

**POST INSPECTION MEMORANDUM**

**Inspector:** Gbenga Ajiboye, Joseph Gratcofsky  
**Reviewed:** Kim West  
**Follow-Up Enforcement:** No Violation  
**PCP\* PCO\* NOA WL LOC**  
**Director Approval\*** \_\_\_\_\_

**Date:** April 18, 2017

**Operator Inspected:** **OPID:** 473 **Region:** Western  
Anadarko Petroleum Corporation  
501 N. Division Blvd  
Platteville, CO 8061

**Unit Address:**  
6312 TWILIGHT AVE.  
County: WELD  
City: FIRESTONE State: CO Zip: 80504

**Unit Inspected:** Anadarko Well-head **Unit ID:**  
**Unit Type:** Flowlines  
**Inspection Type:** M05 Special Assignment  
**Accident Location:** 6312 Twilight Ave.  
**Inspection Dates:** April 18-20, 2017  
**AFOD:** 3.0 (M05)  
**SMART Activity Number:** 156061  
**Incident Report number:** 1175960

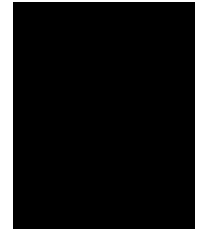
**Operator Contact:** Bret Schissler, Production Supervisor, Anadarko Petroleum Corporation  
**Phone:** [REDACTED] **Cell:** [REDACTED] **Emergency:**

**Unit Description:** At the request of the Colorado Public Utilities Commission (CO-PUC), the Accident Investigation Division, (AID) Director asked the PHMSA Western region office to send Inspectors to the site of the House Explosion. The Local Distribution Company (LDC), Black Hills that falls under the jurisdiction of the CO-PUC, provided natural gas service to the house. Near the exploded house was a wellhead operated by Anadarko. There were three flow lines behind the home that connect to the wellhead. Further details of observation made by the PHMSA Inspectors are summarized in the Daily Logs. The flowlines are not under the jurisdiction of PHMSA, but are within the jurisdiction of the Colorado oil and Gas Conservation Commission

**Facilities Inspected:**  
Wellhead operated by Anadarko, the home that exploded and house to the west of the exploded house (House 2), however, this event does not fall under the jurisdiction of PHMSA, this report is solely written based on our presence at the scene.

**Persons Interviewed or Interacted with:**

Bret Schissler	Production Supervisor	Anadarko Petroleum Corporation
Joe MacLaren	Integrity Inspector	Oil and Gas Conservation Commission
Mike Leonard	Quality Assurance	Oil and Gas Conservation Commission
Fred Johnson	Pipeline Emergency	Department of Regulatory Agencies
Joe Malloy	Pipeline Safety	Department of Regulatory Agencies
Mitchell Pebley	Manager	Black Hills Energy



**Probable Violations/Concerns:**

Not applicable for lack of jurisdiction.

**Follow up on the history of prior offenses that are still open:**

<b>Prior Offenses (for the past 5 years)</b>		
<b>CPF #</b>	<b>What type of open enforcement action(s)?</b>	<b>Status of the regulations(s) violated (Reoccurrence Offenses, Implement a NOA Revision, Completion of PCO or CO, etc.)</b>

**Recommendations:**

Not applicable for lack of jurisdiction.

**Comments:**

A national Response Center (NRC) incident call was made to report an incident of a house explosion at 6312 Twilight Ave., Firestone, Colorado on April 17, 2017, at approximately 1830 MST. The incident report number is 1175960. The report indicated that there were two people working on a water heater in the basement when the home exploded.

Four people were in the house at the time of the explosion. The mother got out of the front door, and air flown to the hospital with internal injuries and son was thrown out through the window to the sidewalk by the explosion. The father and uncle (plumber) were in the basement installing a new water heater when the explosion occurred, and their bodies was later recovered on the April 18th.

