New Clear Free Solutions

Pickering Regulatory Hold Point Intervention

CNSC Hearing Notice No. 2014-H-01

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EXECUTIVE SUMMARY

New Clear Free Solutions is pleased to present this intervention to the Commission members on Ontario Power Generation's (OPG) request to remove the hold point associated with Licence Condition 16.3 of the Pickering Nuclear Generating Station (NGS) Power Reactor Operating Licence (PROL) to allow the reactors to operate beyond 210,000 hours.

We ask the commission not to grant the removal of the hold point based on the following reasons:

1. OPG has not demonstrated that they have made adequate provision for the protection of the environment, the health and safety of persons.
2. OPG has not demonstrated that they have made the adequate provisions required to implement the international obligations to which Canada has agreed, namely the United Nations Convention on Nuclear Safety.
3. OPG has not demonstrated that they are qualified to carry out the activity that the licence will authorize.
4. OPG has not fulfilled the requirements set by the commission for removal of the hold Point.

Many of the issues that led to this additional hearing have not been resolved, and many new ones have arisen. It is our opinion that the removal of this hold point is premature and more information is needed. This intervention will provide the details for our above mentioned reasons to not release the hold point, and what should be done before it is released.

1.0 OVERVIEW

This hearing was requested by interveners because OPG had not provided a full safety case for the removal of the hold point. The commission agreed with this request. This intervention details our four main concerns mentioned in the Executive Summary. We conclude that the appropriate safety case has still not been presented to the commission and the request for removal of the hold point is premature.

2.0 OPG HAS NOT DEMONSTRATED THAT THEY HAVE MADE ADEQUATE PROVISION FOR THE PROTECTION OF THE ENVIRONMENT, THE HEALTH AND SAFETY OF PERSONS.

2.1 Aggregation of Risks

It is unclear why the CNSC staff state in their CMD that the aggregated results are for "illustrative purposes" or downplay it as a "simple summation". As stated in the definition of a PSA in S-294, "it is a comprehensive and integrated assessment of the safety of the reactor or plant." If the results of the individual components of the PSA are not aggregated, the assessment will not be integrated and therefore not compliant with S-294.

The CNSC staff also state that the aggregated results are in accordance with the IAEA definition of Safety goal:

> *"CNSC staff aggregated all event frequencies for a single unit in accordance with the IAEA definition of CDF and LRF Safety Goals"*

After reviewing the IAEA guidance provided in the licencing documents and CMD's we have determined that the results of the PSA should be aggregated for comparison to safety goal limits and targets. Any comparison of individual PSA components to stated safety goals would be increasing the internationally accepted safety goals by a factor of how many PSA components there are, which is not accepted practice. It is unacceptable to increase the safety goals above the internationally accepted values as this would not be consistent with Canada's international obligations and will provide unreasonable risk to the Canadian public and environment.

It is worrisome that in response to CCNB Actions request for rulings at the last Pickering hearings OPG stated that *"there is not yet an accepted methodology for calculating risk aggregation."*. This is untrue as there is very clear and well defined methodology for calculating risk aggregation as stated in the guidance referenced in OPG's Licence Condition Handbook.

2.2 Bounding Analysis

A requirement for the removal of the hold point is to be compliant with Regulatory standard S-294. This standard requires that internal and external events be included in both at power and outage states. Table B.1, B2, C1 and C2 in CNSC staff's CMD shows that many of the Outage PSAs are N\A because they are bounded by the at Power PSAs. This is confusing as it appears that an analysis has not been done, and therefore would not be compliant with S-294. Bounding analysis is however an accepted method of analysis, but it means that the risk is conservatively equal to the bounding analysis it was assessed against. Bounding analysis is used so that a lot of time and resources can be saved instead of doing a detailed analysis. Not performing a detailed analysis has saved OPG a lot of time and effort, but as a result the bounding analysis results must be used or detailed analysis must be undertaken to remove any conservatisms and uncertainty.

In the Record of Proceedings and Reasons for Decision, the commission has already made a decision on bounding analysis in this respect. In CCNB Action's request for ruling that "the wind Large Release Frequency (LRF) be equal to the wind Core Damage Frequency (CDF)" was because OPG had shown in the Pickering B PSA summary that the wind LRF as N/A and had stated that "the wind LRF was not assessed". This was later contradicted in the Pickering PSA summary in which OPG stated "*Hence, the Severe Core Damage Frequency bounds the Large Release Frequency and the Small Release Frequency.".* The record shows that both OPG and the commission accept the bounding analysis methodology:

> *"98. CCNB Action's third request for a ruling was a ruling that "the wind-large release frequency be considered the same as the wind-core damage frequency, unless OPG can prove otherwise." OPG stated that it agreed with this statement for the Pickering B probabilistic risk assessment. The Commission accepts this response from OPG."*

It is not accepted practice to exclude the bounding analysis in the final results of a PSA. In IAEA document SSG-3, "Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants", which referenced in the Pickering Licence Condition Handbook as guidance, states:

> *"8.4. The cumulative contribution of the external hazards subject to the bounding analysis should be calculated and retained in the final results of the Level 1 PSA."*

As was CCNB Action's concern in the previous hearings, CNSC staff are again not following the guidance stated to have been used in making their decision.

Bounding analysis is usually reserved for when the conservative results show that the risk is very low and living with the conservative assumptions are acceptable. However OPG has done a bounding analysis for the Fire PSA which is the largest contributor to the risk. Given the relatively high bounding analysis OPG should be doing a more detailed analysis.

We would like to remind the commission members that Fukushima Unit 4 was in an outage state when it exploded on March 15 2011, and that the risk from an accident while in an outage is far from negligible.

Although it was nice to see the possible reductions in the PSAs from the Fukushima Enhancements, we strongly question the results especially in the Pickering B results. These methodologies are new, have not been thoroughly reviewed and are not compliant with S-294. We ask the commission to only use the S-294 compliant results for comparisons to safety limits.

2.3 Conservatisms

In the last several years we have heard that licensee calculations are very conservative on many occasions, yet we find when they undergo scrutiny they are in fact, not. A few of the many examples of this are:

> -Dr. Frank Greening's calculations showed OPG was off by a factor of 600 in their calculations for the DGR.
>
> -Dr. Sunil Nijhawan's review of the pressure relief of the primary heat transport system, and the amount of PARS required for Point Lepreau found that both are inadequate.
>
> -Chris Rouse's review of NB Power's seismic calculations found that the estimated seismic LRF was off by a factor of 40 from what was originally submitted to the CNSC.

