

**Canadian Nuclear  
Safety Commission**

**Commission canadienne de  
sûreté nucléaire**

**Public hearings**

**Audiences publiques**

**October 1<sup>st</sup>, 2013**

**Le 1<sup>er</sup> octobre 2013**

Kikinahk Friendship Centre,  
320 Boardman Street,  
La Ronge, Saskatchewan

Kikinahk Friendship Centre  
320, rue Boardman  
La Ronge (Saskatchewan)

**Commission Members present**

**Commissaires présents**

Dr. Michael Binder  
Dr. Moyra McDill  
Dr. Sandy McEwan  
Mr. Dan Tolgyesi  
Dr. Ronald Barriault  
Mr. André Harvey  
Ms. Rumina Velshi

M. Michael Binder  
Mme Moyra McDill  
M. Sandy McEwan  
M. Dan Tolgyesi  
M. Ronald Barriault  
M. André Harvey  
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**Secretary:**

**Secrétaire:**

Mr. Marc Leblanc

M. Marc Leblanc

**Senior General Counsel:**

**Avocat général principal :**

Mr. Jacques Lavoie

M. Jacques Lavoie

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La Ronge, Saskatchewan

--- Upon commencing on Tuesday, October 1, 2013 at 7:00  
p.m.

**Opening Remarks**

**MR. LEBLANC:** Bonsoir. Good evening.

Bienvenue aux audiences publiques de la Commission canadienne de sûreté nucléaire. The Canadian Nuclear Safety Commission is about to start a series of three public hearings on the applications by Cameco for the renewal of its uranium mine and mill operating licences for the Key Lake, McArthur River and Rabbit Lake operations.

During today's business, we have simultaneous translation in Cree, Dene and French.

Translation devices are available at the reception. Dene is on channel 7, Cree is on channel 6. La version française est au poste 5. And the English version is on channel 4.

Please keep the pace of your speech relatively slow so that the translators have a chance to keep up.

Les audiences sont enregistrées et

transcribes textuellement.

I'd like to note that this proceeding is being video webcast live and that the proceeding will also be also archived on our website for a three-month period after the closure of the hearing.

The transcripts will be available on our website probably next week or the week after.

To make the transcripts as meaningful as possible, we would ask everyone to identify themselves before speaking.

As a courtesy to others in the room, please silence your cell phones and other electronic devices.

Monsieur Binder, président et premier dirigeant de la CCSN, présidera les audiences publiques d'aujourd'hui. Mr. President, the floor is yours.

**THE CHAIRMAN:** Thank you, Marc.

And good evening and welcome to the public hearing of the Canadian Nuclear Safety Commission.

My name is Michael Binder. I am the President of the Canadian Nuclear Safety Commission.

And welcome to all of you who are here in the room with us and also to all of you joining us via webcast.

First let me, on behalf of the Commission, tell you how we are delighted to be here.

Any time we can get away from Ottawa, it's a good thing, we are very, very happy to be here.

We enjoy the opportunity to hold hearings in the community itself and provide citizens with the chance to participate in the intervention or to observe -- just observe the hearing.

So I would like to also thank the people in -- from the Kikinahk Friendship Centre staff for setting up. I know it's technically complex to set it up, so thank you for setting up this public hearing.

I'd like to begin by introducing the Members of the Commission that are with us today. And on my right is Dr. Moyra McDill. I got the order confused there. Dr. Sandy McEwan, Mr. Dan Tolgyesi, Dr. Ronald Barriault, Mr. André Harvey and Ms. Rumina Velshi.

They wrote it like this just to confuse me, right?

We have now heard from Marc Leblanc, the Commission Secretary, and we also have with us today Jacques Lavoie, Senior General Counsel for the Commission.

I would like to start this hearing with a few introductory remarks.

We are here at La Ronge tonight and for the next two days to consider the written submission and oral presentations from a large number of citizens and

organizations who wish to express their opinions on the application by Cameco Corporation for the renewal of the Key Lake, McArthur River and Rabbit Lake operating licences.

I'd like to clarify a few things prior to getting this hearing under way.

First of all, I'd like to emphasize that the Commission is a quasi-judicial administrative tribunal and that, consequently, it is independent from any political, government or private sector influence.

In fact, each of the Commission Members is independent of one another and also independent of the CNSC staff.

Intervention for this hearing include recommendations to the Commission. CNSC staff also make recommendations to the Commission. But it is the Commission Members who will render a decision based on all the evidence presented and the deliberation and discussion in the context of the hearing process.

The Commission understands that some in the community and elsewhere have serious concerns regarding the operations of Key Lake, McArthur River and Rabbit Lake facilities. This being said, the purpose of the hearing is to consider the safety of the project on the -- and the impact on communities, workers and the environment. And

the Commission is here to hear your views and concerns in this regard.

I'd like also to emphasize the CNSC has no economic mandate and will not base its decision on the economic impact of a facility.

I will repeat it. It is the health, safety and security of the public and the protection of the environment that guides our decision.

So thank you, and with these remarks I would like to start by calling for the adoption of the agenda by the Commission Members, as outlined in Commission Member Document 13-H12.A.

Do I have concurrence?

For the record, the agenda is adopted.

### **13-H12.A**

#### **Adoption of Agenda**

**MR. LEBLANC:** The Commission is conducting three separate hearings this week on three different applications that have been filed by Cameco Corporation.

Therefore, to reduce repetition and ensure there is a complete record for each hearing, the Commission will consider any relevant information regarding common elements that may be presented during the

course of the three hearings.

The Notice of Public Hearing 2013-H-08 was published on July 10<sup>th</sup> of this year.

The public was invited to participate either by oral presentation or written submission.

August 30<sup>th</sup> was the deadline set for filing by intervenors. And the Commission did receive 27 requests for intervention.

September 25<sup>th</sup> was the deadline for filing of supplementary information, and such information and presentations have been filed by CNSC staff, Cameco and several intervenors.

Participant funding was available to intervenors to prepare for and participate in the hearing. The Commission received seven applications for funding.

The Funding Review Committee, which is independent of the Commission, reviewed the applications and funding was provided to the seven applicants as per a decision that was issued on July 8, 2013.

All the documents presented today are available at the reception, either on CDs or in paper format as well as the Commission members biographies.

Mr. President.

No, let me, sorry. To begin, we will first hear the presentations by Cameco Corporation and CSNC

staff. Time allowing, we will also be discussing the written submission that has been filed by Dr. Dale Dewar, and this may be followed by a short round of questions from Commission members.

Tomorrow and Thursday are dedicated to hear the presentations by interveners who have requested to speak. Commission members will have the opportunity to ask questions after each presentation.

Mr. President.

**THE CHAIRMAN:** Okay, we're now ready to start. So I'd like to begin by calling on the presentation from Cameco Corporation on the Key Lake, McArthur River and Rabbit Lake Operations.

And I understand that Mr. Mooney will make this presentation. Please proceed.

**Cameco Corporation:**

**Application for the renewal of  
Its uranium mine and mill operating  
Licences for the Key Lake, McArthur  
River and Rabbit Lake operations**

**13-H13.1/.1a - 13-H14.1/.1A - 13-H15.1/.1A**

**Oral presentation by**

**Cameco Corporation on the three**

**Licence renewal applications**

**MR. MOONEY:** Thank you. Good evening. My name is Liam Mooney and I'm Cameco's vice-president of safety, health, environment quality and regulatory relations.

I'd like to start by welcoming the Commission members to northern Saskatchewan for this week's hearing; it's the re-licensing of our McArthur River, Key Lake and Rabbit Lake Operations.

We also appreciate the efforts of those who are traveling from elsewhere in northern Saskatchewan to participate in this process through their interventions.

With me this evening is Sean Willy, Cameco's director of corporate responsibility within our corporate responsibility and communications group. Also from our corporate office, we have present Kevin Nagy, the director of compliance and licensing, Kent England, manager environment and licensing, and finally, Barry Esford, manager geo-environmental engineering.

Later, we will be introducing our vice-president from Saskatchewan South, our site general managers as well as safety, health, environment, quality and regulatory relations managers from each of our operations.

Sean will outline in greater detail how Cameco engages with people living in the small communities in Saskatchewan's northern administration district. This is no small feat considering this territory contains almost half of Saskatchewan's geography, but less than 3 percent of its population.

Cameco has built an engagement approach over the course of our company's 25-year existence that we take pride in. We take even greater pride in the results of these efforts.

Our approach continues to evolve and Sean will also touch briefly on our efforts in this regard as they relate to collaboration agreements with specific communities.

For reference, on this map of the Athabasca Basin, the three operations that are the subject of these hearings are all located on the east side of the basin. All three operations are mature mines and mills.

More specifically, our McArthur River operation is nearing 14 years in production. Key Lake has operated continuously for 30 years and Rabbit Lake is Canada's longest running uranium operation. Mining and milling first took place there in 1975.

All three operations have demonstrated during the current licence terms their commitment to

strong performance. Ensuring quality management systems are in place and exhibiting continual improvement in all aspects of safety, health and environmental protection.

In short, these operations have demonstrated success in achieving safe, clean and reliable production day in and day out. We've requested a 10-year licence renewal because we believe the performance of all three operations as well as the strong management systems that are in place support this request.

I will now briefly outline how this performance supports the requests.

Starting with safety, our operations have demonstrated strong and improving performance during the current licence term. Our frequency of lost time injury is consistently at or below the provincial mining industry average.

Further, as you can see, that frequency is also trending down. This is all the more noteworthy because it is being achieved at a time when the level of activity at all of our operations increased.

Looking at radiation protection across these northern Saskatchewan operations, you can see that the average annual effective dose for workers is low and even well below the regulatory limit of 1 millisievert annually for members of the public. And that number has

also been trending down in recent years.

Again, this is at a time when the level of activity was increasing, there were more contractors and new staff at each operation, and production was rising.

Looking at all of our northern Saskatchewan operations, maximum doses range between 10 to 15 millisieverts a year. Again, a number well below the annual limit of 50 millisieverts for nuclear energy workers and Cameco's internal guideline of 20 millisieverts annually.

With regard to environmental management, these three operations have environmental management systems that are registered to the ISO 14,001 standard. Further, we have comprehensive programs that monitor both our emissions and the surrounding environment.

Our results are reported regularly to not only the CNSC, but also other federal and provincial regulators. As was reported by Environment Canada, uranium mining was the only sector within Canadian metals mining to achieve full compliance in 2011 with the requirements of the metal mining effluent regulations.

We continually work to improve our performance. In recent years, we have taken measures that have been successful in improving the quality of our treated water with a focus on molybdenum, selenium and

uranium.

Through the addition of treatment circuits at Key Lake and Rabbit Lake and optimization at McArthur River, we have achieved a 70 percent reduction in loadings of molybdenum to the receiving environment from these three operations.

With regard to selenium loadings, those same improvements have also been effective in achieving about a 50 percent decrease in total loadings. And, we have achieved more than a 50 percent decrease in uranium loadings to the environment from these three operations.

Our commitment to environmental protection does not stop there. We are continuing to look at how we can optimize treatment circuits and water usage, thereby improving the quantity and quality of water at all of our operations.

At each of our operations, we have updated our decommissioning plans and have recalculated the financial estimates for this purpose. You will also hear about reclamation activities at Rabbit Lake and Key Lake, where site-wide reclamation plans are now in place. This work is planned to continue throughout the next licence term.

Over the past several years, there has been an increased focus on how companies communicate with their

local communities. I will now ask Sean Willy, our director of corporate responsibility, to talk about Cameco's industry-leading efforts in this area.

**MR. WILLY:** Good evening. For the record, my name is Sean Willy. I'm a northern Métis with a strong tie to my Dene ancestry. I have worked in the mining industry for the past 18 years throughout northern Saskatchewan, Nunavut and the Northwest Territories.

I am proud to be part of a Cameco team who have developed leading edge Aboriginal engagement programs established in northern Saskatchewan, which are now emulated across the country.

Two facts to start. Mining is growing in Canada's north. Secondly, these regions are also home to Canada's Aboriginal Peoples. Many of whom see resource development as a great opportunity to take control of their future, but not at the expense of the environment.

If mining is to proceed, support of Aboriginal communities are integral so they can benefit economically while practicing their traditional activities. This means mining companies need to communicate and engage with Aboriginal Peoples.

This engagement process is nothing new to Cameco. It has been developed in close collaboration with our local communities for the past 25 years in northern

Saskatchewan. We believe that we have established one of Canada's most comprehensive and successful engagement programs, which are focused on the rights bearing communities.

In fact, the engagement model established in northern Saskatchewan has been emulated throughout Canada when Aboriginal communities resource developments are in play. This model partners communities, governments, and industry.

At Cameco, our engagement strategy in northern Saskatchewan is built on five pillars. They include workforce development, which includes local employment, training, education and scholarships, business development, which focuses on local contractors and business capacity, community investment, where we work with communities to provide funds for infrastructure, youth and cultural activities, community engagement which I previously alluded to in our opening, and environmental stewardship, which seeks to promote understanding of the environmental aspects of our business.

We believe this approach has resulted in successful partnerships and strong overall support for our industry. The latest polling results show 77 percent of people in Northern Saskatchewan support the continuation of uranium operations.

In our view, the effectiveness of these programs is shown in how local Aboriginal people are directly engaged with us through employment. Cameco is the leading employer in Saskatchewan's north, and the leading industrial employer for Aboriginal people in Canada.

Approximately 50 percent of those who work in our northern operations are residents of Saskatchewan's north.

Some quick facts on our success in the area of workforce development: At our operations in Saskatchewan's north, we employed 1,529 people at mid-year. Of those, some 744 being residents of Saskatchewan's north or RSNs. There are also another 1,000 people from Northern Saskatchewan working for our long-term contractors.

This means that peak employment this year, we had over 1,700 northerners working at our operations. These numbers are a great success story for Cameco and the local communities. Even so, employment remains a priority within these communities.

