

## **Five Years of SAFENET**

John E. Gould

### **Abstract**

The safety and health reporting system SAFENET has been in existence for five years. Close call reporting systems enjoy widespread use in high risk organizations throughout the world, and are studied closely in the academic community. SAFENET has now collected Wildland fire safety data for five years, which is published on a yearly basis in the SAFENET year end reports. Data referenced includes information such as number of reports received, reports by agency, and contributing factors identified in the reports. In the past five years SAFENET has enjoyed some notable successes, however there remain problems, and perceived problems, that continue to trouble the systems prospects for continued long term success.

### **Introduction**

Recommendations for a safety reporting system for Wildland fire have been made at various times in the last twenty years, but were formalized with the Wildland Firefighter Safety Awareness Study. In fact the creation of a Safety Incident Reporting system was recognized in the report as a high priority for Wildland Fire. The executive summary of Phase III of the Tri-Data report states that “it is almost inconceivable that a comprehensive data collection system is not yet available for accident, injury, or near-miss events across the agencies (Tri-Data 1998).

For a year that recommendation languished until the BLM made the creation of a reporting system one of the performance measures for their Fire Safety Manager at NIFC. At that time Sandy Guches began the process of creating SAFENET.

The need for a safety reporting system has long been recognized as an important tool in high risk organizations. In his book Managing the Risks of Organizational Accidents, James Reason states that “in the absence of bad outcomes, the best way-perhaps the only way- to sustain a state of intelligent and respectful wariness is to gather the right kinds of data. This means creating a safety information system that collects, analyses and disseminates information from incidents and near-misses” (Reason 1997). Reason also talks about reporting and learning as indispensable components of a safety culture. These ideas are reiterated by Karl Weick and Kathleen Sutcliffe in their book Managing the Unexpected, Assuring High Performance in an Age of Complexity. They discuss how these different parts of a safety culture, most importantly for us the reporting culture, contribute to the “mindfulness” essential in High Reliability Organizations (Weick and Sutcliffe 2001).

### **Discussion**

In its fifth year of existence SAFENET received more submissions than any previous year with 139 SAFENETs filed between October 1, 2003 and September 30, 2004. The totals for the four previous seasons were 99 in FY 2003, 110 in FY 2002, 93 in FY 2001, and 68 in FY 2000. Annual year end reports identify key elements of the SAFENETs filed, allowing managers to determine patterns, trends, and common denominators. These elements include type of incident,

