U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

233 Peachtree Street Ste. 600
Atlanta, GA 30303

NOTICE OF AMENDMENT

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 15, 2011

Mr. Tim Heilig
Vice President of Mechanical Operations
Norfolk Southern Corporation
1200 Peachtree Street NE (Box 184)
Atlanta, Georgia 30309

CPF 2-2011-6004M

Dear Mr. Heilig:

On September 28- 29, 2009, November 30, 2009, and June 29, 2010, a representative of the Pipeline and Hazardous Materials Safety Administration (PHMSA) inspected the Norfolk Southern Corporation (NSC) procedures for its Integrity Management Program in Macon, Georgia, pursuant to Chapter 601 of 49 United States Code.

On the basis of the inspection, PHMSA has identified apparent inadequacies found in NSC's plans or procedures as described below:

1. **§195.452 Pipeline integrity management in high consequence areas.**
   .... (f) ***What are the elements of an integrity management program?*** **An integrity management program begins with the initial framework. An operator must continually change the program to reflect operating experience, conclusions drawn from results of the integrity assessments, and other maintenance and surveillance data, and evaluation of consequences of a failure on the high consequence area. An operator must include, at minimum, each of the following elements in its written integrity management program:**
   (1) A process for identifying which pipeline segments could affect a high consequence area;

   §195.452 Pipeline integrity management in high consequence areas.
   .... (d) ***When must operators complete baseline assessments?*** **Operators must complete baseline assessments as follows:**
   .... (3) ***Newly-identified areas.*** **(i) When information is available from the information**

analysis (see paragraph (g) of this section), or from Census Bureau maps, that the population density around a pipeline segment has changed so as to fall within the definition in §195.450 of a high population area or other populated area, the operator must incorporate the area into its baseline assessment plan as a high consequence area within one year from the date the area is identified. An operator must complete the baseline assessment of any line pipe that could affect the newly-identified high consequence area within five years from the date the area is identified.

- **Item 1A: §195.452(f)(1)**

  The Norfolk Southern Pipeline Integrity Management Plan (NSIMP) did not address how NSC determined the volume of product spilled and the buffer distance it used to identify pipeline segments that could affect a high consequence area (HCA).

- **Item 1B: §195.452(d)(3)**

  NSC's procedures were inadequate because Section 2 of the NSIMP did not address using Census Bureau maps to determine changes in population density. NSC's procedures relied solely on the changes in population being reported by personnel who perform the bi-weekly foot patrols along the pipeline.

2. **§195.452 Pipeline integrity management in high consequence areas.**
   .... (f) *What are the elements of an integrity management program?....*
   .... (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section);

   §195.452 Pipeline integrity management in high consequence areas.
   .... (g) What is an information analysis? In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure. This information includes:
   (1) Information critical to determining the potential for, and preventing, damage due to excavation, including current and planned damage prevention activities, and development or planned development along the pipeline segment;
   (2) Data gathered through the integrity assessment required under this section;
   (3) Data gathered in conjunction with other inspections, tests, surveillance and patrols required by this Part, including, corrosion control monitoring and cathodic protection surveys; and
   (4) Information about how a failure would affect the high consequence area, such as location of the water intake.

- **Item 2: §195.452(g)**

  NSC's NSIMP did not adequately address how the nine risk factors in the plan were evaluated and analyzed to determine the risk.

  The regulations require that NSC have procedures to analyze all available information about the integrity of its pipeline and the consequences of a failure. The NSIMP indicated that NSC used the Subject Matter Expert (SME) method to analyze the information, with a Risk Assessment Committee (RAC) performing the analysis. The

SMEs in the RAC analyzed the pipeline segments and determined the relative likelihood and consequences of a failure, from low to high, for each of the nine factors in the NSIMP. While the NSIMP indicated the analysis was based on the knowledge and experience of the SMEs, and from information from relevant industry publications, it did not provide details on how this was accomplished.

Also, the NSIMP did not provide a logical, structured, and documented process or guidelines for how the SME evaluations were performed. And, the NSIMP did not provide justification or guidance for how the magnitude of relative likelihood and consequence levels were established.

3. **§195.452 Pipeline integrity management in high consequence areas.**
.... (f) ***What are the elements of an integrity management program?*** **An integrity management program begins with the initial framework. An operator must continually change the program to reflect operating experience, conclusions drawn from results of the integrity assessments, and other maintenance and surveillance data, and evaluation of consequences of a failure on the high consequence area. An operator must include, at minimum, each of the following elements in its written integrity management program:**
.... (8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section).