Our goal is to increase RSN employment in the skilled, technical and professional designations. We already have maximized RSNs and job placements within entry level to semi-skilled positions. In these

positions, the turnover rate is relatively low so there is less opportunity for new recruitment.

So we will continue to stress in our community engagement the real opportunities for growth as the openings that we have for in the skilled positions.

We have been active on this front, as we support post-secondary training opportunities, as they are made available in the North. We support on-the-job training, job progressions and apprenticeships at our operations.

Having northerners earn supervisory positions within our operations is a positive outcome we want to achieve in greater number.

When we talked to people in communities, we put a particular emphasis on talking to youth and their parents about the importance of educational achievement.

To support this throughout northern communities, Cameco's efforts have been focused on promoting education, providing scholarships and donations to help young northerners pursue their educational goals. We have initiated work skills assessment with many young adults in local communities.

Through this initiative, we are looking at ways of helping communities develop pre-employment skills training wherever feasible. We have partnered with both

federal and provincial skills training programs.

By engaging with communities in this way, we are trying to build skills required both in the communities and in our operations. In addition to employment, Cameco has established leading edge northern business development strategies.

It is our priority to purchase from northern suppliers in an effort to build business capacity. Through this approach, our local communities have built 18 northern suppliers, providing over \$2 billion worth of services to Cameco since 2006.

In 1999, Cameco signed one of the first community resource agreements in the country. The impact management agreement was signed between Cameco, AREVA and the Athabasca Basin communities. Since then, many other agreements have been negotiated across the country to reflect the growing importance placed on local community support.

While we have enjoyed 25 years of strong community relationships, we were approached by some local communities who observed that agreements were being signed elsewhere. They saw an opportunity to do the same here.

Cameco responded to these communities with an offer to negotiate more formal agreements to define the business arrangements. Thus, Cameco embarked upon a

strategy that led us to our new collaboration agreements.

We set out to codify, formalize and establish a new structure that would define benefits and also frame the engagement process. These benefits are based on what we had already been doing over the many years.

In each of the CAs negotiated so far, Cameco's five pillar strategy is the core to the agreement. In all cases, the CAs are being negotiated with specific communities which we already engage, and have for many years.

Our first agreement was reached last December with the Métis community of Pinehouse. In May of this year we signed our second collaboration agreement with the English River First Nation.

We started with these two communities due to the fact that English River and Pinehouse were the only two of our nine priority recruitment communities defined under our surface lease agreements, with whom we did not have a formal agreement. As mentioned earlier, the impact management agreement covered the other seven communities of the Athabasca Basin.

Our plans moving forward are to ensure we effectively implement these current agreements and negotiate additional agreements with other communities to

build off our current community support.

In keeping with our five pillar strategy, the community engagement and environmental stewardship pillars in the CAs are critical components. The collaboration agreements outline a formal engagement process where Cameco and the communities will pursue regular dialogue to exchange knowledge and ensure there is a clear understanding of our operations and their environmental management programs.

This is to say that while these agreements are essentially private commercial arrangements, we do utilize programming in the agreements to discharge applicable regulatory requirements, such as community engagement and consultation activities.

While the operations are seeking to relicense are situated on previously disturbed lands that have been licenced and operating for many years, members of our local communities exercise traditional activities within some proximity to these operations.

As we conclude other collaboration agreements, provisions for ongoing engagement and discussions of environmental issues are a key component.

Northern Saskatchewan is a vast territory and there are dozens of communities from which we draw employees. We have engaged these communities on a regular

basis over the past 25 years and will continue to do so. For many years, the Northern Saskatchewan Environmental Quality Committee has been the forum for representatives of local communities.

The EQC meets regularly to gain understanding about industry activities and learn about regulations which govern us. They also visit our facilities to see what we do to protect the environment.

We expect the EQC to continue to play an important role in ensuring this two-way dialogue continues. We also continue to engage with the Athabasca Working Group. The AWG represents people residing in the basin, including the three Dene First Nations, who are the rights bearing communities.

The AWG manages an independent community-based environmental monitoring program. As such, the AWG is another source of information for residents to be assured that uranium operations are not having an effect on water or air quality.

Our public information program with northern and Aboriginal communities is deeply rooted in face to face engagement but we also live in an age of social media, and we know people in Northern Saskatchewan, especially the youth, are part of that modern, connected world.

We post information to our Web site in a timely manner, while respecting the requests of northerners who want us to communicate orally in Dene or Cree. We are pleased to provide reference materials, such as videos on our Northern Saskatchewan Web site or on our YouTube channel.

Listeners can pick an audio stream in English, Cree or Dene. Using this communication tool is in keeping with the strong oral traditions of Northern Saskatchewan.

In our communities, including those that now have collaboration agreements, we maintain community liaison staff. The community liaison's role is to serve as primary point of contact in the community for Cameco's operations.

There are daily resource within the community for members to ask questions and provide a conduit to follow-up on inquiries, be they employment prospects or specific questions on aspects of our operations.

Building understanding requires continuous engagement over time. Just as we have done in the past, we will continue to engage communities, discuss new projects and any changes at existing operations.

Our people are proud of the way our

operations are managed. We want people in the communities to understand, as do our employees, about the many programs that exist to keep people safe and healthy, and the environment protected.

**MR. MOONEY:** Thank you, Sean.

As you can see, Cameco's corporate responsibility efforts are integral to the success of these operations.

The first of our individual licensees on the agenda this evening is Key Lake. It is my pleasure to present Dave Bronkhorst, Cameco's Vice-President, Saskatchewan Mining South, to introduce that operation.

Dave is a veteran mine engineer and mine manager who has been general manager at two of these operations in the past, Rabbit Lake and McArthur River. Today, his overall responsibilities include the mining operation at McArthur River and the milling operation at Key Lake.

Dave?

**MR. BRONKHORST:** Thank you.

Good evening. For the record, my name is Dave Bronkhorst and I'm Cameco's Vice-President for Saskatchewan Mining South. In this role, I'm responsible for both Key Lake and McArthur River operations.

With me is Les Yesnik, General Manager of

the Key Lake operation. Another member of the Key Lake team with us this evening is Kevin Himbeault, our Site Manager responsible for safety, health, environment, quality and regulatory relations.

We are here tonight to support the relicensing of the Key Lake operation. We will provide information on how Key Lake delivers safe, clean and reliable production. We believe these facts will demonstrate that Cameco is qualified to carry on the licence activities at Key Lake, and that Cameco protects the environment as well as the health and safety of our work force and the public.

I am proud of our effort to strengthen our performance in all of our safety and control areas, including satisfying licence conditions earlier in the licence terms. More specifically, we have made improvements to our fire protection program and reported on them to the Commission.

We have also developed and implemented action plans for the management of waste rock as well as the installation of long-term pit wall stability measures with the Deilmann tailings management facility.

We constructed and commissioned a new water treatment circuit in our mill, and have significantly reduced the amount of moly and selenium in our treated

water discharge to the environment.

Key Lake's performance in meeting all regulatory requirements, while fulfilling Cameco's own commitments to safety, health, environment and quality, provides strong evidence that the site is deserving of a 10-year licence.

The Key Lake mill began operation in 1983, processing ore first from the Gaertner and then Deilmann open pits. As mining activity ceased in 1997, the mill was successfully transitioned to a regional milling facility and began processing high-grade uranium ore from the McArthur River operation in 1999. After 30 years of operation, I'm proud to say that Key Lake continues to deliver solid performance.

Since relicensing in 2008, the operation has improved on its lost time injury frequency, radiation exposures have been well controlled and remain far below regulatory limits, and finally, the quality of our treated water release to the environment has improved significantly, as we have continued to upgrade and optimize our facilities.

We want to ensure that this performance will extend into the future. To that end, we have continued to strengthen our management systems, procedures, and safety culture.

We have also renewed our facilities and will continue to make investments in our site infrastructure while also advancing progressive reclamation activities at inactive areas.

To outline in greater detail the progress we have made at Key Lake, it is my pleasure to introduce Les Yesnik, who has been a General Manager of this operation for the past eight years. Les leads a team dedicated to ensuring Key Lake upholds Cameco's commitment to maintain safety, health, environment and quality.

**MR. YESNIK:** Thank you, Dave.

I'm pleased to be here representing the Key Lake team. Over the past five years we've worked diligently to improve operations and are committed to ongoing, continuous improvement.

I'm proud to state that all safety and control areas of the operation are rated as satisfactory, and we have met all commitments made for all licence conditions included in our current operating licence.

In assessing our operations in Northern Saskatchewan, the CNSC had previously determined that molybdenum and selenium loadings in our treated water should be reduced.

To achieve proper control over these parameters, Cameco designed and installed a new circuit

within the water treatment area of the Key Lake mill. Following commissioning and process optimization, we were successful in significantly reducing molybdenum and selenium in our treated water.

With considerable effort, Cameco also satisfied a licence condition to implement measures to improve the long-term stability of the west wall of the Deilmann tailings management facility.

When we adapted the Deilmann open pit to be a managed tailings facility, mining had left a steeper pit wall on the west side. As water cover rose in the Deilmann tailings management facility, sand from this wall sloughed into the pit. To prevent this, we expanded the capacity of the reverse osmosis water treatment facility. This provided sufficient capacity to control water levels and ensure slope stability.

Throughout the licence period, we worked on a permanent slope stability solution. The approved design involved cutting back the west and northwest walls to a more gradual and stable slope. We are also adding a toe buttress to ensure stability as the water level recovers in the future.

This was a major earth-moving job that involved careful planning, the relocation of utilities, and then removal of more than 2.4 million cubic metres of

sand.

The project was successfully undertaken by a new joint venture that included a northern-owned contractor. Through utilizing our contractor management program, no significant environment or safety incidents occurred, with the total time worked by the contractor onsite now well over 125,000 hours.

This past summer, Cameco worked to complete the slope stabilization project. In this photo you can see how the walls slope gradually away from the lower areas of the pit. You can also see the substantial volume of coarse rock that has been laid as a toe buttress to help ensure stability as the water level rises. We are placing 284,000 cubic metres of rock for this purpose.

The third licence condition was the requirement to maintain an action plan on waste rock. In 2009, agreement was reached that the focus would be the Deilmann north waste rock pile, and Cameco submitted an action plan for reclamation of the pile. This plan was accepted and test work began in 2010, with contouring and packing an area of the pile.

This area is now the site of two test covers that we are monitoring to measure precipitation, infiltration of water, and runoff and evaporation. There are also vegetation trials being monitored within the test

cover area to determine the suitability of these plans for reclamation. This information will be used to optimize final cover design for the pile. I will discuss more on reclamation activities later in the presentation.

I am very proud to note that over the licence term we had record uranium production levels. During this time the quality of treated mill water released to the environment improved significantly. Radiation exposure remained well below the regulatory limit, with the average annual effective dose decreasing since 2010, and finally, safety performance improved with a reduction in lost time injury frequency over the previous licence period.

This was achieved during a time of increased project activity, with the Key Lake revitalization project advancing.

Collectively, all employees and contractors have worked over 2 million consecutive hours with no lost time. At Key Lake, we have a mature safety and health management program that helps us to systematically manage workplace safety hazards, ensuring that personnel and equipment are protected.

Safety continues to be the responsibility of all individuals at the operation and is actively promoted by myself, managers, supervisors, and all

workers.

We also take pride in the effectiveness of our contractor management program which has resulted in the operation reaching significant milestones of six years with no lost time for the contractors onsite.

Our training programs ensure that people have the training they need to work safely. As you see from this chart, these efforts have contributed to our success keeping lost time injury numbers low, despite having increase project activity onsite.

Consistent with our drive for continual improvement, we are always looking for ways to improve our performance. For example, during the past licence period, we restructured the plan safety inspection program with the focus on communication.

We also built a number of work platforms and installed more accessible tie-off locations to improve fall protection inside the mill and out.

Our safety team works with supervisors in safety meetings, through daily contact with frontline workers to emphasize procedures, especially the importance of job hazard analysis when performing non-routine work.

We also continue to work to improve emergency response and fire protection at Key Lake.

During the licence term, we completed

upgrades to the fire panels throughout the facility. Further, we have upgraded the fire training grounds.

In 2012, we sent our emergency response team to the Annual Provincial Mine Rescue Competition and we are proud of the fact they took home four trophies, including first place for proficiency and runner-up for first aid, practical skills and surface firefighting.

The goal of Key Lake's Radiation Protection Program is to keep exposures as low as reasonably achievable. The Operations Radiation Department not only monitors radiation levels, but also provides training and education to the workforce. This ensures people understand the risks as well as mitigation measures.

Key Lake has sustained strong control of radiation levels during the licence term and this chart provides our average effective dose, our full-time equivalent dose and maximum dose, all of which remain well below the regulatory limit, as well as Cameco's internal guideline.

Continued investment and facility improvements at Key Lake has also contributed to a low average dose per worker.

One area of the mill in which we have seen a reduction in gamma emissions is in the leaching circuit where we have replaced the former autoclave leaching

vessels with continuous stir tank reactors working at atmospheric pressure. This has also simplified the operation and maintenance work within the circuit.

A specific maintenance improvement opportunity was identified, where we used leach tanks that have a rubber lining that needs to be replaced periodically.

In the past, this replacement took up to 2,000 hours and in the process, the collective crew exposure was a dose of about 6 to 9 millisieverts. We changed the method of removing the rubber lining to use water jet cutting technology, and this method is working well and has reduced the total project time to around 300 hours and reduced the collective dose to the maintenance crew to less than 1.2 millisieverts.

Capital investments plus reviewing established procedures work together to improve our radiation protection. This drive for continual improvement is a key aspect of our radiation protection program as well as our quality management program.

