Tom Mitchell

President and CEO
Ontario Power Generation

To the Canadian Nuclear Association

February 23, 2012
Ottawa, Ontario

Subject to change upon delivery

Tom Mitchell
President and CEO
Ontario Power Generation
To the
Canadian Nuclear Association Conference
February 23, 2012
Ottawa, Ontario

NOTES FOR REMARKS

A year ago at this time when I spoke here, the word "Fukushima" had not yet become a synonym for the worst nuclear event in 25 years.

What a difference a year makes.

I want to talk about Fukushima today.

How we have responded to it….

What we learned from it

And how it's impacted our industry…

By now, most of us know what happened at Fukushima.

On March 11, a massive earthquake – 9.0 on the Richter scale -- occurred off the northeast coast of Japan, triggering a series of equally massive tidal waves.

In the path of these huge natural forces was the Fukushima Daiichi nuclear station.

As the earthquake struck, the station's three operating reactors automatically shut down.

About an hour later, the tsunamis arrived.

There were as many as seven in all.

One report estimated one of the waves to be nearly 50 feet high (14-15 meters).

This exceeded the station's design basis for tsunamis, which was 18.7 feet (5.7 meters).

The tsunamis disabled all but one of the plant's in-service emergency diesel generators which provided power to cool the shut down units.

With little back-up power on site – and all off-site power disabled by the quake – the units could not be adequately cooled.

Significant core damage ensued – resulting in fuel damage, hydrogen build-up and ignition, challenges in cooling irradiated fuel bays, and the release of radiation.

This was an accident on the scale of Three Mile Island and Chernobyl.
The clean-up costs alone are estimated to be many billions of dollars.

Not to mention additional costs for operating plants – and perhaps most importantly, the cost to our industry's reputation.

And yet Fukushima pales in comparison to the far greater losses endured by the Japanese people.

At least 25,000 individuals – men women and children -- are dead or missing in Japan as a result of the earthquake and tsunamis which struck that country.

- Half a million homes…destroyed or damaged.
- Four million homes without power.
- Numerous roads, railways and industrial buildings damaged.
- And over 560 square kilometres of land inundated with water.

It's hard to imagine that kind of devastation in any country.

Fukushima was just one episode in a much greater picture.

And we must always keep that in mind when talking about this event.

Industry Response – Including OPG

Much has been written about Fukushima – some of it critical of our industry.

Yet as I look back at events over the past year, I believe our reaction to Fukushima was timely, appropriate and effective.

Right from the start, here in Canada we moved quickly to give people as many facts as possible about the event – and assure them of the safety of our nuclear units.

The CNA was very active during this period.

So was OPG as well as our nuclear colleagues.

At OPG, we communicated quickly and across a number of fronts --- with local communities and on regional, national and international level.

We dedicated a portion of our website to the event – providing fact-based information about the event and our stations.

We made our executives available for speeches and interviews.

We did extensive outreach in our nuclear site communities.

We published information pieces in local and regional newspapers.

And we established regular and ongoing communications with nuclear organizations from around the world – including WANO (World Association of Nuclear Operators), INPO (Institute of Nuclear Power Operations) and the IAEA (International Atomic Energy Agency).

Our message was clear.

The geology at our sites was stable and our nuclear safety systems were robust – with redundant back-up power so that we were not vulnerable to
Fukushima-type acts of nature.

The CNSC (Canadian Nuclear Safety Commission) was also active.

Shortly after the event, it asked Canadian nuclear operators to provide verification their reactors were safe.

The CNSC also provided information on its website that was useful to both the industry and the general public.

In response to the CNSC's request, OPG and other operators launched a thorough assessment of their operations to confirm their safety.

We also committed to a number of specific actions based on lessons learned from Fukushima.

By April, we had reconfirmed that our stations were indeed safe and the systems in place at OPG's nuclear facilities were robust enough to withstand significant emergencies.

In July we issued another report in which we outlined the steps we were taking to address the key learnings coming out of Fukushima.

These learnings included the absolute necessity to guard against external events – specifically those that threaten to overwhelm the design basis of the plant's systems and equipment.

As we all know now, it wasn't human error that created the problem at Fukushima.

It wasn't even the earthquake – massive as it was. As soon as the quake was detected, the plant's operating reactors automatically shut down as planned.

The issue was the tsunami.

This was an external event so huge that it disabled virtually all emergency power -- leading to the core damage and consequences which I mentioned earlier.

Responding to this insight, the industry is taking steps to increase safety margins in the unlikely case of a similar emergency happening here.

