

# NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering  
Materials Laboratory Division  
Washington, D.C. 20594



January 29, 2018

MATERIALS LABORATORY FACTUAL REPORT

Report No. 18-008

## A. ACCIDENT INFORMATION

Place : Silver Spring, Maryland  
Date : August 10, 2016  
Vehicle : Washington Gas service pipe and gas regulators  
NTSB No. : DCA16FP003  
Investigator : Ravi Chhatre

## B. COMPONENTS EXAMINED

Main burner assembly and pipe segment that separated from the gas control valve assembly.

## C. DETAILS OF THE EXAMINATION

Figure 1 shows a photograph of the main burner assembly and a pipe segment that separated from the gas control valve assembly. Examination of the pipe segment revealed one end separated from the gas control valve assembly, in the area indicated by arrows "X1" in figure 1. The fracture indicated by arrows "X1" in figure 1 intersected the threaded end of a pipe nipple. The outside diameter of the nipple measured approximately 0.85 inch. The mating threaded-remnant of the fractured nipple, approximately a 0.7-inch length portion, remained attached and inside of the gas control valve assembly. The other end of the pipe segment also fractured at the threaded portion, in the area indicated by arrow "X2" in figure 1. Saw cuts were made through the pipe near the fractured ends to facilitate examination and cleaning.

A saw cut was made through the pipe in areas located approximately one inch from each fractured end. Figures 2 and 4 show photographs of the fractured ends prior to cleaning. Bench binocular microscope examination of the pipe segments revealed the fracture faces were covered with brown iron oxide. The fracture faces were ultrasonic cleaned in Alconox, a commercial detergent. Figures 3 and 5 show photographs of the fracture faces after cleaning. Post cleaning examination of the fracture faces revealed they contained a rough fracture texture on slant planes consistent with overstress separation.

