Government
Energy, Mines and Resources
Oil and Gas Resources
Box 2703 K-11
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COO Direction # 1139-002

Date: 2014/04/02

TITLE

YECL Watson Lake Bi-Fuel LNG Facility Non Destructive Examination Exemption

AUTHORITY

Section 7 of the Gas Processing Plant Regulations ("GPPR")

USE

Purpose:	Watson Lake Bi-Fuel Project
Scope:	LNG Facility Licence #1139
Applicant:	Yukon Electrical Company Limited (YECL), ID Code 522470

REQUEST

YECL requests a variation from the requirements of section 15 of the GPPR, such that, for the purposes of conducting non-destructive examination ("NDE") referred to in s. 15(1) of the GPPR, it may be allowed to conduct NDE on the proportion of welds required by Canadian Standards Association ("CSA") Z276 rather than the entire weld volume of all piping welds. In effect, YECL's request would require an exemption from GPPR Sections 15(2) and 15(3) since a risk analysis has not been submitted to the Chief Operations Officer ("COO"). Pursuant to s. 11(3)(a) of the GPPR, YECL's request is within its application for the Licence dated October 3, 2013.

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DIRECTION

In accordance with Sections 7(1)(a) and (c) of the GPPR, and subject to the conditions set out below, the COO hereby directs that, for activities approved under Licence #1139:

A. YECL is exempt from the requirements of sections 15(2) and 15(3) of the GPPR; and

B. YECL is granted a variation of section 15(1) of the GPPR such that the proportion of weld volume requiring NDE is to be determined by CSA Z276.

This direction is made subject to the following conditions:

1. that, prior to construction authorization, YECL provides to the COO a satisfactory quality assurance and quality control ("QA/QC") program in compliance with CSA B51, which includes welding procedure specifications ("WPS"), welding procedure qualifications ("WPQ"), and procedure qualification records ("PQR");
2. that YECL subjects piping to an on-site leak test using nitrogen in accordance with CSA Z276; and
3. that, prior to commissioning and start up, YECL provides to the COO a copy of the results of all inspection reports, piping data reports, material test records ("MTR"), and any other information related to the NDE of the piping as requested by the COO.

RATIONALE

In accordance with Section 7(2)(b) of the GPPR, the COO has determined that application of CSA Z276 is preferable to Sections 15(1), 15(2), and 15(3) provisions for NDE in relation to the licensed facility.

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BACKGROUND

The requirements of Section 15 of the GPPR stipulate mandatory NDE on the entire weld volume of all piping welds regardless of service. Section 15(2) requires a documented risk assessment be approved by the COO prior to any relaxing of the requirement.

NDE is a procedure used to confirm weld integrity without affecting the serviceability of the pipe. Methods available include magnetic particle inspection, dye penetrant inspection, radiography testing and ultrasonic testing. Adopted standards, such as those published by the American Society of Mechanical Engineers ("ASME"), define the acceptable permutations of different NDE methods and the quantities of welds which need to be examined, in order to be in compliance with the standard. This is a risk based determination which is largely dependent upon engineering factors such as the joint type, weld type, materials, and fluid service type.

YECL proposes to design and construct all piping in compliance with CSA Z276. Sections 9.6.3 and 9.6.4 of CSA Z276 specifically require compliance with ASME B31.3 provisions for piping NDE. In addition, CSA Z276 Annex B, Guidelines for Small LNG Facilities, suggests NDE is not required on socket and fillet welds on 60.3 mm or less diameter pipe that is at less than 20% specified minimum yield stress. Notably, the *Boiler and Pressure Vessels Act (Yukon)* adopts CSA B51 for pressurized piping, which also requires adherence to ASME 31.3.

In addition to LNG facility piping the GPPR also applies to piping in facilities processing sour (i.e. hydrogen sulfide) or sweet gas. Section 15 of the GPPR regarding NDE provides no distinction between these different applications. CSA Z276 and ASME B31.3 comprehensively and specifically address NDE for piping in LNG facilities. These broadly accepted and adopted standards are better suited for the lower risk LNG piping in YECL's

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facility than those provisions set out in the GPPR, which are intended to include high risk environments without established guidance documents.

In the case of YECL's proposed Watson Lake LNG Facility, it is expected that 5% of piping weld volume would be subject to NDE according to CSA Z276, unless exempted by Annex B. This is based upon the engineering drawings supplied by YECL in its construction authorization application dated November 5, 2013 which indicate all piping components are less than 3 inches in diameter, will operate at low pressures, and are to be welded in a certified shop.

The quantity of NDE determined through compliance with CSA Z276, and by extension ASME B31.3, provides assurance of weld integrity through already established practices. A documented risk assessment is not required to determine the proportion of NDE required on piping welds.

Kyle Rolling, P.Eng, Chief Operations Officer

April 2, 2014
Date