

# **Technician I Kyle Wilson**

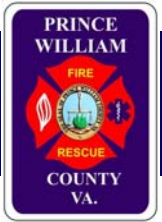
Line of Duty Death

April 16, 2007

15474 Marsh Overlook Structure Fire

Investigative Report

# Technician I Kyle Wilson

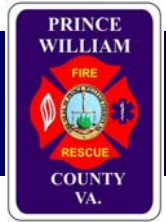


- ❑ Joined the Department on January 23, 2006
- ❑ Graduated Recruit School 06-1 on June 23, 2006
- ❑ Assigned to Engine 512 on June 26, 2006
- ❑ Died in the line of duty on April 16, 2007



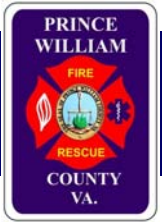
*We will never forget*

# Investigation Process



- Investigation Team Formed:
  - ◆ Department Procedure 4.0.4 Line-of-Duty Death/Serious Injury
  - ◆ Local 2598 representation
  - ◆ Technician level representation
  - ◆ External assistance
- Examined events at Marsh Overlook
- Reviewed related internal policies and procedures
- Referenced the IAFF Fire Fighter Line-of-Duty Death and Injury Investigations Manual
- Reviewed other LODD reports
- Performed research and incident fact finding

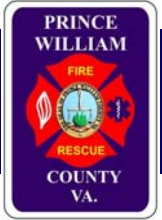
# Investigation Team



## Core Team Members

- ☐ Battalion Chief Jennie Collins
- ☐ Battalion Chief Jerry Shepherd
- ☐ Captain Rob Clemons
- ☐ Captain Brian Cooke
- ☐ Lieutenant Ramon Perez, Jr.
- ☐ Division Chief Richie Bowers (Montgomery County, MD)
- ☐ Battalion Chief Danny Gray (Fairfax County, VA)
- ☐ *Recorder:* Darlene Hodge

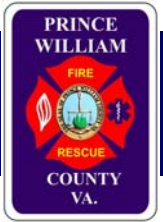
# Investigation Team



## Assistance Provided By:

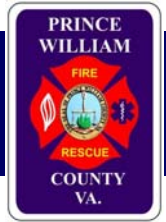
- ❑ County Attorney's Office  
Angela Horan
- ❑ Risk Management  
Lori Gray
- ❑ Office of Public Safety Communications  
Captain Ted McInteer and Shelia Ragan
- ❑ Fire Marshals Office  
Captain Tim Taylor, Captain Dave Doehler, Lieutenant Mark Dinsmore, and Lieutenant Tim Hattwick

# Examination and Review



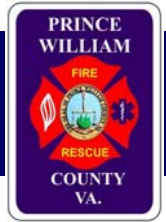
- ☐ Radio Traffic
- ☐ Video
- ☐ Scene Photographs and Sketches
- ☐ Initial Written Statements
- ☐ FMO Information
- ☐ Marsh Overlook Site Visits
- ☐ Personnel Interviews
- ☐ Follow-up Interviews

# Examination and Review



- Policies and Procedures
  - ◆ Department of Fire and Rescue
  - ◆ Fire and Rescue Association
  - ◆ Office of Public Safety Communications
- Gear/SCBA Examinations
  - ◆ Investigation Team
  - ◆ Third Party Independent Labs
- Field Testing
  - ◆ Portable Radios
  - ◆ Pump, Hose and Nozzles

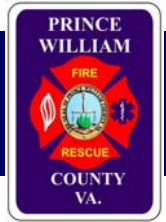
# Research



- Fire Service
- Trade Manuals
- Building Construction
- NIOSH Reports
- NIST Reports
- NFPA Standards
- OSHA Regulations
- Manufacturer's Specifications
- MSA (SCBA) Engineers
- Fire Modeling

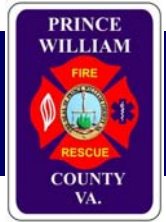


# Report Format



- General Information
  - ◆ Executive Summary
  - ◆ Overview of Fire and Rescue System in PWC
  - ◆ Incident Information
- Findings, Discussions, and Recommendations
- Appendices
  - ◆ Diagrams
  - ◆ Recommendations Matrix
  - ◆ Reconstructed Timeline
  - ◆ Related Reports – PPE, SCBA, and Radio Testing

