

Determining if Company Officers Produce More Accurate and Consistent NFIRS Reports in the  
Virginia Beach Fire Department

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Certification Statement

I hereby certify that this paper constitutes my own product, what where the language of others is set forth, quotation marks so indicate, and that the appropriate credit is given where I have used the language, ideas, expressions, or writing of another.

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### Abstract

The problem is the Virginia Beach Fire Department did not know if the NFIRS reports were more accurate and consistent when completed by the company officer as compared to when they were completed by a firefighter. The purpose of this research was to examine the accuracy and consistency of NFIRS reports in the Virginia Beach Fire Department when completed by a company officer compared to when they are completed by a firefighter. Descriptive research methodology was used to answer the following research questions: (a) What are the standards for accurate and consistent data entry for NFIRS reports? (b) How do the NFIRS reports in the Virginia Beach Fire Department compare to the standard when completed by a company officer? (c) How do the NFIRS reports in the Virginia Beach Fire Department compare to the standard when completed by a firefighter? (d) What are the possible contributing factors to the difference between company officer and firefighter data entry in the Virginia Beach Fire Department? Accuracy and consistency standards were established using the NFIRS Complete Reference Guide. A review of building fire NFIRS reports for a six month period was performed, compared to the standard for accuracy, and divided by whether the report was completed by a company officer or firefighter. The company officers were more accurate than the firefighters by as score of 87.4% compared to 86.2%. Consistency was determined by reviewing fire reports for a live burn evolution at a high-rise structure. Company officers were consistent 75.9% as opposed to 51.7% for firefighters. Training and experience were investigated as contributing factors to the differences. Company officers were better trained but firefighters were completing more reports. It was recommended the VBFD add training after four years of service and allow delegation of reports to those firefighters only.

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The problem is the Virginia Beach Fire Department does not know if the NFIRS reports are more accurate and consistent when completed by the company officer as compared to when they are completed by a firefighter. The purpose of this research is to examine the accuracy and consistency of NFIRS reports in the Virginia Beach Fire Department when completed by a company officer compared to when it is completed by a firefighter. Descriptive research methodology was used to answer the following research questions: (a) What are the standards for accurate and consistent data entry for NFIRS reports? (b) How do the NFIRS reports in the Virginia Beach Fire Department compare to the standard when completed by a company officer? (c) How do the NFIRS reports in the Virginia Beach Fire Department compare to the standard when completed by a firefighter? (d) What are the possible contributing factors to the difference between company officer and firefighter data entry in the Virginia Beach Fire Department?

### Background and Significance

The National Fire Incident Reporting System (NFIRS) began in 1976 as a pilot program. This initial program was started with the participation of six states. Over the years it has grown to include all 50 states and over 30,000 fire departments. Annually there are approximately 1.3 million fire incidents and over 18 million non-fire incidents inputted into the data base. This data is used on a national level to develop public education campaigns, recommend changes to the fire codes, decide where federal funds are most needed, recommend recalls of failed products, establish research, and support legislation (FEMA, 2009).

As important the data is to the federal government, on a local level it is critical. The Virginia Beach Fire Department is a career department located in southeast Virginia. The 450 uniformed members serve a population of 438,000 residents. The city is located on the coast

and has 248 miles of land, 59 miles of water, and 38 miles of beaches (About the City, 2014). It is a popular resort city which increases the population during the summer months. The Virginia Beach Fire Department is an all hazard response including fire suppression, hazardous materials, technical rescue, marine, emergency management, fire inspections, fire investigations, life safety education, safety, health and wellness, and Virginia Task Force 2 which is a FEMA Urban Search and Rescue Team (History of the Virginia Beach Fire Department, 2014). The Virginia Beach Fire Department works as part of a complete public safety team with the department of EMS, the police department, communications, and other city agencies. The data collected and inputted is used by department leaders to justify programs, report to the city council and city manager, decide on location of resources, and make decisions on how to allocate the operating budgets. In tough economic times, all departments must be able to prove to city leadership and the citizens their money is being well spent. Accurate and consistent data is critical on the local level because without it funding may not be allocated for needed resources, grants may be denied, and programs may be cut.

Data is important to supporting the functions of the fire department and for trying to solve the fire problem at a local, state, and national level. This same level of importance is not placed on completing the incident reports in the Virginia Beach Fire Department. The department's policy on incident reporting puts the responsibility of the report on the company officer but allows delegation to a subordinate (Virginia Beach Fire Department, 2011). Although the company officer should review the reports, the system allows approval and clearing at the firefighter level. In addition, firefighters get a brief introduction to data collection, documentation, and NFIRS reporting in their recruit school, but it is only an awareness level and is not designed to make them proficient at inputting the data. Further training on NFIRS

reporting is conducted in the Captain's Academy and officer in-service training. There is an expectation that those officers who choose to delegate the reports to their subordinates will properly train them and review the work. The Virginia Beach Fire Department does not have any checks in place to ensure this occurs. In 2013 members of the Virginia Beach Fire Department completed 47,105 man hours of station drills according to the drill reports. Of that only 270 man hours were dedicated to documentation, data collection, and report writing. As important as it is to collect the proper data, a mere 0.5% of the training time was focused on improving this aspect of the profession.

One of the operational goals of the United States Fire Administration is to improve local planning and preparedness (USFA strategic plan, 2010-2014). This research project meets this goal by describing the accuracy and consistency of report writing by the Virginia Beach Fire Department to gain a better understanding of the department's preparedness and ability to plan for the future. In addition, the Executive Fire Officer Program (EFOP) Executive Development (ED) course strives to improve the ability of the executive fire officer to lead within a complex environment by the application of research (FEMA, 2013). Therefore based on this research project the leaders of the Virginia Beach Fire Department will be better equipped to make decisions based on type of training, responsibility of data input, and managing change to policies and mindset of department members.

### Literature Review

NFIRS is designed to capture data on all types of responses of all types of fire departments. This modular format has the potential to be a single source for data to help establish and solve the national fire problem. Consistency becomes very important when

analyzing the data. If different departments do not report similar fires using the same codes, then it will be difficult to establish trends. This problem can be compounded when members of the same fire department enter data differently. Fire officers of the McHenry Township Fire Protection District (MTFPD) were given a sample cooking fire incident and asked to complete a NFIRS report. There were inconsistencies in 68% of the data entry fields (Krueger, 2010). In the NFIRS Basic Module the "Incident Type" field is described as critical and will determine the modules that will need to be completed (FEMA, 2013). Inconsistencies for this element could result in an incomplete report if the correct modules are not required. A survey sent on a national level by a member of the Redondo Beach Fire Department provided two scenarios and asked the respondents to choose an incident type. One scenario described a confined cooking fire. Although 89% of the answers were correct, two additional answers were given meaning 11% were inconsistent. Another question described a vehicle fire inside the garage. Once again the correct response was given 83.2% of the time but 16.8% of the reports would have been incorrect (Rappaport, 2012).

