

Saratoga Springs, Utah
Natural Gas Explosion
February 06, 2007

Appendix # 15

Report of Investigation
Case File Number 132007000013

By: Troy D. Mills

State Fire Marshal
5272 South College Drive Suite 302
Murray, UT 84123-2611
(801)284-6350



State of Utah

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Governor

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Lieutenant Governor

Utah Department of Public Safety
Scott T. Duncan
Commissioner

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REPORT OF INVESTIGATION

By Troy Mills
Deputy State Fire Marshal

Case File Number132007000013 (Double Fatal)
Requesting AgencySaratoga Springs Fire Department
Owner or InsuredGreg Roper
Occupant or Tenant.....Greg Roper
Date of LossFebruary 6, 2007
Time of Loss4:13 PM
Location of Loss682 North Badger Lane, Saratoga Springs, Utah
County of Loss.....Utah County
Type of Building.....Single Family Home
Vehicle or Trailer.....N/A
Fire Discovered BySee Attached
Responding Fire Department.....Saratoga Springs Fire Department
Date of ExaminationFebruary 9, 2007

Ron L. Morris, State Fire Marshal

5272 South College Drive Suite 302, Murray Utah 84123-2611
Telephone 801-284-6350 – Facsimile 801-284-6351 – Web Site <http://firemarshal.utah.gov/>

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Report:

I was contacted by Chief Deputy Brent Halladay on February 9, 2007 and asked to assist Fire Chief Mike Penovich with the investigation related to the explosion and fire that occurred at 682 North Badger Lane in Saratoga Springs, Utah. I contacted Chief Penovich and received directions to the fire scene and arranged to meet him later that afternoon to receive information about the incident. Mr. Jerry Thompson who stated that he represented the homeowners insurance company then contacted me. Mr. Thompson told me that he had ordered a fence to be installed around the property for security. He also told me where to enter the fence to access the property.

I arrived at the fire scene and found the security fence around the property. I began to photograph the area. I found that the remaining portions of the home had been knocked down and that most of the debris had been pushed into the basement. I attempted to identify any usable information related to the location of the natural gas line that had been damaged by S&E Cable. I also tried to identify the location of the various utilities and the paths they may have used to enter the structure. I found three open holes on the northeast corner of the property. One hole contained the exposed gas line, one hole was open near the utility boxes on the corner of the property, and one hole was open south of the other two.

I met with Chief Penovich and discussed with him the options for continuing this investigation. He asked me to take charge of the investigation and keep him informed as I went along. Chief Penovich gave me copies of some of the witness statements obtained from: the neighbor (Kristina Ewert); the 3 Questar employees involved prior to the explosion (Brian Southwick, Jack Bryant, and Ryan Whittekiend); and the owner (Sandy Parra) and the employee (Manuel Robles) of S&E Cable. S&E Cable is the company that initially damaged the natural gas line. I contacted Mr. Mark Chesley who is the building official for Saratoga Springs and obtained copies of the house plans showing the layout of the home.

I contacted the Utah County Sheriff's Office and requested copies of any photos and video that they had taken. I was able to obtain several photos of the incident taken by the Sheriff's Office after the explosion including some aerial photos and some photos of the body recovery. On February 13, 2007, I received two CD's with photos and one DVD with video footage that related to the incident from the Utah County Sheriff's Office. I then received a preliminary draft report from the Sheriff's Office on February 14, 2007 along with some additional photos.

On afternoon of February 14, 2007, I met with Ron Jorgensen, Vaughn Shosted, Abigail Magrane, of Questar Gas and Tim Dunn, and Kay Hansen of Dunn & Dunn Law Firm. We discussed the information they had collected regarding the events that occurred prior to the fire. They stated that Questar had received a call that the gas line had been hit at about 1:00 pm and sent 4 men in three trucks to repair the leak (Brian Southwick, Jack Bryant, Ryan Whittekiend and Larry Radford). These men arrived on scene and began by digging a hole west of the break with a mini-X machine. They found the gas line and crimped it off. They then dug a hole east of the break and crimped the line. Once the gas flow was stopped they attempted to dig a hole at the break but could not penetrate the frost layer with the mini-X. Another individual from Questar come by with a larger backhoe and dug the hole at the break. That employee then left the area. The four men repaired the break and allowed the connection to cool for about 30 minutes. The men then bar tested the soil and determined that the gas level was at less than 1%. At some point near this time, Mrs. Roper approached them and asked if it was safe to reenter her home. We discussed that the Questar employees "spotted" the gas meter and watched it for a few minutes. The meter held, indicating that there was no leak in the gas lines within the home. Either during this time or shortly after, Mr. Radford removed his coveralls and changed his shoes. Mr. Radford then entered the house with Mrs. Roper while the other three men were preparing to remove the clamps from the gas line. At this point the house exploded. Mr. Southwick then ran around to the front of the house to see if Mr. Radford was OK.

