
FINAL REPORT BY:

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FOREWORD

The fire service operates as a para-military organization dependent on clear and predetermined instructions. This allows individuals to know what they are supposed to do as well as expect what others will do. Standard Operating Procedures and Guidelines (SOPs/SOGs) documents provide information on department rules for completing a job, using the knowledge and skills to perform specific operations. A model template for developing these documents will be important when considering techniques and methods used in firefighting based on accepted scientific principals and research in the field of fire dynamics.

The purpose of this project is to collect and analyze SOPs/SOGs from North American fire departments to determine similarities, difference, and trends that will help guide the development of a model SOP/SOG template for NFPA 1700, Guide for Structural Fire Fighting.

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The Fire Protection Research Foundation plans, manages, and communicates research on a broad range of fire safety issues in collaboration with scientists and laboratories around the world. The Foundation is an affiliate of NFPA.

About the National Fire Protection Association (NFPA)

Founded in 1896, NFPA is a global, nonprofit organization devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards. The association delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach and advocacy; and by partnering with others who share an interest in furthering the NFPA mission.

All NFPA codes and standards can be viewed online for free.

NFPA’s membership totals more than 65,000 individuals around the world.
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EXECUTIVE SUMMARY

SOPs play an important part in fire service operations. Any official written document that sets forth an operational guideline is defined as a standard operating procedure (SOP). It builds on training, providing an organizational blueprint for operational safety and efficiency. Thus, SOPs constitute a key link between organizational policy makers, planners, administrative personnel, and emergency response personnel.

Fire and emergency service agencies need to consider a wide variety of documents, plans, and agreements when developing or revising SOPs. Ensuring compatibility and consistency among these important components of the organization’s operational environment helps standardize behavior, avoid confusion, limit liability and enhance safety. SOP documents also can be used to improve training, external communications and public education.

The creation of a standardized model template for SOPs focused on structural firefighting (NFPA 1700), based on accepted scientific principles and research in the field of fire dynamics, can help improve firefighter safety during fire ground operations. The basis for this guide’s template includes gathering and reviewing Standard Operating Procedures & Guidelines from fire departments in North America, including career, volunteer, and combination departments.
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1. Introduction

NFPA 1700, Guide for Structural Firefighting, is a guide under development by the National Fire Protection Association (NFPA) to provide support to firefighters on challenges related to structural fires by incorporating research findings gathered over the years (NFPA 1700, First Draft Report). The purpose of NFPA 1700 is to “provide guidance for the development of policies, procedures, and guidelines including strategies, tactics, and tasks for structural firefighting supported by science-based research” (NFPA 1700, First Draft Report).

Implementation of a pre-set course of action is believed to improve firefighter safety during fireground operations, although studies evaluating this relationship are currently lacking (Burgess et al., “International comparison of fire department injuries.”, 1043-1059). As such, there has been minimum guidance for developing strategies toward the goal of reducing predictable injuries. Even as reliance on standard operating procedures (SOPs) has increased over the years, fireground injury rates have held steady (Duncan et al., Development of best practice standard operating procedures for prevention of fireground injuries, 1-20). Recognizing that life safety of the public and the first responder is the highest priority, NFPA 1700 is intended to provide guidance based on the application of science-based fire dynamics research on structural firefighting practices, tactics, and tasks. Due to the proposed changes to fireground tactics and strategies, the SOP for such procedures should be re-assessed to help fire departments transition to these modified procedures, grounded in scientific research.

Documents on Standard Operating Procedures and Guidelines (SOPs/SOGs) provide information on department rules and recommended practices for completing a job, using the knowledge and skills to perform specific operations. These documents are also used to mandate certain tasks and responsibilities of those responding to a number of different incidents. In order to substantiate the development of this model template, the Technical Committee submitted a request to review current SOPs/SOGs from a cross section of the North American fire service. Standard Operating Procedures (SOPs) and Standard Operating Guidelines (SOGs) are documents used throughout the fire service in order to mandate certain tasks and responsibilities of those responding to a number of different incidents. Some fire departments have substituted SOGs for SOPs in order to provide better flexibility in responding to unique situations. In order to highlight the difference between SOPs and SOGs, definitions for both are mentioned below (NFPA 1700, First Draft Report: Chapter 3):

**Standard Operating Procedures** – A written directive that established specific operation or administrative methods to be followed routinely for the performance of a task or for the use of equipment.

**Standard Operating Guidelines** – A written directive that establishes recommended strategies/concepts of emergency response to an incident.
For the purpose of this report, the term SOPs will refer to both SOPs and SOGs.

In support of the development of new guidance document, the Technical Committee on *Fundamentals of Fire Control within a Structure Fire Utilizing Fire Dynamics* expressed a need for the development of a template Standard Operating Procedures (SOPs) and Guidelines (SOGs) for structural firefighting strategies, tactics and tasks as contained within NFPA 1700. The model SOP template is intended to provide Fire Departments with a good sense of the key organizational and operational features that are recommended to be included in SOP/SOG’s to effectively implement the techniques and methods used in firefighting based on accepted scientific principles and research in the field of fire dynamics (FEMA, Guide to Developing Effective Standard Operating Procedures, 1061-1076). This project focuses on gathering and reviewing SOP’s and SOG’s from a range of fire departments in North America, including career, volunteer, and combination departments to provide a template to reflect written policies, procedures, and guidelines, including strategies, tactics, and tasks for structural firefighting (i.e., Standard Operating Procedures (SOP), Standard Operating Guidelines (SOG), or Firefighting Procedures).
2. Objective

The purpose of this project is to collect and analyze SOPs from North American fire departments to determine similarities, difference, and trends that will help guide the development of a model SOP template. This is in support of the new NFPA 1700, Guide for Structural Firefighting, being administered by the Technical Committee on Fundamentals of Fire Control within a Structure Utilizing Fire Dynamics (NFPA 1700, First Draft Report).