Accuracy of a NFIRS report could be difficult to determine. An accurate report could be one in which all of the required elements have been entered which will pass the edit checks but fails to truly describe the incident. A more valid method of determine the accuracy of a report is to compare the data entry fields to the narrative. A study conducted by the Austin Fire Department looked at the accuracy of the fire cause entered in the NFIRS reports. They compared the narratives to the data entry field and found they matched 89.9% of the time (Fowler, 2012). However, the National Fire Data Center admits that not all data is accurate. Many records submitted to NFIRS contain incomplete fields or some fields contain no information (FEMA, 2009). This inconsistency was confirmed by members of Largo Fire

Rescue when they reviewed a month's worth of fire reports. The fire reports reviewed were ones which contained the structure module. Although they had one with a score of 100%, the average was 67% and the lowest was 31% (Stefancic, 2011).

In an attempt to assure reports are filled out accurately and consistently, the USFA published the National Fire Incident Reporting System Complete Reference Guide. The guide is divided into chapters which correlate to the specific modules. Each data entry item has a definition, purpose, entry, example, and the codes. The definition describes the element, and the purpose describes how this data can be used. The entry provides additional information on when to use this item, how to use it, and tips to reduce confusion. The example is given to display the correct code or data entry based on particular situation (FEMA, 2013). Although this guide exists there are a number of reasons a report may still be inaccurate. Regardless of the resources available, without a formal training program reports will still be completed incorrectly. In a survey sent to the officers of the Austin Fire Department, the majority stated they received the most training on completing NFIRS reports by trial and error. Next highest response in this survey was information passed to them from their company officers (Fowler, 2012). The McHenry Township Fire Protection District sent a survey to its members in order to gain information about their confidence in filling out NFIRS reports. Although 80% stated they were confident with EMS reports and 63% of them responded they were confident with automatic fire alarms, only 51% stated they were confident with filling out a report for a cooking fire (Krueger, 2010). This clearly shows a decline in confidence in relationship to the number of reports having to be filled out. When asked about training on this same survey, only 38% agreed they had received adequate training on how to input data into NFIRS reports, and 89% agreed that additional training would be useful (Krueger, 2010).

In addition to establishing a formal training program, stressing the importance of the data may prove to increase accuracy and consistency of NFIRS reports. Fire departments will use this data in more ways than simply a legal document or a historic account. Data from NFIRS reports can be published in the department's annual report and budget. It can also be used as a recruiting tool especially when competing with other departments for the best candidates. Furthermore this data can be used during city leadership presentations and when justifying budget requests. Finally, it's common to distribute the data to community leaders, such as civic leagues, to justify resources and discuss specific needs of the community (Barakey, 2009). The Nashua Fire Rescue (NFR) credits data obtained from their NFIRS reports with being awarded a \$435,000 AFG grant for new breathing apparatus, a \$498,000 grant for a new training facility, and \$85,000 from the State of New Hampshire Hazardous Materials Support Grant for advanced monitoring devices (Wholey, 2014). However, if the importance of this data is not stressed, critical information may not be obtained on scene and could result in incomplete information. In a survey to members of Largo Fire Rescue, 60% of the respondents indicated they were not concerned with the NFIRS report while on scene of the incident (Stefancic, 2011).

Related to training and stressing the importance of reporting data are other challenges. The burden put on the individual responsible for data entry and report writing could hinder performance. This burden could be the effort required to manipulate the software or produce hand written reports or it could be a time commitment burden. Without knowledge of the usefulness of the data, this burden becomes heavier. Training and adding user friendly resources can help alleviate this burden. There is also a question on motivation. Departments which lack a quality assurance program produce no feedback, negative or positive, concerning the reports.

Individuals completing these reports have no motivation to ensure they are properly done (Linger, 2014).

Attempting to create a national database of fire incidents and fire related data is a huge undertaking by the U.S. Fire Administration. The literature review for this research focused on establishing the specific problems surrounding data collection. The inaccuracies and inconsistencies have been well documented. The contributing factors have also been studied extensively. Training, lack of information, time constraints, and poor resources available have all been identified as factors. There has been a lack of research concerning who is best suited to complete NFIRS reports in the fire service. The literature review has influenced this study by providing groundwork on the wide spread issues involving accuracy and consistency. Information obtained from this review has provided the foundation for establishing accuracy and consistency standards in order to compare the potential difference between company officers and firefighters in the Virginia Beach Fire Department.

### Procedures

The National Fire Incident Reporting System (NFIRS) can be used on all fire department's incidents. The Complete Reference Guide published by the United States Fire Administration and National Fire Data Center is a resource to use in order to properly complete a report. Data elements marked with a star are required fields. Even though a report is completed and all required fields have been filled in, the report may not be accurate. The Complete Reference Guide was utilized to establish a standard for accuracy and consistency of NFIRS report and answer the first research question. Only NFIRS reports for building fires were reviewed. Based on the reporting requirements, all building fires would require the basic

module, fire module, and structure module. A total of 24 data fields were included in the review. These include fields from the basic, fire, and structure module. They are incident type, actions taken, resources, estimated dollar losses and values, casualties, detector (basic), hazardous materials release, mixed use property, property use, person/entity involved, owner, authorization, property details, on-site materials or products, ignition, cause of ignition and factors contributing to ignition, equipment involved in ignition, fire suppression factors, mobile property involved, structure type, fire origin and fire spread, items and material contributing to fire spread, detector (structure), and automatic extinguishing system. Appendix A describes how each element in the basic module, fire module, and structure module was determined to be accurate and if it was included in the review.

The Virginia Beach Fire Department utilizes the records management software (RMS) RedNMX to complete the NFIRS reports and run queries on data. Under the “Reports” tab in the RedNMX software, the “NFIRS Incidents” menu was selected on the right hand side. The query labeled “NFIRS Incident Summary” was selected. This query will provide the actual NFIRS reports for the selected criteria. The date range for this ARP was selected from January 1, 2013 to June 30, 2013. This date range was selected because it was current enough to properly represent the department and was known to be complete. The only other criteria selected was “Incident Type” in which 111-Building Fire was chosen. The query was run and the file was saved as a PDF. This query resulted in 130 building fire reports for the Virginia Beach Fire Department for the selected six month period. Each of these NFIRS reports was reviewed in the same manner. The first step was to document the incident number on a spreadsheet. Next, the narrative was read to get a good picture of the incident. The narrative was not reviewed for accuracy, writing style, grammar, or spelling. After reviewing the narrative, each data element

was reviewed in order using the NFIRS Complete Reference Guide and the information found in Appendix A of this ARP to determine if the element was accurate. An “X” was placed on the spreadsheet under each inaccurate data item. Finally, it was noted on the spreadsheet whether the member making the report was a company officer or firefighter.