I spoke with Kristina Ewert who stated that she called April and asked her to go for a walk. They were walking west on Prairie Dog Way near the location where the Questar employees were working. April asked them if it

COPY

was safe to reenter the home. One of the Questar employees stated that it was safe. Larry indicated that he would change and then check the home. Kristina and April entered the garage using the electronic keypad to open the garage door. April then opened the door between the garage and the house. Kristina and April waited for several minutes while Larry changed. Larry then came through the garage and entered the house with April. Kristina stated that she was kneeling down to care for her child when Larry came through the garage and did not see what he was carrying with him. She also stated that she did not see if Mr. Radford had turned on the gas detector outside or if he had tested the air inside of the house using the detector prior to entering. Kristina said that she saw Larry and April enter the house but did not see which direction they went once inside.

On February 17, 2007 I met Greg Roper, his parents and Colin King (Greg's Legal Council) at the scene just after 10:00 AM and went over what they knew about the events prior to the explosion. They confirmed the location of the initial hole that was used by Manuel Robles. This hole was in the northeast corner between the utility boxes. We discussed the events of the gas line repair as indicated in the witness statements and as told to me by Questar in our meeting on February 14, 2007. Greg stated that April had been told by the Questar employees to turn off the gas appliances and vacate the home. April had turned off the furnace, the water heater and a pellet stove used to heat the home. She called Greg and told him that she had done this and asked if there was anything else she needed to do. April then left the home. Greg stated that he was down the street to the north of the home when he saw April and Kristina with the kids coming around the corner of the street. April went to the garage door and opened it, then went inside with Kristina.

During our conversation, Greg also revealed some critical facts regarding the location of the furnace and water heater. The building plan shows the utility room being along the north wall. Greg indicated that he had switched the location of the utility room and the bathroom in the basement during construction. The utility room was actually along the west wall, under the entry. The furnace sat against the south foundation wall under the entry and the water heater sat against the west side of the framed wall that extended past the stairs. There was a small amount of space between the furnace and the west foundation wall. Greg thinks that the combustion air opening was ducted to the east wall from the utility room area but he is not completely sure. The other change that Greg pointed out is that the storage area shown along the east wall was removed and that two posts that carried a beam was used to replace the concrete walls indicated on the plan. Greg stated that the electrical service runs from the northeast corner of the property near where the original gas line break occurred to the north wall of the home. The water line and sewer lines also feed to the structure along the north side of the home.

On February 20, 2007 I picked up a letter from Chief Penovich requesting that all evidence held by the Utah County Sheriff's Office be turned over to myself. I then drafted a letter requesting that the evidence be turned over to Mr. Robert Jacobson of Burn Pattern Analysis as decided in the meeting held on February 20, 2007 at Dunn and Dunn Law Firm.

The Utah County Sheriff's Office has authored a report that contains specific details related to this incident. Their report contains some specific information that was obtained through various witness interviews which is important to this case.

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Conclusion:

I have collected most (but not all) of the information available and made a through review of the information I have obtained. It is my opinion that the specific ignition source, which caused the explosion and fire, cannot be determined due to the amount of destruction caused by the explosion and the handling of the scene following the incident. It is my opinion that the source of ignition must have been in the basement and most likely near the utility room. This conclusion is based on an evaluation of the photographs and the manner in which the debris was scattered as observed in those photographs. Photos showing sections of the floor assembly blown out of the structure and various other items would indicate that the explosion originated in the basement. The fact that the garage was relatively undamaged and that the east side of the home was destroyed seems to indicate that the explosion originated near the west wall of the basement. If a definitive conclusion needs to be achieved regarding this issue, a through evaluation would need to be conducted by engineers or experts in this area.