Given the frequency of supposedly conservative calculations turning out not to be after scrutiny, we question all stated conservatisms without a sound technical basis and independent review. When looking at how conservative the PSA is, all assumption must be looked at and not just one or two.

When determining conservatisms one must remember that the measured occurrence of large releases from nuclear reactors is almost two orders of magnitude different than most current calculated PSA results show.

2.3.1 Fire PSA

The CNSC staff recommendation for release of the hold point essentially boils down to the fact that OPG does not meet the PSA safety goal limits, but because of the conservatisms in the PSAs it does not matter. CNSC staff state in their CMD that:

> *"The aggregated LRF, calculated by simple summation from for Pickering A is slightly above OPG safety goal limit. This is primarily due to the overly conservative assumptions and simplified methods in the Fire PSA."*

The CNSC staff also state in their CMD that:

> *"However, the aggregation of internal events and external events by simple summation should be performed only once the bias, due to the uncertainties and conservative assumptions associated with the methodology for external events, is removed."*

If OPG is not going to put the time and effort into their analysis and instead use conservative assumptions, they should have to live with the results until further analysis is performed. Performing simple, or bounding analysis, could be compared to a student skimping on their homework and then complaining when they don't get a passing mark.

The only example given by CNSC staff on the conservatism in the PSA was:

> *"For instance, for the fire analysis, it was assumed that all structures, systems and components in a given fire zone will fail following the initiation of a fire in that particular zone."*

We question how conservative this assumption is. Electrical distribution or control room fires are dominant risks for the fire PSA. It would not be unrealistic for a severe fire in the control room or in the electrical distribution rooms to cause failures of all the systems and components controlled or powered from those zones. Electrical fires in areas such as the control room or electrical distribution rooms can disable many important safety systems and severely deteriorate the usefulness of the Fukushima Emergency Mitigating equipment.

It was not the flooding of the emergency generators at Fukushima that caused the accident. It was that the flooding disabled the electrical distribution equipment. A fire could easily disable electrical distribution similar to flooding. Tepco did have rudimentary power supplies and pumps. It is because of this, we find the reduction, in the revised Pickering B Fire PSA, by an order of magnitude, unrealistic, and should not be accepted without independent peer review and deemed compliant with S-294.

We also find it unrealistic to believe in the huge differences in the LRF for Pickering A and Pickering B. They both share containment and such differences are very hard to believe especially the Fire PSA for the reasons mentioned above.

We also question the conservatism based on the exclusion of the fire outage PSA not being included in the aggregation. In an outage state many systems may be unavailable because of maintenance or unusual plant configurations, and will require different mitigation strategies during an event. Using a bounding analysis does not give OPG the details that would give insights to mitigating an outage state accident.

In 2013 Pickering had 70 fire code non-compliances reported under their S-99 reporting requirements. Given the large number of fire code non compliances we also question the amount of conservatism in the PSA, especially since most of them were caused by human and organizational failures.

We would also like to point out to the commission that the final results have not yet been thoroughly reviewed by CNSC Staff. Accepting these results would be similar to giving a student a passing grade before marking the test.

2.3.2 Wind PSA

In the Pickering B PSA summary it is stated that:

> *"Level 2 assessment for high winds was not performed because high winds are conservatively assumed to affect all four PNGS-B units in the same manner at the same time"*

Given that it would be extremely unlikely that high winds would only affect 1 unit, this is not an overly conservative assumption to be made.

We also question the reduction of Pickering B Wind LRF by a factor of 26 because of the Fukushima Enhancements. We don't think it unrealistic that the new mitigating equipment will also be affected by severe winds as well.

We also question the conservative assumption made for 220km/h winds, as much higher winds could occur.

The conservatisms are again questioned because in Pickering B the outage PSA's are not included in the aggregated results.

2.4 Uncertainty and Sensitivity Analysis

Another requirement of S-294 is that Uncertainty and Sensitivity analyses be performed for the PSA's. It is also paramount to the scientific method to have both a measure of uncertainty and sensitivity analyses be performed. Neither the CNSC staff or OPG have presented to the commission any of these measures, yet they are asking them to accept safety goal limits not being met on their word that the results may be overly conservative. This is neither scientific nor objective.

Proper disclosure of the required uncertainty and sensitivity analyses to the public and the commission members would solve a lot of the uncertainty questions with the results of the PSA's. It appears OPG and CNSC staff just want the commissioners to trust them with no objective scientific information to back up any claims of conservatism.

2.5 PSA Results

After review of the technical basis for the PSAs we conclude that bounding analysis should be included in the aggregation of risks. We have provided for the commission the revised results with the bounding analysis included.

2.5.1 Pickering A PSA Results S-294 Compliant

TABLE 1: PICKERING A PSA RESULTS			
Model	**Operational State**	**CDF (1E-4/reactor year)**	**LFR (1E-5/reactor year)**
Internal Events	At Power	0.16	0.47
	Outage	0.07	0.47*
Internal Fires	At Power	0.47	0.84
	Outage	0.47*	0.84*
Internal Floods	At Power	0.1	0.2
	Outage	0.02	0.02
Seismic Events	At Power	0.03	0.32
	Outage	0.01	0.01
High Winds	At Power	0.27	0.8
	Outage	0.01	0.02
Total		**1.61**	**3.99**
Safety Goal Limit		**1 PSA Above Limit**	**1 PSA Above Limit**
Safety Goal Target		**0.1 PSA Above Target**	**0.1 PSA Above Target**

* Indicates bounding analysis

2.5.2 Pickering A PSA Results with Enhancements Not S-294 Compliant

TABLE 2: PICKERING A PSA RESULTS with Enhancements			
Model	**Operational State**	**CDF (1E-4/reactor year)**	**LFR (1E-5/reactor year)**
Internal Events	At Power	0.08	0.17
	Outage	0.06	0.17*
Internal Fires	At Power	0.47	0.84
	Outage	0.47*	0.84*
Internal Floods	At Power	0.06	0.09
	Outage	0.02	0.02
Seismic Events	At Power	0.02	0.04
	Outage	0.01	0.01
High Winds	At Power	0.03	0.07
	Outage	0.01	0.02
Total		**1.23**	**2.27**
Safety Goal Limit		**1 PSA Above Limit**	**1 PSA Above Limit**
Safety Goal Target		**0.1 PSA Above Target**	**0.1 PSA Above Target**