Once all NFIRS reports were reviewed, a grade was given to each one. Since 24 data elements were reviewed, the errors were subtracted from 24 and that number was then divided by 24 to determine the percent of accuracy. These grades were separated into two group based on whether they were completed by company officers or completed by firefighters. The data was then analyzed to determine the averages of each of the groups.

The Virginia Beach Fire Department had a unique opportunity to determine consistency of NFIRS reports. A high-rise hotel was being demolished and the fire department had the ability to perform live fire training. The specifics of the drill were established by the department’s training division, and twelve separate burns were performed in a two week period. Certain aspects of this drill were consistent while others may have changed based on the crews’ initial tactics. Prior to the first drill, units were told they would be required to complete a NFIRS report. Specific instructions were given over email as well as on location at the drill. An incident was created for each drill which in turn created a report in the units queue in RedNMX. The units were given the instructions on how to access the training version of RedNMX, which mimics the live version without submitting the reports. Once all NFIRS reports were completed, a query was run in the training version of RedNMX utilizing the “Reports”- “NFIRS Incidents”- “NFIRS Incident Summary” form. The information placed in the form was the date range for the drill along with the drill address. This resulted in all twelve completed NFIRS reports containing

the basic module, fire module, and structure module for the individual drills. This file was saved as a PDF for review.

In order to use this drill as a reference for consistency, only data elements which did not change from evolution to evolution were included in the review. Data elements which could be confusing based on the fact that this was a drill were eliminated. The data fields from the basic, fire, and structure modules reviewed are incident type, pre-incident property value, detector, hazardous materials release, mixed use property, property use, person/entity involved, owner, authorization, property details, mobile property involved, structure type, detector, and automatic extinguishing system. A list of the data elements, whether they were included in the review, and the reasons for either including or excluding them can be found in Appendix B. In the measurement of consistency, fifteen data fields were reviewed. If there was 100% consistency then there would have only been fifteen unique data entries. In order to see how many entries per report on average were inconsistent, the theoretical number of perfect entries (15) was subtracted from the number of total unique entries. This number was then divided by the number of members making the report. To get a percent of consistency, this number was subtracted from fifteen and then divided by fifteen and multiplied by 100.

In order to determine some contributing factors to a lack of accuracy and consistency a report was produced which outlined how many NFIRS reports were being completed by company officers versus the number completed by firefighters. This report was produced by the department's data specialist by importing the data from RedNMX into an excel spreadsheet. The information captured was date, alarm time, address, incident number, incident type, member making report name, and member making report rank. The spreadsheet was used to separate

reports by rank. A comparison was made on the percentage of overall reports completed by company officers versus the percentage of building fire reports completed by company officers.

In addition, since several past studies, listed in the literature review, cited training as a contributing factor to poor data entry, training records were pulled. In the Virginia Beach Fire Department personnel are required to perform ten hours of training per month. The majority of this training is accomplished with station drills. The company officer is required to enter station drills into RedNMX each month. Two separate reports were compiled. The first report used looked at the number of man hours dedicated to data entry training. In the RedNMX software the "Reports" tab was selected and the "Training and Non Incidents" menu was brought up. The form for "Non Incidents Summary History" was used for this query. A date range of January 1, 2013 through December 31, 2013 was inputted. Under "Custom Field 1" the selection for NFIRS/PPCR training was chosen and under "Primary Non Incident Type", the box for station drill was checked. This allowed a query of all station drills focused on NFIRS/PPCR training for all of Virginia Beach Fire Department in 2013. The second report was used to compare total station drill training time to that which was dedicated to NFIRS/PPCR training. Utilizing the same form, the same date range was selected, the same box for station drills was checked, and all other fields were left blank. This allowed a query to report all station drills regardless of topic by the Virginia Beach Fire Department in 2013. A comparison was made to the number of man hours spent training on data entry versus the overall training hours in the department.

There were several limitations to this study. The primary one concerns the types of calls reviewed. Since reports were filtered based on incident type and only building fires were selected to review, any building fire which was miscoded would not have been including in this

study. Another limitation was determining the standard for accuracy and consistency. Although the NFIRS Complete Reference Guide exists and training by the National Fire Academy is available, the data collection system is still not perfect. There are several correct choices for many of the data elements and developing a system to determine accuracy proved to be difficult. NFIRS is continually improving and as a result data collection will also improve (FEMA, 2009). When determining consistency, the use of the high-rise evolution provided a unique opportunity to capture data but limited the amount of data that was inputted. In order to keep it as real as possible, crews were directed to fill out the NFIRS reports as they would on a normal incident. This means only one unit does the NFIRS and all others on scene do an assist report. Since this study was specifically looking at data entry points, the assist reports were not included. This limited the study to just twelve reports to determine consistency. Potentially more information may have been able to be obtained through the use of surveys. Surveys were specifically left out of this study due to a recent development in the Virginia Beach Fire Department. A NFIRS workgroup had been developed which began reviewing reports for accuracy and focusing on improved and consistent training. With the beginning of this group members of the Virginia Beach Fire Department are becoming more aware of NFIRS importance and common mistakes. It was the author's opinion that a survey sent out to department members to gauge a feel on NFIRS, training, and usage of data may have been tainted since it is a current hot topic in the department.

## Results

There were four research questions addressed in this study. The first question addressed the standards for accurate and consistent NFIRS reports. This was accomplished through a

comprehensive literature review, successful completion of the NFA NFIRS 5.0 Self-Study Course, review of the NFIRS Complete Reference Guide, and determining what data points could conflict with each other and make the report inaccurate. The chart found in Appendix A details the data elements and how to determine an accurate data entry. In order to determine a standard for consistency, the same fire in the same structure would need to occur and the NFIRS reports filled out by different members. A comparison was made from all the reports completed in order to determine consistency. These standards were then compared to reports completed by members of the Virginia Beach Fire Department to see if firefighters or company officers produced more accurate and consistent reports.

