

Training Evaluation and Needs Assessment

An assessment of the effectiveness of *Fireline Leadership* and
contracted delivery

Conducted for
Utah BLM/US Forest Service Region 4
Interagency Fire Training Program
Salt Lake City/ Ogden, UT

10/17/2003

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Project Overview

All training costs money—in development time, delivery expenses, and student salaries and time. Technically, all training programs should be evaluated for effect and desired outcome and against the learning objectives. Evaluation can be conducted on several levels: initial student reaction to the training (Level 1 per Kirkpatrick 1979), testing of recall and mastery of knowledge (Level 2), testing of behaviors (Level 3), and testing the impacts on the organization (Level 4). NWCG training is typically evaluated at Level 1, and occasionally at Level 2, depending upon the subject matter. Level 3 and 4 evaluation on NWCG courses has not been undertaken.

In Spring 2003, Mission-Centered Solutions, Inc. (MCS) conducted several leadership courses in the Utah for the U.S. Forest Service (USFS) and the Utah State Office of the Bureau of Land Management (BLM). The primary program, *Fireline Leadership*, developed and first presented by MCS in 1999, has been used for a wide variety of fire resources by the USFS and BLM in several regions and states. This weeklong program is also being used in the Wildland Firefighter Apprenticeship Program. During this time MCS also presented *Leading in Fire Management*, a variation of *Fireline Leadership* tailored for Fire Management Officers (FMOs).

Since 1999, MCS has revised *Fireline Leadership* six times based on student and instructor feedback and observations. Since 2000, approximately 4000 fire crew personnel have successfully completed the program. Graduates represent all five U.S. federal land management agencies and several state and municipal organizations. This program represents one of the largest leadership training efforts conducted by an industry or organization. Although student evaluations are strong and testimonials positive, to date no effort has been undertaken to measure the impact or effect of the program in a statistical format. Now in its third year, it is appropriate to evaluate the program for effect and for return on investment (ROI).

With the recent decrease in available funding post 9/11, there has been an increasing call for a cost justification of the program and its continued outsourced delivery. At \$850 to \$900 per student, *Fireline Leadership*, by fire training norms, is expensive. Although the cost of the program is less than other week-long programs in the private sector, which can cost as much as \$5000 per student, and less than OPM 3½ day leadership programs, which costs \$3900 per student including meals and lodging, it is considerably more than the tuition paid for most NWCG fire classes, which run from \$50 to \$200 per student. Given the vulnerability of training funds in general, the current budget, and the relative cost of *Fireline Leadership*, it is important that this evaluative information be available for budget decision makers.

Project Description

The need for evaluation is important both for students of the leadership programs and MCS, as the designer and provider of the programs. In July 2003, the BLM/USFS R4 Regional Training Officer, Vi Hillman, approached MCS with the prospect of performing a program evaluation on *Fireline Leadership* to determine its economic viability and to access remaining leadership development needs in the region. In a partnership arrangement, the USFS/Utah BLM and MCS built a survey to be used with recent graduates of the program with the intent of gathering Level 3 (Job Behavior) and Level 4 (Organizational Impacts) evaluation data on the program.

The BLM paid for the data collection phase and MCS provided the data compilation and analysis. Both organizations worked together to review the data and results. This report is the culmination of that effort.

This report has two segments. The first segment is dedicated to the first objective of the study: the evaluation of *Fireline Leadership* and the national leadership training effort. The second segment is a collection of leadership training and development needs for the USFS Region 4 and Utah BLM organizations.

Methodology

The evaluation of “life skill” programs pose difficulties under the training evaluation methodologies posed by Kirkpatrick. Ideally, Level 3 and 4 data should be gathered using a control group and pre-training measurements. Evaluators observing job behavior directly should assess trained behavior, recording the observations using standardized forms and methods.

Level 3 evaluations are most easily accomplished when the trained skills are focused and mechanical and the application of those skills is confined to a narrow set of operational parameters. Level 4 evaluation assumes that the job skills are directly tied to organizational outcomes in a manner that is clear and unambiguous, without complicating variables. For this reason, Level 3 and 4 evaluations are rarely done and are expensive to conduct.

Because they are not technical, life skills, such as communication and leadership, are usually not evaluated on these levels. Often, the desired outcome of training is for the student to use the skills in a wide set of circumstances and conditions. These skills are also interconnected with other variables and are often hard to separate under independent observation without interviewing the trainee about what their thinking processes were during the testing (self-reported data).

Using questions about what has changed because of the training, this effort attempts to gauge the effect of the training on the job and the organization through the lens of the people who know whether and how they have applied the training to their individual circumstances, job, and life. This self-reported data could then be corroborated by observations from the persons who work in supervisory and subordinate position to the trainee. The best people to evaluate the effect of the program are those that live and work with the trainee on a daily basis; they are most able to perceive trends or changes over time. In the end, the training is designed to serve these people.

The project was designed as a two-part effort, with a two-person data collection and interview team traveling to the unit location to administer paper surveys and conduct interviews. One team would work for two weeks in the southern part of the region, then make a preliminary report to Vi Hillman, the USFS R4/Utah BLM Training Officer. The first team would be replaced by a second team that would work for approximately two more weeks gathering information from groups in the northern part of the Utah and in Wyoming. The teams overlapped for briefing and debriefing.

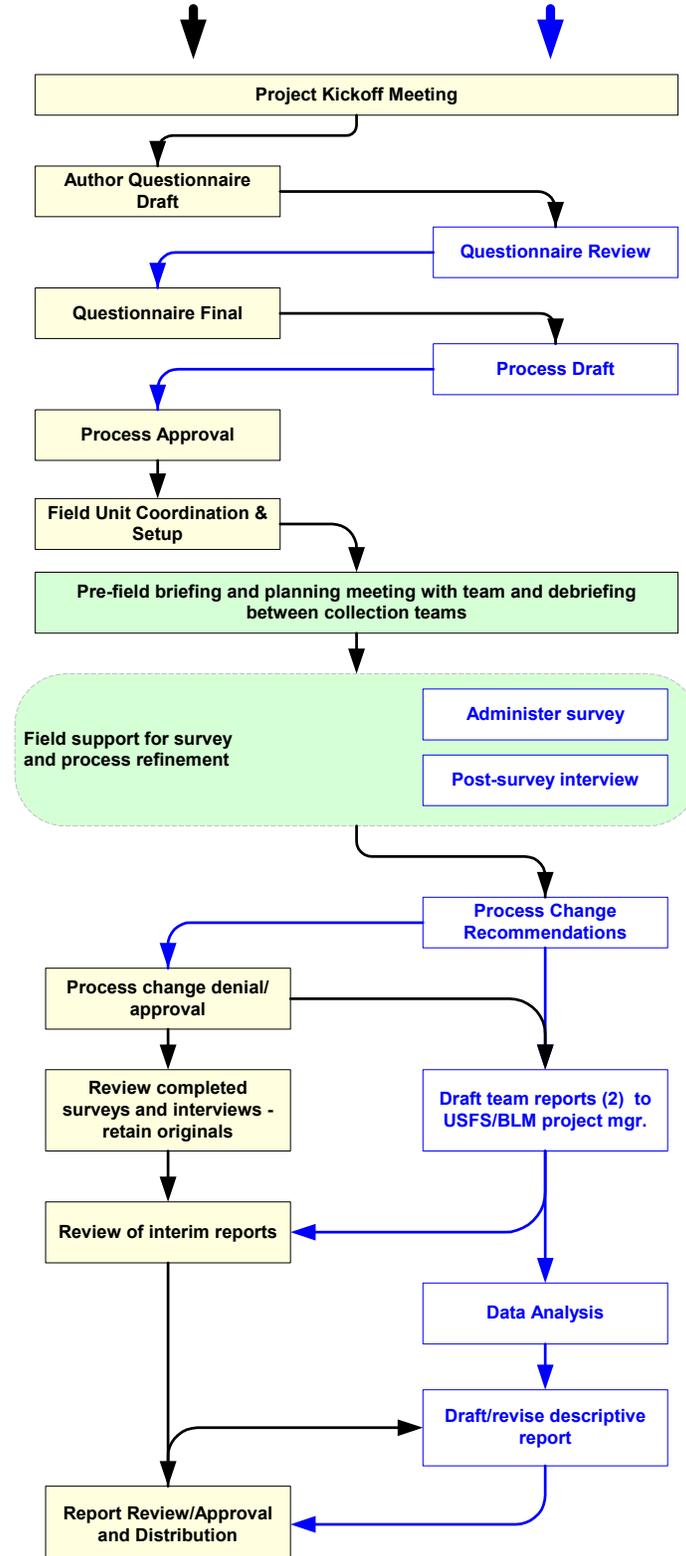
The following diagram delineates the responsibilities.

TRAINING EVALUATION PROJECT

PROCESS RESPONSIBILITIES

USFS/BLM

Vendor



In addition to being tasked with data collection and interviewing, the teams were prepared to go to the fireline to conduct observations on current practices and to gather data regarding how well leadership practices were being translated to the operational environment. Because of the lack of fire activity in the region, this opportunity did not present itself, illustrating the difficulty and inherent expense involved with gathering observational data (typical Level 3) on firefighters during active fire operations.

Project Execution

The first cycle interviews were conducted with the following organizations in Southern Utah:

- Cedar City, BLM
- Cedar City, USFS
- Zion National Forest, Park Service
- Arizona Strip, BLM
- Kanab, BLM
- Richfield, USFS/BLM
- Fillmore, USFS/BLM
- Little Sahara, USFS/BLM
- Loa, USFS/BLM

Interviews were conducted in the following organizations in the northern Utah and southwestern Wyoming:

- Wasatch/Uinta NF, USFS North Zone, Ogden
- Wasatch/Uinta NF, USFS Salt Lake City
- Wasatch/Uinta NF USFS South Zone (Provo)
- USFS Helitack Resources Mountain Green, Provo
- BLM Salt Lake Field Office Helitack Resources
- BLM Salt Lake Field Office West Zone
- BLM Salt Lake Field Office East Zone

These organizations were distilled into nine unique units for the analysis, based upon unique FMOs and the chain of command. A link analysis diagram maps the relationships between Employee, Graduate, and Supervisor respondents.

