Executive Development

Examining Fire Incident Reporting in the City of Virginia Beach Fire Department

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Certification Statement

I hereby certify that this paper constitutes my own product, that 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 writings of others.

Signed: ______________________
Abstract

This applied research project examines the process and effectiveness of fire reporting in the Virginia Beach Fire Department (VBFD). The problem is the VBFD provides no formal training and does not review fire incident reports. The purpose of this paper is to examine and provide a plan to increase the accuracy of fire incident reporting.

This research project employed the descriptive research method to identify:

1) Why are accurate and consistent incident reports important to an organization?
2) What checks and balances exist to ensure a fire incident report is completed accurately and consistently?
3) What policies/procedures could aid with accurate and consistent incident reports?
4) What training exists to prepare firefighters to enter accurate and consistent fire incident reports?
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Fire Incident Reporting in the City of Virginia Beach Fire Department

Introduction

The Virginia Beach Fire Department (VBFD) uses the data collected from fire incident reports to demonstrate the need for additional equipment and staffing. Money is limited. The VBFD must compete with other city agencies for funding while being held accountable for providing acceptable services that will protect the citizens and visitors. Like corporate America, municipal government must show an accurate depiction of the need for a commodity or service. Data drives decisions at all levels of the corporate world and data drives decisions at all levels of government (Burris, 2000). For the fire service, funding and budgetary request have to be justified in the times of lean and responsible government. The fire apparatus and staffing needed to fight fires and provide emergency services are expensive and revenues are limited. As a result, justification and support for the necessary funding comes from the accurate reporting of data and incidents.

The National Fire Incident Reporting System (NFIRS) is an information reporting system that is supported by the United States Fire Administration (Federal Emergency Management Agency, United States Fire Administration National Data Center [FEMA, USFA NDC], 1997). Since 1976, NFIRS has been assessing the nature and scope of fire problems in the United States. Eighteen thousand out of 31,000 fire departments contribute to the data collected within NFIRS. These departments report on an average of 11 million incidents each year, including 800,000 fires (Licht, 2007). Fields are completed based on the nature of the incident.
Fire incident reports are completed daily by members of the VBFD. These reports are required by policy and comply with NFIRS 5.0. Quarterly, the data is forwarded to the Virginia Department of Fire Programs (VDFP), where it populates the Virginia Fire Incident Reporting System (VFIRS). The VDFP in return sends the information to NFIRS. Ultimately, the annual NFIRS data is compiled and published in *Fire in the United States* (FEMA, USFA NDC, 1997).

Accurate data is necessary for the Virginia Beach Fire Department. Productivity and effectiveness can be compared with the state average, communities similar in size and capabilities (FEMA, USFA NDC, 1997). “Without accurate data, management services will not fund our requests; we (the VBFD) must justify our business case. As money gets tighter, we must be able to justify our needs (D. Brehm, personal communication, October 5, 2007).

NFIRS desires to improve the quantity and quality of the data it collects (FEMA, USFA NDC, 1997). Accurate data provides localities, states and federal government with millions of dollars. Accurate data benefits every level of government, from local counties and cities, to the Commonwealth of Virginia, to the federal government. The responsibility of entering accurate data starts with the local fire department.

The problem identified in this research project is that the VBFD completes fire incident reports that are neither accurate nor consistent. Without accurate and consistent fire incident reports, the department lacks: a) the ability to support future fire station locations for better coverage, b) the ability to accurately track the use of equipment and personnel, and c) the ability to accurately demonstrate the fire problem in the City of
Virginia Beach. The purpose of this research project is to identify recommendations for VBFD personnel to complete fire incident reports that are accurate and consistent.

This research project employed the descriptive research method to identify:

1) Why are accurate and consistent fire incident reporting important to an organization?
2) What checks and balances exist to ensure a fire incident report is completed accurately and consistently?
3) What policies/procedures could aid with accurate and consistent fire incident reports?
4) What training and education programs exist to prepare firefighters to enter accurate and consistent fire incident reports?

Recommendations will ensure that accurate and consistent fire incident reports will result from this research project. Research procedures included an evaluation of the dollar loss data entered into fire reports by members of the VBFD, a survey of firefighters and officers who are responsible for the entry of data into the fire reporting software (Red Alert) for the VBFD, a survey of various fire departments throughout the region and country who enter fire incident reports, and interviews of members of the VBFD who use the data entered by the firefighters and officers to build the annual report, justify budgetary requests, plan strategically for the needs of the organization, and complete our Standards of Response Coverage (SORC) document.

Background and Significance

The VBFD completes a fire report for each incident that a fire apparatus is assigned by the Emergency Communications Center (ECC). The incident number assigned at the ECC is interfaced through the CAD to the department’s fire incident
reporting system, Red Alert. Red Alert is a SQL based data base. It is a records management program that is NFIRS 5.0 compliant.

Once the CAD interface assigns a piece of apparatus to the incident number, a fire incident report must be completed. Although some data is directly populated by the CAD, the majority of the data placed in the fire incident report comes from the member of the VBFD completing that report. The data placed in the fire report is strictly at the discretion of members entering the data. Certain fields are “required” and must be filled in prior to completion of the report. The data entered may not be reviewed; the only requirement is that all required fields have data entered.

An interesting relationship exists between members assigned to fire operations and fire administration. Since the firefighters and officers assigned to fire operations responds to the emergency incidents, they have the greatest control of the data entered into the fire incident reporting system. Once the data is entered, officers assigned to fire administration use the data to support, address, justify, and explain the financial and business decisions of the Virginia Beach Fire Department. As a result, everyone in the VBFD determines the future of the organization based on the data entered. The quality and accuracy of the data determines the data fire administration has to report on. The VBFD responds to 27,000 incidents each year. Having data for statistical analysis is never in question; having quality data for statistical analysis is questioned (C. Morse, personal communication, October 12, 2007).

The data is retained and used internally by the administrative branch of the department. The data is included in various documents, to include an annual report, surveys from various professional organizations such as the International City/County
Management Association (ICMA), and the city’s Resource Management Plan (budget). The data is also used in presentations to council and city leaders, justifying budget requests and program initiatives, and requests from the senior staff to justify apparatus placement, increased staffing, and station locations.

The quality of the data entered at the station level has national implications. Without accurate data, the fire problem in the City of Virginia Beach cannot be understood. The data that is entered into Red Alert at the local level is downloaded quarterly to the Commonwealth of Virginia Department of Fire Programs State Incident Reporting System, VFIRS. Without accurate data entered at the local level, the fire problem in the Commonwealth of Virginia cannot be understood. Finally, the data at the state level is then sent to the United States Fire Administration and NFIRS. As a result, poor data collection is not only a local problem; it becomes a state and national problem.

Nationally, fire departments publish annual reports that are developed from the data collected from their fire incident reporting system. This data is used to compare cities and counties of like size and demographics using comparative data and discussion points. Classically, the data collected for annual reports demonstrates the number, nature, location, dollar loss, and types of responses. When requested, or needed to support a program proposal, this data is shared with the city council and city leaders. Framing and supporting these requests may lead to the funding, or failure to fund, desired requests.

As a result, every member of the VBFD has an influence on the future of the organization. Potentially, with a lack of quality assurance or review, finalized reports may be flawed or not accurate. Thus, these patiently flawed reports are forwarded to the
Commonwealth of Virginia through VFIRS and then onto the USFA through NFIRS, and may not accurately depict the fire problem in Virginia Beach.

**Literature Review**

The review of the literature for this research project focuses on the macro, the big picture, to determine the need to have accurate incident reporting and data collection. The literature concludes that quality and accurate data is necessary throughout industry, including the fire service. Quality and accurate data is needed from fire incident reports to have the federal government impose standards, procedures, testing protocols, and certification programs (Government Accounting Office Report [GAO], August 2001).

With respect to isolating the fire problem in federal facilities, the GAO (August, 2001) states:

> The U.S. Fire Administration does not collect data on the number of fires in federal facilities, the causes of those fires, or the specific types of products involved in fires. As a result of a lack of centralized data collection and reporting systems, relatively little assurance exists that the government has sufficient knowledge of the number and causes of fires in federal facilities. (p. 2)

> The federal government cannot determine if any action is necessary to ease the threat of fire in federal facilities. This example demonstrates the need of accurate fire incident reporting at the federal level so that government can be responsive to the needs of the federal employee.

> The literature also reveals that fire incident reporting is not the only public service reporting system that is lacking accuracy. Emergency Medical Service (EMS) quality
Excluding Fire Incident Reporting

assurance programs lack consistent information and several local EMS agencies “reported needing improved EMS data and information to monitor and improve performance, but they recognized that data collection and reporting is sometimes a low priority and an administrative burden in the face of competing demands on EMS provider’s time (Government Accounting Office Report [GAO], October 2001 p. 1)”

According to the GAO (October 2001), state and local EMS officials were contacted regarding the desire for improved EMS data collection. More consistent information was needed for, “improving EMS performance at the local level. Local EMS agencies and providers often lack data to justify budget requests, answer questions about patient outcomes, or support quality improvement and surveillance (GAO, October 2001 p. 4)”

Review of the National Fire Incident Reporting System (NFIRS) process reveals that the U.S. Fire Administration (USFA) the National Fire Information Council (NFIC) relies on accurate and consistent data. It was first used in 1976, and is an informational system that allows data to be collected with the goal of assessing the nature and scope of the fire problem in the U.S. (FEMA, USFA NDC, 1997). The NFIC provides volunteers from metropolitan fire departments and state agencies who are responsible for fire data collections and analysis and they maintain the current system while researching and implementing changes to improve the system (FEMA, USFA NDC, 1997). The desire is to have organizations, to include local fire departments, benefit from the data and its availability.