The second and third research question focused on determining how accurate and consistent reports were when completed by company officers and firefighters. Since accuracy and consistency are two separate concepts which can be measured, this research broke them up. Reports completed by company officers and firefighters were compared to the standard established in research question one. NFIRS reports from a six month period were reviewed and compared to the accuracy standard established using the NFIRS Complete Reference Guide. There were 130 reports reviewed with a department wide accuracy of 87%. Company officers completed the majority of these reports and averaged just over the department wide accuracy level. Of the 130 reports, 85 were completed by the officer and they averaged an accuracy level of 87.4%. The remainder 45 reports were completed by firefighters who averaged a consistency level of 86.2% (Table 1).

Table 1

*NFIRS Report Accuracy Comparing Company Officers to Firefighters*

| Rank            | # Completed | # Incorrect | Accuracy |
|-----------------|-------------|-------------|----------|
| Company Officer | 85          | 3.0         | 87.4%    |
| Firefighter     | 45          | 3.3         | 86.2%    |
| All             | 130         | 3.1         | 87.0%    |

In order to determine how consistent department members were at completing a NFIRS report, a live burn evolution using an actual high-rise hotel was used as the platform. Crews were directed after the training they were to complete a report as if it were a real incident. The drill was performed twelve times with different crews each time. The first arriving crew is responsible for completing the incident report. All other units complete an assist report, but this data is not captured in NFIRS. Of the twelve reports, four were completed by firefighters and eight by company officers. The information entered can be seen in Table 2.

Table 2

*Data Entered in NFIRS Report for Live Burn Evolutions*

| Data Element                | Company Officer   | Firefighter       |
|-----------------------------|-------------------|-------------------|
| Incident Type               | Building Fire (8) | Building Fire (4) |
| Pre-incident Property Value | \$68,000,000      | \$34,000,000      |
|                             | \$33,844,100      | \$13,500,000      |
|                             | \$11,000,000      | \$3,000,000       |
|                             | \$2,820,000       | \$2,820,000       |
|                             | \$5,000,000       |                   |
|                             | \$2,800,000 (2)   |                   |
|                             | \$0               |                   |

|                             |  |   |
|-----------------------------|--|---|
| Property Use                | Hotel (7)<br>Boarding House  | Hotel (4)                                     |
| Detector                    | Alerted Occupants (6)<br>Unknown (2)   | Alerted Occupants(3)<br>Unknown               |
| Mixed Property Use          | Blank (4)<br>Not mixed use (4)   | Blank (2)<br>Not mixed use (2)                |
| Person Involved             | Cavalier (8)   | Cavalier (4)                                  |
| Owner                       | Cavalier (6)<br>Blank (2)  | Cavalier (4)                                  |
| Officer in Charge (Rank)    | Captain (2)<br>Battalion Chief (4)<br>District Chief (2)                                     | Firefighter (2)<br>Captain<br>Battalion Chief |
| Est. # of Residential Units | 500<br>400<br>360<br>330 (2)<br>300<br>282 (2)   | 400<br>360 (3)                                |
| # of Buildings Involved     | 1 (7)<br>Buildings not involved  | 1 (4)   |
| Structure Type              | Enclosed (8)   | Enclosed (4)                                  |
| Building Height             | 11 above, 1 below (3)<br>11 above (2)<br>12 above<br>11 above, 12 below<br>12 above, 1 below | 11 above (2)<br>12 above<br>11 above, 1 below |
| Main Floor Size             | 150,000<br>117,040<br>52,800<br>52,500 (2)<br>10,640 (2)<br>10,000                           | 52,500<br>40,000<br>24,500<br>10,070          |

|  |                                 |                                 |
|--|---------------------------------|---------------------------------|
| Presence of Detectors                      | Present (6)<br>Undetermined (2) | Present (3)<br>Undetermined (1) |
| Presence of Automatic Extinguishing System | Present (6)<br>Not present (2)  | Present (4)                     |

Note: Numbers in parenthesis are number of repeated entries.

In the measurement of consistency, fifteen data fields were reviewed. If there was 100% consistency than there would have only been fifteen unique date entries. As you can see from Table 2, there were a total of 51 unique entries. When looked at individually by rank, the company officers produced 44 unique entries and the firefighters produced 29 unique entries. In order to see how many entries per report on average were inconsistent, the theoretical number of perfect entries (15) was subtracted from the number of total unique entries. This number was then divided by the number of members making the report. To get a percent of consistency, this number was subtracted from fifteen and then divided by fifteen before being converted to a percentage. All twelve NFIRS reports had an average of three entries per report that were inconsistent. The company officers had an average of 3.62 inconsistent entries per report, and the firefighters had an average of 7.25 inconsistent entries per report. This is shown in Table 3.

Table 3

*NFIRS Report Consistency Comparing Company Officers to Firefighters*

| Rank             | Reports | Unique Entries | Inconsistent | % Consistency |
|------------------|---------|----------------|--------------|---------------|
| Company Officers | 8       | 44             | 3.62         | 75.9%         |
| Firefighters     | 4       | 29             | 7.25         | 51.7%         |
| All              | 12      | 51             | 3            | 80.0%         |

This data shows when compared to a standard for accurate and consistent NFIRS report writing, company officers of the Virginia Beach Fire Department are better than the firefighters. Both groups have a lot of room for improvement, and a larger study on consistency might provide insight on how much better the company officers are than the firefighters.

Several contributing factors for the differences between company officer and firefighter NFIRS reports were researched. The first factor was training and the difference between NFIRS training at a company officer level and a firefighter level. In the Virginia Beach Fire Department recruit firefighters receive an introduction to report writing and data collection in recruit school. This training primarily focuses on how to access the RedNMX program and a brief overview of NFIRS. In addition, after recruit school they are given a probationary task book to complete within six months. One section in this book is NFIRS reports in which their company officer is expected to teach them how to fill out reports for different types of incidents. The company officer attends additional NFIRS training in the Captain's Academy. This academy is mandatory for all company officers and is given once the firefighter competes for the promotion and makes it onto the promotional list. The Captain's Academy is two weeks long and an entire day is dedicated to data collection and NFIRS reports.

With formal training for report writing occurring in the academies, it is up to the individual companies and members to train on their own. In the past five years there has been one in-service training which focused on NFIRS reports. This training was mandatory for all Virginia Beach Fire Department members. There has also been one officer in-service training focused on NFIRS. Without question company officers receive more formal training on NFIRS than the firefighters. With the ability to delegate the reports to firefighters, it is expected the

company officers will properly mentor their subordinates. In 2013 Virginia Beach Fire Department members performed 9,291 station drills logging 47,105 man hours. Of these station drills, only 78 of them were focused on NFIRS reports or data collection for a total of 270 man hours. This means only 0.8% of the station drills are report writing and only 0.5% of the man hours are dedicated to this topic.

