Effects of Positional Authority

on Communication, Leadership, and Followership

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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 appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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Abstract

Fire emergency management is a human endeavor where incident commanders develop a strategic plan of action by synthesizing their own perceptions with verbal reports from on-scene personnel. The problem is that firefighters are occasionally reluctant to question or provide input to commanders. This could lead to unsafe emergency response decisions. The purpose of this applied research was to describe current opinions of Orange County Fire Authority (OCFA) operations personnel regarding their willingness to challenge a commander’s decision and to make recommendations for changes to leadership training at OCFA. The descriptive research method was used to answer the following questions: (a) What safety communication concerns are held by OCFA operations personnel, and how do these concerns vary between groups, (b) what crew resource management training is in place at OCFA, (c) what crew resource management procedures are in place at OCFA, and (d) what attitudes or practices should be most important for incident commanders? To answer these questions, the researcher surveyed groups of OCFA operations personnel, reviewed OCFA training records, and reviewed crew resource management training materials. Results indicated that all ranks of OCFA fire operations personnel agree that mission safety is paramount and that every individual has the right and obligation to report safety problems. Firefighters, however, did not believe they are encouraged to challenge a chief’s commands. The survey also revealed that chief officers do encourage subordinates to challenge supervisors, if necessary. This discovery suggests that, although chief officers value subordinates’ opinions, subordinates are hesitant to provide opinions to chief officers. It is recommended that OCFA continue to offer leadership and followership courses, such as L-180 through L-580. Study results may lead to better communication and crew resource
management processes between managers and workers within emergency services and other industries.
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Introduction

The Orange County Fire Authority (OCFA) currently serves a population of 1.4 million residents in 22 cities within a 550 square mile area of Orange County, California. The Orange County Fire Authority (2010) operates 61 fire stations and employs 770 career firefighters and chief officers (C. Santiago, personal communication, December 27, 2011). Career firefighters are supported by 198 reserve firefighters; among these reserve firefighters are 31 reserve officers (J. Penrod, personal communication, December 27, 2011). OCFA answers over 87,000 emergency calls each year and all operations personnel respond to structural fires, wildland fires, and emergency medical calls. In addition, some OCFA personnel are cross-trained as specialists assigned to urban search and rescue, helicopter air operations, hazardous materials, and water rescue teams. All OCFA personnel utilize the incident command system as described in the National Incident Management System (NIMS).

The problem identified for this research is that firefighters may be reluctant to provide input to commanders or to question a supervisor’s decisions while on the emergency scene. According to the OCFA training chief, OCFA firefighters occasionally withhold their concerns until the post-emergency after action review (M. Sanchez, personal communications, January 18, 2012). In addition, a study by Bennis (as cited in Okray & Lubnau, 2004) found that “70% of followers will not question a leader’s point-of-view, even when they believe the leader is about to make a serious mistake” (p. 206). Inadequate two-way on-scene emergency communication could lead to inappropriate or unsafe emergency response decisions and actions.

The purpose of this applied research project was to describe the current opinions of Orange County Fire Authority [OCFA] operations personnel regarding their willingness to
challenge a commander’s decisions and to make recommendations for changes to leadership and followership training within the OCFA.

The descriptive research method was used to answer the following questions: (a) What safety communication concerns are held by OCFA operations personnel, and how do these concerns vary between groups, (b) what crew resource management training is in place at OCFA, (c) what crew resource management procedures are in place at OCFA, and (d) what attitudes or practices should be most important for incident commanders?

**Background and Significance**

Incident commanders often order firefighting and rescue teams into working environments that pose extreme risk. Such environments include working on roofs with a structural fire below, entering buildings that have partially collapsed, positioning in front of approaching wildfires, and operating within atmospheres that are immediately dangerous to life and health (IDLH). The United States Fire Administration (2011) reported an average of 109 firefighter fatalities and 38,609 fireground injuries each year during the nine year period 2001-2009. “Firefighters are in the top fifteen occupations for risk of fatal occupational injury, and the traumatic fatality rates are approximately three to four times higher than the average for all occupations” (National Institute for Occupational Safety and Health [NIOSH], 2009, p. 1).

The three primary causes of firefighter injury, according to the National Institute for Occupational Safety and Health [NIOSH] (2009), are physical stress, being lost or trapped in a fire situation, and vehicle crashes. Contributing to the risk is the common practice for both structural and wildland firefighters to operate beyond the view of the incident commander. The incident commander is generally blind to, and insulated from, the firefighter’s actual working conditions; consequently, the incident commander depends upon verbal feedback from remotely-
located firefighting teams. Despite the incident commander’s insulation, firefighting teams are occasionally reluctant to question the incident commander’s decisions or actions. On some occasions, firefighters at the Orange County Fire Authority do not challenge their superiors and do not point out safety issues until after an emergency incident has concluded (M. Sanchez, personal communications, January 18, 2012). Additionally, a study by Bennis (as cited in Okray & Lubnau, 2004) found that “70% of followers will not question a leader’s point-of-view, even when they believe the leader is about to make a serious mistake” (p. 206). Without open two way communication at the emergency scene, the commander could make inappropriate or unsafe emergency response decisions and thus place firefighters at even greater risk.

This research paper will describe emergency scene communication practices and attitudes at the Orange County Fire Authority (OCFA). A cross-sectional survey instrument will assess various groups of Operations Department personnel at OCFA to gauge their opinions on concepts and practices in leadership, followership, and incident safety. Groups will be established by rank and by specialty in order to compare differences in responses. Results from this study could lead to the adoption of new training programs or new procedures to enhance safety and to increase effectiveness of emergency communications within the OCFA. Without a study that describes attitudes toward communication, emergency responders may be unprepared or reluctant when the need arises to challenge orders that are unsafe or impractical. Results from this research may assist fire service organizations, law enforcement, businesses, government, and other organizations where timely yet thorough communications are critical to team decision-making.

This applied reach project is directly related to the fourth year Executive Fire Officer Program course Executive Leadership (United States Fire Administration [USFA], 2012). The
course examines the Executive Fire Officer as a multi-faceted leader within the framework of professional, personal, community, and family life with a focus on the development of adaptive leadership skills.

Study results from this applied research project may also help, “Improve the fire and emergency services’ capability for response to and recovery from all hazards” and help, “Improve the fire and emergency services’ professional status” (United States Fire Administration [USFA], 2011, p. 1), which are two of the five strategic goals cited within the USFA strategic plan.

**Literature Review**

**Case Studies**

*Case 1: Battle of Gettysburg—July 1863*

On July 3, 1863 near Gettysburg, Pennsylvania, the Confederate Army of Northern Virginia, led by General Robert E. Lee faced off against federal troops, who had entrenched along Cemetery Ridge south of town. General Lee had hoped for a confederate victory on northern soil. Confederate Lieutenant General James Longstreet commanded three divisions (McLaws, Hood, and Pickett) and “Longstreet was impressed with the potential strength of the enemy’s position” (Piston, 1987, p. 51). “To Longstreet’s surprise, Lee announced his intention of attacking the enemy where they stood” (Piston, 1987, p. 51). General Lee subsequently ordered Longstreet to deliver the main attack directly against the federal army’s center on Cemetery Ridge. Longstreet suggested an alternative tactic to Lee: a flanking action against the union position on July 3 would avoid a “costly frontal assault,” (Piston, 1987, p. 58). General Longstreet also proposed a delay in the operation until reinforcements could arrive. Despite the difficult terrain, the strength of the enemy, and Longstreet’s objections, General Robert E. Lee
ordered the series of frontal offensives against the union forces. At around 4:00 p.m. on July 3, in
spite of inadequate reconnaissance and a request for a delay by Hood and McLaws, Longstreet
initiated Lee’s frontal attack operation “with great reluctance” (Piston, 1987, p. 59). General Lee,
on the right flank, was “aware of the changed situation and expressing [sic] annoyance at the
last-minute delay by his lieutenant’s division commanders. The attack therefore went forward
despite Longstreet’s reservations” (Piston, 1987, p. 57). The Union Army took advantage of high
ground, reinforced positions, superior numbers, enhanced visibility, and ample ammunition.
Meanwhile, confederate artillery had difficulty aiming uphill and confederate infantry were
forced to cross an open field before they advanced upslope toward the center of the union line.
“The charge ultimately proved disastrous for the confederates, with casualties approaching 60
percent. As a consequence, Confederate General Robert E. Lee was forced to retreat and
ultimately abandon his attempt to reach Washington, DC via Pennsylvania” (Library of
Congress, n.d., p. 1). By attempting a frontal assault on an enemy position, the confederacy
suffered 28,000 casualties during the three day battle at Gettysburg.

