

**Memo to:**

Puget Sound Energy  
355 110<sup>th</sup> Ave NE  
Bellevue, Washington

Attention: Andrew Lightfoot

Det Norske Veritas (U.S.A.), Inc.  
DNV GL North America Oil & Gas Pipeline  
Services  
5777 Frantz Road  
Dublin, OH 43017  
United States

**Date:**

9<sup>th</sup> September, 2016

**Our reference:**

PP116591 Rev. 1

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**A Detailed Approach to Assess AC Interference Levels Between the Energize Eastside Transmission Line Project and the Existing Olympic Pipelines, OPL16 & OPL20**

Dear Mr. Lightfoot,

DNV GL was retained by Puget Sound Energy ("PSE") to conduct a detailed, project-specific study to evaluate varying transmission line operating configurations to aid in the design of the Energize Eastside transmission lines to minimize the alternating current ("AC") interference effects on the BP Olympic pipelines that are collocated within the existing utility corridor.

In an effort to clarify to the public and permitting agencies, PSE requested that DNV GL clarify the primary differences in approach between the site-specific detailed analysis conducted for the Energize Eastside project and the generalized approach recommended in the Interstate Natural Gas Association of America (INGAA) report "Criteria for Pipelines Co-Existing with Electric Power Lines" (FINAL Report No. 2014-04) ("INGAA Report"). In short, the INGAA report provides general guidelines intended to be used in assessing the likelihood of possible AC interference on collocated pipelines, and prioritizing regions for detailed analysis. The INGAA report recommendations were developed to aid in a risk-based decision making process and help prioritize locations for detailed analysis. The intent being that pipeline operators could perform a generalized assessment to determine if further study was recommended, based upon limited data or knowledge of the parameters of the collocated utilities.

The INGAA report provides a summary of 'Severity Rankings', indicating the influence of individual parameters on the likelihood or severity of AC interference. These Severity rankings are provided as qualitative classifications for guidance when determining locations for detailed analysis. This effectively provides a 'screening tool' to identify collocations with higher likelihood for AC interference in order to prioritize detailed analyses. Where such collocations are identified, the pipeline company would be required to mitigate the risks to meet federal regulations.

Assessing the basic parameters for the Energize Eastside transmission project, the INGAA Report guidance would recommend this collocation for a further detailed analysis. Consistent with the INGAA Report recommendations, PSE proactively retained DNV-GL in 2014 to conduct a project-specific study for the Energize Eastside transmission project to reduce the levels of AC interference on the collocated pipelines.

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DNV-GL is conducting a detailed study of the various engineering options in the design of the transmission lines to minimize the AC interference effects on Olympic Pipe Line Co.'s pipelines that are collocated within PSE's existing utility corridor. This extremely comprehensive and project-specific study considers the parameters of the existing pipelines, various pole types and shield wire conductors, the configuration of phasing, distance between the structures, soil resistivity along the shared corridor, and many other factors. DNV-GL's report will contain project-specific recommendations that will be used as criteria for the project design. As such, and in line with the INGAA Report guidance, the results and conclusions of this detailed project-specific analysis supersedes the generalized conclusions of a screening assessment following the INGAA Report guidance. The information and recommendations developed by DNV-GL as part of the study are consistent with the intent of federal, state and local codes and regulations.

Should you have any further questions or require additional information, please do not hesitate to contact us at your convenience.

Best Regards,



Barry Krebs  
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Materials Advisory Services



David Kemp, P.E.  
Computational Modeling Engineer  
Materials Advisory Services



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Group Lead, Computational Modeling  
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