Local fire department and police department secured the site, at approximately 0700 on April 18th. The missing bodies was recovered, and investigation began on the cause of the explosion. Anadarko has a 1” flowline connected to the wellhead on the east side of the exploded home traced to the back of the basement. The details of the excavation are summarized in the Daily Log sheets.

The flowlines are not under the jurisdiction of PHMSA, but are within the jurisdiction of the Colorado oil and Gas Conservation Commission.

The LDC successfully tested the service line to the exploded house for 10 min. Excess Flow Valve (EFV) was found shut after the explosion.

Anadarko has three buried flowlines that ended near the foundation of exploded house, the lines were found cut and exposed under the slab of the exploded house.

The 1” flowline was found connected to the active well at the time we arrived at the scene of the exploded house.

# USDOT Office of Pipeline Safety

## Daily Log

**Project: Firestone, Home Explosion**

Date: 4/18/17

Owner/Operator: Anadarko Petroleum Corporation

Site Condition: Weather: Clear

Temp: ~75°F

Start Time: 1200

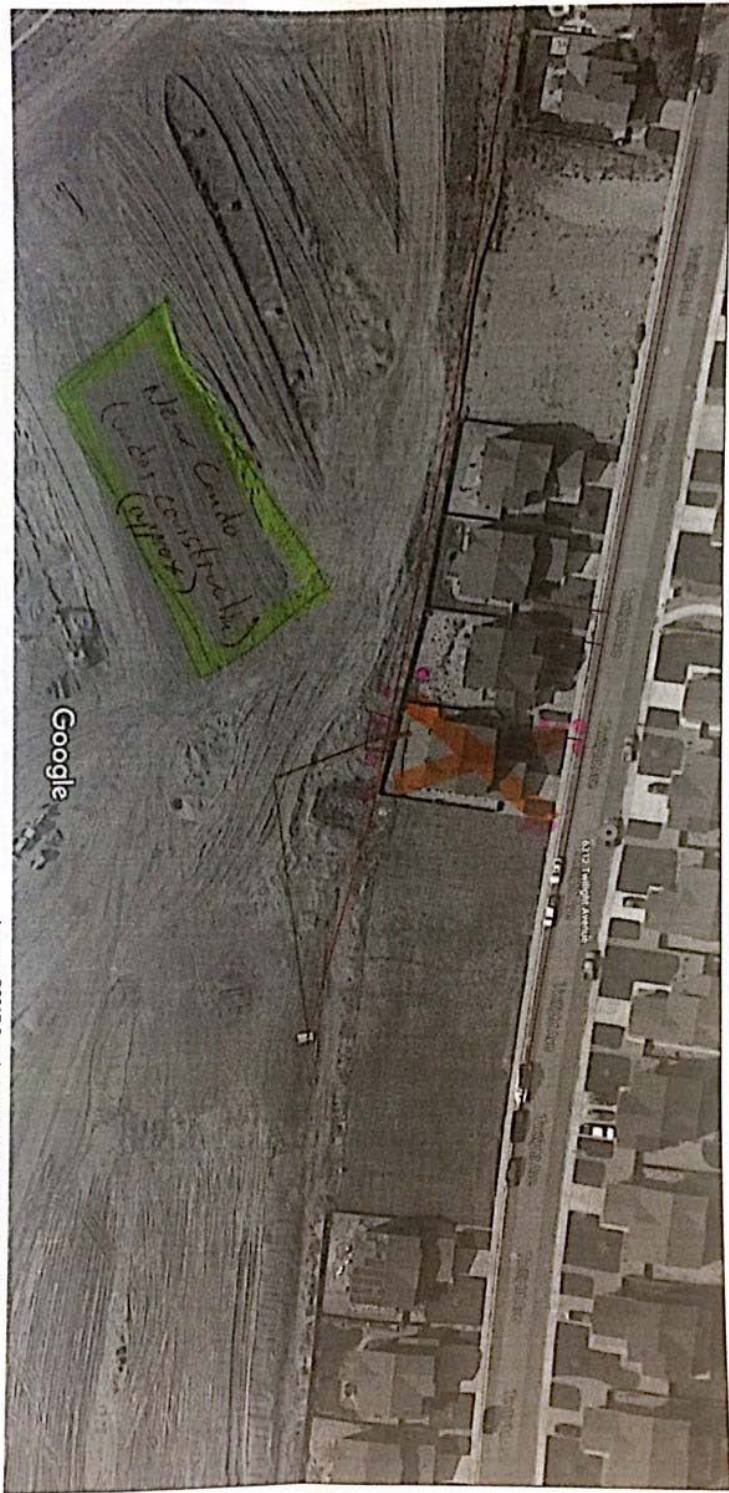
End Time: 1800

Report (Include description of work, location, and identification and resolution of any problems)

- 1200 arrived on site (6312 Twilight Ave. Firestone, CO)
- Met with Gbenga Ajiboye (PHMSA), Joe Malloy (CO-PUC) and Joe MacLaren (CO Oil & Gas Conservation Commission), as well as reps from Black Hills and Anadarko.
- Received an overview of area production operations from Anadarko employee.
- Notified that Black Hills had bar holed (gas detection operation) around the property and found the highest concentrations of gas on the back side of the destroyed home and zero concentration in front of the home (regulator and service line is located at front of the home).
- Anadarko had performed a hydrostatic test on the production flow line (2") prior to my arrival and it held stable at 500 psi for 15 minutes. Joe MacLaren requested this test be performed again under the observation of the state and federal regulators and held for a longer period. Anadarko complied and the test held steady and stabilized for 1 hour at 500 psi.
- There is also a 1" line that is connected to the wellhead whose termination point is unknown. During a line locate, the line locator lost the signal for the 1" line as it met with the 2" line (see figure 1). Per the Anadarko field personnel, the valve on this line had been shut in for 2 weeks.
- As I departed at approximately 1800, the process of excavating the 1" line where the signal was lost began at approximately 1800 hrs.

Inspector Signature \_\_\_\_\_

Google Maps 6312 Twilight Ave



