

SUMMARY OF DEPARTMENT OF PUBLIC SERVICE STAFF'S INVESTIGATION

Natural Gas Explosion, Floral Park: April 24, 2009

The New York State Public Service Commission (PSC) initiated a proceeding to investigate the natural gas explosion which occurred at a private residence at 80-50 260th Street in Queens, New York, on April 24, 2009, in the service territory of Consolidated Edison Company of New York, Inc. (Con Edison). The house was completely destroyed. A 40-year-old woman was inside the house at the time of the explosion and died as a result. There were reported injuries to several other people. There was also heavy damage to adjacent homes on either side and behind the incident building.

SUMMARY OF INCIDENT REPORT

At 3:22 p.m. Con Edison received a report of a partial electric outage from 80-46 260th Street, which is next door to the incident building. At 3:34 p.m. a resident at the same location called Con Edison and reported an outside gas odor.

As detailed in the DPS report, Staff's investigation found that there was an unusually long delay in dispatching a mechanic to the site. The Con Edison mechanic was officially assigned at 3:55 pm and arrived at the location at 4:05 p.m. He noticed a strong odor of gas as soon as he drove onto the block and immediately began investigating for a leak. He tested two sewer manholes in the street near house 80-46, and got positive gas-in-air readings (20% gas) in each. He then contacted his dispatcher and requested that additional personnel respond to assist him.

At about 4:13 p.m., the mechanic entered 80-46 and found no indications of gas with his detection instrument in the atmosphere on the main floor or in the basement. He obtained a reading of 10% gas-in-air at the entry point of the electric service into the basement. The mechanic returned outside and, during the next approximately 26 minutes, tested several sewer manholes along 260th Street in both directions from house 80-46. He obtained readings of 20% gas-in-air in all the sewer manholes tested. He also identified an electric service box in the street in front of house 80-53 (across the street from house 80-50) with a solid cover which prevented him from testing for the presence of gas within the service box. He did not attempt to lift the

cover. Instead he tested for gas in a grass area beyond the curb line but near the service box and obtained very high gas-in-air readings (90%) at three points along the curb line.

At approximately 4:42 p.m., an additional Con Edison mechanic and a helper arrived at the location. At the request of the first responding mechanic, they partially lifted the cover on the electric service box and got an 80% gas-in-air reading within it. They were in the process of fully removing the service box cover to vent it, while the first responding mechanic was checking electric service records to identify buildings connected to that service box, when the explosion occurred at 4:50 p.m.

Immediately after the explosion the Fire Department responded and assisted Con Edison personnel in evacuating the buildings on 260th Street between 80th and 81st Avenues. Con Edison personnel closed gas main valves in the area to cut-off gas service to the block, and cut-off electric service as well. Appropriate actions were taken to clear any buildings and make the area safe before residents were allowed to return to their homes.

On the following day, investigation for the source of the leaking gas revealed a metal conduit containing the electric service to house 80-50 in direct contact with the gas main. Examination of the electric conduit and cable, in the area where it contacted the gas main, revealed indications of failure, with some of the insulation completely melted off and the cable melted in spots. The damaged sections of the gas main and electric cable and conduit were carefully removed and sent to an independent laboratory for testing and failure analysis. The preliminary results indicate that a fault in the electric service cables caused current to flow into the steel electric conduit and arc onto the two-inch high-pressure gas main at the point where they crossed. The arcing created holes in both the electric conduit and the gas main, and the escaping gas migrated through routes in the soil and subsurface facilities, ultimately accumulating in the house at 80-50 260th Street.

Staff's investigation of this incident addressed issues concerning the receipt and handling of the gas odor report from 80-46 260th Street, Con Edison's level of staffing and availability of on-duty personnel at the time, and the process to dispatch a qualified first responder to the scene. The full report examines these issues in detail and makes several recommendations for improvement.