The concentration of natural gas inside of the basement was within the flammable range and appears to have been very near to the optimal level needed to produce the explosion. Any one of a number of ignition sources could have caused the explosion.

Troy D. Mills
Deputy State Fire Marshal



Utah County Fire Marshal Fire Incident Form

Owner: Greg & April Roper

Case: CO485646

Address: 953 Prairie Dog Way

City: Saratoga Springs

State: Utah

Date of Fire: 02/06/2007 (Thursday)

Date of Report: 02/12/2007

Weather Conditions

Temperature: Unknown	Wind:	Relative Humidity:
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Type of Occupancy

Residential	Single Family: Yes	Multifamily:	Commercial:
Church	School	Other	
Estimated age: New	Height (stories):	Length:	Width:

Property Status

Occupied at time of fire? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Unoccupied at time of fire? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Vacant at time of fire? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Last person in structure: April Roper and Questar employee Larry Radford	Time and date: 02/06/07	Exited which door/egress: No egress made
Comments: Female resident of home, April Roper, and Questar employee, Larry Radford, entered home from West entrance according to reports and just prior to the explosion of home. Later both victims found deceased in basement of home toward the North /West side of structure.		

Building Construction

Foundation Type:	Basement: Yes	Crawl Space:	Slab:	Other:			
Material	Masonry:	Concrete: Cement	Stone:	Other:			
Exterior Covering	Wood	Brick/Stone Yes	Vinyl	Asphalt	Metal	Concrete	Other Stucco
Roof Covering	Asphalt: Yes		Wood	Tile	Metal		Other
Type of Construction	Wood Frame Yes	Balloon	Heavy Timber	Ordinary	Fire Resistive	Non-Combustible	Other

Alarm/Protection/Security

Sprinklers? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Standpipe Yes <input type="checkbox"/> No <input type="checkbox"/>	Security Camera(s) Yes <input type="checkbox"/> No <input type="checkbox"/>
Smoke Detectors Yes <input type="checkbox"/> No <input type="checkbox"/>	Hardwired Yes <input type="checkbox"/> No <input type="checkbox"/>	Batteries Yes <input type="checkbox"/> No <input type="checkbox"/>
Were batteries in detectors Yes No		Location(s)
Hidden Keys: Yes <input type="checkbox"/> No <input type="checkbox"/>	Security bars on windows Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Security bars on doors Yes <input type="checkbox"/> No <input type="checkbox"/>

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Comments: Most of the items in this section were destroyed by the explosion and resulting fire. No sprinkler system or smoke detectors observed.

Condition of Doors/Windows

Doors	Locked: Yes <input type="checkbox"/> No <input type="checkbox"/>	Unlocked but closed: Yes <input type="checkbox"/> No <input type="checkbox"/>	Open: Yes <input type="checkbox"/> No <input type="checkbox"/>
Evidence of forced entry: Yes <input type="checkbox"/> No <input type="checkbox"/>		Who forced open /If known:	
Windows	Secure: Yes <input type="checkbox"/> No <input type="checkbox"/>	Unlocked but closed: Yes <input type="checkbox"/> No <input type="checkbox"/>	Open: <input type="checkbox"/> Broken: Yes <input type="checkbox"/>
Broken by first responders: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments: Explosion appears to have broken windows, unknown by the time I arrived on the scene. See photos taken by Sheriff's office.	

Fire Department Observations

Name of first commander on scene: Chief Mike Penovich	Department: Saratoga Springs Fire Dept.
Other Dept's: Lehi, Eagle Mountain, Lone Peak	General Observations: See Dispatch report
Any obstacles to extinguishment:	
First-In report attached? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not received	

Utilities

Electrical: On <input checked="" type="checkbox"/> Off <input type="checkbox"/>	Overhead: No <input type="checkbox"/>	Underground: Yes <input type="checkbox"/>
Electrical Company: Rocky Mountain Power	Phone Number:	
Gas/Fuel On <input type="checkbox"/> Off <input type="checkbox"/> None <input type="checkbox"/>	Type: <i>Natural</i> <input type="checkbox"/> <i>LPG</i> <input type="checkbox"/> <i>Oil</i> <input type="checkbox"/>	Who turned fuel off: Yes <input type="checkbox"/> No <input type="checkbox"/>
Fuel Company: Queststar Gas	Phone Number:	
Water Company: See Dispatch report	Phone Number:	
Phone Company:	Phone Number:	
Insurance Company:	Phone Number:	
Comments: It was unknown if natural gas was on or off at the time of this report. Detective Jody Scott has written statements by Questar employees that may have been conflicting, I have not read reports.		