This includes the safety margins around flooding, earthquakes and the emergencies these events create.

Let me say at this point that the CANDU system already has multiple layers of safety built into its design.

The containment structure of every reactor is linked to a vacuum building.

Each reactor has two shutdown systems.

CANDU reactors also have considerable redundancy in back-up power supplies.

At OPG, for example, we employ standby generators, emergency power generators and auxiliary power generators that provide a safety net of redundant power supply.

Over the last few years, we've invested in upgrades to these systems as well as to our fire suppression systems.

All this -- and more -- provides a strong defence against both external and internal threats to safety.

The steps being taken now, following Fukushima, are giving us an even greater measure of defence.

Our actions at OPG are aligned with the recommendations made in the CNSC's Fukushima Task Force Report, released in October.

They are also consistent with the CNSC's Action Plan on Fukushima, released in December.

Here are the key things we've done to date.

They include:

1. The installation of new Passive Autocatalytic Recombiners or PARs.

   PARs help mitigate potential hydrogen gas hazards. (You'll recall that hydrogen build-up was a significant issue at Fukushima.)

We've already installed PARS on our Pickering Unit 4 reactor and plan to install them on three more units in 2012.

The advantage of this technology is that it operates independent of any electrical source. It would be unaffected by a loss-of-power situation similar to what occurred at Fukushima.

2. We have also made significant progress in securing portable diesel generators and pumps.

   These can supply essential fuel cooling through multiple paths in a nimble and flexible manner.

   They also supply critical electrical power.

   Four diesel-driven pumps and a diesel generator have already arrived at Darlington.

   More of this equipment will arrive on site at Darlington and Pickering during the first quarter of this year. Training for staff will be in place by the end of 2012.

3. Another area we're focusing on involves potential loss of cooling events – as well as loss of water-addition capability – in Irradiated Fuel Bays.

   We are providing improved instructions to our operations crews in both these areas.

   Altogether, OPG has almost a dozen Fukushima related projects underway or planned for implementation between now and the end of 2016.

   These projects represent opportunities for improvement that we have identified as a result of our – and the industry's -- analysis of Fukushima

   They also represent a substantial investment on OPG's part.

As such, they reflect the serious commitment by OPG to strengthen the already significantly robust safety systems at our nuclear plants.

OPG is not unique in this regard.

Other nuclear operators are equally committed….As is the industry as a whole.

Organizations like INPO, WANO, the CNSC and the IAEA have all issued solid, comprehensive reports analyzing the accident and its causes.

All of us I believe are committed to the same thing.

And that is to ensure that going forward we will give just as much attention to the mitigation of accidents as we traditionally have given to the prevention of accidents.

This was a key conclusion of the WANO Post-Fukushima Commission, which I had the honour to chair last year.

After examining what happened at Fukushima, the Commission realized that WANO had to change.

WANO had to continue its excellent efforts in helping to prevent accidents.

But it also needed to focus more on working with operators to mitigate the consequences of accidents that might occur.

Based on this premise, the Commission made five recommendations to help strengthen WANO's effectiveness as the world's foremost nuclear safety organization of operators.

1. Expand the scope of WANO's activities – to include programs in: emergency preparedness basics; severe accident management; and fuel pool and fuel storage contingencies.
2. Develop a world-wide integrated event response strategy.
3. Improve WANO's credibility, including important changes to WANO's peer review process. This would mean more frequents station peer reviews as well as a corporate peer review for each WANO member every six years.
4. Improve WANO's public visibility so that WANO is publicly recognized as ***the*** safety organization for nuclear power plant operators.
5. Improve the quality of all WANO products and services through periodic ***int***ernal reviews of each WANO regional office and its London Centre.

WANO intends to have made significant progress in implementing these recommendations by 2013 at its next biennial meeting in Moscow.

I believe they will make our industry stronger.

Implications of Fukushima

The impact of Fukushima has clearly reverberated across our entire industry.

Here in Canada, the impact is also being felt.

I've tried to convey some of that today by reviewing elements of OPG's -- and the industry's – post- Fukushima response.

I have a few more observations to make.

Number one -- The events in Japan will not adversely affect OPG's plans to refurbish the Darlington nuclear station. We are learning and moving forward.

Number two – Neither will those events negatively affect our approvals and licensing activities regarding proposed new nuclear units at the Darlington site.

In fact, soon after Fukushima, the Ontario government reaffirmed its commitment to nuclear energy in Ontario.

What we will do – and are doing – is incorporating the lessons of Fukushima into our refurbishment and new build planning and design. That is a definite commitment on our part.

