

- Established network of contacts. Exchange of experience. Reports.
- The main achievements of the completing Action COST C-17 are among others:
- identification of the main causes of fire burning historical buildings on a European level.

- determination of the techniques of fire extinguishing on historical buildings.
- determination of most effective fire-protective methods for historical buildings including technical and organizational ones.
- establishing objectives for the reconstruction of fire-damaged buildings.
- establishing objectives concerning the furnishing of historical buildings in terms of fire-prevention safety.
- The action gives also attention to the loss of cultural value in case of fire in a historic building.
- New technologies and methods to the benefit of fire prevention in monuments were discussed during the action.
- The development of a European network of people and organisations, involved in fire prevention and cultural heritage is of importance.
- Also important in the action is the cooperation of policymakers and profession people.
- The knowledge of the state of the art over Europe and US is one of the most significant outcome.
- I believe the main outcome is that the Action has addressed the physical and significant cultural loss of Europe's built heritage to the damaging effects of fire through a multi-disciplinary, multi-national collaboration.
- The publication of a diverse range of papers, research reports, STSM's and Technical Advice Notes is a major achievement, demonstrating the collaborative approach of this action.
- The main outcome of the COST C17 has been the sharing of experience across the many countries involved. In the UK the most significant outcomes have been the recognising of the importance of the historic environment by fire brigades; and the gathering of statistics for fires in historic buildings.
- Improved understanding of the need for statistical information relating to fires and other emergencies in heritage premises.
- Increased cooperation and consultation between the large number of participating countries which has already contributed to improved guidance and protection relating to the built heritage. Share experience and case studies assist with learning the lessons at planning stage and during and after emergency incidents.
- The knowledge of the state of the art over Europe and US is one of the most significant outcomes.
- Great majority of European countries had represented their approach to the heritage fire protection problem, several real fire were analysed, some existing and new fire suppression technologies were presented, including eg fire-tech results to the Action could provide tools for more efficient fire protection strategies made the government and the local authorities think about the problem of fire protection of historic heritage.

### **3. Impact of COST Action C 17**

**Could you please describe the importance and benefits of COST Action C 17 for research and technology in your own country?**

#### **Impact of COST Action C17 3.8**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

#### **External "visibility" 3.7**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

Comments:

- Many new ideas brought home from meetings and exchange of documents.
- Getting acquainted with high-tech systems in terms of fire protection of historical buildings.
- Not all the participants participated in the action from the beginning. In future actions it is recommendable, before starting, to investigate who has to be involved. This will benefit the balance of the input of contributions.
- Owners of cultural heritage projects can directly have profit from the results of the COST 17 Action.

- The “visibility” issue has to be considered rather important, since there are few organizations which study the arguments of the Cost Action.
- This Action has helped to raise awareness of the issue of fire loss to historic buildings, therefore identifying the need for further research on areas such as the provision of statistical information, pre-planning, damage limitation and the use of technology in protection and prevention strategies.
- The benefit of the Action has not yet been felt to its fullest extent. In the coming years I am confident that the contacts and cooperation made will continue to everyone’s benefit. I expect that joint research will result and this is the direct result of COST.
- I hope that the final report will be used to assist the education process at National and International level relating to the protection of the built heritage which will assist with dispelling the myths associated with the implementation of innovative methods eg passive and/or active protection measures (fire sprinklers).
- the “visibility” issue has to be considered rather important, since there are few organizations which study the arguments of the Cost Action.
- heritage fire safety problem was clearly exposed to government institutions.
- some projects in the field were proposed.

#### **4. European added-value**

**Could you please describe how the scientific research in the domain of COST Action C 17 in your institution has been improved by the COST co-operation?**

**Could you please identify what synergies and added value came out of the COST framework?**

##### **National projects set up or running 3.3**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

##### **International projects set up or running 3.2**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

##### **Other added-value aspects 3.9**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

Comments:

- Only by participation in Action C17 could international cooperation on R&D be set up in this area - in the case of our institution.
- We have been updated on the information about research work being carried out by other European R&D units within the range of fire-protection safety of historical buildings.
- Results of the COST 17 Action were implemented into the technical inspection of cultural heritage and in the recommendations my organisation gives to the owners of monuments.
- Knowledge of people concerned with the problem.
- This research has helped to raise awareness of the issue of fire loss to historic buildings whilst providing evidence and examples upon which procedures and guidance can be developed.
- Without the COST C17 Action, the importance of historic buildings would not have made such an impact on the government departments responsible for such things as fire statistics gathering. The Action has opened up the possibilities for shared experiences with other countries in areas not covered by the Action, such as action for Fire Safety in Historic Town Centres and Disaster planning.
- Information gathered has been used to support implementation of an organisation wide fire protection strategies and bids for funding.
- Knowledge of people concerned with the problem.