By participating in NFIRS, local fire departments provide the substance of the data and populate the fields. Presently, 18,000 fire departments participate in NFIRS. These fields include date and response times, number of resources responding, estimated
dollar loss and pre-incident value, casualties and fatalities of civilian and fire service, detector performance, the nature of the call, the actions the firefighters took in response to the call, and a narrative to describe the incident and actions performed. “Participating departments report an average of 11 million incidents, including 800,000 fires, each year (Licht, 2007 p. 202)” This data is then forwarded to the state agency, which then submits the NFIRS data to the USFA.

On July 1, 1980, Virginia officially began statewide fire incident reporting, and at the same time became part of the national reporting system, NFIRS (Commonwealth of Virginia Department of Fire Programs [VDFP], 1982). The Virginia Beach Fire Department submits the completed fire incident reports to the Commonwealth of Virginia Department of Fire Programs (VDFP). At the state level the data provides: statewide basis for analysis and fire trends or problems, revise and improve building and fire codes, improve statewide fire inspection and prevention practices, improve state training and programs to prepare firefighters (VDFP, 1982). Quarterly state information form VFIRS is submitted to the USFA through NFIRS.

At the local fire department level, the data collected can be utilized for analysis and program justification, specifically in public relations, firefighter safety and training, education, prevention, investigation, operations, long range planning, and comparison (VDFP, 1982). Long range planning is necessary for local fire departments to plan and decide how to effectively run and plan for the future direction of the organization. “Accurate data must be collected on what exactly the organization is doing now and how well it is doing it. The fire incident data provides an excellent base for evaluation and long range planning (VDFP, 1982 p.2-3).” Local fire departments can compare their
own productivity and effectiveness against other local departments in their region and others of similar size in the state (FEMA, USFA NDC, 1997). City government, when making decisions of improved funding and program proposal fulfillment, need to see comparisons of like and kind municipalities to determines their return on this investment. VFIRS and NFIRS provide the local departments this opportunity and government benefits from this analytical tool.

The keys to quality incident reporting, as stated by the Virginia Department of Fire Programs (VDFP, 1982 p.1-5):

a. Accuracy: The information must be correct and coded correctly.

b. Completeness: Include all necessary information in the report.

c. Consistency: Like incidents are reported the same.

d. Accountability: Ensure all incidents are reported.

e. Conformity: The reports are in line and conform to the VFIRS and NFIRS rules and codes.

f. Timeliness: All reports are submitted on time to the Virginia Department of Fire Programs.

g. Communication: The state and localities have two-way communications regarding entry and results of the data entered.

The benefits of participating in both the Virginia and National Fire Incident Reporting Systems include: policy planning, operational decision, budget requests, program evaluation, and demonstration of achievements (VDFP, 1982). The data collected can support budgetary requests, show how effective programs are in meeting goals, decide
where to place capital assets, like fire apparatus and stations, and write and update policies.

The literature was reviewed from a statistical data and quality assurance perspective. Fire reports are legal documents. Incident documentation is required and the fire report becomes public record. Victims, insurance companies, lawyers, the media, and citizens can request a copy of a fire incident report (FEMA USFA, 2004). Every incident report completed provides more data that is readily available for statistical analysis. Once the statewide data base is populated, the data is forwarded electronically to the National Fire Data Center (NFDC) at the USFA (FEMA USFA, 2004). The desire of the NFDC is to compare and contrast the data collected, develop national public education campaigns, and make recommendations for national codes and standards, guide allocated funds, and support legislation (FEMA USFA, 2004).

The quality of data is always in question. According to the USFA (FEMA USFA, 2004 p. 5), “Garbage In, Garbage Out”, applies to fire department reports. Furthermore, the USFA identifies that data quality is always a problem. “Fire departments need to establish data quality procedures if they intend to take full advantage of their data (FEMA USFA, 2004 p.5)” . A system to double check the collection and entry work is recommended. Likewise, according to the VDFP, the quality of data in the VFIRS system is limited by the accuracy and completeness of the information entered by the fire department personnel (VDFP, 2007). As of 2005, 77.1% of Virginia fire departments report to VFIRS, covering 92.5% of the population (VDFP, 2007).

The Virginia Beach Fire Department recognizes the importance of the fire incident report. In the Standing Operating Procedure (SOP), Emergency Incident
Examining Fire Incident Reporting

Reporting Procedure, it states “at all times, personnel should be aware that fire incident reports are not only legal documents but are also immediately accessible to the general public through FOIA. The highest levels of accuracy and documentation are required in every instance (SOP O/A 5.03, p. 1 of 2).” Personnel are directed to complete all fire incident reports in compliance with NFIRS coding manuals located in all station libraries.

As for internal review or auditing fire incident reports, the VBFD only states that the company officer should “audit” the reports completed by their subordinates (VBFD, 2004). The company officer may delegate completion of the fire incident reports to their subordinates, yet “reports should be reviewed for accuracy, completeness, and appropriateness of information detailed in the narrative (VBFD, 2004 p. 1 of 2).”

The SOP details similar responsibility to the battalion officers by directing them to routinely audit the fire incident reports of their companies to insure accuracy. Likewise, the Incident Commander of record shall review and approve large-scale incidents involving full second alarm assignments and incidents involving death or serious injury to civilians or fire personnel (VBFD, 2004).

The VBFD, and fire departments across the country, benefits from the NFIRS. Fire departments use NFIRS data to collect, show, and compare their fire experience or problem. By comparing their data against departments of similar size or demographics, fire departments can educate, inform, and report, in detail the number, nature, locations, and types of responses that they responded that year (Burris, 2007). The council and budgetary departments have tangible data, supported by United States Fire Administration, that provides a clear understanding of the frequency of responses, to what type of incident, and that can justify budgets and capital requests (Burris, 2007).
Examining Fire Incident Reporting

communities that are expanding, NFIRS data can assist department leaders justify future station locations and station relocation desires for better coverage.

The survival of the fire service depends on its ability to use critical information in making tactical and strategic decisions. Use of the NFIRS data as an analysis, problem-solving and decision-making tool is crucial to developing strategic decisions. Gathering and extracting data from the national fire database and examine it necessary for advanced reports and analysis. Likewise, publishing data in logical, readable and informative materials will assist in building cases to support strategic initiatives. Annual reports, interactive Web pages will allow fire departments to measure their department's performance against national standards (FEMA National Emergency Training Center [NETC] Training Catalog, 2007).

Procedures

The purpose of this research project is to examine the fire reporting process in the VBFD and provide a plan to increase the accuracy of fire incident reporting. Research procedures followed in this project included the following:

• A survey of randomly selected members of the VBFD to determine 1) who is completing the majority of the fire incident reports, 2) who checks the fire incident for accuracy, 3) what level of training occurred to prepare the VBFD to complete fire incident reports, and 4) who taught the members of the VBFD to estimate dollar loss on the NFIRS report.

• A survey of metro-Hampton Roads fire departments, as well as departments from across the TRADE Region III and the nation. This survey will serve as a tool to
determine and examine how other departments 1) ensure accurate and consistent fire incident reports are completed, 2) what checks and balances exist to ensure fire incident reports are completed accurately and consistently 3) what policies/procedures are in place to guide accurate and consistent fire incident reports 4) and what training and education programs is provided to prepare firefighters to enter accurate and consistent fire incident reports.

- Interviews with the Deputy Chief of Services, City of Virginia Beach, the Battalion Chief of Services, City of Virginia Beach, the Public Information Officer for the VBFD, and Administrative Analysis for the VBFD to determine the importance of quality data, what is done internally with the data collected in Red Alert, the political impact quality and accurate data on the budgetary process and the SORC, and the impact that poor data has on the strategic planning of the department. Questions are contained in Appendix A.

- Two studies were conducted using the data entered into the VBFD NFIRS 5.0 compliant reporting system, Red Alert.

- A review of the annual report for 2006/2007 to determine how data from fire incident reporting is used to populate the annual report.

- A review of surveys, completed annually by the Administrative Analysis of the VBFD, that are populated by the data entered into the fire incident reporting program Red Alert. These surveys include the ICMA, NFPA, and Firehouse surveys.

  A survey with cover letter was distributed through interdepartmental mail to ninety randomly selected members of the Virginia Beach Fire Department on September 24,
The surveys were to be returned by October 10, 2007. Sixty-two of the ninety surveys were received back, which is 69% response rate. The intent of this survey was to identify who in the VBFD completes fire incident reports, if the fire incident reports are reviewed for accuracy prior to being submitted, determine how the members of the VBFD were trained to enter fire incident reports, and how members of the VBFD were trained to estimate dollar loss. Several questions were then asked the members of the VBFD, to include the importance of accurate and consistent fire incident reports, if a formal “checks and balance” program is desired, if modifying the existing fire incident report SOP is desired to ensure more accuracy and consistency, and if training or educational programs is desired to better prepare the VBFD to enter accurate and consistent incident reports.

Similar surveys were sent to twenty fire departments in the mid-Atlantic region, as well as several fire departments throughout the United States. Seventeen departments (85%) returned the survey. Criteria used to choose these departments were based on demographics, population, proximity to the VBFD, and the number of personnel in their fire department. The VBFD is a member of the TRADE Region III, and the survey was sent to fire departments of similar size and demographics in TRADE Region III. A copy of the survey is provided in Appendix C, with a list of the fire departments that responded to the survey listed in Appendix D.

