



# NiSource Gas Transmission & Storage®

RE: CPF 3-2009-1017M

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**Chad Zamarin**  
Director – Integrity Management

September 24, 2009

Ivan A. Huntoon  
Director, Central Region  
Pipeline and Hazardous Materials Safety Administration  
901 Locust Street, Suite 462  
Kansas City, MO 64106-2641

**RE: Response to Notice of Amendment, CPF 3-2009-1017M**

Dear Mr. Huntoon:

This letter is provided on behalf of the NiSource Gas Transmission and Storage (NGT&S) Companies in response to Notice of Amendment, CPF 3-2009-1017M ("NOA"), which was dated August 20, 2009, and received by NGT&S on August 25, 2009.

In accordance with Section 11.a of the Response Options for Pipeline Operators in Compliance Proceedings provided with the NOA, NGT&S submits this response letter to notify you of NGT&S's plans to address the items identified in the NOA.

In response to the issues raised during the PHMSA inspection and in the NOA, NGT&S has initiated a comprehensive overhaul of its Integrity Management Program (IMP). This aggressive effort is already underway and involves not only the update and enhancement of the Integrity Management Plan, but also includes improvement to technology systems, standard operating procedures, and business processes that support the implementation of the Plan. The amended Integrity Management Plan and supporting material will be submitted to you within 180 days of receiving the NOA, which corresponds to on or before February 21, 2010.

Details for addressing the individual items noted in the NOA are outlined below. The language from the NOA is in bold, followed by a brief description of the NGT&S plan for resolving the respective item.

**Item 1A: §192.903**

A "buffer" must be employed in determining the location of high consequence areas (HCAs) to account for uncertainties in the locations of structures and the pipeline. NiSource has employed a 40-foot buffer to account for uncertainties in the location of structures, but the adequacy of the 40-foot distance has not been established. Furthermore, NiSource did not employ a buffer to account for uncertainties in the pipeline location. For example on line A5EAST, an actual measurement of the location of an identified site showed it to be over 90 feet away from its indicated relative position to the pipeline.

**NGT&S Response:**

As a follow-up to the inspection, NGT&S completed a project to realign the entire pipeline system based on GPS data. NGT&S hired a third party vendor to collect data utilizing sub-meter GPS techniques for at pipeline crossings of all public roads, railroad crossings and river crossings. The GPS data collected, along with the visual correction of the pipeline route using ortho-rectified imagery, was used to realign the pipeline. Following correction of the routes, NGT&S performed a statistical analysis to determine the appropriate buffer. Based on this analysis, a 59 foot buffer was established and will be incorporated into the NGT&S HCA analysis process. NGT&S will provide detailed documentation of the process and justification for the 59 foot buffer as an appendix to the revised IMP.

**Item 1B: §192.905(a)**

**The process for using field information and for utilizing the results of population density studies to identify HCAs is not documented completely in the IM plan. The description of how information flows from the field into the HCA identification process needs to be improved.**

**NGT&S Response:**

NGT&S will revise its IMP to include detailed documentation of the process and procedure for how information flows from the field into the HCA identification process. As a further improvement to this process, an electronic data collection system will be deployed in 2010 that enables the efficient communication of local knowledge regarding potential HCA's, structures and identified sites by field personnel. Upon submission of field reports, the electronic data collection system will directly populate NGT&S's central Geographic Information System, ensuring that local knowledge is available within the necessary data system for HCA Analysis, Risk Assessment, and other analysis by System Integrity Engineers.

**Item 2A: §192.917(e)**

**NiSource has not documented whether HCAs with low-frequency ERW pipe or other pipe with potential manufacturing defects fit the requirements for high risk segments as indicated in §192.917(e)(3) and §192.917(e)(4). NiSource's threat identification process does not address consideration of seam failures or increases in operating pressure beyond the maximum operating pressure reached in the 5 year period prior to HCA identification. Because the threat identification did not include this evaluation, NiSource is unable to demonstrate that the BAP priorities reflect the requirement that segments with these threats be designated as high risk segments.**

**NGT&S Response:**

NGT&S will incorporate into the IMP that low frequency ERW pipe and other pipe with the potential for seam failures within an HCA be evaluated in accordance with the Michael Baker Jr., Inc. Report published in cooperation with the Office of Pipeline Safety and co-authored by Kiefner and Associates and CorrMet Engineering titled, "Low Frequency ERW and Lap Welded Longitudinal Seam Evaluation". NGT&S will include detail for how HCAs with low-frequency ERW pipe or other pipe with potential manufacturing defects are considered for high risk segments and will specify requirements for assessment and mitigation if segments are deemed susceptible to seam failure.