- **Item 3A: §195.452(f)(8)**

  The NSIMP did not establish a process for the proper review of integrity assessment results. While the NSIMP stated that the Manager of Pipeline Operations was to review risk assessments and included the name of the engineer who witnessed and approved NSC's 2006 pressure test, the NSIMP did not include procedures for the review of integrity assessment results.

- **Item 3B: §195.452(f)(8)**

  NSC's procedures did not address the qualifications required for the personnel who reviewed and evaluated the results of NSC's integrity assessment results and information analysis. The NSIMP established that the Manager of Pipeline Operations was to review risk assessments. It also included the name of the engineer who witnessed and approved NSC's 2006 pressure test, but the NSIMP did not include the qualifications needed for the persons who reviewed and evaluated integrity assessment results and the information analysis.

4. **§195.452 Pipeline integrity management in high consequence areas.**
.... (f) What are the elements of an integrity management program? ....
.... (4) Criteria for remedial actions to address integrity issues raised by the assessment methods and information analysis (see paragraph (h) of this section);

§195.452 Pipeline integrity management in high consequence areas.
.... (h) ***What actions must an operator take to address integrity issues*****?**
.... (4) ***Special requirements for scheduling remediation.***
(i) ***Immediate repair conditions.*** **An operator's evaluation and remediation schedule**

must provide for immediate repair conditions. To maintain safety, an operator must temporarily reduce the operating pressure or shut down the pipeline until the operator completes the repair of these conditions. An operator must calculate the temporary reduction in operating pressure using the formula in section 451.7 of ASME/ANSI B31.4 (incorporated by reference, see § 195.3), if applicable. If the formula is not applicable to the type of anomaly or would produce a higher operating pressure, an operator must use an alternative acceptable method to calculate a reduced operating pressure. An operator must treat the following conditions as immediate repair conditions:
(A) Metal loss greater than 80% of nominal wall regardless of dimensions.
(B) A calculation of the remaining strength of the pipe shows a predicted burst pressure less than the established maximum operating pressure at the location of the anomaly. Suitable remaining strength calculation methods include, but are not limited to, ASME/ANSI B31G ("Manual for Determining the Remaining Strength of Corroded Pipelines" (1991) or AGA Pipeline Research Committee Project PR-3-805 ("A Modified Criterion for Evaluating the Remaining Strength of Corroded Pipe" (December 1989)). These documents are available at the addresses listed in §195.3.
(C) A dent located on the top of the pipeline (above the 4 and 8 o'clock positions) that has any indication of metal loss, cracking or a stress riser.
(D) A dent located on the top of the pipeline (above the 4 and 8 o'clock positions) with a depth greater than 6% of the nominal pipe diameter.
(E) An anomaly that in the judgment of the person designated by the operator to evaluate the assessment results requires immediate action.

- **Item 4: §195.452(h)(4)(i)**

  The NSIMP did not address how NSC would determine the temporary reduced operating pressure for an *"immediate repair condition"* on its pipeline or explain under what circumstances NSC would shut down the pipeline in lieu of taking a temporary pressure reduction.

  The regulations in §195.452(h)(4)(i)(A) - (E) define five *"immediate repair conditions,"* which require an operator to have procedures to determine and implement a temporary pressure reduction, or to shut down the pipeline, until the *"immediate repair condition"* can be repaired. While the NSIMP addressed a reduction of pressure in the possible responses for some anomalous conditions in Figure 8-1*(Anomalous Conditions & Responses),* it did not provide guidance nor specifics on how NSC would determine the pressure reduction for each of the five *"immediate repair conditions."*

5. **§195.452 Pipeline integrity management in high consequence areas.**
   .... (f) What are the elements of an integrity management program? ....
   .... (6) Identification of preventive and mitigative measures to protect the high consequence area (see paragraph (i) of this section);

   §195.452 Pipeline integrity management in high consequence areas.
   (i) *What preventive and mitigative measures must an operator take to protect the high consequence area?*
   .... (2) *Risk analysis criteria.* In identifying the need for additional preventive and

mitigative measures, an operator must evaluate the likelihood of a pipeline release occurring and how a release could affect the high consequence area. This determination must consider all relevant risk factors, including, but not limited to:

- **Item 5: §195.452(i)(2)**

  NSC's NSIMP did not have adequate procedures to identify preventative and mitigative measures based on a risk analysis.

  The regulations require an operator to have procedures to identify and evaluate preventative and mitigative measures based on an analysis of the relevant risk factors. The NSIMP contains a framework structure that states in Section 6, *PREVENTATIVE AND MITIGATIVE MEASURES,* that "*The Subject Matter Expert Team will develop the guidelines to develop Preventative and Mitigative Measures required under this section of the Integrity management Plan.*" The NSIMP, however, did not include the *"guidelines"* that the *Subject Matter Expert Team* were required to develop.