Case 2: Space Shuttle Challenger--January 28, 1986

As the Space Shuttle Challenger prepared to launch from Florida with teacher-in-space
Christa McAuliffe aboard, engineers at the solid rocket booster plant in Utah became concerned
about the sub-freezing weather at the Florida launch site. The Utah rocket engineers “expressed
concerns that the cold would affect O-ring resiliency: the rings would harden to such an extent
that they would not be able to seal the joints against the hot gases created at ignition, increasing
the amount of erosion and threatening mission safety” (Vaughan, 1996, p. 2). Engineers felt that,
under cold launch conditions, escaping hot gases could impinge upon the adjacent flammable
hydrogen tank and cause an explosion. Despite the objections of rocket engineers, managers at
the solid rocket booster plant voted in favor of the launch, according to Vaughan (1996). “Many
still vividly remember—and will quickly confess, when the subject comes up—exactly where
they were, what they were doing, and how they felt when they heard about the tragedy”
(Vaughan, 1996, p. xi). At 11:38 a.m., the ignition sequence concluded, the temperature at the
Florida launch pad was 36 degrees Fahrenheit, and Challenger lifted off. “The mission ended 73
seconds later as a fireball erupted and the Challenger disappeared in a huge cloud of smoke”
(Vaughan, 1996, p. 7). All seven heroic crew members were lost.

Case 3: South Canyon Fire—July 1994

On July 2, 1994, a lightning-sparked wildfire burned lazily on the slope of Storm King
Mountain near the town of Glenwood Springs, Colorado. This became known as the South
Canyon Fire, which was one of 38 uncontrolled wildfires that had started during a July 2
thunderstorm. Numerous competing fires within the district kept firefighting resources spread
thin and the initial fire attack team consisted of only seven firefighters. After hiking up steep
uneven terrain through the East Canyon for over three hours to reach Hell’s Gate Ridge above
the fire, the incident commander “told the crew to start a fire line off the west side of the ridge”
(Maclean, 1999, p. 44). Notwithstanding the expressed concerns of a nine-year Forest Service
veteran, the seven-person initial attack crew began building a fire line downhill with fire below.
By July 5, the three day old South Canyon Fire had grown to over 30 acres and had become a top
priority. With reinforcements in short supply, the incident commander asked dispatch “for help
of any kind” (Maclean, 1999, p. 44). This brought two teams of smokejumpers who parachuted
from an airplane onto the top of Hell’s Gate Ridge. Additional hot shot firefighters were ferried
to the ridgetop by helicopter. By the afternoon of July 6, the four-day old fire had grown to 127
acres. “The crew on the mountain was at its moment of greatest strength, numbering forty-nine plus a helicopter and pilot” (Maclean, 1999, p. 88).

Following a reconnaissance flight over the fire by helicopter, the incident commander, the helicopter foreman, and the smoke-jumper-in-charge met in a meadow at the base of the mountain. “The problem the supervisors faced was how to fight the fire beginning from the top of the ridge” (Maclean, 1999, p. 74). The alternative was to return all 49 firefighters to the base of the 5,000 foot prominence and start the attack from below the fire. According to Maclean (1999) the three supervisors gave this alternative “scant, if any, attention, though after the fire many touted this as a safer and more sensible alternative” (p. 74). Despite the known risks, the smokejumper-in-charge planned to utilize the downhill line that had already been started. Several fellow smokejumpers and other firefighting personnel challenged this tactic, yet the smokejumper-in-charge believed, “His plan for the fire could work if they moved quickly, if they received more reinforcements right away, and—above all—if the wind held off” (Maclean, 1999, p. 96).

On July 6 at approximately 3:20 p.m., the calm weather was shattered by a surge of wind that “broke over the crest of Hell’s Gate Ridge in an erratic pattern” (Maclean, 1999, p. 106). The firefighters were caught on a steep slope, and behind them “an enormous wave of flame arose from the western drainage and began to sweep the ridgetop, driving the firefighters before it. It moved faster than any human could run” (Maclean, 1999, p. 110). By attempting a downhill fire assault with unburned fuel below, the fire service lost 14 firefighters during several tragic minutes at the wildfire on Storm King Mountain.

*Group Attitudes and Performance*
Management of any endeavor, from space travel to emergency command, is a complex human function that requires two way communication and decision-making. The International Association of Fire Chiefs (IAFC) (2003) reports that airline crash investigations in the 1970’s began to reveal the disturbing trend that “human error was the prevailing cause in aviation disasters” (p. 3). The IAFC (2003) reports that, on December 28, 1978, a commercial airliner with 181 passengers and 11 crewmembers was on final approach to the Portland International Airport when the pilot noticed that the nose gear landing light failed to illuminate. The aircraft continued to circle while the pilot attempted to resolve the problem. “In spite of the crew’s efforts, the nose gear landing light continued to glow red indicating the gear was not locked into position” (IAFC, 2003, p.4).

“Throughout the troubleshooting, the first officer and the flight engineer had informed the pilot that the plane was running low on fuel” (IAFC, 2003, p.4); however, the pilot in command either ignored or did not comprehend the crew’s warnings. Eight passengers and two crew members were killed when the fuel-starved plane crashed into the woods. The post-crash investigation revealed that the green indicator light bulb had burned out and “the nose gear had been down and locked the entire time. The lack of communication skills under stress, situational awareness, team building, decision-making and task allocation sent the plane into the ground.” (International Association of Fire Chiefs [IAFC], 2003, p.4).

In other aviation incidents, flight crew members were aware of potential dangers but they were unwilling to challenge the captain’s positional authority. Within any team environment, harmful attitudes, groupthink, and the influence of positional authority can invade and infect an otherwise healthy decision-making process. In some cases, this can lead to disaster.

*Positional Authority*
Definition of positional authority. Positional authority is “the authority you get from your title and the location of your office” (Northcutt, 2007, p. 1).

Positive effects of positional authority. Positional authority within a hierarchy is a model used for centuries in families, religious institutions, the military, businesses, and government organizations. Organizational structures that include positional authority provide for an unambiguous chain of command, division of labor, and a reasonable span of control. A leader with positional authority also provides positive direction, motivation, advocacy for team members, and protection from outside influences.

Negative effects of positional authority. “When someone has a higher position or more authority than you, the automatic trigger is that whatever that person says must be true” (Northcutt, 2007, p. 1). In the case of airline disasters, the flight crews’ blind obedience and deference to positional authority produced catastrophic results, according to Northcutt (2007).

Harmful Attitudes

Seven poisonous attitudes. Flight crews, fire crews, sports teams, and businesses are comprised of humans; and humans naturally bring their attitudes to the workplace: these attitudes may be positive or negative, harmless or hazardous, constructive or poisonous. Okray and Lubnau (2004) cite seven poisonous attitudes that can adversely affect performance as follows:

(a) Anti-authority—don’t tell me, (b) impulsivity—do something quickly, (c) invulnerability—it won’t happen to me, (d) macho—I can do it, (e) resignation—what’s the use, (f) pressing—let’s get this done and go home, and (g) airshow syndrome—I am going to look so good. (p. 201)
Seven hazardous attitudes. The National Wildfire Coordinating Group (2010) lists a similar set of seven hazardous firefighter attitudes as human factor barriers to situation awareness as follows:

(a) Invulnerable--that can’t happen to us; (b) anti-authority--disregard of the team effort; (c) impulsive--do something even if it’s wrong; (d) macho--trying to impress or prove something; (e) complacent--just another routine fire; (f) resigned--we can’t make a difference; and (g) group think--afraid to speak up or disagree. (p. xi)

Groupthink

The advantages of groups. For millennia, structured groups have provided many advantages to their team members. When compared to an individual, strength in numbers provides enhanced support, defense, motivation, camaraderie, diverse skill sets, and the synergy of collective efforts. Groups provide cohesiveness, uniformity in training and culture, and conformity through mutual understanding of written and unwritten rules.