**Item 2B: §192.921(a)(1)**

**NiSource has taken action to develop specifications to ensure in-line inspection (ILI) tool reliability. However, the IM Plan does not incorporate these requirements and specify how decisions on tool selection should be made.**

**NGT&S Response:**

NGT&S will incorporate into the IMP the ILI specification requirements to ensure ILI tool reliability and will provide guidelines for how decisions on tool selection should be made.

**Item 3A: §192.917(a)**

NiSource's process for threat identification does not adequately consider all threats. The process for screening threats by comparison of HCA threat risk scores and defining Tier 1, Tier 2, and Primary threats does not capture all threats that apply to each HCA. The process has produced anomalous results where threats are to be assessed on some HCAs that have lower threat risk scores than HCAs where the same threat is not assessed. The effect of NiSource's approach is to screen out threats that are potentially applicable to an HCA. Also, the criteria employed for identifying the stress corrosion cracking threat do not specifically address near-neutral SCC.

In addition, threats are considered individually. The analysis used to identify applicable threats includes no evaluation of interacting threats as required by ASME/ANSI B31.8S, Section 2.2. Although common data elements are considered in the risk assessment for multiple threats, there is no mechanism in the threat identification process that evaluates how one threat increases the probability of failure due to other threats.

**NGT&S Response:**

NGT&S has initiated a comprehensive effort to upgrade its threat identification and risk assessment system. Improved algorithms, software, documentation and business processes will be implemented and incorporated into the IMP. The improved system will ensure that all threats referenced in ASME/ANSI B31.8S are considered for each HCA, including consideration of near neutral SCC and the interaction of multiple threats.

**Item 3B: §192.917(b)**

All data elements from ASME/ANSI B31.8S Appendix A are not captured and applied in NiSource's threat identification and risk assessment. All required data elements must be used if applicable. If not used, the reason must be documented. This resulted in data for non-covered segments to be inconsistently assembled, analyzed, and applied in threat identification and risk assessment. Paragraph §192.917(b) explicitly requires that data be collected and evaluated for the entire pipeline, including covered and non-covered segments.

The NiSource IM plan does not require that data sources listed in ASME/ANSI B31.8S Table 2 be used. Information from these sources may be used in answering the questions used to populate the risk model but there is no assurance of consistency in approach. Also, the IM plan does not include a documented process for verifying the accuracy of data collected from field personnel through the risk model questions or other methods.

**NGT&S Response:**

As discussed in the previous response, NGT&S has initiated a comprehensive effort to upgrade its threat identification and risk assessment system. As part of this effort, each data element referenced in ASME/ANSI B31.8S will be evaluated for applicability and will either be incorporated into the threat identification and risk assessment system or justification for exclusion will be documented. NGT&S will extend threat identification and risk assessment to all pipelines (i.e. covered and non-covered segments) and will implement a formal process for periodic validating the accuracy of data and analysis results.

**Item 3C: §192.917(d)**

The threat identification process did not address threats unique to plastic pipe for the one HCA that

includes plastic pipe.

**NGT&S Response:**

NGT&S will incorporate into the threat identification process detailed documentation of how threats unique to plastic pipe will be addressed. This information will be incorporated into the Integrity Management Plan.

**Item 3D: §192.917(e)**

NiSource's threat identification criteria for evaluating manufacturing defects (including seam threats) are not consistent with the criteria specified in §192.917(e)(3) and §192.917(e)(4). Manufacturing defects or seam threats are not being assessed for any HCA, although no technical justification has been prepared to show that the screening required by the rule has been performed.