The project objectives are as follows:

- Gather available SOPs from North American fire departments by means of an online survey. Information collected include: size and structure of department, geographical location, and type of occupancies in jurisdiction.
- Creation of a database of SOPs containing specifics about the fire department, survey results and details regarding their current method.
- Determine classification of SOPs such as: topic (operational, logistics, prevention, etc.), document structure, and scope. This data is used to build a rubric highlighting the common features across North American SOPs.
- Produce a final report based on the acquired information.

The data collected by this study will help create a baseline SOP template. The primary approach to achieve the project goal is through an information collection effort using online survey. This report will be provided to the applicable NFPA Technical Committees, as they continue their work on the first edition of NFPA 1700.
3. Methodology

3.1. Survey

An online survey was conducted to collect information from different fire departments in North America. The survey, created on Survey Monkey, was made available starting 3rd June 2016 to 20th January 2019. Questions on the survey focused on gathering pertinent information about the fire department and the necessary details related to SOPs provided by the department.

Some of the key concepts used to create the survey are mentioned below:

- Size of department
- Department structure
- Geographical location
- Types of occupancies in jurisdiction
- Implementation of SOP and supportive training techniques
- Parties involved in writing the SOP
- Known period of revision cycle

Questions and the available answer choices related to the concepts underwent several revisions with comments from all who were involved in the project. These were then added to the survey and made available to the fire departments as seen in [Appendix 1: Questionnaire. The questions focused on capturing both general information as well as specific information regarding SOPs. Figure 1 provides a list of topics asked in the survey in the form of a flowchart.
The strategies implemented to obtain maximum responses to the survey, include the following:

- Email/phone contacts from Foundation contacts.
- Fire Departments who have been part of other NFPA projects.
3.2. Selection of Database

To conduct a broad analysis of the responses from the survey a well-rounded database was required. The software to be utilized for this SOP database was narrowed down to three software: Microsoft Excel, Zoho, and Obvibase. These options, detailed below, were compared to the project requirements to determine the optimum software to be utilized for this database.

- **Microsoft Excel**

  Microsoft excel is a product that allows users to create, manage, and analyze numerical data. Developed by Microsoft, this spreadsheet software features tools for graphing, tables, calculation and macro programming. The lack of option to add documents or host files made it unfavorable to use as a database for this project. However, it was used for data analysis and plotting graphs.

- **Zoho**

  Zoho is a software company that develops a wide array of applications for the advancement of business. One particular application that was identified as useful was the Creator tool that Zoho offers. According to the website, the tool can automate business processes, manage data, and make work easier with custom applications. The software does not have the capability to store document particularly pdf files.

- **Obvibase**

  Obvibase, an online hosted database creator, operates through the use of a storage cloud. The website mentions that, it is a software aimed to make a database easy to create and collaboratively edit. While the account is linked to the users Google or Facebook, changes made to the database records are visible to other users in real time. There are options for checkboxes, tables nested in cells and even multiple-choice dropdowns. One of the bigger advantages of the basic plan which is free is that the database itself permits externals files or documents to be attached.

  Table 1 provides a comparison of each database software to the six factors favorable to the project.
Table 1: Comparison of database feature

<table>
<thead>
<tr>
<th>Decision Factors</th>
<th>Database Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Microsoft Excel</td>
</tr>
<tr>
<td>Free</td>
<td>x</td>
</tr>
<tr>
<td>Searchable</td>
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<tr>
<td>Exportable</td>
<td>x</td>
</tr>
<tr>
<td>Host documents</td>
<td></td>
</tr>
<tr>
<td>Searchable</td>
<td>x</td>
</tr>
<tr>
<td>Sufficient storage space</td>
<td></td>
</tr>
</tbody>
</table>

Therefore, from the available options, Obvibase was selected as the best suited database for this particular project mainly since it was the only software that could host documents and link all the data collected from the survey.

3.3. SOP Features

In order to review and elementally analyze each SOP, it was important to identify the organizational and operational features in each document. Twelve features were identified as being important and representative of the typical elements contained within a fire service SOP for structural firefighting. Each SOP is inherently unique so all the selected features may not be present in them. After analyzing the data and reviewing individual SOPs, a rubric was created to identify how well the desired features were represented within the collected Fire Department SOPs.

3.3.1. Organizational Features

Organizational features play a vital role in an SOP as it allows the reader to locate and read information in the most efficient manner. This reduces the time to locate details and makes the overall document well-defined. Some of the common organizational sections found from the collected SOPs are mentioned below:

- **Revision Date** – A revision date informs the reader when the SOP was last updated or implemented as a current procedure which allows the reader to know how recent the information is. A revision date section is considered included in the SOP if there is a clear statement of the revision date or implementation date of the document.
• **Purpose/Scope** – A purpose/scope section of an SOP provides the reader with information on how the SOP should be enforced, what type of incidents the procedures apply to (e.g. structural fire, motor vehicle fire, high-rise fire, etc.), the reasoning for the development of the SOP, and personnel the SOP is applicable. If there is a section titled accordingly or if there is simply a statement of the purpose or scope, it is considered included in the SOP.

• **Table of Contents** – Table of contents offers the reader a quick view of the entire SOP. This is useful for quickly finding or referencing a certain section of the SOP and providing organization to the document. A table of contents section will be considered included in the SOP if there is a listing of different sections of the document with associated page numbers.

• **Appendix** – The appendix section of an SOP may contain additional explanatory material that assists the reader in understanding the SOP. Such appendices may include definitions of terms found in the SOP, or further discussion on tactics or responsibilities found in the SOP. The appendix is intended to provide the reader with information supplemental to the SOP material. An appendix section will be considered included in the SOP if there is a clear appendix section at the end of the document.

• **Definitions** – A definition section will be considered included in the SOP if there are document-related definitions found at any point within the SOP.

3.3.2. Operational Features

Operational features allow the fire service personnel to understand the necessary steps to be taken for a specific situation. The features mentioned below provide additional information regarding the sections defined in the collected SOP’s.

