**JAN 13 2010**

**VIA CERTIFIED MAIL AND FACSIMILE TO: (205) 325-7528**

Mr. William G. Cope
Vice President, Operations
Southern Natural Gas Company
P.O. Box 2563
Birmingham, AL 35202-2563

**Re: CPF No. 2-2010-1002H**

Dear Mr. Cope:

Enclosed is a Corrective Action Order issued by the Associate Administrator for Pipeline Safety in the above-referenced case. It requires Southern Natural Gas Company to take certain corrective actions with respect to the natural gas pipeline that failed on January 6, 2010. Service shall be deemed effective upon the date of mailing, or as otherwise provided under 49 C.F.R. § 190.5.

We look forward to a successful resolution of the issues arising out of your recent pipeline failure and to working with you to ensure pipeline safety.

Thank you for your cooperation in this matter.

Sincerely,

Jeffrey D. Wiese
Associate Administrator
for Pipeline Safety

Enclosure

cc: Mr. Ken Peters, Manager, DOT Compliance, Southern Natural Gas Company
Ms. Linda Daugherty, Director, Southern Region, PHMSA

**U.S. DEPARTMENT OF TRANSPORTATION**
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**
**OFFICE OF PIPELINE SAFETY**
**WASHINGTON, D.C. 20590**

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| **In the Matter of** | ) | |
| | ) | |
| **Southern Natural Gas Company,** | ) | **CPF No. 2-2010-1002H** |
| | ) | |
| **Respondent.** | ) | |
| | ) | |

## CORRECTIVE ACTION ORDER

Purpose and Background

This Corrective Action Order is being issued, under authority of 49 U.S.C. § 60112, to require Southern Natural Gas Company (SNG or Respondent) to take necessary corrective action to protect the public, property, and the environment from potential hazards associated with a failure involving the 2nd North Main 24-inch natural gas pipeline.

On January 6, 2010 a failure occurred on Respondent's 24-inch 2nd North Main pipeline in Winston County, Mississippi, resulting in the release of natural gas. The cause of the failure has not yet been determined. Pursuant to 49 U.S.C. § 60117, the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), Southern Region initiated an investigation of the accident.

Preliminary Findings

- At approximately 4:26 a.m. C.S.T. on January 6, 2010, a rupture occurred on Respondent's 2nd North Main 24-inch natural gas pipeline (the Affected Pipeline), resulting in the release of an undetermined amount of gas. The pipeline rupture resulted in pipe being ejected from the ground in six (6) pieces. The failure occurred at Mile Post (MP) 50.642, in Winston County, Mississippi, approximately 5 miles west of Louisville, Mississippi and 700 feet south of Mississippi State Highway 14. The total length of the Affected Pipeline is 236.7 miles, running from Pickens, Mississippi to Talladega, Alabama. The incident was reported by SNG to the National Response Center (NRC Report # 927803) at approximately 7:27 a.m. EST on January 6, 2010.

- The natural gas pipeline failure resulted in an evacuation of one individual. No fires, injuries, fatalities, or property damage were reported.

- SNG isolated the affected valve section by closing the upstream Center Ridge Gate valve (Mile Post 45.683) and the downstream Louisville Compressor Station valve (Mile Post 55.997).

- The 2nd North Main pipeline is in service except for the 10.314-mile isolated valve section from upstream Center Ridge Gate valve (Mile Post 45.683) to the downstream Louisville Compressor Station valve (Mile Post 55.997). SNG is assembling replacement pipe and crews to install pipe.

- The cause of the failure is unknown and the investigation is ongoing. The rupture resulted in the pipe coming apart and being ejected from the ground in six (6) pieces. The failed pipe has been collected and transported to an El Paso Energy metallurgical laboratory in Houston, Texas for metallurgic analysis. Preliminary visual investigation indicates corrosion and metal loss on one piece of the failed pipe with chevrons on the fracture surface pointing to the corrosion area as the point of origin.

- The pipe that failed was manufactured by Republic and constructed in 1952. It has a 24-inch nominal diameter, 0.250-inch wall thickness, Grade X-52, and submerged arc seam weld with coal tar enamel coating. The pipeline is cathodically protected.

- The maximum allowable operating pressure (MAOP) of the pipeline that failed is 750 pounds per square inch gauge (psig). The MAOP was established in 1970/1971 with Class 2 locations established pursuant to 49 C.F.R. §192.619(c). At the time of the incident, the actual operating pressure of the pipeline segment at time of failure was 740 psig.

