

Forensic Fire Investigation Report

Location of Fire: Finance Complex
Lower Happy Hill Drive, Charlestown, Nevis

Date of Fire: 17 January 2014 at 2:00 hours

Investigation Request by: Nevis Island Administration (NIA)

Investigators: Robert T Riches, Fire Chief, TFD Retired
Dr. Judi Riches, Ph.D., C. Psych,
Forensic Psychologist

Dates of Investigation: 13 – 20 March 2014

Date of Report: 20 March 2014

Reason for Report

The investigators attended Nevis at the request of the NIA with a view to advising as to possible cause of the fire, on 17 January 2014, at the Finance Complex which housed the Treasury, VAT and Inland Revenue Departments. Upon completion of the forensic fire investigation, reconstruction and analysis of the site and debriefing with the Premier, this report was requested.

Brief Introduction of the Findings

Using National Fire Protection Association standards, the reconstruction and analysis of the fire scene revealed that arson was clearly the cause of the fire at the Finance Complex on 17 January 2014. Two incendiary devices were used. The devices were petroleum based. These devices entered the structure through a maintenance opening on the west side of the building. Both devices landed on the false ceiling. One device landed towards the south/west corner of the Treasury office, the second landed approximately 3 feet from the front door on the north side of the Treasury office. The devices ignited thus starting the fire.

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Initial Observations at the Site of the Fire

Initial observation at the scene, quickly established that the entire Finance Complex had been involved with fire. The perimeter of the building was observed and examined in detail and photographic evidence collected.

The next step of the investigation involved two parts: (i) establishing the building had been secured since the fire; and, (ii) examination to establish the building to be structurally sound and safe to enter. This would be accomplished by interviewing the relevant parties. The interviews confirmed the building had been secured and was safe to enter. Thus, the reconstruction and analysis of the inside of the fire scene could take place.

Persons Interviewed

Mr. R. Archibald – Street Cleaner

Mr. J. Richards – Port Security

Mr. C. Dore – Treasurer

Mr. A. Farrell – Public Works

Mr. D. Stapleton – Divisional Fire Officer

F.O. Pemberton - Fire

F.O. Matthews - Fire

Mr. H. Brandy – Divisional Commander Police

Detective Hanley – Police

Mr. S. Heyliger – NEVLEC

Mr. L. Blackett – Director, Nevis Disaster Management

Hon. V. W. Amory – Premier & Minister of Finance

Forensic Reconstruction and Analysis of the Events on the Night in Question

Two incendiary devices entered the building through the maintenance opening on the west side. Mr. Farrell confirmed that he last used the maintenance opening to access the building above the dropped ceiling for repairs in late 2013. The devices were most likely plastic containers or bottles filled with accelerant and stuffed with a lighted wick. The accelerant used was a petroleum based liquid. These devices landed on the false ceiling of the Treasury office, one towards the back of the office the other towards the front. Upon impact the devices instantly ignited causing the false ceiling to set on fire.

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As the fire intensified, smoke and flames began to fill the space between the false ceiling and the peaked roof. At this point in time approximately 1:55 am, Mr. Archibald noticed smoke coming from the peak of the roof on the west side of the Treasury building. The smoke was visible from the apex of the roof to 6 or 8 feet towards the south/west corner. He went around to the south side of the building to look in the window. As the windows are placed high in the wall, he looked up through the window and saw flames at the ceiling level. He immediately ran to the office of Mr. Richards the port security guard.

The security guard was at his post and Mr. Archibald told him there was a fire at the Treasury building and to “come quick”. They both ran to the Treasury building and Mr. Richards reported he could see “smoke and fire”. He said he could see fire inside the building on the west side “under the eaves at the point of the roof a little towards the south”. He said he thought the fire was confined to the back of the Treasury building so he ran to the front, as he knew the door was made of glass, and looked inside. He stated he “was surprised” he could not see the fire but then realized there was a wall blocking his view to the back. At approximately 2:00 am, Mr. Richards telephoned Police and Fire, and Mr. Dore and reported the fire to all.