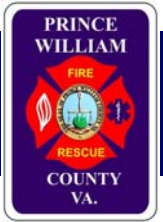
# Incident Information



## April 16, 2007

- ❑ Sustained winds of 25 mph, gusts to 48 mph
- ❑ Temperature was 45° F
- ❑ Early morning
- ❑ Nineteen 911 calls received
- ❑ 911 callers had no information regarding the occupant status
- ❑ Fire and Rescue's primary objective at all fires
  - ◆ Immediate and systematic search and rescue of victims

# First Alarm Assignment



- ☐ Wagon 512
- ☐ Engine 510
- ☐ Engine 520
- ☐ Tower 512
- ☐ Medic 512-C
- ☐ Ambulance 510-A
- ☐ Battalion 503

## Self initiated response

- ☐ Rescue 510
- ☐ Safety 502

# Incident Timeline



🕒 **06:01**      **First 9-1-1 call received**

🕒 **06:03:28**      **First Alarm dispatched**

*"Box 1209 on 5-Charlie for a house fire; 15492 Marsh Overlook Dr., cross street of Herring Way; Wagon 512, Engine 510, Engine 520, Tower 512, Ambulance 510-A, Medic 512-C, Battalion 503 at 0604 hrs."*

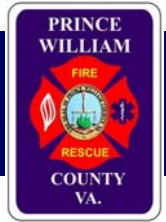
🕒 **06:08:32**      **Wagon 512 at hydrant, on scene report**

*"Wagon 512 is on the scene, we have 2 story single family, heavy fire showing Side B and C. Have next in pumper pick up hydrant at 15169."*

🕒 **06:09:21**      **Tower 512 on scene, A/B corner**

*"Tower 512 on scene, on scene, B Side."*

# Incident Timeline



🕒 **06:10:15      Wagon 512 requested 2<sup>nd</sup> Alarm**

*“Wagon 512 to Prince William we have cars in the driveway, unknown if anyone home, go ahead and hit the second alarm.”*

🕒 **06:11:16      Battalion 503 on scene, obtains status report**

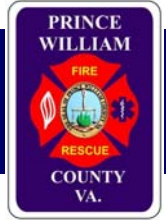
*“Outside fire started outside, right outside the house, in the attic right now, the Tower’s in there on the second floor, we got vehicles in the driveway and out front, searching for victims, we’re going in with a 2 ½.”*

🕒 **06:11:39      Tower 512 crew in foyer, ascending stairs**

🕒 **06:13:16      Wagon 512 reported stairs burned out, evacuate**

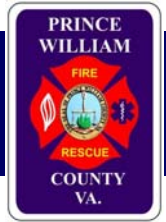
*“Wagon 512 to Command, we have a crew upstairs, the stairs are burned out, hit the evacuation tones!”*

# Incident Timeline



- 🕒 **06:13:26**      **Command requests evacuation tones be sounded**  
*"Command to Prince William, please hit the evacuation tones."*
- 🕒 **06:13**            **Tower 512's officer is observed in the stairwell/foyer area**
- 🕒 **06:14:09**      **OPSC announced emergency evacuation**  
*"Attention all units on scene of the house fire at 15492 Marsh Overlook, Marsh Overlook Command has ordered an emergency evacuation."*
- 🕒 **06:14**            **Tower 512's officer pulled from structure and into front yard**

# Incident Timeline



🕒 **06:14:53**      **Rescue 510 transmitted a mayday call**

*“Rescue 510 Officer to...Mayday, mayday, mayday, Tower 512 is missing one firefighter; we have a firefighter missing, in the stairwell.”*

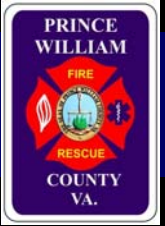
🕒 **06:15:06**      **Technician I Wilson transmitted a mayday call**

*“Mayday, mayday, mayday, Tower 512 Bucket, I’m trapped inside, I don’t know where I am, I’m somewhere in the stairwell, I need someone to come get me out.”*

🕒 **06:15:23**      **Command requests last transmission be repeated**

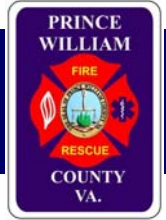
🕒 **06:15:45**      **Rescue 510 confirms mayday situation**