• **Staffing & job descriptions** – Descriptions of staffing and job roles assists the reader in understanding the expectations of their position. This helps clarify sections of the SOP the reader should pay attention to, as well as their general responsibilities. It also informs the reader about the organizational structure of the entire Fire Department, and the qualifications necessary for each position. A staffing and job descriptions section should be considered for inclusion in the SOP if there are descriptions available for each position within the fire department, such as fire chief, incident commander, safety officer, firefighter, etc.
• **Tactical considerations (firefighting tactics)** – Tactical approaches are the most important information included in the SOP. It provides the reader with the appropriate methods that should be implemented during firefighting operations, whether it be every situation or specific fire scenarios. Tactics might include ventilation techniques, size-up, suppression, etc. Tactical considerations and firefighting tactics will be considered in the document if there is a section specifically detailing it or if found in another area of the document. Details about the tactics implemented such as ventilation, size up and suppression should be written out and clearly detailed.

• **Operational responsibilities** – This section provides the reader with the necessary steps to follow upon arrival at the scene. Operational responsibilities may be defined based on the different types of companies/groups (RIT, Ladder Company, Engine Company, Squad Company), or based on the order of arrival to the scene. The operational responsibilities differ from staffing and job descriptions because it provides scene-specific responsibilities of employees, rather a description of the position. It will be considered included in the SOP if there is a section that details what each person must do at the scene of the fire.

• **Incident management/command** – The SOP may contain techniques, methods, or best practices for managing basic or significant incidents. These techniques will be defined in a specific incident management section within the SOP, intended to be applied by necessary first responders. The incident management section may provide a step-by-step guideline on effective incident management, or a collection of appropriate incident management techniques. The incident management command feature will be considered included in the document if there is discussion of how the chain of command should be handled, including techniques and reports that need to be given throughout the course of the fire incident.

• **Safety considerations** – Safety considerations may include specific areas of concern that the first responders should be aware of. These can be related to a certain type of incident or a commonly experienced safety concern. Safety considerations provide the first responders with a general idea of the risks associated with their firefighting activities. The safety considerations feature will be considered included in an SOP if there is a safety section in the document or if anywhere in the document there are listed safety considerations for the firefighter’s awareness.
• *Scientific references* – An SOP may contain reference to scientific material that was used to develop the SOP. The references will most likely pertain to firefighting tactics or operational responsibilities because these sections may require evidence that the material is appropriate and represents the best practices. A scientific references feature will be considered included in the document if there are clear references to scientific documents that support the language in the standard operating procedure.

• *Risk-based approach* – An SOP may contain discussion or mention of applying a risk-based approach to the firefight, either in the firefighting tactics or operational responsibilities or incident management. Risk-based approaches are relatively new to the American fire service, so it will be important to note which Fire Departments are utilizing this concept. A risk-based feature will be considered included in the SOP if the document contains specific mention of analyzing risk before completing certain actions, or if risk assessment techniques are mentioned in the document.
4. Survey Analysis & Discussion

Results from the survey were evaluated to get information about practices followed by the Fire Departments regarding SOPs. The survey was mainly designed to obtain information about SOPs in fire departments. Additional information about the specifics in the department were inquired to better understand the approach and variations in the responses. A total of 36 responses were received from this information gathering effort where participants had to answer 14 questions.

4.1. Geographical Information

The survey was aimed towards North American Fire Departments and the geographical distribution of the response were noted. The markers in Figure 2 show the geographical location of the responses using Google Maps. Majority of the responses were from the East Coast. There were a few scattered responses from the West Coast and Central America. It should be noted that there was a response from Germany and Hawaii. The information from these two locations were also taken into consideration for SOP rubric.
4.2. Analysis of Survey Results

The first six questions in the survey were used to obtain information about the SOPs in the fire department as this was the primary focus. The first question was to recognize how often the SOPs were revised and updated. Figure 3 shows the breakdown of the responses which indicates that more than half of the fire departments have no set time frame to update their documents. This is followed by a quarter of the departments conducting an annual update. It shows that there should be an increased awareness to have a fixed time frame for an SOP revision.

![Figure 3: Revision cycle for SOP](image)

The second and third question examined about topics and groups involved in the development of SOP. It is seen, from Figure 4, that the department management and experts from within the department are the main people involved in writing the SOP. This is followed by fire departments incorporating all available parties like legal counsel and experts from outside the department in addition to people within the department.

![Figure 4: Groups involved in development of SOP](image)
Results from the survey indicate that references used in the development of SOP are mainly from other associated organization SOPs as well as research findings from companies like National Institute of Standards and Technology [NIST] and Underwriters Laboratory [UL]. Figure 5 shows that research data from countries outside of North America are rarely used as references probably due to the difference in geography or tactical approaches among others.

![Usage of policies or scientific research as reference in SOP](image)

*Figure 5: References used in development of SOP*

It is important to know whether fire departments use SOPs as part of their response tactics. Results, from Figure 6, show that around 92% of the participants have some type of SOP in place. This indicates that using an SOP is an effective method to tackle a wide range of incidents.

![Implementation of SOP](image)

*Figure 6: Implementation of SOP in the fire department*
Supportive training to assist with the instructions in an SOP are enforced by majority of the participating departments [Figure 7]. While there are some departments that only partially enforce training the reason for this could be funding issues, small department, etc.

![Implementation of SOP supportive training](image)

*Figure 7: Implementation of supportive training for SOP*

The training method most commonly used in support of SOPs is classroom teaching with an instructor. Some other techniques such as a drill according to surrounding environment, training with live fire and online resources are adopted to maximize understanding. Figure 8 provides a breakdown of the various methods used by the participants in the survey.

![Training methods for SOP](image)

*Figure 8: Training methods for SOP*
The second portion of the survey focused on gathering general information about the participating fire departments such as name, location, zip code and population size. Questions also focused on identifying the type of firefighters working in the departments like career, volunteer or a mix of both as in Figure 9.

