Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CMD 14-H2.53

File / dossier : 6.01.07
Date : 2014-04-23
Edocs pdf : 4423566

Written submission from the Canadian Coalition for Nuclear Responsibility

Mémoire du Regroupement pour la surveillance du nucléaire

In the Matter of the

À l'égard de l'

Ontario Power Generation Inc.

Ontario Power Generation Inc.

Request by Ontario Power Generation Inc. to request to remove the hold point associated with Licence Condition 16.3 of the Pickering Nuclear Generating Station Power Reactor Operating Licence

Demande par Ontario Power Generation Inc. visant à supprimer le point d'arrêt associé à la condition 16.3 du permis d'exploitation de la centrale nucléaire de Pickering

Commission Public Hearing

Audience publique de la Commission

May 7, 2014

Le 7 mai 2014

Canada

Please Do Not Gamble With Nuclear Safety

From: The Canadian Coalition for Nuclear Responsibility
To: The Canadian Nuclear Safety Commission
Re: Operation of Pickering Reactors Beyond 210,000 EFPH (Equivalent Full-Power Hours)
By: Gordon Edwards, Ph.D., CCNR President
Date: April 23, 2014.

This submission is addressed to you, the Commissioners, who have been appointed under the Nuclear Control and Safety Act. Under the law, you are the ones who have the responsibility for deciding whether or not the public and/or the environment will be unduly endangered by operating the Pickering B reactors for up to five years past their design lifetime, along with the two geriatric Pickering A reactors that were designed at a time when the safety challenges of CANDU reactors were not fully appreciated.

Literally millions of people are putting their trust in your judgment, for the decision rests entirely on your shoulders. That decision cannot be relegated to the staff of the CNSC, who are only your advisors. And it cannot be left to the licensee, else why bother having a regulatory agency at all?

So if anything goes seriously wrong with these reactors after they have been given a green light to operate for another five years or more, you – the individuals now serving as Commissioners – must be prepared to accept a significant share of the responsibility. Please, leave no stone unturned in order to ensure that you are completely comfortable with your own personal responsibility in this affair.

We all know that the likelihood of a major catastrophic accident is remote – but it is not zero. It could well happen. As the Select Committee on Ontario Hydro Affairs stated in their 1980 Report, entitled "The Safety of Ontario's Nuclear Reactors":

"It is not right to say that a catastrophic accident is impossible . . . . The worst possible accident . . . could involve the spread of radioactive poisons over large areas . . . possibly contaminating large land areas for future habitation or cultivation."

Even as these hearing are taking place, the federal government is introducing new legislation in Parliament to protect nuclear operators and manufacturers of nuclear equipment from any meaningful financial liability for offsite damage to the health and safety of humans and the environment in the event of just such a catastrophe.

Why is such a law necessary if these reactors are safe? What other industry in Canada requires such a law? Apparently our government and the Canadian insurance companies are not convinced by the safety assurances given by OPG nuclear experts and their CNSC staff supporters.

The stakes are truly enormous. Not only Pickering and Oshawa and Toronto could be devastated by such a catastrophe, but the Great Lakes themselves. Anyone who has kept abreast of the on-going problems in Japan related to the containment of hundreds of thousands of tonnes of highly contaminated radioactive water, three whole years after the disaster at Fukushima Dai-ichi, has to realize that protecting the Great Lakes from unacceptable radioactive contamination in the wake of a nuclear disaster at Pickering would be a formidable task – and there has been no planning at all to cope with such a situation, to the best of my knowledge.

On January 29, 2013, the CEO of Hydro Quebec Thierry Vandal testified to the Quebec National Assembly as follows [see Appendix A]:

"I would no more operate Gentilly-2 beyond 210,000 hours than I would climb onto an airplane that does not have its permits and that does not meet the standards. So, it is out of question for us to put anyone, i.e. us, the workers, the public, or the company, in a situation of risk in the nuclear domain. So this deadline of 210,000 hours, this is a hard deadline."

This testimony followed the permanent closure of the Gentilly-2 nuclear reactor in accordance with a firm condition laid down by the Commissioners when they granted a licence for the Quebec reactor to operate until 2016. As M. Vandal told the National Assembly:

"The permit that we received for continued operation included an important condition . . . that there be a mandatory stop at the end of 2012, after which we would do one of two things: either we would shut down the plant, which is what we have done, or we would begin the refurbishment."

So, as recently as January 2013, 210,000 hours of equivalent full-power operation was regarded as a "hard deadline" by CANDU licensees. And as recently as July 1, 2011, the Commissioners were of the firm opinion that Quebec's only operating CANDU reactor would have to be shut down before reaching 210,000 hours, as it had to be refurbished in order to continue.