Key Lake's comprehensive environmental management system ensures that we meet our commitment to regulatory compliance, environmental compliance and continual improvement. It provides Cameco with a systematic framework to identify our environmental

aspects, implement appropriate controls and to measure and continually improve upon our performance.

Over the licence period, our environmental management system was recertified to the ISO-14001 standard.

With respect to the environment, our performance since relicensing has been strong and improving.

Treated water at our discharge point remains below regulatory limits and within established action levels.

Environmental performance continues to improve despite increased production rates and increased project activity during the licence term.

This speaks to the strength of the programs and procedures by which we manage our activities.

Our performance in reducing molybdenum and selenium in our treated water can be seen in these next two graphs. And I'm proud to report that since Cameco commissioned the new molybdenum and selenium removal circuit in 2009, the concentration of these elements in treated water and their loadings to the environment, have been significantly reduced.

Continued monitoring of the removal process shows the input of molybdenum and selenium is variable,

yet the output in the treated water is significantly reduced and stable.

This steady state operation of the water treatment circuit ensures consistent, controlled removal of molybdenum and selenium regardless of the production rate.

Molybdenum concentrations have been reduced by approximately 75 percent and selenium concentrations by 60 percent.

Over the licence term, Cameco continued investments in the Key Lake operation, have also contributed to improve environmental protection. For example, we initiated a risk-based process to systematically assess and upgrade containment facilities throughout the operation.

A focused effort to identify and manage environmental spills at Key Lake resulted in improved performance over the licence period as well.

I am proud of the achievement and improvements that we have made that resulted in Key Lake achieving a period of 700 consecutive days with no reportable spill during the current licence period.

Inside the mill, we are working to complete one aspect of this effort, which includes the inspection, testing and upgrading of sumps.

In addition to this, improving containment on tanks and vessels continues to be advanced on a risk-informed basis.

Examples of this work done include upgrades to containment on all site fuel tanks, the countercurrent decantation thickener circuit and process tanks on the mill terrace. Condition of vessels is assessed during site infrastructure audits and upgrades are included in the site project plan.

As part of this project, Cameco has also developed and implemented a schedule, cycle of ongoing inspection and maintenance of all containment systems to ensure they continue to perform as designed.

We have completed a new site-wide reclamation plan for Key Lake. This plan provides us with a systematic and risk-informed approach for planning, scheduling and conducting reclamation activities on inactive areas of the facility.

As mentioned before, our current focus is on the Deilmann north waste rock pile, where we are currently assessing the performance of field scale cover and vegetation trial plots as well as a hydro seeding trial on the slope. We also removed a culvert to restore the more natural flow in David Creek.

Reclamation efforts also continue with

respect to the aboveground tailings management facility. Specifically, we completed a drilling program in 2013 and installed instrumentation to further characterize the condition of the tailings within the facility.

The results of this program, as well as our ongoing monitoring, will be used to inform our planning for the long-term decommissioning.

On a smaller scale, we continue to work towards reducing our environmental footprint at Key Lake. And over the licence term, we focused on consolidating our laydown storage areas and, as a result, we were able to send over 500 tires and 34 tonnes of scrap metal offsite for recycling.

As these areas are reclaimed, Cameco is re-vegetating them to hasten their return to a non-disturbed condition.

As Mr. Bronkhorst mentioned, Cameco continues to invest in Key Lake to ensure safe, clean and reliable production into the future. The investments that Cameco is making at Key Lake will not only maintain our operational performance but also ensure, at the same time, that we continue to meet our safety, health and environmental commitments.

During the licence term, an environmental assessment was approved for the mill's services project,

which allowed us to construct new facilities for the production of steam, oxygen and acid.

Also, Cameco successfully commissioned these plants and they are providing Key Lake with increased levels of operations efficiencies as well as improved environmental performance, while reducing energy use.

We are also pleased with the improved environmental performance of the new acid plant. The increased operational efficiency and emission control systems have allowed us to further reduce what were already low emissions of sulfur dioxide. Emissions from the new plant range from 10 to 12 parts per million, representing a 95 percent reduction compared to the previous acid plant.

Another significant investment in upgrading infrastructure that is currently underway at Key Lake is the installation of a new calciner, the major components of which are already in place within the mill. When fully commissioned in operation, the new calciner utilizing an electric fired rotary kiln and equipped with a new scrubber system, will release no combustion gases and fewer emissions to the atmosphere when compared with a propane fired calciner currently in use to dry our yellowcake product.

In addition to improved environmental performance, the design and construction of the new calciner will also make it easier for personnel to operate and maintain. As such, we anticipate a reduction in radiation dose related to working in the calcining area.

Our operations are familiar places to many people in the north because of the connection people have to the sites. At Key Lake, 54 percent of the total workforce of 586 personnel that work on site are from the north. We see our own people as the best ambassadors in these communities.

During my time at Key Lake, I participated each year in a number of events in Northern Saskatchewan such as the annual visits to our operation from members of the Environmental Quality Committee. While participating in Cameco's annual Northern tour, I particularly enjoy the additional opportunity to get to know people from Northern communities who are not our employees.

And while we are in the communities, Northern people ask us about jobs and opportunities. Because of the stable nature of the jobs, there is low turnover at Key Lake. People who train with us as mill operators, for example, tend to stay with us for the long term, however we say there is always a place for skilled people at our sites and we encourage Northerners to

consider the different professions and trade apprenticeship opportunities at Key Lake because we see a long future ahead of us.

We also encourage people to meet in the communities to pursue the post-secondary technical courses that are available in the region as this can be a strong pathway to success at our operation.

In conclusion, we take great pride in our work and in our accomplishments at Key Lake. Over the licence term, we have strengthened our management systems and effectively implemented and managed substantial change to our licensed facilities.

While doing this, not only did we meet our regulatory requirements, but we continually improved in the areas of safety, radiation and environmental protection. The results of our commitment is evident in the satisfactory with stable or improving trend ratings the CNSC staff gave to all of our safety and control areas at Key Lake.

Cameco is a qualified operator of the Key Lake operation in all aspects. Cameco has made and will continue to make investments in Key Lake necessary for us to produce uranium in a safe, clean and reliable manner.

The systems we have in place will ensure that we effectively operate our facilities and manage

change while being protective of the environment as well as health and safety of the public and the workforce. This strong record of achievement demonstrates that a 10 year renewal is appropriate.

**MR. BRONKHORST:** Thank you, Les.

Again, for the record, Dave Bronkhorst. With me, on the McArthur River team is Kevin Quesnel, General Manager and Rick Morrison, Manager for Safety, Health, Environment Quality and Regulatory Relations ---

**THE CHAIRMAN:** Excuse me. Can you get closer to the mic?

**MR. BRONKHORST:** Oh I'm sorry. Better?

**THE CHAIRMAN:** Even closer.

**MR. BRONKHORST:** All right?

**THE CHAIRMAN:** I can hear you now, thanks.

**MR. BRONKHORST:** So with me tonight, at the McArthur River team is Kevin Quesnel, General Manager, Rick Morrison, Manager of Safety, Environment, Health, Quality, Regulatory Relations at McArthur River.

We are here in support of the relicensing of the McArthur River operation. Cameco has requested a 10 year licence renewal.

Throughout this presentation, we will highlight some of the details provided in the Commission Member documents that exemplify how at the McArthur River

operation, we deliver safe, clean and reliable production. We will also demonstrate that Cameco is qualified to carry on the licensed activity at McArthur River and that Cameco is protective of the environment as well as the health and safety of workers and the public.

I am proud of the work we have done over the licensed term, to continue and improve our performance in all our safety and control areas. This includes satisfaction of a licence condition earlier in the licence term. More specifically, we made improvements to our site fire protection program and reported on them to the Commission.

I am pleased to say that the work has resulted in a satisfactory rating in that safety and control area. Over the licence term, we advanced the use of freeze technology to safely allow mine development into the water-saturated sandstone. We also transitioned underground operations into new mining zones and produced at higher rates while at the same time continuing to improve upon our safety radiation protection and environmental performance.

McArthur River has been effective in managing change. In our view, the strength of our management systems and our continual improving performance provides the basis for awarding the request for a 10 year

licence term.

The McArthur River operation began production in 1999 and remains the world's largest high-grade uranium mine. In fact, year after year, McArthur is the leading primary source of mined uranium in the world, amounting to about 15 percent of the world's production.

As a former general manager of this facility, I'm proud to say that McArthur has continued to deliver solid performance. Over the current licence term, McArthur has reduced lost time injury frequency while controlling radiation exposures and maintaining them far below regulatory limits. We have also continued to optimize our facilities to significantly improve the quality of our treated water released to the environment.

McArthur River has not only met all regulatory requirements, but has also fulfilled Cameco's own commitments to safety, health, environment and quality. Again, we believe this level performance supports our application for a 10 year licence term.

We intend to maintain this strong performance into the next licence term. Accordingly, Cameco continues to look for opportunities to strengthen our management systems, procedures and safety culture. We have always renewed our facilities and will continue to

make investments in the infrastructure at the site.

We are preparing the way for decades of mining to come. To talk more about the McArthur River operations performance during the past five years, and our plans for the future, I will now turn the presentation over to Kevin Quesnel, General Manager of the McArthur River operation.

Kevin joined Cameco, McArthur River operation nine years ago as maintenance superintendent. Since then, his leadership and managerial skills have taken him to the role of Mine Manager and most recently an appointment as General Manager in 2010.

Kevin?

**MR. QUESNEL:** Good evening, Commissioners. For the record, my name is Kevin Quesnel.

I've been part of the McArthur River team for the past nine years and I'm indeed proud to lead a team that has had such great success in keeping people safe, radiation doses low and protecting the environment while achieving our production goals. We accomplish this as we develop new mining areas and transitioned into these underground operations.

What I appreciated right away when I joined McArthur River team was a strong safety culture. In order to achieve safe, clean and reliable production, you

need a disciplined approach with no shortcuts. Similarly, underground mining requires a disciplined approach. This is especially the case at McArthur River where the high grade uranium ore is deposited along the geological unconformity between water-saturated sandstone above and the basement rock below.

In all aspects of our safety and control programs at McArthur River, we have worked at continuous improvement to reflect what we have learned as we begin to mine new zones. McArthur River's Safety and Management Health program provides management framework for conventional workplace safety.

This program ensures that safety hazards are identified, personnel and equipment are protected and the strong safety culture is nurtured. This systematic approach is continuing to pay benefits as we lowered our lost time injury frequency over the current licence term.

Of note is that we managed to do this when we had a high number of contractors at McArthur River. Our Contractor Management program ensures everyone working in the operation follows the same safety rules.

To improve safety performance during the current licence term, McArthur River created a list of top 12 high risk activities for our operation. We then increased awareness with respect to these activities

through efforts such as providing safety meeting packages and conducting workplace inspections.

We also developed a supervisor training program that covers the key performance indicators with focus on supervisory responsibilities. This is part of an effort to enhance the training of the supervisors on Cameco safety expectations and the tasks required to fulfil the site's objectives.

Further, our safety officers meet regularly with all personnel working in the mine to emphasize the tools for working safely, including job hazard analysis and the five point safety card, which is the cornerstone of our safety approach.

Our efforts in the area of conventional safety have been recognized during the licence term with the prestigious John T. Ryan Safety trophy which is awarded to the safest underground metal mine in Canada. McArthur River received the national award in 2009 and regional honours in our category in 2010 and 2011.

This speaks to the strength and consistency of our safety performance and the effectiveness of our program in maintaining it.

We are proud that our safety performance is within the top quartile of North American mines and we intend to pursue continual improvement in order to keep it

there.

The members of our site emergency response team have shown diligence and enthusiasm in their training to respond to potential emergencies. During the license period the competition teams have won both surface and underground provincial championships.

Earlier this year the team won the Underground Mine Category at the annual Saskatchewan Mining Association Mine Rescue Competition and just this past weekend our industrial firefighting team won the Saskatchewan Industrial Fire and Rescue Competition.

Our emergency personnel with their rescue and firefighting certification make McArthur River self-sufficient in these areas. This is complemented by the work that we've undertaken to improve emergency response as well as fire protection at McArthur River.

During the license term, in addition to improving our fire protection program, we have upgraded the fire training grounds, including construction of a training area for confined space rescue.

Consistent with the goal of keeping radiation doses as low as reasonably achievable, radiation protection at McArthur River is managed in accordance with the radiation protection program.

In the current license term McArthur River

has continually improved mitigation measures while maintaining tight control of radiation exposures.

I often tell visitors before they head underground that our success in controlling doses may seem counterintuitive; we have the highest grade uranium mine in the world, yet our exposures are consistently low.

Our success is reflected in that our average effective dose has decreased over the license term. Further, the dose calculations for full-time equivalent workers and for the maximum exposed person have also been improving.

As you can see in the graph, these measures are well below not only the regulatory limit but also Cameco's own internal guideline.

Our success in achieving these numbers lies in the program itself and what we do every day to ensure people are aware of risks. For example, as shown in the slide, we ensure the radiation monitors underground are properly calibrated, that people are individually monitored and have confidence in that process.

Of course, infrastructure and mitigation measures are also key components of the radiation protection program, including the extent to which ground freezing limits radon bearing water entering the mine.

There is also the extensive use of shot

shotcreting within the tunnels and working areas that provide additional shielding along with the extensive and well planned ventilation system.

Over the current license term we have made operational improvements that contributed to this success. For example, quicker cycle times for the raised bore mining sequence have reduced the potential for additional exposure to workers. Further, we have installed additional exhaust ventilation at Shaft 3 and upgraded ventilation at Shaft 2.

Over the next license term, McArthur River will continue to keep exposures as low as reasonably achievable.

Understanding the risk and coming up with effective mitigation measures is something we continually work to improve at McArthur River. The best example of this is the extent to which we are using freeze technology and the way we have adapted and expanded this mitigation tool since mining began in 1999.

