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Unit 31: Catastrophic Incident Response
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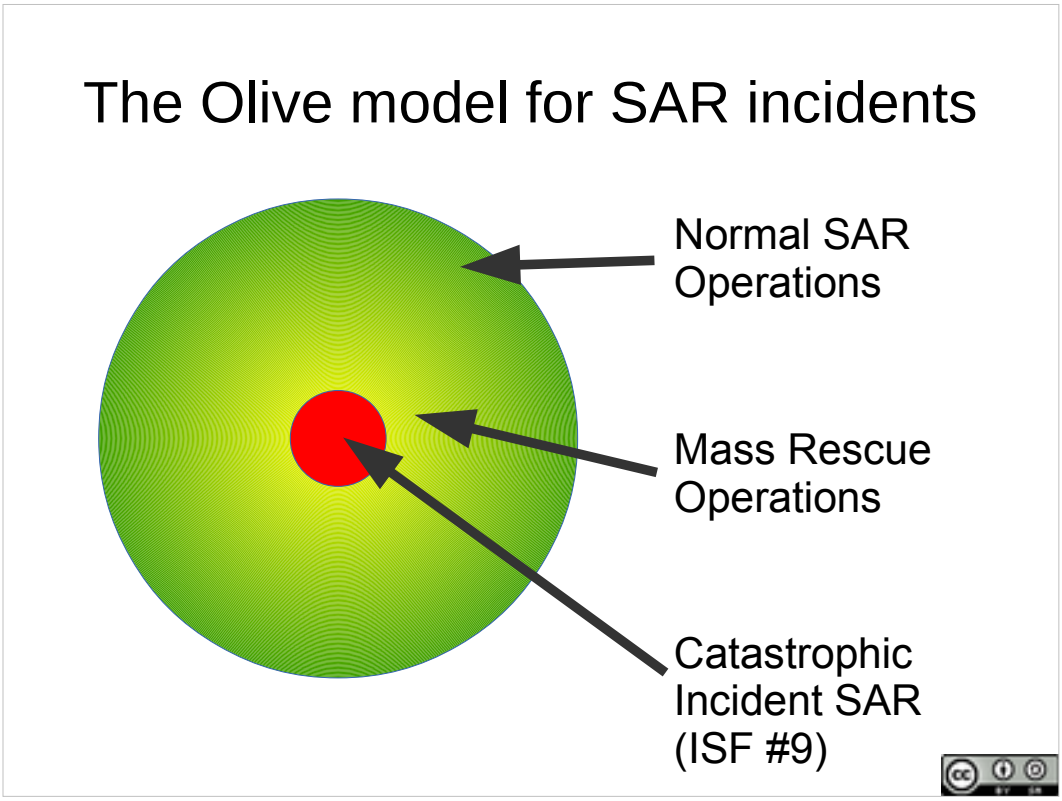


Search and Rescue field team members normally operate in the realm of normal SAR incidents (in the NSARC olive model) in wilderness, rural, suburban, and urban environments with intact infrastructure.

Mass Rescue operations and catastrophic incident SAR expected to involve Triage: More patients than medical resources, decision making about resource allocation.

In a catastrophic incident, search and rescue field team members may be brought in as local resources before USAR resources can be moblized.

This isn't comprehensive training for disaster response, but awareness of how search operations in a catastrophic incident differ from normal SAR operations.

Wide Area Search

- Large area affected
- Unknown number of victims
- Local resources overwhelmed
- Response requires a variety of resources

Catastrophic Incident Search and Rescue Addendum to the US National Supplement to IAMSAR

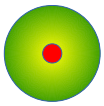
One component of the response to a catastrophic incident is Wide Area Search.

Wilderness SAR responders might be called upon as resources in a catastrophic incident response.

Other aspects of a catastrophic incident may include, among many others, technical rescue, mass care, mass casualty response, and security.

Wide Area Search applies when: A large area is affected by an incident, the number of victims are unknown, local resources are overwhelmed, and a variety of kinds of resources are needed for the response.

Contrast between Normal SAR operations and Wide Area Search



Missing Person / Wilderness SAR	Wide Area Search / Catastrophic Incident
• Large area**, but not affected**	• Large area **affected**
• **Known small number of subjects**	• **Unknown** number of victims
• Local resources **may be insufficient**	• Local resources **overwhelmed**
• Response requires variety of resources	• Response requires variety of resources

Normal SAR operations differ from Wide Area Search.

In normal SAR operations, large areas can be involved, but they aren't affected, and normal infrastructure remains intact.

In normal SAR operations, there is usually one subject or a known small number of subjects.

In a Catastrophic Incident where Wide Area Search applies, local resources are overwhelmed, in a normal SAR response, local resources may be able to quickly resolve the incident, or additional resources may need to be brought in.

In both cases, a variety of resources are needed.

Hazards

- Downed Powerlines
- Flooding
- Raw sewage
- Collapsed Structures
- Damaged Structures
- Roads blocked by debris
- Downed Trees
- Weather
- Loose Animals
- Criminal Activity
- Hazardous Materials
- Civil Unrest
- Damaged Trees overhead
- People

All sorts of hazards to consider in catastrophic incident SAR.

What is different from normal SAR operations/missing person response?

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What hazards can you see here?

At least: Downed powerlines, collapsed structure, damage structures, debris in road, hazardous materials, potential for criminal activity, people...

This image was taken at a Lowes about 3 minutes after a tornado in Sanford, North Carolina. The vehicles in the foreground are driving under the downed power lines (what does that tell you about the state of mind of the drivers?).

Increased risks of exposures to hazardous material and communicable disease in disaster situations.

What risks of exposure do you think may be present here in this flooded campsite?

Primary means of mitigation of risks are Awareness, Prevention (e.g. PPE), and Exposure Reporting.

Disasters are dirty environments.

Expect the need for decontamination at the end of a shift (for both humans and canines). Ask about decontamination plans when given assignments.

Mitigation

- Coordinated Response under ICS
- Operational Risk Management
- Lookouts, Communications, Escape Routes, Safety Zones
- Responder Health and Welfare
  - Fatigue: work/rest cycles, sleeping areas
  - Water
  - Sanitation
  - Food
- Personnel Accountability

A coordinated response under ICS is critical for risk management in catastrophic incidents.

Think about the communicable disease exposures – water, sanitation, and food (get water and food only from clean sources at base). Maintain work/rest cycles.

LCES

- A tool to help you maintain situational awareness

- Lookouts
- Communications
- Escape Routes
- Safety Zones

In a catastrophic incident search, use LECS as a tool on assignments.

Establish lookouts to watch for hazards.

Maintain communications.

Identify escape routes.

Identify safety zones where you are going to escape to.

Accountability

- Sign in
- Personnel Accountability Reports (PAR)
- Nobody goes anywhere alone.

Accountability is critical. The incident will be chaotic.

Sign in/Demobilization – know who is deployed to the incident.

PAR – know where and the status of deployed resources.

Nobody goes anywhere alone.

Initial Response/Management

- Intelligence
  - Information that can be used to set operational objectives
- Reconnaissance
- Master Map
- Manage By Objectives

- What is the affected area?
- What is the Scope and Complexity of Damage?
- What Resources are needed?

Initial response:

Gather Intelligence – information that can set operational objectives.