Consider the situation. Up until very recently, the design lifetime of CANDU reactors has always been accepted as 210,000 hours of full-time equivalent operation. When other CANDU reactors have approached the end of that design lifetime, as in the case of the Point Lepreau reactor, the Gentilly-2 reactor, the Bruce A reactors, the Wolsung reactors in Korea, and the Embalse reactor in Argentina, the choice has been clear: to extend the lifetime of those reactors by refurbishing them, or to shut them down.

In practice this has meant the replacement of all the calandria tubes and pressure tubes, as well as the feeder pipes – crucial small-diameter components of the primary cooling circuit. At Bruce, the steam generators were also replaced, as they too are a critical part of the primary heat transport system, and each one of the eight steam generators contains several thousands of much smaller-diameter pipes, more prone to failure.

However, OPG decided several years ago not to refurbish the Pickering B reactors. Judging by all the criteria that were applicable at the time of that decision, this meant that the Pickering B reactors would not enjoy an extended lifetime.

Now, however, OPG has changed its mind. It does want to extend the lifetime of these reactors, it turns out – but without refurbishing them.

Whatever the condition of the several kilometers of small diameter piping in the heat transport system may be, it is certain that these pipes are not as strong or as reliable as the new pipes would have been following a complete refurbishment.

So OPG is asking the Commission to accept its assurances that the pipes are good enough (even if they are degraded somewhat), and the probability of an accident is low enough (even if it isn't zero, or as low as it once was) that we can just pretend that there is no problem at all.

This represents a sharp departure from past practices that have always been based on a precautionary approach: don't gamble with public safety, don't rely on degraded components, don't hesitate to install brand new components when the old ones are past their prime. Safety must be paramount. It must not be compromised. Don't take a chance on safety.

Of course, the CNSC staff is there to oversee OPG's work and to ensure that no corners are being cut when it comes to safety. However, in the public hearings that we have attended over many years, we have observed that CNSC staff almost never ask the licensee any hard questions or challenge any of the licensee's assumptions or assertions during the hearings. Rather, it seems that the same explanations and the same justifications are given to the Commissioners by both the licensee and the staff. It almost seems like a tag-team effort – whatever one party says, the other party promptly reinforces. Indeed, they all speak as if they are proponents. This does not necessarily help the Commissioners to spot what may be the possible weak spots in the safety case being presented.

What is particularly concerning is the dismissive attitude that the CNSC senior staff seems to demonstrate when highly qualified professionals who have earned their spurs in the nuclear field over the course of many years of outstanding service dare to suggest that the staff may be overlooking some serious safety issues. Instead of being welcoming and thankful that such individuals are volunteering to provide their special knowledge and insight gleaned from many years of experience, senior CNSC staff sometimes seems to treat them as some kind of a nuisance.

As a specific example, consider the warning issued by Sunil Nijhawan on July 16, 2013 [E-DOCS-#4172671-CMD 13-M30.2] regarding the need to replace the existing pressure relief valves in the primary heat transport system with larger ones, in order to prevent pipes from bursting due to over-pressurization in the event of a really serious nuclear accident involving a loss of power and a loss of heat sinks. Replacing the existing valves with larger ones is not terribly expensive, amounting to only a few tens of thousands of dollars. It is certainly a small investment when compared with a complete refurbishment.

Although this sounds like a purely technical matter that must be resolved by experts, it is actually a simple matter of protecting public health and safety that can be understood by anyone. If a piping system is over-pressurized, something is going to burst. If the pipes are full of radioactive fission products due to overheating of the fuel, such a pipe burst will release large amounts of radioactive materials. And if the pipe burst happens to take place inside the pipes of the steam generator, then those radioactive materials have a direct route to the outside atmosphere, completely bypassing containment and without any filtering system to remove the worst radionuclides. The loss of power and loss of cooling would be coupled with a loss of containment simply because the relief valves weren't big enough.

In a case such as this, it is surely within the competence of the Commissioners to decide whether or not to order the licensee to install larger relief valves as a precautionary measure, in order to preclude such an unacceptable consequence, even if there is some bickering among experts as to whether it is or is not absolutely necessary based on various guesstimates of what might happen in such a hypothetical eventuality. Such an action on the part of the Commissioners would be in keeping with the CNSC motto, "We will never compromise safety." But the Commissioners are not even given an opportunity to weigh the question if it is not presented to them as option by the CNSC staff.

As another example, consider the dismissive attitude by senior CNSC staff of the many detailed and well-documented communications from Dr. Frank Greening, who worked for 23 years in Ontario's nuclear reactors and is intimately familiar with the Pickering fuel channels.