The intent of this survey was to identify who completes fire incident reports in other municipal fire departments, what level of quality control/assurance occurs in their department, and what level of training the members of other departments receive in entering fire incident reports and dollar loss. Additionally, several questions were asked
regarding the importance of fire incident reporting, what policies or procedures may be in place to aid with accurate and consistent fire incident reports, and if training or educational programs are offered to prepare firefighters to enter accurate and consistent fire incident reports.

Interviews were conducted on October 5, 2007 with the Deputy Chief of Services for the VBFD, Donna Brehm, and the Battalion Chief of Administration for the VBFD, Steve Lesinski. Additional interviews were conducted on October 12, 2007 with the Administrative Analysis for the VBFD, Cathy Morse, and the Public Information Officer for the VBFD, Battalion Chief David Hutcheson. The intent of these interviews were to gain perspective into the importance of entering quality data into fire incident reports, what is done internally with the data collected in Red Alert, the political impact quality and accurate data has on the budgetary process and the SORC, and the impact poor data may have on the VBFD.

A review of the data entered into the VBFD NFIRS 5.0 compliant reporting system, Red Alert, was conducted to evaluate the accuracy and consistency of fire incident reports in the VBFD. Two studies were designed to isolate one data field in the NFIRS report. The “estimated dollar loss” field was isolated for the following two studies: 1) a review of the property loss fields on the “working fires” reported in the City of Virginia Beach for 2006 and 2) a review of the property loss entered for all “building fires” in the VBFD between January 1, 2007 and October 1, 2007. The intent of this review would determine the accuracy and consistency of entering dollar loss data into the fire incident reports and determine, based on the results of the study, what training and educational programs may be necessary for the members of the VBFD.
Limitations

Limitations regarding the research include compiling the survey results from the two surveys distributed. Ninety surveys were randomly distributed throughout the VBFD and sixty-two (69%) were returned. Likewise, twenty surveys were distributed across the region and nationally, and 17 (85%) were returned. In both cases, the 95 percent confidence level was not satisfied.

Definition of Terms

- TRADE Region III: Fire departments can become members of the National Fire Academy’s Training Resources & Data Exchange (TRADE). Initiated in 1984, TRADE is designed to provide fire departments in 10 regional networks a mechanism to exchange training and resources. To be a member of TRADE, departments must serve over 200,000 in population and/or have more than 400 uniform employees.

- Hampton Roads, VA: The area of southeastern Virginia is called Hampton Roads. The cities of Virginia Beach, Norfolk, Portsmouth, Hampton, Newport News, and Suffolk Virginia make up Hampton Roads. Population of this area is approximately 1.7 million people.

Results

Fire incident reports are completed by the VBFD and local fire departments throughout the country. The data is entered into the fire incident reporting database by firefighters or company officer, and then forwarded to the state database. The data is then forwarded to the national database, NFIRS.
Accurate and consistent fire incident reporting is important to the VBFD and fire service organizations. The data collected from the fire incident reports provides the senior staff quantitative, measurable, and verifiable data. This data can be used to defend budgetary requests, called program proposals, while benchmarking trends and archiving “notable” incidents. The data collected is important to the senior staff of the VBFD. Deputy Chief Donna Brehm (personal communication, October 5, 2007) states, “The data collected from fire incident reports justify our existence and our needs. The days that the fire department receives funding because we are the ‘heroes’ are long gone”.

The data that is entered into the annual report reveals the need to have accurate data entered into fire incident reporting system. The data that populates the annual report is directly assembled from the data entered into Red Alert. When placing data in the annual report, the department’s Administrative Analysis must ensure “outliers” are accounted for and controlled. Inaccuracies are most prevalent in three areas: response times, incident coding (nature code), estimating property and content loss.

The VBFD continues to demonstrate the need for city council to adopt a standards of response coverage document, which utilizes the data collected from the fire incident reports to show response times and station locations. Chief Brehm (personal communications, October 5, 2007) states:

Four person staffing is the number one desire of the senior staff. The standards of response coverage are essential to our future forward motion. This document will provide buy in and the reporting is a must to tie into the objectives of the standards of response coverage.
The data collected from the fire incident reports provides the VBFD with the ability to run a variety of reports. This may include comparative studies over time, both internal and external studies, the ability to research the official actions and activities of responding units, death and injury investigations, number, type, dollar losses and cause of fires, as in-depth recording of these facts is important for accurate accounting.

To demonstrate the need for accurate and consistent fire incident reports, two studies were completed, which involved reviewing data entered into the Red Alert data based. The need for better quality control and assurance in the fire incident reporting is supported by the results of these two studies.

Study #1: When a company officer or incident commander declares a “working fire” the duty District Chief’s pager is alerted. This study only reviewed the fires that involved the duty District Chief’s pager being alerted. Isolating the incidents that were declared to be a “working fire” provided for a comprehensive look into fire incidents that would have a potential significant dollar loss. For calendar year 2006, 184 “working fire” incidents occurred. Seventy-nine of the one hundred eighty-four incidents (43%) did not have an estimated dollar loss entered into the fire incident report (Table 1).

Table 1

<table>
<thead>
<tr>
<th>Number of Working Fires in the Virginia Beach Fire Department for 2006</th>
<th>Number of reports that did not have a dollar value</th>
<th>Percentage that did not have a dollar value</th>
</tr>
</thead>
<tbody>
<tr>
<td>184</td>
<td>79</td>
<td>.43</td>
</tr>
</tbody>
</table>
The significance of these results lies in the unreported numbers. Total reported dollar loss for these 184 incidents was $11,234,254. If 105 of 184 reports were completed, the average dollar loss per working fire was $107,840.51. Therefore, with 43% of the reports having zero dollar loss entered, $8,519,400.30 potentially went unreported. If all 184 working fires had a dollar loss entered, the reported dollar loss would have increased 43% to $19,842,654. The fire problem for the Virginia Beach Fire Department, with just isolating “working fires” for calendar year 2006, would be dramatically different by reporting a $19.8 million dollar loss versus an $11.2 million dollar loss.

Study #2: A more in-depth look into the fire incident reporting process for the VBFD was desired for the second study. This study isolated every incident that was coded a building fire from January 1, 2007 until October 1, 2007. This provided more data, as all fires, not just working fires, were reviewed. There were 726 incidents during this time period and 141 reports had no dollar loss entered or $1 entered into the property loss field. That is 19.4% of the reports. Total reported property loss for that time period was $14,358,299 (Table 2). The average of the 584 building fires with dollar loss entered was $24,586.13. Therefore, with 19.4% of the reports having either zero or one dollar entered, an estimated $3,466,644.30 is un-reported.
Two surveys were instituted for this research project. The first survey was distributed to the members of the VBFD, from firefighters to chief level offices. Ninety randomly selected members of the VBFD was sent the survey, and were asked four questions in the following subject areas: Who completes the fire incident reports, who reviews/checks the completed report for accuracy, what training did you receive to complete fire incident reports, and what training did you receive to accurately determine dollar loss on the fire incident report?

The results are as follows: Eighty-one percent of the respondents reported master firefighters or firefighters completes the fire incident report for single apparatus calls, i.e. EMS, motor vehicle crash, dumpster and vehicle fires, as well as multiple unit responses which are not declarer to be a “working incident or fire”. These responses include, but are not limited to, fire alarms, MVC pin, and commercial gas leaks. The company officer will complete 12% of the same type of report. Therefore, the majority of the fire incident reports completed in the VBFD are completed by firefighters or master firefighters.

The company officer is most likely complete fire incident reports of incidents that are declared a “working fire or multiple alarm fires”. Ninety percent of the respondents
reported the captain (company officer) completes the fire incident report when a working fire or a multiple alarm fire was declared. Zero surveys received back indicated that a Battalion Chief (the incident commander) would complete the fire incident report for any type of incident, to include incidents that escalated to multiple alarms. For calendar year 2006, the VBFD responded to 25,527 incidents and 184 were declared to be a working fire. That is less than 1% of the incidents. The results of the survey questions are detailed in a chart in Appendix G.

The survey reveals the majority of fire incident report that are completed for single or multiple unit responses (85%), without being declared a working fire or incident, is never reviewed for accuracy or completes. Fifteen percent of the responses indicated the company officer will remove all reports from Red Alert, regardless of incident type, after being reviewed for completeness and accuracy. When an incident is declared a working fire or incident, the majority of responses (81%) indicated the company officer would check the report for accuracy prior to being sent to NFIRS. For multiple alarm fires, 93% indicated either the company officer or the battalion chief would review the report for accuracy and completeness prior to being sent to NFIRS. That is 82% company officer and 11% battalion chief reviewed.

Merging the two data points allows for an interesting comparison. If ninety percent of the fire incident reports of working fires or incidents are being completed by the company officer, and 81% of the responses indicate that for working fires the reviewer of accuracy and completeness is the company officer, the same person completing the fire incident report for working fires and incident is also reviewing the report for accuracy. For single alarm working fires, three percent of the responses
indicated the battalion chief reviewed the report for completeness and accuracy. Eleven percent indicated the battalion chief reviewed the report for multiple alarm incidents.

Consequently, the results indicate quality control or assurance only occurs at the company level. With exception of multiple alarm fires, when a battalion chief reviews 12% of the fire incident reports, the only quality control or assurance occurs by the department’s Administrative Analysis when data points are “not normal” or when reports are not completed quarterly. This maybe explained by the technology used to completed NFIRS 5.0 compliant incident reports. The administrative analysis indicates the built in “approval” process for the Red Alert reporting program allows for a “quasi” checks and balance program. Every fire incident report is checked for accuracy by the computer program, as required fields must be completed prior to “removing” the reports for submission to NFIRS. Thus, when the fire incident report is “removed” by the person who completes the fire incident report, it has been checked by the computer program to ensure all required fields are touched. The report is “approved” and the assumption is it requires no further inspection or review.