* Indicates bounding analysis

2.5.3 Pickering B PSA Results S-294 Compliant

TABLE 3: PICKERING B PSA RESULTS			
Model	**Operational State**	**CDF (1E-4/reactor year)**	**LFR (1E-5/reactor year)**
Internal Events	At Power	0.04	0.39
	Outage	0.01	0.39*
Internal Fires	At Power	0.04	0.32
	Outage	0.04*	0.32*
Internal Floods	At Power	0.01	0.07
	Outage	0.01*	0.07*
Seismic Events	At Power	0.01	0.01
	Outage	0.01*	0.01*
High Winds	At Power	0.08	0.8
	Outage	0.08*	0.8*
Total		**0.33**	**3.18**
Safety Goal Limit		**1 PSA Below Limit**	**1 PSA Above Limit**
Safety Goal Target		**0.1 PSA Above Target**	**0.1 PSA Above Target**

* Indicates bounding analysis

2.5.4 Pickering B PSA Results with Enhancement Not S-294 Compliant

TABLE 4: PICKERING B PSA RESULTS with Enhancements			
Model	**Operational State**	**CDF (1E-4/reactor year)**	**LFR (1E-5/reactor year)**
Internal Events	At Power	0.01	0.03
	Outage	0.01	0.03*
Internal Fires	At Power	0.01	0.04
	Outage	0.01*	0.04*
Internal Floods	At Power	0.01	0.07
	Outage	0.01*	0.07*
Seismic Events	At Power	0.01	0.01
	Outage	0.01*	0.01*
High Winds	At Power	0.01	0.03
	Outage	0.01*	0.03*
Total		**0.1**	**0.36**
Safety Goal Limit		**1 PSA Below Limit**	**1 PSA Below Limit**
Safety Goal Target		**0.1 PSA Equal Target**	**0.1 PSA Above Target**

* Indicates bounding analysis

2.6 Comparison of Safety Goal Limit and Targets

Table 5 Comparison Of PSA Results to Safety Goals				
Safety Goal Limits and Targets	**Pickering A S-294 Compliant**	**Pickering A With Enhancements Not S-294 Compliant**	**Pickering B S-294 Compliant**	**Pickering B With Enhancements Not S-294 Complaint**
Sever Core Damage Safety Goal Limit 1 in 10,000 RY	1 in 6211 RY (37% Above Limit)	1 in 8130 RY (18% Above Limit)	1 in 30,303 RY (303% Below Limit)	1 in 100,000 RY (1000% Below Limit)
Sever Core Damage Safety Goal Target 1 in 100,000 RY	1 in 6211 RY (94% Above Target)	1 in 8130 RY (91% Above Target)	1 in 30,303 RY (70% Above Target)	1 in 100,000 RY (Equal Target)
Large Release Frequency Safety Goal Limit 1 in 100,000 RY	1 in 25062 RY (75% Above Limit)	1 in 44052 RY (55% Above Limit)	1 in 31,446 RY (69% Above Limit)	1 in 277777 RY (285% Below Limit)
Large Release Frequency Safety Goal Target 1 in 1,000,000 RY	1 in 25062 RY (97% Above Target)	1 in 44052 RY (95% Above Target)	1 in 31,446 RY (97% Above Target)	1 in 277777 RY (71% Above Target)

Note: Red indicates PSA results are above the limit or target.

2.7 Conclusion

OPG has not demonstrated that they have provided for unreasonable risk. These are our conclusions based on our review.

-Pickering A is not compliant with the CDF or LRF safety goal limits for the S-294 Compliant PSA results.

-Pickering A is not compliant with the LRF safety goal limit for the non-complaint S-294 results with Fukushima Enhancements.

-Pickering B is not compliant with the LRF safety goal limit for the compliant S-294 results.

-If bounding analysis is aggregated Pickering A is not compliant with the CDF or LRF safety goals for either the S-294 compliant, or the non-compliant Fukushima enhancements PSA.

-If bounding analysis is aggregated Pickering B is not compliant with the LRF safety goals for either the S-294 compliant, or the Fukushima enhancements PSA.

-When bounding analysis is added, the individual Pickering A Fire PSA does not meet the LRF safety goal limit.

If OPG in unwilling to spend the time and money on detailed analysis they should be required to live with the consequences of conservative assumptions of the bounding analysis. It is our request that the hold point not be released until Pickering A and B PSA`s are compliant with all safety goal limits with S-294 compliant results.

3.0 OPG HAS NOT DEMONSTRATED THAT THEY HAVE MADE THE ADEQUATE PROVISIONS REQUIRED TO IMPLEMENT THE INTERNATIONAL OBLIGATIONS TO WHICH CANADA HAS AGREED, NAMELY THE UNITED NATIONS CONVENTION ON NUCLEAR SAFETY.

3.1 United Nations Convention on Nuclear Safety

The United Nations Convention on Nuclear Safety (CNS) is one of Canada's international obligations under the Nuclear Safety and Control Act. The Obligations section of the CNS gives very clear guidance to the commission members when safety limits are not met, and upgrades cannot be made. Article 6 under the Obligations section of the CNS states:

> *"Each Contracting Party shall take the appropriate steps to ensure that the safety of nuclear installations existing at the time the Convention enters into force for that Contracting Party is reviewed as soon as possible. When necessary in the context of this Convention, the Contracting Party shall ensure that all reasonably practicable improvements are made as a matter of urgency to upgrade the safety of the nuclear installation. If such upgrading cannot be achieved, plans should be implemented to shut down the nuclear installation as soon as practically possible. The timing of the shut-down may take into account the whole energy context and possible alternatives as well as the social, environmental and economic impact."*

This gives the commission, OPG, and CNSC staff clear guidance that plans to shut Pickering down as soon as practically possible should be implemented because the safety goal limits are not met and there are no plans for upgrades. Taking into account the whole energy context, possible alternatives as well as the social, environmental and economic impact are usually dismissed at licencing hearings as not within the scope or the hearings. However in this particular situation it is within the mandate of the NSCA to consider all of these things.