So while other jurisdictions may be scaling back their nuclear energy commitment because of Fukushima, we are not. But neither are we ignoring the lessons that event is teaching us.

The other point I'd like to make is that Fukushima has given us a great opportunity.

It's once again made people aware of nuclear energy.

It may have put some aspects of the industry on the spot.

But it's also put us in the spot-light.

For example, we heard positive things from our communities and stakeholders in the months following Fukushima.

They told us that our rapid response to the issue gave them confidence.

They also told us they appreciated that we reached out to them.

For me, this underscores the importance of communicating and working with our communities and industry partners. Fukushima gives us yet another opportunity to do that.

It especially gives us an opportunity and a platform for connecting with communities and individuals about the strengths of nuclear power.

- Its low operating costs.
- Its impressive environmental benefits.
- Its capacity for technical innovation and its need for highly skilled workers.
- Its ability to create jobs and contribute to economic growth.

We need to keep reminding people of these things.

This includes addressing misconceptions.

Like the fact that the management of nuclear waste is somehow this big vulnerability in our industry – and not one of our greatest strengths. Which it is!

There's also the issue of radiation.

I am amazed at how much misinformation still exists on this subject.

Radiation is a natural aspect of daily life.

It's around us everywhere, all the time.

We get it from radios and TVs….cell-phones….WiFi….Blackberries and Androids, IPads, microwave ovens, cosmic rays from space, and the materials in soil and in our own bodies.

We've known the facts about radiation for decades and decades.

Before we were measuring climate change….before we put nutritional information on food packaging….scientific institutions had established fact-based limits and developed control strategies for radiation.

Their pioneering and foundational work – some of it done here in Canada -- has protected nuclear industry workers and the public for more than five decades.

This is a solid body of scientific work that we should remember, be proud of, and communicate!

Yes, we need to respect even small quantities of radiation. Our industry always has.

But we also need to convey to people that it's been ***proven*** that radiation can be measured, controlled, and handled very safely – in ways that deliver huge benefits to society…In science…In medicine…And in energy.

This is a message our industry must keep driving home.

Conclusion

To wrap things up, here's one last observation.

Our industry is sometimes called a "transitional" industry – even an obsolete industry -- with a technology whose time is past.

The implication is that 50 or 100 years from now, nuclear generation will not exist.

The world will have graduated to other forms of energy production.

I suspect people said the same thing about the steam engine at some point.

That technology was developed in a practical and effective way over 200 years ago.

It powered the Industrial Revolution.

It's contributed to huge productivity gains in manufacturing, in agriculture, in mining, in transportation and in sustained economic growth.

The rapid settlement of Canada and the United States would not have been possible without it.

….Nor would the growth of cities and the urbanization of our society.

Overall, these are tremendous benefits.

All of them and more we owe – certainly in part – to this one piece of technology.

And it's still in use today. If not in its original form, then in a number of modern-day variations.

Now I'm not a Pollyanna.

I'm an engineer.

I know that no technology is perfect.

But I also know that technologies can evolve.

They can be made better, and safer, and more efficient.

New processes can be implemented. New designs incorporated. New technical breakthroughs applied.

And when human error happens – or Nature strikes -- and something goes wrong, we can learn from those experiences too. And apply what we've learned to improve and perfect the technology.

That's what happened with the steam engine and with numerous other innovations.

And that's what's happened -- and is happening -- with nuclear energy.

Ours is a technology that has brought the world significant and substantial blessings.

It continues to do so.

Has the road been smooth?

No. We've had our challenges.

Three Mile Island….Chernobyl.…Fukushima.

These words are perpetual reminders that we can never be complacent.

….And that safety – despite our industry's excellent record -- can never be taken for granted.

As an industry, we have not been complacent.

We are a better and safer industry after TMI, than before.

We are a better and safer industry after Chernobyl, than before.

And we are -- and will be -- a better and safer industry after Fukushima, than before.

That's because when it comes to safety, we know that we have to be:

- constantly learning,
- constantly improving,
- constantly raising the bar, and
- constantly earning the confidence of the communities and people we serve.

No industry has done this better than the nuclear industry.

But we can't stop.

Fukushima has made that clear.

And we won't stop, I know it.

Because the pursuit of safety and performance excellence defines who we are….and must always define who we are.

Which is why I believe our industry will not fade.

It will not grow obsolete.

It will thrive.

Because everyone here in this room who's a nuclear professional is committed to these values.

And as long as we stay committed, we are here to stay….

Today…Tomorrow…….and for many decades to come

Thank you very much.