![Personnel size information](image)

**Figure 9: Personnel size information**

Most of the personnel in the department are career firefighters (78%) and a small percentage are volunteer firefighter (16%). Of the, 36 participants, 15 were all career, 4 were mostly career, 7 were mostly volunteer and 10 were all volunteer.

Additional information needed was regarding the breakdown of the building occupation types within each fire departments coverage area. Knowing the distribution, helps identify if any fire departments deals with a unique area. The majority of the responses received for this question indicate residential is the main type of structure protected followed by commercial and then industrial [Figure 10]. This question was skipped by 4 participants.

![Distribution of structures in Fire Department coverage area](image)

**Figure 10: Distribution of structures in Fire Department coverage area**
The last two questions focused on the types of apparatus owned by the fire department and the availability of an EMS [Emergency Medical Service]. All survey participants reported owning an engine/pumper and some type of ladder/tower/aerial. The data, from Figure 11, indicates that a large majority have a rescue apparatus. In addition to these crucial equipment’s, participants were provided an option to submit a list of other equipment’s they had in the department. A few of the shared responses included ambulances, command vehicles and brush trucks.

![Figure 11: Apparatus owned by fire department](image)

Results show that three-quarters of the participating fire departments have an EMS to assist with when an incident occurs [Figure 12]. Upon completing the survey, participants were asked to submit a contact email and requested to send a copy of their SOPs to create a rubric and identify the key elements from the different documents.

![Figure 12: Availability of Emergency Medical Services](image)
4.3. Rubric

From the 36 responses received in the survey, a total of 23 participants provided the SOPs that were implemented in their respective fire departments. A rubric was created to analyze the different sections in the document for comparison [Appendix 3: Rubric]. Information from this rubric helped identify key features that were similar and of importance to build a comprehensive template that could be added to NFPA 1700.

To create the rubric, the initial analysis was conducted by sorting the SOPs according to the type of employment within the fire department (e.g., career, volunteer, both) and then evaluated to identify vital sections in the file. Figure 13 provides the breakdown of the SOP types on the basis of career or volunteering employment. It is seen that among the different categories of SOPs that were present, structural SOPs are documents primarily made for firefighting with 61% of the reports targeting this particular topic. 35% of the documents received were fully developed SOPs that covered the topic for structural fires and the required emergency operations. Most of the coverage areas of fire departments are structures ranging from residential to commercial. This creates a need to have a fixed set of guidelines to deal with structural incidents thus an SOP covering structural incidents would help safeguard firefighters. Depending on the location of the fire departments, the SOP can become specific. Among the documents received, some SOPs under the ‘others’ section focused primarily on residential structures, fire coordinated attacks, etc. Organization size, geography, resources, and preferences will influence the process by which the SOPs are developed. Each department will need to tailor this information to their own unique needs and preferences.

![Classification of SOP type](image)

*Figure 13: Classification of SOP type from survey submissions*
A set of 12 features were identified as crucial elements to create an SOP template. They were compared against the documents received from the survey and analyzed as seen in Figure 14.

**Figure 14: Breakdown of content in implemented SOPs**

Majority of the features were present in SOs implemented by fire departments. However, certain sections like scientific references, staffing / job descriptions were not considered important in the SOPs received. This information helps standardize activities and promote coordination and communications among personnel. It also simplifies decision-making requirements under potentially stressful conditions making it an important section in an SOP. A key feature lacking in the collected SOP’s were the scientific references, which is a critically important feature with respect to NFPA 1700.

For the ‘table of contents’ feature, it was seen that it was mostly utilized by volunteer fire departments. While the reasoning behind this is unknown, it could be said that both career and volunteer SOPs have their unique differences and methods. SOPs help operationalize the strategies and plans of the respective fire department. Table of contents allows the reader to locate the section they need without much hassle especially under time-constrained scenarios.

Overall, the responses from the career-based and volunteer-based fire departments showed significant consistency regarding the features contained within their respective SOP documents.
4.4. Draft SOP Template for Structural Firefighting

The section is intended to provide a list of recommended features to be incorporated into a SOP template to support the structural firefighting strategies, tactics and tasks per NFPA 1700: Guide for Structural Firefighting. The section is developed through collection and review of Standard Operating Procedures and Guidelines from a range from fire departments in North America, including career, volunteer, and combination departments.

An SOP for Structural Firefighting should, at minimum, include the twelve sections identified here.

1. **Title.**
The title should clearly indicate the type of SOP or SOG (i.e. for structural firefighting).

2. **Date of Implementation/Publication.**
This date should indicate the date in which the SOP was implemented. This will be used to inform users of the relevancy of the information contained within the SOP to determine whether a revision should be considered.

3. **Revision Date.**
The most recent date of revision should be clearly indicated on the front page of the SOP. Note, if it is the first edition of the SOP, the revision date may be the same as the date of implementation. This revision date is intended to enable the user to know how current the information is that is contained within the SOP.

4. **Name of Fire Department.**
The name of the fire department should be provided to clearly indicate which fire department the SOP is specifically tailored to.

5. **Purpose and Scope.**
A purpose/scope of an SOP/SOG provides the reader with information on how the SOP should be enforced, what type of incident(s) that the procedures apply to (structure fire, motor vehicle fire, high-rise fire, etc.), the reasoning on the development of the SOP/SOG, and which personnel the SOP/SOG applies to.

6. **Table of Contents.**
A table of contents within the SOP/SOG gives the reader a brief view of the entire SOP/SOG. This can be useful for quickly finding or referencing a certain section of the SOP/SOG and providing organization to the document.

7. **Definitions and Terminology.**
This section of the SOP/SOG should provide clear definitions of terminology used throughout the SOP/SOG. This additional explanatory material should provide context and assist the reader in understanding the SOP/SOG.
8. **Risk Assessment.**
An SOP/SOG should contain considerations for applying a risk-based approach to structural firefighting. All firefighting and rescue operations involve an inherent level of risk to firefighters. A basic level of risk is recognized and accepted, in a measured and controlled manner, in efforts that are routinely employed to save lives and property.