According to VBFD SOP O/A 5.03 (2004), internal review or auditing fire incident reports is expected. The results of the survey indicate the company officer is checking fire incident reports between 15-18 % of the incidents on non-working fires. Therefore, 82–85% of the non-working fire incidents, the company officer is not “auditing” the reports completed by their subordinates. With the company officer delegating 85% of these reports to their subordinates, the majority of the fire incident reports completed in the VBFD are never touched by an officer. According to department statistics, the VBFD responded to 27,612 incidents in fiscal year (FY) 2006-
2007. One thousand three hundred ninety-seven of those incidents involved a fire or 100 series nature code for NFIRS. This is 5.1% of the incidents that the VBFD responded to in FY 2006-2007. The survey results indicate 85% of the single unit responses and 82% of the multi-unit responses are not checked for accuracy or completeness by the company officer. Therefore, approximately 23,414 reports (85%) are not checked for accuracy or reviewed for completeness prior to being sent to NFIRS (Table 3).

Table 3

*The number of incidents for fiscal year 2006-2007 in the VBFD, defined by nature code and percentage reviewed for accuracy.*

<table>
<thead>
<tr>
<th>Type of Incident for FY 2006-2007</th>
<th>Number of Incidents</th>
<th>Percentage of Calls</th>
<th>Percentage reviewed for accuracy or completeness by Company Officer or Battalion Chief</th>
<th>Number of incidents not reviewed for accuracy or completeness by at least the company officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Incident-Structural</td>
<td>451</td>
<td>.0163</td>
<td>.84</td>
<td>72</td>
</tr>
<tr>
<td>Fire Incident-All others</td>
<td>946</td>
<td>.0343</td>
<td>.18</td>
<td>776</td>
</tr>
<tr>
<td>EMS</td>
<td>16,758</td>
<td>.6069</td>
<td>.15</td>
<td>14,244</td>
</tr>
<tr>
<td>Non-Fire Incidents</td>
<td>9,457</td>
<td>.352</td>
<td>.15-.18</td>
<td>8,038-8,322</td>
</tr>
<tr>
<td>Total</td>
<td>27,612</td>
<td>100.00%</td>
<td>n/a</td>
<td>23,414</td>
</tr>
</tbody>
</table>

As a result, SOP O/A 5.03 is not being followed. The majority of the fire incident reports completed in the VBFD are not reviewed for accuracy, completeness, and appropriateness of information detailed in the narrative by the company officer, or the incident commander. As for working fires and multi-alarm fires, the majority of incidents are either being completed by, or reviewed by, the company officer.
Technology is the probable reason for the department’s SOP, Emergency Incident Reporting Procedure, not being followed on 85% of the completed incident reports. The approval process designed into the Red Alert’s fire incident reporting software has eliminated the need to review the reports for procedural issues. The “internal review and audit” does not occur by a human; technology is providing this service.

The majority of respondents (97%) indicated they received no formal training to accurately complete a fire incident report. They said they were either taught by a mentor or company officer (90%), or they were self-taught (7%) to fill out the fire incident report. Isolating the “Estimating Dollar Loss & Value” field, 99% of respondents indicated they received no formal training and were taught by a mentor or company officer to “estimate” dollar loss on incidents.

The survey then asked several follow-up questions, seeking more information regarding the importance of the fire incident reports to members of the VBFD. Everyone who responded indicated accurate and consistent fire incident reports are important. The all stated they desired a formal “checks and balances” program to ensure the fire incident report is completed accurately and consistently. They also indicated they desired the existing SOP on fire incident reporting be changed and modified to allow for more accurate and consistent reporting. Finally, everyone who responded desired formal training and educational programs to prepare them to enter more accurate and consistent fire incident reports to include estimating dollar loss.

A similar survey was sent to fire departments across the region and the United States. Similar questions were asked, as the desire of this survey was to determine how other fire departments of similar size and demographics completes, reviews, and trains
their members to enter fire incident reports. Additionally, the survey may lead to a “best practice” or a better way to complete the fire incident reports for the VBFD. The results of this survey questions are detailed in a chart in Appendix H.

The survey revealed that 88% of departments have a company officer or battalion chief complete the fire incident report on working fires. Likewise, 59% of the company officers complete the fire incident reports for single engine and incidents that are not declared working. For all incidents, regardless of incident type, 41% of the responses indicate a civilian or administrator reviews each fire incident report for accuracy and completeness prior to being submitted to NFIRS. When a civilian or administrator was not available to the department, 90% of the responses indicated a company officer would review each fire incident report. If an incident was declared a working fire or multi-alarm fire, 29% of the responses indicated the incident commander or battalion chief checks the fire incident report for accuracy, while 24% indicated the company officer reviewed the completed report. Therefore, 94% of the respondents indicated someone, other than the person completing the fire incident report, reviews the report prior to being sent to NFIRS.

With regards to training, 41% of respondents indicated they received a formal class to enter fire incident reports, while 59% indicated that they were taught a mentor or company officer. For estimating dollar loss, 41% indicated they received a formal class on estimating dollar loss; a mentor or company officer taught 47%, and 12% had no formal class or uses the building valuation worksheet, provided by the USFA, to estimate dollar loss.
Follow up questions were asked in the survey to provide more detailed responses and a possible best practice and possible solution to the research question. The question asked the respondent to explain what “checks and balance” program exists to ensure a fire incident report is completed accurately and consistently. Several departments placed this task on the training division, while others place it on the Fire Marshall’s Office and their fire investigators. Since other department’s rely on billing for EMS services, the review process of all fire incident reports occurs by a civilian hired (usually specialized in Information Technology) to make sure the billing is completed and the reports, both fire and EMS, are accurate and completed in a timely manner. This review process serves the NFIRS report as well as the pre-hospital patient care reports. One department indicates on a weekly basis, all incident coded in NFIRS with a nature code of 100 -173 is reviewed by two members of the organization to ensure consistency and accuracy.

Several departments have “NFIRS office” located in their fire prevention division. The civilians assigned to this office ensure each report completed. When a civilian was not employed to review fire incident reports, most responses indicate the company officer or battalion chief reviews every report that is completed.

Interviews with the Deputy Chief of Services, the Battalion Chief of Administration and the department’s Administrative Analysis defined why accurate and consistent fire incident reporting is important to the VBFD. The VBFD desires increased staffing, new fire stations, and additional equipment, and without accurate data, it is hard to defend these requests (D. Brehm, personal communication, October 5, 2007). “As money in municipal government gets tighter, we must be able to justify our needs. The ideas and desires of Senior Staff have to be backed and the numbers from the NFIRS
reports to allow the VBFD to have political clout (D. Brehm, personal communication, October 5, 2007). Chief Brehm (October 5, 2007) continues, “at times the Chief Operating Officer will review the data to make decision to fund an initiative. With out strong, reliable, and consistent data, it is difficult for the fire department to compete with other municipal departments fighting for their initiatives (D. Brehm, personal communication, October 5, 2007). Fire incident reporting must tie into the standards of response coverage document. Chief Brehm (October 5, 2007) feels this document is essential to the future forward motion of the VBFD.

Cathy Morse, the VBFD’s Administrative Analysis indicates (October 12, 2007) accurate and constant fire incident reports are important to the department because of the statistics they produce. She states (October 12, 2007), “All incident reports must be accurate. The inaccuracy flaws the data”. For example, with regards to response times, the standards of response coverage details the need to have the first-in fire unit arrive within a travel time of 5 minutes or less for the 90th percentile (D. Brehm, personal communication, October 5, 2007). Data for every fire incident report must be accurate and consistent; with over 27,000 incidents this year, the data entered must be accurate and consistent (C. Morse, personal communications, October 12, 2007). For legal reasons, the fire incident report must be accurate. Morse (October 12, 2007) states, “when the fire incident report is removed from Red Alert, the person who completed the report or reviewed must be willing the stand up in court and defend the information entered.”

After reviewing the VBFD’s annual report and the surveys completed annually by the Administrative Analysis, it is clear that quality data is the key to demonstrating where the department has been historically. These accumulated numbers, from run totals
to response times for each unit, can be studies to show compliance with regards to standards (NFPA 1710) and internal mandates (council and staff directives). The surveys, to include Firehouse, NFPA, and ICMA are exhausting to complete provide data that can be used to demonstrate national trends. The NFPA’s annual survey is one data source that helps define the U.S. fire experience (Badger S. & Faby R., 1995). The better data provided, the more accurate the survey will be, allowing the VBFD another tool to demonstrate the fire problem in the City of Virginia Beach.

Discussion

The intent of this research project was to determine the effectiveness of fire reporting in the VBFD and to provide a method to increase the accuracy and consistency of fire incident reporting in the VBFD. The method will provide a formal check and balance system to ensure a fire incident report is completed accurately and consistently, develop procedures that would aid with accurate and consistent fire incident reports, and recommend training and education programs to prepare firefighters to enter accurate and consistent fire incident reports.

Survey results determine that the majority of incident reports completed by the VBFD have no one review the finished report prior to being sent to NFIRS. The accepted “check and balance” measure is completed by the computer software program, Red Alert. When a report is completed for a working fire (single or multiple alarm), the survey results indicates the company officer or battalion chief will review the majority fire incident reports. Consequently, the VBFD’s SOP O/A 5.03, Emergency Incident Reporting Procedure, is outdated, last revised November 15, 2004, and needs to be revised to include a formal review phase. This will ensure all reports are reviewed and
forwarded to NFIRS, after a tiered review occurs. Similarly, initial training and continuous re-training is non-existent. Instituting initial and structured re-training will ensure accurate and constant fire incident reports are completed by the members of the VBFD.

