Variations in high reliability practices in the federal fire community: Relative contributions of agency affiliation, years of experience, and position hierarchy and function

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Abstract:
While several studies have examined the relevance of the HRO paradigm for fire management, no known empirical studies exist. In late 2007, in collaboration with researchers at the University of Michigan, we embarked on an exploration of the nature and extent of HRO practices in the US fire community. One of the primary questions was: *How do HRO practices vary across the federal fire community?* We sought to understand how commonly the theorized principles of HRO were practiced, and the degree to which these were associated with other aspects of organizational culture and crew social dynamics. To address this, we conducted a 15 minute survey of permanent seasonal and permanent full-time employees filling primary fire positions (including fire, fuels, dispatch and fire aviation) in the three largest US federal fire agencies: USDA Forest Service (USFS), and US DOI Bureau of Land Management (BLM) and National Park Service (NPS). The 668 participants were randomly selected using organizational stratification. Major organizational units (such National Park, National Forest) were randomly selected, then sub-units (such as a Ranger District) randomly selected within these. Individuals were assigned to one of three strata – upper-level, mid-level, ground-level based on their formal day-job position title. We asked each participant to provide information about his or her years of experience in wildland fire, and his or her hierarchical and functional role on a recent fire incident. Final hierarchical and functional classification of respondents for analysis was based on survey responses.

We found that placing the classic HRO principles (*deference to expertise, commitment to resilience, reluctance to simplify, preoccupation with failure, sensitivity to operations* – see Weick and Sutcliffe 2001) in relation to other aspects of culture and social dynamics confirmed the existence of a distinct set of high reliability behaviors while clarifying the specific role these practices play in organizational interactions (see Black and McBride, this issue).

In this presentation, we discuss how the emergent set of practices (HRO practices, Leadership, Group Culture, Learning Orientation, Mission Clarity) varied with respect to the demographic differences among respondents. Interestingly, results indicated that respondents in the NPS (n=212) scored significantly lower than respondents in the USFS (n=231) and BLM (n=131) with respect to nearly all identified practices. Further analysis indicated that this consistent trend was driven, in large part, by respondents' different hierarchical and functional positions on the given incident as well as their years of experience in fire suppression.

Results suggest that future efforts to improve high reliability and high performance practices

in wildfire management should pay particular attention to the potential influence of participants' hierarchical and functional roles, as well as their levels of wildland fire experience. The potential influence of participants' agency affiliation should also be considered.

Weick KE, Sutcliffe KM (2001) 'Managing the unexpected: assuring high performance in an age of complexity.' University of Michigan Pressing Problem Series. (Jossey-Bass: San Francisco)