Another contributing factor could be experience. If the company officers are not properly passing on the information learned from the formal training to their firefighters perhaps they are not delegating the task of report writing to them either. As noted in this ARP, the building fires reviewed for the six month period had more company officers making the report than firefighters. Even the high-rise drill had twice as many officers completing the reports than firefighters. All incidents for 2013 were exported and sorted by the rank of the member making the report. The query returned 39,989 reports completed by either a firefighter or company officer. Reports completed by investigators, inspectors, or chief level officers were excluded. Firefighters completed over four times as many reports as company officers. In order to look closer at this the calls were divided by incident type. NFIRS defines nine series of incident type codes. They are: 100-fire; 200-overpressure, explosion, overheat; 300-rescue and EMS; 400-hazardous condition; 500-service call; 600-good intent; 700-false alarm, false call; 800-severe weather and natural disaster; 900-special incident type (FEMA, 2013). Table 4 displays the number of reports per NFIRS series.

Table 4

*Completed Reports by NFIRS Incident Type Series Comparing Company Officers to Firefighters*

| Rank | 100 | 200 | 300    | 400   | 500   | 600   | 700   | 800 | 900 | Total  |
|------|-----|-----|--------|-------|-------|-------|-------|-----|-----|--------|
| CO   | 459 | 19  | 3,730  | 441   | 1,059 | 965   | 915   | 6   | 55  | 7,649  |
| FF   | 501 | 65  | 22,217 | 967   | 2,966 | 3,110 | 2,377 | 10  | 127 | 32,340 |
| All  | 960 | 84  | 25,947 | 1,408 | 4,025 | 4,075 | 3,292 | 16  | 182 | 39,989 |

Based on this information the company officers would be expected to be more accurate and consistent with the NFIRS reports because they have received more formal training and do not appear to be passing the training down in the form of station drills. However, the firefighters are completing many more reports than the company officers. During informal discussions, several company officers stated they complete all fire calls and allow their subordinates to complete all the others. The Virginia Beach Fire Department has approximately 90 company officers and about 330 firefighters. On average each company officer completes about 85 reports a year and each firefighter does about 100 each year. Although the firefighters appear to have more experience, without proper training they will continue to be less accurate. In addition because so many firefighters are completing so many of the reports, it makes it more difficult to control consistency. As the data above shows, even a small group, in which the information was readily available, could not be consistent when filling out the NFIRS reports.

## Discussion

Several studies have looked at NFIRS accuracy and how to improve data entry. Most of them site training as a root cause of poor report writing. The Orange County Fire Rescue Department (OCFRD) states their recruits receive very basic instruction during their initial training. This prepares them to simply open the report, save it, and close the report. There is a brief description given on each tab. In their officer academy the training lasts about an hour longer where they get an explanation on each box and common errors. No one in their department receives training on actually writing a report (Quick, 2011). Comparing this to the Virginia Beach Fire Department, like OCFRD the recruits in Virginia Beach also receive minimal training. This is not done accidentally. A recruit firefighter has a lot to learn and a lot of skills to practice. They also lack the experience needed to fill out a fire report. The recruit report writing class in Virginia Beach is focused to make the recruit aware of reporting requirements and instill a sense of importance of data collection. The problem arises when company officers require their newest firefighters to complete the reports. Unless the company officers are giving their firefighters extensive training at the station, these firefighters are learning by trial and error. As noted by the number of man hours spent training NFIRS, the company officers in Virginia Beach are not properly training their firefighters in the report writing.

The lack of initiative among the company officers in Virginia Beach to properly train the firefighters assigned to them might be a result of a lack of understanding on how the data is used. In a survey sent to several fire departments around the country and receiving 350 responses, less than half of the respondents stated they knew how their department used the data entered into

NFIRS (Quick, 2011). An observed difference in attitude towards documentation can be seen in other public safety agencies. The Virginia Beach Department of EMS requires their providers to complete the patient care report prior to leaving the hospital. This report becomes part of the patient's medical record, can be used to decide further treatment, and could potentially become a defense in court. To stress the importance of this patient care report Givot states "If you didn't write it on the patient care report, you didn't do it." He further stresses the importance of the properly completed report in order to protect the provider, his career, and his department (Givot, 2007). From the law enforcement side investigating, gathering evidence, and making arrests are only the beginning of a possible conviction. Police officers understand documentation is just as important as the work they did and are driven by the legal aspect (Smith, 2007). The fire service is still relatively new to proper documentation and may not have embraced the importance. With increases in litigation, protection of the firefighters, careers, and the departments could be another reason to improve the report writing. Howarth describes report writing as dreaded among firefighters and officers, however adds "we must make sure to write factual, defensible, and accurate reports that clearly describe our actions and provide sufficient detail to stimulate our memory months or even years later." (Howarth, 2015) The majority of the incident reports in Virginia Beach are being completed by firefighters. The study of this ARP did not look at the experience level of the firefighters completing the reports. However since the reports completed by firefighters were less accurate and not as consistent compared to company officers, many of the reports likely would not meet the standard Howarth described.

The McHenry Township Fire Prevention District (MTFPD) performed a study in which they sent three scenarios to members of the department and asked them to complete a report. The scenarios included an EMS incident, and automatic fire alarm, and a cooking fire. Although

they were not specifically looking for a difference between firefighters and company officers, they found one. According to their policies the cooking fire would be completed by the company officers. Therefore the cooking fire scenario was only sent to officers in the department. They found inconsistent entries on 81% of the variables for the EMS incident, 89% for the automatic fire alarm, but only 67% for the cooking fire. They attributed this difference to the experience level of the officers (Krueger, 2010). This specifically correlates to the measurement of consistency found in this study. The measure of consistency was done by using a live burn evolution instead of a written scenario. The evolution was a high-rise fire with fire on the eight-floor. An incident of this magnitude requires experience in gathering information on scene, knowing what to look for, who to get the information from, and knowing other resources available. The experience level of the firefighters may not have been sufficient to complete a NFIRS report for a large fire.

The responsibility of incident reporting lies with the company officer in the Virginia Beach Fire Department although delegation is allowed (Virginia Beach Fire Department, 2011). Since four times more reports are completed by firefighters as compared to company officers it is obvious this delegation occurs. Rappaport found in a survey several respondents admitting to choosing codes which would require less work (Rappaport, 2012). Quick goes on to say that the fire service has underestimated the time commitment needed to accurately report the data (Quick, 2011). Therefore the delegation of certain reports could be the result of attempting to spread out the work load among all members of the company due to a lack of time the officers have to complete each report.