USBLM Participants

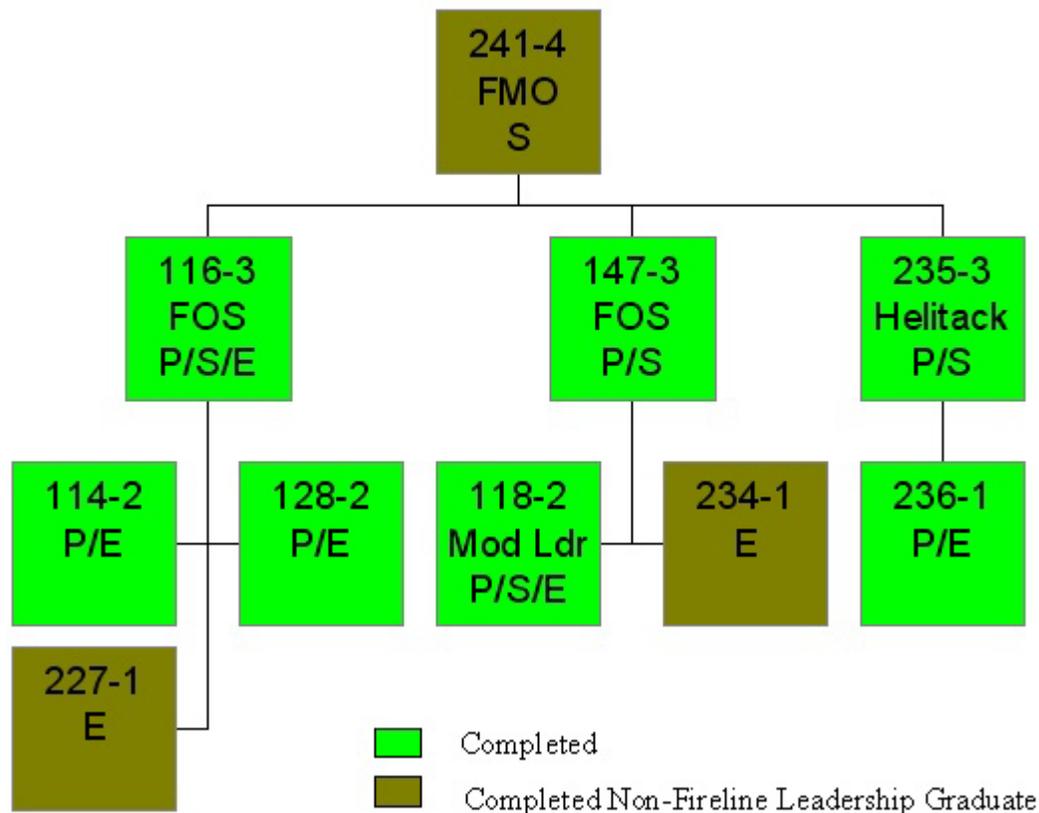


Figure 1 Sample Link Analysis Diagram

Use of MCS Consultants for Data Collection

The USFS/BLM Training Officer felt that MCS consultants, because of prior exposure to survey respondents during *Fireline Leadership* and *Leading in Fire Management* programs, would have rapport and some degree of trust with the graduate respondents and would illicit more accurate and candid feedback than would an agency or unknown representative.

In addition, MCS consultants are the most qualified to recognize vocabulary, terms, and concepts originating in the program, and they could ask follow-up questions more accurately than personnel unfamiliar with the program. This familiarity proved helpful when employees and supervisors who were not graduates identified terms and concepts originating in MCS leadership programs. MCS personnel were also selected so that if mentoring or on-the-job opportunities presented themselves, the team could take advantage of the opportunity.

Data Integrity and Security

Data collection integrity was maintained first by having the respondents provide input in their own handwriting. The original surveys were collected and reviewed by Vi Hillman. Copies were provided to MCS for data entry and analysis. Data files used for analysis were provided to the government as part of the deliverable. The USFS would independently confirm MCS personnel conduct and neutrality with selected respondents.

Anonymity of the respondents was ensured by using a numbering system that identified the respondent and the respondent relationship with either another graduate respondent or an employee respondent (or both in some cases). Units were given a random identification number, and job positions and names were not reported on the surveys. MCS assigned both respondent and unit IDs. MCS retained the respondent ID cross-reference, which remains undisclosed to the government. MCS has provided a master list of the names of all final survey participants.

Interviewing and Survey Process

The survey process was conducted in four steps.

1. **Identification of respondents** Vi Hillman worked in advance to set up times and dates with units that would be interviewed and directed the MCS team members as appropriate. Local unit contacts helped to set up interview times for the individuals.
2. **Respondent Briefing** MCS team members briefed the respondents on the project. The briefing concentrated on explaining the purpose of the project, the objectives, and the importance of candid feedback. The respondent briefing was improved and revised during the second two weeks to improve its effectiveness.
3. **Written survey** Depending upon who they were (Employee, Graduate, or Supervisor), respondents received written surveys to complete. Some were provided more than one survey if they qualified in more than one category. The respondents were left alone to complete the surveys. An MCS consultant was made available to answer questions or provide clarification.
4. **Follow-up Interview** The completed survey was given to an MCS consultant who conducted a follow-up interview to clarify ambiguous comments, to assure completeness, and in some cases to ask follow-up questions for additional information. This information was added to the respondent survey form for data entry. Interviewers made additional comments in other documentation to assist the Interagency Training Officer with the training needs data. Some follow-up interviews were conducted in small groups; others one-on-one.

Potential Issues with Project

Assessment of Life-Skills Programs

Fireline Leadership and *Leading in Fire Management* are life-skill programs, focusing on enabling and motivating participants to improve themselves and their communications behaviors. The programs challenge students to reevaluate their perceptions of who they are and what they value. Moreover, the topics of the programs are widely varied, ranging from foundational leadership constructs and models to using fear as a tool to the application of group decision-making in high stress situations. The programs cover more than 70 subjects organized loosely under 15 major headings. No student can, or is expected to, learn and adopt everything, as personal change is an individual human process, self-directed, difficult and time consuming.

The courses are designed as a starting point for the process of self-directed improvement in the skills of leadership. Unlike technical skill programs that progress from simple to complex, successful life-skill courses (such as leadership) progress from a narrow application of skills or techniques to a more widespread application so that behavior can be adaptively applied to a wider range of circumstances. The more exposure and opportunities to apply the concepts both during and after the class, the greater the likelihood that meaningful change will occur: the wider the application, the more successful the student.

However, the nature of life-skills programs makes it difficult to trace the cause and effect of the training because the skills and techniques are applied in a wide range of situations. There is a considerable body of somewhat disconnected and antidotal evidence that the *Fireline Leadership* has yielded positive outcomes. Comments taken from discussions at safety conferences to interviews conducted by the Wildland Fire Lessons Learned Center indicate that former students still hold the training as very valuable, even years after attending the program. These testimonials have been gathered ad hoc and opportunistically and do not constitute a verifiable trend or consensus.

Because the results of a life-skill program can be so varied, this analysis focused on former students, who understand how and where class concepts now apply in their lives. These personal reports and trends are compared with subordinate and supervisor appraisals to determine if the reported change is manifesting itself in the form of actions or behaviors apparent to others. In this respect, this project seeks to use subordinates and supervisors to validate graduates' reports of change so that actual behavior and organizational effect (Level 3 and Level 4) can be determined.

Another primary objective for this study is to gather attitudes, opinions, or assessments from Graduates and Supervisors about the perceived value or return on investment (ROI) of leadership training, specifically for leadership training provided by MCS. While communication, situation awareness, decision-making, and leadership have been front and center as primary factors in most recent burn over accidents, a financial measurement is hard to quantify. Error mitigation, detection, and avoidance reduce cost in many places on a daily basis and work to avoid systemic failures that can produce infrequent but very high costs. Even so, it is always difficult to place a measurement on what good communication and leadership saves the organization.

When one looks for impact to organizational cost, the effect of a course like *Fireline Leadership* is variable and wide reaching. However, when evaluating a program with life-skills impacts in an environment with many variables, a one-to-one cause and effect relationship is difficult to ascertain with independent observation. Here too, graduates can provide an accurate assessment of value and worth in that they know better than anyone what effects were felt, but also what those effects were worth to them and the organization they serve. They are the ones who know best what effects have lasted beyond the first month or two after training. Finally, as participants and students in other government training they can provide a user's perspective of whether a *Fireline Leadership*-type of course could or should be delivered by the agency.

Factors potentially affecting the survey

Many environmental factors affected the survey effort to some degree.

- Assessing leadership is a subjective due to personal biases, experience levels, and perceptions about what is effective leadership. Employee and Supervisor respondents without the training did not necessarily use the same vocabulary or construct as the graduate respondents when assessing leadership performance. *Potential impact: small.*
- Some graduate respondent may not recognize experience and growth within themselves. *Potential impact: small*
- Many of the employees interviewed had spent only one season with the crews and therefore did not see how leaders functioned prior to this season. *Potential Impact: Moderate, resulted in many “Not Observed” (N/O) responses to reported behavior questions.*
- Some areas had slow fire seasons this year, which may contribute to employees not getting a full perspective on leaders. *Potential impact: Small, resulted in some N/O responses.*
- A number of participants went on furlough after taking the course and did not have opportunities to apply the concepts until this season. *Potential impact: Moderate—scope of issue is unknown.*
- *Fireline Leadership* and *Leading in Fire Management* concepts may not be embraced or encouraged in organizations in which senior leaders have not attended a class or are unfamiliar with the concepts. *Potential Impact: High on individual unit level. Actual impact unknown.*
- Elapsed time, as much as a year and a half, between the training and evaluation inhibited recall of specific content. During the interviews, the teams discovered that providing access to the content outline of the program assisted with the recall of the first item, then other connections were reported more easily. All interviews were conducted after the written surveys were completed, so these connections were not present in the written survey responses. *Potential Impact: Moderate, but was mostly mitigated through some procedural refinements in the interviewing process.*
- The adoption of concepts and tools within the unit and reinforcement in agency documents (such as the AAR guidance provided in the IRPG) have “muddied the water” for recall, and made it more difficult for respondents to determine where some concepts and tools were first introduced or adopted. *Potential impact: Moderate, but was mostly mitigated through some procedural refinements in the interviewing process.*
- Security concerns about where the respondent feedback would go and how it would be used caused initial concern in some respondents. *Potential impact: Moderate, but was mostly if not completely mitigated through adequate briefings and discussion of data security.*
- An error in directions on the part of an MCS interview team resulted in five Employee respondents reporting on multiple leaders using the same survey form, producing a one-to-many relationship in the data record. One of these respondents adequately delineated his/her responses between individual supervising leaders, but four other records could not be reconciled to conform to the data standard. These records have been omitted from some questions reporting on leader satisfaction and leader change for consistency reasons. *Potential impact: Small to Moderate.* The data loss is not considered significant with regard to the larger trends regionally, and by-unit satisfaction was not measured in this study.

Questionnaire Format and Data Interpretation

The survey was designed in open-answer format to provide ample room for responses without narrowing the answer. Some questions provided clarification. Examples of the surveys are included in the Appendix.

The use of the open-answer format required that responses be individually interpreted and placed into general categories for summary, statistical analysis, and trends. Original responses were retained in the database for review and are included in the appendices.

Summary statistics, which are included in this report, were derived by analysis of the comments provided. Trends were categorized as generally positive, neutral, or negative. Specific examples were categorized into main topic areas or themes. For consistency, one person categorized all responses, and an interview team member reviewed the work. Data entry errors were corrected during the analysis process.

Survey Respondent Composition

The survey respondents represent *Fireline Leadership* or *Leading in Fire Management* graduates, their subordinate employees, and their supervisors. The study included 110 unique respondents, representing three federal land management agencies in the State of Utah and western Wyoming.

The agency-level breakout of respondents follows:

- BLM 58
- USFS 48
- NPS 4

The break out of graduate and non-graduate respondents follows:

- *Fireline Leadership* or *Leading in Fire Management* Graduates 64
- Non-Graduate Supervisors 6
- Non-Graduate Employee Subordinates 40

Nine operational units were identified in this group based upon chain of command and FMO assignments.

A total of 156 surveys were completed, resulting in 151 complete data records. Because of their position and relationship with other graduates, some respondents completed surveys in more than one category. Four employee surveys were removed from part of the analysis on questions that rated supervisors because of clarity problems previously discussed.

The surveys were distributed as follows:

- 68 Employee*
- 24 Supervisor
- 64 Graduate

* 69 Employee surveys were originally collected, but one survey was discarded from the group because it was later discovered that a respondent rated a peer and not a supervising leader.