The disadvantages of groupthink. “Groups, like individuals, have shortcomings. Groups can bring out the worst as well as the best in man” (Janis, 1982, p. 3). Conformity and uniformity form the essence of groupthink, which Janis (1982) defines as “a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members’ strivings for unanimity override their motivation to realistically appraise alternative courses of action” (p.9). These shared assumptions and misconceptions “tend to preserve the group without regard for the work at hand” (Janis, 1982, p. 4).

Causes of groupthink. Some group members adhere to their own individual judgments, while Janis (1982) reports that other group members “with strong affiliative needs” (p. 242) fear
disapproval and rejection if they express views contrary to the views of the majority. The leader can also precipitate groupthink through “overly directive leadership practices” (Janis, 1982, p. 275). An overly directive leadership style can thwart discussion and debate when group members believe that the leader intends to maintain sole responsibility for making the decision. Finally, a group that insulates itself from outside interaction might deliver decisions from a limited and narrow perspective.

*Effects of groupthink.* Groupthink can cause a destructive community mindset, which results in “deterioration of mental efficiency, reality testing, and moral judgment” (Janis, 1982, p. 9). Groupthink can lead to a premature consensus without completely fleshing out alternative courses of action. The leader may falsely believe that all team members are in agreement, when in reality, the leader has silenced the team members through over-direction, or team members have silenced themselves through self-censorship.

*Counteracting Harmful Attitudes and Groupthink*

The detrimental effects of positional authority, groupthink, and other harmful attitudes can be ameliorated by instituting crew resource management and by changing the group dynamics of leaders and followers.

*Instituting Crew Resource Management*

To help reverse the trend in aviation human error, the airline industry in 1981 introduced crew resource management, which, at that time, was known as cockpit resource management. Crew resource management (CRM) is simply defined as “the effective use of all resources” (International Association of Fire Chiefs [IAFC], 2003, p. 6). Crew resource management applies the concepts of teamwork and assertive communication to team decision-making. Since adopting CRM principles and practices, “U.S. air disasters (not related to terrorism) have fallen from
approximately 20 per year to one or two per year” (International Association of Fire Chiefs, 2003, p. 5). The doctrines of crew resource management are now being refined and adopted by other industries, the military, medical practitioners, railroads, the shipping industry, and the fire service. To institute crew resource management principles, the IAFC (2003) model includes enhancing leadership, reinforcing legitimate authority, improving followership skills, enhancing communications, strengthening decision making, improving situational awareness, avoiding work overload, and standardizing training and response.

*Enhancing leadership.* Football is a team effort that requires a leader on the field, the quarterback. Yet, Okray and Lubnau (2004) note that, “A great quarterback is nothing if his receivers cannot catch the football. A great receiver is nothing if the quarterback cannot throw” (p. 190). A football quarterback may be compared to the fire incident commander. “The best fire command officer in the world cannot make the right decisions without the right information” (Okray & Lubnau, 2004, p. 191).

*Reinforcing legitimate authority.* Crew resource management in the fire service, according to the IAFC (2003) reinforces the fire department’s authority structure through four points, as follows: “(a) Ensuring mission safety, (b) respectful communication, (c) establishing tasks with clearly defined goals, and (d) including crew input (when appropriate)” (p. 7). In order for any team to operate effectively and safely, leaders and followers are compelled to work together for the common good of the team and in common service of the customer.

*Improving followership skills.* In order to make quality decisions, the leader depends upon information from team members. To acquire accurate information, the leader must encourage and solicit this valuable feedback. “A successful leader must give permission to
Followers to provide input and corrections to a plan” (Okray & Lubnau, 2004, p. 206).

Followership, according to Okray and Lubnau (2004), consists of the following:

(a) the ability contribute to task and goal accomplishment, (b) the possession by the firefighter of the skill set necessary to be technically capable, to understand the environmental cues, and to communicate those cues in a respectful and time-appropriate manner, and (c) it is not a challenge to command authority, but neither is it unthinking compliance with directives—especially if those directives might impact the safety of the operation. (p. 191)

Under appropriate conditions, the crew resource management model “empowers followers to challenge a leader’s decisions” (International Association of Fire Chiefs [IAFC], 2003, p. 9).

**Enhancing communications.** To enhance communications and strengthen the quality of decision-making, the International Association of Fire Chiefs [IAFC] (2003) has developed crew resource management principles that focus on the following five communication skills: (a) inquiry—firefighters and fire officers asking questions when they notice a discrepancy between what is and what should be happening, (b) advocacy—use of an assertive statement, (c) listening—actively listening for verbal and non-verbal clues to understanding, (d) conflict resolution—focusing on what is right, not who is right, and (e) feedback—confirming understanding.

**Strengthening decision making.** To strengthen the quality of decision-making at all levels, the International Association of Fire Chiefs [IAFC] (2003) recommends that leaders “recognize and appreciate the value of the additional eyes, ears, opinions, experience and knowledge of their subordinates” (p.18).
Improving situational awareness. Situational awareness, as reported by the International Association of Fire Chiefs [IAFC] (2003) consists of awareness, reality, and perception. Reality refers to what is happening, while perception refers to what we perceive is happening. Communication and observation combine to help perception equate to reality.

Avoiding work overload. Work overload can lead to lack of situational awareness, which can cause mistakes by both workers and leaders. Through delegation of work and division of labor, the leader can increase the “margin of safety as a result of the crew’s balanced workload” (International Association Of Fire Chiefs, 2003, p. 20).

Standardizing training and response. To improve safety and reduce errors, the IAFC (2003) recommends proficiency training, planning, and standard operating procedures so that all personnel are aware of the usual and consistent response to a particular type of call or location.

Counteracting Groupthink: Changing Group Dynamics

Cohesion, conformity, and uniformity form the essence of groupthink. Despite numerous positive aspects of group cohesiveness, this sense of solidarity may cause shared assumptions, misconceptions, and a destructive community mindset. To help counteract groupthink, individual group members should not self-censor or “minimize to himself (or herself) the importance of his (or her) doubts and counterarguments (Janis, 1982, p. 175). Janis (1982) recommends that decision-makers eliminate “group insulation, overly directive leadership practices, and other conditions that foster premature consensus” (p. 275). Finally, leaders should solicit input from all team members, including those who have been quiet “in order to get all points of view onto the table” (Janis, 1982, p. 276).

Literature Summary Statement
The preceding case studies influenced this project by illustrating how leaders are at risk of making poor decisions if the leader fails to consider suggestions from team members. This research was further influenced by authors who provided insight into the causes of, and countermeasures for, poor decision-making.

**Procedures**

The purpose of this applied research project was to describe the current opinions of Orange County Fire Authority [OCFA] operations personnel regarding their willingness to challenge a commander’s decisions and to make recommendations for changes to leadership and followership training within the OCFA.

Key indicators within this study will include the response rate by respondents, the answers to survey questions, the amount of variation when subgroups are compared, and the amount of leadership training and post-incident-analysis that occurs at the OCFA.

**Research Procedures**

Research procedures followed during the project included the following: (a) development of survey questions for distribution to respondents, (b) development of sampling methods, (c) development of survey instructions for respondents; (d) a review of training records at the Orange County Fire Authority; (e) a review of Orange County Fire Authority standard operating procedures and training materials, and (f) an analysis of survey findings.

