Jan 2013- Oklahoma City Minor injuries - One home destroyed, many others damaged No basement, no sewer line breach found Sub-contractor installing telecom lines parallel to gas line



Aerial view of area prior to explosion obtained from Google Earth and revised with site information. <u>marked phone/cable line</u> marked natural gas line <u>marked phone line</u> installed by contractor prior to 2nd bore





Feb 2013 -- Detroit

One death -- Two or three homes destroyed, many others damaged Basement, no sewer line breach (sewer lines in the alley) Gas company crossing service lines with new main, report states that service lines at crossings were not exposed



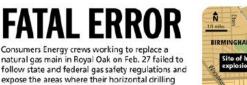




Graphic: Fatal error in Royal Oak house explosion

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expose the areas where their horizontal drilling passed existing underground service lines. Here is how horizontal drilling

works and where the safety step called potholing was left out.

1 GETTING STARTED: A guided boring machine pushes a spinning drill bit into the ground, starting a path for a new gas pipe. 0

FAT

Oakland-Troy Airport Cu Panto-Meijer Drive BIRMINGHAM DTE Energy center Site of house explosion 14 Mile amoset ROYAL OAK Royal Oak Golf Club Royal Oak Golf Course Nakota 2 Massoit Normandy Oakla DETAIL Memorial Park 13 Mile Wayne

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HOW EVENTS UNFOLDED These are the events that led to the

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house explosion and death of Daniel Malczynski, 58, according to the report.

4:30 P.M. Consumers Energy crew members working to install a new gas main smelled natural gas and knocked on the front door of the nearest home, where Malczynski lived. There was no answer. The seven-person crew reported the gas leak and left the site, while Consumers sent a gas service worker to respond to the leak. 5:07 P.M. The house at 4232 Cooper Ave. exploded, killing Makzynski and damaging dozens of homes.

5:15 P.M. A Consumers Energy manager arrived on the scene after feeling the Royal Oak Service Center shake. The gas service worker dispatched to check out the gas leak arrived at 5:29 p.m.

2. GUIDING THE BORE --The drill head sends positioning signals to workers at the surface who guide the drill around obstacles.

3. MISSING STEP Hand-digging where the bore passes underground lines, known as potholing quired in order to crews to see that ir rotating drill bit is sing safely. This was not done properly on Cooper Avenue on Feb. 27 according to Consumers Energy officials.

P

4. DAMAGED PIPE

A steel natural gas service line at 4232 Cooper Ave. was damaged, causing gas to migrate into the nearby home and leading to an explosion that killed its owner.

5

depiction of incident SOURCES: Consumers Energy, Michigan Public Service Commission

Not actual

DAVID PIERCE/DETROIT FREE PRESS

Feb 2013 -- Kansas City

One death, multiple serious injuries -- Business destroyed, many buildings damaged Basement unknown, sewer lines unknown

Contractor installing telecom line across gas line, according to official report the contractor assumed locates were off when they found two lines together that had been marked as one.



Mar 2013 -- Grand Junction, CO

At least 3 people injured – 2 homes destroyed

Sub-contractor reportedly struck a gas line that was beneath a located gas line determined to be abandoned

http://www.gisentinel.com/news/articles/report-junction-8232shares-no-blame-8232in-gas-exp http://www.gisentinel.com/news/articles/gas-explosion-levels-2-homes

Feb 2014 -- St Louis, MO

No injuries (14 people evacuated less than 1 min prior to explosion) -- Building destroyed Sub-contractor installing telecom lines, crossed a gas service line, snow on the ground covered locates





Mar 2014 -- Ewing, NJ 1 death, multiple injuries -- Building complex destroyed Details unknown

http://www.nj.com/mercer/index.ssf/2014/03/crews dig for clues in ewing gas explosion.html