Graduate Respondents

In FY02 and FY03 approximately 180 regional firefighters or FMOs attended *Fireline Leadership* or *Leading in Fire Management* either in a regional course or in the Wildland Firefighter Apprenticeship Program (WFAP) in McClellan, CA. Graduate respondents are a subset of these attendees. There are 64 graduate respondents in the study.

REGIONAL COURSES

Course ID	Course	Graduation Date	Location
0380	<i>Fireline Leadership</i>	04/04/03	Wendover, NV
0352	<i>Fireline Leadership</i>	11/22/02	Cedar City, UT
0353	<i>Fireline Leadership</i>	4/11/03	Salt Lake City, UT
0237	<i>Fireline Leadership</i>	4/26/02	Salt Lake City, UT
0254	<i>Fireline Leadership</i>	5/24/02	Richfield, UT

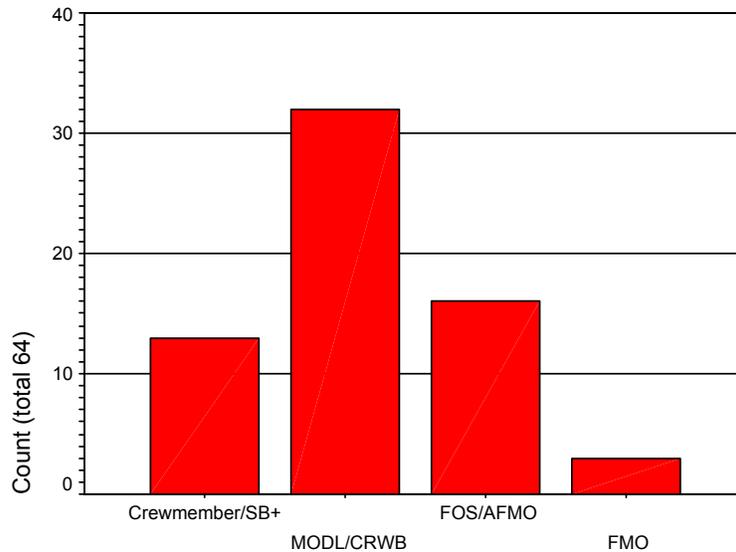
OUT OF REGION COURSES

AA1902*	<i>Fireline Leadership</i>	01/24/03	WFAP
0351	<i>Leading in Fire Management</i>	11/22/02	Albuquerque, NM
AA2005*	<i>Fireline Leadership</i>	03/07/03	WFAP
0360*	<i>Fireline Leadership</i>	03/24/03	Boise, ID

* Attended by only one person from survey group

Three respondents in this survey were graduates of *Leading in Fire Management*. The remaining 61 respondents graduated from *Fireline Leadership*. The five regional sessions listed above were conducted under three different primary trainers and a wide mix of Human Factors and Fire Operations trainers in supporting cadre positions.

A majority of the Graduate respondents were Engine Module Leaders or Crew Bosses, including squad leaders. Figure 2 depicts the graduate respondent breakdown by job level.



Participant Job Position Distribution

Figure 2 Distribution of Participants by Job Position

Graduates varied considerably with regarding time in current position, from less than a year to more than 20 years (Figure 3); however, the most graduate respondents reported between a year and three years in position (Figure 4).

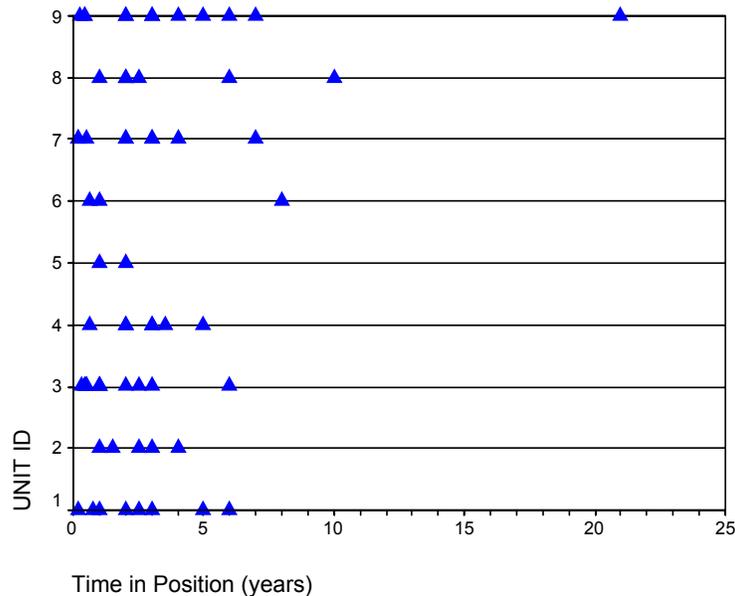


Figure 3 Distribution of Participants by Unit and Time in Position

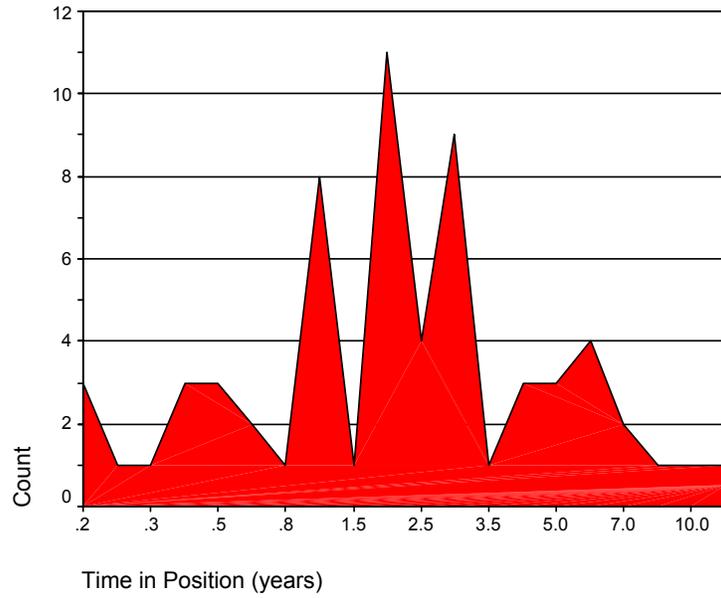


Figure 4 Participant Distribution—Years in Current Position

Figure 5 shows the distribution of graduate respondents among the nine units in the study.

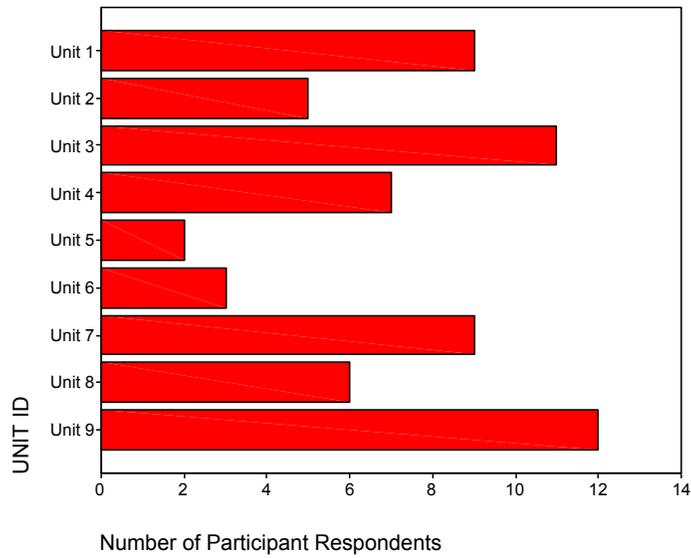


Figure 5 Number of Participant Respondents per Unit

Supervisor Respondents

Supervisors of graduates can provide a unique perspective on leadership behavior. First, observations from this group are not influenced by self-awareness or ego on the part of the graduate, and can provide validation for graduate reports. Secondly, they can provide a glimpse of training impact beyond the unit level, depending upon their organizational position.

The Supervisor category describes personnel who are supervisors of graduates. Of the 24 supervisors in the study, 18 were also graduates providing feedback on subordinate graduates. Six respondents in this category were non-graduates of the program, holding mostly FMO positions (Figure 6).

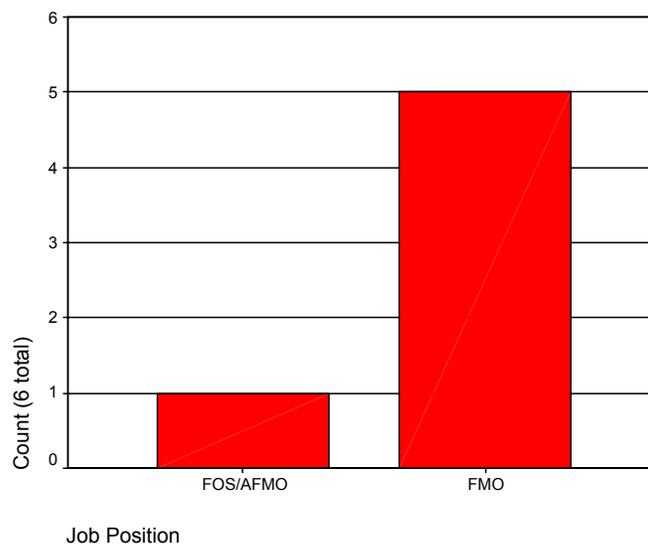


Figure 6 Non-Graduate Supervisor Respondents—Job Distribution

Employee Respondents

Employee respondents were personnel who were serving under a graduate supervisor who had attended either *Fireline Leadership* or *Leading in Fire Management*. Because both supervisors and subordinates attended the training together, 24 of the Employee respondents are also graduates, and completed Graduate surveys. Non-graduates completed 40 Employee surveys. All respondents in this group hold crewmember level positions in their organizations.

While the subordinate appraisals of leadership behavior cannot be tied directly to the success or failure of the leadership programs, they are telling as an overall picture of the leadership health of the crew or unit and provide a perspective of leadership capability from the eyes of the subordinate.

Several subordinate respondents have been under the leadership of their supervisor for a very short period of time. Figure 7 (next page) shows the number of years non-graduate employees have served under a graduate supervisor. Many of these respondents in this group did not know the supervisor before the supervisor attended training and could not answer questions about change resulting from the training. These responses were recorded as “N/O or Not Observed,” or in some cases the question was simply not answered (NR or No Response).