We recommend that an additional hearing be held that considers the whole energy context, possible alternatives as well as the social, environmental and economic impact of continued operation of Pickering Nuclear Generation Station before removal of the regulatory hold point.

4.0 OPG HAS NOT DEMONSTRATED THAT THEY ARE QUALIFIED TO CARRY ON THE ACTIVITY THAT THE LICENCE WILL AUTHORIZE.

4.1 Management Systems

The management system licence condition is unique as it applies to all other licence conditions. Management systems are the parts of the regulatory framework that establish the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against those objectives, and fosters a healthy safety culture. Therefore management systems performance are a measure of safety culture.

There are many examples of an underperforming management system within OPG. Some examples are:

-Asking for removal of hold point without an Action Plan on safety goal limits and targets.

-Third Quarter S-99 event reports not posted on website on time, and a lot of confusion over the 4th quarter results due to poor document control.

-Pickering had the most event reports in 2013 with 131 reported events.

-70 of the event reports are for fire code non-compliance.

-At least 74 of the events are directly related to human or organizational failure.

-Many of the events are not one-off's but are reoccurring. There seems to be normalized deviance towards fire code regulations. Deliberate tampering of the PA system has been evident at OPG since 2009. It has happened at all of the NPP's but is most prevalent at OPG. There seems to be no sign of adequate corrective actions being taken by OPG, or any regulatory actions stemming from this pattern of safety system tampering.

-Our request for consultation on OPG's public information program was ignored for several months. It was even ignored when complaints to the CNSC where made in which OPG was aware of the complaint.

Addendum A Table 6 provides a list of S-99 event reports with human or organization failures or fire code non-compliances highlighted for the commission to review.

We request an independent audit of OPG's management systems be undertaken as a measure of OPG's human and organizational performance. This audit should be made public, and any specific concerns of the public should be included in the scope of the audit.

The external advisory committee report on the Fukushima Action Plan noted that:

> *"It is not evident that the CNSC has considered the area of Human and Organizational Performance in its FTF recommendations "*

Human and Organizational Performance (HOP) was later added to the Fukushima Action plan, but it has not been clear that this has been addressed in any meaningful way. An independent management system audit would be the obvious first step in assessing HOP to determine if OPG is qualified to operate the PNGS.

4.2 CNSC Staff

We strongly question the CNSC staff's recommendation to the commission for release of the hold point. It is our opinion that there are severe cultural problems within the CNSC that are very similar to the cultural problems that led to the Fukushima Accident. We base this opinion not only on our own experiences with the CNSC staff, as has been detailed in great length in CCNB Action's Issues and Reasons for Requests for Rulings, but also from information from within the CNSC.

The following are the results of the recent Environics "Big Chill" survey, commissioned by PIPSC.

> *-57% of the CNSC employee's surveyed said they were aware of cases where the health and safety of Canadians (or environmental sustainability) has been* ***compromised*** *due to political interference.*
>
> *-50% of the CNSC employee's surveyed didn't feel they could publish their work in peer-reviewed journals.*
>
> *-94% of the CNSC employee's reported interference with manuscripts and or conference presentations.*
>
> *-The CNSC was among the groups most likely to be asked to exclude/alter information in Federal government documents for non-scientific reasons.*
>
> *-93% of the CNSC employee's surveyed agreed that the public would be better served if the federal government strengthened its "whistleblower" protection*

These results were brought up at the Dec 2013 public meeting, and they were dismissed as not representative as only 79 of 518 CNSC employees responded. We argue that there doesn't need to be consensus for the issue not to be serious. We are unsure how many people it takes to state that safety is being compromised from within the CNSC for it to be taken seriously, but 45 people should be enough.

At the Dec 2013 meeting Dr. Thompson from the CNSC responded to the results with:

> *"My sense from discussing it with my colleagues and my staff is that the perception sometimes that opinions don't get considered fully is in relation to how we respond to scientific uncertainties."*

We can understand this perception as the CNSC staff used the scientific uncertainties in OPG's PSAs in OPG's favour in their recommendation to remove the regulatory hold point.

Another internal source of information to highlight the cultural problems within the CNSC is the CNSC union website where all meeting minutes, newsletters ect are available. Some highlights of these documents are cited below with links provided.

Canadian Nuclear Safety Commission Labour Management Consultation Committee (LMCC) Minutes of Meeting Thursday, December 5, 2013

http://www.pipsc.ca/portal/page/portal/website/employers/separate/cnsc/pdfs/lmcc12052013.en.pdf

"Environics Survey

Mr. Crentsil provided the Committee with some background on the recent Environics Survey that was commissioned by PIPSC (named "The Big Chill"). There have been some questions among senior management as CNSC results stood out. Ms. Norgang (PIPSC) was also available to the Committee to provide background and context to the discussion as she was a member of the survey team

Mr. Crentsil noted that the survey was conducted among 15,000 science-based members and there was a 26% response rate. At the CNSC, 518 NUREG members received the survey and 78 responded (14%). The sample at the CNSC was small, particularly compared to other departments.

The survey raised questions with respect to scientific integrity, communications with the public and encouraging peer review. The Committee discussed their concerns with the survey and possible reasons for these views.

It was acknowledged that many initiatives are in place to accommodate differences of opinion but perhaps they are too new to be reflected in this type of survey. It was also noted that there are many opportunities in the preparation of Commission Member

Documents (CMD) to solve issues of differing opinions. Mr. Crentsil agreed that perhaps it is a matter of time; the process may not have been in place long enough to see its advantages.

The Committee was in agreement that the survey provides a barometer which helps us to understand that there should be greater focus on the disposition of input into technical issues.

Ms. Norgang also advised that there were over 1,000 open-ended comments collected as part of the survey which will be posted publicly (once they are cleared as non-attributable) to provide a broader perspective."

2012 NUREG Consultation Team Meeting Saturday December 1, 2012

http://www.pipsc.ca/portal/page/portal/website/employers/separate/cnsc/pdfs/010713.en.pdf

"• The action plan was co-developed with NUREG & Human Resources (HR).
• There is perceived harassment and there is a fear of reprisal.
• Staff may have a lack of understanding on how to surface issues.
• Managers should manage employee performance but may be reluctant to do so because of a fear of grievances.
• There may be a perception of bias in the harassment process."