At this point in time, the fire conditions inside the structure were taking on a life of their own. The fire was looking for fuel to feed its insatiable hunger. The ceiling, at the back of the Treasury office, was now on fire and completely consumed in flames. The space between the ceiling and the roof would be filled with super-heated gases which would be pressing downwards thus creating dangerously unsafe conditions in the office space below. Any persons who may be in there would be unconscious by now.

Mr. Dore reported he immediately telephoned Charlestown Police Station to “report the matter”. He said the police were aware of the fire. He next called Mrs. Neva Manners, the Deputy Comptroller of the Inland Revenue to say the “Treasury was on fire”. Then he telephoned Permanent Secretary Mr. Laurie Lawrence and the Hon Premier Vance Amory to advise both of the fire. Finally, he called Mr. Richards back and reported he was told the “Police were on scene but Fire had not arrived”.

The Royal St. Christopher Nevis Police Force reported that at approximately 1:55 am the Charlestown Police Station received a “report that there was fire in the Treasury building”. Police officers Nisbett and Joseph were on duty and were the first on scene at 2:00 am and reported that the Treasury door was locked and secure and all windows were closed and intact. Inspector Brandy reported he was off duty and that Mr. Wilkinson, the night manager at the police station, telephoned him to tell him about the fire. Mr. Brandy arrived at approximately 2:00 am, parked at the square and observed “a lot of smoke and bright fire and flame”. He reported that he was thinking in a preventative mode and was concerned and scared for the servers in the building which held crucial government data.

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Nevis Electrical Company Ltd reported that emergency crews were dispatched by the operator at the power station at 1:55 am. At 2:12 am, Mr. Sterling Heyliger, Emergency Services Supervisor, reportedly received a call from Inspector Brandy asking for the electric to the building to be cut off. In response to this telephone request, the emergency operator, Mr. Liburd reportedly arrived on scene at 2:15 am. He reported that one of the Phase Conductors feeding the building was severed from the weather head and the generator to the building was in full operation. Mr. Liburd proceeded to disconnect the service line from the building and attached the cable to the utility pole. He then assisted the Fire workers with isolating the automatic transfer switch which controlled the generator. There was no request of NEVLEC to carry out an official investigation and NEVLEC reported no complaints or repair work was conducted on the Treasury, VAT or Inland Revenue offices during the previous year.

Divisional Fire Officer Stapleton reported he was “off duty [and] not on scene first, arriving one hour and a quarter later”. His written report states that “at 02:00 hrs, the Fire and Rescue Services responded to a fire call” at the Treasury building. The crew consisting of four fire officers “observed strong evidence that energized electrical activity was present inside the building. With this discovery the crew was unable to start extinguishment, as water which is our main extinguishing agent is a very good conductor of electricity which in turn could electrocute officers attempting to extinguish the fire. Since safety is paramount they had to contact NEVLEC Emergency Crew to disconnect the electricity before initiating an offensive fire attack”.

Fire Officers Matthews and Pemberton reported that at approximately 2:00 am they approached the front of the building with the fire appliance. Fire and smoke were visible coming out of the window at the back of the Treasury and was “just starting to come through the roof”. Wires attached to the building at that same location were reportedly on fire. The Fire Officers reported that only one room was on fire at the south/west corner of the building. A “loud explosion came from that room”, followed by “3 or 4 smaller booms”. The first explosion was sufficient for the Fire Officers to “go defensive for safety and move the fire appliance farther down the street” towards the sea.

At this moment, the super-heated gases in the ceiling at the south/west corner of the Treasury are building and becoming volatile. An extremely dangerous phenomenon is about to happen. As the super-heated gases reach their pinnacle of over 1000 degrees Fahrenheit, they take on a life of their own. The dreaded flashover is created and devastation will follow. Not a living soul could survive this event. This flashover explosion caused the ceiling in the back of the Treasury to collapse. Undoubtedly this is the explosion the Fire Officers heard.