*Survey questions.* The 12 survey questions were developed from training concepts and checklists found within the *Incident Response Pocket Guide*, published by the National Wildfire Coordinating Group (2010) and *Crew Resource Management for the Fire Service*, published by International Association of Fire Chiefs (2003). Questions one through three were demographic in nature, while questions 4 through 11 accepted only one answer on a five-point rating scale.
from an opinion of 1 (strongly disagree) to 5 (strongly agree). The twelfth and final question asked respondents to arrange four items in order of importance. See survey questions in evaluation instrument in Appendix A.

Sampling methods. References by Fink (2006) and Survey Monkey (2011) were used extensively during survey development and data management. Respondents were selected through a convenience sampling method, which Fink (2006) defines as a method of “non-probability sampling” (p. 46). All members of the OCFA Operations Department (770 total members) received an email invitation to participate in the on-line survey. Respondents who were willing and available selected an attached link in the email and completed a survey that consisted of 12 forced choice, closed-ended, questions using the Survey Monkey (2011) web-based survey system. The survey was a one-time, cross-sectional, comparative, self-administered, internet-based questionnaire. Data were acquired and tabulated anonymously by Survey Monkey and the raw data were provided to the researcher in an electronic format. See survey response raw data in Appendix B.

Survey instructions. Instructions asked participants to first answer the three demographic questions about their rank, their status as reserve or career, and their status as a member of a specialty team. Respondents were instructed to rate their opinions along the following five-point continuum: 1(strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). Because most specialty team members are also members of a general firefighting team, the instructions asked members of specialty teams to answer questions based upon their attitudes and practices associated with their special assignment, such as urban search and rescue or hazardous materials.
**OCFA training records.** Orange County Fire Authority [OCFA] training records were reviewed and the OCFA training officer was interviewed to determine how many personnel had completed National Wildfire Coordinating Group [NWCG] leadership courses.

**OCFA standard operating procedures and training materials.** The Orange County Fire Authority [OCFA] post incident analysis standard operating procedure (SOP 207.13) was reviewed to determine the criteria and content for post incident reviews at OCFA. The researcher also determined how often crews are specifically trained on how to refuse risk and how many OCFA personnel have received a personal copy of the National Wildfire Coordinating Group’s *Incident Response Pocket Guide*.

**Analysis of Survey Findings**

*Response rate.* Out of 770 eligible operations personnel, 157 firefighters responded to this on-line questionnaire in December 2011 and January 2012. This represents a response rate of 20.4 %. Of 31 eligible reserve officers, only three reserve officers responded to the survey, which represented only 1.9% of the total respondents. Due to the insignificant response numbers within this subgroup, the reserve firefighter’s answers were merged with the answers from the general operations department. The initial three demographic survey questions allowed the researcher to apply a filter in the database to create a total of four sub-groups for a comparison study: (a) the overall operations department, (b) the general firefighting unit, (c) the specialty teams, and (d) the chief officers. All respondents answered the same 12 questions.

*Data summarization.* To summarize the data, *strongly disagree* was given a weighted value of one, *disagree* a value of two, *neutral* a value of three, *agree* a value of four, and *strongly agree* a value of five. Using the procedures suggested by Fink (2006), these weights were multiplied by the number of personnel who chose that value. Once all five products were
added, the results were divided by the number of respondents to obtain a single score for each question. This average score for each question was tabulated for each of the four groups and displayed in a data table of average group scores in Appendix C.

Comparing groups. For each question, the results from the four groups were placed on the same graph in the results section in order to conveniently compare responses according to group. When comparing responses from one group to another, the average deviation formula was used to illustrate variability in opinions for discussion purposes. Microsoft Office Support (2012) defines average deviation as the “average of the absolute deviations of data points from their mean. Average deviation is a measure of the variability in a data set” (p. 1). The Microsoft Office (2012) Excel program was used to calculate average deviation according to the following formula: \[ \frac{1}{n} \sum |x-x_1| \], where \( x_1 \) represents the average.

Limitations

Sample size. All personnel within the operations department were eligible to complete the survey between December 2011 and January 2012, although it appears that only one respondent was allowed to complete the survey from each individual computer. Consequently, personnel who share a computer in a fire station may have been restricted from entering the Survey Monkey site from a previously used computer. This may have limited the total number of respondents. Despite this restriction, the overall survey response rate (number of completed surveys divided by the number of surveys eligible for completion) was 157 of 770 or 20.4%.

Sample type. This was a non-probability convenience sample where respondents were not specifically chosen as participants. A convenience sample, according to Fink (2006) “is one that you get because people who are willing to complete the survey are available when you need them” (p. 50). Because participants selected themselves voluntarily, the data collected may be
biased toward those operations personnel who had the time or the interest or the willingness to participate in this survey. Consequently, this sample of 157 participants may not necessarily represent the viewpoints of the entire population of 770 fire operations personnel at the Orange County Fire Authority.

Survey type. Answers given by a respondent in this point-in-time cross-sectional survey may have been influenced by a recent encounter or a recent memory. The respondent’s opinion in this instant may not necessarily represent the respondent’s position over time.

Statistical significance. When comparing responses, the average deviation formula was used to illustrate areas of apparent discrepancy between the four groups. A t test was not conducted to confirm statistical significance.

Results

The descriptive research method was used to assess opinions of Operations Department personnel at the Orange County Fire Authority (OCFA) in order to answer the following questions: (a) What safety communication concerns are held by OCFA operations personnel, and how do these concerns vary between groups, (b) what crew resource management training is in place at OCFA, (c) what crew resource management procedures are in place at OCFA, and (d) what attitudes or practices should be most important for incident commanders? Survey responses were collected on-line by Survey Monkey (2011). Survey response raw data are displayed in Appendix B.

What safety communication concerns are held by OCFA operations personnel and how do these concerns vary between groups?

The researcher surveyed 157 personnel from a convenience sample from among the Orange County Fire Authority Operations Department. Survey questions consisted of 12 forced
choice, closed-ended, questions developed by the researcher and distributed to respondents through the Survey Monkey (2011) web-based survey system. The survey was one-time, cross-sectional, comparative, and self-administered. The same 12 questions were given to all respondents.

The 12 survey questions were developed from training concepts and checklists found within the *Incident Response Pocket Guide*, published by the National Wildfire Coordinating Group (2010) and *Crew Resource Management for the Fire Service*, published by International Association of Fire Chiefs (2003). Questions one through three were demographic in nature, while questions 4 through 11 accepted only one answer on a five-point rating scale from an opinion of 1 (*strongly disagree*) to 5 (*strongly agree*). The twelfth and final question asked respondents to arrange four items in order of importance. See evaluation instrument in Appendix A.

*Survey questions 1, 2, and 3.* Questions one, two, and three were demographic in nature and used to establish four sub-groups for comparison study. These first three questions established that, of the 157 OCFA Operations Department personnel who responded to the survey, 19 were chief officers; 42 were members of a specialty team; three were reserve fire officers, and the remaining 93 respondents were members of the general firefighting unit.

For each question, the results from all four groups were placed on the same graph in order to conveniently compare responses. The following tables summarize the responses to survey questions 4 through 12.

*Survey question 4.* The fire service operates with a philosophy that promotes team member input.
The four groups responded within a range of 3.5 to 3.8 with an overall average of 3.7, as shown in Table 1.

Table 1

Results for Question 4 (Team Member Input)

<table>
<thead>
<tr>
<th>Question 4: Fire Service Philosophy of Team Member Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= Strong Disagree  1.5  2  2.5  3  3.5  4  4.5  5 5=Strong Agree</td>
</tr>
<tr>
<td>All Operations</td>
</tr>
<tr>
<td>General Firefighters</td>
</tr>
<tr>
<td>Specialists</td>
</tr>
<tr>
<td>Chief Officers</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

The average deviation from the mean was only 0.1, indicating very little variability in answers amongst the four groups of respondents. These data suggest that members of all four groups within the OCFA Operations Department mildly agree that the fire service operates with a philosophy that promotes team member input.