*“Tower 512 bucket portable is in the stairwell, he is lost, we have a RIT operation.”*





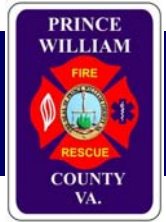
# Major Factors



## **Marsh Overlook Incident:**

- ❑ Initial arriving fire suppression force
- ❑ Size-up of fire development and spread
- ❑ High wind impact on fire development and spread
- ❑ Structure size, lightweight construction and materials
- ❑ Rapid intervention and firefighter rescue efforts
- ❑ Incident control and management

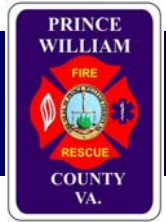
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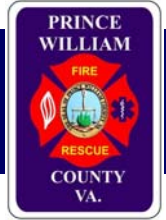
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# Initial Arriving Fire Suppression Force



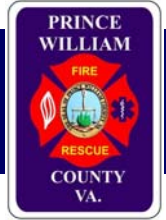
- Performance measures are established
- Operational Guidelines identify required tasks
- Initial dispatch complement – single family dwelling
  - ◆ 3 Engines – 1 Truck – 1 EMS Transport – 1 Battalion Chief
- Unit minimum staffing = 16 firefighters
  - ◆ 3 Engines – 3 Personnel each; 9 Personnel total
  - ◆ Truck – 4 Personnel
  - ◆ EMS Transport – 2 Personnel
  - ◆ Battalion Chief – 1 Person

# Initial Arriving Fire Suppression Force



- NFPA 1710 vs. 1720
  - ◆ 1710 – applies documented and proven science
  - ◆ 1720 – lacks quantifiable method of measuring effective personnel deployment
  - ◆ 1710 – applicable to Prince William County as career and volunteer capabilities and resources are fundamentally the same
  
- NFPA 1710 effective firefighting force = 17 firefighters
  - ◆ Based on a 2,000 square foot, single family occupancy, two-story without a basement, and with no exposures (detached home)
  - ◆ Identifies tasks which require 17 firefighters to accomplish

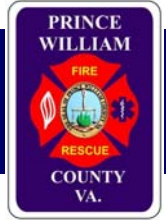
# Initial Arriving Fire Suppression Force



## □ Marsh Overlook

- ◆ 6,000 square foot, single family occupancy, two story with a basement
- ◆ Minimal staffing of normal dispatch complement: 16 firefighters
- ◆ Operational guidelines establish task expectations beyond that of the minimal NFPA tasks
  - RIT
  - Ladder placement
  - EMS
  - Utility control
  - Place additional hose lines in service

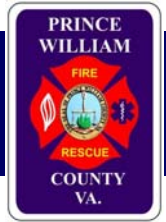
# Initial Arriving Fire Suppression Force



## Highlighted recommendations:

- ❑ *Increase minimum staffing on all engines from three to four qualified firefighters.*
- ❑ *Increase minimum staffing on all specialty pieces from four to five or six and address the practice of splitting crews on the fire ground.*
- ❑ *Increase dispatch complement and discontinue graduated dispatch complements based on structure type = standard structure fire dispatch complement.*
- ❑ *Specialty unit resource allocation study.*

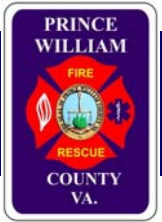
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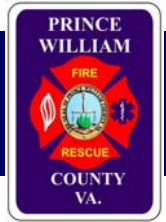
# Size-up of Fire Development and Spread



- Initial Arriving Unit Officer's Size-up Factors
  - ◆ 0600 hours
  - ◆ Large single-family (6,000 sq ft)
  - ◆ Search and rescue priority
  - ◆ Large volume of fire on exterior; fire extending into attic
  - ◆ Requested additional resources
  - ◆ Primary and secondary water sources
- Initial action plan
  - ◆ Offensive mode
  - ◆ Primary Search
  - ◆ Fire Attack