• bar hole d (approx)

— Abandoned 2" (dead track)  
1" (still track)

— 2" Flawline

Figure 1: Sketch of observations over Google satellite view.



**Figure 2:** Wellhead in foreground, explosion site in background.



**Figure 3:** Explosion site from south side of property facing North.



**Figure 4:** Explosion site, from Southwest side of property, facing Northeast.



**Figure 5:** From Southeast corner of property looking toward the wellhead. Yellow flags indicate location of active 2" flowline.



**Figure 6:** End of active 2" flowline at oil water separation unit.



2" Active flowline

**Figure 7:** End of 2" flow line a separator facility with pressure gauge installed for hydrotest

End of day 1

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## Daily Log

**Project: Firestone, Home Explosion**

Date: 4/19/17

Owner/Operator: Anadarko Petroleum Corporation

Site Condition: Weather: Clear

Temp: ~73°F

Start Time: 1200

End Time: 1900

Report (Include description of work, location, and identification and resolution of any problems)

- 0800 Arrived on site day 2, 6312 Twilight Ave. Firestone, CO
- Present on site were, Fred Johnson (CO-PUC) and Mike Leonard (CO Oil & Gas Conservation Commission), as well as reps from Black Hills and Anadarko.
- Figure 8 is a Google map description and depiction of likely path of two 2" flow line and a 1" flow line going towards the basement of the exploded home. Figure 10 is the open trench behind the exploded house showing the three lines.
- House to the west of the exploded house (House 2) was vented overnight from 4/18 to 4/19. The LEL level was checked at approximately 0830, 30 min after the fan was off, the LEL reading was 0. Four hours later at approximately 1330 the LEL increased to 6%, as per test conducted by the Black Hills Technician. Figure 8 shows the position of house 2 on Google map.
- Exploded house and House 2 each have separate drainage system that channel to the sump in the basement of each respective homes. The window water collection drainage system can be seen at the basement window of the house where there positive LEL level as shown in Figure 10 and 11.
- The concrete slab at the back of the exploded house was lifted and a gas check was done, under the deck that showed a 10% LEL see Figure 12.
- Excavation of the section near the foundation occurred at approximate 1643 on the two 2" lines and 1" line, as shown in Figure 13. The trench was dug to expose the line in the yard of the exploded house close to the window, there was a strong smell of gas, like a petroleum product coming out of the open trench, the line sloughed afterwards.
- Future activity, Black hills plans to do a pressure test on their line on 4/20/2017