The expanded use of freezing as a ground control measure, as we transition to new mining areas, also contributes to our strong radiation protection performance. As previously mentioned, freezing has also proved very effective in limiting the volume of radon bearing water entering the mine workings.

McArthur River's comprehensive environmental management system is certified to ISO 14001 standard and ensures we meet our commitment to regulatory compliance, environmental protection and continual improvement.

It provides us with a systematic framework that we use to identify our environmental aspects, implement appropriate controls and to measure and continually improve our performance.

Our environmental performance has been strong though the current license term. Concentrations of contaminants in our treated water were maintained below regulatory limits and within established action levels.

At the last relicensing, a commitment was made to reduce concentrations of molybdenum in the treated water released by McArthur River. As a result of our continued optimization efforts we have been able to not only meet this commitment but reduce concentrations by 83 percent.

In the past three years when the mine increased production the effectiveness of the process and operational changes we had made were evident as concentrations of molybdenum in 2012 was the lowest since the operation began.

Changes made to the process water

collection systems underground, plus improvements to the water treatment plant have all contributed to McArthur River being able to meet and exceed the commitment made five years ago.

Another significant undertaking during the license term was the replacement of the culvert at the Reed Creek Crossing downstream of our operation. The new culvert is shown in the slide and is designed to limit the potential impact of release of treated water to the environment in the case of a non-routine inflow situation.

During the next license term McArthur River will continue to look at ways to optimize water management at the site.

Mr. Bronkhorst referred to McArthur River preparing for decades of mining ahead. In the years to come, we are confident that our mine can continue to do this successfully because of the safe transition to new mining zones that we undertook during the current license period.

This successful transition has allowed us to continue to employ raised bore method to extract the high grade ore, a method which has proven highly protective of workers.

We achieved a first in mining the deposit by using freezing to develop through the unconformity.

This means we have developed secure workings within the sandstone formation that sits atop of the high grade ore.

We have done so through the use of innovative cathedral-shaped freeze structures. It is a process that can only be done through careful planning and risk assessment.

A process of freezing such a large area in preparation for development requires great precision in its sequencing and execution. Mine planning, freeze infrastructure, and mine development occur years in advance of production.

During the license term we have tested and proven two new mining methods we intend to use at McArthur River. The success we have had in developing stable raised bore chambers in frozen sandstone has given us confidence that we will be able to use drill and blast in the form of long hole stopes. This is a more conventional mining method, however our plans to use it at McArthur River are quite limited in scope.

Nevertheless, our test program in long hole stoping has shown this form of mining can be done effectively on a small scale, and that it can be done in a way that is safe and will result in lower exposures to workers.

After the successful test program we

received CNSC staff approval just last month to incorporate this method into our future mining plans. After a similar test period we have also received approval to use box hole mining.

It is anticipated that box hole and blast - that drill and blast, pardon me, and box hole boring will be limited in scope in the years ahead as we expect raise bore mining to continue to be the dominant method.

At McArthur River, Cameco continues to invest in the infrastructure required to mine the various zones that make up the deposit to ensure safe access to this ore.

During this current license term I am proud of the manner in which risk assessment tools and mitigation measures allowed us to make a safe transition to these new zones.

The long-term strategic plan for the operation requires additional capacity and options that support ground freezing, electrical distribution and ventilation. Some of that work is underway right now.

For example, we successfully expanded the ventilation and freeze capacity during the current license term, as we made our transition to new mining zones and our long-term planning anticipates additional measures.

We have also modernized our camp facilities

in the past several years to reflect the long horizon we see for McArthur River.

Another example of risk assessment in mitigation is our defense and depth measures for contingency water management. As part of our risk assessments, a water management plan is included for every new zone in which mining development work begins. We have confidence in the geotechnical work we do ahead of any development and the mitigation measures such as freeze walls, but we remain on guard for non-routine water inflows. Based on our experience however, McArthur River has the management system in place to pump, treat, and release clean water in a non-routine inflow situation.

The surface facility you see in the photograph is a contingency water pond. It is normally empty, but once a year it is filled with clean water to allow us to test the entire contingency water system. Through our diligent management of risks in this fashion, we believe we can continue to mine safely at McArthur River.

The long projected life of mine for McArthur River is one that offers stability for employment. There are more than 485 Cameco employees and more that 375 permanent contractor working at site. Of the combined workforce, about 440 people, or 51 percent of

the total are residents of Saskatchewan's North. We actively encourage members of our workforce to pursue training opportunities that will allow them to advance their careers at McArthur River, or within Cameco.

Our management team takes our engagement responsibilities seriously, and we work hard to ensure communities we visit have a good understanding of our diligence in protecting the environment and people, and the long-term business, and workforce opportunities we have available at the McArthur River operation.

Cameco, including McArthur River staff, is committed to continuing our practice of regularly visiting and reporting to communities on our activities. When members of the community visit the site, we take them through the mining areas to show them how we protect people and we explain our environmental protection program, including how we have improved the mine water treatment process.

In this photo, members of the Northern Saskatchewan Environmental Quality Committee see the re-vegetation work that followed the land clearing done in 2012 to allow expanded electrical substations. Our careful stewardship of the environment is in keeping with Cameco's values. This means traditional activities such as harvesting country foods can continue throughout the

Athabasca Basin.

This current licence period has been a period of transition at McArthur River. From 1999 until about the midway portion of this current licence period, mining of the deposit effectively took place in various ore panels of zone 2, closest to our main shaft. As previously mentioned, one success during the licence period was our transition into two additional ore zones where we used our innovative cathedral freeze walls to develop through the unconformity. As well during this period, we have had successive years where we've been able to safely increase production.

In conclusion, McArthur River operation continues to demonstrate a strong commitment to safety of people and the environment, while building upon our track record of successfully mining this world class deposit. We have shown that our main mining method of raise boring is adaptable for use as we transition to new mining zones, and we have shown we can safely use two other mining methods as required. Our quality management program guides all of our safety and control areas and has proven effective in managing change.

We are pleased that the CNSC staff has graded the McArthur River operation as satisfactory, with a stable or an improving trend in all of the safety and

control areas. In short, Cameco is a qualified operator in all respects. Even with the increased production and level of activity across the entire site, our safety performance, our ability to keep radiation doses as low as reasonably achievable, and our record in protecting the environment continues to improve year by year. This strong record of achievement at McArthur River demonstrates that a 10 year renewal is appropriate.

**MR. MOONEY:** Again, for the record my name is Liam Mooney. Our final presentation tonight is on the Rabbit Lake operation. With me is Scott Britton, the General Manager of Rabbit Lake, and Kirk Lamont, our Site Manager for safety, health, environment quality, and regulatory relations.

We are here tonight to support the relicensing of the Rabbit Lake operation. We will provide information on how Rabbit Lake delivers safe, clean, and reliable production. We believe that not only is Cameco qualified to carry on the mining and milling activities at Rabbit Lake, but also that Cameco is protective of the environment, as well as the health and safety of our workers and the public.

I am proud of our accomplishments over the current licence term, including the satisfaction of two licence conditions. More specifically, we have made

improvements to our fire protection program and reported on this progress to the Commission. We have also developed and implemented a risk informed action plan to facilitate the timely reclamation of inactive areas. The operations performance and meeting all regulatory requirements and fulfilling Cameco's own commitments to safety, health, environment, and quality provides strong evidence that the site is deserving of a 10 year licence.

After more than 35 years of operation, Rabbit Lake continues to deliver solid performance. Since relicensing, the operation has improved on our lost time injury frequency. Radiation exposures have been well controlled and remain far below regulatory limits. Finally, the quality of treated water released to the environment has improved significantly as we have continued to upgrade and optimize our facilities.

To ensure this performance extends into the future, we've continued to strengthen our management systems, procedures, and safety culture. We have also renewed our facilities and we will continue to make investments in our infrastructure, while also advancing progressive reclamation activities. Further, prospects for continued long-term operations are strong, thanks to our track record of discovering and proving out additional ore zones at the Eagle Point underground mine.

Since mid-2012 the Rabbit Lake team has been led by Scott Britton, who brought with him more than 36 years of experience as a mine engineer working in both underground and surface mining operations. I will now turn the presentation over to Scott.

**MR. BRITTON:** Thank you, Liam. For the record my name is Scott Britton, the current General Manager of the Rabbit Lake operations. I'm also proud to be here today representing the Rabbit Lake operation.

Since joining the team at Rabbit Lake, it has become clear to me that this facility can and will continue to mine and mill uranium in a safe, clean, and reliable manner. As an experienced mining professional, I'm looking forward to continuing the life of the operation and keeping with our success of adding to our reserves.

At Rabbit Lake, we have a long history of successfully managing change in our operations. Five different ore zones have been mined and milled at Rabbit Lake since operations began in 1975. Beginning in 1992, ore has been exclusively mined at the underground Eagle Point Mine.

If you look at these two overhead photos of Rabbit Lake, you will see that the mill and the camp are located in the southern part of the operation. The mill

is located close to the original Rabbit Lake open pit mine. This pit has been successfully transitioned into an engineered tailings management facility to safely store milled tailings. It's shown on the slide as the Rabbit Lake In-pit Tailings Management Facility, or RLITMF. In addition, the original Above Ground Tailings Management Facility is located just to the southeast of the mill.

The Eagle Point Mine is located approximately 16 kilometres to the northeast of the mill, along the Harrison Peninsula. Our ongoing surface and underground exploration activities at Eagle Point have been successful. We have continued to find sufficient ore to sustain production since 1992, and we believe that the prospects for locating additional reserves remains strong.

Over the life of Rabbit Lake, we have also worked to reclaim inactive areas of the facility. In 2009, Cameco developed a site-wide reclamation plan and submitted it to the CNSC. The plan was approved in 2010 satisfying a licence condition that was issued in 2008. The plan took a risk informed approach to developing a schedule for progressive reclamation activities at the site.

Over the licence term we have worked to implement that plan while providing annual updates to the regulatory agencies on our progress. The health and

safety of our workers and the public at the Rabbit Lake operation is incurred throughout the implementation of our occupational health and safety program. The program provides a systematic framework by which we identify hazards, protect workers and equipment and maintain a strong safety culture.

At Rabbit Lake, our safety performance has been strong and improving. Since relicensing, there has been a steady increase in activity and the number of contractors on our site due to projects such as the acid plant upgrades.

However, even with new personnel and non-routine activities on site, loss time injuries have been maintained at a low level. In 2012 for example, our lost time injury frequency was 0.14, compared to the provincial mining industry average of 0.30.

In 2012, there was one lost time injury involving a contractor who suffered injuries to his feet and legs, after being struck by a scooptram underground. A comprehensive investigation of this incident was completed and corrective actions developed and implemented as a response.

Further, I'm happy to report this worker has made a successful return to work at Rabbit Lake this past summer. We will continue to improve our program and

build a stronger safety culture at Rabbit Lake, through ongoing education, training, inspections and improvement to processes and safety equipment.

Through our radiation protection program, we ensure that applicable regulatory requirements are met and that the radiation exposures remain as low as reasonably achievable.

During the current licence period, the Rabbit Lake operation maintains strong control of radiological exposures of both the underground mine and the mill.

As you can see on the chart, radiation doses have been maintained well below the regulatory limit of 50 millisieverts, as well as our own Cameco guideline of 20 millisieverts.

Again, this improvement occurred at a time when there was greater activity and new people onsite, due to the increased level of construction and reclamation activities. This speaks to the strength of our radiation protection.

At the Eagle Point Mine, we continue to look for new ways to improve ventilation to ensure it is working effectively to further control radiation exposures within the mine. To that end, during the past license term, we successfully constructed and commissioned a new

exhaust air raise to improve ventilation as we safely transitioned into new mining areas at Eagle Point.

In the future, mine ventilation requirements for mine expansion will be met, as needed, through additional ventilation raises. Another example can be seen on this slide.

At the Eagle Point Mine, we would periodically experience seasonal conditions that would allow mine exhaust air to mix with fresh air. A novel and effective way to address this issue was to construct these blue towers, extending the elevation of the fresh air intakes.

We call them snorkels and they have proved successful in addressing the condition, ensuring a safer work environment in the mine.

Over the license term, we continue to strengthen our environmental management system and we are proud to have achieved certification to the ISO 14001 standard in 2010 and recertification in 2013.

Effective implementation of this management system ensures that we meet our commitments to regulatory compliance, environmental protection and continual improvement. Our environmental performance since relicensing has been strong.

The quality of our treated water remains

well below regulatory limits and established action levels. We have repaired and upgraded key infrastructure, such as our mine water pipelines, to manage environmental spills.

During previous proceedings, uranium, selenium and molybdenum were identified as key - three key parameters that Cameco should reduce, as treated water released it to the environment in Northern Saskatchewan.

Earlier this evening, Liam Mooney noted that uranium loadings to the environment from the three operations up for relicensing have been cut in half. Rabbit Lake is a big part of that improvement.

During the past license term, Cameco successfully upgraded the water treatment facility at Rabbit Lake to specifically increase the removal of uranium from the treated water being released.

Over the current term, we have continued to optimize the process to improve our performance. As can be seen on the chart, we have achieved a 67 percent reduction in average uranium concentration when compared to the past license period.

Throughout the license period, we have also maintained the concentration of uranium in our treated water below the CNSC's optimization screening objective level, while meeting the provincial regulatory limits.

Cameco continued to improve the treated water quality at Rabbit Lake over the license term, through the addition of a treatment circuit specifically aimed at removing molybdenum and selenium.

As the bar graph shows, since the successful commissioning of the facility in 2010, we have achieved significant reductions in the concentration of molybdenum in our treated water release to the environment.

Compared to operations before we built the circuit, concentrations of molybdenum have been reduced 88 percent. The site also continues to control selenium effectively, well below the provincial licence requirements.

During the current license period, Cameco has continued to invest at Rabbit Lake to improve both operational and environmental performance. We produce sulphuric acid at Rabbit Lake for use as a milling reagent.