Survey question 5. When an incident safety error occurs, it is usually caused by a communication failure.

The four groups responded within a range of 3.3 to 3.5 with an overall average of 3.4, as shown in Table 2.
Effects of Positional Authority

Table 2

Results for Question 5 (Safety Errors)

<table>
<thead>
<tr>
<th>Question 5: Safety Errors Usually Caused By Communication Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= Strong Disagree</td>
</tr>
<tr>
<td>All Operations</td>
</tr>
<tr>
<td>General Firefighters</td>
</tr>
<tr>
<td>Specialists</td>
</tr>
<tr>
<td>Chief Officers</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

The average deviation from the mean was only 0.1, indicating very little variability in answers amongst the four groups of respondents. These data suggest that members of all four groups within the OCFA Operations Department mildly agree that when an incident safety error occurs, it is usually caused by a communication failure.

Survey question 6. Every individual has the right and obligation to report incident safety problems.

The four groups responded within a range of 4.6 to 4.8 with an overall average of 4.7, as shown in Table 3.
Table 3

Results for Question 6 (Right and Obligation to Report)

<table>
<thead>
<tr>
<th>Question 6: Every individual has the right and obligation to report incident safety problems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= Strong Disagree</td>
</tr>
<tr>
<td>All Operations</td>
</tr>
<tr>
<td>General Firefighters</td>
</tr>
<tr>
<td>Specialists</td>
</tr>
<tr>
<td>Chief Officers</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

The average deviation from the mean was only 0.1, indicating very little variability in answers amongst the four groups of respondents. These data suggest that members of all four groups within the OCFA Operations Department strongly agree that every individual has the right and obligation to report incident safety problems.

Survey question 7. Fire personnel are encouraged to advocate their position to their supervisors by respectfully suggesting alternative solutions.

The four groups responded within a range of 3.1 to 3.6 with an overall average of 3.5, as shown in Table 4.
Table 4

Results for Question 7 (Personnel Encouraged to Advocate)

<table>
<thead>
<tr>
<th>Question 7: Fire personnel are encouraged to advocate their position to their supervisors by respectfully suggesting alternative solutions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= Strong Disagree</td>
</tr>
<tr>
<td>All Operations</td>
</tr>
<tr>
<td>General Firefighters</td>
</tr>
<tr>
<td>Specialists</td>
</tr>
<tr>
<td>Chief Officers</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

The average deviation from the mean was only 0.2, indicating little variability in answers amongst the four groups of respondents. These data suggest that members of all four groups within the OCFA Operations Department mildly agree that fire personnel are encouraged to advocate their position to their supervisors by respectfully suggesting alternative solutions.

Survey question 8. Fire personnel are encouraged to challenge their supervisors, if it becomes necessary.

The four groups responded within a range of 2.9 to 4.0 with an overall average of 3.2, as shown in Table 5.
Table 5

Results for Question 8 (Personnel Encouraged to Challenge)

<table>
<thead>
<tr>
<th>Question 8: Fire personnel are encouraged to challenge supervisors, if it becomes necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= Strong Disagree</td>
</tr>
<tr>
<td>All Operations</td>
</tr>
<tr>
<td>General Firefighters</td>
</tr>
<tr>
<td>Specialists</td>
</tr>
<tr>
<td>Chief Officers</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

The average deviation from the mean was 0.4, indicating variability in answers when chief officers are compared to the other respondent groups. These data suggest that chief officers agree that fire personnel are encouraged to challenge their supervisors, if it becomes necessary. The other three groups are neutral on the issue of challenging their supervisors.

Survey question 9. Fire service personnel will suffer negative consequences if they question a Chief Officer’s decisions or actions.

The four groups responded within a range of 2.8 to 3.6 with an overall average of 3.3, as shown in Table 6.
Table 6

Results for Question 9 (Personnel Will Suffer Negative Consequences)

<table>
<thead>
<tr>
<th>Question 9: Fire service personnel will suffer negative consequences if they question a Chief Officer’s decisions or actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= Strong Disagree</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

| All Operations    | | | | | | | |
|-------------------|-------------------|
| General Firefighters | | | | | | | |
| Specialists       | | | | | | | |
| Chief Officers    | | | | | | | |
| Average           | | | | | | | |

The average deviation from the mean was 0.3, indicating variability in answers when chief officers are compared to the other respondent groups. These data suggest that chief officers disagree that fire personnel will suffer negative consequences when they question a Chief Officer’s decisions or actions. The other three groups appear to mildly agree that fire personnel would suffer negative consequences when they question a Chief Officer’s decisions or actions.

Survey question 10. Officers and incident commanders appreciate the opinions, experience, and knowledge of their subordinates.

The four groups responded within a range of 2.9 to 4.0 with an overall average of 3.3, as shown in Table 7.
Table 7

Results for Question 10 (Officers Appreciate Opinions)

<table>
<thead>
<tr>
<th>Question 10: Officers and incident commanders appreciate the opinions, experience, and knowledge of their subordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= Strong Disagree</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>All Operations</td>
</tr>
<tr>
<td>General Firefighters</td>
</tr>
<tr>
<td>Specialists</td>
</tr>
<tr>
<td>Chief Officers</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

The average deviation from the mean was 0.4, indicating variability in answers when chief officers are compared to the other respondent groups. These data suggest that chief officers agree that chiefs and incident commanders appreciate the opinions, experience, and knowledge of their subordinates. The other three groups appear to be neutral on whether or not officers and incident commanders appreciate the opinions, experience, and knowledge of their subordinates.

Survey question 11. Officers and incident commanders give serious consideration when safety problems are reported.

The four groups responded within a range of 3.8 to 4.2 with an overall average of 3.9, as shown in Table 8.
Table 8

Results for Question 11 (Officers Give Serious Consideration)

<table>
<thead>
<tr>
<th>Question 11: Officers and incident commanders give serious consideration when safety problems are reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= Strong Disagree</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>All Operations</td>
</tr>
<tr>
<td>General Firefighters</td>
</tr>
<tr>
<td>Specialists</td>
</tr>
<tr>
<td>Chief Officers</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>

The average deviation from the mean was only 0.1, indicating very little variability in answers amongst the four groups of respondents. These data suggest that members of all four groups within the OCFA Operations Department agree that officers and incident commanders give serious consideration when safety problems are reported.

Survey question 12. Please rank these items from 1 to 4 according to what should be most important for incident commanders: (a) Ensuring mission safety, (b) maintaining respectful communications, (c) establishing tasks with clearly defined goals, and (d) including crew input when appropriate.

The unique survey design for question 12 allowed respondents to select more than one first choice; nevertheless, an overwhelming 86% of respondents indicated that, given those four choices, mission safety was the most important consideration for incident commanders as shown in Tables 9, 10, 11, and 12.
Effects of Positional Authority

Tables 9, 10, 11, and 12

Results for Question 12 (What Should be Most Important for Commanders)

**Table 9  Operations: What should be most important for commanders?**

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including Crew Input</td>
<td>0%</td>
</tr>
<tr>
<td>Respectful Communications</td>
<td>0%</td>
</tr>
<tr>
<td>Setting Clear Goals</td>
<td>40%</td>
</tr>
<tr>
<td>Mission Safety</td>
<td>70%</td>
</tr>
</tbody>
</table>

**Table 10  General Fire: What should be most important for commanders?**

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including Crew Input</td>
<td>0%</td>
</tr>
<tr>
<td>Respectful Communications</td>
<td>0%</td>
</tr>
<tr>
<td>Setting Clear Goals</td>
<td>30%</td>
</tr>
<tr>
<td>Mission Safety</td>
<td>70%</td>
</tr>
</tbody>
</table>

**Table 11  Specialists: What should be most important for commanders?**

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including Crew Input</td>
<td>0%</td>
</tr>
<tr>
<td>Respectful Communications</td>
<td>0%</td>
</tr>
<tr>
<td>Setting Clear Goals</td>
<td>30%</td>
</tr>
<tr>
<td>Mission Safety</td>
<td>70%</td>
</tr>
</tbody>
</table>

**Table 12  Chiefs: What should be most important for commanders?**

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including Crew Input</td>
<td>0%</td>
</tr>
<tr>
<td>Respectful Communications</td>
<td>0%</td>
</tr>
<tr>
<td>Setting Clear Goals</td>
<td>40%</td>
</tr>
<tr>
<td>Mission Safety</td>
<td>70%</td>
</tr>
</tbody>
</table>
An overwhelming 86% of respondents (with only trace variability between groups) indicated that, given those four choices, mission safety was the most important consideration for incident commanders as shown in Tables 9, 10, 11, and 12.