- On December 21, 2007 the Affected Pipeline ruptured at Mile Post 194.3 north of Birmingham near Fultondale, Alabama. A metallurgical analysis was performed on the failed pipe. The pipe rupture was caused by a cluster of external corrosion pits approximately 11.5”L x 6”W. The corrosion resulted from insufficient protection from the environment due to a disbonded coating and inadequate cathodic protection. No Stress Corrosion Cracking or any crack-like indications were discovered, nor was any measurable internal corrosion observed. SNG initiated an action plan for the Affected Pipeline in January 2008, which consisted of an in-line inspection, close-interval surveys of the pipeline, and remediation of indications found. PHMSA Southern Region has been monitoring SNG performance of the action plan.

- The Affected Pipeline, between the Pickens Compressor Station (MP 0.0) and the Louisville Compressor Station (MP 55.997), had been inspected by at least two different in-line inspection tools. In May 2009, SNG performed in-line inspections with a PII combination caliper and Magnetic Flux Leakage (MFL) tool. In May 2005, SNG performed inspections using an Enduro caliper tool and a PII Magnetic Flux Leakage tool.

- On January 14, 1994 a failure occurred on Affected Pipeline at Mile Post 39.17 resulting in a rupture of 108'. The reported cause was corrosion fatigue and low pH stress corrosion cracking.

- On February 20, 1994, the Affected Pipeline, from Mile Post 46.741 to Mile Post 54.554, was hydrostatically tested to 990 psig for 8 hours.

- On June 23, 1968, the Affected Pipeline, from the Center Ridge Gate valve (Mile Post 45.683) to the Louisville Compressor Station (Mile Post 55.997), was hydrostatically tested to 982 psig for 22 hours.

- Respondent's 2nd North Main pipeline originates in Pickens, MS from the Pickens Compressor Station to the Louisville Compressor Station at Louisville, MS then to the Reform Compressor Station at Reform, AL then to the Providence Compressor Station in Jefferson County, AL then to the Tarrant Compressor Station at Tarrant, AL (on the north side of Birmingham, AL) then to the Pell City Compressor Station at Pell City, AL and ending at Rowe Gate west of Lincoln, AL after crossing the Coosa River**.** The pipeline crosses the following counties: Mississippi (Yazoo, Madison, Attala, Winston, Noxubee, and Lowndes), and Alabama (Pickens, Tuscaloosa, Jefferson, St Clair, Talladega).

- The Affected Pipeline primarily crosses rural parts of the country (farmland and forested areas) and small towns from Pickens, Mississippi, runs through northern Louisville, MS approximately 5 miles downstream of the failure site, then continues on to the west side of Birmingham, Alabama where the pipeline crosses through Classes 1, 2, and 3 populated areas (open land, and suburban and other residential areas) to the end of the pipeline at Rowe Gate west of Lincoln, AL. The pipeline runs along US, state and local highways. Specifically, the pipeline failure site is approximately 700 feet south of Mississippi State Highway 14. The pipeline crosses several navigable rivers and other major rivers: the Tombigbee River at Mile Post 101.743; the Black Warrior River at Mile Post 158.671; and the Coosa River at Mile Post 234.

**Determination of Necessity for Corrective Action Order and Right to Hearing**

Section 60112 of Title 49, United States Code, provides for the issuance of a Corrective Action Order, after reasonable notice and the opportunity for a hearing. Such orders may require various corrective actions, including suspended or restricted use of a pipeline facility, physical inspection, testing, repair, replacement, or other action, as appropriate. The basis for making the determination that a pipeline facility is hazardous, requiring corrective action, is set forth both in the above-referenced statute and 49 C.F.R. § 190.233, a copy of which is enclosed.

Section 60112 and the regulations promulgated thereunder provide for the issuance of a Corrective Action Order without prior opportunity for notice and hearing upon a finding that failure to issue the Order expeditiously will likely result in serious harm to life, property, or the

environment. In such cases, an opportunity for a hearing will be provided as soon as practicable after the issuance of the Order.

After evaluating the foregoing preliminary findings of fact, I find that continued operation of the Affected Pipeline without corrective measures would be hazardous to life, property, and the environment. Additionally, having considered the age of the pipe, the circumstances surrounding this failure, the proximity of the pipeline to publicly accessed areas and roadways (including Mississippi State Highway 14), the hazardous nature of the product transported by the pipeline, the pressure required for transporting the material, the uncertainties as to the cause of the failure, and the ongoing investigation to determine the cause of the failure, I find that a failure to issue this Order expeditiously to require immediate corrective action would result in the likelihood of serious harm to life, property, or the environment.

Accordingly, this Corrective Action Order mandating immediate corrective action is issued without prior notice and opportunity for a hearing. The terms and conditions of this Order are effective upon receipt.