In his current intervention in these hearings, Dr. Greening points out that the CANDU Owner's Group has spent millions of dollars per year over the last 30 years on research into pressure tube degradation problems. Despite this enormous effort, in May 2010 the COG Program Manager described two new projects designed to provide the data necessary to demonstrate fitness-for-service in pressure tubes *up to the expected life* of 210,000 EFPH and to explore the *possibility* of operation beyond that [see Dr. Greening's intervention, page 2].

The Commissioners should consider whether it is likely that OPG has managed to resolve a host of fundamental unanswered research questions about fuel channel integrity in the last two or three years, when 30 years of previous research and dozens of ongoing investigations by the COG have been unable to do so. If the Commissioners are doubtful that all these questions have truly been resolved, they should ask themselves whether they are willing to risk the public health and safety on the basis of OPG's engineering euphoria by extending the lifetime of these aging reactors.

Perhaps we in the Canadian Coalition for Nuclear Responsibility have a naïve view of how the staff of a regulatory agency should behave. In our view, a regulatory agency that is dedicated to public safety would be glad to have the input of such well-qualified experts as Dr. Greening and Mr. Nijhawan, and would take pains to explain the concerns of these individuals to the Commissioners, even if they disagreed with some of the conclusions.

My first encounter with Dr. Frank Greening's work was quite a few years ago, when Dr. Greening wrote to the CNSC about a case of fraudulent safety data allegedly having been published in a refereed journal. Dr. Greening had pointed out to his superiors that in his view the data had been falsified and asked them to ensure that a correction would be published in that same journal. When no action was taken, Dr. Greening wrote to the CNSC to alert them to the fact that he felt sure that safety data had been falsified and that the record had gone uncorrected. The response of CNSC staff was, essentially, as I understand it, that it was none of the CNSC's business as it did not directly affect the licensing procedure.

At the time I was stunned that CNSC staff was unperturbed by the notion that one of their licensees might be allowing false safety-related data to be published in a refereed journal. Surely it might occur to any reasonable person that perhaps that same licensee could also be providing falsified data to the CNSC. Whether the allegation was true or not I have no way of knowing, but I was surprised that there would not even be an investigation.

More recently, Dr. Greening wrote to the CNSC pointing out that the radioactive inventory planned for OPG's Deep Geological Repository on the shores of Lake Huron had been understated by OPG by at least two or three orders of magnitude. Without disputing his facts, senior CNSC staff

wrote to him saying that such mis-statements were of no great concern because the site was still acceptably safe – as if the question of false data being submitted by the licensee was of little or no concern to the CNSC. Again I was dumbfounded by this attitude on the part of senior CNSC staff.

In one of the letters to Dr. Greening, which is currently posted on the CNSC web site, Mr. Jammal refers to him as "someone who claims to be a self-respecting scientist". I find it repugnant that a civil servant whose job it is to protect the public health and safety would refer to any intervenor in such disparaging terms, but especially someone with such a long and distinguished career as Dr. Frank Greening. The CNSC should thank its lucky stars that such well-educated and dedicated professionals are voluntarily offering their services to achieve the best possible protection of the public health and welfare and our precious natural environment.

Given these well-documented instances of partiality on the part of CNSC senior staff, you, the Commissioners, should be wary of accepting their assurances of safety based on OPG's rather tardy desire to operate the Pickering reactors beyond their expiry date, in contradiction to their earlier decision not to extend the lifetime of these reactors by choosing not to refurbish them.

Please do not gamble with nuclear safety. Millions of people are counting on you to fulfill your mandate and say "no" when the safety case is inadequate.

On behalf of the CCNR Board of Directors, I thank you for this opportunity to intervene in these hearings.

Gordon Edwards, Ph.D., President,
Canadian Coalition for Nuclear Responsibility.

M. Thierry Vandal, 29 January 2013 [translated from the French, below]

This is an important issue and I would like to take the time to explain it well. While it is true that we have an operating license from the CNSC valid until 2016, it is not true, unfortunately, that we can operate this power plant until 2016. The permit that we received for continued operation included an important condition, I think, No. 16, that there be mandatory stop at the end of 2012, after which we would do one of two things, either that we shut down the plant, which is the present case, or that we would go into refurbishment.

We asked ourselves the question, because we really wanted to have a look before we would proceed. Good, OK, that is the permit, but would it be possible to do differently? Would it be possible to rework things out so that we could continue to operate a little longer? And then we looked at this operation in a context which, for us, is the ultimate date, what I would call the extreme limit of operation, the 210 000 hours, which is the design value for this power plant. When we stopped, we were almost there, within a few hours, after 198,000 hours of operation of this power plant since the very beginning. These are the hours of operation at full power. This is a measure of aging, if you will, of the plant components. This is the power plant with the most hours, the plant that has operated with the most hours at full power, 198,000 hours.