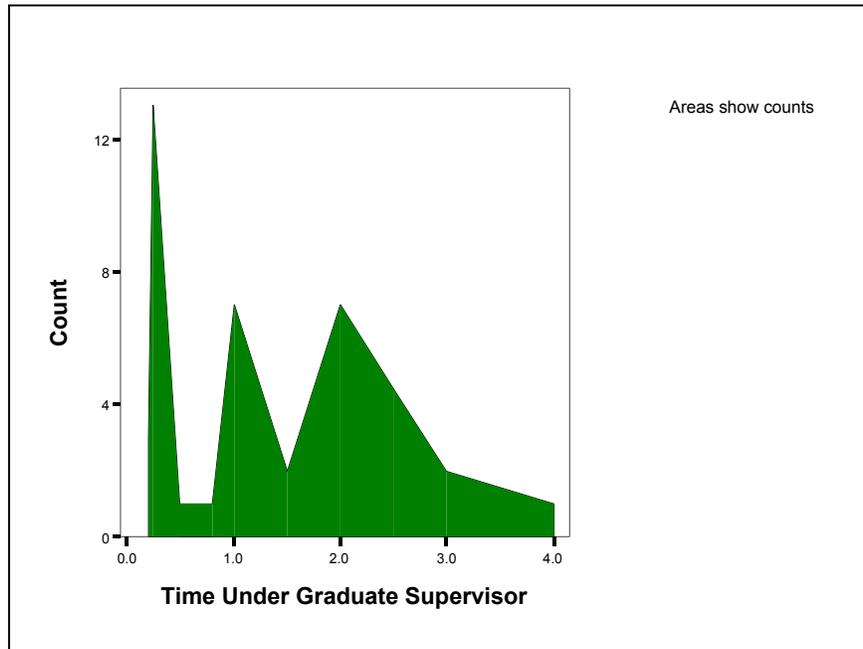


Figure 7 Non-Graduate Employees: Years Served Under Graduate Supervisor

Part 1—Leadership Training Evaluation

Part I of this analysis focuses on measuring the effectiveness of leadership skill training accomplished to date. Graduates and supervisors were asked to provide input to answer the following questions:

- Are graduates remembering the course tools and content and putting them to use, and if so, what tools are being used most?
- Are there positive or negative effects from the program that are reported by graduates or the people they work with, especially in terms of leader behaviors?
- If there are program effects, do they extend beyond the individual to the crew/unit, and the organization?
- Has training in leadership skills, and specifically the MCS *Fireline Leadership* program, been a worthy expenditure of training resources?
- What should be the future direction of training delivery for the program in terms of contract vs. internal delivery?

1 Perceived Training Value and Effect on Behavior

Graduates were asked about what they recalled and applied from the program. They were also asked about the effects that the program had on their leadership behaviors in their own appraisal. Supervisors were asked to recall any rollout effects that they have observed with their subordinate graduates on the personal, unit, or organizational level. Employee questions were focused on observed graduate leader behavior pre- and post-training. Because many employees in this study are new to their position or supervisor, responses were limited to those employees who had history with the graduate.

1.1 Graduate responses

1.1.1 Content and Tools Taken from the Program

Q: What are the three most important concepts or tools you took away from Fireline Leadership? Explain

As predicted and as typical with life-skill training programs, the responses varied widely, ranging from fundamental foundational concepts to more hands-on communication and problem solving skills. This most likely is a reflection of the diversity in circumstances and situation of graduates when they attended the program and their perception of the benefit at the time.

Nearly every major subject in the program was represented in the responses of one or more respondents. All former students were able to positively identify concepts or tools presented in the class. Most (83%) respondents were able to recall three or more independent concepts. All listed at least one topic or item. Responses to the written survey and subsequent interviews indicate that graduates were able to do more than simply recall subjects, as respondents often referenced an application of the tool or concept with explanations.

Example: *Interrupting the Swiss cheese affect. Paying more attention and noticing these trigger points earlier.*

Figure 8 shows the top 20 first-referenced concepts or tools, demonstrating the wide variance in responses.

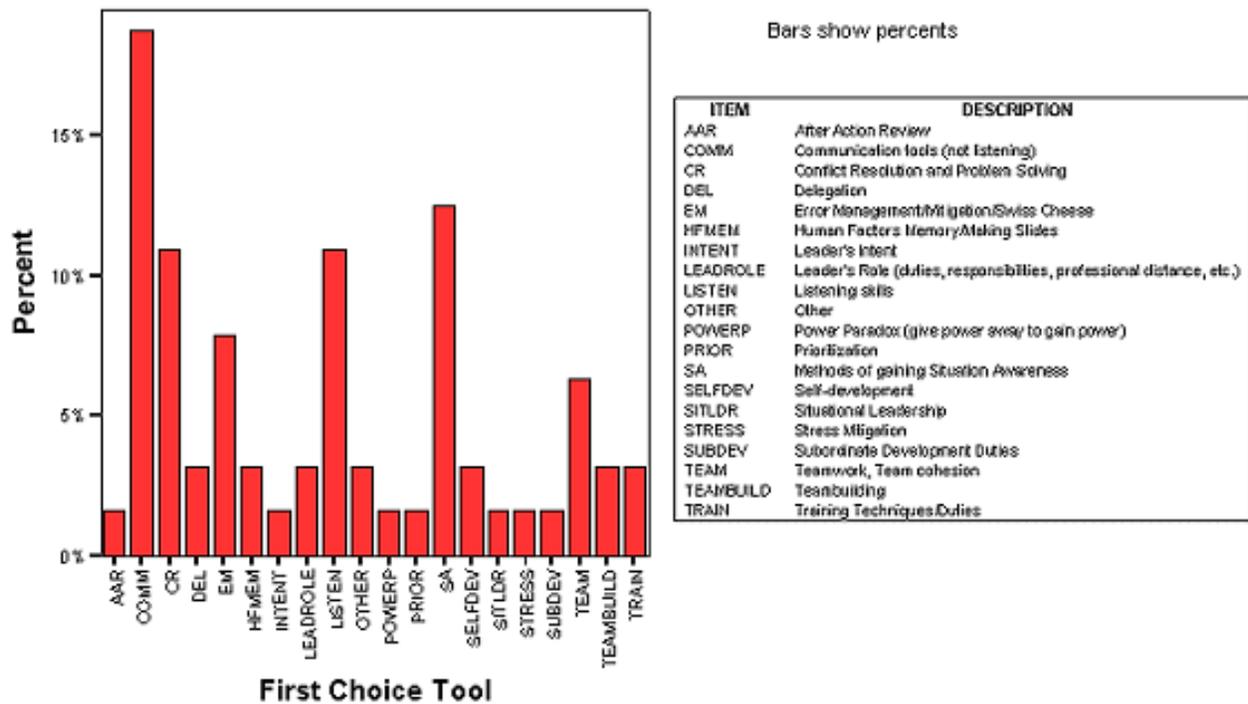


Figure 8 First Listed Tool or Concept Taken from Fireline Leadership

Although respondents listed a variety of topics first, communication and situation awareness were listed first by the largest percentage.

When all tools and concepts were considered, general communication (which included communication awareness and using communication more deliberately) topped the ranks. Another communication skill, listening, and the concept of situational awareness as it applied to the leader role were also popular choices as the top cited tools and concepts taken away from the course (Figure 9).

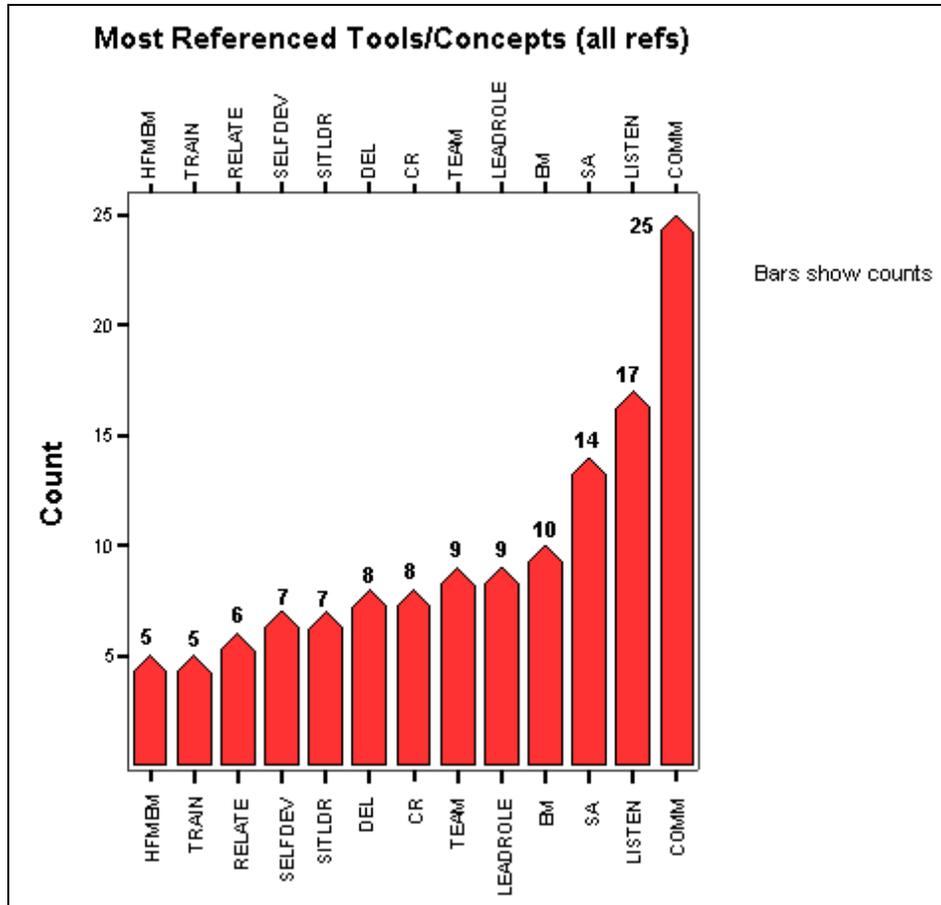


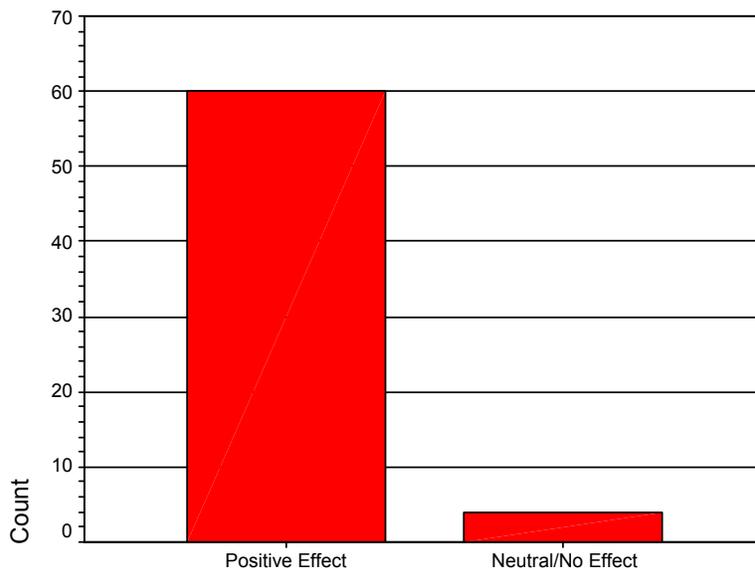
Figure 9 Count—Most Referenced Tools/Concepts

1.1.2 Self-reported Change in Behavior

Q: Describe any effects that attending Fireline Leadership has had on how you do business as a leader now. Explain

This item was selected to measure, beyond recall, the way that the leadership program had changed the way the leader acted in the operational environment.

For general trending, the responses were categorized into one of three categories: those indicating a positive effect, no effect (or neutral), or a negative effect. The overall trend on the effects of the program was very positive, with 60 of 64 respondents reporting positive outcomes or effects (Figure 10). Four respondents reported no effect or otherwise neutral responses. No respondent reported a negative effect.



Summary Effect of Training (64 respondents)

Figure 10 Trend of Reported Effects—Post-training

The reported effects of the program generally coincide with items regarding what students remembered from the program. Improved communication (15%) and listening skills (11%) lead as the most cited areas, followed by the motivation and desire to step into the leader’s role, improved conflict resolution skills, and improved decision making under stress. Figure 11 depicts the distribution of the first mention effects.