Collaborative Workplace Initiative

http://www.pipsc.ca/portal/page/portal/website/groups/nureg/081213

"Action Plan
The main issues raised at the facilitated session were:

- *Perception of increased harassment and conflict in the workplace; tendency to use the word harassment to describe workplace issues;*
- *Lack of understanding of recourse options; concern about retaliation prevents some employees from exercising recourse options;*
- *Perception of bias in harassment policy, particularly in the intake process (initial review of complaint to determine if it is admissible under the policy);*
- *Lack of clarity around roles and responsibilities; union/management relationship exists primarily between HRD and NUREG and not with line management."*

Canadian Nuclear Safety Commission Labour Management Consultation Committee (LMCC) Minutes of Meeting Monday, May 7, 2012

http://www.pipsc.ca/portal/page/portal/website/employers/separate/cnsc/pdfs/may72012.en.pdf

"Due Diligence by Specialists

Mr. Crentsil opened the discussion by advising that in the Technical Services Branch (TSB), specialists wish to understand at what point they would be considered to have exercised "due diligence" when providing advice.

Mr. Glen McDougall was invited to speak to this item. Mr. McDougall stated that there is a TBS Policy on Legal Assistance and Indemnification which protects the employee should an external party bring a claim against the CNSC. However, this does not cover any liability that may exist internally. In other words, advice and guidance from the specialists are handed off to other parties in the "chain", and the roles and responsibilities of the specialists can become blurred in the overall process.

Mr. McDougall provided an example where specialists are asked to present at a Commission hearing but are not given much advance notice or are not involved in the initial preparation of the file. The concern is that they may be putting their professional reputation at risk in situations where they are asked to defend CNSC positions before the Commission when the position is not theirs. At what point are they therefore liable for what they say? Can they decline to participate if they are uncomfortable?

Mr. Binder expressed concern that employees were being asked to appear before the Commission without being prepared, that is the purpose of the dry runs. He questioned whether the issue is that the employee is not aware of the issues or if the employee disagrees with the direction. He confirmed that if an employee is uncomfortable presenting then s/he can decline to participate.

Mr. Elder advised that employees have the opportunity to raise issues as it is built into the process when developing Commission member documents; he reiterated Mr. Binder's concern that although an employee may not agree, CNSC's position should be known in advance.

Ms. Harrington advised that Mr. Terry Jamieson (Vice-President Technical Services Branch) was aware of the issue as brought forward by NUREG, and that more conversation around this topic will be undertaken."

Workplace Civility

http://www.pipsc.ca/portal/page/portal/website/groups/nureg/11282013

"As a steward I often encounter what may be perceived as violations of the CNSC Values and Ethics Code. Often such perceived violations, aka incivility, can fly under the organizational radar since they may not meet the threshold for administrative or disciplinary investigation or action. If left unchecked however, such behaviors can become normalized and become part of the corporate culture and possibly lead to a toxic workplace climate.

I usually get 2 types of reactions when I raise the issue of civility with colleagues and managers: 1) It's common sense; I'm an adult and don't need lessons on manners; Let's concentrate on technical issues; 2) I hear war stories of incivility often in a group setting. Examples: offensive jokes; checking of e-mails during meetings; talking down to others; not listening; temper tantrums; eye rolling; yelling; swearing; withholding information; belittling others efforts; social exclusion; spreading rumors about colleagues etc.

Although we may be aware of incidents of incivility, we often don't feel we have the appropriate tools to intervene. And even if we do, we may fear reprisal from a supervisor or colleague. In a group setting, the end result is an embarrassed silence where no one either objects to or addresses incivility."

NUREG Group Newsletter Dec 2013

http://www.pipsc.ca/portal/page/portal/website/groups/nureg/pdfs/newsletterdecember2013.en.pdf

"We are reminded of the bureaucratic byword: "Never write when you can talk; never talk when you can nod; never nod when you can wink.""

As you can see from above there are cultural issues going on within the CNSC, and the issue should not be ignored. The information contained in the above documents validates the concerns of the Environics survey. The commission members should consider these internal CNSC issues when making their decisions.

With regards to the mention of "Due Diligence by Specialists" we request that any CNSC staff that have disagreed with the recommendation be able to voice their concerns at the hearing, and full disclosure of any issues be tabled for the commission and the public.

5.0 OPG HAS NOT FULFILLED THE REQUIREMENTS SET BY THE COMMISSION FOR REMOVAL OF THE HOLD POINT.

5.1 Action Plan for Targeted Safety Goals

In the commission's decision they stated:

> ``*the Commission requests that OPG provide an action plan to address any identified issues should OPG exceed its targeted safety goals.*``

This has not been done. As outlined in section 2 of our intervention there are many exceeded limits and targets, yet there is no action plan.

5.2 Filtered Vents

We support OPG`s existing and planned improvements under the Fukushima Action Plan for protection of the containment but disagree that an additional filtered vent should not be installed. It should not be this **or** that. It should be this **and** that.

The S-294 compliant PSA results show that there is almost zero level 4 defence in depth and none of the results are compliant with the LRF limits. An additional filtered vent may reduce the LRF enough so that the OPG is compliant with LRF limits. The public, as I am sure the commissioners do, would like to see additional PSA results with an additional filter included.

CNSC staff state in their CMD that:

> ``*If the capacity of the FADS is insufficient, then additional venting is possible through the Containment Exhaust Stacks, which are monitored, but not filtered. It would be preferable to vent a known amount of radioactivity under favourable circumstances (wind direction) rather than compromise the integrity of an intact containment and lose control of venting.*``

We are unsure of which wind direction is favorable, but I think anyone living in that direction would argue that it is not favorable to them. Pickering is not beside a vast ocean like Fukushima, and there are no favorable wind conditions only bad and really bad conditions. It is not fair for the employee`s at OPG to have to decide to save the containment or wait for ``favorable`` wind conditions.

OPG and CNSC staff both agree that an additional filtered vent would provide benefits. The only con to the installation of a new vent would be when the decision is made to do this OR that. A decision to do this AND that has no cons and only pros.

