


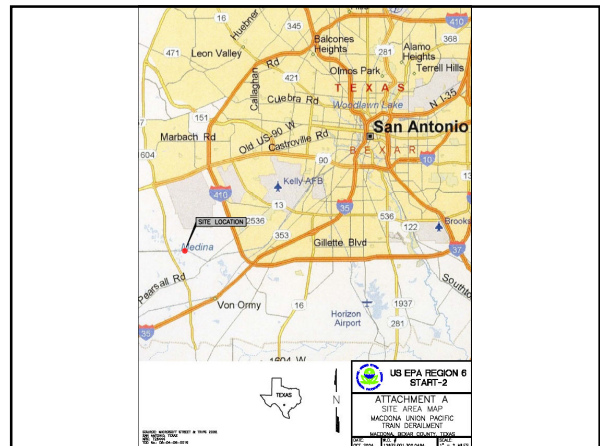
**Macdona, TX
Derailment and Chlorine
Release**



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WORKPLACE HEALTH AND SAFETY



What Happened?

June 28, 2004 at 0503 hours

Westbound Union Pacific
Eastbound Burlington Northern


- Pulling onto siding to let UP pass
 - Not yet clear of main line

UP cuts through BNSF and derails


- Blocks Nelson Road
- Traps at least five families
 - Flooded Medina River to rear

Initial Reports

0506 Hours

911 call from 9221 Nelson Road 


- Misunderstands report
- No advice for caller
- No further contact with the two residents
 - Later found deceased in home

Bexar County Fire dispatches SWVFD 

- Medical call related to smoke

Initial Reports

0508 Hours

911 call from 9251 Nelson Road 

- "This could be bad"
- "I told them to get out of the house"
- "This may be a wonderful hazardous material"

Family leaves in vehicle, but road is blocked

Returns to home, calls 911 again

- Continual 911 callbacks
- Rescued by AirLife at 1100 hours

Initial Reports

0511 Hours

911 call from EZ-Mart

Man collapses in doorway, choking

Not connected to other response


Ambulance is diverted from Nelson Road

Who is he?

- Newspaper delivery

Initial Reports

0526 Hours

Southwest VFD approaches scene 

- Drives into cloud
- "Southwest firefighter down..."

911 calls UP for info

- "Possible train-on-train"
 - UP and BNSF
 - Chlorine
- Updates responders on incident
 - "We got a... definite hazmat incident."
- Informs UP of response and casualties

Initial Reports

0612 Hours

UP notifies National Response Center

- "Unknown material"
- "Unknown amount"
- "No cars reported derailed at this time"
- Actions being taken? "Unknown"
- Community impact due to material? "No"
- "Caller had limited information"

0615 Hours

- SW discovers UP engineer
 - Transports to hospital in FD vehicle

Initial Reports

0622 Hours

NRC notifies EPA Region 6 Hotline

Phone Duty Officer seeks information

- Common report for R6
 - Typical >100 annually

NRC report does not relay urgency

Follow-up calls to UP, local FDs etc.





Response

0715 Hours

FOSC Harris notified

- Chlorine
- 10-15K gallons of fuel
- Wreckage and fuel on fire
- Many responders down
- 911 calls
- FDs fighting over control

Began resource deployment

- START / ASPECT / Request TCEQ Strike Team

Initial Evacuation Order

0715 Hours

Local IC requests downwind ENS / Evac

- 57,000 residents in model impact area
 - Predicted into SAT
 - Odors at Sea World (8 miles out)

Call time will exceed 8 hours

No ENS sent / No evac

No notification of failure to local IC

START

0800 Hours

- San Antonio START onsite
- Coordinates with local UC

0830 Hours

- Begins deploying offsite monitoring
- Constant contact with FOSC Harris
- Requests support from START - Dallas

Close Call for Responders

SAFD Entry 1 in Hot Zone

- 1 mile round trip on air

Heavy cloud

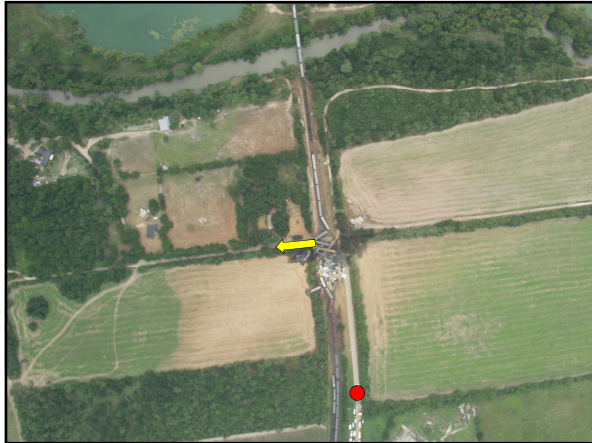
- No wind at site until 1000
- "Can't see the other end of the stretcher"

Deploys two EPA AreaRAEs

- Immediately saturated, offline

Misses turn across tracks, goes north

- Discovers deceased, unidentified male
 - Missing UP Conductor



Close Call for Responders

Entry team reports "sensor saturation"

- No monitoring, no ppm estimates
- Later estimated at 50,000 – 85,000 ppm

Off air in Hot Zone

- High chlorine
- Ran out of air
- Dropped tanks and suits
- Escaped through woods / fields / swam river



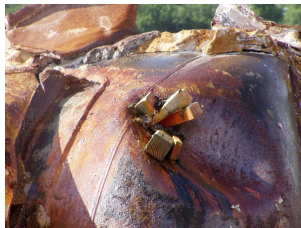
Initial team would have died if not lost?