Perform Reconnaissance

Develop a master map.

What is the affected area?
What is the damage like?

Develop objectives.
What resources are needed to meet them.

Reconnaissance
Information Gathering Only

- Organized, Structured Survey
- Preliminary, and Cursory
- Timely Reporting
  - Communications – runners if necessary.
- Immediate and Continuous
- Methods driven by incident and resources
  - Air, Water, Ground (windshield survey).

Reconnaissance isn’t search or rescue, it is limited to information gathering.

Preliminary, Cursory, timely reporting.

Reconnaissance Teams

- Small, Mobile, Flexible
- Inconspicuous
- State Of Mind:
  - Not Search, Not Rescue
  - Not Providing Treatment
  - Goal: Provide a snapshot of the entire event in order to drive the response effort
  - Goal: Do the most good for the most people by rapidly and efficiently determining the scope of the event and resource needs for the response.

Use older, “have seen it all” folks for reconnaissance, not in uniform.

State of mind is to efficiently provide a snapshot of the entire event to drive the response effort.

The greatest good for the most people can be done by not searching, not rescuing, not providing medical treatment, but by efficiently determining the scope of the incident and the resource needs.

Overview of Response

- Scope of incident, Resource Needs
  - Intelligence, Recon, Master Map
- Segment Map
- Objectives, Resource Requests
- Hasty Search (hasty **area** search of segments)
  - Locate
- Special Response Teams
  - Targeted known concentrations of victims or special needs
- Primary Search
- Secondary Search

Then, once the objectives and resource needs have been identified, search response can involve:

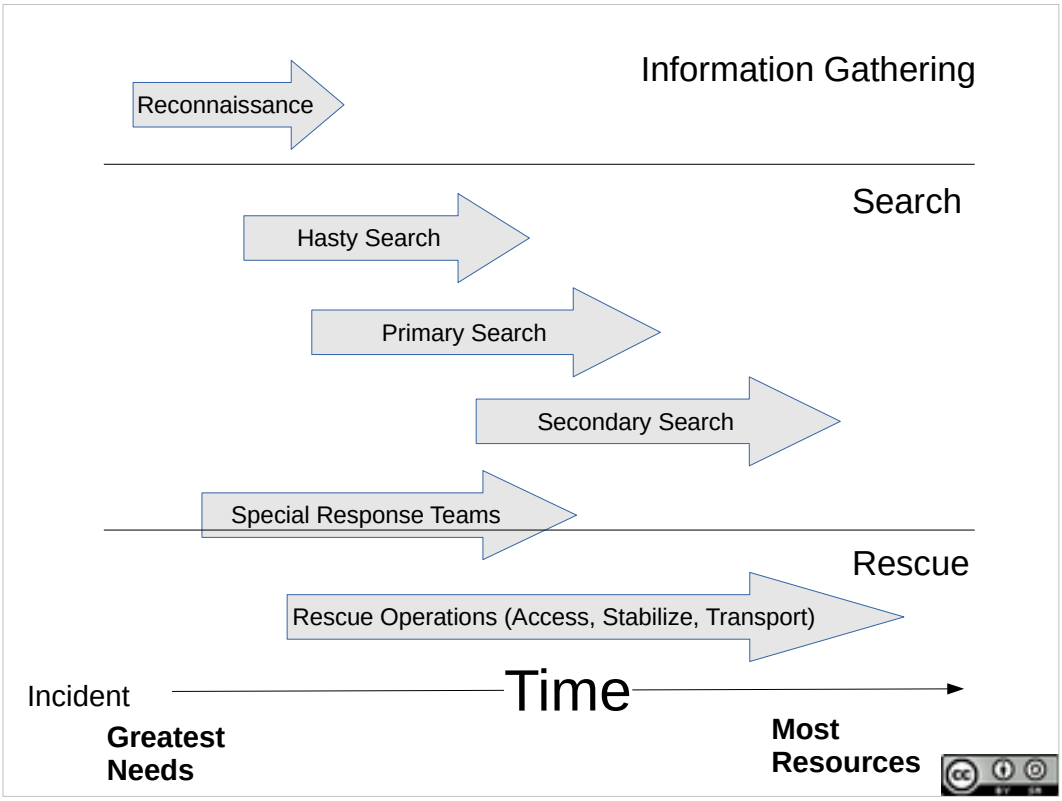
Hasty (area) search of segments, focused on locate.

Special response teams to targeted known concentrations of victims or special needs.

Primary search

Secondary Search

And Rescue Operations



Over time, looks like this.

Rescue operations probably start early and last through much of the response.

Note – greatest needs are early in the incident, more and more resources will arrive over time.

Hasty (rapid WAS) search

- Fast paced, methodical
- Locate and send to collecting point easily extricated victims
- Mark victims that need extrication and move on
- Document and report

Hasty (in the sense of Rapid Wide Area Search) search is:

Fast paced and methodical.

Locate easily extracted mobile victims and send them to a collecting point.

Mark victims that need extrication and move on.

Document, document, document, and report.

Why document?

“Hasty”, similar, but different

- Lost Person Incident
  - Hasty Search:
    - Primarily Route Searches
    - Can be area searches near IPP
    - Can be point searches.
    - Search effort is typically coverage of 1 for areas searched.
    - Sound Sweep/Hailing depending on subject behavioral profile
- Catastrophic Incident
  - Hasty Search:
    - Area Searches
    - Locate Only
    - Fast Paced
    - Hailing Search
  - Special Response Teams
    - Similar to Lost Person Hasty Search to points of high probability/risk.

The concept of Hasty search is similar, but different between the normal SAR incident and catastrophic incident response.

Hailing Search

- Spread around structure/area
- Close eyes and listen to background noises
- One person calls out
  - Identify as searchers
  - Tell victims to call out or make noise
- Everyone else listens and points at noises.
- Leave people pointing in place, move others and repeat to localize source.

Hailing search is a good technique for Hasty (and Primary) search.

Key bit, listen (before and after).

Special Response Team

- Targeted Response to likely high concentrations of victims or special needs
- Examples
  - Hospitals
  - Nursing Homes
  - Evacuation Shelters within the affected area
  - Areas of last refuge
- Team composed for the specific task

Special Response team – targeted to likely high concentrations of victims/needs.

Primary Search

- Quick Search, Exterior
- Walk (or boat) around structure
- Look in windows/openings
- Scan surface debris
- May be Physical, Canine, or Technical
  - Physical including Hailing search
- Treatment of immediate life threatening injuries
- Mark victim locations, call in additional resources to rescue victims

Primary Search:

Exterior, surface debris.

Physical (including hailing) or Canine (or technical)

Provide treatment for immediate life threatening injuries (think triage).

Mark (and report) victim locations.

Additional resources will perform rescue.

Secondary Search

- Systematic search of enclosed areas
  - All rooms in all structures.
  - All void spaces in all collapsed structures.
  - Tornado Shelters

Secondary search

Goes inside.

Systematic search of all enclosed spaces.

Search Squads/Strike Teams

- Functional roles:
  - Leader
  - Medical, Communications, Documentation
  - Local area knowledge
  - Force Protection
- Maintain Span of Control
- Search: Fast, Agile, Mobile

Search Squads or Strike teams:

Each person with an assigned functional role.

Maintain span of control.

For Search: be fast, agile, mobile.