As the ceiling collapsed the smoke, fire and gases powerfully charged through the lower portion of the Treasury office from back to front. It is so hot it consumes everything in its path. At this point, the secondary device is burning above. With the fire raging both above and below, the remaining Treasury ceiling collapses. The whole of the Treasury office is now violently consumed with super-heated flames and gases. As of yet, there is no offensive attack by emergency personnel, the uncontained, out of control fire now rages unhindered on its journey towards the Vat and Internal Revenue offices.

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At approximately 2:25 am Mr. Dore arrived on the scene and reported that his office was “burned to ash”. He recalled that by 2:40 am NEVLEC had “turned off the power” to the building. Meanwhile he saw that the fire had “now spread to the VAT office next door.

The flames and raging fire have now consumed the Treasury and VAT offices. More than two thirds of the building is filled with out of control fire. The fire travels along the ceiling of the VAT office to the Inland Revenue Department, along the remaining roof, causing the ceiling there to ignite. As the ceiling ignites the furniture in the upper level of the department is destroyed by fire.

The inside of the building is so hot by now that the actual concrete structure is being compromised. The plaster walls, which in places are 2 inches thick, are super-heated and cracking and falling under the onslaught. Large cracks and openings appear in the concrete walls themselves. Due to the severe temperatures within the building, the steel girders holding the roof up begin to buckle and twist. The fire at roof level is bright red and glowing.

Mr. Stapleton reported that it was at this time “Fire Officers with assistance from the Police launched an offensive attack in an attempt to contain the spread of the fire”. The Fire Officers reported they “fought the fire from the outside” with two hose lines.

As the fire travels along the roof to Inland Revenue, the steel beams twist, turn and contort making a tremendous squealing, grinding and dying noise. The roof above the Treasury office can stand no more. A thundering crash, which shakes the foundation and the ground around the building, signals the collapse of the roof. Sparks dance and fly and flames jump out of the building reaching 30 feet high into the night sky. This would be visible for miles out to sea.

Now that the roof has fallen and all combustible materials in the Treasury and VAT offices have been destroyed, the fire is searching for fuel to consume but finding none it retreats down to the lowest level. As the flames settle down, the fire hides in hot spots waiting to be reborn. It will take several more hours to completely calm this fiery beast.

Bottom Line

The fire at the Financial Complex which housed the Treasury, VAT and Internal Revenue offices was subject to a vicious arson attack. The resulting fire gutted the Treasury and VAT offices and the Internal Revenue Department sustained considerable damage. Fortunately, no lives were lost.

After completing this comprehensive forensic fire reconstruction and analysis, it is the opinion of the investigators that this was not a random act of mischief but rather a well-developed and orchestrated plan of mayhem. We are of the opinion that a well-thought out plan of attack was made at the heart of the Government and the people of Nevis.

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Discussion and Recommendations

1. It became clear during the investigation that there is a common belief that Fire Officers cannot enter a burning building if electricity is involved. This belief appears to be well entrenched and was the main reason the Fire Officers delayed before performing an offensive attack of the fire. The initial blaze was confined to one room at the back of the Treasury office. If the Fire Officers had entered the building and fought the fire, it is highly probable the fire would have been contained to that room and extinguished.

With up-to-date training techniques, the Fire Officers would have known a safe way to enter the building, extinguish the fire and remain safe from the effects of electricity. In terms of firefighting, the common belief that Fire Officers will be electrocuted if they use water on a fire where electrical activity is present is an erroneous one.

Therefore, the first and primary recommendation, which can have a tremendous effect on saving property and lives, is to train the Fire Officers how to fight a fire when electricity is present. This is a simple, well-established and cost-free technique which can be easily learned and implemented.

The technique is explained here:

- The standard setting on firefighting nozzles is straight-stream, this is used for basic attacks on most fires
- As a steady stream of water is a good conductor for electricity to follow, this setting is not used on such fires, as the electricity could follow the stream and injure the person
- To avoid this, simply turn the setting on the nozzle from straight stream to wide-angle fog
- The reason this setting is used is because the water being applied is broken down in to a mist of incredibly fine water droplets
- This is not a good conductor of electricity
- On a cautionary note: when a wide angle fog is used and the Fire Officer is approaching the fire, a point may come under certain circumstances (such as conditions of huge electrical voltage), when a buzz may be felt on the nozzle. This buzz feels similar to a cell phone set to vibrate. The attack can be held at this position without any injuries. Should the Fire Officer decide to push forward, this should be done slowly and with vigilance as the feedback buzz may become stronger.