For example, the risk assessment could consider factors such as the risk to building occupants, building characteristics, fire factors, firefighting capabilities. The SOP/SOG should specify the risk assessment methodologies implemented for response to any structure fire. A risk matrix should also be contained within this section of the SOP/SOG.

9. **Operational Responsibilities.**
The operational responsibilities section provides the reader with the necessary steps to take upon arrival at the scene. Operational responsibilities may be defined based on different types of companies / units / apparatus / members. This section should include tactical considerations, safety considerations, as well as considerations specific to apparatus and corresponding personnel.

Tactical considerations are of critical importance within the SOP/SOG. It provides the reader with the appropriate fire attack methods that should be used, whether it be every situation or specific fire scenarios. Such tactics might include ventilation techniques, size-up, suppression, etc.

Safety considerations may include specific areas of concern that the first responders should be aware of. These can be related to a certain type of incident or a commonly experienced safety concern. Safety considerations provide the first responders with a general idea of the risks associated with their firefighting activities.

10. **Responsibilities of Command/Incident Management System.**
The SOP/SOG may contain techniques, methods, or best practices for managing basic or significant incidents. These techniques will be defined in a specific incident management section within the SOP/SOG, intended to be applied by necessary first responders. The incident management section may provide a step-by-step guideline on effective incident management, or a collection of appropriate incident management techniques.

11. **References.**
An SOP/SOG may contain reference to scientific material that was used to develop the SOP/SOG. The references will most likely pertain to firefighting tactics or operational responsibilities because these sections may require evidence that the material is appropriate and represents the best practices.
If the SOP/SOG contains content that has been influenced from scientific literature, but does not reference a singular piece of work, this should be addressed in this section as well.

12. Appendix.
The appendices are intended to provide the reader with information supplemental to the SOP/SOG material. Such appendices may include further discussion on tactics or responsibilities found in the SOP/SOG.
5. Summary

In support of the development of the new guidance document, NFPA 1700, this report analyzed Standard Operating Procedures and Guidelines from a cross section of Fire Departments, career, volunteer, and combination departments, across North America to inform the development of a model template Standard Operating Procedures (SOPs) and Guidelines (SOGs) for structural firefighting strategies, tactics and tasks.

Through an online survey, a variety of information was collected about participating fire departments including key features about the fire department itself, along with the contents of their SOP, SOP development process, and training programs. As a result of this collection effort, a database of the acquired information was created, which includes PDF’s of Fire Department’s SOP’s. This database of the acquired information discussed throughout this report was then evaluated to develop a representative SOP template, with respect to the scientific based procedures outlined in NFPA 1700.

Results from the survey analysis have shown that the usage of an SOP has proven to improve the overall operational efficiency and effectiveness of structural firefighting and emergency response. Majority of the fire departments have developed a training plan in support of their SOP in addition to recognizing safety precautions and necessary procedures within the SOP. Recognizing the modified firefighting strategies, tactics, and tasks recommended by the results of scientific research in the field of fire dynamics and structural firefighting, this report summarizes a set of important features to include in an SOP for structural firefighting. The usage of these features in career and volunteer-based fire departments were examined and found to be similar except for sections like incorporating research findings in the SOP guidelines and the use of a table of contents.

Based on the data collected, a list of comprehensive features was developed in support of the creation of an SOP template. This model SOP template is intended to provide Fire Departments with a good sense of the key organizational and operational features that are recommended to be included in SOP/SOG’s to effectively implement the techniques and methods used in firefighting based on accepted scientific principles and research in the field of fire dynamics.
6. Bibliography


Appendix 1: Questionnaire

It is of high importance to this research effort that you submit a Structural Firefighting SOP or SOG. Please email your document to research@nfpa.org

1. What is the revision cycle of the Standard Operating Procedure that your Fire Department provided?
   - [ ] Annually
   - [ ] Less than annually
   - [ ] More than annually
   - [ ] No set time-frame exists

2. Who was involved in the writing of the Standard Operating Procedure? (Please select all that apply)
   - [ ] Subject matter experts from within the department
   - [ ] Subject matter experts from outside the department
   - [ ] Department Management
   - [ ] Legal Counsel
   - [ ] All of the above
   - [ ] Other (please specify)

   [ ]
3. Did the development of the Standard Operating Procedure include using other policies or scientific research as a reference? (Please select all that apply)

- [ ] No other policies or scientific research were used as a reference
- [ ] Other associated organization SOP
- [ ] UL Research Findings
- [ ] NIST Research Findings
- [ ] Canadian Research (ex. Knowledge 2 Practice - K2P)
- [ ] European Research (ex. Swedish Rescue Services Agency)
- [ ] Other (please specify)

4. Has the Standard Operating Procedure been implemented?

- [ ] Yes
- [ ] No

5. Has training been developed to support the SOP?

- [ ] Yes
- [ ] No
- [ ] Partially

6. How is the training delivered to employees? (Please select all that apply)

- [ ] Online
- [ ] Classroom instructor
- [ ] Station drill
- [ ] Multi-company drill
- [ ] Hands-on with no live fire
- [ ] Hands-on with live fire
- [ ] Training has not been developed or delivered yet

7. What is the name of your Fire Department?

8. What is the zip code of the administrative headquarters of your Fire Department?
9. What is the total population that your Fire Department serves?

10. Fire Department personnel size information
   How many members of the
   Fire Department are
   career Fire
   fighters/employees?

   How many members of the
   Fire Department are
   volunteer Fire
   fighters/employees?

   How many members of the
   Fire Department are a
   combination of
career/volunteer Fire
   fighters/employees?

11. What is the distribution of structures within your Fire Department’s coverage area? (Please provide percentages)
   Residential (ex: apartment, single/multi-family homes, etc.)

   Commercial/Business
   (ex: restaurants, retail, etc.)

   Industrial (ex: warehouse, factories, etc.)

