

# Mack Lake Fire

## May 5, 1980

### Staff Ride

Human Factors Analysis  
Classification System  
(HFACS)

# Swiss Cheese Model



# RX Escape Trajectory Defenses Breached

**DANGER**

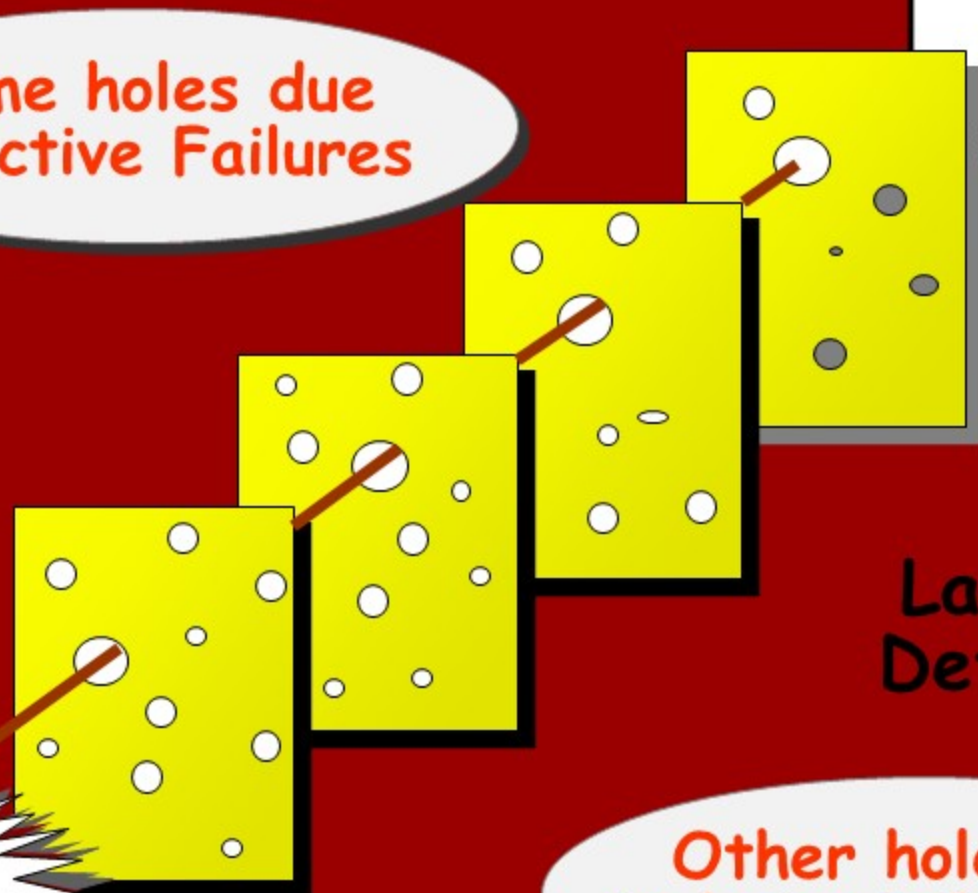
**Hazards**

Some holes due  
to Active Failures

Layered  
Defenses

**RX Escapes**

Other holes due  