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The Officer in Command should be trained first to break down the belief that a fire cannot be broached until the electricity is turned off. Then all Fire Officers should be trained in the technique until they are confident and competent in using the technique. It is crucial that the Officer in Command understands, demonstrates and promotes the use and benefits of this technique.

If only one lesson is learned from this disaster, it should be that Fire and Rescue can immediately perform an offensive attack on a burning structure when electricity is present. With this in mind, the above recommendation should be non-negotiable and implemented immediately.

2. During the fire at the Finance Complex, the Divisional Fire Officer reportedly arrived more than one hour after the fire was called in to the fire station. This raises a question about the effectiveness of the command structure in regards to rapid response time and fire scene management.

The recommendation is that a strategy be put in place which allows for a qualified Fire Officer to be on scene, within a reasonable amount of time, to take command and control of the fire incident. This component is critical as the decisions the fire scene commander makes are most often matters of property, life and death.

3. Numerous reliable reports were made regarding the apparent unpreparedness of the Fire Officers responding to the fire. For example: there were reports of only one Fire Officer being in full firefighter gear; of one Fire Officer having to return to the fire appliance to get a fire helmet; of another Fire Officer on scene with no firefighting gear whatsoever; and, of one Fire Officer having to return to the station for a flashlight.

Regardless of whether there is a shortage of gear, this is no way to be prepared to respond to any fire call. All Fire Officers must be in full firefighting gear and be fully equipped to deal with any emergency when leaving the fire station to respond to a fire call.

The recommendation is to perform an inventory of all required firefighting equipment and gear and to replace what is missing. Following the restocking of the inventory, the Commanding Officer must ensure that it is Standard Operating Procedure that any time Fire Officers are called out they are fully equipped and prepared for any eventuality.

4. Mr. Blackett, Director of Nevis Disaster Management provided a copy of his recent report addressing his concerns following this fire. The investigators support all of his findings and recommendations and rather than listing them here, the report is included in the Appendix.

5. During the reconstruction of the fire scene it became clear that the recently renovated Finance Complex was not equipped with any fire warning or suppression systems. Had, during the renovations, the complex been equipped with sprinkler systems, smoke detectors and heat detectors these would have activated and held the fire. Better yet, if these systems were automated to alert a central dispatch of the fire, there would be no need to rely on street cleaners to run to the port to alert the security guard.

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The recommendation consists of the mandate that: (i) all new or retrofit buildings are equipped with fire detection and suppression systems; and, (ii) at a minimum, all existing buildings (residential, commercial or public) be equipped with smoke detectors.

6. It became clear to the investigators that an independent and unbiased mechanism to conduct fire investigations needs to be developed and implemented. Attached in the Appendix is our recommendation for such a mechanism. In brief, it involves the development and implementation of a **Fire Prevention & Protection Act**.

7. We leave you with this thought: *Fire is a useful Servant, but what a fearful Master.*

Respectfully Submitted

Robert T Riches, Fire Chief, TFD (Ret)

International Fire & Safety Consultant

Dr. Judi Riches, Ph.D., C. Psych

Forensic Psychologist

Appendix

Proposal for the Establishment of a Fire Code Fire Prevention & Protection Act for the Federation of St. Kitts & Nevis

Why A Fire Code

Currently, there is no fire code on the Federation. Major developers profess to work to “Best International Standards” in regards to fire safety regulations. This really boils down to their ‘good will’ as there is no mechanism to monitor, regulate or mandate that certain *minimum standards* are being met and the Government has no guarantee for the safety of current or future occupants.

Long term planning must be a focal point for all governments in the area of Fire and Life Safety. As populations increase potential for injury or death continues to grow. These statistics are not something which any Government wishes. The development and proper application of a Fire Code will keep these statistics in check and will become a defining moment in the history of the Government of St. Kitts & Nevis.