Based on the review of the literature, analysis of the data obtained from this study, and personal observation and communication, an interpretation can be formed. The Virginia Beach Fire Department has stressed the importance of data over the past several years. Messages have been delivered to officers and firefighters to insure proper data collection and data entry. As much as the department has embraced proper reporting, no policies have changed to ensure this occurs. The department has increased the training to include the officer academy as well as officer in-service. With the increase training at the officer level, there would be an expected increase in accuracy and consistency. This was observed in this study although the difference in accuracy between company officers and firefighters was relatively small. The majority of the reports in Virginia Beach are being completed by firefighters; however the majority of building fires are completed by officers. Krueger hypothesized the improvement on consistency of the cooking fire reports was a result of the officers having more experience with the RMS software (Krueger, 2010). In Virginia Beach the firefighters are completing more reports and are therefore comfortable with the software. These report usually only contain the basic module, so it is possible the firefighters are not comfortable with the fire and structure modules of NFIRS. The lack of station training can be interpreted as a lack of interest, importance, or understanding. Since the company officer receives the most training, they would be the experts to lead a station drill. The training they receive is primarily a lecture. Although interactive, it is common for members to leave a lecture without fully understanding the material. In a survey distributed to several departments the question was asked about what can be done to better educate the members. Greater than half the respondents requested hands-on training (Quick, 2011). Firefighters are more accustomed to learning by doing. Report writing training is typically

performed in a lecture. It is likely the company officers are not able to take knowledge from the lecture and pass it on to their crews.

The results of this study has implications within the Virginia Beach Fire Department, within the state of Virginia, and nationally. Information extracted from NFIRS reports are used at a state and national level for legislation, product recall, fire prevention programs, funding distribution, and education. The extensive literature review and the results of this study have shown much of this information may be inaccurate. Therefore much of the decision making at these levels are based on false or misleading information. In order to help improve this data reported to the state of Virginia and the U.S. Fire Administration, the Virginia Beach Fire Department will need to evaluate its policies on report writing. The company officers produce more accurate and consistent reports but complete only a fraction of the total reports. These officers are given the training necessary to form a foundation of knowledge, but they fail to build on this knowledge by performing station drills on report writing. A policy change taking away the option of delegating the reports down to a subordinate may improve the report writing but could also increase the work load of company officers to the point which they would rush through the NFIRS. Increased training at all levels could improve accuracy but could also be viewed as an encouragement to delegating more reports to the firefighters. Members on all levels of the Virginia Beach Fire Department will need to change their perspective when it comes to report writing. Senior leadership will need to understand not all data is accurate when gathering information for presentations to city council, community leaders, or special interest groups. In addition when making decisions affecting the department, they may need to retrieve data from other sources and not rely on just NFIRS. Battalion chiefs will need to embrace the importance of the data and stress this importance to their companies. Their involvement, review

of reports, and participation in station drills will increase awareness at the company level on how important it is to take NFIRS reports seriously. At the company level, officers will need to take more ownership in NFIRS, ensure their subordinates are properly trained, and review the reports before they are approved.

### Recommendations

Company officers in the Virginia Beach Fire Department are more accurate and consistent when completing NFIRS reports as compared to firefighters. Although the company officers are charged with the responsibility of these reports, they are given the option to delegate the task to the firefighters (Virginia Beach Fire Department, 2011). The firefighters, however, are not receiving the same amount of training. In addition they are completing four times as many reports as the officers. Firefighters fresh out of recruit training lack the experience in completing NFIRS reports plus they are busy learning and reinforcing other skills. It is a recommendation from this study the Virginia Beach Fire Department establishes another level of training for NFIRS. The initial training should still occur in recruit school and should still focus on awareness of information being gathered and how it will be used. A second level of formal training should occur after the firefighter has been working four years in the field. This should be an in depth hands on training focused on properly filling out NFIRS reports. The training which occurs in the officer academy should still occur and should be designed to reinforce the information already obtained. In addition to the added level of formal training, it is recommended NFIRS education is given annually during in-service. With this tiered level of training, the Virginia Beach Fire Department should consider adjusting policy and only allow the officers to delegate report writing to those firefighters who have received the formal training

after four years of service. This model would allow firefighters with field experience to be trained to the same level company officers are currently trained. Supported by the data in this study, this should increase the accuracy and consistency of reports completed by firefighters. In addition the company officers would receive another level of training improving their abilities even more.

An entire culture change is needed in the fire service. Instead of busy work, report writing needs to be viewed as a critical task in emergency mitigation. As critical as pulling a hose line is to fighting a fire happen now, the report is a critical task to fight future fires. Information obtained today and properly entered into a NFIRS report will arm the departments, states, and country with valuable information to better plan for tomorrow's emergencies. Future studies should build on the results of this study. Instead of limiting the accuracy research to building fires it should be expanded to include all emergencies. In addition, in order to establish a mindset concerning the importance of data collection and data entry, a survey could be done in which questions concerning how the data is used and the importance of report writing is in relation to other fire service tasks.

Another recommendation to future studies would be to include research from other public safety departments. An in depth analysis of EMS and law enforcement when it comes to documentation would be extremely revealing. Information gathered should include when training occurs, who is responsible for the report writing, how much time is allotted in each day to ensure reports are completed properly, and what quality assurance and improvement measures do these agencies have in place? EMS providers view the patient care report as an extension of the care provided. Law enforcement officers view the documentation as an extension of the

investigation. Firefighters view the fire report as busy work having no real impact on how they perform business. This culture change is needed and information can be pulled from these other professions.

Another step for improvement across the board for the Virginia Fire Department would be to establish a quality improvement program. Currently only reports requested through the Freedom of Information Act are reviewed. With only a small percentage of the total being reviewed, the likelihood of a member receiving any feedback is small. Many officers and firefighters in the department are probably not even aware their reports are inaccurate. A review with feedback will increase awareness of the problem and allow members to work towards a solution.

The literature review, past studies, and the results from this research have shown a wide spread epidemic on inaccuracies with fire reporting. Such inaccuracies bring into question the validity of the national database. Fire service professionals and leaders need to work towards better data in order to make more informed decisions and grow the profession for the future.