The literature reviewed identifies the limitations of the fire incident reporting data collected, and speaks to the accuracy and consistency of the data entered. This is reflected in the following statement in The Assessment of Virginia’s Fire Service Community Needs (2007) document which states:

This vary useful system does, however, have some limitations. Data from VFIRS is not complete because participation is not mandatory for fire departments in Virginia, and the system does not include information on fires that are not reported to local fire departments. The quality of the data in the system is also limited by the accuracy and completeness of the information entered by the fire department personnel. Data from 2005 is the most recent year for which full data is available from VFIRS. (p.9)

The literature offers solutions through formal training and educational programs. Based on the courses offered at the National Fire Academy, several courses are dedicated to providing the fire service with the knowledge, skills, and abilities to collect, compile, and analyze NFIRS data with the goal to train and educate the fire service. The National Emergency Training Center offers the following explanation to have fire service leaders attend classes at the National Fire Academy, as recorded in the 2007-2008 Training Catalog (2007):
Fire service leaders and managers, local officials, and planning personnel are faced with decisions that provide fire protection and emergency medical services for their community. With rapid growth, and the increased demand for fire and emergency services, fire departments are experiencing a lack funding. Local leaders are faced with the increasing pressure of doing more with less. As a result, fire departments are held accountable for providing acceptable service levels, while justifying any increase in expenditures. Until recently, being able to quantify and justify increases in fire-related services has been difficult because of a lack of available data and accepted analytic methods. (p.36)

Data collection at the federal level can be compared to the data collection at the local level. The GAO (August 2001) found that it is difficult for the federal government to isolate the fire problem in their facilities:

The U.S. Fire Administration does not collect data on the number of fires in federal facilities, the causes of those fires, or the specific types of products involved in fires. As a result of a lack of centralized data collection and reporting systems, relatively little assurance exists that the government has sufficient knowledge of the number and causes of fires in federal facilities. (p.2)

The literature revealed the USFA identifies quality data as a problem. “Fire departments need to establish data quality procedures if they intend to take full advantage of their data (FEMA USFA, 2004, p.5)”. A system to double check the collection and entry work is recommended. Likewise, according to the VDFP, the quality of data in the VFIRS system is limited by the accuracy and completeness of the information entered by the fire department personnel (VDFP, 2007). Based on the results of the surveys and the
review of the fire incidents in the VBFD, the findings of the USFA and VDFP are supported.

The literature considers accurate reporting necessary for evaluating, comparing and documenting. “Accurate data must be collected on what exactly the organization is doing now and how well it is doing it. The fire incident data provides an excellent base for evaluation and long range planning (VDFP, 1982 p. 2-3)”. Local fire departments can compare their own productivity and effectiveness against other local departments in their region and others of similar size in the state (FEMA USFA NFDC, 1997). Incident documentation is required as the fire report becomes public record. Victims, insurance companies, lawyers, the media, and citizens can request a copy of a fire incident report (FEMA USFA, 2004). As a result, quality checks and a formal review of the entry work are recommended.

Finally, the results and findings are supported by the literature with regards to quality fire incident reporting. The VDFP (1982 p. 1-5) identifies the following keys to quality incident reporting:

a. **Accuracy**: The information must be correct and coded correctly.
b. **Completeness**: Include all necessary information in the report.
c. **Consistency**: Like incidents are reported the same.
d. **Accountability**: Ensure all incidents are reported.
e. **Conformity**: The reports are in line and conform to the VFIRS and NFIRS rules and codes.
f. **Timeliness**: All reports are submitted on time to the Virginia Department of Fire Programs
g. Communication: The state and localities have two-way communications regarding entry and results of the data entered.

Accurate and consistent fire incident reporting is desired in the VBFD. The VBFD needs to implement a process to ensure the fire incident reports forwarded to VFIRS and then to NFIRS is accurate and consistent. The goal should be accuracy, with the information entered correct and the fields and data coded accurately, consistency, ensuring all “like” incidents are reported, coded, and entered the same, accountability by ensure all incidents are reported, completeness to include all necessary information is entered and all required fields are completed according to NFIRS, conformity by having the reports entered checked to ensure they are in line and conform to NFIRS rules and codes (VDFP, 1982).

The implication of the results of this research identifies the need for establishing a procedure and plan to ensure fire incident reports are entered accurately, with a formal checks and balance program to act as quality control will result in more precise data, increased validity and credibility of the data provided, and the ability to better define the fire problem in the City of Virginia Beach. This will provide the VBFD with accurate and consistent data, and the Senior Staff can use the information with confidence to address a variety of organizational needs, to include: four person staffing, apparatus placement, fire station locations, and budget needs. The department’s standards of response coverage and strategic plan is dependent upon accurate and consistent data from fire incident reports, with objectives defined at the annual retreat based on the interpretation of the data entered. As the VBFD continues to move forward to meet
Examining Fire Incident Reporting

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strategic initiatives, making the city safe and provide quality services, the fire incident
reporting process should accurate and consistent.

Recommendations

To increase the effectiveness and increase the accuracy of fire incident reports in
the VBFD, the VBFD needs to implement a revised SOP on emergency incident
reporting procedures, institute a formal checks and balance program to ensure all reports
are reviewed in a tiered program, and provide training and re-education programs to all
members who enter or review the fire incident reports. As determined by the results of
this study, the following recommendations are suggested:

1. Update the existing procedure on fire incident reporting, SOP O/A 5.03

   “Emergency Incident Reporting Procedure”, last revised November 15, 2004, to
   ensure the following (Appendix F):

   a. The company officer will complete the fire incident reports for all
      incidents that have property or content loss, and any incident that is
      declared to be a working fire or incident.

   b. All working fires or working incidents will be reviewed and removed by
      the Battalion Chief who was the incident commander of the incident. The
      Battalion Chief may elect to have the first arriving company officer
      complete the majority of the fire incident report, but the Battalion Chief
      should add comments to the narrative, review for accuracy, and remove it
      from Red Alert after being satisfied it completed accurately and
      completely.
c. The company officer will audit the reports completed by their subordinates. Ensure all fire incident reports are reviewed and checked for completeness and accuracy.
   
   i. All reports will be reviewed by the company officer and removed once the company officer has ensured it is accurate and complete.

d. When a fire incident report is completed for a fire that is “under investigation”, the fire investigator assigned to the incident will complete the Red Alert fire incident report prior to being sent to NFIRS.

2. Restructure the administrative staff and job duties to ensure the fire incident reports are reviewed and a formal quality assurance program is developed for the VBFD.

   a. The Battalion Chief of Administration will be the program administrator of the fire incident reporting program for the VBFD.

   b. The Administrative Analysis will be the program manager of the fire incident reporting program for the VBFD.

   c. The job duties of two civilian members of the VBFD will be adjusted to review every fire incident report that is completed by the VBFD.

      i. The Administrative Assistant assigned to fire investigations and the Office Assistant 1, assigned to Fire Administration, will review all fire incident reports for accuracy and consistency. Reports that are not completed correctly will be returned to the person who completed the fire incident report, and their supervisor will be copied, with an explanation identifying why the report was
rejected. It is anticipated, as the reports are reviewed, and common mistakes are identified, errors should decrease and accuracy should increase.

3. Provide Training to members of the VBFD.

   a. The department’s Administrative Analysis, the Administrative Assistant of Investigations, and the Office Assistant 1 assigned to Fire Administration, as the civilians dedicated to review all the fire incident reports completed by the VBFD, and the Battalion Chief of Administration, as the program administrator, will need formal training. They will attend the National Fire Academy course “National Fire Incident Reporting System Program Manager (R491)”. The course is designed to:

   Enhance the knowledge and skills of these individuals responsible for the managing of NFIRS in their organization, and/or responsible for the training of field-level data collection and reporting staffs. Focus is on the higher level knowledge, skills, and abilities required collecting compile, and analyzing NFIRS data, to develop decision packages based on local, State, or national data and trends, and to train others in data entry (FEMA NETC, 2007, p. 36).

   b. The VBFD’s program manager and administrator, the Administrative Analysis and the Battalion Chief of Administration will attend: “National Fire Incident Reporting System Standards of Cover (R492).” This course is designed for fire service leaders who uses NFIRS to:
Demonstrate how National Fire Incident Data and analysis tools combined with the IAFC/ICMA ‘Standards of Coverage’ methodology can document the distribution and concentration of fixed and mobile resources and develop an acceptable model to meet community performance and outcome standards and to guide future growth discussions (FEMA NETC, 2007, p. 36).

c. The VBFD’s Administrative Analysis, the Public Information/Media relations Battalion Chief, and the Battalion Chief of Administration will attend:

Advanced NFIRS Program Management: Data Analysis Tools for Decision Making and Marketing the Fire Department (P493). It is designed to show and educate fire department leaders how to use NFIRS data as an analysis, problem-solving and decision-making tool. It will allow fire department’s the ability to develop and refine annual reports, publish interactive Web pages and measure their department's performance against national standards (FEMA NETC, 2007, p. 37).

d. Provide all members of the VBFD training on completing fire incident reports.

This would be accomplished in the following venues:

i. Company In-Services: This will allow for consistent initial training and the necessary re-training.

ii. Captain’s Academy: All company officers will receive further training based on their rank.

iii. Officer In-services: Case reviews and expectations for quality and accurate data and review of the data entered.
iv. Frontline Firefighter: Use this video training series to update the members of the VBFD as to changes in the NFIRS process or tools that are available to assist in the reporting process.

v. Recruit School: Every recruit academy receives basic training on entering fire incident reports from the Administrative Analysis during the academy. This training will be better served after the fire recruit has graduated from the academy and has been able to learn the process of running fire incidents. After the employee’s probationary period is completed, bring the academy back for re-training on fire incident reporting.