*What crew resource management training is currently in place at OCFA?*

The researcher reviewed Orange County Fire Authority [OCFA] training records with the OCFA training officer. The researcher interviewed the training officer via email to determine how many personnel had completed National Wildfire Coordinating Group [NWCG] leadership courses, how many personnel had received a personal copy of the National Wildfire Coordinating Group’s *Incident Response Pocket Guide*, and how often crews had specifically trained on how to refuse risk.

Results indicated that the National Wildfire Coordinating Group L-180 course, *Human Factors in the Wildland Fire Service*, was provided to over 500 (65%) of OCFA operations personnel between 2004 and 2011. The L-180 course is now taught as part the firefighter recruit academy, while portions are reviewed each year in the annual R-130 wildfire refresher course (M. Sanchez, personal communications, January 18, 2012).

Results also indicated that the National Wildfire Coordinating Group L-280 course, *Followership to Leadership*, was provided to over 30 (4%) of OCFA operations personnel between 2004 and 2011 (M. Sanchez, personal communications, January 18, 2012).

Results further indicated that advanced leadership courses, L-380, L-480, and L-580 have not yet been offered to OCFA personnel (M. Sanchez, personal communications, January 18, 2012).

Finally, results indicated that no training had been implemented specifically on how to refuse risk (M. Sanchez, personal communications, January 18, 2012).
What crew resource management procedures are currently in place at OCFA?

The Orange County Fire Authority [OCFA] post incident analysis standard operating procedure (SOP 207.13) was reviewed to determine the criteria and content for post incident reviews at OCFA (J. Rader, personal communications, December 27, 2011).

Results indicated that the OCFA has in place a robust standard operating procedure for post incident analyses. The standard operating procedure establishes guidelines for conducting one of three levels of review following any noteworthy or significant emergency incident. These reviews are used to evaluate the effectiveness of actions and procedures that were used at the emergency scene. The review procedures remind personnel to concentrate on “what, not who, is right” (Orange County Fire Authority, 2011, p. 2).

Finally, results indicated that all members of the OCFA Operations Department receive a personal copy of the Incident Response Pocket Guide published by the National Wildfire Coordinating Group [NWCG]. The NWCG (2010) Incident Response Pocket Guide includes a specific section on how to refuse risk. OCFA members, however, do not receive specific training on how to refuse risk (M. Sanchez, personal communications, January 18, 2012).

What attitudes or practices should be most important for incident commanders?

Survey question 12 asked respondents to rank the following four items according to what should be most important for incident commanders: (a) Ensuring mission safety, (b) maintaining respectful communications, (c) establishing tasks with clearly defined goals, and (d) including crew input when appropriate. An overwhelming 86 % of respondents indicated that, given those four choices, mission safety was the most important consideration for incident commanders.

Discussion

Relationship Between Study Results and Literature
Bennis (as cited in Okray & Lubnau, 2004) found that “70% of followers will not question a leader’s point-of-view, even when they believe the leader is about to make a serious mistake” (p. 206). The researcher found in Table 5, that the three firefighter groups (non-chief officers) are neutral on the issue of challenging their supervisors. The researcher, however, found in Table 5, that the chief officer group does encourage personnel to challenge their supervisors, if it becomes necessary.

Okray & Lubnau (2004) report that, “A successful leader must give permission to followers to provide input and corrections to a plan” (p. 206). Again, as shown in Table 5, the chief officer group agrees that fire personnel are encouraged to challenge their supervisors.

Okray and Lubnau (2004), noted that followership “is not a challenge to command authority, but neither is it unthinking compliance with directives—especially if those directives might impact the safety of the operation” (p. 191). The researcher found in Table 6 that most OCFA personnel mildly agree that they will suffer negative consequences if they question a chief officer. The chief officer group, however, does not agree that personnel will suffer negative consequences if they question a chief officer.

The IAFC (2003) reinforces the fire department’s authority structure through four points, as follows: “(a) Ensuring mission safety, (b) respectful communication, (c) establishing tasks with clearly defined goals, and (d) including crew input (when appropriate)” (p. 7). The researcher found in Tables 9, 10, 11, and 12, that 86% of OCFA respondents invariably chose mission safety as the most important consideration for incident commanders.

Janis (1982) defines groupthink as “a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members’ strivings for unanimity override their motivation to realistically appraise alternative courses of action” (p.9). To help counteract
groupthink, Janis (1982) recommends that decision-makers eliminate “group insulation, overly directive leadership practices, and other conditions (such as team member self-censorship) that foster premature consensus” (p. 275). The researcher found in Table 4 that fire personnel mildly agree that they are encouraged to advocate their positions to their supervisors by respectfully suggesting alternative solutions.

The International Association of Fire Chiefs [IAFC] (2003) has developed crew resource management principles that focus on communication skills and conflict resolution—focusing on what is right, not who is right. The researcher found language in the Orange County Fire Authority [OCFA] post incident analysis standard operating procedure that reminds personnel to concentrate on “what, not who, is right” (Orange County Fire Authority, 2011, p. 2).

**Interpretation of Results**

Based upon the questions answered in this one-time survey, it is the researcher’s opinion that all four groups of OCFA operations personnel of all ranks share many positive values and attitudes. The overall results of this descriptive research demonstrate that all members of the OCFA Operations Department, regardless of rank or specialty, agree that mission safety is paramount, that every individual has the right and obligation to report safety problems (Table 3), and that officers and incident commanders give serious consideration when safety problems are reported (Table 8).

Given the limitations of this cross-sectional applied research, it is the researcher’s opinion that, in general, there are areas where attitudes of chief officers diverge from the other groups. In the researcher’s opinion, chief officers appreciate the opinions, experience, and knowledge of their subordinates (Table 7), while non-chiefs are neutral as to whether officers and incident commanders appreciate the opinions, experience, and knowledge of subordinates.
In the researcher’s opinion, chief officers do encourage subordinates to challenge their supervisors if it becomes necessary (Table 5), while non-chiefs do not believe they are encouraged to challenge a chief’s commands.

In the researcher’s opinion, chief officers do not believe that fire personnel will suffer negative consequences when they question a chief officer’s decisions or actions (Table 6), while non-chiefs mildly agree that negative consequences are possible.

It is the opinion of the researcher that divergent views between chiefs and non-chiefs could be caused by the effect of positional authority within the organization.

Results from the researcher’s personal communications indicated that the National Wildfire Coordinating Group L-180 course, *Human Factors in the Wildland Fire Service*, was provided to over 500 (65 %) of OCFA operations personnel and is now taught as part the firefighter recruit academy; however, L-280 has received little attendance, while L-380, L-480, and L-580 have not yet been offered to OCFA personnel.

Results indicated that all members of the OCFA Operations Department receive a personal copy of the *Incident Response Pocket Guide* published by the National Wildfire Coordinating Group [NWCG] that includes a specific section on how to refuse risk. OCFA members, however, do not receive specific training on how to refuse risk.

Results indicated that the OCFA has policies for reviewing emergency scene actions and procedures, focusing on “what, not who, is right” (Orange County Fire Authority, 2011, p. 2).