- The problems connected with fire protection of heritage created the necessity to make a thorough survey of all monuments of culture in Bulgaria - not only the criteria they are listed, but also about other risks and threats such as natural disasters.

## **5. Coordination and management**

**Could you please describe the effectiveness of coordination and management of COST Action C 17?**

### **Overall management of Action 4.6**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

### **Organization of meetings 4.0**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

### **Distribution of documents (including minutes, etc.) 4.4**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

### **Usefulness of the COST homepage 3.5**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

### **Internal self assessment of Action progress 3.8**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

Comments:

- The homepage has been established too late, and its use therefore minor. The homepage should have been established early on, and used purposefully throughout, ie relieving chairman of distribution of documents which could have been downloaded from site, etc.
- The coordination, management and communication between members have been a key element in the success of this Action.
- The meetings have been very well managed despite the difficulties of a large number of participants.
- Meetings have been extremely well chaired and managed throughout the action.

## **6. Dissemination and results**

**Could you please describe briefly the effectiveness of dissemination?**

### **Publications from meetings 4.0**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

### **Accessibility of documents 3.7**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

### **Publicity and marketing (national and international) 3.3**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

Comments:

- All documents have been disseminated, usually electronically in a manner that ensured that I was kept fully aware of all research, findings and progress throughout the course of the Action.
- In hindsight a permanent website should have been made at the start of the action, perhaps this is something to think about for future actions.
- An extensive amount of documentation has been made available in electronic format.



## 7. Organization

<b>Do you think within COST C 17 there should/could have been made more (you may tick several fields):</b>				
Research	Case studies	Common projects	Seminars/ Conferences	WG meeting
10	8	7	6	8
<b>Do you think your workload was generally</b>				
Far too heavy	Too heavy	Ok	Small	
0	2	16	0	
<b>Do you find it beneficial the meetings being held in partner's (or other) cities?</b>				
Very much	Fairly	not so much	better in Bruxelles	
16	2	0	0	
<b>Do you think that the interactions among the 4 working groups was</b>				
Excellent	Good	Sufficient	not enough	
3	11	3	2	

## 8. Participation

Could you please describe briefly the effectiveness of the participation of your Institution to the Action?

### European wide 3.7

(1-5: Bad, Poor, Fairly good, Good, Excellent)

### Nationally / regionally 3.8

(1-5: Bad, Poor, Fairly good, Good, Excellent)

### Within your organization 4.0

(1-5: Bad, Poor, Fairly good, Good, Excellent)

### Short-term scientific missions 3.6

(1-5: Bad, Poor, Fairly good, Good, Excellent)

Comments: (Especially if you took part, as organiser, researcher or host Institution in one of the STSM's)

- As a researcher in a STSM, I found this an excellent system to enable me to consider best practice with partners, spend time looking at specific research aims and make a positive contribution to the Action by providing a comprehensive report on my findings.
- No Swiss STSM neither as host or quest.

## 9. Economic aspects

Could you roughly estimate the total manpower in person-days dedicated by yourself and by your Institution's personnel to the activities of the Action each year and for the entire duration of the COST Action C 17, including attendance of meetings?

This is the summary of only 12 answers out of 18; the others had no information in this part.

Number of person-days							
	2001	2002	2003	2004	2005	2006	TOTAL
	4	117	282	538	440	419	1800
average per answer							150 person days

Could you estimate the total financial resources mobilised by your Institution each year and for the entire duration of the Action for the scientific research co-ordinated by the COST C 17 Action, excluding the cost of above mentioned person days?

Cost, excluding the cost of above mentioned person days, in EURO							
	2001	2002	2003	2004	2005	2006	TOTAL
	0 €	2,800 €	17,565 €	55,213 €	133,700 €	166,250 €	375,528 €
average per answer							31,294 € per institute

#### **Cost (time and money spent) of Action in relation to participation 4.3**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

#### **Cost (time and money spent) of Action in relation to added value 4.3**

(1-5: Bad, Poor, Fairly good, Good, Excellent)

Comments:

- It is impossible to put a price on the value of the action, as the benefits of the closer working links with the participants cannot be estimated.

## **10. Overall COMMENTS and RECOMMENDATIONS**

Would you like to give some overall comments and recommendations, including possible new actions?