Definition of the Fire Code

The Fire Code is an Act to promote Fire Prevention and Public Safety and Protection in the Federation of St. Kitts & Nevis.

The Ministry may make regulations that are considered advisable or necessary for the purpose of a Fire Code for St. Kitts & Nevis governing fire safety standards for equipment, systems, buildings, structures, land and premises including regulations:

- Prescribing any method, matter or thing leading to fire protection;
- Respecting standards for reducing the risk of, or consequences of, a fire that would seriously endanger the health or safety of any person or the quality of the natural environment for any use that can be made of it;
- Requiring and regulating fire protection equipment and systems and respecting the maintenance of such equipment and systems;

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- Respecting the qualifications and training of persons servicing, maintaining, testing, installing or repairing fire protection devices, equipment or systems and the licensing of such persons;
- Requiring and regulating means of egress, fire separations, finished materials, furnishings and decorations, standards of housekeeping and ventilation, air conditioning and incinerating equipment and systems;
- Controlling or prohibiting any material, substance, equipment or systems affecting fire safety;
- Requiring and regulating procedures respecting fire safety and the keeping of furnishings of records and reports;
- Requiring notice to be given to the Ministry or to a prescribed person respecting any change in use or occupancy;
- Prescribing conditions for use, occupation or demolition;
- Adopting by reference, in whole or in part, with such changes as the Ministry considers necessary, any code or standard and requiring compliance with any code or standard that is so adopted.

Fire Code and How it will Work

A Fire Safety Consultant shall be appointed with the power to monitor, review, advise and assist the Ministry respecting the implementation and provision of Fire Prevention and Protection services and to make recommendations for improving the efficiency and effectiveness of those services. The office of the Fire Safety Consultant of St. Kitts & Nevis could be a Crown Corporation created by the Government and funded by the private sector. In this way, there would be no cost to the Government.

The Fire Safety Consultant's mandate will be to ensure the rules, regulations and standards set out in the Fire Code are met and to enforce compliance with the Fire Code as directed by the Ministry. Moreover, the Fire Safety Consultant will have the authority to investigate: fires where arson is suspected; fires where a fatality has taken place; fires where a substantial financial loss has been experienced; and, fires in Government owned or operated buildings.

As Governments look to ensure that the image of their office is perceived as having created a platform that will continue to improve the way of life and economy for its people, the creation of the Office of the Fire Safety Consultant whose focus is fire code enforcement will establish this Government as a forward thinking innovative leader. The office of the Fire Safety Consultant of St. Kitts & Nevis will report directly to the Ministry therefore ensuring the highest authority is left with the Government.

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Duties of the Fire Safety Consultant

The duties of the Fire Safety Consultant shall include but not be limited to:

- Advising the Ministry in the interpretation and enforcement of the Act and Regulations;
- Complete Forensic Investigation of fires where arson is suspected; fires where a fatality has taken place; fires where a substantial financial loss has been experienced; and, fires in Government owned or operated buildings
- Assist in the development of training and licensing programs and evaluation systems for persons involved in the provision of fire protection services and provide programs to improve practices related to fire protection services. **The primary focus shall be identifying and training local Nationals for jobs in fire technology and safety;**
- Perform such other duties as may be assigned to the Fire Safety Consultant under this Act.

Qualifications of the Fire Safety Consultant

The position of Fire Safety Consultant requires a person who has years of specialized training and practical experience in modern fire technology. A thorough and intimate knowledge of the Fire Code, its implementation, interpretation and enforcement along with a broad experience with each specific fire safety component as relates to architectural developments is a requirement.

Fire Chief Robert T Riches (Ret, TFD) is such a diverse individual. A native of Toronto, Canada, Mr. Riches started his highly acclaimed 35 year professional career as a rookie fire officer in the *busiest fire station in all of North America (*as reported in the National Post newspaper, June 2008).