I would like the commission to read this brief summary of Windscale accident from wikipedia:

> *"The reactors were built in a short time near the village of Seascale, Cumberland and were known as Windscale Pile 1 and Windscale Pile 2, housed in large concrete buildings a few hundred feet apart. The reactors were graphite-moderated and air-cooled. Because nuclear fission produces large amounts of heat, it was necessary to cool the reactor cores by blowing air through channels in the graphite. Cool air was taken in by a battery of large fans, hot air was then exhausted out of the back of the core and up the chimney. Filters were added late into construction at the insistence of Sir John Cockcroft and these were housed in galleries at the very top of the discharge stacks. They were deemed unnecessary and a waste of money and time, and presented something of an engineering headache, being added very late in construction in large concrete houses at the top of the 400-ft (120 m) chimneys. Due to this, they were known as "Cockcroft's Folly" by workers and engineers. As it was, "Cockcroft's Folly" probably prevented a disaster from becoming a catastrophe."*

Commissioners, it has long been known that a nuclear disaster can be kept from becoming a catastrophe with the addition of vents. Please follow Cockcroft's lead and demand additional filtered vents.

6.0 CONCLUSIONS

We conclude that the regulatory hold point should not be removed based on:

- The S-294 Compliant PSA results are not compliant with safety goal limits
- Canada will not be upholding its obligations under the Convention of Nuclear Safety as no plans have been made for safety improvements by OPG.
- OPG's qualifications for operating PNGS cannot be confirmed until an external audit of their management systems is undertaken
- OPG has not provided the requested Action Plan to the commission to address any identified issues should OPG exceed its targeted safety goals

7.0 REQUESTS FOR RULING

Under the rules of procedure, section 20 (1), New Clear Free solutions would like to make the following requests for rulings. The reasons and issues for the requests for rulings are contained within this intervention.

7.1 Ruling 1

We request that before the removal of the regulatory hold point, OPG must have completed the required Action Plan because PSA limits and targets are exceeded.

7.2 Ruling 2

We request that before the removal of the regulatory hold point, the commission require an independent audit of OPG's management systems to determine if they are qualified to operate Pickering. In addition to that, we request that the management system audit be made public, and any specific concerns of the public should be included in the scope of the audit as part of OPG's public information program.

7.3 Ruling 3

We request that OPG provide PSA results that show the benefits of an additional emergency filtered vent.

7.4 Ruling 4

We request that the commission use its Powers under the NSCA to summons any CNSC staff that have had issues with the CNSC staff recommendations to remove the hold point and get full disclosure on their issues.

7.5 Ruling 5

We request the commission to rule that the aggregated results of the PSAs should be used for comparison to safety goal limits, and that bounding analysis should be included in the aggregation as per the IAEA guidance listed in OPG's LCH.

TECHNICAL BASIS

The following documents have formed the technical basis for our intervention. Please consider all referenced documents under this section as part of the official record. Copies of the documents listed under the technical basis can be provided.

1. IAEA SSG-3, "Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants".
2. IAEA SSG-4, "Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants"
3. NK30-REP-03611-00021 Pickering B Risk Summary Report
4. CCNB Action's Issues and Reasons for Requests for ruling
5. Nuclear Regulatory Group documents listed in intervention
6. External Advisory Committee report on the Fukushima Action Plan
7. All CMD's from 2013 Pickering Hearings
8. All CMD's for this set of hearings
9. OPG event reports listings from 2009 to 2013

ADDENDUM A: TABLE 6 2013 PICKERING S-99 EVENTS

Table 6 2013 Event Reports		
Events	**Human or Organizational Failure**	**Fire Code Non-Compliance**
P-2013-00039 Apparent Missed Test: Fire Protection Test not Performed by Late Date	*	*
P-2013-00468 Missed Fire Protection Test	*	*
P-2013-00665 Apparent License Condition Noncompliance: Motorized Vehicle Parked under Cable Tray in Noncompliance with CSA	*	*
P-2013-01562 Apparent Non Compliance to License Condition: Fire Door Propped Open	*	*
P-2013-01574 Apparent Missed Test: Fire Protection Tests not Performed by Late Date	*	*
P-2013-01664 Apparent Non Compliance to CSA Fire Standard: Public Address System Speaker Unavailable	*	*
P-2013-01706 Apparent Non Compliance to CSA Fire Standard: Public Address System Speaker Unavailable	*	*
P-2013-01753 Apparent Non-Compliance to CSA Standard on Fire Protection: One Speaker Unavailable in Sallyport Area	*	*
P-2013-01786 Apparent Non Compliance to CSA Fire Standard: In-Plant Vehicle Found Parked in Screen 3 Fire Zone	*	*
P-2013-01826 Apparent Non-compliance to CSA Fire Standard: Repairs not Carried Out Within a Timely Manner.	*	*
P-2013-01840 Apparent Noncompliance with CSA Fire Standard: Motorized Vehicle Parked in Screen 3 Fire Zone	*	*
P-2013-02048 Apparent Non Compliance to CSA Fire Standard: Compressed Gas Cylinders not Properly Secured	*	*
P-2013-02131 Apparent Non Compliance to CSA Fire Standard: Transient Material Stored in a Screen 3 Area	*	*
P-2013-02865 Apparent Non-compliance to CSA Fire Standard: Fire Door Impairment	*	*
P-2013-02892 Apparent Non Compliance to CSA Fire Standard: Combustible Material Stored in Screen 3 Fire Zone	*	*
P-2013-02905 Apparent Noncompliance with CSA Fire Standard: Combustibles in Screen 3 Fire Zone	*	*
P-2013-02946 Apparent Missed Test: Missed Fire Protection Tests	*	*
P-2013-03154 Apparent License Condition Noncompliance: CSA N293-07 Two Fire Extinguishers not on Hangers	*	*