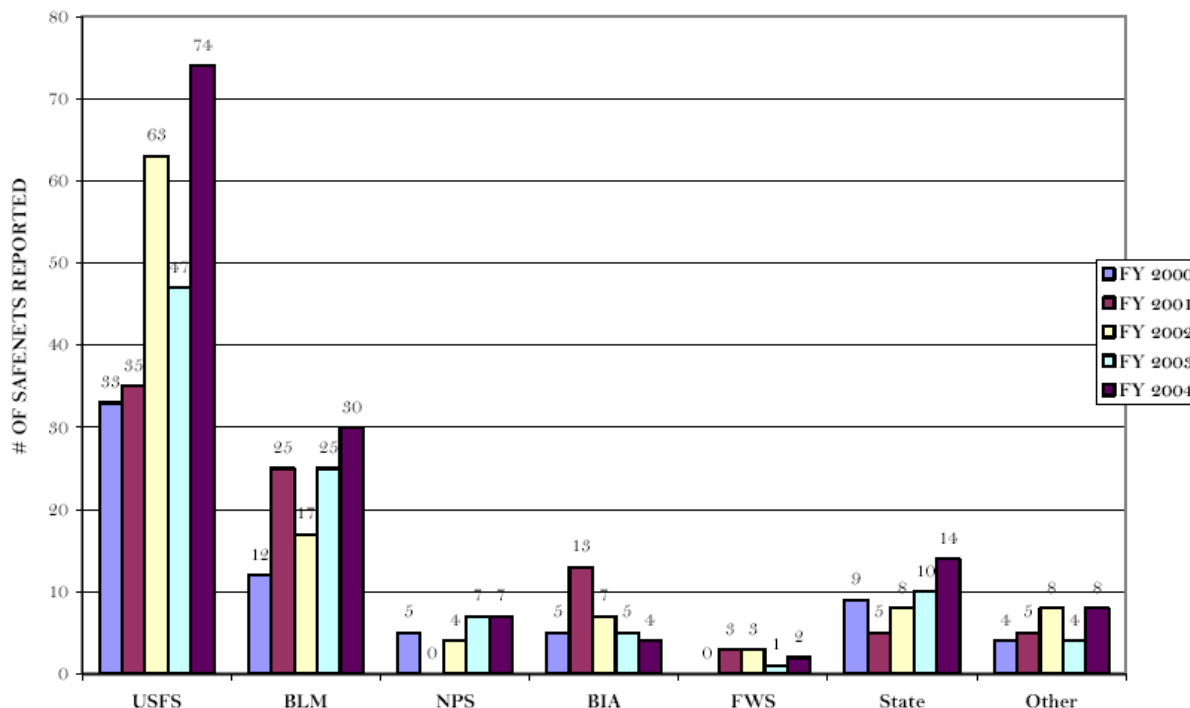
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type of activity, contributing factors, human factors, agencies with jurisdictional responsibility, and the representative agency of the SAFENET author.

The following graph compares the jurisdictional agency responsible for the incident in which a SAFENET has been filed. This graph is cumulative, showing totals for every season.

JURISDICTIONAL AGENCY YEARLY COMPARISON



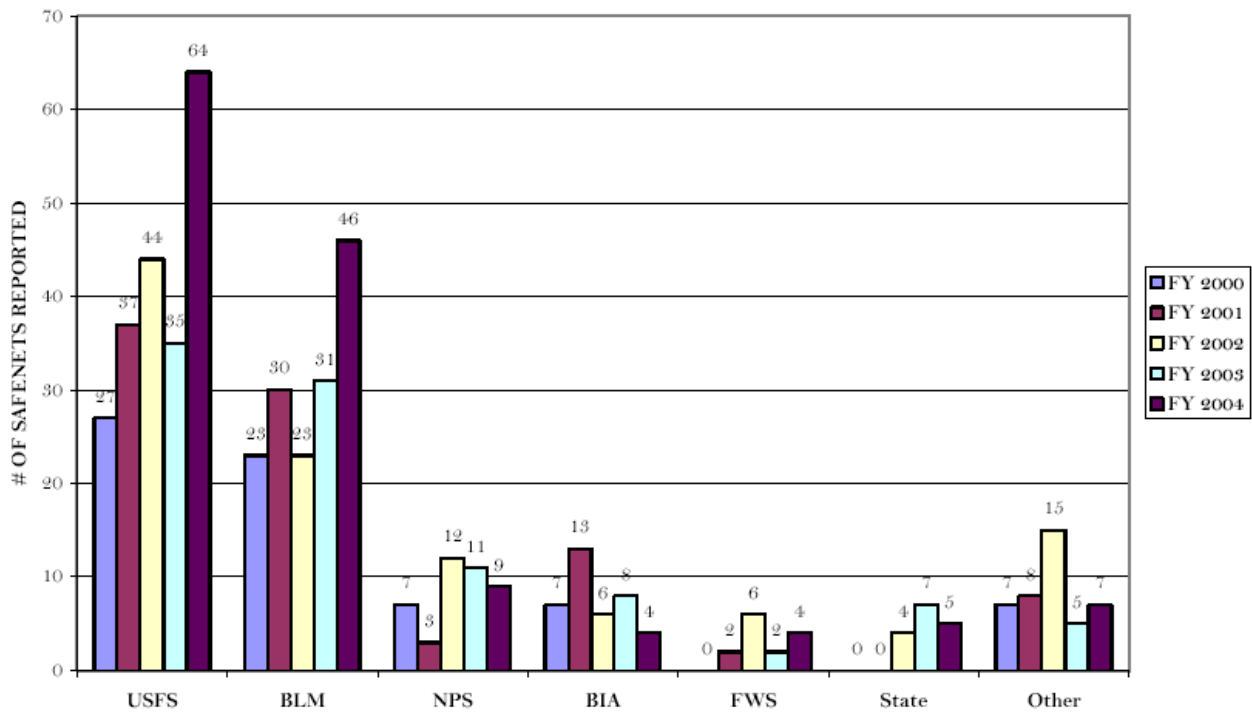
As might be expected, the US Forest Service reported the highest number of SAFENETs in fires under their jurisdiction, followed by the BLM, NPS, BIA and FWS. The same reporting trends hold true for the States and other jurisdictions.