- Overall, excellent. The limited production of scientific documents could have been better organized, less arbitrary. In retrospect, the lack of a useful website hampered efficient progress and was often distressing. A website running from the very start could have been very efficient in terms of distribution of documents, overview of progress, drafts etc. The exchange, and benefit of, information at conferences, meetings and by e-mail has been very good. The chairman and management has been excellent, and the various hosts also. The working group convenors have worked out the results well, although they were sometimes less prepared at meetings than anticipated, causing an 'ad hoc feeling' for attendants both in WG-meetings and in joint meetings. New actions: Building upon parts of the established network of C17, new action(s) could become even more effective, provided specific topics are addressed – one of them being the 'terrorist threat'.
- In future actions: try to make use of the existing network and the knowledge gained in this action.
- The proposal for a future action Kerstin Westerlund Bjurström did to the chair deserves closer study.
- I think it is necessary to take into account the possibility of a new action concerning the problems related to the safety/security of the built heritage against disasters (natural and man-made).
- Overall I found the Action to be well managed, has remained true to the intent of the Memorandum of Understanding and I believe that it has achieved most of the objectives set out within the MOU. With a total of twenty states signing up to the agreement, I feel that demonstrates that there was a pan-European need for a research project on this subject. One of the biggest challenges ahead, having collected so much excellent information through collaboration, is to ensure that the impetus to protect the built heritage is not lost through the ending of this Action. My only recommendation would therefore be based on the need to ensure that work within this field continues in some form, with ultimately the introduction of a Europe-wide standard that will assist in the protection of the built heritage from the effects of fire.
- Some of the outcomes of the action will not be realised in the immediate future and some joint working projects have only just started, so a series of follow-up meetings in the coming years would be useful. I believe that this has been an excellent Action, the outcomes of which have and will make a great contribution to the protection of the built heritage in Europe and other parts of the world. It has benefited greatly from the number of countries and individuals from many different professions that have contributed to the Action.
- Unfortunately the work of the participants has been affected by changes to the level of funding available which has been reduced throughout the term of the action and limited the number of WG members attending the meetings. I feel that the uncertainty over funding has limited the work undertaken during meetings.

- The work of the group was greatly assisted by the independence of the chair from commercial issues and consultation with, but not control by, the manufacturers' organisations which tend to happen during the preparation of standards.

The action should progress in three ways:

- a) The final report should be used 'in country' to encourage the formation of National Working/Consultation Groups to continue the work of the Action and the collection and collation of data relating to fire loss and the development of fire protection strategies and protocols for comparison across the EU.
  - b) The groups should continue to meet to carry on the process of collaboration and exchange of information.
  - c) Specific outcomes of the Action should be carried forward to further develop the level of knowledge and cooperation in the protection of the built heritage.
- I think it is necessary to take into account the possibility of a new action concerning the problems related to the safety/security of the built heritage against disasters (natural and manmade).
  - Very useful experience. Maybe the next programme should cover a smaller field so it's possible to come closer to issues and just not list what's already done? For instance management and not technology.
  - There's still a lot of work to do regarding the fire safety of monuments, specially spreading the message but also following what new happens in the field.
  - The Action contributes to sharing of knowledge about fire phenomena in built heritage.
  - Great majority of European countries had presented their approach to the heritage fire protection problem.
  - All data collected during action within four working groups could provide in connection with other tools eg Fire-tech results a basis for more efficient fire prevention strategies.
  - The part of future research work could be perhaps oriented in the "heritage room" parametric fires.
  - The main goal and subject of COST C17 have to continue in another common project or action! There is so much work, including research to be done in the sphere of heritage protection.

# ANNEX 6

## COST ACTION C17

### BUILT HERITAGE: FIRE LOSS TO HISTORIC BUILDINGS

### EXTERNAL EVALUATION REPORT

#### **External Expert**

This report has been prepared by Dennis Davis, a chartered fire engineer, who is an Independent Fire Adviser based in Chester, United Kingdom<sup>1</sup>. Background professional knowledge includes extensive fire and rescue experience up to chief fire officer and government chief inspector levels, election to president of the both the UK fire chiefs and the international fire engineers and chairmanship of numerous professional non governmental organisations. Currently he is chairman of the Federation of British Fire Organisations [FOBFO] and the Europe Committee of Comite Technique International de Prevention et d'Extinction du Feu [CTIF].

#### **Evaluation Procedure**

The evaluation procedure used has involved undertaking a structured interview with the Cost Action 17 Management Committee Chairman Ingal Maxwell in Edinburgh, Scotland; attendance at one working meeting in Varna, Bulgaria and a desk based review of information supplied to members of Management Committee and Working Groups associated with the programme of Action.

The range of documents, allied reports or studies, technical discussions and field visits together with formal presentations at seminars and meetings are extensive. The external review has considered information circulated electronically since September 2004 and has periodically reviewed released documentation made available on the Action web site. In addition, the proceedings of the international conferences in Varna, Bulgaria in 2004 and Ljubljana, Slovenia in 2006 have been considered.

As an illustration of the range of information arising from the Action a summarised list is shown at Annex A. In addition draft final reports have been studied<sup>2</sup>. A number of allied documents produced either in support of the Action or directly as an outcome of communications during the Action have also been reviewed. The quality and perceived applicability of this Action was such that it prompted interest beyond the European Union both in continental Europe and North America. This is demonstrated by involvement in the Action by well known internationally recognised bodies like the National Fire Protection Association [USA] and Emercom [Russian Rescue Officers Corps].