Frank Zakar  
Senior Metallurgist

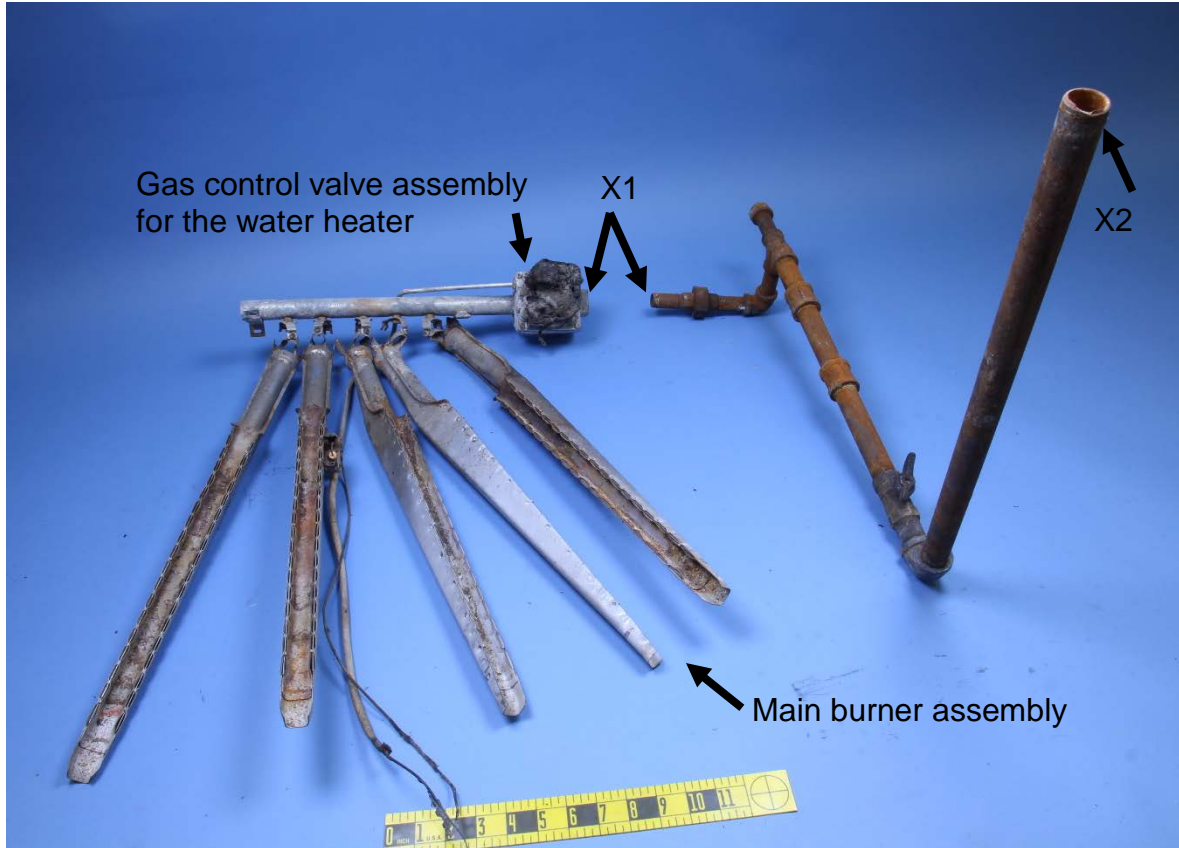


Figure 1. As-received main burner assembly and pipe segment that separated from the gas control valve assembly, in the area indicated by arrows "X1". This photograph shows the location of the mating fracture faces and does not show the alignment of pieces relative to each other prior to the accident.

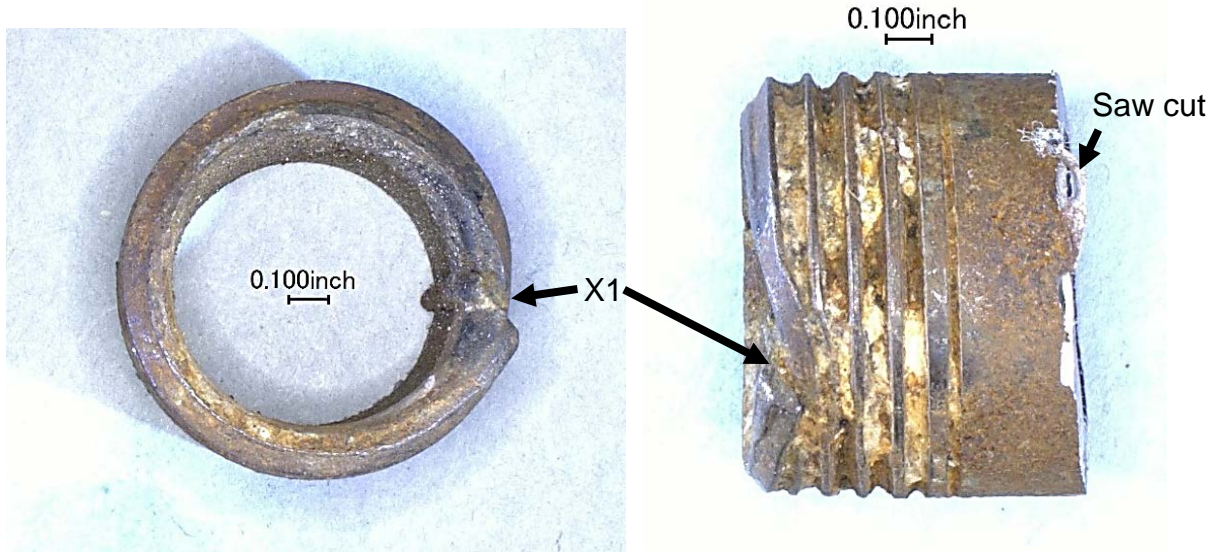


Figure 2. Side profile of pipe segment (right side of page) that fractured at the threaded end indicated by arrows "X1" in figure 1 and the fracture face (left side of page), prior to cleaning. The portion indicated by arrows "X1" contained evidence of bending deformation.