   Other (any other structures)

12. How many of the following apparatus does your entire Fire Department have?
    Engine/Pumper

    Ladder/Tower/Aerial

    Rescue

    Other (please provide names of apparatus as well)

13. Does your Fire Department provide department-based Emergency Medical Services?

   ○ Yes
   ○ No
14. Please provide an email address that we can use to contact you as we distribute the research project findings (email address will be kept confidential).
<table>
<thead>
<tr>
<th>Fire Department Name</th>
<th>SOP Type</th>
<th>Jurisdiction</th>
<th>Population of FD Coverage Area</th>
<th>% Residential Protection</th>
<th>% Commercial Business Protection</th>
<th>% Industrial Protection</th>
<th>% Other Prot.</th>
<th># of Career Employees</th>
<th># of Volunteer Employees</th>
<th># of Combination Career/Volunteer</th>
<th># of Engines/Pumpers</th>
<th># of Ladder/Tower/Aerial</th>
<th># of Rescue</th>
<th>Other Apparatus (name/number)</th>
<th>Does FD Provide EMS?</th>
<th>SOP Revision Cycle</th>
<th>SOP Author(s)</th>
<th>Other policies/research used as reference</th>
<th>Has the SOP been implemented?</th>
<th>Does SOP have supporting training?</th>
<th>Training delivery method</th>
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</thead>
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<tr>
<td>Cleveland</td>
<td>Structural FF SOP</td>
<td>Cleveland, OH</td>
<td>390,000</td>
<td>70</td>
<td>20</td>
<td>10</td>
<td>0</td>
<td>730</td>
<td>0</td>
<td>22</td>
<td>11</td>
<td>2</td>
<td>Hazmat, FIU, BEAM, Foam Trailer, Dive Rescue, Collapse Rescue</td>
<td>Yes</td>
<td>No set time-frame exists</td>
<td>Subject matter experts from within the department</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Classroom instructor</td>
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<td>Los Angeles, CA</td>
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<td>20</td>
<td>10</td>
<td>0</td>
<td>2,800</td>
<td>0</td>
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<td>163</td>
<td>32</td>
<td>2</td>
<td>PM Squads 68</td>
<td>Yes</td>
<td>Yes</td>
<td>No set time-frame exists</td>
<td>Subject matter experts from outside the department, department management, Labor</td>
<td>Y</td>
<td>N</td>
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<td>0</td>
<td>105</td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>Command - 1, Tender - 1, Brush - 11</td>
<td>No</td>
<td>Annually</td>
<td>Subject matter experts from within the department, Department management, Legal Counsel</td>
<td>Y</td>
<td>Y</td>
<td>Classroom instructor</td>
<td></td>
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<tr>
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<td>Structural FF SOG</td>
<td>Hanover County, VA</td>
<td>100,000</td>
<td>50</td>
<td>20</td>
<td>20</td>
<td>10</td>
<td>170</td>
<td>347</td>
<td>0</td>
<td>24</td>
<td>3</td>
<td>4</td>
<td>Tanker/Tenders, Brush Trucks, Foam Unit, Quick Response Vehicles</td>
<td>Yes</td>
<td>No set time-frame exists</td>
<td>Subject matter experts from within the department, Department management</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Classroom instructor, station drill, multi-company drill, hands-on with no live fire, hands-on with live fire</td>
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<tr>
<td>Department</td>
<td>Full FD Best Practices</td>
<td>Pierre, SD</td>
<td>14,000</td>
<td>70</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>Numerous water rescue equipment</td>
<td>No</td>
<td>No set time-frame exists</td>
<td>Subject matter experts from within the department, Department management</td>
<td>No other policies or scientific research were used as a reference</td>
<td>Yes</td>
<td>Yes</td>
<td>Classroom instructor, station drill, multi-company drill, hands-on with no live fire, hands-on with live fire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
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<td>-----------</td>
<td>--------</td>
<td>----</td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td>----------------------------------</td>
<td>----</td>
<td>--------------------------</td>
<td>Subject matter experts from within the department, subject matter experts from outside the department, Department management</td>
<td>Other associated organization SOP, NIST Research Findings</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wagontown Volunteer Fire Company</td>
<td>Full FD SOG</td>
<td>West Cain Township, PA</td>
<td>10,000</td>
<td>70</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>42</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1 Brush Trucks, 4 Utility vehicles, 2 boats, 1 atv</td>
<td>No</td>
<td>Annually</td>
<td>Subject matter experts from within the department, subject matter experts from outside the department, Department management</td>
<td>No other policies or scientific research were used as a reference</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
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<tr>
<td>City of Green River Fire Department</td>
<td>Full FD SOG</td>
<td>Green River, WY</td>
<td>12,515</td>
<td>70</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>33</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1 Quick attack, 2 watercrafts, 1 UTV, 4 Suburbs</td>
<td>No</td>
<td>Annually</td>
<td>Subject matter experts from within the department, Department management</td>
<td>No other policies or scientific research were used as a reference</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philomath Fire and Rescue</td>
<td>Offensive Ops. SOG</td>
<td>Philomath, OR</td>
<td>9,200</td>
<td>90</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>32</td>
<td>38</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>4 Brush trucks</td>
<td>Yes</td>
<td>No set time-frame exists</td>
<td>Subject matter experts from within the department, Department management, Legal counsel</td>
<td>No other policies or scientific research were used as a reference, other associated organizations SOP</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Merrill Fire/RMS</td>
<td></td>
<td>Merrill, WI</td>
<td>600</td>
<td>90</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td></td>
<td>Yes</td>
<td>No set time-frame exists</td>
<td>Department management, Legal counsel</td>
<td>No other policies or scientific research were used as a reference</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