4. Alpine/Red Alert:
   
a. Task Alpine to re-program the Red Alert fire incident reporting program to ensure only an officer rank can “remove” a fire incident report from the queue in the Red Alert program. This would ensure each report is being removed by a company officer or higher.

b. Task Alpine to modify the Red Alert fire incident reporting program to have an audit trail that will identify and time stamp everyone who touches and modifies the fire incident report. This is a legal necessity as it is required to have legal documents “tracked” as they are modified and changed throughout the process.

5. Ensure that the fire investigators complete the fire incident reports that are labeled “under investigation”.

6. Provide company officers the educational material necessary to ensure fire incident reports are completed timely, complete, and accurate.
   
a. Building valuation worksheet published by the USFA and VDFP. This worksheet would provide a baseline for estimating dollar loss in structural fires. This worksheet is provided in Appendix I.
   
b. NFIRS Coding Manual is accessible to all in a conspicuous place in each fire station and office.

7. A follow up evaluation of the changes implemented will occur at the end of each fiscal year. The Administrative Analysis will report to the Battalion Chief of Administration what “trends” continue with regards to inaccurate and incomplete fire incident reports so that training and re-education programs can capture the shortfalls. If necessary, the SOP will be changed to reflect any trends that develop over the fiscal year.
References


Appendix A

Interview Questions:

1. Why are accurate and consistent fire incident reports important to the VBFD? To you?

2. What data is most valuable and produces the data that is used by the VBFD most often?

3. What training issues, with respect to NFIRS and fire incident reporting, do you see in the VBFD?

4. What checks and balances exist in the VBFD for fire incident reporting?

5. How would you change the SOP to allow more accurate and consistent fire incident reporting?

6. What recommendations would you make to ensure fire incident reporting is completed accurately and consistently?
Virginia Beach Fire Department (VBFD) Incident Reporting Processes Evaluation  
(September 2007)

The purpose of this research paper is to evaluate the City of Virginia Beach Fire Department’s Fire Incident Reporting Process. This project aims at identifying the means of improving the quality and accuracy of the fire incident reports completed by the Virginia Beach Fire Department.

Please read each question below. Place a “X” mark in the one box that best answers the question asked. Then, answer the four questions with Yes or No.

Please return to Mike Barakey at the FTC by October 10, 2007!

#1 Completing the Fire Incident Report
Completing a fire incident report is required for all incidents. The firefighter/officer completing the Fire Incident Report is often different for each crew, shift, and/or type of incident.

Please “X” who, most often, completes the fire incident report for each type of incident(s) listed below.

<table>
<thead>
<tr>
<th>Who completes the following incident reports?</th>
<th>Incident Commander (BC)</th>
<th>Company Officer (Captain) or Acting Officer</th>
<th>Master Firefighter or Firefighter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call (EMS, MVA, Dumpster Fire, Vehicle Fire etc…)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident or fire (Fire Alarm, MVC Pin, Commercial Gas Leak, etc…)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: single alarm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: multiple Alarms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
#2 Checking the Fire Incident Report for Accuracy

Quality Control/Assurance is necessary to ensure reports are completed accurately and timely.

**Once the fire incident report is completed, please identify who, if anyone, reviews/checks the fire incident report for accuracy, prior to it being approved and sent to VFIRS?**

<table>
<thead>
<tr>
<th>Who checks the following incident reports for accuracy?</th>
<th>Incident Commander (BC)</th>
<th>Company Officer (Captain) or Acting Officer</th>
<th>No One: I remove it from Red Alert without anyone reviewing the fire incident report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call (EMS, MVA, Dumpster Fire, Vehicle Fire etc...)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident (Fire Alarm, MVC Pin, Commercial Gas Leak, etc...)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: single alarm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: multiple Alarms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
#3 Training

Filling out fire incident reports requires some form of training.

**Please “X” the box that identifies the level of training that best describes how you were trained to complete fire incident reports.**

<table>
<thead>
<tr>
<th>What best describes your level of training to enter fire incident reports?</th>
<th>None, self taught</th>
<th>Taught by mentor or company officer</th>
<th>Formal Class taught by Fire Department</th>
<th>NFA class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call (EMS, MVA, Dumpster Fire, etc….)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident (Fire Alarm, MVC Pin, Commercial Gas Leak, etc…)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires, single alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires, multiple Alarms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
#4 Dollar Loss:

When completing a fire incident report that requires section G2 to be filled out (found on the front page of the NFIRS form), “Estimated Dollar Loss & Value”, what training do you have to accurately estimate this field?

Please “X” which best describes how you were taught to estimate dollar loss for the following incidents.

<table>
<thead>
<tr>
<th>What best describes your level of training to accurately fill out section G2, “Estimated Dollar Loss &amp; Value”?</th>
<th>None, self taught</th>
<th>Taught by mentor or company officer</th>
<th>Formal Class taught by Fire Department</th>
<th>Building Valuation Data worksheet published by the USFA and Virginia Department of Fire Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call (Dumpster Fire, Vehicle Fire, Brush Fire, Rubbish Fire etc…)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fire in a Residential, single alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fire in a Commercial Occupancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please answer the following questions:

1) Are accurate and consistent fire incident reporting important to you? Yes □ or No □

2) Would you desire a formal “checks and balance” program that would ensure your fire incident report is completed accurately and consistently? Yes □ or No □

3) Would you desire the existing SOP, SOP O/A 5.03, Emergency Incident Reporting Procedure, to be changed to allow for a more accurate and consistent fire incident reports: Yes □ or No □

4) Would you desire formal training and education programs to prepare you to enter accurate and consistent fire incident reports? Yes □ or No □

Demographic Data
(This information is for statistical purposes only)

Position:
Firefighter/Master Firefighter □
   Captain □
   Chief Officer □

Years in the Fire Department
5 years or less □
   6-10 years □
   11-15 years □
   16-20 years □
   Over 20 years □
Virginia Beach Fire Department (VBFD) Incident Reporting Processes Evaluation
(September 2007)

The purpose of this research paper is to evaluate the City of Virginia Beach Fire Department’s Fire Incident Reporting Process. This project aims at identifying the means of improving the quality and accuracy of the fire incident reports completed by the Virginia Beach Fire Department.

Please read each question below. Place a “X” mark in the one box that best answers the question asked. Then, answer the four questions at the end of the survey. Three questions are Yes or No, and one is short answer.

Please return to Mike Barakey at mbarakey@vbgov.com by October 10, 2007!

#1 Completing the Fire Incident Report
Completing a fire incident report is required for all incidents. The firefighter/officer completing the Fire Incident Report is often different for each crew, shift, and/or type of incident.

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<tr>
<th>Who completes the following incident reports?</th>
<th>Incident Commander (BC)</th>
<th>Company Officer (Captain) or Acting Officer</th>
<th>Master Firefighter or Firefighter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call (EMS, MVA, Dumpster Fire, Vehicle Fire etc...)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, <strong>without being a working incident or fire</strong> (Fire Alarm, MVC Pin, Commercial Gas Leak, etc...)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: single alarm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: multiple Alarms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
#2 Checking the Fire Incident Report for Accuracy

Quality Control/Assurance is necessary to ensure reports are completed accurately and timely.

Once the fire incident report is completed, please identify who, if anyone, reviews/checks the fire incident report for accuracy, prior to it being approved and sent to NFIRS?

<table>
<thead>
<tr>
<th>Who checks the following incident reports for accuracy?</th>
<th>Administrator/Civilian personnel at Fire Administration</th>
<th>Incident Commander (BC)</th>
<th>Company Officer (Lt. or Captain) or Acting Officer</th>
<th>No One: The incident report is removed without anyone reviewing the fire incident report.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call (EMS, MVA, Dumpster Fire, Vehicle Fire etc...)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident (Fire Alarm, MVC Pin, Commercial Gas Leak, etc...)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: single alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: multiple Alarms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
#3 Training

Filling out fire incident reports requires some form of training.

Please “X” the box that identifies the level of training that best describes how you were trained to complete fire incident reports.

<table>
<thead>
<tr>
<th>What best describes your level of training to enter fire incident reports?</th>
<th>None, self taught</th>
<th>Taught by mentor or company officer</th>
<th>Formal Class taught by your Fire Department</th>
<th>NFA class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call (EMS, MVA, Dumpster Fire, etc…)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident (Fire Alarm, MVC Pin, Commercial Gas Leak, etc…)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires, single alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires, multiple Alarms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
#4 Dollar Loss:

When completing a fire incident report that requires section G2 to be filled out (found on the front page of the NFIRS form), “Estimated Dollar Loss & Value”, what training do you have to accurately estimate this field?

Please “X” which best describes how you were taught to estimate dollar loss for the following incidents.