Task Status Reporting (Typically Hourly)

- PAR
- Current location
- Percentage of assignment completed
- Estimated completion time

PAR checks, typically hourly.

Include current location, percent assignment completed, expected time of completion.

Search Techniques

- Physical – human ground searchers
  - visual
  - hailing
- Canine
- Technical
  - Listening Devices
  - Viewing Devices

Search techniques (expect to be told these as part of your assignment) are:

Physical, that is human ground searchers performing:

Visual search
Hailing search

Canine

Technical

Listening devices
Viewing devices (including FLIR and TIC)

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With repeated phases of Hasty, Primary, and Secondary Search, and separated Search and Rescue activities in large complex messy setting, findings are marked as searches are carried out.

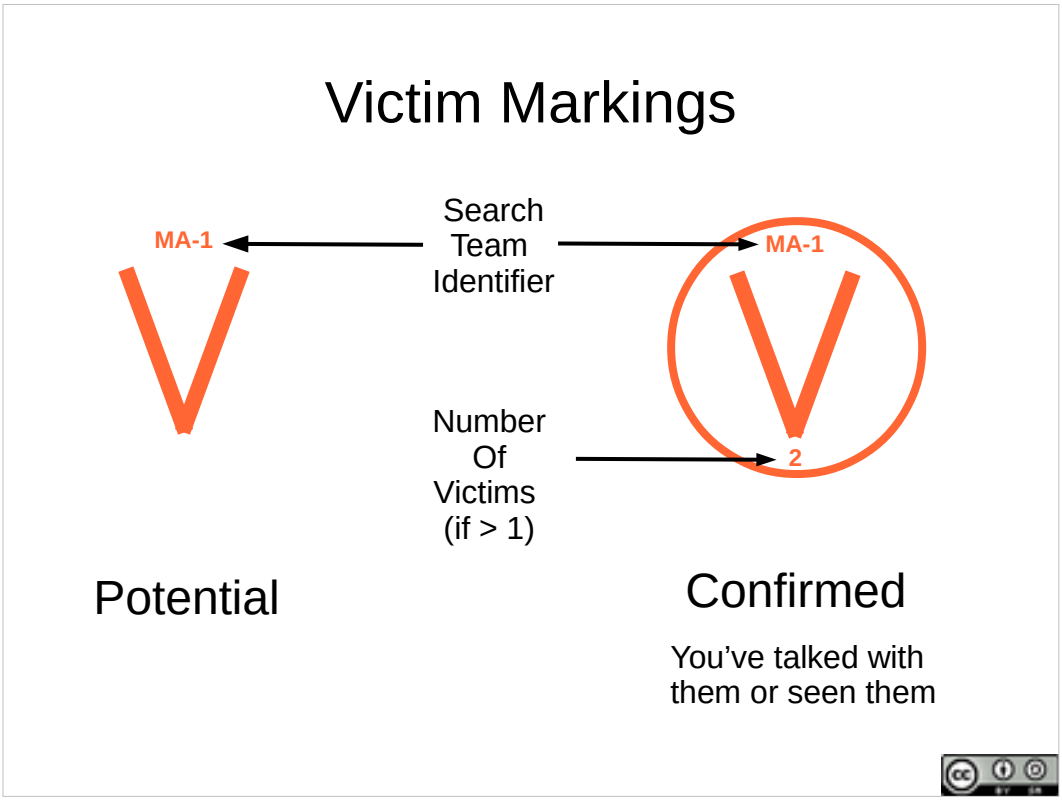
(Note: not drawn to current standards, shouldn't have a square around the X, no entry time).

[(some)TF-3 did the search exiting on 8/16, hazards roof and wall, found 0 victims.]

One type of markings is for victims.

This is for victims who need extrication.

Someone sitting in their house and able to walk away doesn't get a victim marking.

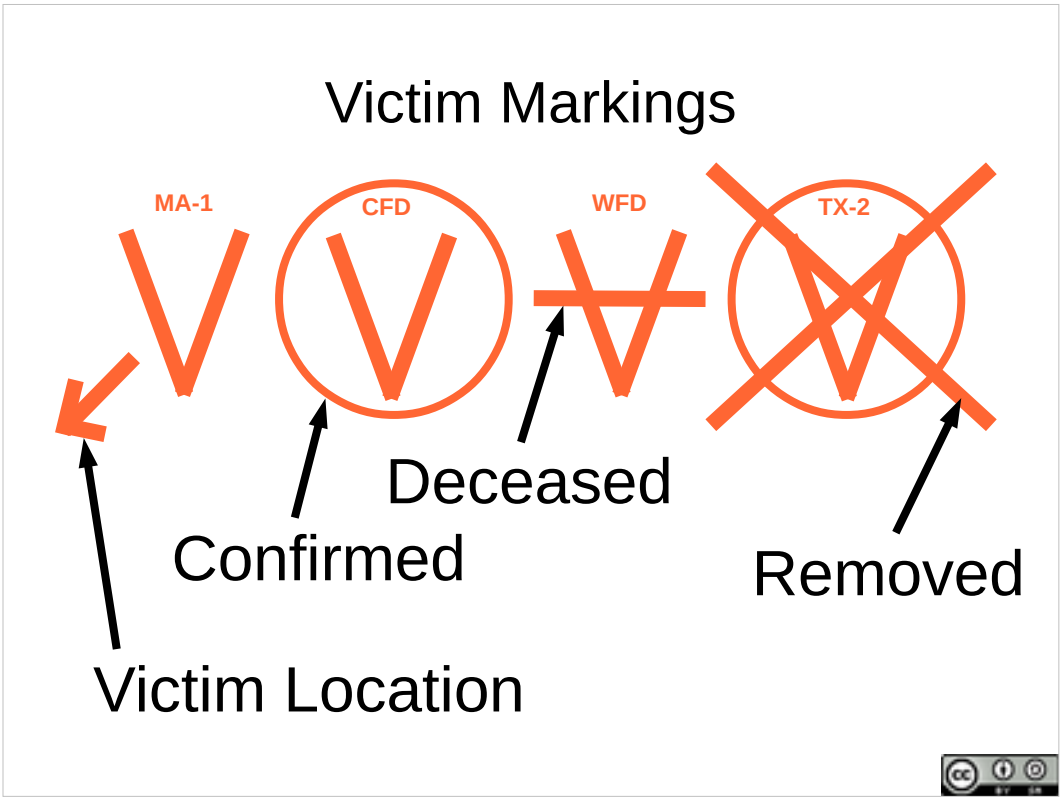


V for victim

Identify the search team at the top.

Count if more than 1 at the bottom.

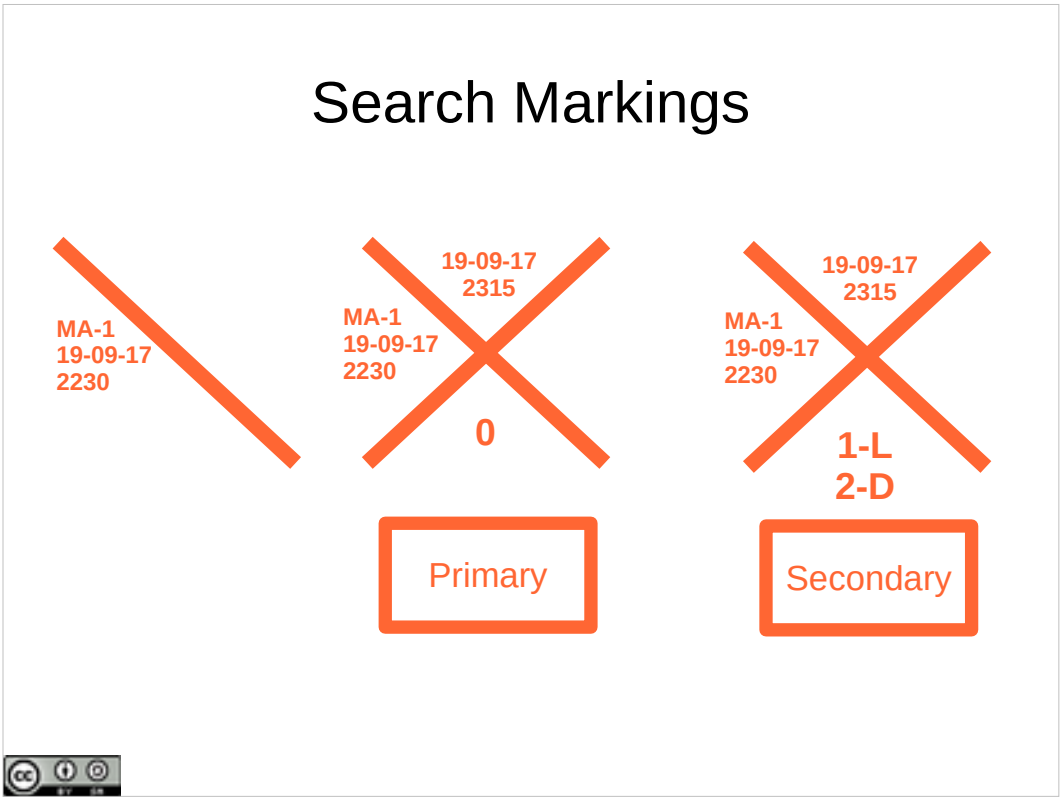
Circle if they are confirmed (you've seen them or talked to them).



Arrow to point to the specific location.

Line through the V if the victim is deceased.

Rescuers draw a big X through the marking when they remove the victim (rescue or recovery).



Then there are search markings, to indicate what form of search was done by whom when, what they found, and what hazards were observed.

Walk through the marking.

Slash with who when on left on entry.

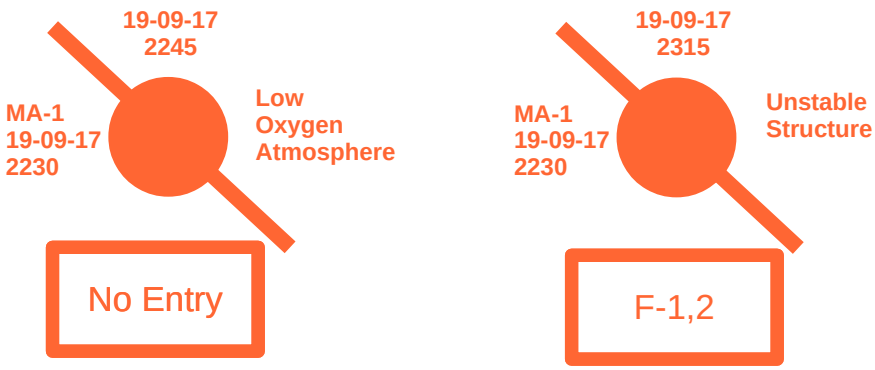
Finish X with exit time on top.

Findings (live or dead or 0 below). Hazards to right.

Can mark additional information in box below.

Incomplete search, solid circle in center. What was completed in square below.

Incomplete Search Markings



Then there are search markings, to indicate what form of search was done by whom when, what they found, and what hazards were observed.

Walk through the marking.

Slash with who when on left on entry.

Finish X with exit time on top.

Findings (live or dead or 0 below). Hazards to right.

Can mark additional information in box below.

Incomplete search, solid circle in center. What was completed in square below.

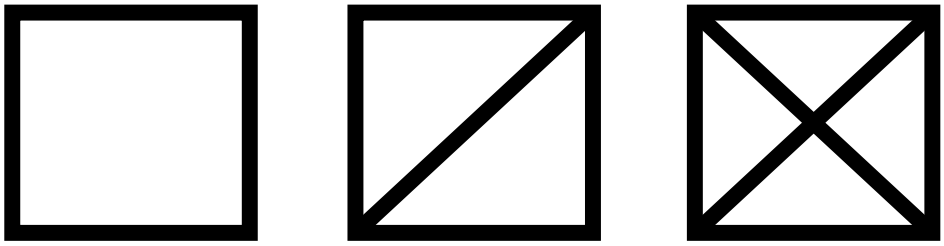
Here's a search marking (not drawn to current standards, doesn't include times.).

What can we read from this?

[CA-3 did the search exiting on 9-12, no hazards noted, found 0 victims.]

X for search can be used inside as well.

Structure Markings
(made by USAR Structural Engineers)



Low Risk For USAR Operations	Medium Risk For USAR Operations	High Risk For USAR Operations

USAR task force structural engineers will also mark structures for hazards.

Medium and high risk need additional hazard mitigation measures to enter to perform secondary search.

Further Training

- Wide Area Search Course (TEEX)

Seek further training.

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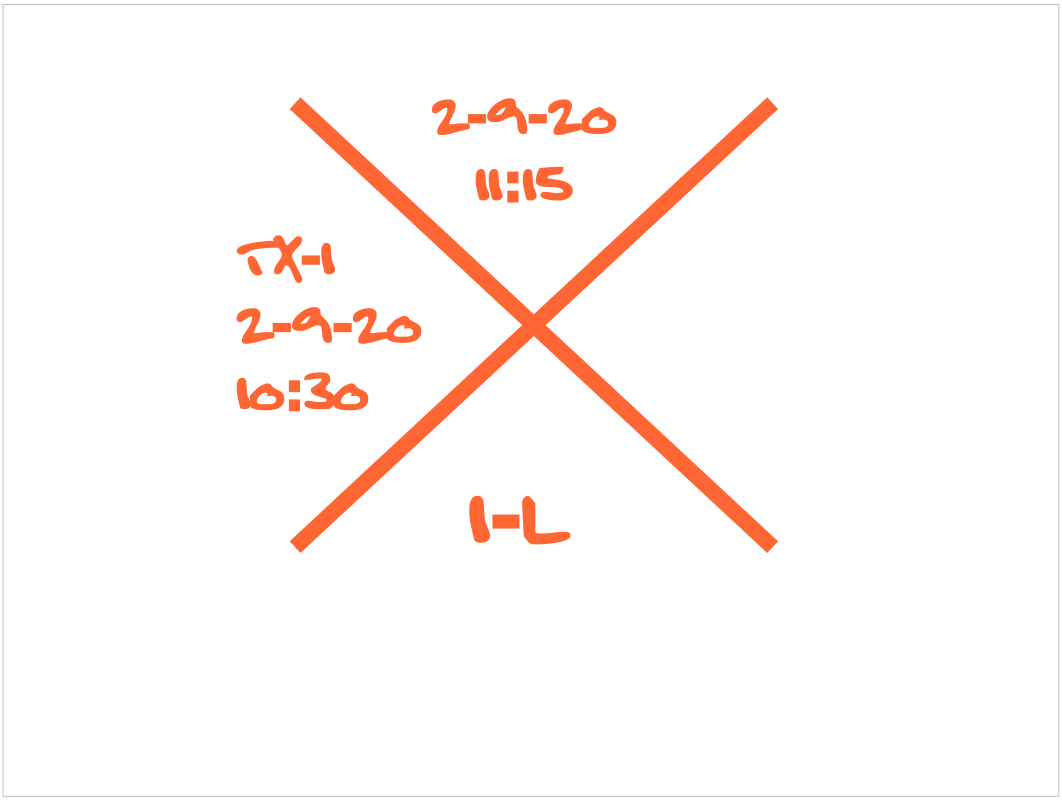
Practical Evolution - Markings

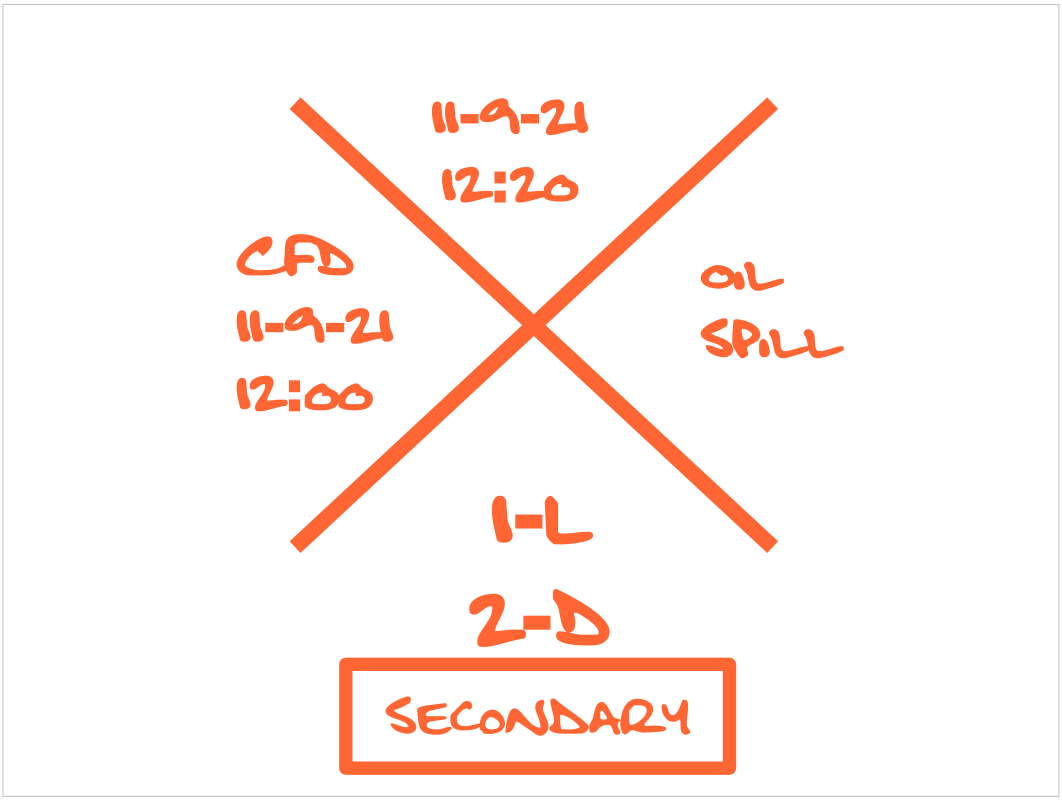
What markings can we see here?

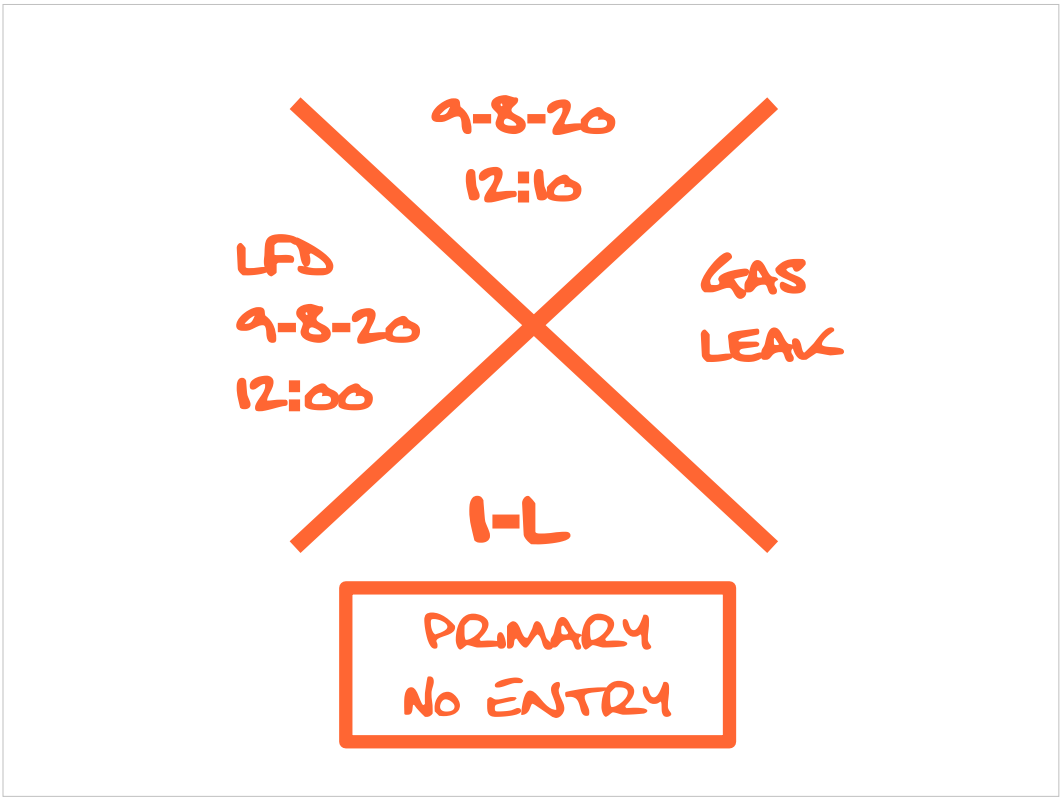
Tornado damage in Springfield, MA.

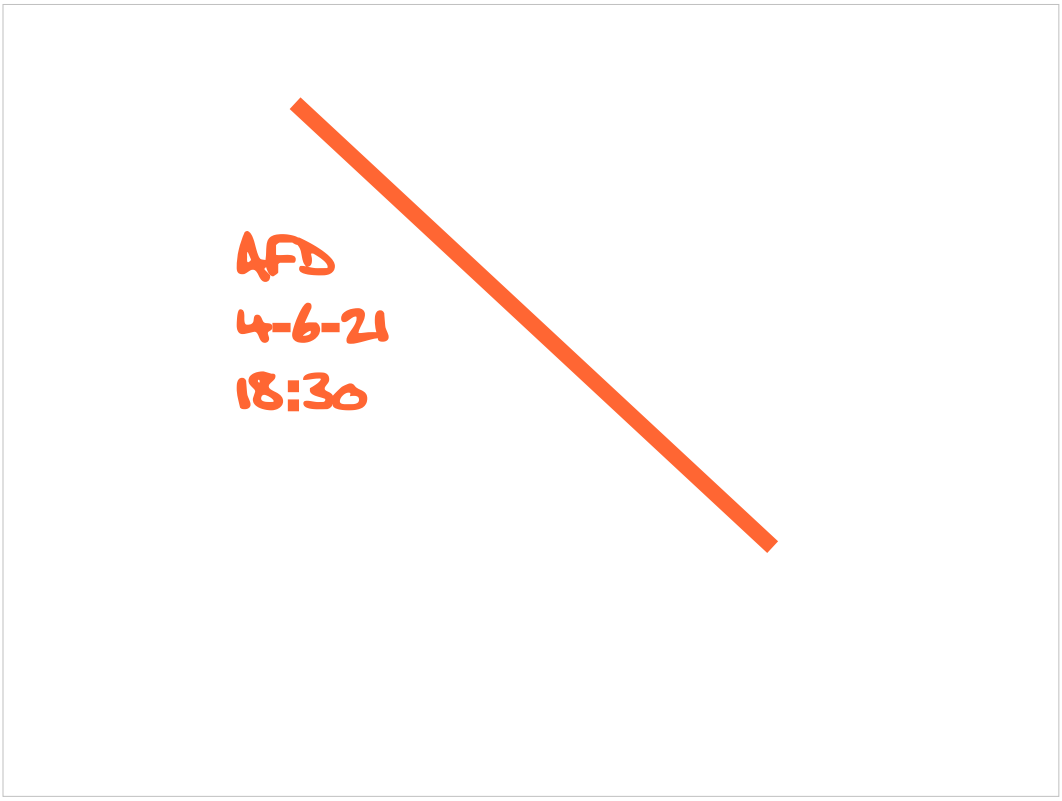
[Some search was carried out (faint orange X).

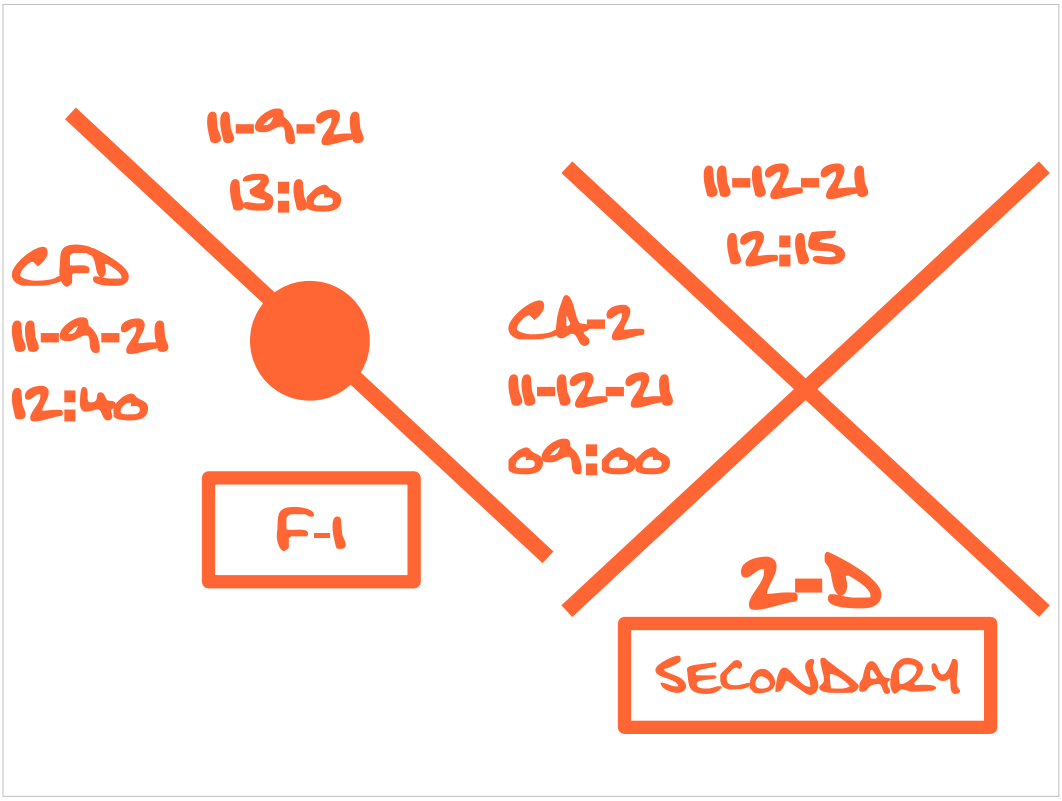
Later marked by [MA?]TF as high risk.]

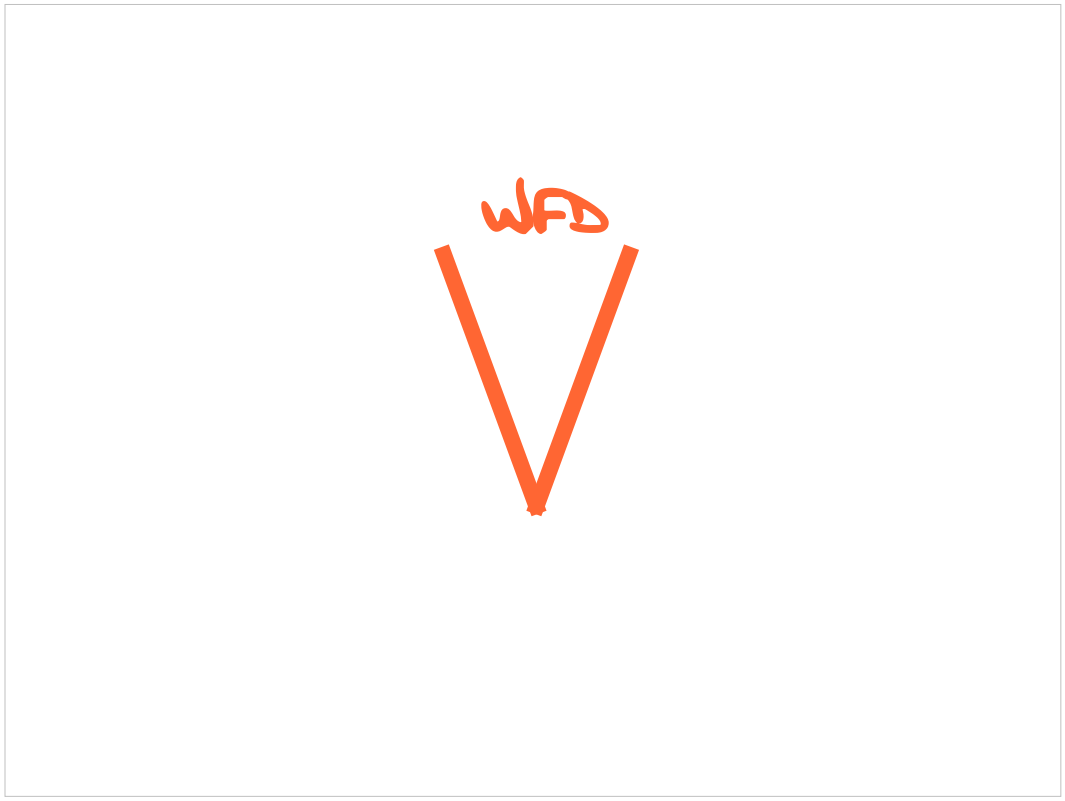

2-9-20
11:15
TX-1
2-9-20
10:30
I-L

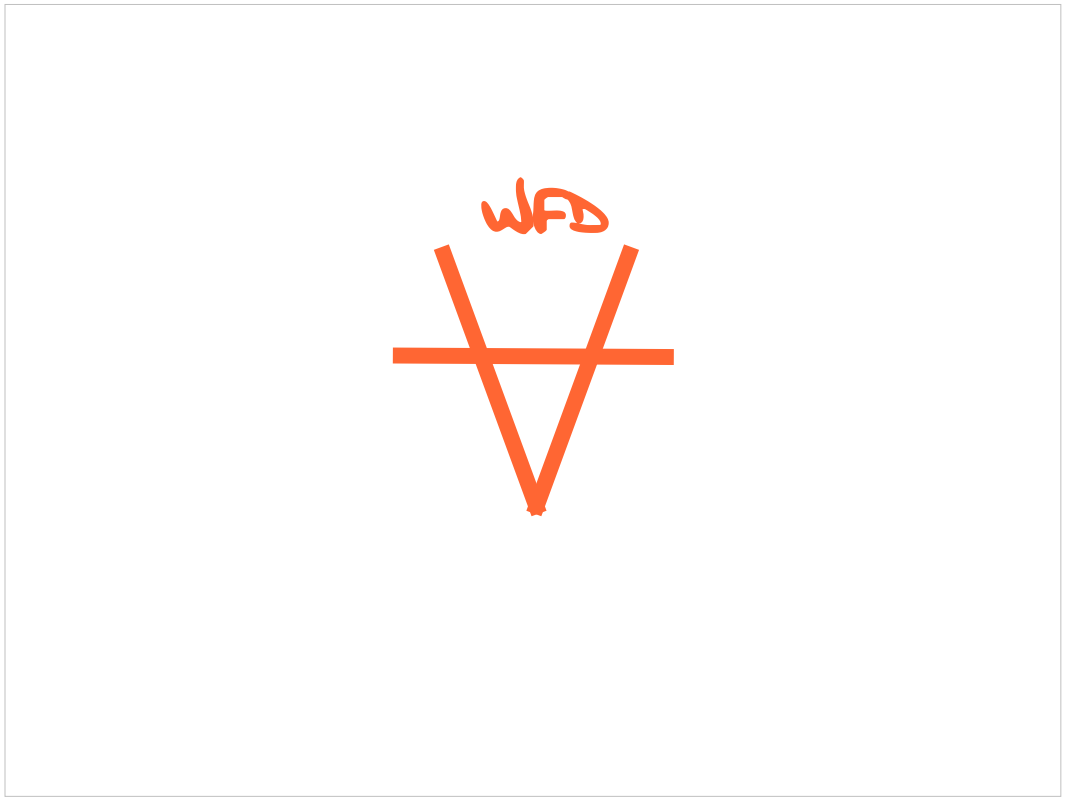

11-9-21
12:20
CFD
11-9-21
12:00
OIL
SPILL
1-L
2-D
SECONDARY


9-8-20
12:10
LFD
9-8-20
12:00
GAS
LEAK
I-L
PRIMARY
NO ENTRY

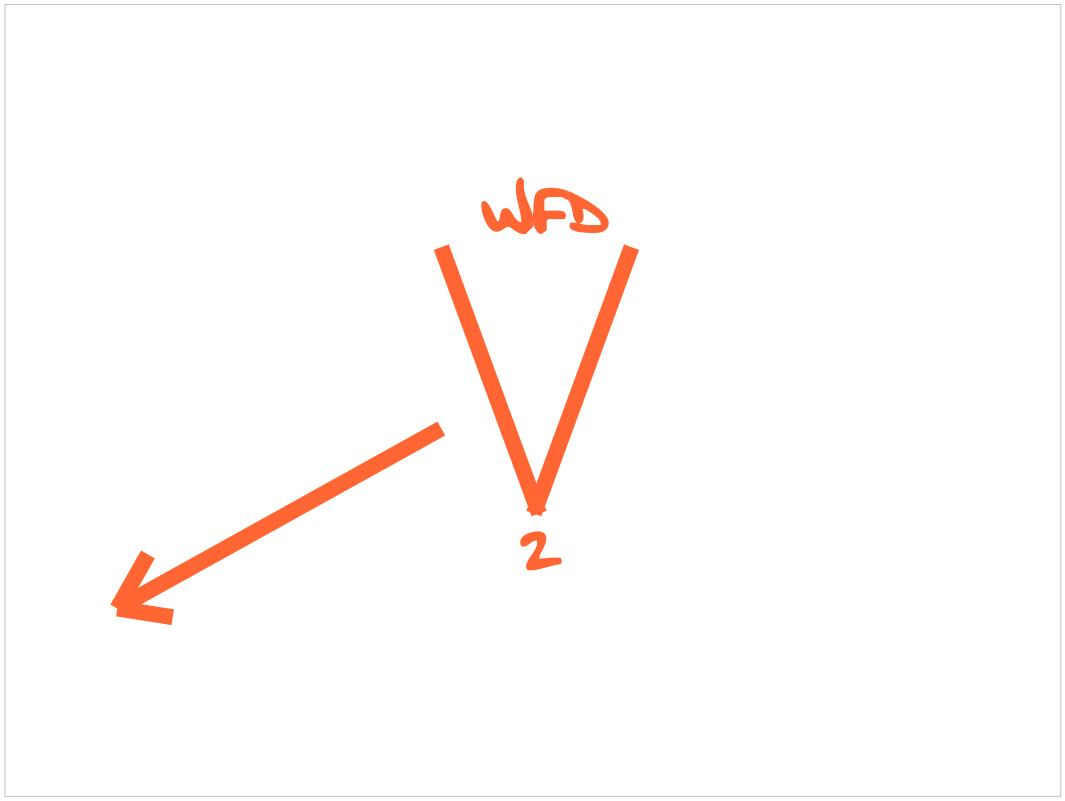

AFD
4-6-21
18:30

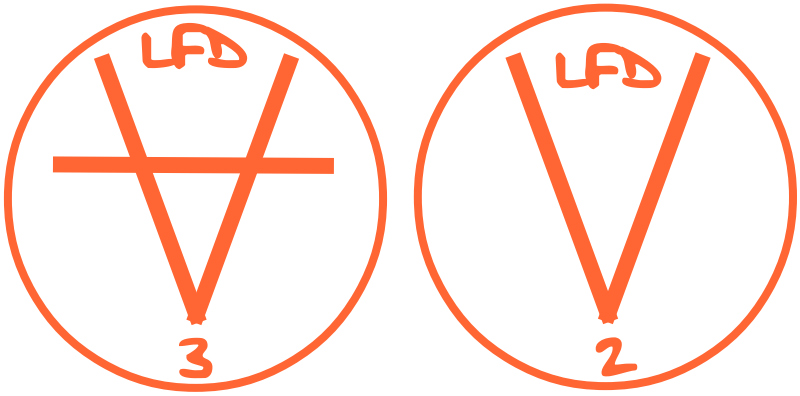

11-9-21
13:10
CFD
11-9-21
12:40
F-1
11-12-21
12:15
CA-2
11-12-21
09:00
2-D
SECONDARY

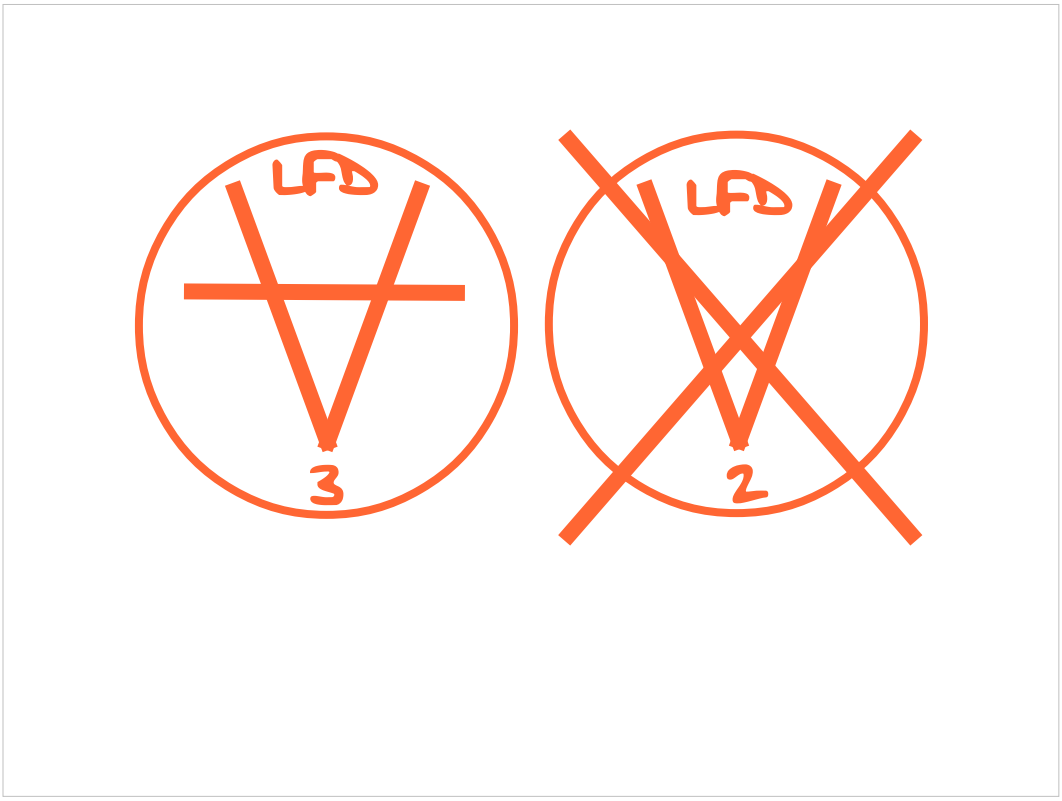


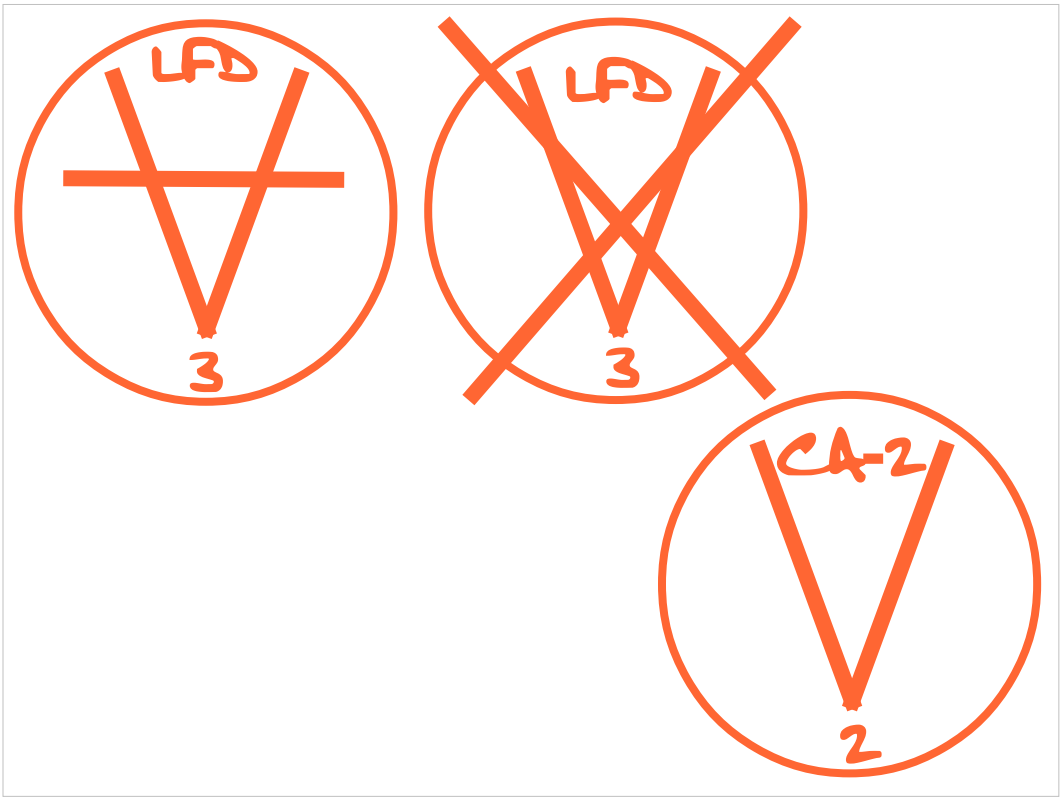

WFD

WFD


WFD
2


LFD
3
LFD
2


LFD
3
LFD
2


LFD
3
LFD
3
CA-2
2

Draw the Marking

- Secondary Search Entry by Acton Fire at noon today.
- Search exit at 12:30
- Found no victims

X. AFD, entry date and time to left. Date and time of exit at top.

No need for a 0 underneath, implied 0 from blank.

Draw the Marking

- Secondary Search Entry by CATF-1 at 16:00 today.
- Search exit at 16:30
- Found one live and two deceased victims.
- Hazardous materials

X. CA-1, entry date and time to left. Date and time of exit at top.

Hazmat to Right.

L-1 and D-2 beneath

Draw the Marking

- Knocking noises consistent with a Live Victim heard in response to a hailing search by Lancaster Fire.

V with LFD over.

Draw the Marking

- One Live Victim seen trapped by Lancaster Fire.
- One Live Victim self extricated and walked out to collection point while Lancaster Fire was doing a hailing search.

V within a circle, LFD above.

No marking for the extricated victim (no need to pass the location on to rescue resources).

Draw the Marking

- Two Live Victims and 3 Deceased Victims Seen by Ayer Fire.

V in circle, AFD above 2 below.

V with a line in a circle, AFD above, 3 below.

Draw the Marking

- One Live Victim and 2 Deceased Victims Seen by Ayer Fire.
- Live Victim removed by Cambridge Fire.

V in a circle, AFD above, X through the V.

V with a line through it, AFD above, in a circle, 2 below.

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