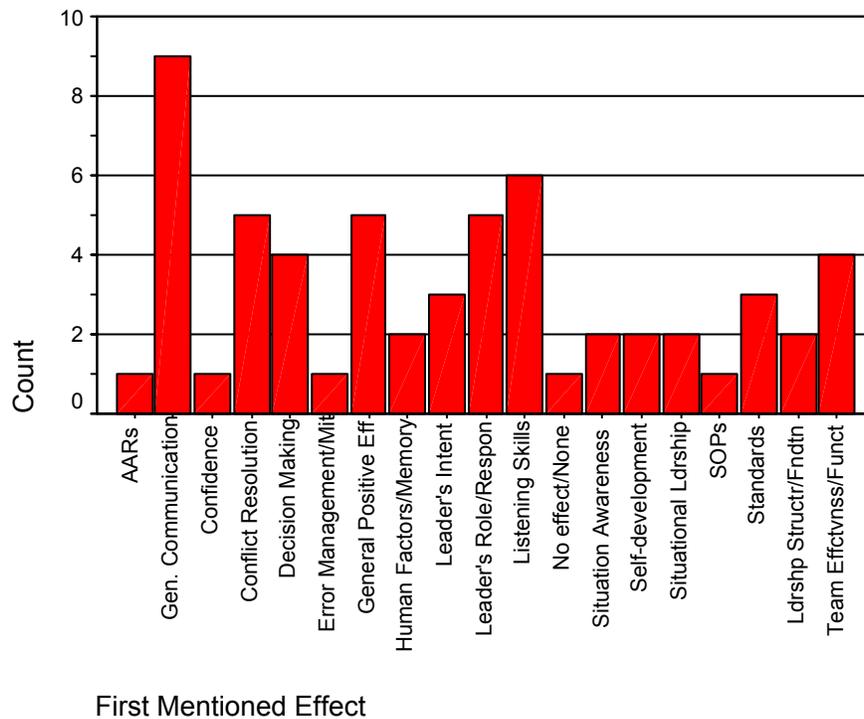


Figure 11 First Mentioned Effects - Count

Figure 12 shows the distribution of all effects listed by all graduates. Here the trends seen in the first responses generally held for subsequent responses as well.

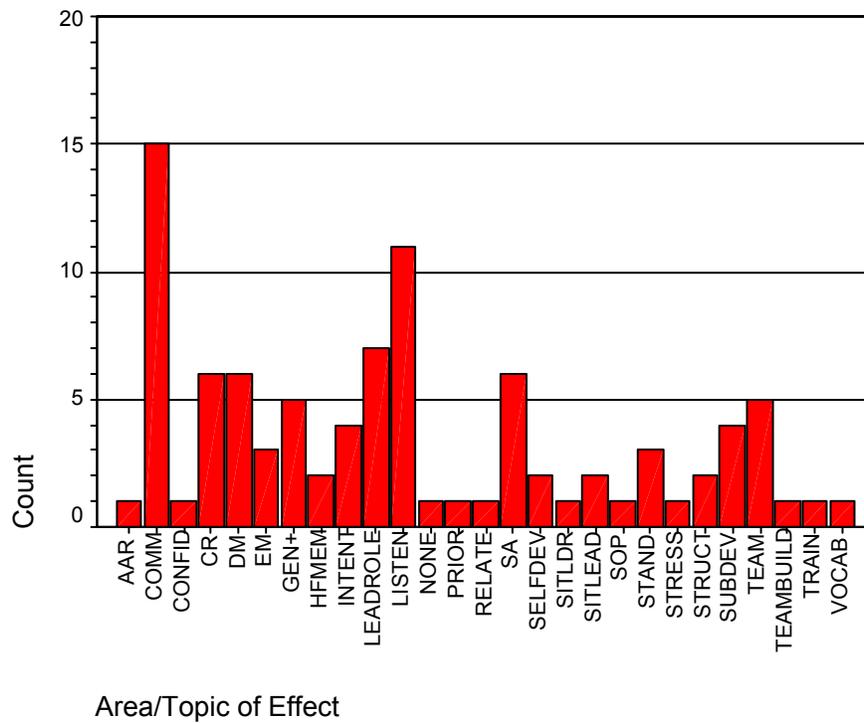


Figure 12 All Reported Effects—Topic Areas

1.1.3 Interviewer Comments

In regards to communication, interviewers reported that graduates appear to be using active listening techniques as indicated by the perception that more leaders are stepping back, listening, and applying a less direct approach to dealing with personnel issues and conflict resolution. This contrasts with the rush to judgment and direct approach taken by most in the past. Middle to upper supervisory levels report the general perception that their subordinate leaders have become more adept and proficient at managing people and resolving problems without having to look up for guidance. Conflict resolution was, however, one of the areas most cited where the organization could improve.

While some units and respondents have reported significant progress, there appears to be a consensus among respondents that not all leaders at the crew, unit, and organizational levels are as adept or willing to apply the concepts and tools presented in the leadership programs. This reality has been attributed to a variety of factors including fear—both of change and loss of control and authority—and resistance to change, termed the “old school mentality” by respondents, which precludes the adoption of new leadership approaches and techniques.

The dissension between those embracing change and those resisting change was cited as one of the primary barriers to improved communications, increased cohesion, and overall health of the organization. This discrepancy may explain the generally lower supervisor satisfaction ratings given by subordinate graduates when compared with their non-graduate counterparts (described in Part II) and may be a result of graduates’ raised expectations of their supervisors. This trend was not investigated in this group but has been reported by MCS cadre in dealing with other clients.

1.2 Supervisor Responses

1.2.1 Rollout Effects

Q: Have you seen any rollout effects with your employees that you attribute to the Fireline Leadership program? (subparts ask for noticed effects at Personal, Unit, and Organizational levels)

Both graduate and non-graduate supervisors answered this question.

The following shows examples of comments that were classified as positive and neutral:

Positive comment: *Subordinate leaders have a better understanding of what is needed to be addressed with employees to solve problems without bringing them in.*

Neutral comment: *In the past several years I have seen several individuals improve and step up in their leadership abilities including decision making, communication, performance of duties. I cannot attribute these directly to FL program but I cannot say it wasn't part of it.*

More supervisor respondents reported positive rollout effects at the personal level than at the unit or organizational levels (Figure 13). The drop in the rates of change between the personal (79%) and unit level (54%) could be reasonably expected, given that behaviors of individuals are usually easier to observe than effects on organizations. Unit and organizational level effects were reported at nearly the same rates. Figure 14 depicts the distribution of positive, neutral, and non-respondent rollout effects cited by supervisors on the largest category, personal rollout effects.

Level of Effect Cited	Number of Respondents	%
Personal (Subordinate)	19	79%
Unit Level	13	54%
Organizational Level	11	46%

Figure 13 Supervisor (Grad and non-Grad) Reports of Rollout Effects

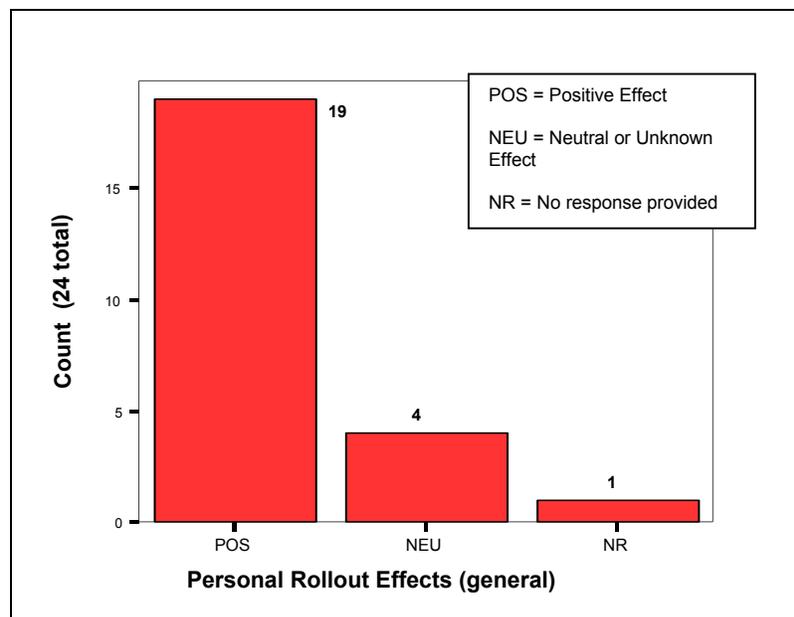


Figure 14 Supervisors citing Personal Rollout Effects with Subordinate Graduates

In an examination of positive responses, the trend of wide distribution continues with the greatest number of responses citing improvement again in communication (Figure 15).

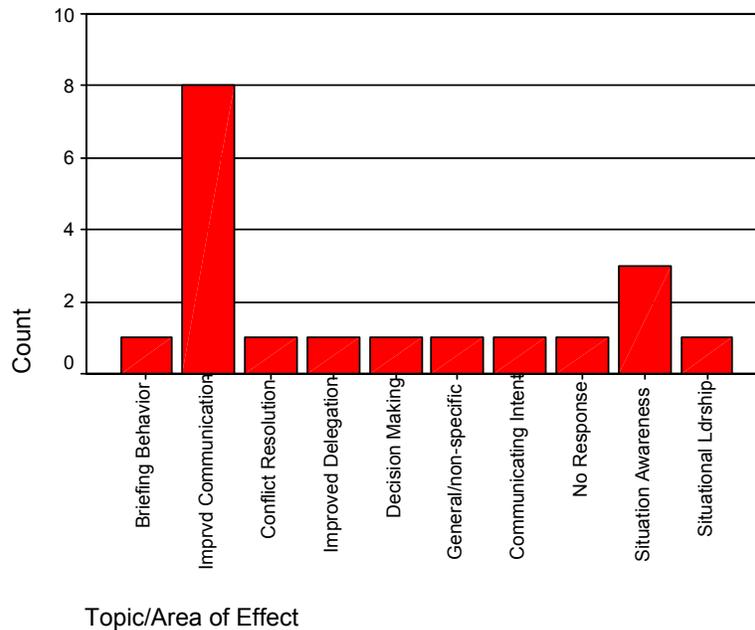


Figure 15 Personal Rollout Effects Cited by Supervisors

At the unit level, the areas most affected by the training were improved unit cohesion (Figure 16). Typical unit comment: Group cohesion is possibly better this year. There still need to be changes but we are getting there. Chain of command supports FL concepts.

At the organizational level, those supervisors reporting effects cited increased communication and teamwork as out comes attributed to the training.

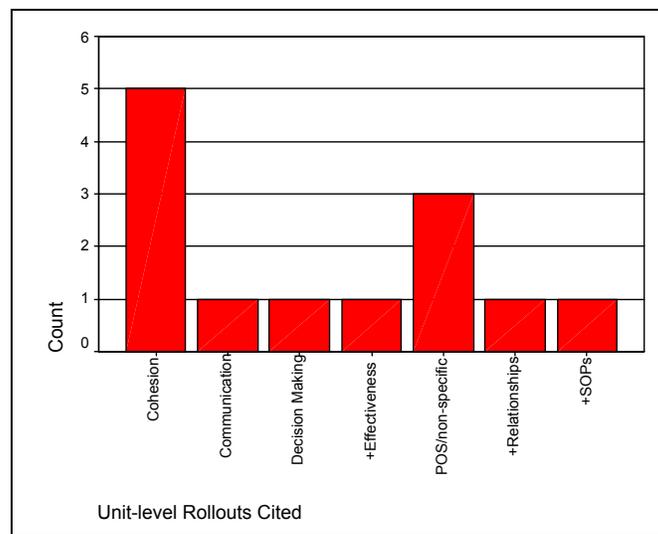


Figure 16 Unit & Organizational Rollout Effects Cited by Supervisors

1.2.2 Supervisor Trends

In the analysis of supervisor responses, positive changes on a personal level (Level 3) were noted by about 75% of the surveyed supervisors. Unit and organizational effects (Level 4) were less commonly noted but still present. At unit and organization levels, supervisors frequently reported improvement in unit function this year but could not attribute the change specifically to the training. This is not unexpected since cause and effect are much harder to trace at these levels where many variables are present.

