"Action first, mistakes second, lessons third."

Robert Kiyosaki
“Statistics are no substitution for judgement.”

Henry Clay
American lawyer, statesman, and skilled orator

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Use the content in this document to guide your annual Fire Refresher.

Instructors
The exercises require some preparation – pulling up videos and some printing. Be Prepared.
We think the numbers, topics, exercises and questions included in this document can help you translate the lessons from last season into learning for future operations.

1. Introduction

The information in this report comes from wildland fire incidents—from various agencies—submitted to and gathered by the Wildland Fire Lessons Learned Center (LLC) in 2016. The primary source of data is accident reports (FLA, RLS, SAI, etc.). Most of these reports have been posted to the LCC’s Incident Reviews Database. SAFENETs and other data sources have been included when no actual report could be located. The total data set included 108 incidents.

What Should You Do with this Report?
Our intent is for this report to inform general training and dialogue—very specifically, annual refresher training.

What is the intent of your refresher? Is it to “wipe the cobwebs off.” Just a brush-up on how to start the pump and advance the hose lay? Is it a venue to update everyone on new policy? Is it intended to reduce accidents and injuries? Obviously, you have to answer these questions for yourself.

Whatever you decide, we think the numbers, topics, exercises and questions included in this document can help you translate the lessons from last season into learning for future operations.

Throughout this report, this Action Icon identifies training curriculum related to the topic. If you are an instructor, you will need to look at each exercise ahead of time to pull up videos or to print reading material.

Use these exercises for training days.

2. Dead On

FATALITIES

Last year we predicted that between 8 and 35 firefighters would die in 2016.

The number was 15.

We also predicted this: “It will likely include some heart attacks, some vehicle accidents, getting hit by trees, and an entrapment or two. That’s just what the numbers say.”

2016 Fatalities
Vehicle Accidents: 7
Medical Emergency: 4
Hit by Tree: 2
Hit by Rock: 1
Fall: 1

So What?
3. What We Do and What Happens

Activity

This chart depicts what people were doing when something happened that triggered a report. It tends to involve activities we spend a lot of time doing. What makes an activity "dangerous"?

Exercise (30 minutes)

Write down your answers to these questions: (5 mins)

- Based on how I spend my time supporting fires, if I were to die on assignment it would most likely be from ____________________________.
- Five things I have no control over that could take my life on a fire assignment include: ______
- Five things I do have control over that could take my life on a fire assignment include: ______
- If one of my coworkers dies on a fire assignment, my top three concerns will be: __________

Discuss this exercise in your groups and with your instructors. (25 minutes)

Exercise (30 minutes)

Listen to this podcast: Chainsaws and Fire Season 2016 (20 mins)

In small groups discuss the following questions: (10 mins)

Is operating a chainsaw more dangerous than it has been in the past? Explain.

Why are Driving and Saw Ops the top two activities that result in incident reports?
Exercise (40 minutes)

Look closely at both graphs. Identify all the things we get “Hit by.”

- In small groups, trade stories about getting “hit by” or “nearly getting hit by” stuff. (20 mins)

- In the large group, report out on how many stories emerged in your group. (10 mins)

- Based on the numbers and the stories, identify one lesson related to:
  - Avoiding getting hit.
  - Planning for someone getting hit. (10 mins)

Outcome

What was the outcome? This graph tends to consist of outcomes that normally get reported. What are some outcomes we don’t normally write reports on?

### 2016 Incidents by Outcome - "Split"

- Rollover
- Entrapment
- Equipment Damage
- Hit by Tree
- Vehicle Accident
- Rhabdo
- Burn Injury
- Chain Saw Cut
- Heat Injury
- Medical Emergency
- Other
- Close Call
- Hit by Vehicle
- Hit by Rock
- Hit by Water Drop

### 2016 Incident by Outcome - "Lumped"

- Vehicle Accident
- Equipment Damage
- Hit by Stuff
- Exertion
- Entrapment
- Fuel Geyser
- Laceration/Puncture
- Other

Lumper or Splitter?

How do you like your data?

Both graphs use the same incidents organized different ways.

Does how it’s portrayed matter?

How will you decide what to pay attention to?
4. “We Got Cut Off” (Entrapment?)

**Common occurrence or rare event?**
Nobody died by fire entrapment this season. Multiple firefighters survived entrapments. Others got “cut off” or “took a little heat”. Here are a few highlights:

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**Exercise (50 minutes)**

**Part 1: (25 mins)**
Write down how you finish this statement:
Entrapments are _______________________.

Watch this video: Holloway Fire (12 mins)

Instructor: Pick three individuals to read aloud their answers to “Entrapments are ________.”

After watching the video, would anyone change their statement?

Discuss as a class what Chrissy’s story means.

**Part 2: (25 mins)**
Read this short blog post: Entrapments Are...

(5 mins)

In groups, discuss these questions: (20 mins)
- Share your “Close Call” stories – are any entrapments?
- Can LCES fail?
- Is there a social stigma with entrapment? Explain.

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**When Fire Shelters Work**
Mop up. Fire whirl. Escape route cut off. Squad leader directs everyone to previously burned area and orders shelter deployment. Cedar Fire Entrapment

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**Structure Protection**
“Two Type 3 Engines were overrun by the fast-moving fire at a residence—where two civilians had remained on the property. Firefighters had asked the residents to leave multiple times but they refused.” Blue Cut IA Structure Protection

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**Heavy Equipment**
The DZIA trainee was following a two track road up the draw to the saddle for quicker progress, and for easier access for engines to mop up. When the wind direction changed, the DZIA trainee did not have enough time to retreat into the black before the flame front reached him. Sand Ledges Dozer

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5. Repeats

If a type of accident happens again and again, what does it mean? It’s easy to blame our workforce for “not learning the lesson”—but how well is that working? Maybe the combination of certain conditions and operations will produce the same result time and time again. So what is it that we can change?