In comparison, the next graph illustrates the reporting agency of the individual who filed the submission to SAFENET. This graph is also cumulative, showing the totals for every SAFENET season.

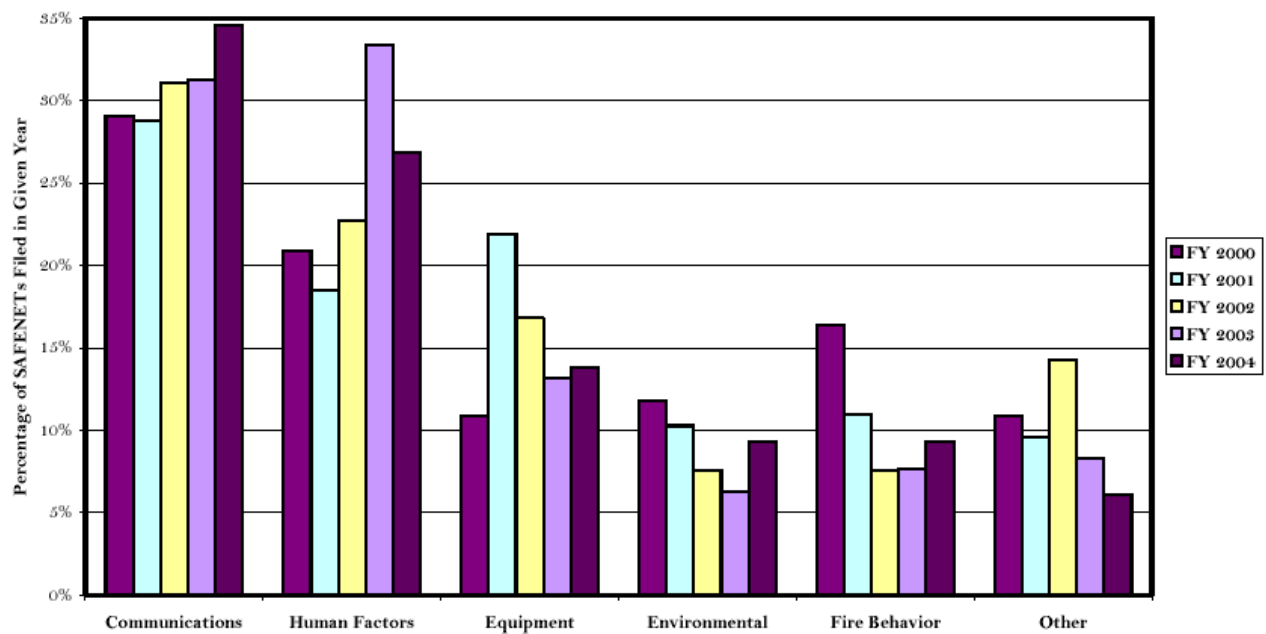
Again, as would be expected from the largest pool of firefighters, the USFS filed the highest number of SAFENETs, followed by the BLM, NPS, BIA and FWS. Jurisdictions represented by the category of “Other” include city and county fire departments, as well as retired federal agency personnel.

