



**POWER
WORKERS'
UNION**

August 29, 2013

Canadian Nuclear Safety Commission
P.O. Box 1046, Station B
280 Slater Street
Ottawa, Ontario
K1P 5S9

**Re: Fitness for Service Aging Management - Draft Regulatory Document
REGDOC-2.6.3**

The Power Workers' Union ("PWU") represents a large portion of the employees working in Ontario's electricity industry. Attached please find a list of PWU employers.

The PWU is committed to participating in regulatory consultations to contribute to the development of regulatory direction and policy that ensures ongoing service quality, reliability and safety at a reasonable price for Ontario customers and to ensure transparency and robustness of regulation. To this end, please find the PWU's comments on the Draft Regulatory Document REGDOC-2.6.3 – Fitness for Service Aging Management.

We hope you will find the PWU's comments useful.

Yours very truly,

Don MacKinnon
President

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List of PWU Employers

Algoma Power
AMEC Nuclear Safety Solutions
Atomic Energy of Canada Limited (Chalk River Laboratories)
BPC District Energy Investments Limited Partnership
Brant County Power Incorporated
Brighton Beach Power Limited
Brookfield Power – Mississagi Power Trust
Bruce Power Inc.
Atlantic Power - Calstock Power Plant
Atlantic Power - Kapuskasing Power Plant
Atlantic Power - Nipigon Power Plant
Atlantic Power - Tunis Power Plant
Coor Nuclear Services
Corporation of the City of Dryden – Dryden Municipal Telephone
Corporation of the County of Brant, The
Coulter Water Meter Service Inc.
CRU Solutions Inc.
Ecaliber (Canada)
Entegrus Powerlines Inc.
Erie Thames Services and Powerlines
ES Fox
Great Lakes Power Limited
Grimsby Power Incorporated
Halton Hills Hydro Inc.
Hydro One Inc.
Independent Electricity System Operator
Inergi LP
Innisfil Hydro Distribution Systems Limited
Kenora Hydro Electric Corporation Ltd.
Kincardine Cable TV Ltd.
Kinectrics Inc.
Kitchener-Wilmot Hydro Inc.
Lake Superior Power Inc. (A Brookfield Company)
London Hydro Corporation
Milton Hydro Distribution Inc.
New Horizon System Solutions
Newmarket Hydro Ltd.
Norfolk Power Distribution Inc.
Nuclear Waste Management Organization
Ontario Power Generation Inc.
Orangeville Hydro Limited
Portlands Energy Centre
PowerStream
PUC Services
Sioux Lookout Hydro Inc.
Sodexo Canada Ltd.
TransAlta Generation Partnership O.H.S.C.
Vertex Customer Management (Canada) Limited
Whitby Hydro Energy Services Corporation

CNSC Aging Management Draft REGDOC-2.6.3

Comments of the Power Workers' Union

1 INTRODUCTION

The Canadian Nuclear Safety Commission (“CNSC”) requests stakeholder comment on the June 2013 draft regulatory document REGDOC-2.6.3, *Aging Management* (“Draft Regulation”) which sets out the CNSC’s requirements for managing nuclear power plant (“NPP”) aging structures, systems and components (“SSCs”).

The Draft Regulation states that managing “the aging of an NPP means to ensure the availability of required safety functions throughout the facility’s service life, with consideration given to changes that occur over time and with use. This requires addressing both physical aging and obsolescence of SSCs where this can, directly or indirectly, have an adverse effect on the safe operation of the NPP.”

The Power Workers’ Union (“PWU”) appreciates the opportunity to comment on the Draft Regulation.

2 PWU POLICY POSITION

The PWU has been a key participant in public policy discussions in Ontario for over 60 years. The PWU is providing input on the issues raised in the Draft Regulation REGDOC-2.6.3 to ensure transparency and robustness of the Draft Regulation in meeting its objective. The PWU’s comments on the Draft Regulation are guided by our energy policy statement:

Reliable, secure, safe, environmentally sustainable and reasonably priced electricity supply and service, supported by a financially viable energy industry and skilled labour force is essential for the continued prosperity and social welfare of the people of Ontario. In minimizing environmental impacts, due consideration must be given to economic impacts and the efficiency and

sustainability of all energy sources and existing assets. A stable business environment and predictable and fair regulatory framework will promote investment in technical innovation that results in efficiency gains.

3 PWU's COMMENTS

The PWU fully supports the systematic and integrated approach to aging management and the "PLAN-DO-CHECK-ACT" template proposed by the CNSC. A nuclear power plant is a complex set of interacting components many of which cannot be considered independently of the others. This makes the integration of component lifecycle plans essential through an aging management program that considers this interaction in detail. The PWU believes that the adoption of the CNSC's approach to aging management will both improve safety **and** the economic performance of nuclear power plants over the long term. The PWU's comments are intended to supplement the robustness of the CNSC's aging management.

3.1 PLAN

Advance planning is necessary to stop deterioration before it starts and to mitigate it once it does. The longer it takes to do this, the greater the deterioration. In addition, the solution set available to mitigate deterioration decreases because of potentially long lead-times for some options. Consequently, delays cause costs to rise and effectiveness to decrease.