**NGT&S Response:**

As previously discussed, NGT&S will incorporate into the IMP that low frequency ERW pipe and other pipe with the potential for seam failures within an HCA be evaluated in accordance with the Michael Baker Jr., Inc. Report published in cooperation with the Office of Pipeline Safety and co-authored by Kiefner and Associates and CorrMet Engineering titled, "Low Frequency ERW and Lap Welded Longitudinal Seam Evaluation". NGT&S will include detail for how HCAs with low-frequency ERW pipe or other pipe with potential manufacturing defects are considered for high risk segments and will specify requirements for assessment and mitigation if segments are deemed susceptible to seam failure.

**Item 3E: §192.917(e)(l)**

The IM plan does not require data integration in which foreign line crossing and encroachment location data are integrated with ILI results. Data elements are required to be represented in a common spatial reference system to allow this integration.

**NGT&S Response:**

NGT&S will add to the IMP details regarding the process and requirements for integration of ILI data with other integrity related data including foreign line crossings and encroachments. As an additional improvement, NGT&S has initiated an effort to upgrade its Geographic Information System (GIS) and as a part of this effort will migrate integrity related data to the GIS database. This comprehensive data integration effort will include the migration to the common GIS platform of data sets including ILI, corrosion, encroachment, and field inspection data.

**Item 3F: §192.917(e)(5)**

The process for evaluating all pipeline segments (covered and non-covered) with similar material coating and environmental conditions when significant "corrosion is identified during integrity assessments is not adequately described. In addition, NiSource has not documented the technical basis for the definition of "actionable external corrosion" in: section 9.4.1 of the IM plan.

**NGT&S Response:**

NGT&S will add to the IMP detailed documentation of the process, procedure and basis for identifying "actionable external corrosion" and for evaluating all pipeline segments (covered and non-covered) with similar material coating and environment conditions.

**Item 4A: §192.933(a)**

NiSource has used RSTRENG to calculate allowable pressure reduction for dents with metal loss. RSTRENG is not applicable to defects other than corrosion anomalies. It is not applicable, for example, to dents or dents with metal loss.

**NGT&S Response:**

As a follow-up to the inspection, NGT&S revised the language in the IMP to state that ASME/ANSI B31G or RSTRENG shall not be used to determine pressure reduction for dents with metal loss, cracking or a stress riser. The language in the IMP has been updated with the following language:

*“ASME/ANSI B31G or RSTRENG shall not be used to determine pressure reduction for dents with metal loss, cracking or a stress riser.”*

**Item 4B: §192.933(b)**

The IM plan requirements for reporting of conditions identified during ILI do not assure prompt identification of immediate repair conditions, but instead allow communication of immediate repair conditions to wait until the final vendor report, which may not be received for 12 weeks after the conclusion of the ILI. Information on immediate repair conditions must be communicated by the vendor to the operator as soon as sufficient information is available to characterize these conditions, which may be much sooner than the deadline for the vendor final report.

**NGT&S Response:**

As a follow-up to the inspection, NGT&S added specific language to its current contract signed in March 2007 with GE Oil & Gas (ILI Vendor) to require preliminary reporting within 15 working days from the date of the assessment. As specified by the contract, the preliminary report will include, but not be limited to, the following:

- Pressure Sentencing (RPR 0.85dl)
- Metal Loss Interaction Rules: 3t axial x 6t circumferential
- Report Metal loss equal to or greater than 50%
- Report dents with metal loss
- Check for LSW orientations for defects 50% and greater (if applicable)

These requirements will be incorporated into the Integrity Management Plan.

**Item 4C: §192.933(c)**

The IM plan does not specify a requirement to develop a prioritized repair schedule other than identifying which anomalies must be repaired in one year. There is no requirement to prioritize among the anomalies. No prioritized repair schedule was developed for the completed ILI assessments that were reviewed. NiSource's schedule for dealing with anomalies scheduled per Figure 4 of ASME/ANSI B31.8S consists only of dates listed in the assessment summary. There is no requirement to identify or schedule those Figure 4 anomalies for which repair would be required prior to the next assessment to assure that timely action is taken.