Narrative:

On February 6, 2007, at 17:42, I received a call from Utah County Dispatch on my cell phone while at home. I was requested to respond to an explosion at a home in Saratoga Springs, 953 Prairie Dog Way, at the request of Detective Jody Scott, Utah County Sheriff's office. I arrived at the scene at around 18:10 hrs.

Upon my arrival I observed the only portion of the home still remaining intact was the garage located on the West side of the home; it appeared that the rest of the home was destroyed by an explosion. Debris was scattered in all directions, but appeared more extensive to the East of the home site. Assessment at the scene indicated this was an explosion with resulting fire. When I observed surrounding area to the East, I observed a large couch on top of the home directly East of the damaged home, as well as personal property and building components some distance to the East of the damaged structure. As I approached the fire scene coming from the East to the West, I observed that the home located to the East of said structure had damage to the West side of the home. Windows were broken, siding damaged as well as soffit missing.

I made contact with Chief Penovich and was asked by him to assist the Sheriff's department with investigation of the explosion. I made contact with Detective Jody Scott and asked where he was in the investigation. He stated he had received written statements from people that witnessed the accident, as

well as any Questar employees that were at the scene during and after the explosion. Detective Scott explained that a natural gas line had been hit while doing trenches by an independent contractor. Questar Gas was notified of the damaged gas line and sent personnel and equipment out to repair the damaged line. In talking to Questar employees at the scene they stated that the line damaged was a main line, and was six inches in diameter. The repaired line was around fifty feet from the damaged property, and was on the North/ East side of the home, close to the sidewalk. Questar employees stated to me that the lines had been repaired prior to the explosion. I asked Detective Scott if photos were taken of the repaired line and hole, he stated they had. There were a few holes dug in the ground on the North side of the home and photos were taken by the Sheriff's Department. I had heard conflicting stories if the gas meter to the damaged home had been turned on or not, so I asked Detective Scott if a photos of the gas meter had been taken, and he stated they had. Chief Penovich was asked if he would like to have the gas meter taken into evidence so at a later date it could be determined if it was on or off at the time of the explosion, and he stated he would. The gas meter had extensive damage from heat imposed upon it and had melted, it was then taken into evidence by the Sheriff's office. I was unsure as to who had taken the meter from the wall, or if the explosion had done it.

During this time Questar employees asked if they could come inside the taped secured area and take gas meter reading in the ground on the North side of the damaged home as well as the home on the East side. I contacted Chief Penovich and asked if he would approve them to take the reading and he stated it would be a good thing to do, so I escorted them to the areas they wanted to get these readings. As they took the readings to the home East of the damaged home they were getting readings of thirty percent in the ground, as stated by the Questar employee taking the reading. As they moved to the West toward the damaged home the reading became smaller; until we were within five feet of the damaged home gas meter they stated the readings were around one percent. I relayed this information to the Chief Penovich and escorted the Questar employees back behind the caution tape and secured area.

I made contact with the Eagle Mountain Fire Chief Rand Andrus, who had taken over as Operations Commander on the fire ground. Fire crews were in the process of trying to find the bodies of missing persons assumed to be in the basement of the home and under all the debris in the basement area of the damaged home. After the explosion, a fire consumed much of the remaining wood portions of the home. The upper floors and wood trusses from the roof of the structure had pancaked into the basement, making it difficult to be removed. They were using heavy equipment to assist in the removal of the debris in the basement. I noticed the water heater being moved, and asked Chief Andrus to have the heavy equipment operator remove it very carefully to an area by itself on the ground East of the home. I asked Chief Andrus to leave the furnace where it was located and not move it; it appeared to be in a location that would not hinder the search of the victims. I was not sure if it had been moved prior to my observing it or not.