## References

- About the City*. (2014). Retrieved February 18, 2015, from VBgov.com:  
<http://www.vbgov.com/about/Pages/default.aspx>
- Barakey, M. (2009, December 1). *Fire incident reporting: Accurate data will market your department*. Retrieved from <http://www.fireengineering.com>
- FEMA. (2009). *Fire in the United States 2003-2007*. U.S. Fire Administration.
- FEMA. (2013, November). Executive development student manual.
- FEMA. (2013). *National fire incident reporting system complete reference guide*. U.S. Fire Administration National Fire Data Center.
- Fowler, W. D. (2012). *NFIRS accuracy in the Austin Fire Department*. Emmitsburg, MD: National Fire Academy.
- Givot, D. (2007, October 9). *EMS documentation: The truth about sticks and stones*. Retrieved from EMS1.com: <http://www.ems1.com/ems-products/billing-administration/articles/312863-EMS-Documentation-The-Truth-About-Sticks-Stones/>
- History of the Virginia Beach Fire Department*. (2014). Retrieved February 18, 2015, from VBgov.com:  
<http://www.vbgov.com/government/departments/fire/Pages/The-History-of-the-Virginia-Beach-Fire-Department.aspx>
- Howarth, R. (2015, January 1). *Writing the report*. Retrieved from Firefigther Nation:  
<http://www.firefighternation.com/>
- Krueger, J. (2010). *Garbage in? Evaluating the consistency of the data input into the MTFPD NFIRS compliant database*. Emmitsburg, MD: National Fire Academy.
- Linger, W. (2014). Big data in the fire service. *Fire Engineering*, 93-95.
- Quick, V. (2011). *Garbage in garbage out: An evaluation of the national fire incident reporting system (NFIRS) training in the Orange County Fire Rescue Department (OCFRD)*. Emmitsburg, MD: National Fire Academy.
- Rappaport, R. (2012). *Evaluation of the accuracy of the Redondo Beach Fire Department NFIRS reporting*. Emmitsburg, MD: National Fire Academy.
- Smith, M. (2007). *Determining NFIRS reporting accuracy by Alachua County Fire Rescue company officers*. Emmitsburg, MD: National Fire Academy.
- Stefancic, J. (2011). *NFIRS data entry analysis*. Emmitsburg, MD: National Fire Academy.

*USFA strategic plan. (2010-2014).* Retrieved February 19, 2015, from United States Fire Administration:  
[https://www.usfa.fema.gov/downloads/pdf/strategic\\_plan.pdf](https://www.usfa.fema.gov/downloads/pdf/strategic_plan.pdf)

Virginia Beach Fire Department. (2011, April 27). SOP FS 5.09 emergency incident report procedure.  
Virginia Beach, VA: Unpublished.

Wholey, M. (2014). *Establishing a consistent and accurate national fire incident reporting system program for Nashua Fire Rescue.* Emmitsburg, MD: National Fire Academy.

## Appendix A: Establishing Accuracy

| Module | Data Element   | Included in Review? | How accuracy was determined  |
|--------|--|---------------------|--|
| Basic  | FDID, State, Date, Station, Incident Number, Exposure Number | Not included        | This information is automatically transferred from the CAD.  |
| Basic  | Location Type, Number, Street, City, State, Zip              | Not included        | This information is automatically transferred from the CAD.  |
| Basic  | Incident Type  | Included            | Information was gathered from the narrative and compared to this data field  |
| Basic  | Aid Given or Received  | Not Included        | This information was difficult to verify. The VBFD does not do much mutual aid and information from the CAD on each call would be needed. For this reason this element was not reviewed.   |
| Basic  | Date, Time, Shift, Alarm, Special Studies                    | Not included        | This information is automatically transferred from the CAD.  |
| Basic  | Actions Taken  | Included            | This information was compared to the narrative. According to the reference guide, lower numbers are to be used first. This was determined to be inaccurate if lower number action items were omitted. As example, if Investigate (86) was used and the narrative stated ventilation was performed but was omitted from this field, the element was not accurate. |
| Basic  | Resources  | Included            | This field is typically transferred from the CAD, but it doesn't always work. The user needs to verify this field. If nothing entered, this field was considered not accurate.   |

|       |                                    |              |   |
|-------|------------------------------------|--------------|---|
| Basic | Estimated Dollar Losses and Values | Included     | Losses and pre-incident values were both required. This field was not verified, but based on information in fire module, structure module, local knowledge of the structures, and the narrative, if this field seemed reasonable, it was considered accurate.   |
| Basic | Casualties                         | Included     | If the narrative described a possible injury or a need for medical assessment, and this element was not filled out, it was considered not accurate.   |
| Basic | Detector                           | Included     | Information was gathered from the narrative and the structure module to ensure there were not contradictions. This field was assumed correct if no other information stated differently.  |
| Basic | Hazardous Materials Release        | Included     | This field was consistently left blank. It is not a required element so a blank field was not automatically considered inaccurate. However, any information in the narrative of a hazardous material without information in this field was inaccurate.  |
| Basic | Mixed Use Property                 | Included     | This field was consistently left blank. It is not a required element so a blank field was not automatically considered inaccurate. However, any information in the narrative, structure module, or local knowledge that indicated the building was mixed use would result in an inaccurate field if left blank. |
| Basic | Property Use                       | Included     | This field was compared to the narrative and structure module to determine accuracy. In addition, local knowledge was used if it was in question.   |
| Basic | Person/Entity Involved             | Included     | This was considered inaccurate if it was left blank.  |
| Basic | Owner                              | Included     | This was considered inaccurate if it was left blank.  |
| Basic | Remarks                            | Not included | The narrative was not include, however the narrative was used as the basis to determine the accuracy of the other fields.   |

|       |   |          |  |
|-------|---|----------|--|
| Basic | Authorization   | Included | The officer in charge is the ranking fire official dealing with the incident. If any other name was listed, this field was inaccurate. Also, this field was used to determine the level of the individual completing the report.   |
| Fire  | Property Details  | Included | The components of this element had to match with each other and make sense with the property use from the basic module. This element is consistently left blank. It is required for any property use in the 500s, 600s, 700s, or 800s. If any of these property use types from the basic module were entered and this was blank, it was inaccurate. Also if any information from the narrative indicated on-site materials then this section would have to be completed for it to be accurate. |
| Fire  | On-site Materials or Products   | Included | Information from all components was compared to the narrative. In addition all components had to match (item first ignited and type of material first ignited had to make sense). Any "Undetermined" was only accurate if an investigator was called.  |
| Fire  | Ignition  | Included | The information was obtained from the narrative and compared to these data fields. Any "Undetermined" was considered inaccurate unless an investigator had been called.  |
| Fire  | Cause of Ignition, Factors Contributing to Ignition, Human Factors Contributing to Ignition | Included | The information was obtained from the narrative and compared to these data fields. In addition this was compared to the ignition fields in the fire module. If this was left blank or contradicted with the origin, this element was considered inaccurate. In addition this element could be considered in accurate if wrong information was given concerning power source and portability.   |
| Fire  | Equipment Involved in Ignition  | Included | This data field was compared to the narrative and was considered accurate if no contradictions were found.   |
| Fire  | Fire Suppression Factors  | Included |  |