to Latent Conditions



# Human Factors Analysis and Classification System (HFACS)

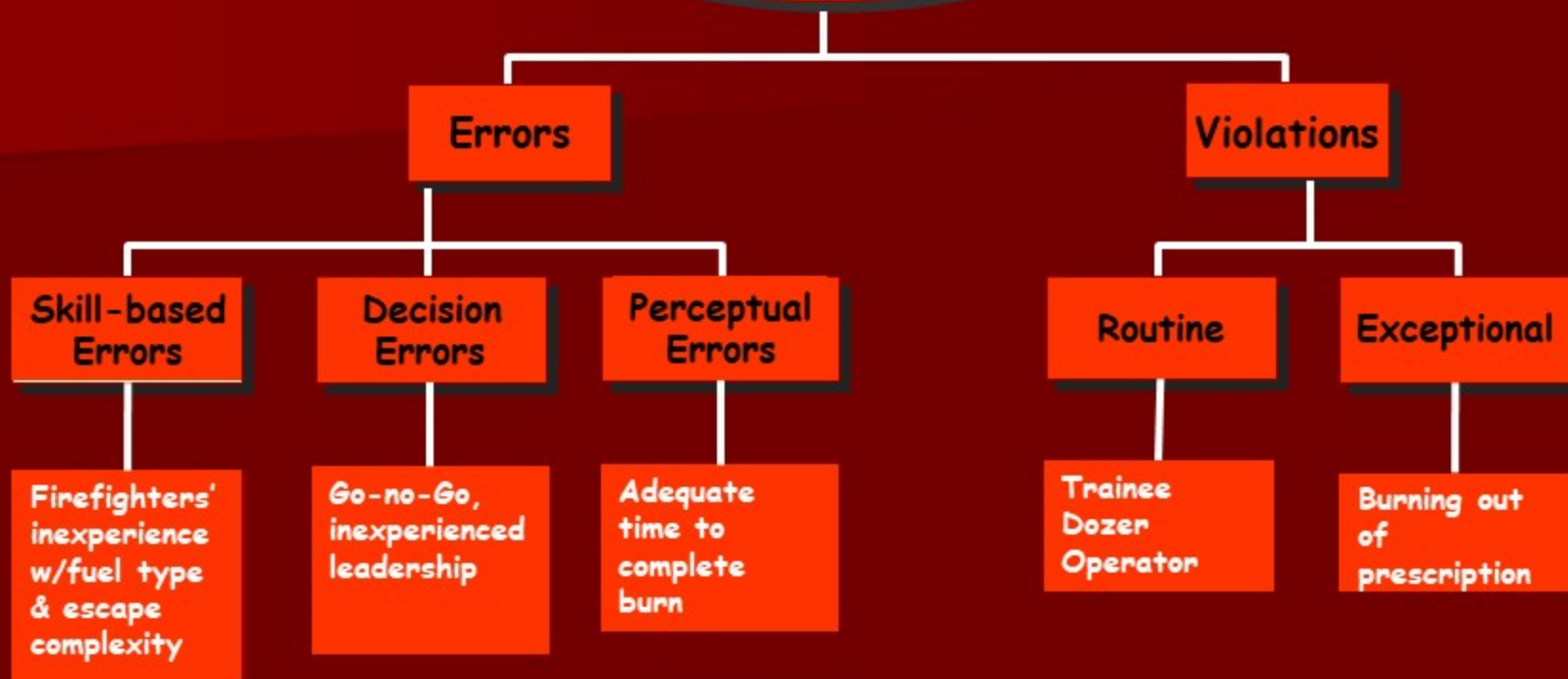
Organizational Factors

Unsafe Supervision

Pre-Conditions for Unsafe Acts

Unsafe Acts

# POTENTIAL UNSAFE ACTS

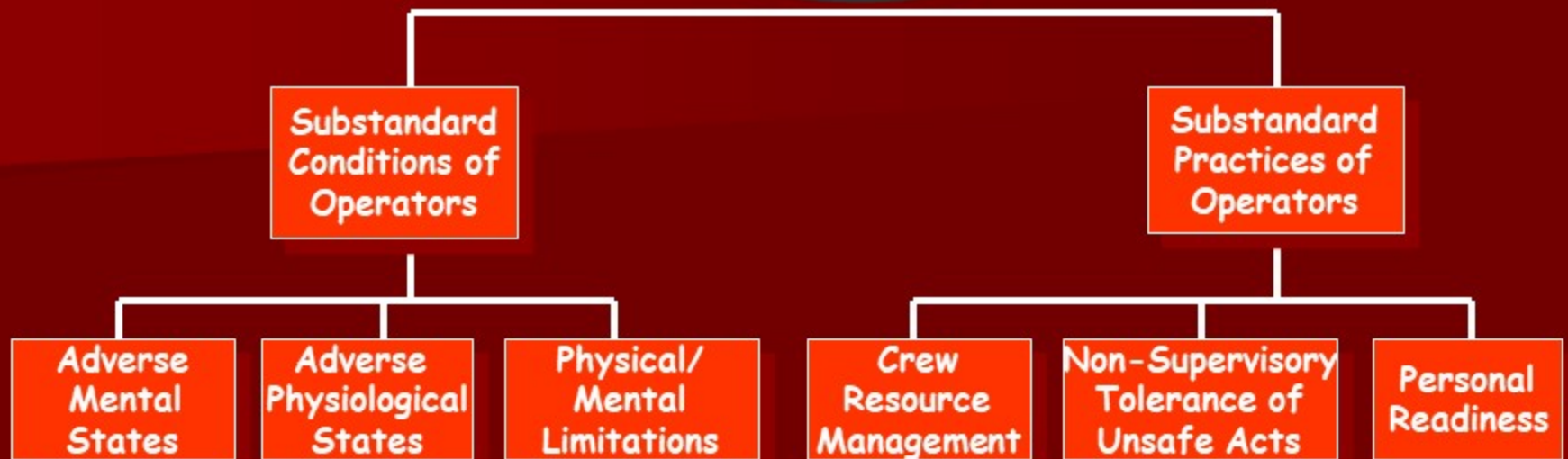


Unsafe Acts





# PRECONDITIONS FOR UNSAFE ACTS



Where do these fit?