**Fuel Geyser**
Fuel becomes superheated and pressurized. Opening a partially filled pressurized container can result in a geyser. It keeps surprising us.
- Expect a geyser.
- Cover the cap.

**Drip Torch Leg Burn**
By design, the hot end of a torch is near your leg. Liquid leaks and drips. Rough terrain and brush will trip you up and “grab” stuff. You are flinging a can of gas around flames. Can we expect a burn or two?

**Exercise (40 minutes)**
- Each group pick one of the following topics above (Leg Burns, Fuel Geyser, Equipment Rollover).
- Discuss all the CONDITIONS around these events (slope, pressurized tank, flame near legs, etc.).
- Is this type of incident just part of the “price of doing business”? Individually, decide on Yes or No. (20 mins)
- Group-up by topic discussed (all Fuel Geyser discussers in one spot).
- Divide each group by the answer to the “price of business” question – Yes on one side, No on the other.
- Each Yes and No group identify three points supporting their position. (10 mins)
- Report out to larger group. (5 mins)
6. The Lessons
This season we gathered information on well over 100 incidents. Most of these incidents have a report. In those reports are lessons related to the incident. This section provides some of those lessons. Remember, these are only lessons—they are not learned until you put them to use!

**How hard should Day One PT be?**
Acknowledging that stress and anxiety affect physiology, there was discussion around the mental and physical intensity of Day One. Other programs have also experienced Rhabdo cases early on in the critical training period. One such program shifted their “hard day” from Day One to later in the week and the occurrence of Rhabdo has sharply declined.

Day One PT Rhabdo

**Fuel can ignite away from flames**
“Even if you get away from the fire, the fuel from a geyser may still ignite. Performing other saw maintenance before fueling, such as cleaning the air filter or sharpening the chain, is one way to allow more time for the saw to cool.”

Pioneer Fire Fuel Geyser Burn Injury

**Hung tree = Different complexity**
“An average free-standing “B” caliber tree begins as a standard felling operation. But in the process of felling, this tree becomes hung/suspended with compound binds, at high-angle, with undetected limb lock. It is now clearly an advanced C “bucking” operation that has a plethora of unknowns.

Gap Fire Tree Strike

**Carry an “Israeli Bandage”**
“In crew discussion after the incident, it was noted that the effectiveness of the Israeli Bandage, utilized in this situation from the sawyer’s pack, should be shared by all members of the crew—not just primarily limited to sawyers.”
The Israeli Bandage is a specially designed first aid device that is used to stop bleeding from hemorrhagic wounds caused by traumatic injuries in pre-hospital emergency situations.

Broadway Fire Chainsaw Cut

**Policy in your pocket**
Having an electronic copy of policy manuals on a mobile device proved to be invaluable in determining the correct response. Since the accident, the other Burn Bosses on the District as well as the qualified EMT have added relevant policy manuals to their mobile devices.

Rock Creek RX Burn Injury

Deer Creek Fire Engine Damage
**Exercise (30 minutes)**

Look through all of the lessons on pages 8 and 9.

**Individually: (10 mins)**

- Identify and prioritize the *three* that are most important to you.
- Write down two steps you can take to implement/practice your chosen lessons.

**Self-Organize: (20 mins)**

- Move around the room and find everyone who shares your top priority lesson.
- Discuss why you chose the lesson and share your implementation steps.
- Find someone with a different priority – share information on your plan.

These reports emphasize the need to speak up if you’re not feeling well. Our culture tends to value “suck it up” over “speak up.” If you are new to the crew it’s even more complex. What is the right balance?

Is the Pack Test an adequate measure of the job you do? How do we know if our PT program is enough—or not enough? Who is responsible?

Know Rhabdo

People die from Rhabdo. It’s impossible to field diagnose. If you suspect Rhabdo—it’s urgent. Firefighters are at an elevated risk. Some health care professionals may not be aware of this.

- Study up.
- Talk about it.
- Identify a Patient Advocate.

Intentional Design

What is the purpose of the Crew PT program? Is it preparation? Is it a test? Is it a crew cohesion tool?

Whatever it is, be very intentional with the design. Get on the same page with your supervisors. Take every precaution for emergencies.

- Collect detailed emergency contact info first.
- Do basic emergency protocol training before PT.
- Have a detailed medical plan and test communication.

Exercise (30 minutes)

Read this short blog: Fire Culture (10 mins)

In small groups discuss the following questions: (10 mins)

- Is the description of fire culture accurate?
- In what ways is this culture beneficial?
- What are some of the downsides?

Rhabdo (10 Mins)

Individually write down 5 things you know about Rhabdomyolysis.

- Share lists in your group.
- Discuss the lists—what is the range of knowledge?
- Do some fact-checking and compile one comprehensive 5-bullet list for the group.

P.T. – Potential Trauma?

Every year we get a handful of reports on incidents during Physical Training – that’s normal. The surprising piece this year was the similarity of the events reported. We only had eight incidents in the PT category, but check this out:

- 6 Rhabdo
- 2 Heat stroke

6 of 8 PT Incidents (5 Rhabdo and 1 Heat Stroke) occurred during the first few days of the crew coming on.

These themes emerged: