THE 1989 LOMA PRIETA EARTHQUAKE: LESSONS FOR TODAY

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Why study LP here? Now?
Today’s program

- **Scope:** SF Bay Area & Monterey Bay Area
- **Video:** “The Quake of 89” KRON TV
- **Personal lessons learned at the time and refined ever since**
- **Cascadia-specific perspectives**
- **Q&A**
Larry’s background

- 1989: Paramedic Captain, San Francisco DPH Paramedic Division
- 2001-2013
  - Regional & county EM coordinator
- 2014-present
  - EM coordinator, City of Medford
The setting: Oct. 17, 1989

- San Francisco population: 750,000
- Daytime population: 2,000,000 est.
- 43 fire stations staffed
- 9 district police stations staffed
- 9 paramedic ambulances staffed

Park Emergency Hospital circa 1902
Liquefaction susceptibility
5:04 PM

USGS/UCB/CGS ShakeMap: Magnitude 6.9

HOLLISTER

SHAKING: WEAK STRONG SEVERE
Immediate impacts

- Structural collapses
  - Unreinforced masonry (URM) construction
  - Wood frame with “soft” first story
  - I-80 Cypress Structure
  - Oakland-San Francisco Bay Bridge

- Power outages
- Telephone outages
- Nonstructural damage
Video discussion points

- Suddenness of onset
- Behaviors of ground & structures
- Behaviors of people from Day 1 to Day 3
- Spontaneous/emergent volunteers
- Statements by officials

Video available for streaming at:
https://diva.sfsu.edu/collections/sfbatv/bundles/189054
Delayed effects

- Ignition of gas leaks
- Hydrant system failure
- Crucial presence of SFFD fire boat
Photo credit: Margo McGrath
Response challenges

- Technology disruptions
- Spontaneous/emergent volunteers
- Mission narrowing
- Demand in excess of available services
- Inadequate EOC
- Inadequate/rigid response plans
- Communications challenges
- Inadequate planning for PAFN
Technology disruptions

- Power failure consequences
  - Failure of all traffic signals
  - Inability to pump fuel
  - Limited duration generator operation
  - Radio communications became unreliable
  - Hospital generator failure
  - EMS Communications computer failure
- Adaptations and corrective measures
Spontaneous volunteers

- Conducted highly risky activities
- Essentially unmanaged & undirected

Corrective actions:
- Aggressive volunteer programs initiated
- Stockpiles of safety equipment
- Improved application of Disaster Service Worker statutes
CA Emergency Services Act

“...all public employees are hereby declared to be disaster service workers subject to such disaster service activities as may be assigned to them by their superiors or by law.” CGC §3100

Available at www.caloes.ca.gov
Volunteers “impressed into service”

“Volunteers... duly impressed into service during a[n]...emergency, in carrying out... any order... or performing any of their authorized functions or duties or training for the performance of their authorized functions or duties, shall have the same degree of responsibility for their actions and enjoy the same immunities as officers and employees of the state and its political subdivisions performing similar work.”

CGC §8657

Available at www.caloes.ca.gov
Mission narrowing

- Opting for favored activities vs. essential response actions

- Corrective actions:
  - Clear policy
  - Articulate expectations in plans
  - Training, especially managers
Excess demand

- Inevitable in a disaster
  - Single emergency message
  - SFFD call volume: 500/hour 1800-0000

- Corrective actions:
  - Plan, equip, & supply
  - Personnel recall plans, including automatic
  - Identify, train, & exercise support staff
  - Plan for effective use of volunteers, including emergent
  - Current agreements and relationships
  - Flexibility in plans & policies
  - Emphasize personal and family preparedness for all staff to maximize availability
Inadequate EOC

- Working space
- Redundant communications
- Visual display of vital information
- Familiar to EOC staff
- Security & access control
Inadequate EOC (2)

- Corrective actions:
  - Build/convert an adequate physical space
  - Equip & supply for effective sustained operations
  - Anticipate technology disruptions
  - Train and exercise EOC staff
  - Manage security and access
Inadequate/rigid plans

- Out of date
- Unrealistic assessment or expectations
- Inadequate resource information
  - Internal
  - External
- Too rigid to allow discretionary actions
Inadequate/rigid plans

- Corrective actions:
  - Use sound plan development practices
  - Implement and honor a maintenance schedule
  - Be brutally honest in all areas
  - Be creative in identifying resources during plan development and maintenance
  - Provide adequate flexibility to respond to whatever issues emerge
Communications challenges

- Technical
- Personal
- Both may degrade in a major emergency

“Communication without intelligence is noise; intelligence without communication is irrelevant” -- Gen. Albert Gray, USMC
Communications challenges

- Corrective actions:
  - Count on technology failures
  - Plan for robust redundancies, including low/no tech
  - Train and exercise for failures of primary and secondary systems
  - Plan for overwhelming demand
  - Keep procedures simple, e.g. clear text
PAFN challenges

- Virtually no systemic plan in place

- Corrective actions:
  - Aggressive planning emphasis
  - Highly effective registry established
  - Comprehensive community outreach
On plans:

“Planning is worthless; the planning process is indispensable” --General Dwight D. Eisenhower

“Everyone has a plan until they get punched in the face” --Mike Tyson

The lesson: *Have good plans and use them. Recognize their limitations. Train and exercise to the plans.*
On facilities:

- Have backup facilities and backups to those.
  - Can you operate in a school gym?
  - Can you operate mobile?
  - Can you operate in a tent?
- What is your operational endurance in each?
  - How does that change when the supply chain is “toast”?
- Plan, train, and exercise for those facilities & conditions
On the tough decisions

- Be prepared to triage all manner of response strategies
  - Public services
  - Support for response and recovery personnel
- Enlist fellow decision-makers you respect
- Anticipate fallout from leadership, media, public at large
On maximizing your people

- Prepare to support responder & staff families
- Consider remote/home-based work where possible
- Plan for sheltering, childcare, animal care, other services for essential personnel
- Plan to use able family members in those roles, when and where appropriate
- Emphasize family preparedness
On senior leadership

- Train your elected officials on their roles and limitations
- Enlist their support in preparedness activities
- Train and enlist your “non-emergency” managers
- Establish relevant relationships between those in your jurisdiction and others
- Consider delivering FEMA’s ICS 402
On the role of the EM

Most of us are hired for our subject matter expertise, when in fact the successful EM should probably be equal parts SME and evangelist.

It isn’t enough to just deliver a sound message, we must make believers of our flocks.
On resilience
The numbers

- Fatalities: 67 (42 on I-880)
- Injuries: 3,757
- Homeless: 12,000
- Fires: 30
- Cost: 8-10 Billion
How Cascadia could compare

- 20 times the duration (15 sec. v 5 min. +)
- 900+ times the energy release
So... how ready are we?

1. Ask yourself
2. Ask your leadership
3. Ask your communities

“With commitment all things are possible. Without it, nothing else matters.”

--Yoram Klein, MD
Day 10

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