For any safety concern filed in the SAFENET system, there are six elements from which to choose in the category of contributing factor. These include communications, human factors, environment, fire behavior, equipment, and other. Many SAFENET submissions include multiple contributing factors. The following is a pie chart illustrating the contributing factors involved in the FY 2004 SAFENET submissions.

REPORTING AGENCY YEARLY COMPARISON



Contributing Factors Comparison



In order to provide a clearer picture about the issues within the “contributing factors” category breakdowns, the following issues were taken directly from individual safenets.

### **Communications – 35%**

For the fourth time in five years, communications is the leading contributing factor in all SAFENET submissions. This can include a multitude of elements, such as equipment issues and personal communications. Communications Equipment:

- The majority of equipment issues arose from the switch to narrowband radios, including systems that are not compatible, radios that do not function properly, and lack of knowledge and training on how to properly use the new radios.
- Several complaints were received, mostly from dispatch centers, regarding antiquated repeater systems that do not function properly.

Personal Communications:

- Several submissions dealt with a difference of opinion on the strategy and tactics employed to manage the fire.
- Poor or nonexistent briefings to fire personnel.
- Loss of information during communication relays.
- Hearing loss affecting communication capabilities.
- Miscommunications and differing perceptions.
- Poor information dissemination regarding new policy implementations and training materials.

It is interesting to note that more than a third (37%) of all SAFENETs filed referred in some way to problems encountered with handheld radios. Thirteen submissions dealt with EF Johnson radios, five with RACALs, nine with narrowbanding in general, 13 with repeaters, and 11 with dispatch systems. It should be noted that the preponderance of complaints came with regard to two types of handheld radios in most part because they were the only two new generation radios in field use.

### **Human Factors – 27%**

Human factors were credited as a causal factor in over a quarter of all SAFENETs filed. This category is broken down into several elements including decision-making, leadership, situational awareness, risk assessment, performance, and fatigue. Listed below are a few examples cited in SAFENET for each of these elements with the corresponding number of times the element was cited. One thing to note is that many of the elements are interchangeable and authors interpret these elements differently in their citation of causes.

#### **Decision Making – 59%**

- Failure to adjust strategies in changing conditions.
- Placing unqualified people in leadership positions.
- Not reporting accidents.
- Choosing to travel all night rather than RON.
- Not recognizing when overloaded with responsibilities.

#### **Leadership – 54%**

- Lack of a command structure.
- Coercion of crews to deploy in unsafe situations.
- Not providing a briefing.
- Not advising of safety zones and escape routes.
- Pressure by management to complete Rx burns to meet target accomplishments.

**Situational Awareness – 48 %**

- Failure to recognize the need for additional resources.
- Making cell phone calls while driving.
- Not wearing gloves while pouring fuel onto burn piles, resulting in 2<sup>nd</sup> degree burns.
- Not recognizing downed power lines in the area.
- Dozer operator not scouting line to be plowed in order to be aware of rocks and ledges that could cause hazardous situations.

**Risk Assessment – 40 %**

- Lacking or having a poor quality of a safety zone.
- Leaving resources in unsafe area.
- Using fuel for burning piles mixed by unknown persons with unknown ingredients.

**Performance – 32 %**

- Uneducated and untrained personnel.
- Personnel not following policies or guidelines. Ignoring LCES and 10 & 18.
- Allowing unqualified instructors to teach fire courses.
- Local personnel showing up on the fireline when not assigned to the incident.
- Poor inspections of vehicles prior to assigning to the incident.

**Fatigue – 17 %**

- Bus drivers transporting crews showing visible signs of fatigue.
- Holding boss sleeping in vehicle while on an Rx burn.
- Not following 2:1 Work/Rest guidelines for resources checking into an incident.