The process flow chart in IM Figure 6.2 appears to indicate that identification of any immediate repair conditions that do not involve corrosion greater than 50% wall loss (e.g., dent with metal loss) will not be made and that response to any immediate repair conditions will not occur until after the vendor's final report is received. The flow chart should otherwise be examined for logic (e.g., if there is an indication of wall loss greater than 50% the flow chart would imply that no final report is ever received).

IM section 6.3.1 specifies that immediate repair conditions will be examined within 5 business days. B31.8S requires such conditions to be examined within 5 days and does not specify business days.

The NiSource IM plan allows for use of ILI results from successive assessments to determine allowable repair times different from B31.8S Figure 4. The standard does not allow such an option.

**NGT&S Response:**

NGT&S will ensure that updates to the IMP require proper prioritization and scheduling of anomalies. In addition, the ILI data management and analysis process will be upgraded to leverage the Geographic Information System and related software tools. ILI data will be loaded to the GIS and anomalies requiring investigation will be added to a published diglist that provides the prioritized schedule for anomaly investigation. The ILI data analysis process will ensure that all immediate repair conditions are properly identified. As discussed in the previous response, changes have already been implemented that ensure the prompt identification of immediate repair conditions and the IMP requires that immediate repair conditions be examined "within 5 days".

**Item 4D: §192.933(d)(1)**

NiSource's IM plan requires that temporary pressure reduction be calculated using B31.G or RSTRENG or that pressure be reduced to 80% of its value at the time an anomaly is discovered, but the IM plan does not include any process description that would ensure that the required pressure reduction will actually be taken.

The IM plan limits immediate repair conditions to dents "within the reasonable accuracy of the inspection tool" that have metal loss. There is no such limitation to the rule.

The agreement with the ILI vendor (PII) specifies that a preliminary report will be issued within 15 days that "will contain a maximum of five (5) features in need of correlation and/or defects that may need immediate attention". There is no correlation between the defects referred to in this agreement and the immediate conditions specified in §192.933 and hence, no assurance that immediate repair conditions will be reported in the preliminary report. In addition, the limitation to 5 reported features could result in immediate repair conditions not being identified in the preliminary report if more than 5 such features are found during an assessment.

**NGT&S Response:**

As a follow-up to the inspection, NGT&S revised the language in the IMP to require that pressure be immediately reduced when immediate repair conditions are identified. The IMP has been updated with the following language:

*"Upon determination of an immediate response condition as per Section 6.3.1, NGT&S Operations personnel will promptly reduce the operating pressure in the covered segment until repairs are completed. NGT&S IMP or Pipeline Services personnel will determine the safe operating pressure for the covered segment using ASME/ANSI B31G or RSTRENG. If the calculated safe operating pressure is below the operating pressure at the date of discovery, the operating pressure will be reduced to the calculated safe pressure. If the calculated safe pressure is above the operating pressure of the covered segment, the operating pressure will be reduced to 80% of the pressure at the time of discovery."*

In addition, NGT&S removed the language in the IMP that limits immediate repair conditions to dents "within the reasonable accuracy of the inspection tool" that have metal loss. Any dent with an indication of metal loss, cracking or a stress riser is deemed an immediate repair condition.

To ensure all immediate repair conditions will be reported in the preliminary report, NGT&S added specific language to the ILI vendor contract to require preliminary reporting within 15 working days from

the date of the assessment. As specified by the contract, the preliminary report will include, but not be limited to, reporting anomalies that meet the following criteria:

- Metal loss with Failure Pressure Ratios less than or equal to 1.1 times the MAOP
- Metal loss equal to or greater than 50%
- Dents with any indication of metal loss, cracking or a stress riser

**Item 4E: §192.399(d)(3)**

**The IM plan specifies that monitored corrosion conditions and monitored dents be evaluated during future assessments, but there is no defined process for performing this evaluation.**

**NGT&S Response:**

NGT&S will add to the IMP detailed documentation of the process and procedure for how monitored corrosion conditions and monitored dents will be evaluated during future assessments.