Page 31 of 37
<p>| Department | SOG | Location | Population | Engine | Ladder | Truck | Brush | Squads | IC | Fire Police | Haz Mat Support | Fireboat | Fire Investigation | Subject Matter Experts | Training Format | SOP | Other Policies or Scientific Research Used as Reference | Subject Matter Experts from Outside the Department, Department Management, Legal Council | Other Associated Organization SOP | Training Format | Other Policies or Scientific Research Used as Reference |
|------------|-----|----------|------------|--------|--------|-------|-------|--------|----|-------------|----------------|---------|------------------|------------------|------------------|------------------|----------------|
| Wilton Fire Department | Structural FF SOP | Wilton, CT | 19,000 | 70 | 30 | 0 | 0 | 28 | 0 | 0 | 3 | 1 | 1 | Utility, staff cars | Yes | Annually | Yes | No | Yes | Yes |
| East Providence Fire Department | Structural FF SOP | East Providence, RI | 48,000 | 43 | 7 | 19 | 31 | 108 | 0 | 0 | 7 | 2 | 8 | 1 Special Hazards, 1 Haz/Mat Truck, 1 Brush Truck, 2 Inflatable watercraft units, 1 Marine unit, 2 Foam trailers | Yes | No set time-frame exists | Yes | No | Yes | Yes |
| Taylor Mill Fire/EMS | Taylor Mill, KY | 9,500 | 85 | 5 | 5 | 8 | 10 | 35 | 2 | 0 | 1 | 1 Brush Unit | Yes | Annually | Yes | No | Yes | Yes |
| Cranberry Township Vol. Fire Co. | Entire FD SOG | Cranberry Township, PA | 30,000 | 55 | 35 | 10 | 0 | 0 | 56 | 0 | 3 | 2 | 1 | 1 brush, 2 squads, 3 IC, 2 firepolice | No | More than annually | Yes | Yes | Yes | Yes |
| Stratford CT Fire Department | | Stratford, CT | 52,600 | 65 | 20 | 10 | 5 | 98 | 0 | 0 | 8 | 2 | 1 | Haz Mat support 1, Fire boat 2, Fire Investigation 1 | Yes | No set time-frame exists | Yes | Yes | Yes | Yes |</p>
<table>
<thead>
<tr>
<th>Chesterfield Fire &amp; EMS</th>
<th>Chesterfield, VA</th>
<th>335,000</th>
<th>500</th>
<th>50</th>
<th>30</th>
<th>7</th>
<th>2</th>
<th>SCUBA Unit, HazMat Unit, Air utility, Mobile command center, Medical services Unit</th>
<th>Yes</th>
<th>No set time-frame exists</th>
<th>Subject matter experts from within the department, Department management, legal counsel</th>
<th>No other policies or scientific research were used as a reference</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Yuma Fire Department</td>
<td>Fire Attack SOG</td>
<td>Yuma, AZ</td>
<td>93,400</td>
<td>60</td>
<td>20</td>
<td>15</td>
<td>5</td>
<td>125</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>9-ambulances</td>
</tr>
<tr>
<td>Clearwater Fire &amp; Rescue</td>
<td>Single Family Dwelling FF SOG</td>
<td>Clearwater, FL</td>
<td>130,000</td>
<td>70</td>
<td>15</td>
<td>5</td>
<td>10</td>
<td>201</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>2 Battalion chiefs, 5 medic units</td>
</tr>
<tr>
<td>Belton Fire Department</td>
<td></td>
<td>Belton, MO</td>
<td>35,000</td>
<td>60</td>
<td>30</td>
<td>8</td>
<td>2</td>
<td>46</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3 MEDIC UNITS, TANKER, 2 BRUSH UNITS</td>
</tr>
<tr>
<td>Kansas City Kansas Fire Department</td>
<td></td>
<td>Kansas City, KS</td>
<td>167,000</td>
<td>65</td>
<td>20</td>
<td>15</td>
<td>0</td>
<td>443</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>7</td>
<td>1</td>
<td></td>
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</tbody>
</table>

Page 33 of 37
<table>
<thead>
<tr>
<th>Fire Department</th>
<th>Fire Prevention Plan</th>
<th>Region</th>
<th>Population</th>
<th>Property Value</th>
<th>Fire Department Property Value</th>
<th>Annual Training</th>
<th>Associated Organization SOP</th>
<th>Associated Organization UL Research Findings</th>
<th>Other Training Activities</th>
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</thead>
<tbody>
<tr>
<td>Montgomery Fire Co. #1</td>
<td>Entire FD SOG</td>
<td>Belle Mead, NJ</td>
<td>12,000</td>
<td>89</td>
<td>10</td>
<td>1,000</td>
<td>40</td>
<td>0</td>
<td>2,1,1,1,40</td>
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<tr>
<td>North Spartanburg Fire Department</td>
<td>Structural FF SOG</td>
<td>Spartanburg, SC</td>
<td>25,000</td>
<td>92</td>
<td>5</td>
<td>2,27,10,18,4,2,0</td>
<td>1 Medical first-response</td>
<td>Yes</td>
<td>Annually</td>
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<tr>
<td>Gladstone Fire/EMS</td>
<td>Structural FF SOP</td>
<td>Gladstone, MO</td>
<td>33,000</td>
<td>85</td>
<td>15</td>
<td>0,0,39,0,2,1,0</td>
<td>4 Ambulances</td>
<td>Yes</td>
<td>No set time-frame exists</td>
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<tr>
<td>Town of Cary Fire Department</td>
<td>Structural FF SOG</td>
<td>Cary, NC</td>
<td>157,388</td>
<td>89</td>
<td>10</td>
<td>1,0,222,0,9,3,3</td>
<td></td>
<td>Yes</td>
<td>No set time-frame exists</td>
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</tbody>
</table>