Within 10 days of service of this Order, Respondent may request a hearing, to be held as soon as practicable, by notifying the Associate Administrator for Pipeline Safety in writing, with a copy to the Director, Southern Region, PHMSA. If a hearing is requested, it will be held in-person in Atlanta, GA, or Washington, D.C., on a date that is mutually convenient to PHMSA and Respondent.

After receiving and analyzing additional data in the course of this investigation, PHMSA may identify other corrective measures that need to be taken. In that event, Respondent will be notified of any additional measures required and amendment of this Order will be considered. To the extent consistent with safety, Respondent will be afforded notice and an opportunity for a hearing prior to the imposition of any additional corrective measures.

## Required Corrective Action

Pursuant to 49 U.S.C. § 60112, I hereby order Southern Natural Gas Company to immediately take the following corrective actions with respect to the Affected Pipeline:

1. Southern Natural Gas Company shall not operate the 10.314-mile isolated segment, of the Affected Pipeline; running from the Center Ridge Gate valve (Mile Post 45.683) to the Louisville Compressor Station (Mile Post 55.997), until authorized to do so by the Director, Southern Region (Director).

   Southern Natural Gas Company will maintain at 20% pressure reduction in the operating pressure along the Affected Segment between the Pickens Compressor Station (MP 0.0) and the Louisville Compressor Station (Mile Post 55.997). The operating pressure shall not exceed eighty percent (80%) of the actual operating pressure in effect immediately prior to the January 6, 2010 failure. Specifically, the pressure in the Affected Pipeline Segment between the Pickens Compressor Station (MP 0.0) and the Louisville

Compressor Station (Mile Post 55.997) is not to exceed 592 psig when returned to service. The pressure restriction is to go into effect as soon as practicable, but no later than 72 hours after service of this Order. The pressure restriction will remain in effect until written approval to increase the pressure is obtained from the Director as set forth in Item 10 below. If the results of any action undertaken pursuant to this Order necessitate a further reduction in the allowable operating pressure permitted by this Order, Respondent must further reduce the allowable operating pressure accordingly.

3. Within 30 days of service of this Order, SNG will complete mechanical and metallurgical testing and failure analysis of the pipe that failed on January 6, 2010 to determine the cause and contributing factors. In completing the testing and analysis, SNG will:

    (A) When handling and transporting the failed pipe section and other evidence originating from the failure site, document the chain of custody;

    (B) Obtain the Director's prior approval of the mechanical and metallurgical testing protocols, including the approval of the independent testing laboratory;

    (C) Prior to commencing the mechanical and metallurgical testing, provide the Director with the scheduled date, time, and location of the testing to allow a PHMSA representative to witness the testing; and

    (D) Ensure that all resulting testing laboratory reports are distributed in their entirety, whether draft or final, to the Director upon completion.

4. Within 60 days of service of this Order, SNG will develop a return-to-service plan and submit it to the Director for prior approval. The return-to-service plan must address incremental pressure increases and patrolling of the pipeline segment following each pressure increment. The return-to-service plan should specify a day-light restart and detail advance communications with local emergency response officials.

5. Within 60 days of service of this Order, Respondent will perform a root cause analysis to determine the cause of the failure, including a study and analysis of the Action Plan SNG implemented on the 2nd North Main Pipeline subsequent to the December 21, 2007 failure near Fultondale, Alabama and any other factors that may have contributed to the pipeline failure. Respondent will provide a report to the Director on the root cause analysis within 90 days of receipt of this Order, including any deficiencies identified in the referenced Action Plan and any recommended improvements and enhancements.

6. Within 90 days of service of this Order, SNG will submit to the Director for approval an Integrity Verification and Remediation Plan to investigate, evaluate, and remediate the Affected Pipeline. Respondent will include, at a minimum:

    (A) Evaluate the Affected Pipeline based on the findings of the study performed as required of Item 5 (root cause analysis). Identify and include in the plan any

enhancements or revisions resulting from the recommended improvements and enhancements from Item 5;

(B) Develop and implement an Integrity Verification and Remediation Plan. The plan must address all factors known or suspected in the failure and consider all available information including, but not limited to, comparison of previously conducted internal inspection tool results, cathodic protection testing or other integrity verification information. The plan may include but is not limited to internal inspection tool surveys, pressure testing, coating surveys, and remedial action. The type of internal inspection tools or other testing used will be technologically appropriate for assessing the system based on the type of failure that occurred on January 6, 2010. Determination of excavation and repair of anomalies and imperfections will be per the criteria used in evaluating the pipeline in Item 6(A). Also, as a minimum, the following excavation and repair criteria will apply:

i. Immediate response or repair: Any anomaly within a pipeline operating up to 72% SMYS that meets either: (1) a Failure Pressure Ratio (FPR) equal to or less than 1.1; or (2) an anomaly depth equal to or greater than 80% wall thickness loss.

ii. One-year response or repair: Any anomaly that meets either: (1) an FPR less than design factor – for Class 1 location- FPR equal to or less than 1.39; for Class 2 location – FPR equal to or less than 1.67; and for Class 3 location – FPR equal to or less than 2.0; or (2) an anomaly depth equal to or greater than 60% wall thickness loss.