**Item 5A: §192.937(b)**

**The process for periodic integrity evaluations is not documented in sufficient detail. The process documented in the framework IM plan does not include details of how process inputs (e.g., threats, risk assessment results, integrity assessment results, preventive and mitigative measures) are to be evaluated to determine integrity reassessment intervals and methods. In addition, the process documented in the current framework does not meet the requirements of §192.917(b) and §192.937(b) to consider data from the entire pipeline (both covered and non-covered segments) in the data integration performed as part of the periodic evaluation.**

**NGT&S Response:**

NGT&S will add to the IMP details regarding the process and requirements for periodic integrity evaluations and will implement a risk based process for the establishment and validation of reassessment intervals.

**Item 5B: §192.937(c)**

**Procedures did not assure that segments meeting the B31.8S criteria for stress corrosion cracking were assigned reassessment methods that address SCC. ILI is indicated as the reassessment method for these lines, but this method does not address the SCC threat.**

**NGT&S Response:**

NGT&S has implemented a requirement that any covered pipeline segment within an HCA that meets the B31.8S criteria for SCC be assessed with an integrity assessment method appropriate for the SCC threat. NGT&S has qualified pressure testing and SCCDA as approved integrity assessment methods for SCC. The NGT&S IMP requires that direct examination for SCC be performed whenever a pipeline is exposed in an area that meets the B31.8S criteria for SCC (whether in an HCA or not). In addition, inspection for SCC is required whenever a pipeline within an HCA is exposed, regardless of whether it meets the B31.8S criteria for SCC. To date, there have been no confirmed cases of SCC identified during the numerous pipeline inspections performed. However, significant data has been proactively gathered on locations where SCC does not exist.

Based on a review of the NGT&S system, there are 16 covered segments that meet the B31.8S criteria for SCC. NGT&S has added to the Baseline Assessment Plan the schedule for performing an integrity assessment for SCC on each of the 16 segments.

**Item 6A: §192.935(a)**

**The process description for identifying, evaluating, choosing, and implementing additional preventive**

and mitigative measures is inadequate. It is at a framework level only, consisting just of a flow chart (with the exception of the additional procedure for determining if ASV/RCVs are needed). Also, consequences are not considered in the evaluation of preventive and mitigative measures, except in the evaluation of ASV/RCVs.

Limiting consideration of preventive and mitigative measures to the top highest-risk threats for an HCA could result in failing to consider measures that address other significant threats (e.g., risk score for the third most important threat for some segments maybe higher than the two top scores on other segments). For example, for RCA 171115:23954 the threat with the third highest score is internal corrosion (0.3354). That score is higher than the second-highest score for RCA K170-30:21353I, which is also internal corrosion (0.26370). The limitation to the two highest threats means that preventive and mitigative measures will be considered for the latter RCA, but not for the former where its contribution to likelihood of failure is higher. It is likely that more such examples exist.

**NGT&S Response:**

NGT&S will revise the process and procedure for implementing additional preventive and mitigative measures. This revision will include the basis for identifying, evaluating, choosing, and implementing additional preventive and mitigative measures for segments with relatively higher risk. These requirements will be incorporated into the Integrity Management Plan.

**Item 6B: §192.935(b)(1)**

The IM plan does not require monitoring shallow excavations (less than 6 inches deep) or excavation of areas with evidence of past encroachment if the previously unmonitored excavation was shallow. No such exclusion is allowed by the rule. This issue was also identified for separate requirements related to pipe operating at less than 30% SMYS and for plastic pipelines.

The IM plan states that data on third-party damage is collected in a central database, but use of this information is not addressed in the IM plan. For example, there is no requirement to perform root cause analysis to support identification of additional preventive and mitigative measures for high consequence areas.

**NGT&S Response:**

As a follow-up to the inspection, NGT&S revised the language in the IMP to state that unmonitored excavations will be excavated or an above ground survey will be conducted. The IMP has been updated with the following language:

*“When there is physical evidence of past encroachment involving excavation within the right-of-way of a covered segment that was not monitored, the area near the encroachment will be excavated or an above ground survey using methods defined in NACE RP-0502-2002 will be conducted.”*

NGT&S is developing an improved process for the collection and use of third-party damage data that will be documented in the IMP. In addition, an improved process will be developed for performing risk assessment and root cause analysis to support the identification of additional preventive and mitigative measures for high consequence areas.