Starting in 2010, Cameco has replaced the Rabbit Lake acid plant in stages, working within the confines of the existing plant. The end result of this work is safer and more reliable production of sulphuric acid and also a further reduction in what were already low emissions of sulphur dioxide from the facility.

As I mentioned earlier, in 2009 we developed a site-wide reclamation plan. I am proud of the work that we have completed to implement this plan and progressively reclaim inactive areas of the operation.

One of the highlights has been the progress we have made in reclaiming land and shoreline surrounding the three former open pits along Collins Bay. During this license term, we reclaimed the D-Zone mining area in 2010.

The dyke abutments were breached and, as you can see on the slide, we utilized a crane to remove the steel cofferdam cells, returning the pond back to Collins Bay. The D-Zone clean waste rock pile was then hydroseeded with grass and trees were planted in the surrounding area.

As you can see from the photograph bottom left, previously we had great success in re-vegetating the access road to A-Zone. Cameco completed this work while remaining protective of the environment. For example, we deployed equipment to protect the lake from sediment disturbance, as we removed the steel cofferdam sections.

I should note we also engaged an Elder from the adjacent community of Hatchet Lake to act as an environmental monitor while we were conducting the work.

Further, we continued to work to reshape and cover the B-Zone waste rock pile. Specifically,

Cameco recontoured the pile and installed an engineered cover to reduce water infiltration into the pile. The pile was then hydroseeded to promote the development of a sustainable vegetable cover -- vegetation cover.

We will continue to monitor the cover to ensure that it performs as designed. We also continue to work on the above ground tailings management facility, including installing a clean till cover.

While a part of this facility will be reclaimed, the other part will continue to be used for disposal of contaminated waste. This means no further areas of the site need to be disturbed for waste disposal.

As a result of these efforts at the above ground tailings management facility, we expect an improvement in both surface and groundwater management near the facility. We've installed instruments to better understand groundwater flow and to determine how well the new cover layer of clean till is working.

This will inform us of any additional work that must be completed before final covering and re-vegetation. Cameco will continue progressive reclamation during the next license period.

We will also continue to bring our community neighbours to our site and will keep them engaged on the reclamation work as it progresses.

Cameco has upgraded and installed new equipment in many areas of the operation. Recently, we replaced an older boiler system with a new one that allows for more safe and efficient operation.

As well, in the past two summers, during our maintenance period, Cameco also replaced four large process tanks, which were nearing the end of their operational life.

Further, Cameco has upgraded the operation's main electrical transformer and switchgear.

One final highlight is within the yellowcake drawing and packaging area. We have upgraded the packaging system, installed new doors and added new safety inter locks.

These upgrades help ensure operators continue to be safe when working in the area.

Over the licence term, Cameco expanded the approved storage capacity of the Rabbit Lake In-pit Tailings Management Facility. As shown here, this included laterally expanding the north and west sides of the pit. Work was completed and tailings deposition commenced in August of 2009. The expanded facility has operated as expected.

In addition, Cameco modified the previous surround at the In-pit Tailings Manage Facility allowing

the establishment of a water cover over the tailings. This means winter deposition of tailings is now occurring underwater, which should prevent the formation of frozen tailings while allowing for more optimal tailings consolidation.

As you have heard during our corporate overview, Cameco was Canada's leading industrial employer of Aboriginal people. Rabbit Lake has many long serving residents of the north working at the operation. There are about 300 employees and 340 contractors on site with more than 53 percent being residents of Saskatchewan's north.

There is strong representation from the basin communities at the operation. It has and will remain a priority at Rabbit Lake to build on our record of success where we have had many long-serving employees from basin communities.

With respect to direct engagement with our stakeholder communities, Cameco helps ensure that information regarding the operations, including Rabbit Lake, is communicated with communities on an on-going basis. In our operations 2012 annual report as an example, we note that specific information on Rabbit Lake was presented at eight meetings throughout the north, including three meetings in the basin and the annual visit

by the EQC at the operation.

In addition, mine tours are offered on a regular basis to high school students from northern communities. This is in addition to the annual Cameco northern tour and the many visits to northern communities and schools from our northern office here in La Ronge and from our Cameco liaison personnel living in the basin communities.

I mentioned the Rabbit Lake engagement activities for 2012 by way of stating that this is typical of what we do each and every year, not just in the months leading up to relicensing hearings. Even as the new person at Rabbit Lake, I have already had two opportunities, last fall and this past June, to visit the communities in the basin.

One of our assurances to these community stakeholders was that in seeking a 10 year relicense - or 10 year licence, Cameco will continue to visit and report to the communities on what we are doing to protect the environment.

Finally, I wanted to speak briefly about the future of Rabbit Lake. A significant change occurred during the licence term which was the announcement of a Northern Saskatchewan milling strategy that would see Cigar Lake ore processed at the McLean Lake mill. This

meant that the uranium rich solution from McLean Lake would not be further processed at the Rabbit Lake mill as originally planned.

However, as history shows, we have good reason to be confident that ore will continue to be found and that it can be brought into the mine plan. Further, with the improvements we have made to the mill, we are confident it is capable of safe, clean and reliable operations processing both Eagle Point and other potential regional ores for many more years.

Cameco has a strong management system which is -- which has facilitated the continual improvement of our safety radiation protection and environmental performance. As proof of this, the CNSC staff has rated the Rabbit Lake operation as satisfactory with a stable or an improving trend in all of the safety and control areas. In short, Cameco is a qualified operator of Rabbit Lake in all areas.

Finally, as shown in this presentation, the current license term has featured significant change in operational improvement both with respect to facilities and the plan for future production. Cameco will continue producing uranium from the Rabbit Lake operation in a safe, clean and reliable manner, protecting the environment as well as protecting the health and safety of

the public and our workers.

We believe that the prospect of additional reserves and the history of Rabbit Lake effectively managing and controlling change speak to a 10 year licence term being justified.

**MR. MOONEY:** And that concludes Cameco's presentations for the evening.

**THE CHAIRMAN:** Okay. I think it's a good time to take a 10 minute break.

**MR. LEBLANC:** I would also like to reiterate that there are some interpretation devices and that these proceedings are being translated into Dene and into Cree and into French. Thank you.

--- Upon recessing at 10:41 p.m./

L'audience est suspendue a 21h41

--- Upon resuming at 10:57 p.m./

L'audience est reprise a 21h57

**MR. LEBLANC:** If you can, please take your seats, we're going to resume in a few seconds. Thank you.

**THE CHAIRMAN:** I'd like to move on now to the presentation from CNSC staff as outlined in CMD 13-H13, H14 and H15. And I extend to Mr. Jammal for his presentation. Please proceed.

13-H13 / 13-H14 / 13-H15

**Oral presentation by**

**CNSC staff on the three licence renewal applications**

**MR. JAMMAL:** Bonsoir, monsieur le Président et membres de la Commission. For the record, I'm Ramzi Jammal, Executive Vice-President and Chief Regulatory Operations Officer for the CNSC.

I'm just going to take some time to introduce to you our staff members. Right next to me is Mr. Jean LeClair, Director of the Uranium Mines and Mills Division; and our staff from Saskatoon office, Ms. Sarah Eaton, Project Officer for the McArthur River site; table behind me, Mr. Tom Gates, Project Officer for Key Lakes Site; next to him is Mr. Glenn Groskopf, Project Officer for the Rabbit Lake site.

Right behind me, Mr. Malcolm McKee, Lead Technical Advisor for the Directorate of Environmental and Radiation Protection and Assessment Directorate; Ms. Caroline Purvis, Director of the Radiation Protection Division; Dr. Barbara Dowsley, Environmental Risk Assessment Officer from the Ecological Risk Assessment Division; and Mr. Frank Ryan, Environmental Program Specialist from the Environmental Compliance and

laboratory services Division.

We also have with us Dr. Sandor Demeter, practicing nuclear medicine physician under contract as a physician advisor to the Commission.

Next slide.

Cameco has applied to renew their operating licence for the Key Lake, McArthur River and Rabbit Lake uranium mine and mills facilities. Before proceeding with the individual presentation for each of the licence application, I would like to provide the Commission an overview of recent developments in licencing compliance across all facilities at the CNSC to include uranium mines and mills.

Then -- Jean LeClair will provide an overview of the overall compliance performance for the three uranium mine and mill sites under consideration at these licence hearings. Will be followed by project officer for each of the sites and then they will provide their presentation and summarize CNSC staff assessment of the licence applications as documented before you in CMD's 13-H13, H14 and H15. Next slide.

After the Fukushima Daiichi accident, the CNSC issued directive to all major nuclear facilities to include power plants and non-nuclear power plants. The directive applied to uranium mines and mills facilities.

The reviews and recommendations were later on consolidated into CNSC staff action plan and this action plan is an integrated action plan that applies to all operating nuclear facilities licenced by the CNSC.

It consists with the following five categories: strengthening defence in depth, enhancing emergency response, improving regulatory framework and processes, enhancing international collaboration, enhancing communications and public education.

In August of this year, CNSC staff provided an update on the implementation of the action plan to the Commission. At the time, CNSC staff noted that all actions for uranium mines and mills have been closed.

I would like now to describe in brief the licensing form that the CNSC has initiated to improve its regulatory processes. One key initiative involved the detailed review of the licences across all nuclear facilities to ensure clarity, transparency and consistency of the licences across all of the licence facilities.

This licence initiative reform did lead to the introduction of a CNSC licence supported by a comprehensive Licence Conditions Handbook that sets out the regulatory requirements and criteria that are used by CNSC staff to verify compliance against CNSC regulatory framework.

Earlier this year, a similar licence and Licence Conditions Handbook was issued for Cameco's Cigar Lake operation, and the proposed draft licences before you are on the same format.

In 2012, CNSC staff presented annual compliance report entitled, "CNSC Staff Report on the Performance of Canadian Uranium Fuel Cycle and Processing Facilities." This report provides the compliance performance for uranium fuel cycle facilities, which include uranium mines and mills. The report is presented to the Commission and the public at a Commission meeting and allows for public interventions to ensure that any issues or concerns may be brought to the Commission's attention.

In addition, this report encompassed the data from the status of the environment, which is a report that consolidates all of the data that has already been submitted by the licensees, and this information is reviewed by CNSC staff.

While last year's report was presented at a public meeting of the Commission in Ottawa, CNSC staff are looking at presenting the report, which is the annual report, on a rotating basis in the communities that are in proximity to the facilities licensed by the Commission. This would include a future meeting in Saskatchewan that

would focus on uranium mines and mills.

CNSC staff assessed Cameco's request for a 10-year licence in accordance with the CNSC regulatory framework. CNSC staff have verified and concluded that Cameco has an effective management system in place, that Cameco has stable and mature operational programs with sustained satisfactory performance, and Cameco has the qualifications to carry out its licensed activity.

On this basis, CNSC staff recommend that the Commission issue a 10-year licence for the Key Lake, McArthur River, and Rabbit Lake uranium mine and mill operations.

I would like to clarify that, within the 10-year period, the CNSC staff will seek the Commission's approval for any requests by the Applicant that falls outside the licensing basis. As part of the CNSC regulatory oversight, through verification, reporting, and the use of enforcement actions as appropriate, CNSC staff will ensure that Cameco remains in compliance with their licence and CNSC regulatory requirements.

As I previously stated, the CNSC staff annual report on the performance of Canadian uranium fuel cycle and processing facilities will provide annual updates to the Commission and the public on the regulatory performance and any major developments at the uranium

mines and mills.

As part of our ongoing consultation and engagement activities, CNSC staff will continue to engage the public and Aboriginal peoples to share information with them, and to identify any issues or concerns with regards to health, safety, and environmental protection at the Key Lake, McArthur River and Rabbit Lake operations.

Puis maintenant je cède la parole à M. Leclair to continue with the CNSC presentation.

**M. LECLAIR:** Bonjour, Monsieur le Président et membres de la Commission. Mon nom est Jean LeClair et je suis le directeur des mine et usines de concentration d'uranium.

I would like to begin my presentation by providing you a quick overview of the location of operating uranium mines and mills in Saskatchewan. This will be followed by a brief history of the three mines and mill facilities being considered in these hearings. I will then provide you the overall performance of the three sites in the areas of radiation protection, conventional safety, and environmental protection.

As we presented to the Commission in October, 2012, we will provide a comparison of the environmental performance for the mining sector as it relates to the application of Environment Canada's metal

mine effluent regulations.

I would also like to take this opportunity to briefly discuss Cameco's performance with respect to their public information and disclosure program, and to share with you some of the activities we've undertaken during the current licence period to engage with Aboriginal peoples and communities of Northern Saskatchewan.

I will end my presentation with staff's assessment and basis for recommending the 10-year licence term.

The following slide shows a map of Saskatchewan and highlights the location of the three mine and mill sites under consideration in these hearings. All currently operating uranium mines and mills in Canada are located in the Northeast region of Northern Saskatchewan.

Cameco Corporation operates the four facilities of Cigar Lake, McArthur River, Rabbit Lake and Key Lake, while Areva Resources Canada operates McClean Lake.

They are located approximately 250 to 400 kilometres of La Ronge, which, as you can see on this figure, is in the north central part of the province.

The sites are in remote locations, accessible by all-weather roads for the transportation of

materials, equipment and product. Workers are transported to the sites by air from various locations throughout the province. The closest community is the Wollaston Post and Hatchet Lake communities, located on the southeast shore of Wollaston Lake.

Rabbit Lake is the longest operating uranium mine and mill. Key Lake began operation in 1983, while McArthur River mine was opened in 1999.

The current licences for Key Lake, Rabbit Lake and McArthur River were issued following public hearings held in 2008. The current licences expire on October 31<sup>st</sup>, 2013.

As directed by the CNSC, Cameco implemented a number of improvements to their water management and treatment processes, to reduce the concentration of uranium, selenium, and molybdenum in treated water. These will be discussed later in the staff presentations for each of the sites.