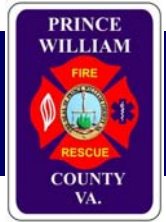


# Size-up of Fire Development and Spread



- Initial size up failed to identify all situational factors
  - ◆ Failed to complete a 360° survey
    - Rear of the house was not fully surveyed
  - ◆ Rear doors were left open by escaping occupants
    - Permitted air movement
    - Uncontrolled ventilation
  - ◆ Environmental impacts and building construction
    - Wind
    - Construction materials and design

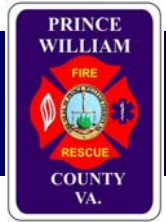
# Size-up of Fire Development and Spread



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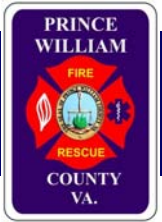
- *Comprehensive review of all procedures.*
- *Procedural change – require the following*
  - ◆ *On Scene Report*
  - ◆ *Size Up Report*
- *Department wide training needs.*
  - ◆ *Strategy and Tactics*
  - ◆ *Officer Development*
  - ◆ *Decision Making*

# Major Factors



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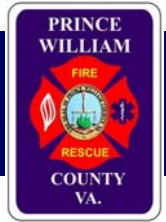
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# High Wind Impact

- High wind advisory in effect
  - ◆ 25-35 mph sustained, gusts up to 50 mph
- First arriving officers unaware of weather related advisories
- First arriving officers did not anticipate impact of high wind conditions on initial operation
- High wind impact
  - ◆ Intensified fire development and growth
  - ◆ Accelerated fire spread
  - ◆ Fire penetration through open doors and structural component failure
  - ◆ Uncontrolled ventilation of structure
  - ◆ “Blow torch” effect
  - ◆ Chimney effect in center core of structure

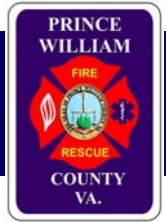
# High Wind Impact



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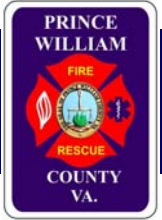
- ❑ *Review and revise all procedures related to operations in environmental extremes.*
- ❑ *Adjustment of dispatch complements.*
- ❑ *Standard method for communicating important weather related information to all personnel.*
- ❑ *Develop policy for expectations of wireless device use and programming.*
- ❑ *Standard shift change information exchange.*
- ❑ *Related training needs.*

# Major Factors



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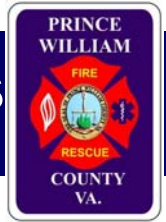
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# Structure Size, Lightweight Construction & Materials

- Size of Structure – Over 6,000 square feet
  - ◆ Two-story colonial with finished basement
  - ◆ Two stories in front; three stories in rear
- Type V-B construction
- Vinyl siding
  - ◆ Time to initial flame extension = 82 seconds
  - ◆ Time to flame extension to eave = 130 seconds
- Vinyl Soffit – ventilation holes
- Energy Brace – sheathing

# Structure Size, Lightweight Construction & Materials



0.106 inch Energy Brace  
Insulative Sheathing

Vinyl siding

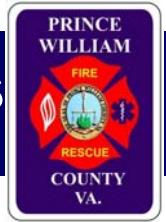
Soffit



*We will never forget*



# Structure Size, Lightweight Construction & Materials

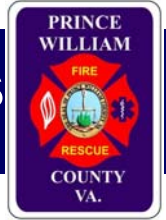


- ❑ Construction materials significantly affect rapid fire spread and BTU production
- ❑ Impacts occupant and firefighter safety
- ❑ Rapid fire spread with extension into the structure's interior on multiple levels
  - ◆ Multiple hose lines were required on multiple floors
  - ◆ Inadequate fire flow initially available (effective firefighting force)
  - ◆ Inadequate resources to increase the number of hose lines deployed
- ❑ Structural compromise of roof and walls occurred within seven minutes after the arrival of units

# Fire Modeling



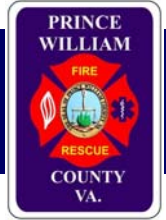
# Structure Size, Lightweight Construction & Materials



## Highlighted recommendations:

- *Effective firefighting force = minimum staffing and dispatch complement increases.*
- *Review and revise all procedures related to operations with various types of building construction.*
- *Related training needs.*

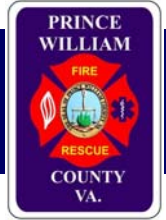
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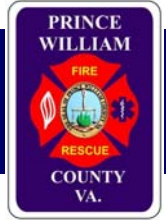
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# Rapid intervention and firefighter rescue efforts