P-2013-03165 Apparent Non Compliance to CSA Fire Standard: Combustible Material Stored in Screen 3 Fire Zone	*	*
P-2013-03501 Apparent Non-compliance with CSA Fire Standard: Combustibles in Screen 3 Fire Zone	*	*
P-2013-03777 Apparent License Condition Noncompliance: CSA N293-07 Compressed Gases Stored in Screen 3 Fire Zone	*	*
P-2013-03941 Apparent License Condition Noncompliance: CSA N293-07 Combustibles in Screen 3 Fire Zone	*	*
P-2013-04000 Apparent License Condition Noncompliance: CSA N293-07 Motorized Vehicles Parked under Cable Tray	*	*
P-2013-04031 Apparent License Condition Noncompliance: CSA N293-07 Transient Material Stored in Screen 3 Fire Zone	*	*
P-2013-04584 Apparent Missed Test: Missed Fire Protection Tests	*	*
P-2013-04837 Non-compliance to CSA Fire Standard: Vehicle Parked under Cable Trays in Screen 3 Area	*	*
P-2013-05688 Apparent License Condition Noncompliance: CSA N293-07 Combustible Material Stored in Screen 3 Fire Zone	*	*
P-2013-05904 Apparent License Condition Noncompliance: CSA N293-07 Combustibles in Screen 3 Fire Zone	*	*
P-2013-06168 Apparent License Condition Noncompliance: CSA N293-07: Evidence of Individual(s) Smoking Found in Cable Trays	*	*
P-2013-06255 Apparent License Condition Noncompliance: CSA N293-07: Individual found Smoking in Non-designated Area	*	*
P-2013-06923 Apparent License Condition Noncompliance: CSA N293-07 Combustible Material Stored in Screen 3 Fire Zone	*	*
P-2013-06925 Apparent License Condition Noncompliance: CSA N293-07 Combustible Material Stored in Screen 3 Fire Zone	*	*
P-2013-06928 Apparent License Condition Noncompliance: CSA N293-07 Transient Material Stored in a Screen 3 Fire Zone	*	*
P-2013-07013 Apparent License Condition Noncompliance: CSA N293-07 Access to Fire Extinguishers Blocked	*	*
P-2013-07085 Apparent License Condition Noncompliance: CSA N293-07 Propane Tanks Stored with other Combustibles	*	*
P-2013-07157 Apparent Missed Test: Missed Fire Protection Test	*	*
P-2013-07162 Apparent Missed Test: Missed Fire Protection Test	*	*
P-2013-07354 Apparent License Condition Noncompliance: CSA N293-07 Combustible Material Placed Inappropriately	*	*
P-2013-07421 Apparent License Condition Noncompliance: CSA N293-07 Propane Tank Stored with other Combustibles	*	*
P-2013-08237 Apparent License Condition Noncompliance: CSA N293-07 Propane Tank Stored with other Combustibles	*	*
P-2013-08633 Apparent License Condition Noncompliance: CSA N293-07 Expired Fire Extinguishers	*	*
P-2013-09074 Apparent Missed Test: Missed Fire Protection Test	*	*

P-2013-10080 Apparent License Condition Noncompliance: CSA N293-07 Combustible Material Stored in Screen 3 Area	*	*
P-2013-10198 Apparent Missed Test: Annual Test on Fire Pump Engine not performed by Late Date	*	*
P-2013-10238 Apparent Missed Test: Missed Fire Protection Test	*	*
P-2013-10409 Apparent License Condition Noncompliance: CSA N293-07 Fire Hose Cabinet obstructed by Carts	*	*
P-2013-10434 Apparent License Condition Noncompliance: CSA N293-07 Fire Escape Route blocked with Material	*	*
P-2013-10652 Apparent License Condition Noncompliance: CSA N293-07 Access to Fire Hose Cabinet Blocked	*	*
P-2013-10708 Apparent License Condition Noncompliance: CSA N293-07 Fire Extinguisher Obscured from View	*	*
P-2013-14662 Apparent Missed Test: Monthly Test of Fire Panels not performed by Late Date	*	*
P-2013-16496 Apparent License Condition Noncompliance: CSA N293-07 Combustible Material Stored without a Space Allocation	*	*
P-2013-18561 Apparent License Condition Noncompliance: CSA N293-07 Fire Extinguisher Obstructed Access	*	*
P-2013-19219 Apparent Licence Condition Non-compliance: CSA N293-07 Propane Tanks Stored with other Combustibles	*	*
P-2013-20150 Apparent License Condition Noncompliance: CSA N293-07 Fire Extinguishers found on the Floor and Partially Blocked	*	*
P-2013-21061 Missed Test: Annual Battery Replacement in Fire Panels not performed by Late Date	*	*
P-2013-21372 Apparent License Condition Noncompliance: CSA N293-07 Combustible Material Found Stored in Screen 3 Fire Zone	*	*
P-2013-21378 Apparent License Condition Noncompliance: CSA N293-07 Motorized Vehicle Parked in Screen 3 Fire Zone	*	*
P-2013-21519 Apparent License Condition Noncompliance: CSA N293-07 Flammable Material Stored without Proper Enclosure	*	*
P-2013-23344 Apparent License Condition Noncompliance: CSA N293-07: Fire Extinguisher Blocked	*	*
P-2013-23381 Apparent License Condition Noncompliance: CSA N293-07 Motorized Vehicle Parked in Screen 3 Fire Zone	*	*
P-2013-23821 Apparent License Condition Noncompliance: CSA N293-07 Fire Extinguisher not on Hangers	*	*
P-2013-00017 Declaration of Station Emergency for Assembly and Accounting - Lube Oil Purifier Fire		*
P-2013-05920 Pressure Boundary Failure: Pickering A Fire Yard Ring Header Break		*
P-2013-07383 Apparent License Condition Noncompliance: CSA N293-07 Fire Door Closure Mechanism Defective		*

P-2013-08663 Apparent License Condition Noncompliance: CSA N293-07 Fire Extinguisher Found in Non-Operable State		*
P-2013-08740 Apparent License Condition Noncompliance: CSA N293-07 Fire Door Not Latching		*
P-2013-09685 Apparent License Condition Noncompliance: CSA N293-07 Public Address System Speaker Unavailable in the Upgrader		*
P-2013-10180 Apparent License Condition Noncompliance: CSA N293-07 Fire Door Requires excessive Force to Open		*
P-2013-10703 Apparent License Condition Noncompliance: CSA N293-07 Containment Dyke Partially Full with Rain Water		*
P-2013-11194 Apparent License Condition Noncompliance: CSA N293-07 Emergency Lighting Defective on Standby Generator		*
P-2013-00229 Apparent non-compliance with CSA N285: TSSA Approval Not Obtained Prior to Performing Pressure Boundary Work	*	
P-2013-01249 Apparent Non-compliance to Licence Condition: Liquid Penetrant Examination not Performed as per Approved Pressure	*	
P-2013-02956 Apparent Non-compliance to Regulations: Unposted Radiation Hazard found near Gas Chromatograph Room.	*	
P-2013-03260 Contract Staff Independently Entered a Radioactive Work Area without being under the protection of a Radiation	*	
P-2013-03427 Missed Test: ECI Vault Recovery Valve Test not Performed by Late Date	*	
P-2013-03527 Apparent Missed Test: Emergency Power System Disconnect Switch Test not Performed by Late Date	*	
P-2013-08674 Apparent Licence Condition Noncompliance: Relief Valve Not Replaced Within the Due Date	*	
P-2013-09007 Apparent License Condition Noncompliance: CSA N285.0 Pressure Vessel placed in operation without a Pressure Vessel	*	
P-2013-09405 Apparent Missed Test: Temperature Element Calibration not Performed by the Late Date	*	
P-2013-09668 Apparent Missed Test: Manual Start of Class III HPSW Pump not Performed by the Late Date	*	
P-2013-10817 Apparent Missed Test: Annual Maintenance Test of a Control Panel not performed by Late Date	*	
P-2013-20348 Apparent Licence Condition Non-compliance: CSA N285.4 - Incorrect Weld Inspected	*	
P-2013-22010 Missed Test: Ion Chamber Amplifier Calibration not Performed by the Due Date	*	