Plugging Operation

1030 Hours

Two entry teams

- Level B
- Difficult access
- Unstable platform
- Plugged 11 x 2 inch gash
 - Wood + lead wool



How and How Much?

90-ton chlorine car

Head puncture from leading car

- First in history, per NTSB

60 tons released in < 3 minutes

- Largest Cl₂ transportation release on record

Auto-refrigerated

- Traps 30 tons in car
 - Estimated from frost line

FOSCs Onsite

Coordinate with START and IC

SAFD notifies of pending demobe

- Final ground searches
- Body recovery

Co-locate CP with TCEQ Strike Team

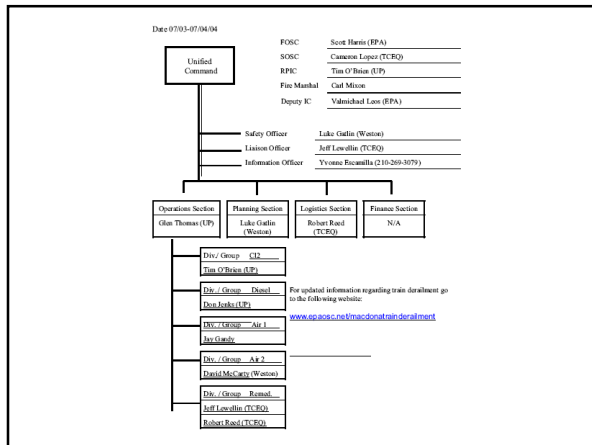
Begin developing UC structure

- Need Unified Command

Problems with RP

UP resists authority

- Refuses to participate or cooperate
- Intends to act against direction of UC / OSC
 - Risk to life
- "Worst-case scenario" for UP?
 - Threat of U.S. Marshall
 - Federalizing
 - Track closure



ASPECT Results

High-res aerals

- Unique data
- NTSB investigation

IR scans

- No detections



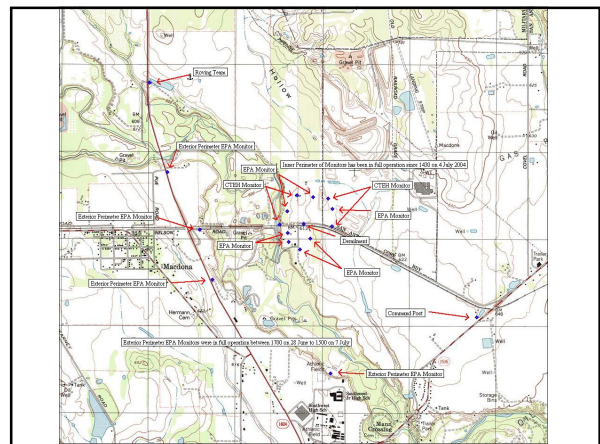
Day 2

Car continues to smoke

- No offsite chlorine detections

Formalize and implement ICS / UC

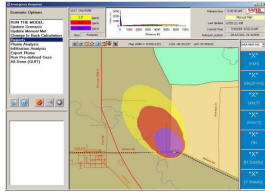
- Operations and Planning briefings
- Initial press briefings
- Prepare for UP to move CI2 car
 - Precautionary evacuation planning
- Enhance monitoring network



Day 3

Precautionary Evacuation

- Initial ENS
- Final ENS
- ~20 homes
- Car moved and stabilized without incident
- Residents return home



Rail reconstructed and operational

Patching / Valving Operation



Impacts

- 3-4 fatalities
- 43+ treated / hospitalized
- Pets & wildlife / property
- Evacuations / SIPs
- Social / Political
- UP hardware loss (\$10M+)
- Track closure (\$1M / minute)
- EPA Cost Recovery (\$480K)



Lawsuits??

Federal Agency Coordination

NTSB process seemed outside ER / EPA

- NTSB off-site operations / FRA?
- Difficult logistics
- Declined UC role
- Declined ER Review participation
- Excluded EPA from ER Investigation

Lessons

- Evaluate relationship
- Consider future joint operations

NTSB Investigation

- No EPA participation
- Initial site visit on Day 5
- Site completely altered
- Hi-Res photos from ASPECT



Lessons

- Material evidence lost by delay
- Value of ASPECT photos and video



Coordination With Others

Excellent

- State and local
- Co-location and security
 - Scalable facilities
 - Technical, operational areas segregated

Lessons

- TCEQ Strike Team support invaluable
 - Logistics, regulatory, UC

NRC

Audio of NRC notification lost

- Tapes recycled after ~60 days
 - Not known to OSC

Lessons

- Request ASAP for event record
- Upgraded to digital
- Receive / retain record of all notifications?

UC / ICS Lessons

Immediate UC / ICS clearly aided response

UP defiance created unnecessary drama

Responders must function in ICS

- Interagency / integrated responses
 - RPs and contractors

FOSCs / First Responders *must* be familiar with authorities

- NIMS / NRP / NCP
- Prepared to follow through

Lack of information CAN kill you

Discussion?



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