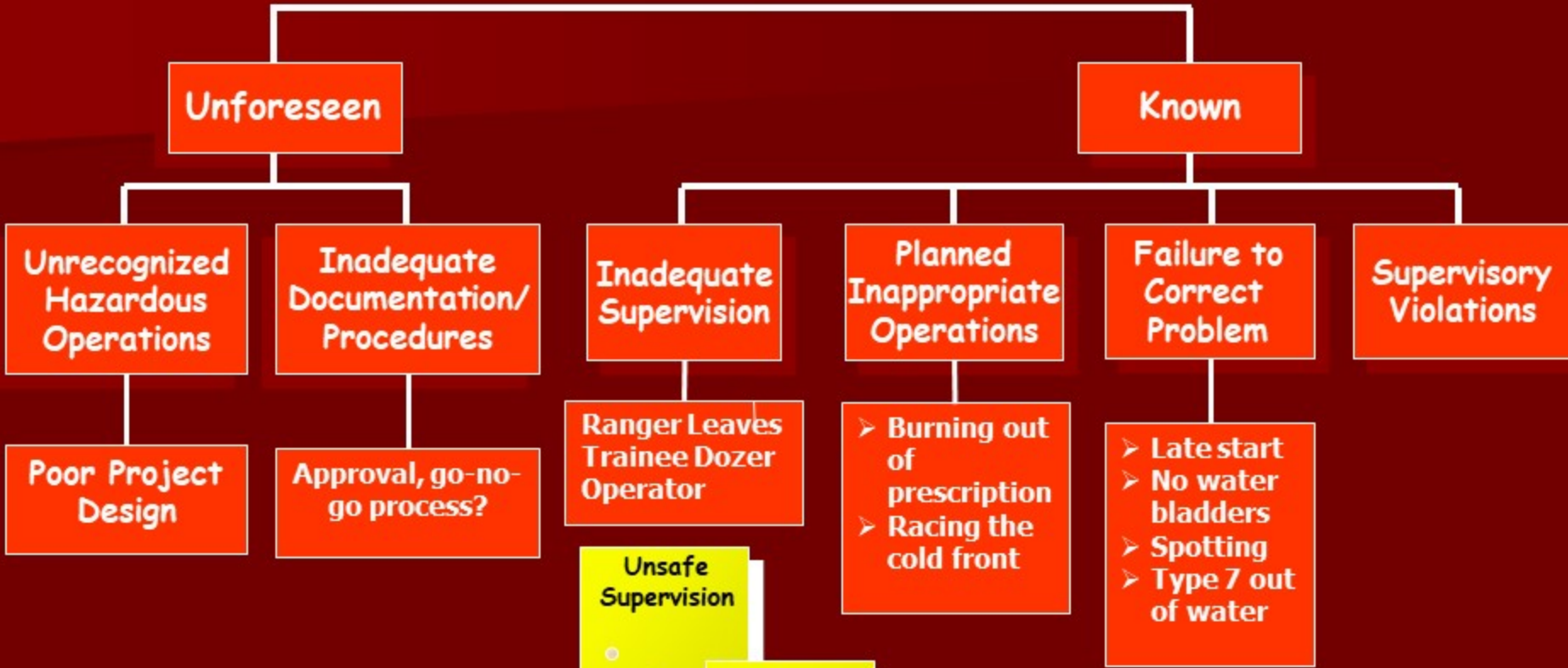
- Dozer operator accepts mission
- Desire to implement project
- Type 7 engine overloaded
- Other observations?
- Impact of the "Boss" being on the burn

Preconditions for Unsafe Acts

Unsafe Acts



# UNSAFE SUPERVISION



Unsafe Supervision

Preconditions for Unsafe Acts

Unsafe Acts



# ORGANIZATIONAL INFLUENCES

## Resource Management

- FPO Training competing with RX burn
- Purchase of inadequate Type 7 Chassis

## Organizational Climate

Pressure to produce KW habitat

## Operational Process

Burn plan development

RX prescription

Organizational Influences

Unsafe Supervision

Preconditions for Unsafe Acts

Unsafe Acts





# Human Factors Analysis Provides More than just an Accident Investigation Tool



# Mack Lake RX Escape

Any of these familiar  
To your burns?

**DANGER**

**Hazards**

Out of prescription  
Pressure to complete  
Front is approaching  
East fireline is weak  
Prescribed wind pushes weak  
east line  
Burning in "Spring Dip"

Late start, ignition 1026  
Numerous spots right away  
Frontal winds arrive, lower RH

Smoke affecting HWY 33  
Type 7 engine gets stuck  
Type 7 stalls & out of water

1215 Fire spots  
across HWY 33

RX escapes 1230, 1 fatality,  
44 structures lost

**RX Escapes**

**Defenses  
in Depth**

How to prevent this?