P-2013-23653 Apparent Non-compliance to Regulations: Unposted Radiation Hazard Found at Radiation Area Boundary	*	
P-2013-00892 System Unavailability: Auxiliary Boiler Feed Pump Unavailable due to Unacceptable Levels of Water in Oil		
P-2013-01129 Containment Actuation due to Radiography		
P-2013-01147 Employee Fractured Ankle		
P-2013-01428 System Unavailability: Does Not Meet Design Intent Impairment of Emergency Low Pressure Service Water		
P-2013-01693 Research Finding: Prediction of Reactor Response Using Spatial Kinetics Simulation Model for Loss of Flow events is		
P-2013-01981 System Unavailability: Level 2 Impairment of Negative Pressure Containment		
P-2013-02284 System Unavailability: Does Not Meet Design Intent Impairment of EHPSW		
P-2013-02377 Reactor Trip: Manual SDSE Trip Initiated to Place Unit into GSS to Facilitate Repairs on Regulating Valve		
P-2013-02498 System Unavailability: Does Not Meet Design Intent Impairment of EHPSW		
P-2013-02536 Reactor Trip: Manual SDSA Trip Initiated to Place Unit into GSS to Investigate Cause of AGS Dew Point Alarm.		
P-2013-02574 Discovery Issue Resolution Process (DIRP) Initiated for Implications of Irradiated Fuel Bay Fracture Analysis on Design		
P-2013-03631 System Unavailability: Does Not Meet Design Intent Impairment of Emergency Low Pressure Service Water		
P-2013-03647 System Unavailability: Does Not Meet Design Intent Impairment of EHPSW		
P-2013-03669 System Unavailability: Does Not Meet Design Intent Impairment of Emergency Low Pressure Service Water		
P-2013-03773 Technical Operability Evaluation Initiated on Unavailability of Emergency Low Pressure Service Water and Emergency		
P-2013-04733 Release to the Environment: Ethylene Glycol Leak to Lake		
P-2013-04844 Release to the Environment: Residual Sodium Hypochlorite Released to the Environment During Leak Test		
P-2013-05059 Release to the Environment: Vehicle Transmission Fluid Leak to Yard Drain		
P-2013-05308 Technical Operability Evaluation Initiated on Unit 6 Black Deposits found on Fuel Bundle		
P-2013-05659 System Unavailability: Does Not Meet Design Intent Impairment of Emergency Low Pressure Service Water		
P-2013-06352 Research Finding: Error discovered in Pickering A Risk Assessment (2009) Model		

P-2013-06671 Pressure Tube to Calandria Tube Gap Measurement Less Than Expected		
P-2013-07280 Seismic Event Magnitude 5.1 Occurred within 500 km of the Pickering Nuclear Generating Station		
P-2013-07408 Containment Actuation due to High Activity		
P-2013-07637 System Unavailability: Does Not Meet Design Intent Impairment of Moderator System		
P-2013-07983 System Unavailability: Level 1 Impairment of Emergency Coolant Injection on Unit 1 and Unit 4		
P-2013-08126 Technical Operability Evaluation Issued to Assess Operability due to Environmentally Qualified Connectors found		
P-2013-08352 Reactor Trip: Manual Unit 4 Reactor Trip		
P-2013-08452 Apparent Exceedance of Certificate of Approval Limit for Daily Average Temperature Difference		
P-2013-09856 Worker Appeared to Lose Consciousness		
P-2013-10050 System Unavailability: Does Not Meet Design Intent Impairment of Heat Transport System		
P-2013-10207 License Condition Noncompliance: Environmental Qualification Configuration not Maintained		
P-2013-10215 Reactor Trip: Reactor Trip Occurred following DCCY stall while DCCX was Taken Out of Service for Maintenance		
P-2013-10228 Reactor Trip: SDS2 Trip Occurred while Lowering PHT Pressure in Preparation for Steam Safety Valve Maintenance		
P-2013-10977 Discovery Issue Resolution Process on Irradiated Fuel Bay (P-DIA-00531-00003)		
P-2013-11265 Discovery Issue Resolution Process (DIRP) Initiated on Reactor Inlet Header Pressure Gradient for Pickering B Loss of Flow		
P-2013-12394 Technical Operability Evaluation initiated for Emergency Transfer Scheme (ETS) Logic Concern		
P-2013-13639 Technical Operability Evaluation Performed to assess Seismic Qualification of Relays installed in Units 1 and 4 SDSA		
Protective System (System found Unconditionally Operable)		
P-2013-15139 Reactor Trip: Reactor Trip Following an Automatic Turbine Trip		
P-2013-16236 Apparent Exceedance of Certificate of Approval Limit for Daily Average Temperature Difference		
P-2013-16733 System Unavailability: Does Not Meet Design Intent Impairment of Heat Transport System		
P-2013-18293 Apparent Licence Condition Noncompliance: Pressure Boundary Code Non-compliance		
P-2013-19955 Technical Operability Evaluation Initiated over Bleed Condenser Level Control Valve Negative Margin to Close		

P-2013-21186 Release to the Environment: Generator Seal Oil Leak to the Lake		
P-2013-23489 System Unavailability: Does Not Meet Design Intent Impairment of Emergency Low Pressure Water System		
P-2013-24015 System Unavailability: Does Not Meet Design Intent Impairment of Heat Transport System		
P-2013-24132 System Unavailability: Does Not Meet Design Intent Impairment of Emergency High Pressure Water System		