So, how many hours is it that they could still continue to operate from a safety point of view? You've talked a lot about safety issues, but I can tell you that Hydro-Québec's management in no way would have considered to go beyond 210,000 hours even if it had been possible according to the design. I would no more operate Gentilly-2 beyond 210,000 hours than I would climb onto an airplane that does not have its permits and that does not meet the standards. So, it is out of question to put anyone, i.e. us, the workers, the public, and the company, in a situation of risk in the nuclear realm.

So this deadline of 210,000 hours, this is a hard deadline. We looked to see if we would have been able to operate up to the 210,000 hours, i.e. to go from 198 000 to 210 000 hours, what it meant. What it meant was that had there should have been, right now, a major shutdown, a shutdown, a major stop with significant investments in order to convince the *Canadian Nuclear Safety Commission* to let us operate the plant a little more. And we would have been able to operate one more year or so until 2014, somewhere in the second half of 2014.

During that period, taking into account the investment and the operating costs along with the utilization factor that we could reasonably expect from this power plant based on the experience of the past five years, we would have lost $ 300 million. It would have cost $ 300 million to operate another year and a quarter in order to get to 210,000 hours.

M. Thierry Vandal, le 29 janvier 2013

C'est une question importante puis je voudrais prendre le temps de bien, bien l'expliquer. S'il est vrai qu'on a un permis d'exploitation de la CCSN jusqu'en 2016, il n'est pas vrai malheureusement que l'on peut exploiter jusqu'en 2016 cette centrale-là. Le permis d'exploitation qu'on a reçu comportait une des conditions importantes, la condition, je pense, n° 16, là, un arrêt obligatoire à la fin de l'année 2012 pour, deux choses l'une, soit qu'on arrêtait, ce qui est le cas présent, ou bien donc qu'on était dans un scénario de réfection.

On s'est posé la question, parce qu'on a voulu vraiment avant de mettre ça de l'avant, on a voulu regarder: Bon. D'accord. Ça, c'est le permis, mais est-ce qu'il serait possible de faire différemment? Est-ce qu'il serait possible de retravailler le dossier pour continuer d'opérer encore un peu? Et là on a regardé le dossier dans un contexte de ce qui, pour nous, est la date ultime, j'appellerais ça, la date extrême d'exploitation, le 210 000 heures, qui est le design de cette centrale-là. Au moment où on a arrêté, on était à peu près, là, à quelques heures près, à 198 000 heures d'exploitation à cette centrale-là depuis tout le début. Ça, c'est des heures d'exploitation à pleine puissance. C'est une mesure de vieillissement, si on veut, des composantes de l'opération. C'est la centrale qui a le plus d'heures, qui aura roulé le plus d'heures à pleine puissance, 198 000 heures.

Donc, combien d'heures est-ce qu'on pouvait encore continuer d'opérer d'un point de vue sécuritaire? Vous m'avez parlé beaucoup des questions de sécurité, mais, moi, je peux vous dire que d'aucune façon est-ce que la gestion d'Hydro-Québec n'aurait envisagé d'aller au-delà de 210 000 heures même s'il avait été possible, le design. Je n'opérerais pas plus Gentilly-2 au-delà de 210 000 heures que je monterais dans un avion qui n'a pas ses permis puis qui ne respecte pas les normes. Alors, il ne serait pas question de placer qui que ce soit dans une situation, nous, travailleurs, la population, l'entreprise, la société, dans une situation de risque dans le domaine nucléaire.

Donc, cette échéance de 210 000 heures, c'est une échéance dure. On a regardé si on était capable de travailler pour se rendre à 210 000 heures, donc passer de 198 000 à 210 000 heures, qu'est-ce que ça voulait dire. Ce que ça voulait dire, c'est qu'il fallait, là... il aurait fallu, dès à présent, engager un «shutdown» majeur, un «shutdown», un arrêt majeur avec des investissements significatifs pour convaincre la Commission canadienne de sûreté nucléaire de nous laisser opérer encore un peu. Et on aura opéré essentiellement une autre année et quelques, on aurait pu se rendre en 2014, quelque part en deuxième moitié de 2014.

Durant cette période-là, compte tenu des investissements des coûts d'exploitation et du coefficient d'utilisation qu'on pouvait raisonnablement attendre de cette centrale-là, comme on a depuis cinq ans, on aurait perdu 300 millions de dollars. Ça aurait coûté 300 millions de dollars opérer une autre année et quart pour se rendre à 210 000 heures.