The search for the victims continued while I discussed witness statements and other information with Detective Scott. At some point during these conversations, Questar made a request to take and move their vehicles that were parked on the roadway on the West and North side of the home; these were the vehicles that were used in the repairing of the damaged lines. I advised Chief Penovich and asked him to have the vehicles stay in their present location until the investigation was completed, and he agreed.

When one of the victims was found, I made my way over to the North side of the property, and found that the Questar victim's toolbox had been recovered from the basement, and taken from the basement to ground level. I went and found Detective Scott to make sure that photographs were taken of any other evidence prior to removal from where it was found. During that time a red handheld gas meter was found, and placed by the toolbox. Questar asked if they could have the meter, but both Detective Scott and myself asked Chief Penovich to have it secured and taken into evidence; Chief Penovich agreed and asked the Sheriff's office to have it secured and taken into evidence, at which time it was.

After two victims were found, their remains were photographed in place by the Sheriff's office. The medical examiner was notified by the Sheriff's office and the bodies were left in place pending the medical examiner arrival for removal.

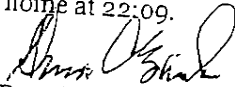
During the investigation we were unable to determine the area of origin of the explosion because of extensive and heavy damage, and resulting fire. The remaining garage walls and garage doors showed bulging outward, and large cracks in the joints of the brick wall which is indicative of an explosion. Chief Penovich was advised as to our findings at the scene, it was determined to classify this explosion and resulting fire as accidental.

The origin of the fire was not determined because of the extensive damage caused by the explosion. An ignition source was also not found due to extensive damage. Items that were displaced some distance from the home showed no signs of fire prior to them being ejected from the home, which would show that there was an explosion with resulting fire. Photos were taken of items prior to my arrival.

I met with Chief Penovich, Chief Andrus, Detective Jody Scott and Lt. Jerry Monson, Utah County Sheriff's office, and advised Chief Penovich to keep the scene secured until the property could be turned over to the insurance company the following morning. While I was there, it was set up that Saratoga Springs Fire Department would secure the scene during the night; if a fire call came into Saratoga Springs Fire Department, the Utah County Sheriff's office would come and secure the scene so the fire department could respond. Chief Penovich was worried about the walls of the remaining garage and that potential collapse may injury someone. Chief Andrus advised Chief Penovich if he felt the walls were a danger he should have the walls taken down.

I asked Chief Penovich if there was anything else he would like me to do at the scene and he stated I helped a lot, and said I could finish up. I advised Chief Penovich I would prepare a written statement on my actions and would forward it onto him as soon as I completed it.

Dispatch records do not show when I cleared the scene; I believe it was around 21:30 hours. When I left, the walls were still up and the bodies remained in the basement waiting the ME's to arrive. I was 10-42 at home at 22:09.


Dennis C. Barker
Utah County Fire Marshal



State of Utah

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Utah Department of Public Safety
Scott T. Duncan
Commissioner

February 20, 2007

Utah County Sheriff's Office
Office of Investigations
3075 North Main Street
Spanish Fork, Utah 84660

To Whom It May Concern:

I have been requested by Chief Mike Penovich to take charge of the evidence related to the February 6, 2007 fire and explosion at 682 North Badger Lane, Saratoga Springs, Utah. Today I attended a meeting with several attorneys that represent each of the parties involved in this case. It was decided at that meeting that the proper course of action regarding the future handling of evidence related to this case is to turn all evidence over to one entity that can provide a safe and secure storage facility that would also provide adequate space to conduct any examination of the evidence by all interested parties. It was also decided that the best individual for this should be Mr. Robert "Jake" Jacobson of Burn Pattern Analysis, Inc. We have discussed the options available and determined that it would be best to have all evidence turned directly over to Mr. Jacobson in order to minimize the custody chain related to this evidence.

I request that you release all physical evidence being held by the Utah County Sheriff's Office related to case number 07UCO1273. Attached is the written request from Chief Penovich releasing the evidence to my care.

Thank you for your cooperation and assistance in this matter.

Sincerely,

Troy D. Mills
Deputy State Fire Marshal

Ron L. Morris, State Fire Marshal

5272 South College Drive Suite 302, Murray Utah 84123-2611
Telephone 801-284-6350 – Facsimile 801-284-6351 – Web Site <http://firemarshal.utah.gov/>

NOTES:

Case Number: 13200700013
Greg Roper
682 North Badger Lane
Saratoga Springs, Utah

February 9, 2007

Called by Saratoga Springs Fire Chief Mike Penovich on February 9, 2007 and asked to assist with the explosion investigation that occurred on Tuesday February 6, 2007. (Cell: 801-██████████)

The incident occurred on lot 806. This is the house on the corner of Prairie Dog Way (700 North) and Badger Ln. (980 West) in Saratoga Springs.