**Equipment – 14%**

Issues with a piece of equipment or equipment failures continue to prompt the submission of a SAFENET. This category often includes SAFENETs that are used as a warning to other firefighters regarding faulty equipment, rather than a gripe about the equipment in general. A few examples of equipment issues that firefighters in the field noticed are:

- Torn seams and handles in fire shelters.
- Cracked utility box mounts on crew pickups.
- Mark 3 pump not properly marked with warning labels.
- Recall on International engines.
- Battery cables melting.
- Malfunctioning flare gun.
- Radio failures and inoperable repeaters.
- Brake safety cable detached on trailer delivering to camp.
- Trailer operating without lights.
- Spare tire bracket failure.

**Fire Behavior – 9%**

- Unmonitored extreme fire behavior and wind events.
- Ill prepared or not responding to changing fire conditions.

**Environmental – 9%**

- Snags causing other trees to fall.
- Sanitation issues at fire camp.

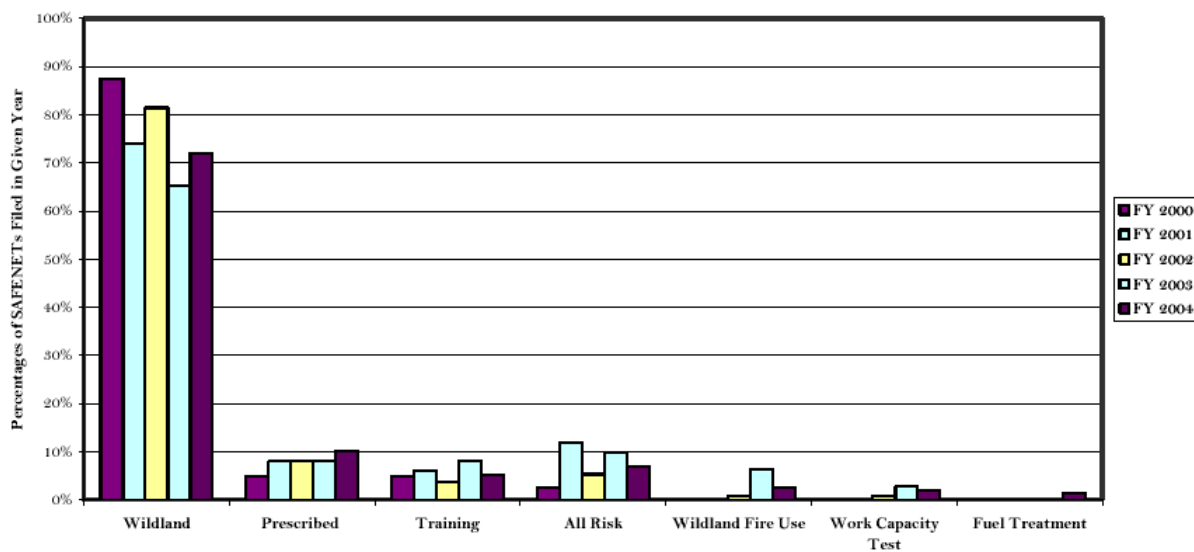
- Heavy rains, swollen rivers, treacherous footing and low temperatures on a hike-out by a rappel crew.