**The quality of the documents reviewed has been generally high with many having a foundation level of acceptable research allowing a substantive evidence base for conclusions.**

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<sup>2</sup> Draft MC Final Report status 17 August 2006, WG Final Reports 1 December 2006 and Final Conference Report 12 December 2006.

#### **Results versus Objectives**

The main objective of the action was to define at a European level of the degree of economic and cultural loss to the built heritage arising from fire and then to make proposals to mitigate and reduce this current loss using equipment, techniques and practices<sup>3</sup>.

The first part of the main objective required establishment of more accurate data concerning losses and the second part, making mitigation proposals, involved using scientific and technical practices in a contextual situation.

This was to ensure that any selected installation, technique or practice was not so overtly invasive that it might distract or harm the heritage environment being protected or restrict access and thereby enjoyment or cultural use of historic buildings and sites. Other key objectives of the Action were: to obtain wide support from European Union Member States; to maintain financial and management control; and to complete the Action within the time frame accepted within the agreed Memorandum of Understanding [MOU]<sup>4</sup>.

In terms of results, considerable statistical information has been researched through the activities of Working Group 1, which analysed UK and EU data to draw conclusions on actual losses and a number of specific scientific studies were undertaken through a partnership between Norway and Scotland<sup>5</sup>.

Likewise there have been interesting developments in the use of active and passive fire protection with exchange of knowledge and experimentation on matters such as the retrospective installation of water sprinkler systems, the design and use of electronic detection systems for combustion products and enhanced fire resistance of existing historic materials and building components. Practices to mitigate loss post fire initiation have also received detailed consideration with an exchange of best practices in matters like preplanning, post fire salvage and final recovery.

The time scale for the activity was contained within that originally envisaged, despite delays at commencement resulting from internal Member State discussions since national government agreement was a requirement of participation in the Action. Ultimately over 22 countries joined and this included most of the enlarged 25 Member States within the European Community with one significant exception. Over 70 individuals are recorded as contributing to the work.

**Overall it is concluded that the results have satisfied the objective criteria established in the MOU.**

### **Outcome and achievements**

The main outcome has been the improvement in understanding of practices and techniques to limit the devastating impact of fire on heritage buildings.

As examples of performance the following achievements are cited:

1. Introduction of improved data collection to support prioritisation of resources helping place the most vulnerable buildings at the head of any action regardless of how restricted the funds in a particular country.
2. Using new technologies like firewater sprinkler and water mist systems specifically developed for heritage buildings allowing improved protection in novel and site sensitive ways.
3. Techniques that improve understanding of the effect of heat on stone providing assessment criteria on post fire stability and ultimate reconstruction.
4. Scientific research on non-invasive material fire resistance increasing scope to retain original materials and so maintain aesthetics and historical accuracy.
5. Introducing evacuation modelling and performance based codes to support public safety and innovation in solutions.
6. Utilising computer-modelling contextualised to heritage buildings to aid design of smoke and heat extraction increasing safety and protection opportunities.
7. Introducing risk assessment and risk avoidance studies to improve planning and management of risk to create safer public environments.
8. Studying pre fire action planning and organisation to improve evacuation and damage limitation schemes.
9. Consideration of external threats and possible solutions especially related to the security of heritage buildings used for large-scale public assembly.
10. Exchanging case study information aiding both evaluation of the practical implications of installing solutions and exposing observed weaknesses from post fire reviews.

The published information indicates that throughout the Action members appear to have worked decisively to add to the body of knowledge and their achievements fully support all of the stated objectives.

**The outcome and achievements exceed anticipated performance expectations both in terms of the allocated financial contribution and the stated objectives**

### **Impact of the Action**

The protection of cultural heritage buildings is fundamental in helping ensure that national identity, history and culture survive. The issue is of such importance as to be discussed by the Council of Europe Committee of Ministers. This is because loss of any historic building or artefact universally is seen as a cause of great sadness regardless of which country it occurs, since by definition there is a uniqueness that cannot be replicated. Some buildings and artefacts are so well known that they are internationally recognised icons that represent the very essence of a culture or nationhood.

<sup>3</sup> COST Action 17 Memorandum of Understanding COST 327/01 Brussels 21 December 2001

<sup>4</sup> The originally estimated period of 4 years was precisely met with the Action occurring between 13 December 2002 and 12 December 2006.

<sup>5</sup> For example, Riksantikvaren and Historic Scotland sponsored studies on sprinkler failures, water mist protection, manual fire extinguishing equipment, minimum invasive fire detection systems and inert [hypoxic] air venting protection.

Unfortunately the most common form of sudden loss of such buildings in Europe is fire and therefore this Action, which was seeking to find solutions to prevent and mitigate these losses, was of considerable importance not just to the European Community but also beyond.