Spoke with Saratoga Springs Building Official Mark Chesley and obtained copies from the building plan in order to understand the layout of the home. The basement appears to be unfinished.

Jerry Thompson is representing Farmers Insurance who insures the homeowner.

Jody Scott is the Deputy Sheriff Investigator with Utah County Sheriff's Office. (Office: 801-851-4023, Cell: 801-██████████)

Spoke with Larry Thorson with Questar Gas who indicated that I needed to talk with Ron Jorgensen of Questar Gas. (Ron's Office: 801-324-3135)

Comments:

Larry Thorson stated that he understood that the gas line had been marked correctly and that the contractor had shot a missile to install a phone line for one of the houses in the area. The contractor was suppose to pothole the gas line but apparently did not.

February 12, 2007

Spoke with James Johnston with Utah OSHA. (Office: 801-530-6604; Cell: 801-██████████) He stated that they are focusing their investigation on the Questar employee and the tools and test equipment he used. I explained the concept of spoliation and informed him that I would work toward getting the test equipment he wanted but he would need to include all interested parties in any destructive testing that was conducted.

I spoke with Ron Jorgensen with Questar and set up a meeting with him for Wednesday at 2:00 PM at his office located at 1140 W 200 S SLC.

I called Jody Scott. He has been injured and has turned the information over to Mike Bower. The main number for investigations is 801-851-4010

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TO PROTECTIVE ORDER

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February 16, 2007

I received a two CD's with photos and one DVD with video footage on February 13, 2007. I then received a preliminary draft report from Mike on February 14, 2007 along with some additional photos. I am in the process of reviewing the photos and video.

I met with Ron Jorgensen, Vaughn Shosted, Abigail Magrane, of Questar Gas and Tim Dunn, and Kay Hansen of Dunn & Dunn on February 14, 2007. We reviewed the information they had regarding the events that occurred prior to the fire. They received a call that the gas line had been hit and sent 4 men in three trucks to repair the leak. The men first dug a hole west of the break with a mini-X machine, found the gas line and crimped it off. They then dug a hole east of the break and crimped the line. They then attempted to dig a hole at the break but could not penetrate the frost layer with the mini-X. They had someone else from Questar come by with a larger backhoe and dig the hole at the break. That employee then left the area. The four men repaired the break and allowed the connection to cool for about 30 minutes. They then bar tested the soil and indicated that it tested at less than 1%. At some point near this time, Mrs. Roper approached and asked the men if it was safe to reenter her home. The men spotted the gas meter and watched it for a few minutes. The meter held, indicating that there was not any gas leaks in the gas lines within the home. Either during this time or right after, Mr. Radford removed his coveralls and changed his shoes. He then entered the house with Mrs. Roper. The other three men were preparing to remove the crimps. At this point the house exploded. The men ran around to the front of the house to see if Mr. Radford was OK.

I spoke with Kristina Ewert at her home this afternoon. She stated that she called April and asked her to go for a walk. They were walking west on Prairie Dog Way near the Questar workers. April asked them if it was safe to reenter the home. One of the Questar employees stated that it was safe. Larry indicated that he would change and then check the home. Kristina and April entered the garage using the electronic keypad to open the garage door. April then opened the door between the garage and the house. They waited for several minutes while Larry changed. Larry then came through the garage and entered the house with April. Kristina stated that she was kneeling down to care for her child when Larry came through the garage and did not see what he was carrying with him. She stated that she also did not see if he turned on the gas detector outside or tested the air inside of the house. Kristina said that she saw Larry and April enter the house but did not see where they went once inside.