<table>
<thead>
<tr>
<th>What best describes your level of training to accurately fill out section G2, “Estimated Dollar Loss &amp; Value”?</th>
<th>None, self taught</th>
<th>Taught by mentor or company officer</th>
<th>Formal Class taught by your Fire Department</th>
<th>Building Valuation Data worksheet published by the USFA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call (Dumpster Fire, Vehicle Fire, Brush Fire, Rubbish Fire etc…)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fire in a Residential, single alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fire in a Commercial Occupancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please answer the following questions:

1) Are accurate and consistent fire incident reporting important to your organization?  
   Yes ☐ or No ☐

2) What checks and balances exist to ensure a fire incident report is completed accurately and consistently? Please explain: __________________________

3) Does your fire department you have policies/procedures in place to aid with accurate and consistent fire incident reports: Yes ☐ or No ☐

4) Does your fire department provide training and education programs to prepare firefighters to enter accurate and consistent fire incident reports? Yes ☐ or No ☐

<table>
<thead>
<tr>
<th>Demographic Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>(This information is for statistical purposes only)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Position:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firefighter/Master Firefighter ☐</td>
</tr>
<tr>
<td>Captain ☐</td>
</tr>
<tr>
<td>Chief Officer ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years in the Fire Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years or less ☐</td>
</tr>
<tr>
<td>6-10 years ☐</td>
</tr>
<tr>
<td>11-15 years ☐</td>
</tr>
<tr>
<td>16-20 years ☐</td>
</tr>
<tr>
<td>Over 20 years ☐</td>
</tr>
</tbody>
</table>
Appendix D

Fire Departments that participated in the Research Survey

1. Baltimore County, MD
2. Chesapeake, VA
3. Chesterfield County, VA
4. Currituck County, NC
5. District of Columbia
6. Frederick County, MD
7. Hampton, VA
8. Henrico County, VA
9. Honolulu, HI
10. James City County, VA
11. Loudon County, VA
12. Newport News, VA
13. Norfolk, VA
14. Portsmouth, VA
15. West Virginia University Extension
16. Williamsburg, VA
17. York County, VA
APPENDIX E

CURRENT VBFD SOP O/A 5.03 EMERGENCY INCIDENT REPORTING PROCEDURE
Revised November 15, 2004

PURPOSE

To document emergency incident activity of the VBFD for historical and legal purposes.

SCOPE

This policy shall apply to all incidents involving VBFD units. In addition, specific specialty response units may require additional internal reporting procedures that are not addressed by this policy, but which shall be included in divisional policy manuals.

CONTENT

a. VBFD participates in the Virginia Fire Incident Reporting System (VFIRS), which is based on the National Fire Incident Reporting System (NFIRS). These systems are designed to capture incident activity of any type involving fire department units. All reports shall be completed in compliance with the NFIRS coding manuals located in all station libraries.
b. The VBFD uses a software system called Red Alert for the completion of all incident reports. All reports shall be completed in accordance with the guidelines for Red Alert as distributed by the Red Alert Program Manager(s).
c. ERS incident reporting shall be carried out in accordance with the policies and procedures of the VB Department of Emergency Medical Services. The ERS Battalion Chief will administer information regarding procedures for PPCR completion.
d. At all times, personnel should be aware that incident reports are not only legal documents but are also immediately accessible to the general public through FOIA. The highest levels of accuracy and documentation are required in every instance.
e. At no time will copies of incident reports be issued by personnel other than the BC of Administration, or his designee, for fire-based reports, or by VBDEMS Administration for PPCR’s. Any requests received in the field should be directed to the appropriate office where they can be recorded and reports reviewed prior to issue. Any issued report not fully completed (including assist reports) will be stamped “preliminary” and a final completed report sent out to the requesting party at a later date.
f. First Arriving Unit: The first arriving engine, ladder or squad shall be the unit electronically defaulted with responsibility for completion of the primary fire report.
g. If possible, all reports shall be completed by the end of the shift following the shift on which the call occurred (Example: The report for an incident occurring on an A Shift is due by the end of the following A Shift.).
a) Company officers may delegate the completion of all reports, however, they should audit the reports completed by their subordinates. Reports should be reviewed for accuracy, completeness, and appropriateness of information detailed in the narrative. At no time should personal information such as name, social security numbers or patient medical information be written into the final NFIRS narrative. If in doubt on the appropriateness of information, contact the chain-of-command, a Red Alert Program Manager, or a fire investigator.

b) Company Officers should routinely audit the Red Alert queue for their unit(s); ensuring reports are completed within the established time frame.

h. Assisting Units

a. All reports shall be completed by the end of the shift following the shift on which the call occurred. (Example: The report for an incident occurring on a B Shift is due by the end of the following B Shift).]

i. Battalion Officers

a. Battalion officers should routinely audit the Red Alert reports for their companies to insure their accuracy, completeness, and appropriateness of information detailed in the narrative.

b. Battalion Officers should routinely audit the Red Alert queue for their companies; ensuring reports are completed within the established time frame.

10. The incident reports of large-scale incidents involving a full second alarm assignment and incidents involving death or serious injury to civilians or fire personnel shall be reviewed and approved by the Incident Commander of record. The Incident Commander shall then remove the report from the queue.
Appendix F

Proposed VBFD SOP O/A 5.03 EMERGENCY INCIDENT REPORTING PROCEDURE

PURPOSE

To document emergency incident activity of the VBFD for historical and legal purposes.

SCOPE

This policy shall apply to all incidents involving VBFD units. In addition, specific specialty response units may require additional internal reporting procedures that are not addressed by this policy, but which shall be included in divisional policy manuals.

CONTENT

1. VBFD participates in the Virginia Fire Incident Reporting System (VFIRS), which is based on the National Fire Incident Reporting System (NFIRS). These systems are designed to capture incident activity of any type involving fire department units. All reports shall be completed in compliance with the NFIRS coding manuals located in all station libraries.

2. The VBFD uses a software system called Red Alert for the completion of all incident reports. All reports shall be completed in accordance with the guidelines for Red Alert as distributed by the Red Alert Program Manager(s).

3. ERS incident reporting shall be carried out in accordance with the policies and procedures of the VB Department of Emergency Medical Services. The ERS Battalion Chief will administer information regarding procedures for PPCR completion.

4. At all times, personnel should be aware that incident reports are not only legal documents but are also immediately accessible to the general public through FOIA. The highest levels of accuracy and documentation are required in every instance.

5. At no time will copies of incident reports be issued by personnel other than the BC of Administration, or his designee, for fire-based reports, or by VBDEMS Administration for PPCR’s. Any requests received in the field should be directed to the appropriate office where they can be recorded and reports reviewed prior to issue. Any issued report not fully completed (including assist reports) will be stamped “preliminary” and a final completed report sent out to the requesting party at a later date.

6. First Arriving Unit: The first arriving engine, ladder or squad shall be the unit electronically defaulted with responsibility for completion of the primary fire report. The Battalion Chief, as the incident commander, is responsible for reviewing and removing the report for all working fires and working incidents.

7. If possible, all reports shall be completed by the end of the shift following the shift on which the call occurred (Example: The report for an incident occurring on an A Shift is due by the end of the following A Shift.).
a. Company officers may delegate the completion of all reports, except incidents that have property or content loss, that are declared to be a working fire or working incident. The company officer will audit the reports completed by their subordinates. Reports should be reviewed for accuracy, completeness, and appropriateness of information detailed in the narrative. At no time should personal information such as name, social security numbers or patient medical information be written into the final NFIRS narrative. If in doubt on the appropriateness of information, contact the chain-of-command, a Red Alert Program Manager, or a fire investigator.

b. Company Officers should routinely audit the Red Alert queue for their unit(s); ensuring reports are completed within the established time frame

8. Assisting Units

a. All reports shall be completed by the end of the shift following the shift on which the call occurred. (Example: The report for an incident occurring on a B Shift is due by the end of the following B Shift).

9. Fire Investigators: When a fire incident report is completed for a fire that is “under investigation”, the fire investigator assigned to the incident will complete the Red Alert fire incident report prior to being sent to NFIRS.

10. Battalion Officers

a. Battalion officers should routinely audit the Red Alert reports for their companies to insure their accuracy, completeness, and appropriateness of information detailed in the narrative.

b. Battalion Officers should routinely audit the Red Alert queue for their companies; ensuring reports are completed within the established time frame.

c. All working fires or working incidents will be reviewed and removed by the Battalion Chief. The Battalion Chief may elect to have the first arriving company officer complete the majority of the fire incident report, but the Battalion Chief should add comments to the narrative, review for accuracy, and remove it from Red Alert after being satisfied it completed accurately and completely.

11. The incident reports of large-scale incidents involving a full second alarm assignment and incidents involving death or serious injury to civilians or fire personnel shall be reviewed and approved by the Incident Commander of record. The Incident Commander shall then remove the report from the queue.
Appendix G

Results of VBFD Survey Evaluation

#1: Percentage of who Completes the Fire Incident Report

<table>
<thead>
<tr>
<th>Who completes the following incident reports?</th>
<th>Incident Commander (BC)</th>
<th>Company Officer (Captain) or Acting Officer</th>
<th>Master Firefighter or Firefighter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call</td>
<td>.19</td>
<td>.19</td>
<td>.81</td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident or fire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: single alarm</td>
<td>.90</td>
<td>.10</td>
<td>.10</td>
</tr>
<tr>
<td>Working Fires: multiple Alarms</td>
<td>.90</td>
<td>.10</td>
<td>.10</td>
</tr>
</tbody>
</table>

#2 Percentage of who Checks the Fire Incident Report for Accuracy

<table>
<thead>
<tr>
<th>Who checks the following incident reports for accuracy?</th>
<th>Incident Commander (BC)</th>
<th>Company Officer (Captain) or Acting Officer</th>
<th>No One: I remove it from Red Alert without anyone reviewing the fire incident report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call</td>
<td>.15</td>
<td>.15</td>
<td>.85</td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires: single alarm</td>
<td>.03</td>
<td>.03</td>
<td>.16</td>
</tr>
<tr>
<td>Working Fires: multiple Alarms</td>
<td>.11</td>
<td>.11</td>
<td>.07</td>
</tr>
</tbody>
</table>
### #3 Percentage of Training