No supervisor reported negative effects from the training at the organizational or unit levels.

1.2.3 Interviewer Comments Regarding Supervisors

USFS supervisors were more likely to make connections between the training and positive rollout effects at the organizational level. BLM supervisors were generally less likely to attribute positive rollout effects at the unit or organizational level to the MCS leadership programs. BLM supervisors were more likely to report that the training had neutral rollout effects on the unit or organization.

1.3 Employee Responses to Leader Change and Satisfaction Items

To provide a third perspective on leader behavior change, subordinates of graduates were asked to assess their satisfaction with their leader's leadership skills and to report any positive or negative changes in the leader compared with the previous year (pre-training).

Q: Have you seen changes in the way that your leader acts or otherwise conducts business when compared to last year (or pre-training)?

A total of 33 subordinates—both graduate and non-graduate—responded. Two subordinates were not in the position to assess any changes in their leader's behavior because they were new to the position or new to the supervisor or they did not know the graduate prior to training well enough to assess change. Five respondents did not respond to this item, perhaps for the same reasons, leaving 26 respondents in a position to assess their leader's change.

The following shows examples of comments categorized as "Positive" or "No Change":

Positive: *Very good, much more organized and structured in operations.*

After the training I believe my supervisor is starting to take an active role on where this program is going.

No change: *The leader I had this year needs to take the course and if they did take it, it didn't help.*

Figure 17 shows the distribution of Positive and No Change Observed responses. Records with responses “not observed” and “no response” are not included. Employee surveys that reported on more than one supervisor and contained a “group” (vs. an individual) appraisal were also removed.

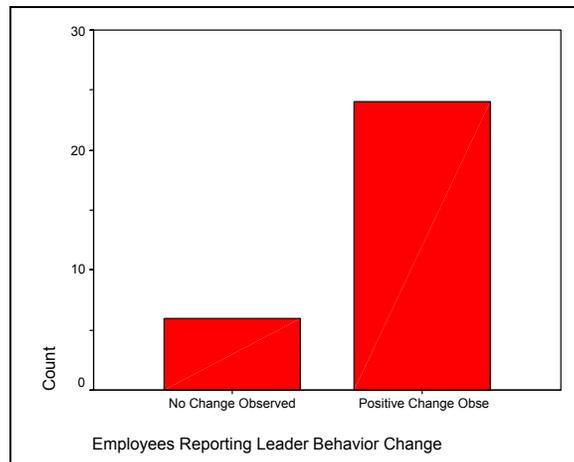


Figure 17 Employees Reporting Behavioral Change

Non-Graduate Employees

Non-graduate employees provide a relatively unbiased perspective on leadership behavior. These respondents are not necessarily aware of the leadership programs or their content and therefore cannot provide connections to the training directly. They do, however, represent a group unfamiliar with the concepts of effective leadership other than what is passed to them through normal crew processes.

The following are examples of comments categorized as showing positive trends:

Positive Trend: *He is more laid back in that he lets other people make choices. If something is wrong it will be brought to attention at a later time. This allows others to grow and develop their leadership abilities while still providing for a safe environment.*

I see a pause before actions are taken.

Out of a total of 23 non-graduate employees that indicated a trend, 18 respondents reported an improving trend in their leader’s performance since last season (Figure 18). No respondent in this group reported a negative trend in leadership performance, however nearly half of this group could not report on their leader’s change, mostly because they had not worked under the supervisor long enough to render judgment.

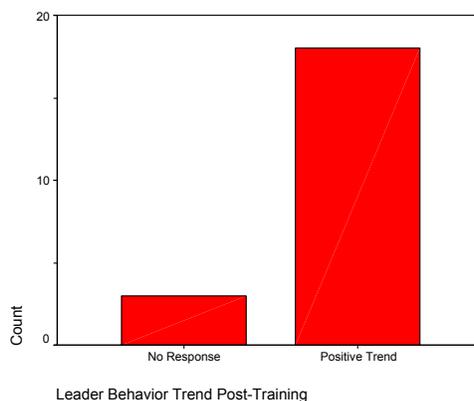


Figure 18 Non-Graduate Employees Indicating a Positive Trend in Leader Performance

Observed Trends in Operations

One of the questions presented to the investigating group was if there were ways to detect if there had been changes detectable at the operational levels. Employee subordinates were asked to compare their current crew/team with last year.

Q: How do you feel that your crew/team is operating this year compared with last year (or pre-training)?

In the study group, many subordinate employees had changed crews. Respondents who were part of other units or crews the previous year compared their current situation with the last group they were with. For this reason, the measurement is probably more indicative of overall crew health rather than of an individual leader’s progress.

As depicted in Figure 19, a majority of subordinates feel that their crew operations have improved when compared to last year, whether they were referring to the same crew or a different one. The five respondents who indicated that their crew operations was worse this year cited a change in supervisor or a move to a new crew this season as factors.

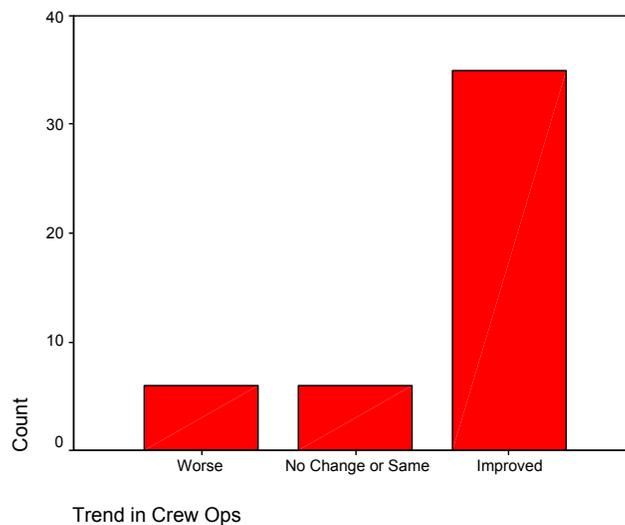


Figure 19 Subordinate Assessment of Current Crew Operation Compared to Last Year

Comment indicating improved operations: *People know that there is going to be more expected of them than in the past.*

Comment indicating worse operations: *Our Engine has a new foreman this year. He is not a very good leader.*

As a follow-on to the question above asking for a general measurement of improvement or decline in crew operations, the employees were asked if they could provide examples of operational differences.

Q: Is your crew/team’s operating differently this season (or pre-training) when compared to previous seasons, or have you SOPs changed or been otherwise modified recently? If so, in what way?

The question was intended to detect any general changes in standard operating procedures, training, policies, etc. to provide additional perspective on the earlier trend question. In this item, improvement was observed by approximately 60% of the respondents (Figure 20). 38% of the group had observed no change when compared with last year’s operations. The types of observations cited by the employee respondents varied widely and without a discernable pattern.

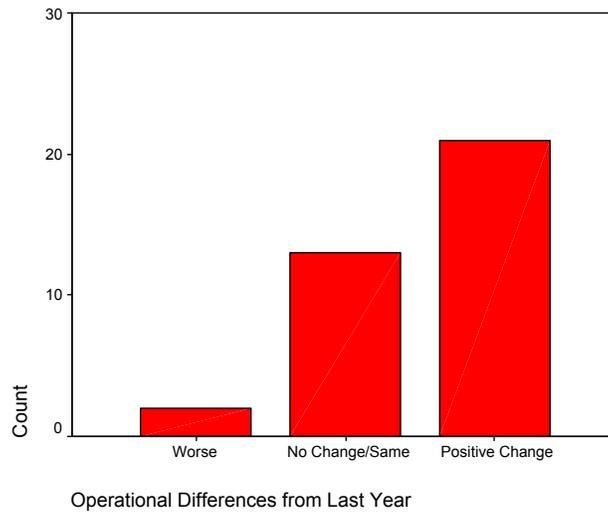


Figure 20 Operational Differences Noticed from Last Year

One of the desired outcomes of the *Fireline Leadership* program is that leaders will be motivated to reexamine their own practices and operating procedures and to make changes to improve them prior to the next season. The perceived “need” to do this varies from crew to crew, and historically these types of effects have been reported in other regions to MCS cadre members. Usually reported changes tend to focus on addressing standardization or policies regarding professional conduct.

In the studied group of employees, very few reported outcomes similar to these.

Comment indicating change in operations: *We are more actively making our PT program more meaningful.*

Comment indicating no change in operations: *I have not noticed anything from the class.*
(graduate subordinate)

Q: Have you noticed differences in your leader’s behavior in conducting operations (at home unit or on the line)? Leading or communicating; Handling problems; Making decisions; Giving briefings or debriefings?

This question directly connects the leader’s behavior to operations. The question was used mostly to validate previous responses and to provide clarification for analysis. As Figure 21 shows, responses demonstrated no departure from trends seen in reported leader change and behavior, with approximately 80% of the respondents indicating positive change, with 20% indicating no changes in these areas.

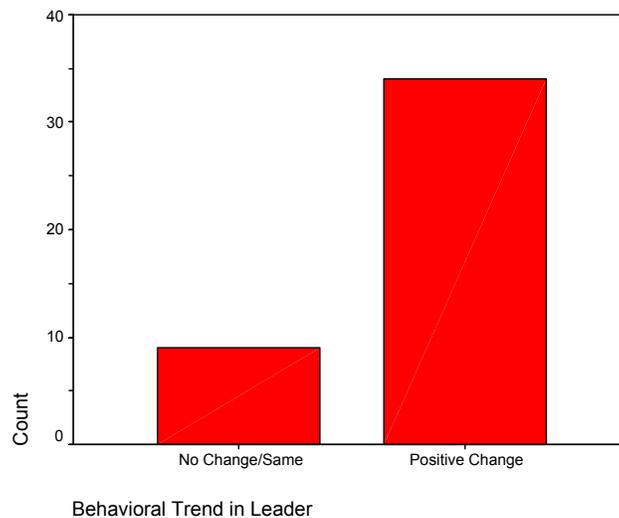


Figure 21 Leader change in operational tasks

1.3.1 Subordinate Employee Trends

Subordinates provide a unique perspective on leader behaviors. Whereas graduates tended to report improvements in their communication skills, subordinates tended to report behaviors relating to changes in their leader’s reactions to problems—either crew-related or operational. Regardless of context, subordinate employees reported positive impacts of the training program on the unit. Employees with both post- and pre-training perspectives consistently report improvement in their leaders.

1.3.2 Interviewer Comments Regarding Subordinates

A supplemental question asked in post survey interviews was whether the human factors concepts and vocabulary introduced in *Fireline Leadership* and also seen in *L-180 Human Factors on the Fireline* were being used by the crew as part of their operational vocabulary. Data gathered prior to training indicates that respondents in this study had not yet been exposed to *Human Factors on the Fireline* prior to training, so concepts such as “Swiss Cheese” (Human Factors Analysis Classification System, HFACS) were probably introduced first to the group in *Fireline Leadership*.

Interviews with non-graduate subordinates indicated that human factors concepts and vocabulary were not only recognized by many crewmembers but were an active part of their vocabulary and speech. When asked where they got this information, respondents indicated that crew leaders were using the terms and concepts as part of the operational lingo of the crew. This indicates that crew leaders are actively using the human factors concepts and vocabulary presented in the leadership curriculum.