|           |  |          |   |
|-----------|--|----------|---|
| Fire      | Mobile Property Involved   | Included | This data field was compared to the narrative and was considered accurate if no contradictions were found.  |
| Structure | Structure Type   | Included | This element was compared to the property use in the basic module, property details in the fire module, the narrative, and local knowledge. If any contradictions existed, this element was inaccurate.           |
| Structure | Fire Origin, Fire Spread, number of stories damaged by flame                               | Included | This element was compared to the narrative and ignition section in the fire module. Any contradictions were considered inaccurate.  |
| Structure | Item contributing most to flame spread, Type of material contributing most to flame spread | Included | This element was compared to the narrative and the fire spread section of the structure module. In addition the information of the item and the type of material had to match in order to be considered accurate. |
| Structure | Detector   | Included | This element was compared to the narrative and the detector section of the basic module. If any contradictions existed than it was considered inaccurate.   |
| Structure | Automatic Extinguishing System   | Included | This element was compared to the narrative. If any question existed then information obtained from pre-plans or local knowledge could be used. This was considered accurate if no contradictions were found.      |

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## Appendix B: Establishing Consistency

| Module | Data Element   | Included in Review? | Reasons  |
|--------|--|---------------------|--|
| Basic  | FDID, State, Date, Station, Incident Number, Exposure Number | Not included        | This information is automatically transferred from the CAD.  |
| Basic  | Location Type, Number, Street, City, State, Zip              | Not included        | This information is automatically transferred from the CAD.  |
| Basic  | Incident Type  | Included            | All evolutions involved the same incident type   |
| Basic  | Aid Given or Received  | Not included        | The drill was performed with only members of the VBFD and did not include any mutual aid.  |
| Basic  | Date, Time, Shift, Alarm, Special Studies                    | Not included        | This information is automatically transferred from the CAD.  |
| Basic  | Actions Taken  | Not included        | Every evolution required several functions of the crews. It would be difficult to determine consistency because there are multiple correct entries for this data element.  |
| Basic  | Resources  | Not included        | This field is typically transferred from the CAD, but it doesn't always work. The user needs to verify this field. If nothing entered, this field was considered not accurate.   |
| Basic  | Estimated Dollar Losses and Values                           | Included            | Only the pre-incident property value was included in this review. The reason is the hotel was empty and had been stripped of most contents. Some members may have given estimates of contents based on what the hotel would normally have. Also property losses would have been difficult to estimate since each evolution resulted in more fire damage. |
| Basic  | Casualties   | Not Included        | Each evolution had a different number of casualties.   |

|       |                               |              |   |
|-------|-------------------------------|--------------|---|
| Basic | Detector                      | Included     | A detector was operational and sounding on every evolution.   |
| Basic | Hazardous Materials Release   | Included     | There was no hazardous material release in any of the evolutions so this field should be consistent.  |
| Basic | Mixed Use Property            | Included     | This field was consistently left blank. It is not a required element so a blank field was not automatically considered inaccurate. However, any information in the narrative, structure module, or local knowledge that indicated the building was mixed use would result in an inaccurate field if left blank. |
| Basic | Property Use                  | Included     | The structure was a hotel and therefore this entry should be consistent.  |
| Basic | Person/Entity Involved        | Included     | There was a hotel representative at each evolution to provide information   |
| Basic | Owner                         | Included     | The pre-incident plan was updated prior to the drill which contained owner information.   |
| Basic | Remarks                       | Not included | This research was aimed at determining consistency of data fields not evaluating the narratives.  |
| Basic | Authorization                 | Included     | Every evolution was commanded by a Battalion Chief or higher. The rank of the Officer-in-charge was reviewed for this data field.   |
| Fire  | Property Details              | Included     | The property did not change and the fire was confined to a single building on each evolution. According to the Pre-plan given, there were 360 residential living units in the building.   |
| Fire  | On-site Materials or Products | Not included | This is not a required element for this location type and the building had been stripped of most of the contents. Eliminating this element from review lessened the chance of inconsistencies being due to someone imagining the building in normal use.  |

|           |   |              |   |
|-----------|---|--------------|---|
| Fire      | Ignition  | Not included | The primary reason for eliminating this element from review is the crews were rushed out after the evolution in order to get the next evolution started. They were not given adequate time to determine where the fire started and how it spread.                                 |
| Fire      | Cause of Ignition, Factors Contributing to Ignition, Human Factors Contributing to Ignition | Not included | The primary reason for eliminating this element from review is the crews were rushed out after the evolution in order to get the next evolution started. They were not given adequate time to determine where the fire started and how it spread.                                 |
| Fire      | Equipment Involved in Ignition  | Not included | The primary reason for eliminating this element from review is the crews were rushed out after the evolution in order to get the next evolution started. They were not given adequate time to determine where the fire started and how it spread.                                 |
| Fire      | Fire Suppression Factors  | Not included | This data element could vary each day. There were problems with the FDC that did not occur on each evolution. Variance in this element was expected.  |
| Fire      | Mobile Property Involved  | Included     | This was included in the review; however no mobile property was involved.   |
| Structure | Structure Type  | Included     | The structure type (enclosed building) was included; the status was excluded due to the confusion of document how it was versus how they were pretending it was for the drill. Building height and main floor size were included and information was available from the pre-plan. |
| Structure | Fire Origin, Fire Spread, number of stories damaged by flame                                | Not included | The primary reason for eliminating this element from review is the crews were rushed out after the evolution in order to get the next evolution started. They were not given adequate time to determine where the fire started and how it spread.                                 |

|           |  |              |   |
|-----------|--|--------------|---|
| Structure | Item contributing most to flame spread, Type of material contributing most to flame spread | Not included | The primary reason for eliminating this element from review is the crews were rushed out after the evolution in order to get the next evolution started. They were not given adequate time to determine where the fire started and how it spread. |
| Structure | Detector   | Included     | Information on this element was available on the pre-plan and was consistent throughout each evolution.   |
| Structure | Automatic Extinguishing System   | Included     | Information on this element was available on the pre-plan and was consistent throughout each evolution.   |

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