Any anomaly for Class location changes from original Class 1 to 2 location or original Class 2 to 3 location in accordance with §§ 192.5 and 192.611 that meets either: (1) an anomaly FPR equal to or less than the FPR of the original Class location ; or (2) an anomaly depth equal to or greater than 50% wall thickness loss.

iii. Monitored response: Any anomaly that meets both: (1) an FPR less than design factor – for Class 1 location – FPR greater than 1.39; Class 2 location – FPR greater than 1.67; and for Class 3 location – FPR greater than 2.0; and (2) an anomaly depth less than 60% wall thickness loss.

Any anomaly repairs for Class location changes from original Class 1 to 2 location or original Class 2 to 3 location in accordance with §§ 192.5 and 192.611 that meets both: (1) an anomaly FPR greater than the FPR of the original Class location; and (2) an anomaly depth less than 50% wall thickness loss.

(C) Incorporate the findings of Items 6(A) and 6(B) to determine if conditions similar to those contributing to the January 6, 2010 failure are likely to exist elsewhere on the Affected Pipeline.

(D) Of the pipe identified in Items 6(C), focus on areas where there is a potential threat to life, property or the environment;

(E) Provide a proposed schedule for the completion of Items 6(A) through 6(D). Include in the plan a detailed description of the inspection and repair criteria to be used in the field evaluation of the anomalies that are excavated. This is to include a description of how any defects are to be graded and the schedule for repairs or replacement;

7. The Integrity Verification and Remediation Plan becomes incorporated into this Order and shall be revised as necessary to incorporate the results of actions undertaken pursuant to this Order and whenever necessary to incorporate new information obtained during the failure investigation and remedial activities. Submit any such plan revisions to the Director for prior approval. The Director may approve plan elements incrementally.

8. Submit quarterly reports to the Director that: (1) include available data and results of the testing and evaluations required by this Order; and (2) describe the progress of the repairs and other remedial actions being undertaken. The first quarterly report shall be due March 31, 2010.

9. Maintain documentation of the costs associated with implementation of this Corrective Action Order. Include in each quarterly report submitted pursuant to Item 8, the to-date total costs associated with: (1) preparation and revision of procedures, studies and analyses; (2) physical changes to pipeline infrastructure, including repairs, replacements and other modifications; and (3) environmental remediation.

10. The Director may allow the removal or modification of the pressure restriction set forth in Item 2 upon a written request from Respondent demonstrating that the hazard has been abated and that restoring the affected pipeline, or portion thereof, to its pre-failure operating pressure is justified based on a reliable engineering analysis showing that the pressure increase is safe considering all known defects, anomalies, and operating parameters of the pipeline. The Director may allow temporary modification of the pressure restriction to allow for public safety and critical gas supply: In the event of a temporary modification of the pressure restriction, the Director may require alternate safety precautions to provide for public safety.

The Director may grant an extension of time for compliance with any of the terms of this Order upon a written request timely submitted demonstrating good cause for an extension.

With respect to each submission that under this Order requires the approval of the Director, the Director may: (a) approve, in whole or part, the submission; (b) approve the submission on specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove in whole

or in part, the submission, directing that Respondent modify the submission, or (e) any combination of the above. In the event of approval, approval upon conditions, or modification by the Director, Respondent will proceed to take all action required by the submission as approved or modified by the Director. In the event that the Director disapproves all or any portion of the submission, Respondent will correct all deficiencies within the time specified by the Director, and resubmit it for approval. In the event that a resubmitted item is disapproved in whole or in part, the Director may again require Respondent to correct the deficiencies in accordance with the foregoing procedure, and/or the Director may otherwise proceed to enforce the terms of this Order.

Respondent may appeal any decision of the Director to the Associate Administrator for Pipeline Safety. Decisions of the Associate Administrator shall be final.

The actions required by this Corrective Action Order are in addition to and do not waive any requirements that apply to Respondent's pipeline system under 49 C.F.R. Parts 190 through 199, under any other order issued to Respondent under authority of 49 U.S.C. chapter 601, or under any other provision of Federal or State law.

Failure to comply with this Order may result in the assessment of administrative civil penalties and referral to the Attorney General for appropriate relief in United States District Court pursuant to 49 U.S.C. § 60120.

The terms and conditions of this Corrective Action Order are effective upon receipt.

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Jeffrey D. Wiese
Associate Administrator
for Pipeline Safety

Date Issued