**Item 6C: §192.935(b)(2)**

The IM plan addresses preventive and mitigative measures for the threat of outside force. None have been implemented for any segment, however, because this threat did not show up as first or second most important threat for a covered segment. It appears unlikely that this threat would be the first or second most important on any covered segment, and thus it is unlikely that additional P&M measures

would be required for this threat by the program as now written.

**NGT&S Response:**

NGT&S will revise the process and procedure for implementing additional preventive and mitigative measures for the threat of outside force to ensure that additional measures are implemented for segments with relatively higher risk due to outside force. These requirements will be incorporated into the Integrity Management Plan.

**Item 6D: §192.935(d)**

NiSource has not developed a process to evaluate Class 3 and 4 areas of its pipelines outside of HCAs to determine whether measures required by 192.935(d) for such pipelines operating below 30% of SMYS (e.g., additional leak surveys for unprotected pipelines or cathodically protected pipe where electrical surveys are impractical) must be implemented.

**NGT&S Response:**

NGT&S will add to the IMP detailed documentation of the process and procedure for how Class 3 and 4 areas outside of HCAs are evaluated to determine whether measures required by 192.935(d) should be implemented for such pipelines operating below 30% of SMYS

**Item 7A: §192.909**

The IM plan lacks sufficient definition of what changes need to be documented in the MOC process. "Significant changes" that need to be tracked through MOC are not delineated clearly.

**NGT&S Response:**

NGT&S is developing an improved MOC process that will be documented in the IMP. The improved process will establish a clear definition of what constitutes a "significant change". The improved process will ensure that an MOC evaluation is performed prior to implementation of any "significant change"

**Item 7B: §192.911(k)**

The documented MOC process does not assure that the effects on the IM program of physical changes to the pipeline (e.g., MAOP changes) will be analyzed before the changes are made.

Changes originating within the IM group that are managed through the MOC process are defined too broadly. Numerous individual changes have been rolled up into a single MOC item. In addition, changes that are managed internally by the IM team need to be tracked.

**NGT&S Response:**

As discussed in the previous response, NGT&S is developing an improved MOC process that will be documented in the IMP. The improved process will ensure that the effects on the IM program of physical changes to the pipeline (e.g., MAOP changes) will be analyzed before the changes are made and will require that an MOC evaluation be performed prior to implementation of any "significant change". MAOP changes will be included in the definition of a "significant change".

**Item 8A: §192.7**

The IM plan does not state the policy for implementing non-mandatory (i.e., "should") requirements from referenced standards (e.g., ASME B31.8S).

**NGT&S Response:**

NGT&S will add to the IMP detailed documentation of the policy for implementing non-mandatory requirements from referenced standards.

**Item 8B: §192.911(l)**

**The IM plan does not include the required quality control elements specified in ASME/B31.8S, Section 12.2(b) as referenced by the rule.**

**The IM plan and the ILI vendor contract language provided for review do not require that ILI vendors implement quality assurance programs consistent with ASME/B31.8S, Section 12.2(c) as referenced by the rule.**

**NGT&S Response:**

NGT&S will revise the IMP to include an improved and comprehensive quality control program that will include requirements for ILI vendors to implement quality assurance programs consistent with ASME/ANSI B31.8S.

**Item 8C: §192.915(a)**

**The IM plan does not include or reference the required qualifications for IM supervisory personnel.**

**NGT&S Response:**

NGT&S will add to the IMP a section that identifies "roles" associated with the execution of the Integrity Management Program. This section will specify the qualification and training requirements for individuals performing IMP roles and will include the required qualifications and training for IM supervisory personnel.

**Item 8D: §192.915(b)**

**The IM plan and the contract language provided for review do not specify qualification requirements for vendor personnel who carry out assessments or evaluate results.**

**NGT&S Response:**

NGT&S will add to the IMP the required qualifications and contract language for vendor personnel who carry out integrity assessments or evaluate integrity assessment results.

If you have any questions regarding the NGT&S plan for addressing the items identified in the NOA, please feel free to contact me.

Sincerely,



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