The investigation also examined the actions of the first responder and whether his actions conformed to Con Edison's leak investigation procedures. In Staff's opinion, the procedures in place at the time of the incident were adequate and contained the necessary information for the

Con Edison first responder to react appropriately. However, in Staff's opinion, the mechanic failed to follow several important provisions of those procedures, spending approximately 26 minutes trying to determine the extent of the gas leak migration outside, rather than following other provisions of the procedures more critical to protecting life and property, including failure to:

- Determine the migration of leaking gas into or near buildings and/or underground facilities, required when a type 1 leak is found (e.g. the 20% gas-in-air readings obtained in the sewer manholes upon first arrival).
- Check for gas readings at all utility points of entry, when a leak investigation leads inside to the basement.
- Check adjacent and adjoining buildings for entry of gas, when an indication of gas or odor is found within a building.
- Check the electric facility maps to determine connected buildings and subsurface structures, upon indication of a gas leak in a manhole or electric service box.

Following the provisions cited above, either individually or in combination, would have led the Con Edison first responder to check inside house 80-50, at which point Con Edison's procedures would have required evacuation of the building if the responder found any reading in the general atmosphere that could not quickly be brought below 0.5% gas-in-air.

Con Edison's leak investigation procedures also called for establishing a made-safe condition by venting enclosed spaces, including removing manhole covers where gas is entering sewer or duct systems in the event a Type 1 leak is found. The mechanic did not remove any manhole covers to ventilate.

Since the incident, Con Edison has implemented several actions to improve its applicable procedures. These procedural enhancements provide for identifying situations that require enhanced emergency response, getting more personnel on the scene quickly in such situations, venting subsurface structures, checking and evacuating nearby buildings if necessary, and improved coordination with the New York City Fire Department (NYFD) at emergency sites. The revised procedures also emphasize that checking buildings and ventilating subsurface structures take priority over establishing the outside gas migration pattern.

In addition to the enhancements already implemented by Con Edison, Staff's report makes several recommendations for further changes to policies and procedures related to receiving odor

reports from the public, dispatching personnel, leak investigation and emergency response, equipment carried by mechanics and separation of electric and gas facilities:

- **Customer Service Representative (CSR) Scripts:** Con Edison should modify the script used by CSRs when handling gas leak/odor reports to have the CSR obtain a confirmation that the caller understands the instructions and intends to evacuate. If the caller does not answer affirmatively, the CSR should re-emphasize the hazard posed by the gas leak.
- **Ability to Contact Personnel:** Con Edison should take appropriate action to review and revise, as necessary, its policies regarding the ability to immediately contact all on-duty employees whose duties include responding to emergency situations, including provisions that such personnel have their communication devices with them at all times while on duty. Con Edison should also equip its personnel with communication devices that provide better coverage in “blind spots” such as basements.
- **Dispatching Policies and Procedures:** Con Edison should conduct an analysis of its policies and procedures for dispatching personnel to emergencies with emphasis on giving higher priority to emergencies than to routine matters. The analysis should examine, but not be limited to, the issues discussed in Staff’s report such as minimizing distractions due to unrelated routine calls and balancing employee proximity to the emergency versus an employee being engaged in routine matters. For example, the company should perform an analysis of the approach of having personnel strategically placed throughout the territory during each shift who are assigned routine work that can be set aside if an emergency arises. The company should respond in writing to the Department providing its analysis and results and a description of recommended changes.
- **Identification of Buildings Connected to Subsurface Structures:** Con Edison should enhance the procedure by which dispatchers identify buildings and structures connected through subsurface electric facilities and provide guidance to field crews, by specifying that employees have this information available early in the dispatching process, so that it is available to the responder upon arrival at the scene.
- **Leak Investigation Procedures:** Con Edison should add provisions to its leak investigation procedures to provide better clarity and direction regarding which and how many buildings on both sides of the street adjacent to a manhole in an urban setting will be checked in the event positive gas readings are found within subsurface structures.
- **Equipment:** Con Edison should create a first responder checklist of required tools and equipment, including but not limited to those mentioned in staff’s report such as radios, cones, waffles, barricades and manhole cover lifting devices, etc. The list should be reviewed and updated as needed, and the company should periodically verify that all mechanics are properly equipped.
- **Combined Gas and Electric Events:** Con Edison should implement a process to identify reports of electric and gas problems occurring at approximately the same time in close geographic proximity. In such situations, additional company personnel and the Fire Department will be immediately dispatched.

- **Electric and Gas Facility Separation:** Con Edison should document discovered instances of insufficient clearance between facilities, and the actions taken to correct the situation.
- **Facilities Replacement:** Con Edison should make proximity to gas facilities a priority for replacement when exposed electric conduit is found in a deteriorating condition.