As noted earlier in Mr. Jammal's presentation, following the Fukushima accident in 2011, the CNSC directed all operators of nuclear facilities, including uranium mines and mills, to review the lessons learned from this event, including emergency measures for multiple accident scenarios.

In June 2011, CNSC staff presented a mid-

term performance report for Rabbit Lake, Key Lake, and McArthur River sites. At the time, CNSC staff noted important improvements in addressing deficiencies noted at the licence renewal hearings in 2008, and significant progress had been made in addressing the various licence conditions.

We also updated the Commission on the environmental performance, radiation protection, and conventional safety, discussing the results from past monitoring, including the results from the most recent status of the environment reports.

As noted in Mr. Jammal's presentation, in 2012, CNSC staff produced a CNSC staff report on the performance of Canadian uranium fuel cycle and processing facilities. The report provides an overview of the compliance performance and major developments at Canadian uranium fuel cycle facilities that include uranium mines and mills.

In October 2012, CNSC staff also introduced a reformed licence and Licence Conditions Handbook for uranium mines and mills beginning with the McClean Lake uranium mill operated by Areva Resources Canada. As Mr. Jammal already noted, the Cigar Lake licence and Beaverlodge licences were also issued under this new format.

The proposed licences for Key Lake, Rabbit Lake and McArthur River follow this same format which brings us to today and these Commission hearings to consider Cameco's application for renewal of their licences to operate the Key Lake, Rabbit Lake and McArthur River uranium mine and mill sites.

The applications being considered at these hearings include a request from Cameco for a 10-year licence term. The basis of our recommendations to the Commission have already been discussed.

As part of our licensing process, CNSC staff undertook a detailed review of Cameco's licence application, including a review of their updated programs, revisions to the preliminary decommissioning plans and the proposed financial guarantees.

The activities proposed in the licence applications are consistent with the currently approved activities and, as previously noted, the staff CMDs include a draft licence and Licence Condition Handbook for each of the sites.

CNSC staff rates the overall compliance of all nuclear facilities including uranium mines and mills across 14 safety and control areas that include such things as management systems, training, design, maintenance, radiation protection, conventional safety,

environmental protection, waste management and emergency management.

These reviews are based on the review of the programs, policies and procedures, reviews of the results of these programs, reviews of any reportable events or action level exceedances and independent verification through onsite inspections.

At the 2008 licence renewal hearings for Rabbit Lake, Key Lake and McArthur River, CNSC staff rated management system, human performance or training and fire protection as below expectations.

Cameco implemented several improvements across these three safety and control areas. CNSC staff verified through desktop reviews and onsite inspections that the deficiencies had been addressed and improvements had been made.

As a result, for 2010, we changed the ratings from below expectations to satisfactory. Ongoing compliance verification has concluded that the performance remains satisfactory.

In addition to standard licence conditions, the current licences for Key Lake and Rabbit Lake include specific licence conditions to address reclamation activities at tailings and waste rock management facilities. More information on these will be presented

in the site-specific presentations that will follow.

Mr. Jammal also presented an overview of the CNSC in licensee response reviews and action plans following the Fukushima accident, and specific reference to uranium mines and mills and the current licence applications. Cameco reviewed existing safety cases and emergency management programs against the ability of their facilities to withstand extreme external events.

CNSC staff reviewed and verified the licensee reports and findings. The reviews determined the underlying defence and depth controls were in place to deal with natural disasters and severe accidents. The reviews confirmed the facilities are safe, improvements were identified and Cameco has worked at implementing them.

The CNSC has established regulatory limits for radiation exposure to workers at all nuclear facilities including uranium mines and mills. These limits that are established internationally set the maximum yearly dose limit at 50 millisieverts and 100 millisieverts over five years.

In addition, the radiation protection regulations require that licensees put in place a radiation code of practice to further control radiation exposure, to allow for more timely detection and

correction of any potential problems, and to keep radiation exposures as low as reasonably achievable.

The weekly and quarterly action levels for Cameco's operating uranium mines and mills are shown in this slide.

During the current licence term, CNSC noted and verified that the radiation doses to workers at Cameco's Key Lake, Rabbit Lake and McArthur River mine sites were well below the regulatory limits and continuous improvements at each of the sites have helped keep doses as low as reasonably achievable.

This graph further details the annual effect of radiation doses to workers from 2008 to 2012. The average worker dose and the maximum individual doses are shown.

As indicated by the red line and the results for each site, the effect of radiation dose to workers during the current licence term have remained well below the annual regulatory limit of 50 millisieverts per year.

As part of routine and focussed compliance inspections, CNSC staff verified and confirmed that Cameco has effective radiation protection programs to monitor and control radiation exposures.

Mining and milling operations present

important safety hazards that need to be effectively managed. Working with provincial inspectors from the Saskatchewan Labour Relations and Workplace Safety, CNSC staff routinely verify the safety programs at the uranium mines and mills.

Worker health and safety incidents are reported to both the CNSC and our provincial counterpart. We review the reports and corrective actions taken by Cameco to prevent reoccurrence.

CNSC staff have verified and noted several activities undertaken at each of Cameco's uranium mine and mill sites to enhance safety and promote a strong safety culture.

This slide provides a lost time incident statistics collected by Saskatchewan Labour Relations and Workplace Safety for the mining industry in Saskatchewan.

We have included the statistics across different mining sectors and the statistics for each of the sites under consideration for licence renewal at these hearings.

It is important to consider the level of industrial activity and the relative hazards associated with each mining sector. Conventional safety hazards at potash mining and hard rock mining such as gold mining are most similar with uranium mining and milling.

It is also worth noting that significant construction activities, including equipment refurbishments, facility improvements and reclamation activities were undertaken at all three sites during the licence period.

Despite significant increases in personnel and industrial activity at the sites, CNSC staff noted that the frequency and severity of lost time incidents remained well below the industry average in Saskatchewan.

CNSC staff and mines inspectors from Saskatchewan Labour Relations and Workplace Safety have confirmed through inspections and report reviews that Cameco is providing effective oversight of health and safety at its operating uranium mines and mills.

During the last licence renewals for Cameco's Key Lake, Rabbit Lake and McArthur River operations, the CNSC directed Cameco to implement improvements to its water management and water treatment to reduce the concentration of molybdenum, selenium and uranium and treated effluent.

Cameco submitted detailed plans and implemented various improvements at each of the facilities to further reduce contaminant concentrations for those elements of greatest concern for each site.

CNSC staff note that significant reductions

have been achieved for given elements at each of the sites and are satisfied that Cameco has undertaken the necessary actions to reduce these concentrations and keep them as low as reasonably achievable.

In October 2012, CNSC staff presented to the Commission, the CNSC staff report on the performance of Canadian uranium fuel cycle and processing facilities at a public meeting. The report, which is posted and available on the CNSC's Web site includes a table that compares the level of compliance with metal mine effluent regulations across the different mining sectors in Canada, based on the most current information in Environment Canada's published annual reports.

The table in this slide presents the same information updated to include more recent information for 2011. CNSC staff calculated the percentage compliance as shown on this slide. The mines from across Canada reporting under the Metal Mine Effluent Regulations have been grouped into four metal mining sectors.

The number of mines and mills representing each sector varies. There are five uranium mines and mills, 43 base metal mines, 50 precious metal mines and 7 iron mines. The table provides a percentage of mines and mills in each sector that were in compliance for each year.

For a mine to be in compliance, their effluent must have met all of the regulatory effluent release limits of the Metal Mine Effluent Regulations for the entire year.

For a sector to achieve a 100 percent compliance rating, all the facilities in that sector must have met all the parameter limits as shown on the previous slide for all submitted samples for the entire year. For example, if a sector had a 50 percent compliance rating, this would mean only half of the facilities in that sector met all of the requirements for the full year.

Please note that the list of parameters includes the radioactive element, radium-226.

As shown, the uranium mines and mills sector maintained 100 percent compliance with the effluent parameters, concentrations and pH limits from 2007 to 2011. This means that all five uranium mine and mill facilities met all of the metal mine effluent regulation, effluent release limits from 2007 to 2011.

On a final note the CNSC is currently part of a working group with Environment Canada as part of a review of the Metal Mine Effluent Regulations to review existing limits and includes considering the possible expansion of the list of parameters to be regulated to include elements such as selenium which CNSC staff already

identified as a contaminant of concern and took action to reduce the levels of these contaminants at uranium mines and mills.

Requirements for environmental protection cover off the entire lifecycle of any project.

From the beginning, prior to conducting any new activities or making any major changes, CNSC requires that Cameco conduct ecological risk assessments that examine the proposed activities or any major changes to existing activities in order to predict releases into the environment and their potential effects.

All uranium mines and mills have detailed environmental risk assessments that were done to support the original applications that have been updated on several occasions, through various environmental assessments, and as part of a review of important changes at each facility.

We expect and verify that these assessments remain relevant and up-to-date based on past experiences and improvements in our understanding.

Environmental monitoring programs that have always been a requirement as part of previous licences have also been included in the proposed Licence Conditions Handbook. They are used to monitor releases from the facilities, including the waste management facilities.

Monitoring looks at both releases to air and water. Air sampling includes continuous air monitoring in the mines, stack sampling, high-volume air sampling, passive air monitoring, such as track-etch and grab sampling to measure concentrations of airborne contaminants.

Monitoring includes measurements of contaminants in waters prior to treatment; waters and holding ponds or end of pipe; measurements of water quality in groundwater wells, surrounding in downstream of various facilities; water monitoring in streams and lakes.

Monitoring does not end here. In addition, the CNSC, Environment Canada and the Saskatchewan Ministry of Environment requires that Cameco monitors the receiving environment as part of environmental effects monitoring.

The programs include such things as sampling plants and aquatic life, such as the benthic invertebrates or the bugs that live in the sediments of the lakes and streams and fish to verify and ensure the protection of the environment and, in particular those components that are important sources for human consumption, example such as fish, caribou, moose.

As requested by regulation in respective -- the respective licences, monthly, quarterly and yearly reports are routinely submitted to the CNSC and other

regulators to provide detailed results from the monitoring programs, which include trend analysis.

In addition, Cameco conducts environmental effects monitoring on a three-year cycle to comply with Environment Canada requirements, and also continues to produce the status of the environment report for both the CNSC and provincial regulators that reviews the environmental performance over a five-year cycle.

CNSC staff routinely review all of the reports looking for trends and anomalies, requesting additional information or investigations where needed, and requesting that Cameco take actions, where necessary, to further reduce their emissions to further protect the environment.

As reported -- as was reported to the Commission as part of the midterm reports in 2011, the last status of the environment reports for the site showed stable or improving conditions across the sites and continuing monitoring since then continues to demonstrate this.

Health studies conducted over the years have concluded that exposure to elevated concentrations of radon can increase the risk of lung cancer. This has led to several improvements at uranium mines and mills.

In addition, Health Canada has also

undertaken an important education program to help Canadians better understand the potential risks from elevated concentrations of radon in home basements and measures that can be taken to reduce these concentrations.

CNSC staff participate in different international studies that have concluded that the radon exposures and overall radiation doses resulting from currently operating uranium mines and mills is low and do not measurably increase the risk of cancer.

Health studies also show that workers and the public living near uranium mines and mills are as healthy as the general population. The CNSC has in place strong regulatory requirements and regulatory oversight by CNSC staff ensures that radiation continues to be effectively managed and mitigated to protect workers and the public.

CNSC regulations require that licensees inform the public about the facility and activities. In 2012, the CNSC published a regulatory document that provided further direction and guidance to licensees with regards to public information and disclosure programs with increased emphasis on the need for disclosure protocols to help ensure timely sharing of information, including non-routine events such as accidents or environmental spills.

Cameco updated its public information

disclosure program to comply with these requirements.

CNSC staff reviewed the updated programs and verified that the program and its implementation met CNSC requirements.

While licensees are expected to provide timely information on their activities to the public, CNSC staff also routinely engage communities and groups that may have an interest in uranium mining operations in Northern Saskatchewan.

During the current licence term, CNSC staff undertook several engagement activities with people in Northern Saskatchewan, including meetings and mine site tours with the Northern Saskatchewan Environment Quality Committees.

CNSC staff also participated in annual tours of communities, project and facility-specific meetings with community residents and, on invitation, participate in special events such as the Trappers Convention and the Athabasca sector meeting that were held earlier this year.

In addition, as part of the Commission hearing process, the CNSC provided funding to the public and Aboriginal peoples through the Participant Funding Program to allow for review the licence applications and their intervention in these hearings.

This slide shows the names and locations of

the communities that were visited by CNSC staff as part of our engagement activities. The -- several of the sites that are -- the communities that are visited tend to be focused based on whatever facilities are closest to those operations.

So for instance, when we visit Uranium City, often the discussions might be around Beaver Lodge and the Gunnar sites, communities like La Loche, Buffalo and Île-à-la-Crosse will discuss issues surrounding the Cluff Lake operations. Pinehouse, English River, Wollaston, Hatchet Lake, Stony Rapids, Fond-du-Lac will discuss often issues around Cameco and AREVA resources operations around Wollaston Lake and on the northeast side of the province.

This ends this overview presentation. I would now ask Mr. Tom Gates, the CNSC Project Officer for the Key Lake Operation to provide the next staff presentation.

**MR. GATES:** Good evening, I'm Tom Gates, CNSC Project Officer for Cameco Key Lake operation.

This presentation contains CNSC staff's assessment and recommendations concerning Cameco's application for the renewal of the Key Lake uranium mill licence.

I will begin my presentation by providing

an overview of the Key Lake operation with a brief historical timeline. This is followed by a status update on specific licence conditions for waste management and improvements to effluent treatment during the current licence term.

Could you change the slide, please? Thank you.

Next is an overview of CNSC's compliance activities and an update on decommissioning and financial guarantees, and then CSNC staff's conclusions.