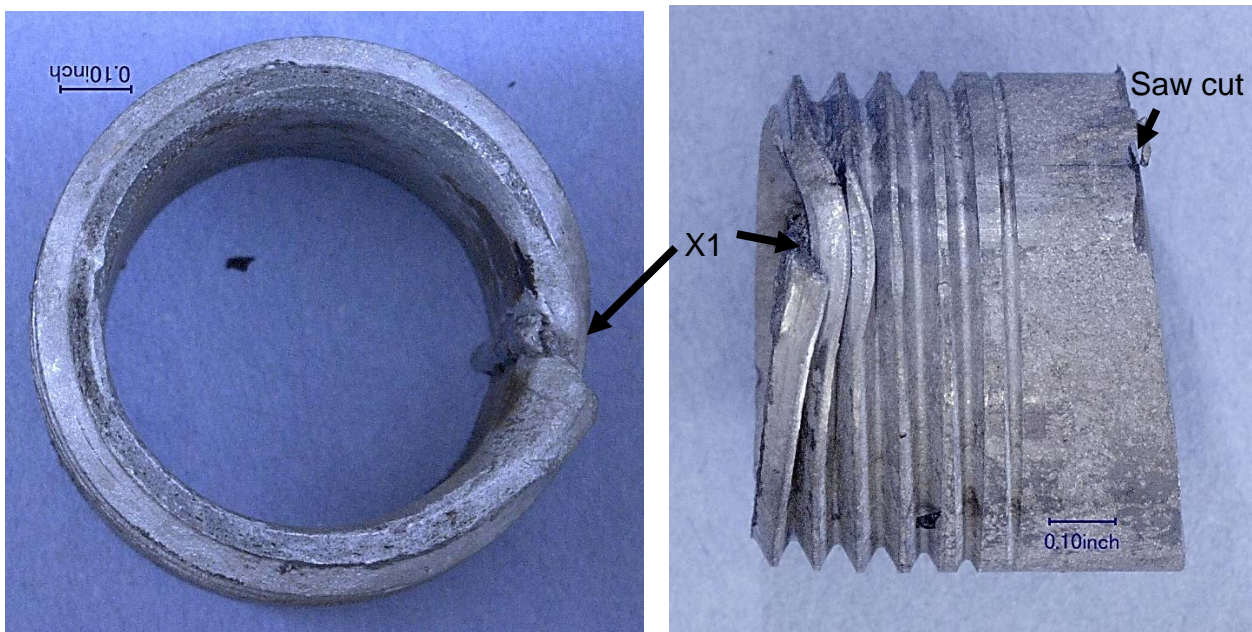


Figure 3. Same pipe segment as shown in figure 2 after cleaning.



Figure 4. Side profile of the pipe segment (right side of page) that fractured at the threaded end in the area indicated by arrow "X2" in figure 1, and the fracture face (left side of page), prior to cleaning. The portion indicated by arrows "X2" contain evidence of bending deformation.

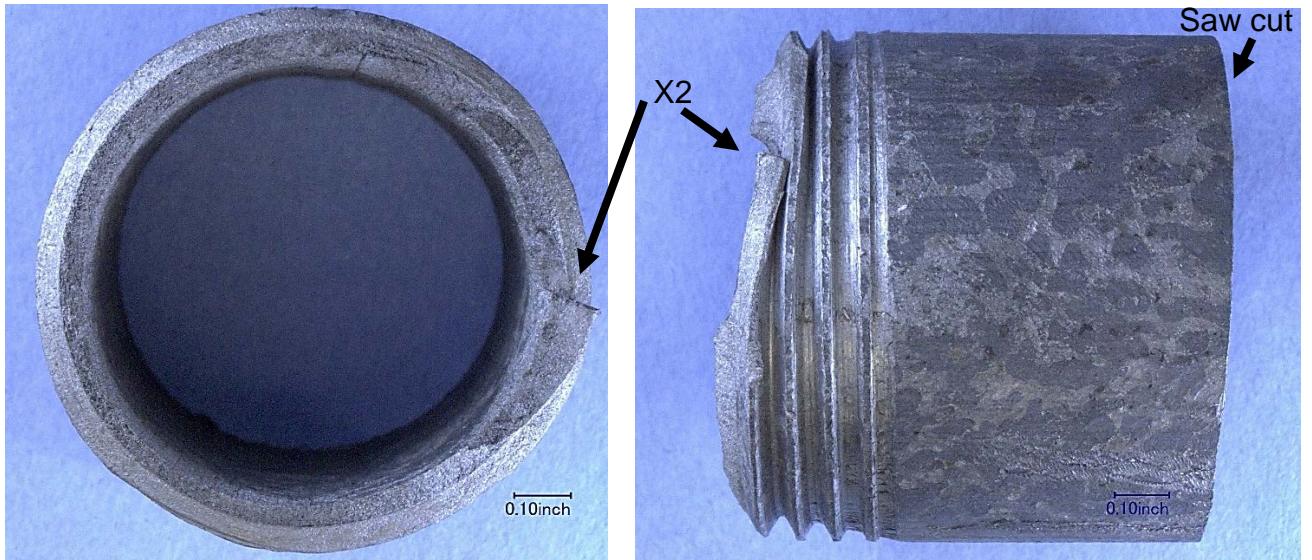


Figure 5. Same pipe segment as shown in figure 4 after cleaning.