**Other – 6%**

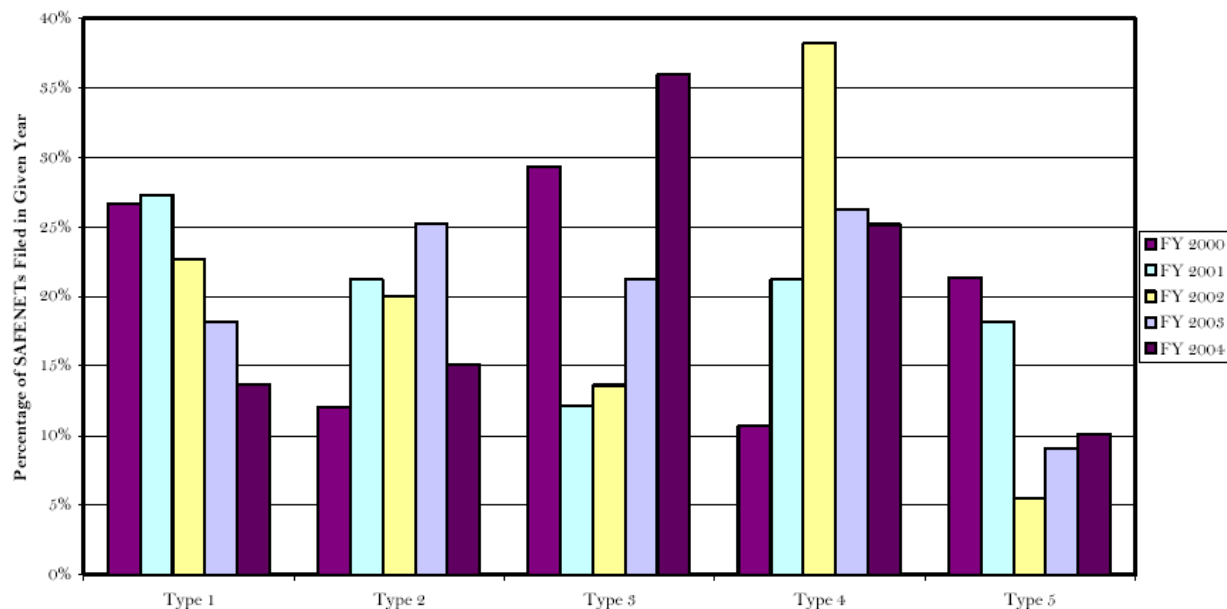
- Using unknown fuel mixture when lighting burn piles.
- Concern that the Work Capacity Test is not an appropriate test of firefighter fitness for duty.

Some additional trends to consider are comparison graphs based on the type of incident and management level on which SAFENETs are filed. The following graphs are illustrative of the past five years.

Incident Type Comparison



Management Level Comparison



Determining what constitutes success with the SAFENET program has required some rethinking over the last five years. It is intuitive to want to focus in on the number of safenets received as the sole measure of accomplishment. While the number has been increasing every year, no one would argue that we should have more than 140 submissions annually when we regularly have up to 20,000 people in the field on any given day. That being said, there are a couple ways in which SAFENET is undeniably successful.

The first is the ability of the system to pick up on emerging problems. If two or three SAFENETS are received regarding the same topic, then we can be reasonably assured that many people are experiencing the same problem. If we get six it is a big problem, and if we get ten it is a crisis. The second form of success is how our fire directors and managers use the system to ground truth new or existing policy.

The problems SAFENET is encountering are easier find. Of course the first is that SAFENET is undeniably having a problem taking root within the Wildland culture. The reasons for this are manifest, but in general I think GS-6 firefighters cannot see how they can possibly benefit from the system, so they feel no sense of responsibility for reporting safety problems. A second problem is a reluctance among mid-level managers to embrace the system and push those values down to their employees. Some managers tend to see SAFENET as a threat from outside their organization that creates unwanted and unsubstantiated problems.

### **Conclusions**

After five years SAFENET has proven its value many times over. At the most fundamental level it is performing the functions that Weick and Sutcliffe value in High Reliability organizations by allowing us to become aware of and anticipate unexpected situations. It is gradually becoming part of our cultures “preoccupation with failure” and commitment to learn from our mistakes.

### **References**

- Reason, J.T. ; Managing the Risks of Organizational Accidents. pp196-196  
Weick, K.E;Sutcliffe, K.M. Managing the Unexpected, Assuring High Performance in an Age of Complexity. pp129-130  
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## **The Author**

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1980: Degree in Business Management from Gonzaga University

1976– 1980: Roadside and Helitack for the Bureau of Land Management

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