Reflecting on the links between intentions and outcomes is a key practice of a learning organization (Garvin 2000). The After-Action Review (AAR) is a formal reflection process intended to assist groups in capturing lessons learned from a task. AARs typically ask four questions regarding fire-response operations: (1) what did we set out to do, (2) what actually happened, (3) why is there a difference between the first two, and (4) what should we continue/what should we change? Since the Wildland Fire Lessons Learned Center sponsored training workshops on AARs for the fire community in 2002, the practice seems to have been widely adopted. You can hear the term almost everywhere you go these days, from engine bays to incident command posts. But just how widely has the practice been implemented? Are all levels and all functions in the fire organization conducting AARs? How good are AARs as currently practiced at getting at root causes of discrepancies, and is the practice having a positive impact on performance?

We asked 668 randomly selected survey participants from across the country about their AAR practices, as part of a larger study of high reliability behaviors among permanent fire staff in the Forest Service, their AAR (after each shift, assignment, incident, or season).

We also asked respondents about their perception of their group’s performance. We are still in the process of analyzing the full dataset but want to share answers to the first of these questions: who is conducting AARs and at what point? AARs typically ask four questions regarding fire-response operations: what did we set out to do; what actually happened; why is there a difference between the first two; and what should we continue, and what should we change?

Data Classification

Because there were far more suppression events (373) than prescribed fires (59) or wildland fire use (54) events, we grouped the respondents’ roles first by basic organizational unit: agency (e.g., agency representative, line officer, fire management officer, duty officer, resource advisor); dispatch (including dispatch function and Geographic Area Coordination Center level); or team (for anyone assigned to the incident).

Because there were significantly more team (538) than dispatch (73) or agency (57) respondents (fig. 1a), we broke team respondents down into their functional roles: aviation (helicopter managers, helitack, etc.); Incident Command (type 5–1, area command); and others according to their Incident Command...
Finally, because operations numbers outnumbered the responses from other ICS functions by an order of magnitude, we broke out the operations function into general resource type or level: division supervisor, firefighter 1, firefighter 2, interagency hotshot crew, operations section chief, task force/strike team leader, crew, engine, and a category that includes specialized roles (e.g., sawyers, bulldozer operators, firing bosses, and fire use module members) (fig. 1c).

While these queries and subsequent analysis cannot tell us about the quality of the AARs, they do indicate some significant differences in current practices. Subsequent analysis will help us associate learning practices with perceptions of performance.

Results

According to this study, staff on prescribed fire, fire suppression, and wildland fire use events use AARs in similar proportions: about 74 percent of the time. There are, however, significant differences in AARs use by basic organizational unit, class of fire, team function, and operational role (table 1, fig. 2). Frequency of AARs conducted by groups involved in initial attack (64 percent) is significantly different than on those on project-complex fires.

Only 37 percent of respondents in dispatch units reported their group held an AAR, whereas 86 percent of team-based respondents said their group had done so. Perhaps surprisingly, respondents working in aviation reported that their group conducted AARs less frequently than all but those in an information function. At an overall 79-percent rate, those in safety reported the group they associated with lagged significantly behind those in operations functions (85 percent). Among the operations functions, division supervisors reported their group held AARs less frequently than any other category (although not statistically so), while all of those participating in a crew reported conducting AARs.

Most of these AARs are conducted after each shift and/or after the incident—at least for prescribed fire and suppression operations (fig. 3). Respondents who last worked on a wildland fire use incident reported that their AARs were generally conducted after an assignment. This timing may reflect the different tempo of action on different
Table 1. Statistical results for assessing differences in after-action review (AAR) practices on wildland fires.

<table>
<thead>
<tr>
<th>Categories Compared</th>
<th>Pearson Chi-Sq test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of fire (suppression, prescription, wildland fire use)</td>
<td>$\chi^2 (2, N = 653) = 2.71, p = .258$</td>
</tr>
<tr>
<td>Organizational unit for all classes</td>
<td>$\chi^2 (2, N = 668) = 63.08, p = .000^*$</td>
</tr>
<tr>
<td>Class of fire (initial assessment, extended assessment, home, or project/complex)</td>
<td>$\chi^2 (3, N = 499) = 11.15, p = .011$</td>
</tr>
<tr>
<td>Team function for suppression events</td>
<td>$\chi^2 (8, N = 541) = 27.57, p = .001$</td>
</tr>
<tr>
<td>Operational role on suppression events</td>
<td>$\chi^2 (8, N = 291) = 16.63, p = .034$</td>
</tr>
</tbody>
</table>

* Significant results (bold) are those with p-values less than 0.05. Models indicate whether or not there are significant differences among the categories, but not which ones are significantly different.

Figure 2—Percentage of respondents on different types of suppression events reporting that their group conducted an AAR, with total number of responses from each type at top of bar.

Figure 3—Percentage of AARs conducted by strategy and timing, with total number of responses summed for each time period.

More information on AARs, including background information and training materials, as well as fire-related AARs and details on how to share your own AAR, may be found at the Wildland Fire Lessons Learned Web site: <http://www.wildfirelessons.net/AAR.aspx>. More information on this project can be found at <http://leopold.wilderness.net/research/fprojects/F017.htm>.

Reference