February 17, 2007

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furnace, the water heater and a pellet stove used to heat the home. She called Greg and told him that she had done this and asked if there was anything else he needed to do. April then left the home and returned later. Greg was down the street to the north of the home when he saw April, Kris and the kids coming around the corner of the street. April went to the garage door and opened then went inside with Kris. Greg revealed some critical facts regarding the location of the furnace and water heater. The plan shows the utility room being along the north wall. Greg indicated that they had switched the location of the utility room and the bathroom. The utility room was actually along the west wall under the entry. The furnace sat against the south foundation wall under the entry and the water heater sat against the west side of the framed wall that extended past the stairs. There was a small amount of space between the furnace and the west foundation wall. Greg thinks that the combustion air opening was ducted to the east wall from the utility room area but he is not completely sure. The other change that Greg pointed out is that the storage area shown along the east wall was removed and that two posts that carried a beam was used to replace the concrete walls indicated on the plan.

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REPORT OF INVESTIGATION

By Troy Mills
Deputy State Fire Marshal

Case File Number	132007000013 (Double Fatal)
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Occupant or Tenant	Greg Roper
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Vehicle or Trailer	N/A
Fire Discovered By	See Attached
Responding Fire Department	Saratoga Springs Fire Department
Date of Examination	February 9, 2007

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I was contacted by Chief Deputy Brent Halladay on February 9, 2007 and asked to assist Fire Chief Mike Penovich with the investigation related to the explosion and fire that occurred at 682 North Badger Lane in Saratoga Springs, Utah. I contacted Chief Penovich and received directions to the fire scene and arranged to meet him later that afternoon to receive information about the incident. Mr. Jerry Thompson who stated that he represented the homeowners insurance company then contacted me. Mr. Thompson told me that he had ordered a fence to be installed around the property for security. He also told me where to enter the fence to access the property.

I arrived at the fire scene and found the security fence around the property. I began to photograph the area. I found that the remaining portions of the home had been knocked down and that most of the debris had been pushed into the basement. I attempted to identify any usable information related to the location of the natural gas line that had been damaged by S&E Cable. I also tried to identify the location of the various utilities and the paths they may have used to enter the structure. I found three open holes on the northeast corner of the property. One hole contained the exposed gas line, one hole was open near the utility boxes on the corner of the property, and one hole was open south of the other two.

I met with Chief Penovich and discussed with him the options for continuing this investigation. He asked me to take charge of the investigation and keep him informed as I went along. Chief Penovich gave me copies of some of the witness statements obtained from: the neighbor (Kristina Ewert); the 3 Questar employees involved prior to the explosion (Brian Southwick, Jack Bryant, and Ryan Whittekiend); and the owner (Sandy Parra) and the employee (Manuel Robles) of S&E Cable. S&E Cable is the company that initially damaged the natural gas line. I contacted Mr. Mark Chesley who is the building official for Saratoga Springs and obtained copies of the house plans showing the layout of the home.

I contacted the Utah County Sheriff's Office and requested copies of any photos and video that they had taken. I was able to obtain several photos of the incident taken by the Sheriff's Office after the explosion including some aerial photos and some photos of the body recovery. On February 13, 2007, I received two CD's with photos and one DVD with video footage that related to the incident from the Utah County Sheriff's Office. I then received a preliminary draft report from the Sheriff's Office on February 14, 2007 along with some additional photos.

On afternoon of February 14, 2007, I met with Ron Jorgensen, Vaughn Shosted, Abigail Magrane, of Questar Gas and Tim Dunn, and Kay Hansen of Dunn & Dunn Law Firm. We discussed the information they had collected regarding the events that occurred prior to the fire. They stated that Questar had received a call that the gas line had been hit at about 1:00 pm and sent 4 men in three trucks to repair the leak (Brian Southwick, Jack Bryant, Ryan Whittekiend and Larry Radford). These men arrived on scene and began by digging a hole west of the break with a mini-X machine. They found the gas line and crimped it off. They then dug a hole east of the break and crimped the line. Once the gas flow was stopped they attempted to dig a hole at the break but could not penetrate the frost layer with the mini-X. Another individual from Questar come by with a larger backhoe and dug the hole at the break. That employee then left the area. The four men repaired the break and allowed the connection to cool for about 30 minutes. The men then bar tested the soil and determined that the gas level was at less than 1%. At some point near this time, Mrs. Roper approached them and asked if it was safe to reenter her home. We discussed that the Questar employees "spotted" the gas meter and watched it for a few minutes. The meter held, indicating that there was no leak in the gas lines within the home. Either during this time or shortly after, Mr. Radford removed his coveralls and changed his shoes. Mr. Radford then entered the house with Mrs. Roper while the other three men were preparing to remove the clamps from the gas line. At this point the house exploded. Mr. Southwick then ran around to the front of the house to see if Mr. Radford was OK.