Change slide, please.

This 2013 CNSC photo shows the general layout of the Key Lake operation. The above ground tailings management facility is located near the top of the photo and it receives surface deposited tailings at the beginning of the operation prior to tailings being deposited under water in the Deilmann tailings management facility.

The above ground tailings management facility is approved for storing and disposal of contaminated materials. It has a liner with a drain that directs seepage water to be treated at the mill.

In the middle of the photo is a Deilmann north and south waste rock piles located on both sides of the mined out pit, which was converted into the Deilmann

tailings management facility.

The water level in the Deilmann tailings management facility is maintained by pumping water from below the tailings and from surrounding groundwater for treatment before release to the environment under strict controls. This isolates this water and any constituents of concern from local groundwater aquifer.

Please note on the back slope of the Deilmann tailings management facility the band of crush rock placed at the water's edge to help stabilize the sand slope. This is called the toe buttress and it is discussed a bit later.

In the upper left, you can see the mined out Gaertner pit and waste rock. The Gaertner pond water level is adjusted by directing Gaertner well water to a reverse osmosis plant which produces pure water released into the Horsefly Lake and McDonald Creek system.

Seepage or other industrial water is treated at the mill before release to Wolf Lake in the David Creek system.

Last at the bottom left of the photo, the Dielmann special waste pile, holds low grade ore left for mining until it is ground up and mixed with high grade ore for the mill. To protect the environment, special waste and ore piles have been lined -- have line pads to collect

seepage.

Next is the 30-year timeline showing the history of Key Lake operation. The Key Lake ore bodies were discovered between 1975 and 1976. And the Key Lake project environmental impact statement was submitted in October 1979. In 1983 the Gaertner open pit mining began, followed by the mining of the Dielmann open pit in 1989.

In 1994 an environmental assessment was done so that after the Dielmann pit was mined out in 1997 it could be converted to an in pit tailings management facility. This was followed by a 1995 environmental assessment to mill uranium ore slurry from the McArthur River mine.

The environmental assessments have concluded that with mitigation there would be no significant adverse effects from the Key Lake operation.

In 2006, CNSC staff predicted that effects could accrue from the treated effluent from molybdenum and selenium. And Cameco was required to control these constituents.

CNSC staff reported in the 2011 midterm that they were satisfied that new controls were limiting risk to the David Creek system.

In 2008 the Commission issued a 5-year license which expires October 31<sup>st</sup>, 2013. And staff are

here today in La Ronge recommending a 10-year license.

The next three slides are an update on the Commission's three, 2008 license conditions, provided to ensure necessary improvements to waste management and to effluent quality.

Change slide.

In these photos, you can see the monitoring of the vegetation and earthen cover that was constructed to study the issue of keeping water out of the pile to eliminate the nickel in the waste rock from washing out into the environment in the long-term.

At the 2008 Key Lake license renewal, Cameco waste management plan was acceptable but the Commission added a license condition to maintain and implement an action plan to address this waste rock issue.

In 2009, CNSC staff accepted Cameco's plan for an engineered vegetative cover that, if it performs correctly, will limit water infiltration into the rock and protect groundwater and the health of the environment and people in the area.

Currently the environment is protected since any groundwater under the waste rock is drawn towards the pumping wells at the tailings pit, then over to the mill for treatment before release.

CNSC staff will evaluate the results of

test cover monitoring and the final cover design expected next year prior to cover construction in about 2015.

CNSC staff will ensure that there is an acceptable long-term monitoring plan provided to assess if the criteria of low water infiltration and a sustainable plant cover is met.

Next is the sloughing sand slope issue in the Dielmann in pit tailings management facility.

Change slide.

As seen in the upper photo, a number of loose sloughing events had occurred between September 2001 and May 2005. And again in April 2009 a much smaller sloughing event had occurred.

These pit wall sloughing events threatened to create increased environmental impacts and they posed a health and safety risk to workers at site.

A CNSC license condition required an action plan to stabilize the slope in a timely manner. The design included a major flattening of the slopes and the installation of a coarse rock toe buttress.

CNSC reviewed and found the design, construction plans, and safety risk assessments acceptable and now construction is nearing completion, as you can see in the lower photo.

In 2012 -- in a 2012 CNSC inspection, staff

found that construction was proceeding as planned and was being done safely. CNSC staff found a state-of-the-art continuous slope monitoring system for the project.

For example, this included radar at two locations to detect slope movements at the centimetre scale.

As you can see in the bottom photo, the major slope cutback is complete and the toe buttress construction may be complete this month.

CNSC staff requires Cameco to complete a post-construction slope stability assessment and report. As CNSC staff continue to verify performance of waste management facilities in ongoing desktop reviews and inspections.

Next slide, please.

In response to CNSC staff concerns that molybdenum and selenium could accumulate and affect environmental health, the Commission added license condition that required Cameco to implement actions to reduce these elements.

These two elements are micronutrients. They are okay in small amounts but can cause problems at higher levels. Ecological risk assessments confirmed that these elements needed to be reduced to limit environmental risk, particularly in the David Creek system at Key Lake.

As seen in the photo, in 2008 Cameco completed construction of a new circuit for the removal of molybdenum and selenium. The circuit was -- has resulted in greater than 60 percent reduction for selenium and 75 percent reduction for molybdenum.

It is also important to note that new environmental code of practice effluent action levels were established to ensure that these elements continue to be controlled to a level limiting environmental risk.

These action levels are included in the proposed License Condition Handbook and if exceeded, may indicate loss of control. If a loss of control is confirmed CNSC staff will take appropriate regulatory action.

Next slide, please.

Before I talk about overall compliance performance during the license term, I would like to point out an error in staff CMD.

On the top of page 27, in CMD 13H-13, we refer to treated Gaertner groundwater being released to the David Creek system after reverse osmosis treatment. This is incorrect since this very pure water is released into Horsefly Lake in the McDonald Creek system as shown in the inspection photo.

Now on to compliance. During the license

term CNSC staff completed 20 inspections, including focused inspections, which included safety control areas rated below expectations at the start of the license term. Namely, management systems, human performance which is training, environmental protection, fire protection and waste management.

As well, there were inspections of the molybdenum, selenium reduction circuit and the new acid and oxygen plants, of radiation protection, geotechnical inspections, transportation and packaging, security and specialist onsite reviews of the mill and Dielmann tailings management facility.

CNSC staff verified that all deficiencies identified in inspections have or are being addressed.

CNSC staff also reviewed and assessed Cameco's performance through their review monthly, quarterly and annual reports, the review of reportable incidents and events such as spills, worker dose or injury, contamination incidents or dangerous occurrences. And also through a review of licensing applications, new projects or notifications regarding changes to facilities or licensed activities.

CNSC staff rate Cameco's compliance performance over the license term as satisfactory.

Next are details on the three core safety

and control areas.

CNSC staff reviewed the licensees' radiation protection program to ensure it met regulatory requirements and describes how engineering and administrative controls are in place to keep radiation exposures as low as reasonably achievable.

CNSC staff include elements of radiation protection in all inspections. All action notices provided during inspections have been adequately responded to by Cameco.

CNSC staff reviewed all radiation code of practice exceedances and verified implementation of corrective measures. During the license term there were four events with radiation code of practice action level exceedances resulting in dose assignments from the detection of uranium in urine after work in the calciner.

Corrective measures included improvements through the use of personal protective equipment and the construction of a new horizontal rotary calciner to minimize maintenance requirements and exposure risk.

CNSC staff verified through compliance activities that workers are being protected to mature radiation protection programs, and as shown in the next slide, that radiation doses are well below regulatory limits.

This graph illustrates the average individual effect of radiation dose and maximum individual effective dose to workers from 2008 to 2012. Maximum worker effective dose shown in the purple bars, has been consistently lower than one-fifth of the CNSC annual limit of 50 millisieverts per year, as shown in the red line in the graph.

The smaller blue bars show the average dose. CNSC staff conclude that radiation exposures are being adequately controlled and monitored.

During the review period, CNSC staff note an improving trend in the conventional health and safety program. The trend is especially significant, given the increasing number of workers during the licence term. There have been 13 lost time incidents in the five-year period. CNSC staff reviewed investigation reports and verified that appropriate corrective actions were taken by Cameco. Details of these are included in the Annual Directorate of Nuclear Cycle and Facilities Regulation and Staff Report to the Commission and there have been no lost time accidents in 2013.

CNSC staff conclude that Cameco has effectively managed workplace safety hazards and the licensee's performance in the SCA of Conventional Health and Safety is rated as satisfactory with an improving

trend.

CNSC staff reviewed and verified that environmental programs meet regulatory requirements to control and monitor all releases of radioactive and hazardous substances and their potential effects on the environment and human health.

CNSC staff verified that treated effluent concentrations have been controlled to far below regulatory limits and action levels to limit environmental risk.

For example, since 2008 selenium has been reduced by greater than 60 percent and molybdenum by over 75 percent.

Interestingly, nine out of twelve parameters that are monitored are lower in 2012 than in 2008, as found in the table on page 27 of the CNSC Staff CMD 13-H13. Arsenic and ammonia remained at low levels and pH remained in its normal range.

CNSC staff verified that Cameco continues to implement measures to prevent releases of radioactive and hazardous substances to the environment and that spills were immediately reported and cleaned up with no long-term impacts to the environment.

The volumes of these spills have been small and, ironically, many resulted from secondary containment

or sumps being opened for repairs.

There's been a significant reduction in the number of spills since 2011, with none in 2012 and recently two minor spills in 2013.

As well, staff found a number of good practices such as temporary use of secondary containment to limit risk of spills.

CNSC staff verified compliance with regulatory requirements and found an improving trend for environmental protection.

To summarize compliance performance, CNSC staff verified that all deficiencies identified during inspections are being addressed or have been closed as of September 2013.

During the current licence term, CNSC staff rated all safety and control areas as satisfactory since 2010. Radiation doses remained low and well below the regulatory limits. The final treated effluents met discharge limits and conventional health and safety has improved during the licence term.

CNSC staff rate Cameco's performance overall SEAs as satisfactory and conclude that the environment and the health and safety of persons continue to be protected.

CNSC staff found that Cameco's revised 2013

preliminary decommissioning plan and continues to meet regulatory requirements. The plan is reviewed every five years or when there is a significant change to facilities or activities. This ensures that cost estimates and financial guarantees are kept up to date.

Cameco also has a site-wide decommissioning plan and schedule for the orderly planning, scheduling and execution of reclamation activities, taking into account risks and benefits. Annual updates and progress or changes to this plan are reported in the Annual Compliance Report.

Some examples of activities, going forward, are the implementation of the decommissioning of the waste rock piles as discussed in our slide number five and Cameco's development of the progressive reclamation plan for the aboveground tailings management facility.

This is a recent photo of the Key Lake's aboveground tailings management facility. Tailings were deposited into this line facility from 1983 to 1996 and the system which collects seepage from it continues to send water to the mill for treatment. Cameco continues to use this facility for approved disposal of contaminated materials.

The general concept for reclaiming the facility is to landfill an area with waste, test

engineered vegetative covers and to have a final design which looks similar to the natural landscape.

This concept has been presented by Cameco Key Lake to regulators, the EQC and Aboriginal leaders. CNSC staff conclude that Cameco continues to meet regulatory requirements for decommissioning.

Cameco has proposed a financial guarantee of \$225 million. This includes all current facilities as well as any planned facilities to 2018. The revised cost estimate is similar to Rabbit Lake operation and includes, new infrastructure, for example as seen in this photo, the new acid plant and sulphuric acid tanks and inflation, higher labor, material and maintenance costs. The estimate is acceptable to the Saskatchewan Ministry of Environment.

CNSC staff conclude that the revised decommissioning plant and cost estimate is acceptable and meets regulatory requirements.

CNSC staff conclude that Cameco's performance has been satisfactory; that Cameco has the necessary programs in place to continue to operate the Key Lake facility in a safe manner for the protection of workers, the public and the environment; that the financial guarantee is acceptable and meets regulatory requirements; that CNSC staff will continue to assess and

verify, through ongoing compliance activities, Cameco's performance during the licence term.

CNSC staff recommend that the Commission approve the licence renewal and financial guarantee for Cameco's Key Lake operation.

This concludes my presentation. Thank you.

I will now pass this over to Sarah Eaton for her presentation on the McArthur River operations.

**MS. EATON:** Good evening. I will present CNSC Staff's assessment and recommendations on the proposed licence renewal for Cameco's operation at McArthur River.

I'll begin my presentation with an overview of Cameco's operation at McArthur River and a brief history. This will be followed by a summary of Cameco's performance during the licence term with a focused discussion on three key safety and control areas: radiation protection, conventional health and safety and environmental protection. Finally, I will present the updated financial guarantee, CNSC staff activities going forward and CNSC staff conclusions.

The image on the right shows Cameco's operation at McArthur River with the main shaft, Shaft 1, located in the centre of the image.

This slide shows an overview of the

facility, the slurry load-out building and three shafts are on the left side of the image. The mineralized and potentially acid generating waste rock piles are on the right side of the image. The monitoring ponds are shown on the top right.

Water use in the underground is pumped to surface and treated in the water treatment plant. The monitoring ponds hold the water until it is confirmed to be safe for release. Once confirmed, the water is released into the environment. The underground mine can be accessed through Shaft 1 and Shaft 3. Shaft 2 is used exclusively for ventilation purposes. Uranium ore is mined underground, ground into a slurry, pumped to surface to the slurry load-out building and placed in specially designed containers. These containers are then shipped to Key Lake.

This slide shows a condensed history of McArthur River. The McArthur River deposit was discovered in 1988 and was subject to a joint federal/provincial environmental assessment in 1996 and 1997. The environmental assessment concluded that, with mitigations, no significant adverse effects were expected with the operation of the mine.