Although the terms like *situation awareness* and *the After Action Review* are presented in the Incident Pocket Response Guide (IRPG), they are not defined there. Definitions, therefore, are being trained and passed along from individual firefighter to firefighter.

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2 Satisfaction with Leaders

2.1 Overview

Subordinates' satisfaction with their leader's leadership capabilities and skills measures the leader's approachability for problem solving and effectiveness in dealing with their subordinates. Weaknesses in this area can result in problems and error chains as communication and a general willingness to engage can be stymied, preventing normal error corrections.

2.1.1 *The "Bubble Effect"*

According to MCS cadre members who have delivered roughly 200 sessions in the past three years, an increase in leadership expectations after training is a commonly reported result of the program. This effect is usually seen in groups where subordinates participated in leadership training, but supervisors did not participate or did not attend in significant numbers. When funds are limited, management often opts to train firefighting forces as first priority. The first level managers (FOS/AFMO/DFMO) are sometimes considered secondary priorities for leadership development, and because these persons in these positions are usually overburdened, they don't typically complain about the missed opportunity.

In these circumstances, a "bubble" of expectation sometimes develops in subordinate groups, with the symptoms of the effect being increased frustration and the perception of a lack of support from mid-level management. The effect tends to be more pronounced in groups where the students are members of the same unit and are cohesive. Mid-level management's lack of awareness and alignment with the changes at the bottom of the organization produce more distance, or sometime more friction.

Although the mid-level manager's behavior has remained constant through this evolution, the perspective of the graduate has changed. The same tools and new perspectives that the student has gained, which assist in analyzing and solving crew leadership challenges, are equally effective at analyzing and measuring their leader's performance.

This change in expectation, if not met by middle management, can produce conditions where increased friction will result between graduates and their superiors, and dissatisfaction increases until management and the subordinate leaders begin meaningful dialog on standards and expectations. A coordinated training effort, in which fire management and subordinate leader training is timed closely (starting with the management levels first), has historically yielded stronger results and organizational alignment.

The groups studied in this effort did not coordinate middle and first line supervisor training and trained primarily the first-line supervisors only. As a result, increased dissatisfaction with mid-level leadership performance could be expected. Although the results indicate more dissatisfaction with leadership at the middle management levels, there is no pre-training data on this group to indicate if this perception has changed or is just status quo with this particular group.

2.2 Graduate and Non-Graduate Satisfaction with Leaders

Q: How satisfied are you with your leader’s leadership skills?

When the non-responses and “not observed” responses were removed, a majority of subordinates, both graduates and non-graduates, are generally satisfied with their leader’s leadership skills. Non-graduates, consisting entirely of crewmembers, were the most satisfied with their leader’s skills (96% Satisfied). Graduate employee respondents, a mix of crew leaders and FMOs, rated their superior’s leadership skills less strongly (71% Satisfied) (Figure 22).

While this trend may be a result of the “bubble effect,” it may also be the result of increased subordinate maturity or the less-structured environment in which middle and upper leaders work and interact. More information would be needed to draw a conclusion regarding the causes; however; the trend poses an interesting question.

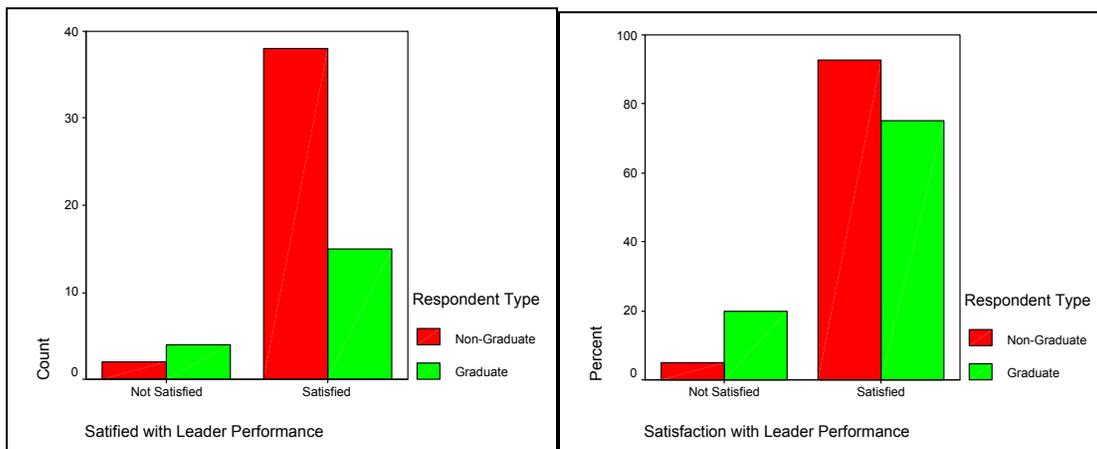
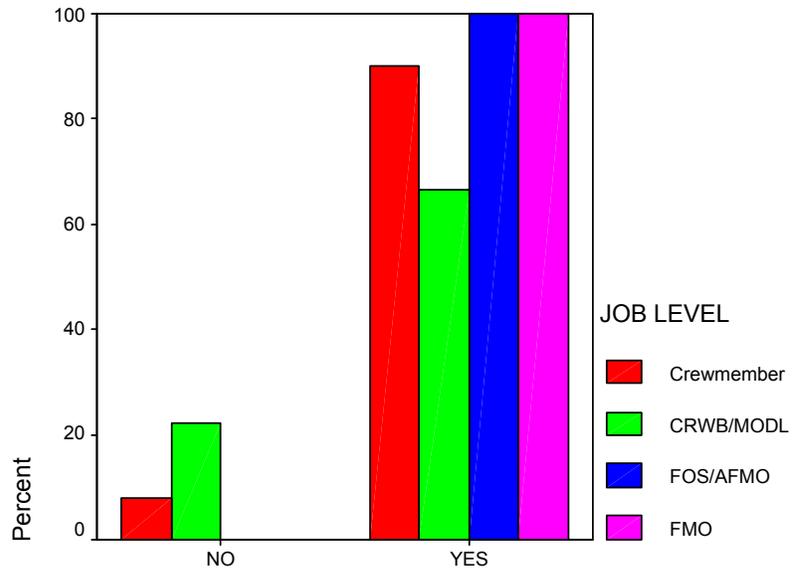


Figure 22 # Employees Satisfied with Leader % of Employees Satisfied with Leader

When looking at satisfaction with leader performance from a job level perspective in Figure 23 (non-graduates and graduates included), the earlier results are validated in that greatest dissatisfaction is present with the subordinates in first-line supervisor positions (CRWB/MODL).



Satisfaction with Leader Performance by Job Position

Figure 23 Satisfaction with Leader Performance by Job Position

3 Attitudes About Leadership Training Value

3.1 Return on Investment

Q: Do you feel that training in leadership skills, and specifically Fireline Leadership, is/has been a worthy expenditure of training funds?

Comments regarding general leadership training were recorded separately from comments concerning the MCS leadership programs. Where the respondent did not make delineations between the two, comments were usually directed to *Fireline Leadership*. In all cases, comments regarding leadership training in general and *Fireline Leadership* stayed in step with each other, as most of the respondents did not seem to distinguish *Fireline Leadership* as an independent effort from general leadership training.

3.1.1 Graduate Responses

Graduates in the study remain very positive about both the leadership training focus and *Fireline Leadership*. Among all graduate respondents, 59 of 64 (92%) responded that leadership development training was worth it, with 5 (8%) respondents giving a neutral rating. The following shows examples of comments categorized as Positive and Neutral.

Comment Marked as Positive: *FL is by far the best and most advanced leadership course offered within the fire organization. The funds required for this course are spent in a training experience that will move an individual to a new level.*

Comment Marked as Neutral: *Yes for younger employees. No for older employees who are set in their ways. Training would be more beneficial at a starting point of supervisory level.*

One hundred percent of crewmember and FMO graduates stated that the effort was worth the funds spent. Responses were categorized as Positive, Neutral, or Negative. Positive scores were assigned a value of 1, Neutral 0, and Negative -1 value. Respondents at the FOS/AFMO level registered the lowest score on both, with a mean score of approximately .75 (Figure 24).

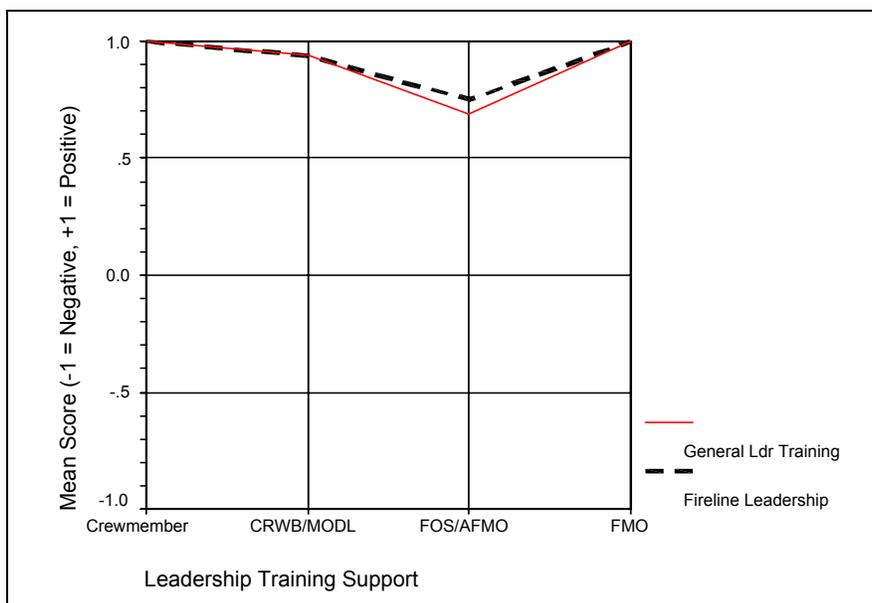


Figure 24 Attitudes by Job Position Leadership Training and Fireline Leadership Value

3.1.2 Non-Graduate Supervisor Responses

Given that most Supervisor respondents were also graduates, it was seen as valuable to examine the appraisals of the six non-graduate supervisors. Though the group is too small for detailed analysis, Figure 25 depicts the breakdown of the general responses for this group.

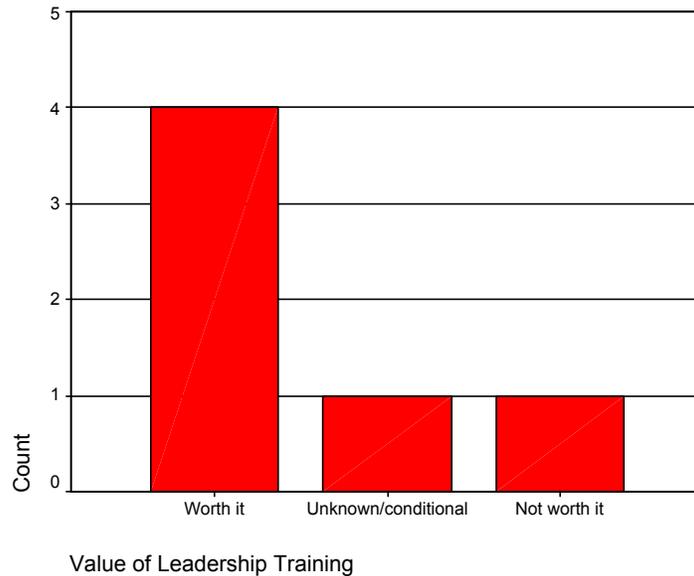


Figure 25 ROI/Value of Leadership Training Initiatives (Non-graduate supervisors)

3.2 Attitudes Concerning Future Contractor Involvement

Another question facing the agencies is whether to continue the practice of using contractors to provide leadership training. The recent leadership development initiative that is underway by the agencies includes the largest use of private contractors for fire-related training to date. This unprecedented use of private contractors runs counter to the historical NWCG training delivery model and general culture, which has relied on internal resources to provide training cadre and development personnel.