- ❑ Two-in, two-out satisfied
- ❑ At time of mayday, no Rapid Intervention Team (RIT) was established
- ❑ Technician Wilson was unable to self rescue
  - ◆ Data files indicate the PASS was not functional
- ❑ Firefighter rescue effort attempted by various crews but activities not coordinated under a rescue group supervisor
- ❑ PASS devices sounding on fire ground

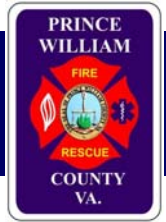
# Rapid intervention and firefighter rescue efforts



## Highlighted recommendations:

- ❑ *Clarify Department and Association procedures regarding RIT.*
- ❑ *Standardize procedures designated the RIT crew.*
- ❑ *Establish rescue divisions within the incident command structure when a firefighter rescue operation is encountered.*
- ❑ *Effective firefighting force = minimum staffing and dispatch complement increases.*
- ❑ *Related training needs.*

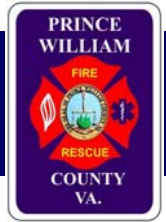
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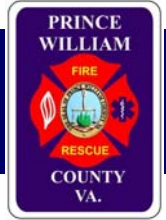
# Incident Control and Management



- Wagon 512's officer initially in charge of the incident
- Battalion 503 established command
  - ◆ 3 ½ minutes after W512 marked on the scene
- Span of control
  - ◆ Eight crews operating when Command was established
  - ◆ Seven more crews joined the operation prior to the arrival of another command level officer
  - ◆ Exceeded normal span of control
- Second command officer
  - ◆ Arrived in excess of 13 minutes

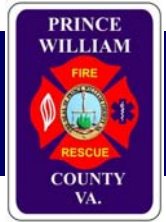


# Incident Control and Management



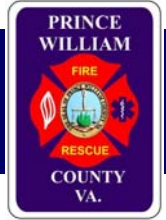
- No immediate command post support
  - ◆ Events occurring within the first minute after establishing Command
    - Emergency evacuation
    - Rapidly progressing fire
    - Depletion of on scene resources
    - Operating in hostile environmental conditions
  - ◆ Events occurring within two minutes after establishing Command
    - Mayday from a unit reporting a missing firefighter
    - Mayday from a firefighter reporting he was lost
    - Unanswered radio communications from units in IDLH atmospheres
    - Confirmed lost firefighter situation

# Incident Control and Management



- Resource coordination & operational discipline
  - ◆ Accountability system
  - ◆ Crew integrity
  - ◆ Compliance with evacuation orders
  - ◆ Modes of operation
- Low frequency, high risk event
  - ◆ Firefighter mayday
  - ◆ Firefighter rescue operation
  - ◆ No direct communication established with missing firefighter

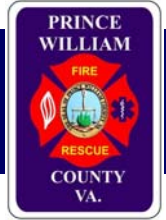
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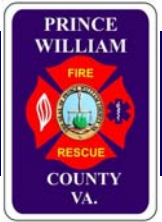
- ❑ *Must be an immediate resource assigned to arrive with the battalion commander to initiate command post support activities.*
- ❑ *Develop and implement an incident command support team.*
- ❑ *Staffing position analysis for all rank levels.*
- ❑ *Compliance with established procedures.*
- ❑ *Related training needs.*

# Recommendations

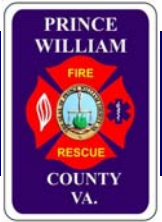


- ☐ Report implementation
- ☐ Address effective firefighting force
- ☐ System standardization
- ☐ Training
- ☐ Procedures
- ☐ Further areas identified for comprehensive analysis
- ☐ Technology and new initiative issues
- ☐ Local, regional, state and national initiatives

# Conclusion



- Investigation Team mailbox
  - ◆ Please read report in its entirety
  - ◆ Questions concerning the report content
  - ◆ [LODDreport@pwcgov.org](mailto:LODDreport@pwcgov.org)
  
- Next steps
  - ◆ Chief McGee



Technician I Kyle Wilson  
May 25, 1982 – April 16, 2007



May you rest in peace

*We will never forget*