I spoke with Kristina Ewert who stated that she called April and asked her to go for a walk. They were walking west on Prairie Dog Way near the location where the Questar employees were working. April asked them if it was safe to reenter the home. One of the Questar employees stated that it was safe. Larry indicated that he would change and then check the home. Kristina and April entered the garage using the electronic keypad to open the garage door. April then opened the door between the garage and the house. Kristina and April waited for several minutes while Larry changed. Larry then came through the garage and entered the house with April. Kristina stated that she was kneeling down to care for her child when Larry came through the garage and did not see what he was carrying with him. She also stated that she did not see if Mr. Radford had turned on the gas detector outside or if he had tested the air inside of the house using the detector prior to entering. Kristina said that she saw Larry and April enter the house but did not see which direction they went once inside.

On February 17, 2007 I met Greg Roper, his parents and Colin King (Greg's Legal Council) at the scene just after 10:00 AM and went over what they knew about the events prior to the explosion. They confirmed the location of the initial hole that was used by Manuel Robles. This hole was in the northeast corner between the utility boxes. We discussed the events of the gas line repair as indicated in the witness statements and as told to me by Questar in our meeting on February 14, 2007. Greg stated that April had been told by the Questar employees to turn off the gas appliances and vacate the home. April had turned off the furnace, the water heater and a pellet stove used to heat the home. She called Greg and told him that she had done this and asked if there was anything else she needed to do. April then left the home. Greg stated that he was down the street to the north of the home when he saw April and Kristina with the kids coming around the corner of the street. April went to the garage door and opened it, then went inside with Kristina.

During our conversation, Greg also revealed some critical facts regarding the location of the furnace and water heater. The building plan shows the utility room being along the north wall. Greg indicated that he had switched the location of the utility room and the bathroom in the basement during construction. The utility room was actually along the west wall, under the entry. The furnace sat against the south foundation wall under the entry and the water heater sat against the west side of the framed wall that extended past the stairs. There was a small amount of space between the furnace and the west foundation wall. Greg thinks that the combustion air opening was ducted to the east wall from the utility room area but he is not completely sure. The other change that Greg pointed out is that the storage area shown along the east wall was removed and that two posts that carried a beam was used to replace the concrete walls indicated on the plan. Greg stated that the electrical service runs from the northeast corner of the property near where the original gas line break occurred to the north wall of the home. The water line and sewer lines also feed to the structure along the north side of the home.

On February 20, 2007 I picked up a letter from Chief Penovich requesting that all evidence held by the Utah County Sheriff's Office be turned over to myself. I then drafted a letter requesting that the evidence be turned over to Mr. Robert Jacobson of Burn Pattern Analysis as decided in the meeting held on February 20, 2007 at Dunn and Dunn Law Firm.

The Utah County Sheriff's Office has authored a report that contains specific details related to this incident. Their report contains some specific information that was obtained through various witness interviews which is important to this case.

Conclusion:

I have collected most (but not all) of the information available and made a through review of the information I have obtained. It is my opinion that the specific ignition source, which caused the explosion and fire, cannot be determined due to the amount of destruction caused by the explosion and the handling of the scene following the incident. It is my opinion that the source of ignition must have been in the basement and most likely near the utility room. This conclusion is based on an evaluation of the photographs and the manner in which the debris was scattered as observed in those photographs. Photos showing sections of the floor assembly blown out of the structure and various other items would indicate that the explosion originated in the basement. The fact that the garage was relatively undamaged and that the east side of the home was destroyed seems to indicate that the explosion originated near the west wall of the basement. If a definitive conclusion needs to be achieved regarding this issue, a through evaluation would need to be conducted by engineers or experts in this area.

The concentration of natural gas inside of the basement was within the flammable range and appears to have been very near to the optimal level needed to produce the explosion. Any one of a number of ignition sources could have caused the explosion.

Troy D. Mills
Deputy State Fire Marshal

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Appendix # 15 – Sealed Photos # 45 to 52
Of the Pipeline Failure Investigative
Report