6. **§195.452 Pipeline integrity management in high consequence areas.**
   .... (f) What are the elements of an integrity management program?....

   §195.452 Pipeline integrity management in high consequence areas.
   .... (j) *What is a continual process of evaluation and assessment to maintain a pipeline's integrity?*
   .... (2) *Evaluation*. An operator must conduct a periodic evaluation as frequently as needed to assure pipeline integrity. An operator must base the frequency of evaluation on risk factors specific to its pipeline, including the factors specified in paragraph (e) of this section. The evaluation must consider the results of the baseline and periodic integrity assessments, information analysis (paragraph (g) of this section), and decisions about remediation, and preventive and mitigative actions (paragraphs (h) and (i) of this section).

- **Item 6A: §195.452(j)(2)**

  NSC's NSIMP did not have adequate procedures to address how NSC would conduct a periodic evaluation as frequently as needed to assure pipeline integrity and that such an evaluation would consider the results of the baseline and periodic integrity assessments, information analysis, decisions about remediation, and preventive and mitigative actions. Moreover, the procedures did not address the use of risk factors specific to the pipeline to establish the frequency of the evaluation.

  The NSIMP contains a framework structure and stated in Section 5, *REASSESSMENT PLANS,* that "*...the Subject Matter Expert Method described in Section 4 of the Integrity Management Plan"* is also used to "*develop Reassessment Plans."* The NSIMP also discussed operations and maintenance activities (listed as existing preventative and mitigative measures), but the NSIMP did not establish procedures to address how NSC would perform a periodic evaluation of the pipeline or how the frequency of the evaluation would be established.

- **Item 6B: §195.452(j)(2)**

  NSC's NSIMP did not have adequate procedures to review its corrosion control program as part of its consideration of the risk factors required to establish the frequency of the required periodic evaluation of the pipeline or for the information analysis that must be considered as part of the periodic evaluation.

  NSC used hydrostatic pressure testing to assess its pipeline but did not include a comprehensive review of its corrosion control program in the NSIMP, Section 5 - *REASSESSMENT PLANS.*

7. **§195.452 Pipeline integrity management in high consequence areas.**
   .... (l) *What records must be kept?* (1) An operator must maintain for review during an inspection:
   .... (ii) Documents to support the decisions and analyses, including any modifications, justifications, variances, deviations and determinations made, and actions taken, to implement and evaluate each element of the integrity management program listed in paragraph (f) of this section.

   NSC's procedures did not address maintaining documents that support the decisions, analysis, justifications, modifications, and actions taken to implement and evaluate each element of its NSIMP.

   While the NSIMP provided basic guidance to retain Risk Assessment reviews (NSIMP Section 4) and program evaluation reviews (NSIMP Section 7), the NSIMP did not address maintaining documents to support its integrity management program decisions and analysis nor other required items.

Response to this Notice

This Notice is provided pursuant to 49 U.S.C. § 60108(a) and 49 C.F.R. § 190.237. Enclosed as part of this Notice is a document entitled *Response Options for Pipeline Operators in Compliance Proceedings*. Please refer to this document and note the response options. Be advised that all material you submit in response to this enforcement action is subject to being made publicly available. If you believe that any portion of your responsive material qualifies for confidential treatment under 5 U.S.C. 552(b), along with the complete original document you must provide a second copy of the document with the portions you believe qualify for confidential treatment redacted and an explanation of why you believe the redacted information qualifies for confidential treatment under 5 U.S.C. 552(b). If you do not respond within 30 days of receipt of this Notice, this constitutes a waiver of your right to contest the allegations in this Notice and authorizes the Associate Administrator for Pipeline Safety to find facts as alleged in this Notice without further notice to you and to issue a Final Order.

If, after opportunity for a hearing, your plans or procedures are found inadequate as alleged in this Notice, you may be ordered to amend your plans or procedures to correct the inadequacies (49 C.F.R. § 190.237). If you are not contesting this Notice, we propose that you submit your amended procedures to my office within 120 days of receipt of this Notice. This period may be extended by written request for good cause. Once the inadequacies identified herein have been addressed in your amended procedures, this enforcement action will be closed.

In correspondence concerning this matter, please refer to **CPF 2-2011-6004M** and, for each document you submit, please provide a copy in electronic format whenever possible.

Sincerely,

Wayne T. Lemoi
Director, Office of Pipeline Safety
PHMSA Southern Region

Enclosure: *Response Options for Pipeline Operators in Compliance Proceedings*