The exchange of scientific and technological knowledge that has occurred and has been initiated during the Action is extensive as is illustrated in the documents produced. This work has introduced an impetus, informed the heritage community and provided fresh thinking and ideas on how to tackle the challenges posed.

**An important impact of the Action is that it has helped influence at the European level the need for fire protection awareness to safeguard many symbolic national icons of cultural heritage for the future.**

### **European added-value**

The use of the COST framework has enabled an international network of cooperation on cultural heritage to be established. That network has in turn allowed access to the unrivalled resources that are only available with national and regional level government support or from non-governmental organisations that support public and community values.

In a self-evaluation of the Action outcomes<sup>6</sup> eleven of the members assessed that they had assigned national resources equivalent to be 1,800 person days and €375,528 to the Action. The Report extrapolated that if applied to all the participants then resources equalling to 9,000 person days and €1.87 million would have been allocated to the whole Action, illustrating quiet remarkable effectiveness of modest COST pump priming.

This high level of cooperation permitted a research environment and community of interest to be established in a hitherto unprecedented way. A working example of operating in this way within the COST framework was the effectiveness of research. Typically one Member State might commission an area of research or scientific study into a subject that the State required; with the added knowledge and any outcomes gained would benefit the whole Action membership and, conversely, the research or study would itself benefit from the views, expertise and information contributed from other countries.

**Mutual cooperation from the COST Framework ensured extensive gains in resources and external technical contributions resulting in a Win-Win situation for all the participants.**

<sup>6</sup> Final Conference Report 12 December 2006.

### **Co ordination and management**

A Management Committee comprised of all Working Group chairman was appointed to manage co ordination and ensure effective supervision. In addition, the chairman of the Management Committee, who was enabled to support the Action by his employer Historic Scotland, undertook the task of project leader with considerable personal commitment.

The outcome of using this mechanism did ensure the organisation, progress chasing, recording, documentation, dissemination and research was maintained at a high level with very effective overall performance.

**The assessment is that co ordination and management were effective and the personal efforts made by the management committee chairman were significant.**

### **Dissemination of results**

Throughout the Action all results have been routinely and frequently internally exchanged between members and associated organisations primarily using electronic mail. Using this media as a regular activity enabled information to be passed on easily to others who expressed interest, ensuring not only did the base of knowledge and expertise established expand considerably, but that more and more allied professions and individuals became involved, thus contributing and disseminating information.

In addition, individual members issued a number of authoritative publications directly arising from their work, which were also released during the Action<sup>7</sup>.

The regular exchanges that helped continually expand the membership had the positive effect of enabling the outcomes of the Action to reach a much wider audience than that foreseen at the outset. A less positive affect of the expanding membership linked with the associated constraints of finance was that it undoubtedly placed burdens on the chairman of the management committee, his organisation and the other chairmen involved in the overall management of the Action.

In addition to the routine internal electronic communication, three conferences, two interim and then a final conference were held to which interested individuals not directly involved in the Action were invited. The proceedings of the first of two conferences have already been recorded and disseminated using printed and electronic media and it is understood a similar action will follow the final conference.

A most significant, very generous and positive step in dissemination is the creation and hosting of an Internet website by Austria's Schloss Schonbrunn Kulture [[www.heritagefire.org](http://www.heritagefire.org)].

<sup>7</sup> Examples are heritage property protection measures like fire detection and suppression systems to fire safety management.

This unique website is dedicated to the Action and is easy to find using publicly available search engine keywords like fire and heritage. The website provides clear and simple access to a significant amount of downloadable subject material including all contributions, reports and meeting minutes. Only one very minor weakness of the website was observed, regarding the omission of an overall organisational structure component to guide the uninformed reader to the right Working Group for an activity subject.

The website therefore represents an extensive freely available and publicly accessible resource without restriction. Publishing meeting minutes and reports also improved the openness, transparency and accountability of the Action management and allow public scrutiny and assessment of the value for money obtained by COST and ESF.

**It is concluded that overall dissemination of results has been undertaken in an extremely effective manner.**

### **Recommendations**

COST Action C17 has allowed an unprecedented exchange of information between those having responsibility for the protection of cultural and historical heritage across Europe and experts within the fire protection, conservation and crisis recovery professions. A lasting consequence of this Action is the creation of an informal network of contacts, some of which have resulted in close collaboration and practical research programmes.

However, central to this informal network is the management process established as a requirement of COST to oversee and supervise the effective discharge of financial and performance responsibilities. In addition to these requirements the management process facilitated routine communication and exchange by maintaining and supporting the individual contact Action database and access to resources identified as the Action unfolded.

The COST C17 website now in existence is an excellent example of the positive nature of this informal networking.