In the opinion of the researcher, fire crew members could become aware of an incident commander’s dangerous order or decision, but some fire crew members appear unwilling to challenge a chief officer. This absence of feedback could be in deference to the chief’s positional
authority. Subordinates might also withhold feedback due to inadequate leadership training or due to the influence of groupthink.

Hazardous attitudes, groupthink, and deference to positional authority are not responsible for all poor decisions; however, all team members and all team leaders should be aware of the insidious nature of these viewpoints.

Implications for the Organization

Crew resource management (CRM) was a new paradigm for teamwork when introduced into the airline industry in 1981. A generation later, crew resource management has penetrated all aspects of airline culture and is manifested in crew training, written policies, and after action reviews. Since adopting CRM principles and practices, “U.S. air disasters (not related to terrorism) have fallen from approximately 20 per year to one or two per year” (International Association of Fire Chiefs, 2003, p. 5).

The Orange County Fire Authority has already adopted a number of successful crew resource management practices by implementing standardized suppression training and response practices, utilizing the incident command system, deploying safety officers as members of the command staff, providing human factors training, issuing incident response pocket guides, sharing knowledge through post-incident analyses, and empowering the workforce through the publication of the OCFA Way (Orange County Fire Authority, 2011).

In the researcher’s opinion, the formation of cohesive groups and the development of a reasonable hierarchy with positional authority imparts tremendous value for teams, organizations, and societies. Group cohesiveness imparts vital, nurturing, and even lifesaving characteristics within a team situation. Conversely, congeniality when taken to excess, in the researcher’s opinion, can prevent team members from appropriately challenging a formal leader,
which can result in a lack of critical analysis, premature consensus, and potentially poor decisions.

In addition to cohesive group formation, positional authority within the group is also very valuable in preventing anarchy and avoiding ambiguity in business organizations and governmental institutions. However, team members who quietly and excessively defer to positional authority can also cause a lack of critical analysis, premature consensus, and potentially poor decisions.

As a preventative countermeasure, in the researcher’s opinion, the fire service should continue to adopt additional principles and precepts of crew resource management (CRM) for the safety of the firefighters and the customers that we serve.

**Recommendations**

The problem identified for this research is that firefighters may be reluctant to provide input to commanders or to question a supervisor’s decisions while on the emergency scene. Inadequate two-way on-scene emergency communication could lead to inappropriate or unsafe emergency response decisions and actions. The purpose of this applied research project was to describe the current opinions of Orange County Fire Authority [OCFA] operations personnel regarding their willingness to challenge a commander’s decisions and to make recommendations for changes to leadership and followership training within the OCFA.

Survey results collected from four groups of personnel from the Orange County Fire Authority (OCFA) Operations Department indicated that chief officers value the opinions of subordinates, although subordinates may at times be hesitant to share their opinions and suggestions with chief officers.
Based upon these findings, the following transformative and adaptive actions are recommended.

Training Officer

In order to enhance the training and education of followers and future leaders, the Orange County Fire Authority training officer should continue to present to all firefighter academies the National Wildfire Coordinating Group L-180 course, *Human Factors on the Fireline*.

In order to prepare OCFA personnel for orders that may be unsafe, the Orange County Fire Authority training officer should include annual refresher training on how to refuse risk.

In order to enhance the training and education of current followers and leaders, the Orange County Fire Authority training officer should consider offering to all personnel the National Wildfire Coordinating Group L-280 course, *Followership to Leadership*.

In order to prepare personnel for advanced leadership, the Orange County Fire Authority training officer should consider offering the International Association of Fire Chief’s *Crew Resource Management Instruction* and the National Wildfire Coordinating Group courses L-280, *Followership to Leadership*; L-380, *Fireline Leadership*; L-480, *Organizational Leadership*; and L-580, *Leadership is Action*.

Formal Leaders

In order to improve openness of communication, chief officers and other formal leaders should consider giving permission to followers to provide input and corrections to a plan without invoking a fear of retribution.

In order to improve the quality of team decisions, formal leaders should consider methods to delay premature consensus. Leaders should encourage the devil’s advocate, embolden those members who are quiet, reduce group insulation, and refrain from being overly directive.
In order to develop new skills and to develop future leaders, chief officers should consider a post incident analysis at the appropriate level following any significant emergency incident.

*All Team Members*

In order to improve two-way communication and crew resource management, all team members should consider communicating cues in a respectful and time-appropriate manner, using the principles of inquiry, advocacy, listening, conflict resolution, and feedback.

In order to avoid the negative effects associated with groupthink, all team members should consider providing an honest assessment of any situation while avoiding self-censorship.

In order to avoid negative effects caused by positional authority, all team members should consider advocating their position respectfully without excessive deference.

In order to improve safety and decision-making, all team members should consider a periodic review of the methods of how to refuse risk.

*Future Studies*

Everyone in society is a leader and a follower within the various contexts of their professional, personal, community, and family lives. If team members yield excessive deference to positional authority, the truth could be diluted, situational awareness could be compromised, and the outcome in some cases could be disastrous.

It is the opinion of the researcher that divergent attitudes between chiefs and non-chiefs could be caused by the effect of positional authority. Transformative and adaptive leadership education is available to help teach boldness to followers and receptivity to leaders.

Future readers who have an interest in, or a responsibility for, leadership training may wish to replicate portions of this study within their own organization. Differences in personnel,
training, organizational history, sampling techniques, or survey methodologies may yield different results. A longitudinal follow up study within the Orange County Fire Authority is recommended as a way to study changes in attitudes over time.
Reference List


International Association of Fire Chiefs (2003). *Crew resource management: A positive change for the fire service*. Fairfax, VA


Orange County Fire Authority (2010). *Orange County Fire Authority 2010 Annual Report*. Irvine, CA


Appendix A

Survey Questions

1. I am a Reserve Firefighter or Reserve Officer  Yes/No
2. I am a Chief Officer (Battalion Chief, Division Chief, Assistant Chief):  Yes/No
3. I serve in one or more of the following Special Assignments  Yes/No
   - Helicopter Pilot or Crew Chief
   - Haz Mat Technician or Specialist
   - Local US&R/Swiftwater/Heavy Rescue Technician
   - Federal US&R Task Force Member
   - Crews & Equipment

If you answered yes to the question about Special Assignment, please consider your specialty role (not your routine engine/truck/paramedic role) when responding to the following ten questions.

1 (strongly disagree)  2 (disagree)  3 (neutral)  4 (agree)  5 (strongly agree)

4. The fire service operates with a philosophy that promotes team member input.
5. When an incident safety error occurs, it is usually caused by a communication failure.
6. Every individual has the right and obligation to report incident safety problems.
7. Fire personnel are encouraged to advocate their position to their supervisors by respectfully suggesting alternative solutions.
8. Fire personnel are encouraged to challenge their supervisors, if it becomes necessary.
9. Fire service personnel will suffer negative consequences if they question a Chief Officer’s decisions or actions.
10. Officers and incident commanders appreciate the opinions, experience, and knowledge of their subordinates.