The PWU suggests that the PLAN include at least an initial outage schedule related to aging management over the lifetime of the plant. This would ensure that activities related to aging management are penciled-in for inclusion in outages. Many of these activities will land on the critical path and identifying them at an early stage enables other activities to be scheduled around them. It also provides a reference base against which to judge plan implementation. Deviations from the plan are inevitable, but having a reference point allows for explanation on why the schedule of aging management activities has changed and for the provision of assurances that these deviations will not materially impact life management.

3.2 DO

Lifecycle management activities often land on the back burner because their impact is not manifested in the operating timeframe. Therefore the PWU submits that incentive plans which emphasize short-term performance at the expense of longer-term management should be discouraged in the aging management regulation.

3.3 CHECK

The CNSC has already identified the importance of a systematic and ongoing inspection program. In the PWU's view the CHECK approach will:

- Monitor known deterioration mechanisms;
 - This monitoring needs to identify both the current condition of components and the rate of change in the deterioration (for example hydride levels in pressure tubes). Identification of the rate of change involves taking differences between two measurements, sometimes on a measurement made on one component and a similar one made at a later date. The measurements themselves often have large variability and the differences between two measurements have even more variability resulting in estimates with large error bands. This makes the rate of change calculation highly variable.
 - In addition, the mechanisms for deterioration often change as the deterioration progresses. A case in point is the hydriding of pressure tubes near the high temperature end of the rolled joint. At some point deterioration may become non-linear, further complicating rate of change calculations.
 - The inspection program for reactor components also has to recognize the number of "similar" components and the complexity of the variables that affect the deterioration, which can include their location within the reactor, radiation flux, temperature, chemistry, start-ups, shutdowns, operational history and initial baseline values. The dominant deterioration mechanism can actually vary along the length of a component such as pressure tubes

and may be affected by the number of start-ups and shutdowns, and by shutdown chemistry, as examples.

- Highly variable deterioration measurements from component to component coupled with complex and interacting variables necessitate more frequent inspections to avoid unnecessarily high allowances for error.
- Guard against currently unknown deterioration mechanisms;
- Allow for early corrective measures to be taken in the event the deterioration is unexpectedly high or new deterioration mechanisms are identified; and,
- Provide adequate time for research in the event that deterioration identified by inspections calls for it.

Therefore, the PWU fully concurs with the CHECK element of the Draft Regulation.

3.4 ACT

Timely mitigation of component deterioration to maximize the safe operating life of a nuclear power plant is clearly one of the major aims of the aging management program. In the PWU's view this requires adequate research and development funding, inspections, planning and training, which must all be provided for. Articulation of these provisions should therefore be included in the regulation.

3.5 ADDITIONAL GENERAL SUGGESTIONS

3.5.1 The Impact of Changing Inspection Techniques

From time to time, new inspection techniques are adopted. Occasionally this results in the introduction of a bias in rates of change calculations. For example, early inspection tools for monitoring of feeder thicknesses overstated the thickness. Later techniques gave more accurate, but thinner measurements. When changes are estimated they are enlarged because the starting point was inaccurate (too high). In this particular example the rates of change calculated are conservative from a safety point of view. However, this may not always be the case. Therefore the PWU suggests that where it is critical to

life management activities or to fitness or service calculations, where changes in inspection technique will or has occurred, parallel measurements with the two techniques should be conducted to allow for correction for this bias. Because of cost and dose considerations this calibration could be done in a non-radioactive test environment.

3.5.2 Incentive for completing the aging management program on time.

Incentive programs drive behaviour. There is a constant tension between operating staff and lifecycle management staff with respect to outage planning. Aging management activities are often on the critical path and under pressure. If other activities on the critical path take longer than expected aging management activities often are considered for deferral to keep the outage on schedule. In the near-term the safety impact of this is undoubtedly insignificant, but a constant accumulation of such deferrals causes undue backlogs of critical aging management activities.

Providing regulatory incentive for completing these activities on an agreed-upon schedule would help to reduce this tension. Such an incentive could be the inclusion of maintaining the timeline of the aging management program as a performance area reported on in the CNSC staff's annual Nuclear Power Industry Safety Performance Reports.

3.5.3 Departing Staff Mentor New Staff by Working in Parallel

The experience of departing staff is not always captured in documentation. Valuable knowledge sometimes is lost with departing staff as the knowledge is not necessarily passed along to successors. In the PWU's view it would improve safety and lifecycle planning, if prior to a staff departure, the departing staff person works in parallel with the new staff so that as much of the departing staff's knowledge as possible is passed along. In this particular case we are referring to aging management information and knowledge of deterioration mechanisms and procedures.

While all of this would necessarily be documented, the amount of information generated by even a single component of an aging management plan is substantial and amounts to several binders of procedures. Ensuring that this information is brought to the fore as

intended in the implementation process requires staff that is thoroughly familiar with the information. A mentoring process would help to ensure that information in the lifecycle plan remains accessible and is implemented as intended. The PWU therefore suggests that aging management regulation specify the mentoring of new staff by departing staff.

All of which is respectfully submitted.