The importance of this management aspect, so apparent in the way the Action has utilised national resources, is referred to in the Final Conference Report self-assessment questionnaire returns. In responses, emphasis is placed on establishing, or continuing where they exist, national cultural heritage working and consultative organisations that can further advance the collaboration, technical exchange and advance of knowledge that are the central Action outcomes. The need for every Member State to have a national forum of this kind is fully supported.

A number of recommendations are also contained within the Final Conference Report that specifically refer to the European Construction Technology Platform [ECTP] and reflect that further developments could emerge within the Focus Area Cultural Heritage [FACH].

The FACH proposals made are extensive but it is unclear how they would be taken forward on a European basis given the Action's outcomes have relied extensively on the management arrangements introduced through controls included within the COST Framework.

No proposal is made to continue a European point of collaboration or cross border exchanges once the Action is completed. It is considered that without a specific administrative interface that can facilitate a wider European exchange, the synergy of collaboration that now exists will ultimately be lost.

It is also difficult to envisage how a further quality exchange, of the type achieved in the COST 17 Action, can be sustained without the central coordinator role, as required by the COST Framework, being in place given that the process of constructing any proposal under ECTP or any other European Community programme requires one organisation to commit start up resources. It is therefore concluded that without any form of continuing a central group any new cultural heritage initiative will have to start afresh.

If at all possible this loss of central coordination should be avoided since as new individuals replace the original participants and the knowledge acquired degrades over time, so reducing one of the most significant gains of the Action. Likewise placing the website on a sustainable footing is essential if knowledge is to remain within the public domain.

**It is recommended that existing COST Action 17 members be approached and asked to formulate a proposal to create a sustainable European Community Cultural Heritage Fire Protection Mechanism.**

**Summary**

In summary, the Action has undoubtedly been the beneficiary of a substantial amount of goodwill, resources and support extended by many organisations and Member States. As a COST initiative, Action 17 is an excellent example of how limited financial resources can be utilised progressively to facilitate a Europe wide advance.

The high value contributions ultimately ensured the study did deliver the desired result. Furthermore the COST Action 17 project has been undertaken most effectively. The early delays and subsequent funding restrictions were all overcome in a most positive way due to the sustained efforts of a team of committed individuals.

Utilising the COST Framework allowed a process to be established at minimum cost, which has delivered an outcome of achievements that will be of benefit to all those in the European and wider cultural heritage community as they undertake activities to prevent fire loss to historic buildings.

**The overall evaluation is that this has been a successful Action.**

Dennis Davis



# COST ACTION C17

## LISTED REFERENCES

(Annexed to External Evaluation Report)

1. Analysis of significant fires WP 2
2. Barrett, J, Dual electric motor driven fire pumps
3. Bridge street fire exercise feedback. 10-04
4. British Standards Institute November 2004, Sprinkler systems
5. Building Bulletin 100, Designing and managing against the risk of fire in schools
6. Building Research Establishment, Fire Suppression in Buildings using water mist, fog or similar systems 2005 Case Studies 2005
7. Bukowski, R. Performance based fire protection of historic structures Case Studies 2005
8. Bulgaria List of fires from the National Fire Service of Bulgaria
9. Bulgarian Fire Statistics
10. Chiltern International fire case study, Fire resistance of medium rise timber frame buildings Case Studies 2005
11. Chiltern International fire case study, Stare Fire Test Case Studies 2005
12. Clausen, I. 11-04, Historic buildings and insurance in Norway
13. Conrad, E. Fire detection systems October 1998 Case Studies 2005
14. Cooper, S, Existing Technologies, the accepted abilities, reliabilities and cost
15. Coull, M. 03-05, Fire and rescue stats user group
16. Counter Disaster Planning In Historic Buildings
17. Davis D 12-04, Malicious attacks on Heritage Buildings
18. Definition of cultural historic value 03-04
19. Description of models and tools to give priority between different buildings and projects 08-04
20. Description of risk (assessment, evaluation) analysis, consequence in theory, with statistics etc 06-04
21. Description of the best practice for future insurance of historic buildings and relevant key questions to reach the best practice 11-04
22. Description of the principles behind the Insurance Companies work with historic buildings today and models to estimate the insurance fee in historic buildings 11-04
23. Directorate for Cultural Heritage, Norway Cultural Heritage Monuments and Historic buildings as value generators in a post-industrial economy
24. Discussion of what historic value means to economy and the costs of losing historic valuable property because of fire 04-04
25. Documentation to make reconstruction possible 04-05
26. Dusman A 07-04, Schultz's hazard analysis, Italy
27. Egardt, E 07-04, Electronic system of recording fire statistics in Sweden
28. Egardt, E Swedish statistics from turn out reports
29. Ekwall, M, 11-04, Incident in the Stockholm City Hall
30. Ekwall, M, 11-04, The Katarina church in Stockholm
31. Emercom 2002, New safety technologies
32. Emery, S, 04-04, Fire Safety in the Wooden Town centres of Norway
33. Emery, S, 07-04, Electronic recording system of fire statistics in the United Kingdom
34. Emery, S, 07-04, Fire statistics for heritage buildings
35. Evaluation of risks and special measures to take; regards to historic buildings, 06-04
36. Example of blank risk assessment form
37. Examples of costs for reconstruction after a fire 06-04
38. Fernandez, 12-04, Guidelines on Structural behaviour in case of fires in historic buildings
39. Finland Accident Investigation Report, Fire in Hotel in Kuhminen 23 December 1995 Case Studies 2005
40. Fire Prevention Journal November 2003 various articles (Bound Separately) Case Studies 2005
41. Fire-tech museum notes
42. Fire-Tech Newsletter 11-03 Fire risk evaluation to European Cultural heritage
43. Fire-Tech, 11-03, Fire risk evaluation
44. Forrest, R. Strategic Fire Protection in Historic Buildings Building Conservation 2001 Case Studies 2005
45. Friedman, L, Fire-Tech museum notes