Inspector Signature \_\_\_\_\_





**Figure 8:** Sketch of active and abandoned pipeline going to the back of the yard (Note, the map is not official, not drawn to scale, but a pictorial description based on the trenched line)



**Figure 9:** First open trench going towards the exploded house. Two 2" lines (steel) and a 1" line (plastic) are shown



**Figure 10:** Drainage system in the south window of the exploded house



**Figure 11:** Drainage system in the east window of the unexploded House 2



**Figure 12:** Removal of the concrete slab at the back of the exploded house, relative to the position of the initially dug trench exposing the three flow lines.



**Figure 13:** Sloughed trench close to the south window of the exploded house.

End of day 2

# USDOT Office of Pipeline Safety

## Daily Log

**Project: Firestone, Home Explosion**

Date: 4/19/17

Owner/Operator: Anadarko Petroleum Corporation

Site Condition: Weather: Clear (AM)/Rainy (PM)

Temp: ~43°F

Start Time: 0730

End Time: 2000

Report (Include description of work, location, and identification and resolution of any problems)

- Arrived on site day 3 6312 Twilight Ave. Firestone, CO at 0730.
- At approximately 0900 Black Hills Energy company exposed the service line in the north-east side of the exploded house for a pressure test.
- The test started at 0938 and the pressure held at 30 psi for 10 min, test ended at 0950, pressure was constant for the duration see Figure 14.
- Routine test was conducted on the window of the unexploded house 2, test showed 50% by volume of LEL.
- Once the concrete slab was removed at the south window close to the sloughed trench, a bar hole sample test indicated presence of LEL. Soil samples were collected for further analysis.
- Bar hole sample was taken at the back yard of House 2 to test for LEL, all bar hole locations tested positive for LEL see Figure 15.
- The sloughed trench at the exploded house was reopened at approximately 1330, once the three lines were exposed, there was strong odor of petroleum product again see Figure 16. All three lines appeared to be saw cut and not capped.
- The 1" line was brought to surface, and the hole was backfilled to allow for work to continue as shown in Figure 17. The exposed 1" line was tested for LEL, and the result was negative. Approximately 2 feet of the exposed 1" line was cut and removed for further analysis, see Figure 18.
- The other end of the 1" line at the wellhead (Fig. 20) was tested for continuity by tapping a plastic bag to the inlet, and vacuum pressure from the vacuum-truck was applied on the exposed 1" line behind the exploded house (Fig 22). The test stopped when the plastic bag responded to the vacuum pressure, indicating continuity.
- Figure 19 was showing the wellhead after the explosion on April 18<sup>th</sup> showing a connection to the active wellhead.

Inspector Signature \_\_\_\_\_



**Figure 14:** Black Hills Energy company service line pressure test pressure held for 10 min.



**Figure 15:** The backyard of the unexploded House 2 where a hole was dug and LEL tested.



**Figure 16:** The exposed end of the three flow lines under the removed concrete slab. The 1” line is underneath the exposed two 2” line



**Figure 17:** End of 1” line brought to the surface.



**Figure 18:** Approximately 2 feet of the exposed 1” line cut.



**Figure 19:** The Anadarko wellhead East of the exploded property with the 1’ line still connected, photo taken 4/18/2017



**Figure 20:** The 1” line at the wellhead with a plastic cover, ready for continuity test