11. Officers and incident commanders give serious consideration when safety problems are reported.

12. Please rank these items from 1 to 4 according to what should be most important for incident commanders:

- Ensuring mission safety
- Maintaining respectful communications
- Establishing tasks with clearly defined goals
- Including crew input when appropriate
### Appendix B
Survey Response Raw Data

#### 1. I am a Reserve Firefighter or a Reserve Officer

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1.9%</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>98.1%</td>
<td>154</td>
</tr>
</tbody>
</table>

- **answered question**: 157
- **skipped question**: 2

#### 2. I am a Chief Officer (Battalion Chief, Division Chief, Assistant Chief)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>13.2%</td>
<td>20</td>
</tr>
<tr>
<td>No</td>
<td>86.8%</td>
<td>132</td>
</tr>
</tbody>
</table>

- **answered question**: 152
- **skipped question**: 7

#### 3. I serve in one or more of the following Specialty Assignments: Helicopter Pilot or Crew Chief; Haz Mat Technician or Specialist; Local US&R/Swiftwater/Heavy Rescue Technician; Federal US&R Task Force Member; Crews & Equipment

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>32.9%</td>
<td>50</td>
</tr>
<tr>
<td>No</td>
<td>67.1%</td>
<td>102</td>
</tr>
</tbody>
</table>

- **answered question**: 152
- **skipped question**: 7

#### 4. The fire service operates with a philosophy that promotes team member input.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response %</td>
<td>0.02758621</td>
<td>0.13793103</td>
<td>0.11034483</td>
<td>0.62758621</td>
<td>0.09655172</td>
<td>145</td>
</tr>
<tr>
<td>Please Choose One</td>
<td>4</td>
<td>20</td>
<td>16</td>
<td>91</td>
<td>14</td>
<td>145</td>
</tr>
</tbody>
</table>

- **answered question**: 145
- **skipped question**: 14
5. When an incident safety error occurs, it is usually caused by a communication failure.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response %</td>
<td>0.00000000</td>
<td>0.1398601</td>
<td>0.363636</td>
<td>0.43357</td>
<td>0.0629376</td>
<td>143</td>
</tr>
</tbody>
</table>

Please Choose One

- answered question: 143
- skipped question: 16

6. Every individual has the right and obligation to report incident safety problems.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response %</td>
<td>0.00689655</td>
<td>0.006897</td>
<td>0.0069</td>
<td>0.25517</td>
<td>0.7241379</td>
<td>145</td>
</tr>
</tbody>
</table>

Please Choose One

- answered question: 145
- skipped question: 14

7. Fire personnel are encouraged to advocate their position to their supervisors by respectfully suggesting alternative solutions.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response %</td>
<td>0.02068966</td>
<td>0.1724138</td>
<td>0.165517</td>
<td>0.51724</td>
<td>0.1241379</td>
<td>145</td>
</tr>
</tbody>
</table>

Please Choose One

- answered question: 145
- skipped question: 14

8. Fire personnel are encouraged to challenge their supervisors, if it becomes necessary.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response %</td>
<td>0.0896552</td>
<td>0.3034483</td>
<td>0.234483</td>
<td>0.337931</td>
<td>0.0344828</td>
<td>145</td>
</tr>
</tbody>
</table>

Please Choose One

- answered question: 145
- skipped question: 14
9. Fire service personnel will suffer negative consequences if they question a Chief Officer's decisions or actions.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response %</td>
<td>0.0137931</td>
<td>0.2206897</td>
<td>0.248276</td>
<td>0.386207</td>
<td>0.131034</td>
<td></td>
</tr>
<tr>
<td>Please Choose One</td>
<td>2</td>
<td>32</td>
<td>36</td>
<td>56</td>
<td>19</td>
<td>145</td>
</tr>
</tbody>
</table>

10. Officers and incident commanders appreciate the opinions, experience, and knowledge of their subordinates.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response %</td>
<td>0.11034483</td>
<td>0.1586207</td>
<td>0.303448</td>
<td>0.372414</td>
<td>0.055172</td>
<td></td>
</tr>
<tr>
<td>Please Choose One</td>
<td>16</td>
<td>23</td>
<td>44</td>
<td>54</td>
<td>8</td>
<td>145</td>
</tr>
</tbody>
</table>

11. Officers and incident commanders give serious consideration when safety problems are reported.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response %</td>
<td>0.01388889</td>
<td>0.0416667</td>
<td>0.145833</td>
<td>0.625</td>
<td>0.1736111</td>
<td></td>
</tr>
<tr>
<td>Please Choose One</td>
<td>2</td>
<td>6</td>
<td>21</td>
<td>90</td>
<td>25</td>
<td>144</td>
</tr>
</tbody>
</table>

12. Please rank these items from 1 to 4 according to what should be most important for incident commanders:

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>1st choice</th>
<th>2nd choice</th>
<th>3rd choice</th>
<th>4th choice</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensuring mission safety</td>
<td>125</td>
<td>17</td>
<td>1</td>
<td>2</td>
<td>145</td>
</tr>
<tr>
<td>Maintaining respectful communications</td>
<td>2</td>
<td>26</td>
<td>64</td>
<td>53</td>
<td>145</td>
</tr>
<tr>
<td>Establishing tasks with clearly defined goals</td>
<td>25</td>
<td>91</td>
<td>24</td>
<td>5</td>
<td>145</td>
</tr>
<tr>
<td>Including crew input when appropriate</td>
<td>3</td>
<td>11</td>
<td>52</td>
<td>79</td>
<td>145</td>
</tr>
</tbody>
</table>
### 12 A. Calculate Percentage of First Choice Priority

<table>
<thead>
<tr>
<th>Choice Priority</th>
<th>n (Selected)</th>
<th>N (Total Respondents)</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission Safety</td>
<td>125</td>
<td>145</td>
<td>86.2%</td>
</tr>
<tr>
<td>Setting Clear Goals</td>
<td>25</td>
<td>145</td>
<td>17.2%</td>
</tr>
<tr>
<td>Respectful Communications</td>
<td>2</td>
<td>145</td>
<td>1.4%</td>
</tr>
<tr>
<td>Including Crew Input</td>
<td>3</td>
<td>145</td>
<td>2.1%</td>
</tr>
</tbody>
</table>
# Appendix C

Data Table of Average Group Scores

(Questions 4-11)

<table>
<thead>
<tr>
<th>#</th>
<th>Question Description</th>
<th>All Operations</th>
<th>General Firefighters</th>
<th>Specialists</th>
<th>Chief Officers</th>
<th>Mean</th>
<th>Average Deviation From Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Team Input</td>
<td>3.6 (n=145)</td>
<td>3.7 (n=83)</td>
<td>3.5 (n=40)</td>
<td>3.8 (n=17)</td>
<td>3.7</td>
<td>0.1</td>
</tr>
<tr>
<td>5</td>
<td>Safety/Communications</td>
<td>3.4 (n=143)</td>
<td>3.5 (n=81)</td>
<td>3.4 (n=40)</td>
<td>3.3 (n=17)</td>
<td>3.4</td>
<td>0.1</td>
</tr>
<tr>
<td>6</td>
<td>Right to Report</td>
<td>4.7 (n=145)</td>
<td>4.7 (n=83)</td>
<td>4.8 (n=40)</td>
<td>4.6 (n=17)</td>
<td>4.7</td>
<td>0.1</td>
</tr>
<tr>
<td>7</td>
<td>Advocate Position</td>
<td>3.6 (n=145)</td>
<td>3.6 (n=83)</td>
<td>3.5 (n=40)</td>
<td>3.1 (n=17)</td>
<td>3.5</td>
<td>0.2</td>
</tr>
<tr>
<td>8</td>
<td>Challenge Supervisor</td>
<td>2.9 (n=145)</td>
<td>2.9 (n=83)</td>
<td>3.0 (n=40)</td>
<td>4.0 (n=17)</td>
<td>3.2</td>
<td>0.4</td>
</tr>
<tr>
<td>9</td>
<td>Negative Consequences</td>
<td>3.4 (n=145)</td>
<td>3.4 (n=83)</td>
<td>3.6 (n=40)</td>
<td>2.8 (n=17)</td>
<td>3.3</td>
<td>0.3</td>
</tr>
<tr>
<td>10</td>
<td>Chiefs Appreciate Opinions</td>
<td>3.1 (n=145)</td>
<td>3.0 (n=83)</td>
<td>2.9 (n=40)</td>
<td>4.0 (n=17)</td>
<td>3.3</td>
<td>0.4</td>
</tr>
<tr>
<td>11</td>
<td>Officers Give Consideration</td>
<td>3.9 (n=144)</td>
<td>3.8 (n=82)</td>
<td>3.8 (n=40)</td>
<td>4.2 (n=17)</td>
<td>3.9</td>
<td>0.1</td>
</tr>
</tbody>
</table>