46. Galea, E.R, 09-03, Analysis of the building EXODUS evacuation simulation study of Schloß Schönbrunn
47. Hargraves, R, 2002, Cataclysm and Challenge
48. Helseth, S, 12-04, Secretariat observations regarding definitions
49. Heras, G, 09-04, Fire Damage of Heritage building Stones
50. Historic Scotland, 01-03, Edinburgh old and new towns world Heritage site report
51. Historic Scotland, 07-04, Managing fire safety in historic buildings
52. Hood, C, The intelligent use of water
53. Hristov, P, 07-04, Electronic recording system of fire statistics in Bulgaria
54. Hristov, P, Approaches and Methods of Fire Risk Quantitative Evaluation for Heritage Buildings in Bulgaria
55. IHBC, Fire at Buxton Mill Case Studies 2005
56. Jackman, P Building Conservation, The sleeping Policeman: The role of compartmentation in fire protection Case Studies 2005
57. Jensen, G, 12-04, Hand held fire-extinguishing equipment
58. Jensen, G, 12-06-05, unintended activations of sprinkler and water mist systems in heritage
59. Jensen, G, Hypoxic Air Continuous Inerting
60. Kaplan, M, 7th October 2003 Balancing the impact of physical interventions and of potential fire damage with the “value” and significance” of the site
61. Kaplan, M, 09-03, Balancing the impact of physical interventions and of potential fire damage with the “value” and significance” of the site. (Detailed cost studies ...from fires)
62. Kaplan, M, Fire Protection in Religious Properties through management October 1998 Case Studies 2005
63. Karlsen, E 06-10-04 Important fires in Norway in the last 20 years
64. Karlsen, E 07-04, Electronic system of recording fire statistics in Norway
65. Karlsen, E Norway Fire Statistics
66. Keivila, K Final scientific report
67. Kidd, S, 02, Disaster recovery and business continuity planning
68. Kidd, S, 12-03, US Fires in historic buildings
69. Kidd, S, 12-04, Fire risk improvement project
70. Kidd, S, 95, Heritage under fire
71. Kippes, W 07-04, Developing an Internet based system on European fire events
72. Kippes, W 08-04, NFPA USA Fire Data
73. Lenka M 04-05, Cultural heritage in Slovenia
74. Little RF 03-67, Fire test on a standing Georgian Dwelling
75. Llinares M 02-05, Fire in the Windsor Building, Madrid, Spain
76. Llinares M 12-03, Cultural Heritage in Spain Report
77. Loss Prevention Consultancy, Heritage risk assessment
78. Loss recovery (from ethical point of view) 08-04
79. Lund, I, IHBC, Fire damage at Marlborough High Street Case Studies 2005
80. Marchant, E, 07-04, advances in detection, extinction and suppression
81. Marchant, E, The efficacy of water mist fire suppression systems for archive protection
82. Marsella, S, 06-00, Performance based codes v prescriptive rules: The case of the application to fire protection of heritage in Italy
83. Marsella, S, 12-03, Performance based codes v prescriptive rules
84. Mattinen, M, 04-04, Gives an overview over the contents of the international conservation charters, statements of significance etc
85. Maxwell, I 01-03 Fires in Scottish historic buildings
86. Maxwell, I 04-04, Note of Research Seminar: “The Application of Water Mist in Cultural Heritage Buildings”
87. Maxwell, I 12-02, Fire Prevention and Engineers Journal
88. Maxwell, I, 09-02-01 Protection of Cultural Heritage Values: Fire Risk assessment for Historic Buildings
89. Maxwell, I, 11-04, Hotel de Ville, concluding observations
90. Maxwell, I, 12-03, Working group meeting and research seminar, Schloß Schönbrunn, Vienna
91. Mays D 12-04, English/ Scottish Listing criteria
92. Mileva, G, A Review of Some Problems Concerning The Estimation of the Cultural and Financial value of Historic Heritage in Bulgaria
93. Morgan Academy case study
94. Muskalska J 04-05, Fires in Poland
95. Muskalska, J 06-05, Polish Fire Statistics
96. New Zealand Fire Services Commission, Guidelines for Case Studies 2005 Identifying and Preventing Fire Risks to Heritage Buildings Case Studies 2005