He climbed his way up the ladder to reach his dream of being the chief fire officer. Along the way he first learned and then taught every aspect of fire safety and security. After obtaining advanced degrees at the Ontario Fire College, he became an in-demand training officer and fire safety consultant.

Since retirement from the Fire Services, he is now a resident of St. Kitts and consults to the Government and the Fire & Rescue Services of the Federation. As a world-wide fire and safety consultant, Fire Chief Riches is in high demand and respected for both his business acumen and his humanitarianism.

In his consulting/mentoring capacity to the Government and the St. Kitts & Nevis Fire & Rescue Services, he has: developed a Strategic Plan which was implemented and a Master Fire Plan, including aerodrome and urban fire officer training, which is currently underway; initiated a comprehensive evaluation and study of the airports which revealed some matters which required

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urgent attention, as a result, mechanisms were put in place to demonstrate due diligence; initiated a program for regulated certification of airport fire officers which is ongoing; raised in excess of \$750,000 in goods, services and training at no cost whatever to the Government; provided computerized programs to streamline training and simplify administration; and, completed in-depth fire fatality/arson investigations. Since his involvement with the Fire Services in the Federation it became clear, in light of changing conditions, recent arson and fire fatality experiences, demands of the environment and circumstantial changes, that a Fire Code is needed.

Fire Chief Riches has spent 35 years in the field upholding the Fire Code and has particular skills which cannot be obtained elsewhere in the Federation. He is willing and able to design a customized Fire Code for the Federation of St. Kitts & Nevis and is ready and willing to provide the service of Fire Safety Consultant to the Government of St. Kitts & Nevis. Fire Chief Riches can complete the process of designing the Fire Code within six (6) months of being commissioned to do so.

With the Government's movement towards public-private partnerships and the commitment to the transfer of knowledge and skills to younger nationals, the appointment of Fire Chief Riches as Fire Safety Consultant to the Ministry is the epitome of this forward-thinking mandate.

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Mr. Blackett's Report

“The devastating fire that severely damaged the Finance Complex on Friday 17th January 2014 that housed the Treasury and Inland Revenue Departments and the VAT office requires a review of Government's policy and preparedness for similar events.

In the past, there have been a number of significant fires in Government buildings, namely the Charlestown Police Station, the Ministry of Communications Fire and Solid Waste. All of the fires in Charlestown were in close proximity to the only Community Fire Station in Nevis. Other significant non-Government fire in the last decade includes the Delta Petroleum Depot Fire.

A report should be required, not just to determine the cause of the fire but also to review the response and capabilities of the Fire & Rescue Services (FARS) and other agencies. Of critical importance is the demonstrated capacity of the FARS, including its equipment, readiness, operational status, procedures and training regime. I strongly suggest that a joint combined report be prepared with input from Fire & Rescue, Police, Disaster Management, NEVLEC and the affected agencies. The focus should be on lessons to be learnt from the incident.

Questions to be addressed should include but are not limited to the following:

- Was the response from NEVLEC adequate and timely and did it affect the effective response by FARS.
- Should there be training required to allow FARS to disconnect power in a Fire situation.
- What additional support (stations, equipment, gear, vehicles, manpower, water tankers etc.) should be provided to FARS to enhance their capability to effectively react to similar events.

Immediate report recommendations after fire incidents could include but are not limited to the following:

- Detailed post fire evaluation and recommendations by all parties involved with an effort to learn from the event and to enhance capabilities.
- Development of methods to enhance alerting and response to similar events.

Preliminary recommendations with regards to Fire Preparedness of Agencies in general, include but are not limited to the following:

- Establishment of a Fire Plan including maps, escape routes and periodic fire drills.
- Adequate Fire extinguishers in all Government Departments coupled with training in their use and periodic inspection.
- Establishment of a model comprehensive Disaster/Emergency Plan (to be individualized) for all Government building to include the hazards – fire, earthquake, hurricane, tsunami
- Establishment of Fire alerting systems (fire/smoke alarms), coupled with retro-fitted sprinkler systems where applicable, with central reporting for critical agencies/buildings.
- Backup of all essential data on a periodic basis in a separate location.”