- Online, Classroom instructor, station drill, multi-company drill, hands-on with no live fire, hands-on with live fire
<table>
<thead>
<tr>
<th>Department/Location</th>
<th>Incident Command System SOG</th>
<th>Hazmat, Helicopter Tender, Tanker, Rescue Watercraft, Brush, Reserve Apparatus</th>
<th>No set time-frame exists</th>
<th>Subject matter experts from within the department</th>
<th>Other associated organization SOP, UL Research Findings, NIST Research Findings, NFPA Standards, Professional Medical Standards, etc.</th>
<th>Yes</th>
<th>Yes</th>
<th>Online, Classroom instructor, station drill, multi-company drill, hands-on with no live fire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honolulu Fire Department</td>
<td>Honolulu, HI 956,899</td>
<td>2-HazMat, 1-Helicopter Tender, 5-Tanker, 10-Rescue Watercraft, 2-Brush, 30 Reserve Apparatus</td>
<td>No</td>
<td>No set time-frame exists</td>
<td>Subject matter experts from within the department</td>
<td>Yes</td>
<td>Yes</td>
<td>Online, Classroom instructor, station drill, multi-company drill, hands-on with no live fire</td>
</tr>
<tr>
<td>Frankfurt, Germany Structural FF SOP</td>
<td>Frankfurt, Germany 720,000</td>
<td>various special units, i.e. HAZMAT, Ventilation, EMS, Command etc.</td>
<td>Yes</td>
<td>No set time-frame exists</td>
<td>Subject matter experts from within the department, department management, legal counsel</td>
<td>Yes</td>
<td>Yes</td>
<td>Classroom instructor, station drill, multi-company drill, hands-on with live fire</td>
</tr>
<tr>
<td>Hood River Fire &amp; EMS Structural FF SOP</td>
<td>Hood River, OR 15,000</td>
<td>3 ambulances, 1 brush truck, 3 command vehicles</td>
<td>Yes</td>
<td>No set time-frame exists</td>
<td>Subject matter experts from within the department, subject matter experts from outside the department, department management, legal counsel</td>
<td>Yes</td>
<td>Yes</td>
<td>Online, Classroom instructor, Hands-on with live fire, Multi-company drill, station drill</td>
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<tr>
<td>Polk County Fire Dist. No.1 Structural FF SOP</td>
<td>Independence, OR 24,000</td>
<td>Grass 2, Ambulance 3</td>
<td>Yes</td>
<td>No set time-frame exists</td>
<td>Subject matter experts from within the department</td>
<td>Yes</td>
<td>Yes</td>
<td>Classroom instructor, station drill, multi-company drill</td>
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<tr>
<td>Santa Clara County Fire Dept.</td>
<td>Santa Clara County, CA 230,000</td>
<td>6 type 3 engines, 5 reserve type 1, 1 reserve truck</td>
<td>Yes</td>
<td>Annually</td>
<td>Subject matter experts from within the department, Department management</td>
<td>Yes</td>
<td>Yes</td>
<td>Online, Station drill, Multi-company drill</td>
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<td>Location</td>
<td>Population</td>
<td>30</td>
<td>20</td>
<td>10</td>
<td>5</td>
<td>3</td>
<td>2</td>
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<tr>
<td>North Providence Fire Department</td>
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<td>36,000</td>
<td>50</td>
<td>30</td>
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<td>93</td>
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<td>3,214</td>
<td>70</td>
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<td>15</td>
<td>0</td>
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<td>City of Waukesha</td>
<td>Waukesha, WI</td>
<td>75,000</td>
<td>55</td>
<td>30</td>
<td>10</td>
<td>5</td>
<td>302</td>
<td>3</td>
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<td>Snow Lake Vol. Fire Department</td>
<td>Ashland, MS</td>
<td>1,500</td>
<td>100</td>
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<td>2</td>
<td>0</td>
<td>18</td>
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<td>Sound Beach, NY</td>
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<td>110</td>
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<td>Colonie, NY</td>
<td>5,000</td>
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<td>0</td>
<td>39</td>
<td>2</td>
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<tr>
<td>Highland Falls Fire Department</td>
<td>Highland Falls, NY</td>
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<td>75</td>
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<td>2</td>
<td>40</td>
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</tbody>
</table>

**Note:** The table includes various消防部门的消防培训和演练情况，列出了各个部门的地点、人口、培训内容、培训频率、培训负责人等信息。
### Table 2: SOP features rubric

<table>
<thead>
<tr>
<th>Fire Department</th>
<th>FD Type</th>
<th>Organizational Features</th>
<th>Operational Features</th>
<th>Final score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Revision/ effective date</td>
<td>Purpose/ Scope</td>
<td>Table of Contents</td>
</tr>
<tr>
<td>Cleveland, OH</td>
<td>career</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Los Angeles, CA</td>
<td>career</td>
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<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Sheridan County (KS)</td>
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<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Hanover County (VA)</td>
<td>volunteer</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pierre, SD</td>
<td>volunteer</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Wappingtown Volunteer Fire Company (PA)</td>
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<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Green River, WV</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Philomath, OR</td>
<td>volunteer</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Wilton, CT</td>
<td>career</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>East Providence, RI</td>
<td>career</td>
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<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Cranberry Township, PA</td>
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<td>1</td>
<td>1</td>
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<tr>
<td>Yuma, AZ</td>
<td>career</td>
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<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Clearwater, FL</td>
<td>career</td>
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<td>1</td>
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<tr>
<td>Montgomery Fire Co. #1 (NJ)</td>
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<tr>
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<td>Gladstone, MO</td>
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<tr>
<td>Cary, NC</td>
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<tr>
<td>Honolulu, HI</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Frankfurt, Germany</td>
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<td>0</td>
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</tr>
<tr>
<td>Hood River, OR</td>
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<td>1</td>
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</tr>
<tr>
<td>Polk County No. 1 (OR)</td>
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<td>1</td>
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</tr>
<tr>
<td>North Providence, RI</td>
<td>career</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Bloomington, Indiana</td>
<td>career</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

- Organizational Features: Revision/ effective date, Purpose/ Scope, Table of Contents, Appendix/ Definitions
- Operational Features: Staffing/ Job Descriptions, Firefighting Tactics, Operational Responsibilities, Incident Management/ Command Techniques, Safety Considerations, Scientific References, Risk-based approach

- Final score: Calculated based on the criteria in the rubric.