97. Nuzzolese V 11-09-04 Definition of Historic buildings in Italy
98. Pehlivan, E, 09-04, Fire safety at the historical covered bazaars
99. Pehlivan, E, E 09-04 Definition of Historic buildings in Turkey
100. Pekurinen, S, 11-04, Insurance for historic buildings in Finland
101. Position of fire safety of cultural heritage in the regulatory system in various European countries, 02-03
102. Pressure check electric pump specification
103. Principles behind the Insurance Companies work with historic buildings, 08-04
104. Principles for deciding the degree of reconstruction of an historic building 11-04
105. Principles of deciding what should be built to replace the fire loss of authentic fabric 08-04
106. Razza, J. Fire alarm Systems in Historic places of worship October 1998 Case Studies 2005
107. Reivila K 06-09-04 Definition of historic buildings in Finland
108. Reivila K 07-04, Electronic recording system of fire statistics in Finland
109. Reivila K 11-04, Comparison of Data Categorisation of European Countries Fire Reporting Statistics
110. Relevant methodologies for risk (assessment, evaluation) analysis, consequences and measures to take, 06-04
111. RICS, Protecting Historic Buildings from Fire and Smoke Case Studies 2005
112. Rohen, P September 2004, Weimar library fire
113. Schloß Schönbrunn Meeting 07-04, Concluding Discussion
114. Schloß Schönbrunn Meeting 07-04: UK Fire Performing Proforma, Sweden Fire Reporting Proforma, and Swedish Fire Stats 1996-2001
115. Serious fire safety events in Italy
116. Skagit River Journal, The Wooley Fire of 1911 Case Studies 2005
117. SNHNFDF, 12-04, Fire database
118. Snodland Paper Mill Fire 1906 Case Studies 2005
119. SPAB Journal 6 April 1985 “York- Up from the Ashes” Case Studies 2005
120. Swaden, C, 06-09-04, Analysis of the building EXODUS evacuation simulation study of Schloß Schönbrunn
121. Swaden, C, 6 September 2004, Residential sprinkler systems- potential for design freedoms
122. Swedish National Property Board, 06-01, Instructions on fire safety in national monuments
123. Swedish Rescue Services Agency, 12-01, Systematic prevention work
124. Taglia, C del, Standard fires in historic buildings
125. Taylor, A. IHBC, Fire Prevention in Historic Buildings Case Studies 2005
126. The Colvin Trust – Stewart Kidd, Risk improvement in Historic and Heritage Buildings, Adaptive re-use, Duff House Case Study June 2003 Case Studies 2005
127. Trada Technologies case study, Windsor Castle Roof Case Studies 2005
128. U.S. Department of Housing and Urban Development: Fire Ratings of Archaic Materials and Assemblies Case Studies 2005
129. United States Fire Administration, St George Hotel Complex 16 Alarm Fire August 25 1995 Case Studies 2005
130. University of Aberdeen, Safety and Reliability Engineering Fire Hazards IV Fire containment and extinguishment Case Studies 2005
131. University of Edinburgh School of Civil Engineering, Behaviour of steel framed structures under fire conditions June 2000 Case Studies 2005
132. Vladimirov, V, Expression of interest in participating in COST Action C17
133. Wainwright, I, 11-04, Ecclesiastical Insurance
134. Watts, J. Performance Based Approaches to Protecting our Heritage Case Studies 2005
135. Westerlund, K and Egardt, E. 06-09-04 Definition of Historic buildings in Sweden
136. Westerlund, K, 06-04, Describe various attempts to estimate the economic value of historic buildings on the national or regional level
137. Westerlund, K, Definition of cultural and financial value
138. Westerlund, K, Emery, S, December 2004, Cultural and financial value 03-2005, The importance of historic value for economy 03-2004, Create contacts with insurance companies and describe to what extent historical buildings are insured?
139. Weston, K. IHBC, When the fire is over Case Studies 2005
140. White, F 11-03, Edinburgh Old Town Fire Report
141. Wilson, A 11-03 Contact with member countries, Listed Buildings etc.
142. Wohltan, D, 11-04, Insurance for historic buildings
143. World fire statistics bulletin October 2003
144. World fire statistics bulletin October 2004
145. Zarnic, R, 23-11-04, Consequence based approach to safeguarding cultural heritage
146. Zhigang, L, 02-01, A review of water mist fire suppression technology

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9 781904 966531