<table>
<thead>
<tr>
<th>What best describes your level of training to enter fire incident reports?</th>
<th>None, self taught</th>
<th>Taught by mentor or company officer</th>
<th>Formal Class taught by Fire Department</th>
<th>NFA class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call (EMS, MVA, Dumpster Fire, etc…)</td>
<td>.07</td>
<td>.90</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident</td>
<td>.07</td>
<td>.90</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Working Fires, single alarm</td>
<td>.07</td>
<td>.90</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Working Fires, multiple Alarms</td>
<td>.07</td>
<td>.90</td>
<td>.03</td>
<td></td>
</tr>
</tbody>
</table>

### #4 Percentage of Training to Estimate Dollar Loss:

<table>
<thead>
<tr>
<th>What best describes your level of training to accurately fill out section G2, “Estimated Dollar Loss &amp; Value”?</th>
<th>None, self taught</th>
<th>Taught by mentor or company officer</th>
<th>Formal Class taught by Fire Department</th>
<th>Building Validation Data worksheet published by the USFA and Virginia Department of Fire Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call</td>
<td>.61</td>
<td>.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fire in a Residential, single alarm</td>
<td>.61</td>
<td>.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fire in a Commercial Occupancy</td>
<td>.60</td>
<td>.39</td>
<td>.01</td>
<td></td>
</tr>
</tbody>
</table>
Appendix H

Results of Regional/National Reporting Evaluation

#1 Percentage of who Completes the Fire Incident Report

<table>
<thead>
<tr>
<th>Who completes the following incident reports?</th>
<th>Incident Commander (BC)</th>
<th>Company Officer (Captain) or Acting Officer</th>
<th>Master Firefighter or Firefighter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call</td>
<td>.59</td>
<td>.41</td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident or fire</td>
<td>.59</td>
<td>.41</td>
<td></td>
</tr>
<tr>
<td>Working Fires: single alarm</td>
<td>.12</td>
<td>.76</td>
<td>.12</td>
</tr>
<tr>
<td>Working Fires: multiple Alarms</td>
<td>.12</td>
<td>.76</td>
<td>.12</td>
</tr>
</tbody>
</table>

#2 Percentage of who is Checking the Fire Incident Report for Accuracy

<table>
<thead>
<tr>
<th>Who checks the following incident reports for accuracy?</th>
<th>Administrator/Civilian personnel at Fire Administration</th>
<th>Incident Commander (BC)</th>
<th>Company Officer (Lt. or Captain) or Acting Officer</th>
<th>No One: The incident report is removed without anyone reviewing the fire incident report.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call</td>
<td>.41</td>
<td>.53</td>
<td>.06</td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, without being a working fire or incident</td>
<td>.41</td>
<td>.53</td>
<td>.06</td>
<td></td>
</tr>
<tr>
<td>Working Fires: single alarm</td>
<td>.41</td>
<td>.29</td>
<td>.24</td>
<td>.06</td>
</tr>
<tr>
<td>Working Fires: multiple Alarms</td>
<td>.41</td>
<td>.29</td>
<td>.24</td>
<td>.06</td>
</tr>
</tbody>
</table>
### #3 Percentage of Training

<table>
<thead>
<tr>
<th>What best describes your level of training to enter fire incident reports?</th>
<th>None, self taught</th>
<th>Taught by mentor or company officer</th>
<th>Formal Class taught by your Fire Department</th>
<th>NFA class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call</td>
<td>.59</td>
<td>.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple unit response, without being a working incident</td>
<td>.59</td>
<td>.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires, single alarm</td>
<td>.59</td>
<td>.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Fires, multiple Alarms</td>
<td>.59</td>
<td>.41</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### #4 Percentage of Estimating Dollar Loss:

<table>
<thead>
<tr>
<th>What best describes your level of training to accurately fill out section G2, “Estimated Dollar Loss &amp; Value”?</th>
<th>None, self taught</th>
<th>Taught by mentor or company officer</th>
<th>Formal Class taught by your Fire Department</th>
<th>Building Validation Data worksheet published by the USFA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Call</td>
<td>.12</td>
<td>.47</td>
<td>.41</td>
<td></td>
</tr>
<tr>
<td>Working Fire in a Residential, single alarm</td>
<td>.06</td>
<td>.47</td>
<td>.41</td>
<td>.06</td>
</tr>
<tr>
<td>Working Fire in a Commercial Occupancy</td>
<td>.06</td>
<td>.47</td>
<td>.41</td>
<td>.06</td>
</tr>
</tbody>
</table>
BUILDING VALUATION DATA

The International Code Council is pleased to provide the following Building Valuation Data (BVD) for its members. As included in the March 2003 issue of the Building Safety Journal, ICC will no longer provide data sheets in an effort to move toward complete consolidation and provide the most efficient set of data for jurisdictions to use. ICC strongly recommends that all jurisdictions and other interested parties actively evaluate and assess the impact of the new BVD table before utilizing it in their current code enforcement activities.

The BVD table provides two main functions. In addition to providing the "average" construction costs per square foot, the data can be used to determine permit fees for a jurisdiction as well as calculating the anticipated plan review fees charged by the ICC plan review service. Permit fee schedules are addressed in Section 106.2 of the 2003 International Building Code (IBC) and Section 106.3 addresses building permit valuations. The permit fees are calculated by using the BVD table and the Permit Fee Multiplier, which is calculated based on the total construction value within the jurisdiction for the past year. The Square Foot Construction Cost table presents factors that reflect relative value of one construction classification/occupancy group to another so that more expensive construction is assessed higher permit fees than less expensive construction.

The resulting BVD table was compiled by ICC using the Marshall Valuation Service, as published by the Marshall and Swift Corporation, Los Angeles, California. ICC has developed these data to aid jurisdictions in determining permit fees. It is important to note that while the BVD table does determine an estimated value of a building (e.g., gross area x square foot construction cost), the data are only intended to be used for determining permit fees for a jurisdiction. This data table is not intended to be used as an estimating guide because the data only reflect average costs and are not representative of specific construction.

The degree of precision required for the intended purpose, which is to establish permit fees so as to encourage code compliance activities. The BVD table provides jurisdictions with a simplified way for determining the estimated value of a building that does not rely on the permit applicant to determine the cost of construction. Therefore, the bidding process for a particular job and other factors not accounted for do not affect the value of a building for determining the permit fee. Whether a specific project is bid at a cost above or below the computed value of construction does not affect the permit fee because the cost of related code enforcement activities is not directly affected by the bid process and results.

BUILDING VALUATION

The building valuation data in Table 1 represent average valuations for most buildings. In conjunction with IBC Section 106.3, these data are offered as an aid for the building official for determining if the permit valuation is underestimated. Again, it should be noted that using these data that are "average" costs based on typical construction methods for each occupancy group and type of construction. The average costs include structural, electrical, plumbing, mechanical, interior finish, electrical, fire protection, architectural and design fees, overhead, and profit. The data represent a national average and must be modified using the appropriate regional cost modifier from Table 2.

Permit Fee Multiplier

Determine the Permit Fee Multiplier:
1. Based on historical records, determine the total annual construction value which has occurred within the jurisdiction in the previous year.
2. Determine the percentage (%) of the building department budget expected to be provided by building permit revenues.

\[
\text{Permit Fee Multiplier} = \frac{\text{Budget, Dept. Budget} \times \%}{\text{Total Annual Construction Value}}
\]

Example

- Building department operates on a $300,000 budget, and it expects to cover 75 percent of that with building permit fees. The total annual construction value which occurred within the jurisdiction in the previous year was $300,000,000.

\[
\begin{align*}
\text{Permit Fee Multiplier} &= \frac{300,000 \times 75\%}{30,000,000} \\
&= 0.0075
\end{align*}
\]

ICF PLAN REVIEW FEE SCHEDULE

The plan review fee is based on the estimated construction value calculated in accordance with the Square Foot Construction Costs in Table 1 (gross area x Square Foot Construction Cost). The Regional Cost Multipliers in Table 2 are not used when computing the estimated construction value for the purpose of determining plan review fees. For buildings with an estimated construction value up to $5,000,000, the building plan review fee is 0.0015 of the estimated value ($75 minimum). For buildings with an estimated construction value over $5,000,000 up to $6,000,000, the fee is $3,900 plus 0.005% of the estimated value over $5,000,000. For buildings over $6,000,000, the fee is $5,400 plus 0.0004% of the valuation over $6,000,000.
BUILDING VALUATION DATA (continued)

Special consideration may be given in computing plan review fees for buildings such as large warehouses or indoor recreational facilities because of their plan review simplicity. Such considerations may also be given to buildings with repetitive floor plans such as high-rise buildings.

Structural reviews in areas of high seismic or wind risk will have an additional surcharge, please contact your local IFC district office for more details.

The plan review fee for mechanical, plumbing and electrical reviews is computed at 25 percent of the building plan review fee for each discipline ($250 minimum).

The plan review fee for accessibility and energy reviews is also computed at 25 percent of the building plan review fee for each discipline ($250 minimum).

The sprinkler review fee is based on the number of sprinkler heads: 1-100, $275; 101-200, $325; 201-300, $350; 301-400, $375; 401-500, $425; over 500, $500 plus $.33 per sprinkler over 500. For hydraulically designed systems, multiply the fee by 2.

Table 1. Square Foot Construction Costs

<table>
<thead>
<tr>
<th>Group</th>
<th>Type of Construction</th>
<th>IA</th>
<th>IB</th>
<th>IIA</th>
<th>IIB</th>
<th>IIIA</th>
<th>IIBB</th>
<th>IV</th>
<th>VAB</th>
</tr>
</thead>
<tbody>
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a. Private garages are Utility, miscellaneous
b. Unfinished basements (all use group) = $16.00 per sq. ft.
c. N/P = not permitted

Table 2. Regional Cost Modifiers

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