Recently, the leadership committee of the NWCG has provided a specification for the *Fireline Leadership* program (L-380) and engineered the delivery process so that it can be provided by other vendors, provided the vendor is willing to design and build a program that can be certified to the specification. Other agency personnel have advocated that the program should be taught internally and provided through existing mechanisms, mostly for reasons of anticipated cost-benefit.

The study asked former students of the programs to offer their appraisals of value and worth of a contract provider. Because the only provider of the program is MCS, many comments spoke to the firm’s product more so than to contract providers in general.

Q: Currently, Fireline Leadership is provided by private contractors at an expense greater than typical internal training offerings. What are your thoughts about whether the agency should continue to contract the Fireline Leadership Course or work to bring the program in so that it delivered internally? Explain

Figure 26 depicts the breakdown of responses given by graduates on the use of contractors. In all, 52 (81%) of the graduates supported continued use of contract delivery.

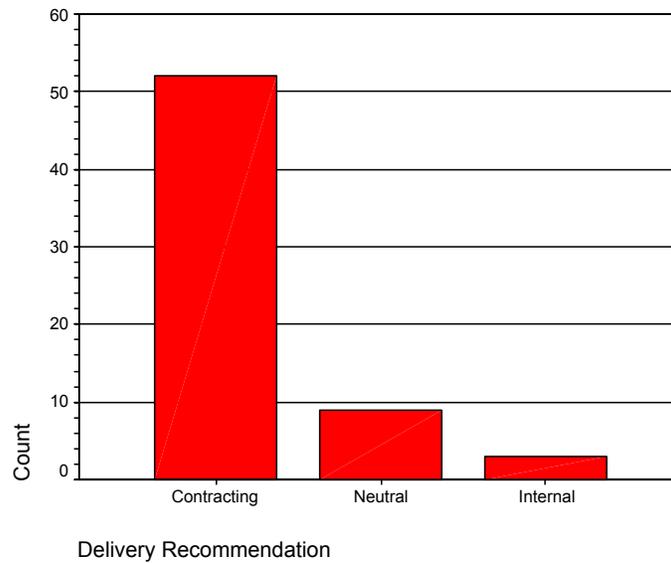


Figure 26 Graduate Attitudes about Contractor vs. Internal Delivery

The breakdown of reasons cited for continuing private contractor delivery of the program is depicted in Figure 27. A majority of the reasons for continued contracting related to a general lack of confidence or credibility in the internal training system. Doubts were voiced about the agencies’ ability to deliver this type of program effectively, consistently, or without bias. Following this concern was the benefit of having a cadre with outside perspectives and experience beyond fire.

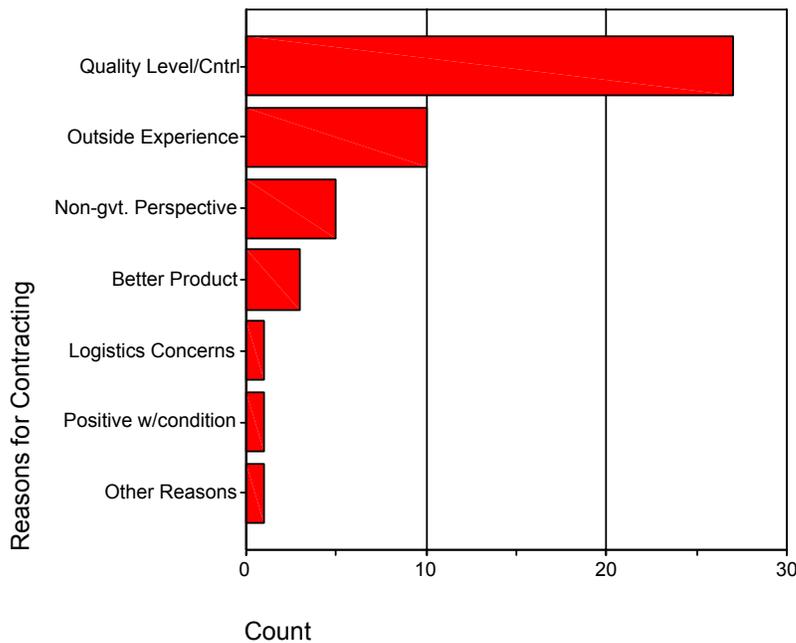


Figure 27 Graduate Reasons Cited for Contracting

Following are sample comments supporting continued contracting:

Supporting contracting: *Truthfully, I think that outside sources are better for this kind of training. Forest trainings tend to be biased and less developed.*

Most of our internal training is a joke. So I would definitely recommend keeping it with private contractors. In my opinion, our biggest problem in the fire organization is a lack of good leadership. What are you going to get when you have poor leaders teaching leadership?

Private contractors provide a more diverse background and I think taking the groups outside our normal range of experience greatly benefits the classes.

Nine respondents (14%) were neutral or unsure about the prospect of continued contracting. Of these, seven provided reasons that were conditional in some way, and tended to center on the premise that if the agencies could muster the dedicated staff and funding, internal delivery might work.

Neutral/Conditional: *If the money is there I think you will always get a better course with a dedicated cadre. If we can afford it or the money is money is competing with other required training I think we would teach it in-house, but it wouldn't come easy or fast.*

I would like to see it more available to people, but not just anybody. Only people who are going to make a career in leadership roles. But then again, its just not for fire. Just think of budget.

Three respondents (5%) indicated that the course should not be contracted. One respondent felt that the course should be provided as an internal offering (comment below); the other two did not elaborate on reasons for their position.

No Contracting: *I think that there are enough good leaders internally that could put on the course if they had a little bit of training.*

Four of the six non-graduate supervisors came out in favor of contracting. Two others refrained from commenting because, as they indicated, they had not observed enough to render an opinion.

3.3 Additional Comments—An MCS Commentary on the Effects of Unit Culture on Training

Another item worth noting in the analysis of graduate respondent scores: the apparent effect of unit culture on training acceptance. For example, the mean score of three items—the value of leadership development, the value of *Fireline Leadership*, and attitudes towards contracted delivery—was relatively constant within each unit (Figure 28).

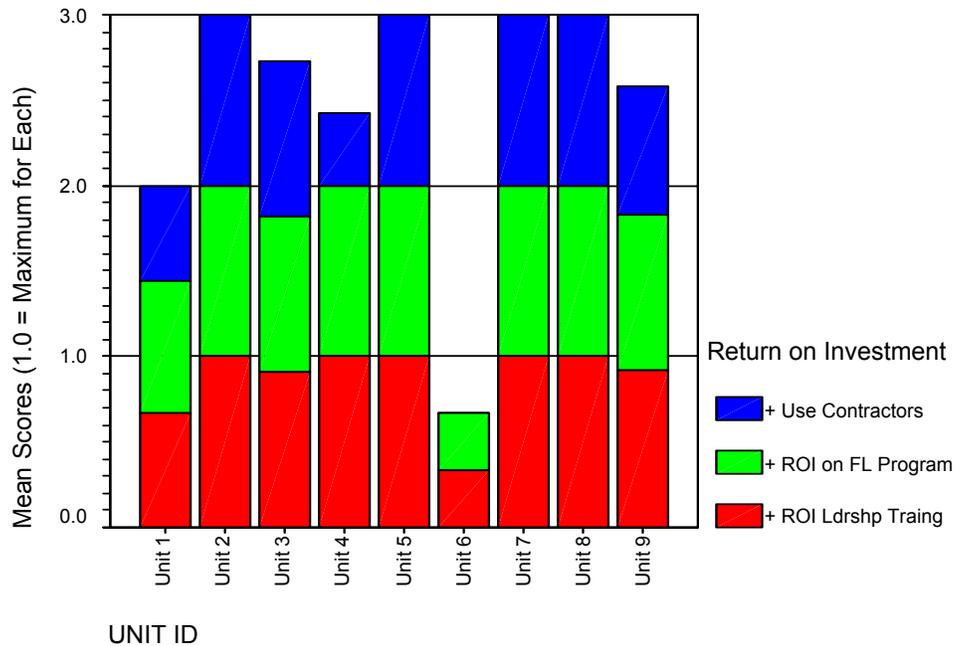


Figure 28 Attitudes by Unit Breakdown—Value of Leadership Training, Fireline Leadership, and the Use of Contractors

In these questions, as with other items in the study, one operational unit stands out with scores considerably lower than other units.

Crew or unit cultural issues usually do not influence the outcome of a course given the 5-day length of the session. Usually within this time, barriers can be overcome and trust builds between the students, their peers, and the cadre to the point where these factors do not play heavily into the adoption of attitudes and values presented in the program. Occasionally, there is an exception when individual unit culture is represented so strongly that members of the group maintain resistance through the course. . According to our experience, this occurs infrequently—in approximately one out of every 50 sessions. One of the programs presented to this study group represented such a session.

When we investigated this more thoroughly, we found that the same unit that had scored lower in some of the study questions about behavior changes also scored unusually low on other aspects of the Crewmember Attitudes Questionnaire, a pre-training inventory we administer prior to *Fireline Leadership*. The CAQ gathers data about the unit culture as it pertains to safety and effectiveness. The survey was built by MCS with the assistance of the NASA/University of Texas Crew Research Program to gather cultural norm baselines for the wildland fire industry. During training, the cadre reported significant resistance to the training from a small group of firefighters from this same unit. The issues cited in the cadre notes pertain to struggles with internal unit culture and attitudes.

The case illustrates the hard reality that even the best programs can’t get buy-in or results from everyone, and units with particularly strong or dysfunctional cultures will require more than a week of training to see marked improvement.

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4 Part I Conclusions

The following are the major findings regarding the evaluation of *Fireline Leadership* effectiveness in the Utah BLM/USFSR4 area:

- Survey respondents were generally open and honest with their input to the survey. The use of MCS personnel to gather the information seemed to work well, as the respondents appeared to trust the interviewers and were very candid with their responses.
- Fireline leadership has been well accepted by the subject group. A large majority of personnel have seen improvement in others and in themselves as a result of the course. The type of change and strength varies considerably from individual to individual. Usually these changes support improved communication skills and problem solving abilities. These trends are also reflected in non-graduate employee and supervisor observations. Most change is occurring on the personal/behavioral level, while there are some rollout effects at the unit and organizational levels.
- Generally, satisfaction with leadership behavior is high. There is less satisfaction with graduates than with non-graduates.
- There is evidence that management involvement and commitment (or lack thereof) can have a marked effect on the incorporation and adoption of new behaviors in subordinate leaders. New leaders in some units note that opportunities to try out new leadership skills are too few.
- There is a high level of support for continued contractor involvement in providing leadership training. While 14% of questioned personnel would like to see the program brought in-house at some point, responses included conditional statements. Most made comment of the large commitment in money, time, and personnel required from the agencies for it to be a viable option. Of the study group, 5% of the respondents thought that the program should or could be brought in now.