In 1999, the Atomic Energy Control Board issued licences allowing Cameco to construct and operate

the facility. The first ore was removed in 1999.

In April 2003, there was a mine water inflow. This resulted in a suspension of underground mining, while crews worked to shut off the inflow. During the inflow, larger volumes of water was treated in the water treatment plant.

The effluent quality remained within regulatory limits. CNSC staff instructed Cameco to conduct a detailed investigation. Staff independently assessed Cameco's findings and provided comments on the investigation reports.

Stemming from the event, Cameco was required to reassess its water management strategy. This included the need to install more pumping capacity underground and upgrades to the contingency water treatment plant.

Staff reviewed the designs for these changes and verified their implementation during subsequent compliance inspections. CNSC staff briefed the Commission and the public regularly during this time period to provide updates on staff activities regarding the event.

In 2008 in response to staff concerns, Cameco implemented changes to its existing water treatment plant to further reduce molybdenum concentrations in

treated effluent. Since 2008 Cameco has achieved a reduction of over 80 percent in molybdenum concentrations.

The current licence was issued in 2008 for a five-year term, expiring October 31<sup>st</sup>, 2013. In 2011, CNSC staff provided the midterm update to the Commission and we're here today to recommend a 10-year licence renewal for Cameco's operation at McArthur River.

I'll now discuss Cameco's compliance performance.

At the 2008 relicensing hearings, CNSC staff rated management system, human performance and fire protection as below expectations.

Cameco improved their programs and implementation of these programs during the licence term. Staff verified the improvements during compliance inspections, meetings and report submissions. Since 2010, staff rated all safety and control areas as satisfactory.

Radiation doses and treated effluent remained well below the regulatory limits. Releases were kept as low as reasonably achievable through established radiation and environmental protection programs. Worker health and safety was managed using effective programs.

The photo on the right shows a slurry truck being loaded at the slurry load out building. During joint inspections with CNSC and the Province of

Saskatchewan inspectors we conduct inspections on these facilities ensuring proper signage and contamination control.

Joint inspections with the Province of Saskatchewan inspectors are an important part of staff's compliance program. CNSC staff rate Cameco's performance over the licence term as satisfactory.

From November 2008 to present, CNSC staff conducted 23 compliance inspections, including focused inspections on training, radiation and environmental protection, emergency response and fire protection, training and management system. All deficiencies identified in these inspections were addressed and closed.

The picture on the right shows CNSC staff inspecting service facilities in June 2012. Contaminated materials are stored on surface until they can be shipped to Key Lake for disposal or disposed of underground in the mine. The CNSC verifies compliance to ensure the health and safety of workers, the public and the environment.

CNSC staff reviewed Cameco's performance and compliance through desktop reviews, including the review of monthly, quarterly and annual reports, reportable incidents and events such as spills, worker injuries or dangerous occurrences and project-specific applications.

In response to two radiation action levels, Cameco was required to review activities associated with long-lived radioactive dust. Cameco identified additional controls were necessary. Examples of these controls include activity-specific dust monitoring and enhanced work planning in areas with a potential for higher levels of long-lived radioactive dust.

As an example, when working on turned off freeze pipes, additional, personal protective equipment is required and enhanced dust monitoring is completed by radiation protection staff.

Staff verified Cameco's implementation of the additional controls during compliance inspections and will continue to include long-lived radioactive dust controls during the proposed licence term. Staff are satisfied with Cameco's actions.

The image on the right shows CNSC staff inspecting an active freeze well underground. The CNSC verifies compliance to ensure the health and safety of workers, the public and the environment.

I'll now focus on radiation protection. In preparation for relicensing, Cameco submitted an updated radiation protection program. CNSC staff reviewed the program and found it met regulatory requirements. The program describes how radiation exposures are kept as low

as reasonably achievable.

Staff include radiation protection in all compliance inspections. For example, CNSC inspectors check that ventilation is adequate. The image on the left shows the raise bore mining machine with direct exhaust. The exhaust, which is the white tubing at the top of the image, captures radon and directly exhausts this to surface. This helps ensure that workers are protected from radiation exposures from radon.

Radiation doses at Cameco's operation at McArthur River are well below regulatory limits as I will discuss shortly. CNSC staff verified through compliance activities that workers are being protected through established radiation protection programs.

This graph illustrates the annual effective radiation doses to workers from 2008 to 2012. The effective dose is along the left of the graph and the year along the bottom. The average worker dose and the maximum individual doses are shown.

As you can see, both the average and maximum effective doses to workers continues to be well below the annual regulatory limit of 50 millisieverts per year which is shown as the red line at the top of the graph.

Over the licence term, Cameco increased

uranium production of high grade ore. During this period of increased ore production, Cameco reported a reduction in both average and maximum radiation doses to workers.

CNSC staff confirm that radiation exposures are being adequately controlled and monitored and that workers at Cameco's McArthur River operation have radiation doses well below the CNSC limit.

I will now present information on conventional health and safety.

CNSC staff include conventional health and safety in compliance inspections. Cameco reported eight lost time incidents during the licence term. As an example, in 2012 there was one lost time incident which resulted in a finger injury while working underground. Staff reviewed the investigation report and verified all corrective actions implemented in follow-up compliance inspections.

During the licence term there was a steady increase in the number of workers onsite. With more workers onsite, Cameco reported a decrease in injury severity rate and a steady frequency rate.

The image on the right shows uranium mine and mills inspectors and geoscientist specialists reviewing ventilation drawings in March 2012. Ensuring adequate ventilation is an important component during

compliance inspections.

CNSC staff verified through compliance activities that health and safety programs are protecting workers.

During the licence term, Cameco had satisfactory safety performance. In addition to improving trends in injury statistics, staff noted Cameco's safety performance during compliance inspection.

The John T. Ryan Award is given to the safest metal mine in Canada by the Canadian Institute of Mining and Metallurgy. Cameco was the recipient of the regional trophy in 2010 and 2011, and the national award in 2009. Cameco was the winner of the Saskatchewan Underground Mine Rescue Competition in 2013 and travelled to the Canadian competition in September.

The image on the left shows CNSC staff entering the cage to go down the shaft. Many underground employees are contractors.

During compliance inspections, the CNSC includes contractors and verifies Cameco's oversight of contractors. Staff verified through compliance activities that health and safety programs are protecting workers and that Cameco and its contractors have an ongoing commitment to safety.

I will now discuss Cameco's performance

regarding environmental protection. As a uranium mine, Cameco releases effluent to the environment. Treated effluent concentrations remained well below licence limits during the licence term with reductions in some parameters.

For example, Cameco reported an 83 percent reduction in molybdenum concentrations from 2008 to 2012. This is a significant reduction. Staff are satisfied that Cameco is controlling its releases.

During the licence term, Cameco reported a number of small spills which were cleaned up with no long-term impacts to the environment.

The volumes of these spills are generally small. For example, in 2012 Cameco reported three spills. Two were less than 100 litres and one was less than 200 litres. The spills were immediately identified, the area cleaned up and the incident reported to federal regulators. The environment was not affected.

Cameco uses weekly environment topics to increase awareness of environmentally responsible behaviours at its facility. These topics are shared with both Cameco employees and contractors. Staff reviewed these topics during compliance inspections.

CNSC staff are satisfied with Cameco's performance and have rated them as satisfactory for

environmental protection.

During a compliance inspection in 2010, CNSC staff identified a deficiency in training documentation for environment staff. Staff directed Cameco to review the program, which was completed in a timely manner.

Cameco implemented a number of corrective actions. CNSC staff verified the actions taken and, in a follow-up inspection, noted an improvement in the training program. The deficiency did not affect Cameco's operations significantly and had no impact on the downstream environment.

One incident which occurred in 2012 merits additional discussion. In October, a small release of water with elevated PH and total suspended solids was released to the environment. Downstream samples were collected and there was no increase in these parameters, indicating that there was no impact to the environment.

Following the incident, Cameco implemented engineering controls which will prevent reoccurrence. CNSC staff verified the implementation of the corrective actions during follow-up inspections in 2013.

CNSC staff are satisfied that Cameco has and will continue to operate the facility safely.

Financial guarantees are required for

uranium mines and mills. In preparation for relicensing, Cameco proposed a financial guarantee of \$48.4 million. This includes all current facilities, as well as any planned facilities to 2018. The revised financial guarantee includes additional infrastructure on surface and underground, inflation, and increased labour and material costs for decommissioning.

CNSC staff conclude that the revised decommissioning plan and cost estimate is acceptable and meets regulatory requirements.

During the proposed licence term, staff will continue our comprehensive compliance program. This includes conducting regular compliance inspections on all 14 safety and control areas, with specific focus on management systems, operating performance, radiation protection, environmental protection and conventional health and safety.

Staff will continue to review the regular reports we receive from the licensee and conduct detailed reviews of these reports and project-specific applications.

As underground mines are continually expanding and changing, it is expected that Cameco will apply to make modifications to its facility during the licence term. These proposed activities or modifications

will be assessed by CNSC staff through the Licence Conditions Handbook. Any application that is determined to be outside the licensing basis will be brought back to the Commission for a decision.

CNSC staff will continue to verify compliance of Cameco's operation at McArthur River.

In conclusion, CNSC staff note Cameco's satisfactory performance over the licence term. Cameco has the necessary programs in place to continue to operate the facility in a safe manner for the protection of the workers, the public and the environment.

Cameco's proposed financial guarantee is acceptable and meets regulatory requirements.

Staff will continue to assess and verify, through ongoing compliance activities, Cameco's performance during the proposed licence term.

CNSC staff recommend the Commission approve the licence renewal and financial guarantee for Cameco's operation at McArthur River.

This now concludes our presentation for Cameco's operation at McArthur River.

I will now turn the presentation to Mr. Glenn Groskopf to present CNSC staff recommendations and conclusions on Cameco's Rabbit Lake operation.

**MR. GROSKOPF:** Thank you, Sarah.

For the record, my name is Glenn Groskopf. I am currently the Project Officer responsible for managing the licensing and compliance activities associated with the regulation of Cameco Corporation's Rabbit Lake Project.

Cameco has applied to renew the licence for its Rabbit Lake uranium mine and mill. This presentation contains CNSC staff's assessment of the licence application.

I will begin my presentation by providing an overview of the Rabbit Lake site and the status of the licence condition requiring reclamation at the site.

A brief summary of the performance of Rabbit Lake operation and the proposed financial guarantee will follow. The path, going forward, will be described and, finally, the conclusions of CNSC staff will be presented.

I will now describe the layout of the Rabbit Lake site. The Rabbit Lake operation has both active and inactive facilities. The major active components are shown on the slide in white lettering. The inactive areas are highlighted in green lettering and the focus of the reclamation activities.

Moving from north southward, or from left to right on the air photo image, the Eagle Point

underground mine lays on the left margin of the image. The ore from this active mine is trucked to the mill.

Moving southward are the mined-out A-, D- and B-zone deposits which lie along the shore of Collins Bay on Wollaston Lake.

The operating Rabbit Lake uranium mill and the Rabbit Lake in-pit tailings management area are in the central area of the image. The link lakes identified in blue lettering in the mid portion of the image are immediately east of the Rabbit Lake pit and were impacted by early mining activity.

The inactive aboveground tailings management facility is south of the mill on the right side of the image.

The northern portion of this facility is used for low-level solid waste and will continue to be used for this purpose over the proposed licence term.

On the right or southern margin of the photo, treated effluent is released to Horseshoe Creek which comes to enter Wollaston Lake at Hidden Bay.

In total, the Rabbit Lake site spans some 20 kilometres along the western shore of Wollaston Lake.

Uranium mining and milling at Rabbit Lake began almost four decades ago, in 1975, with the open-pit mining of the Rabbit Lake deposit. Tailings generated

from the mining of this ore were placed in an aboveground tailings management facility, shown in the earlier slide.

The mid-1980s marked the completion of mining of the Rabbit Lake deposit, its conversion to an in-pit tailings management facility, closure of the aboveground tailings facility and a major refurbishment of the mill. Open-pit mining of the B-Zone deposit followed.

In 1993, a federal panel assessed the then-proposed D-Zone and A-Zone open pits and the Eagle Point underground mines and concluded that, with mitigations, mining could commence with no significant adverse effects.

The sequential mining of the D- and A-Zone deposits has been completed.

The Eagle Point underground mine commenced in 1994 and is currently the only operating mine at Rabbit Lake.

With an expansion, the Rabbit Lake in-pit tailings management facility continues to be the repository for tailings at the site.

In response to CNSC concerns over the last decade, Cameco has initiated effluent treatment changes which have reduced uranium, molybdenum and selenium concentrations and their loadings to the environment.

Lastly, a mill rejuvenation project is nearing completion. Several components of the mill have

come to be replaced or upgraded, which has positively affected the performance of the mill. Replacement of the acid plant has directly resulted in reduced sulphur dioxide emissions.

A condition in the licence renewal in 2008 required Cameco to provide a site reclamation plan and implement the plan. A reclamation plan developed by the licensee was reviewed and approved by the CNSC and other regulatory bodies in 2009.

Cameco's comprehensive plan covers the entire site, focusing on the inactive areas, A-Zone, D-Zone, B-Zone, the aboveground tailings management facility and the link lakes.

The reclamation of the A- and D-Zone areas has been completed. The mined-out pits were partially backfilled, flooded, and only when the pit water quality was demonstrated to be of acceptable quality where the dykes breached connecting the flooded pits to Wollaston Lake.

The water in the pits remains of good quality. The disturbed areas and mine rock piles around the pits have been re-vegetated.

The reclamation activities at the B-Zone are well advanced. The partially backfilled and flooded B-Zone pit remains isolated. Its improving water quality

remains under surveillance as final reclamation plans are developed.

The B-Zone mine rock pile, shown in the picture on the right, was shaped, an engineered cover placed on it and the surface has been hydroseeded. Comprehensive monitoring of this pile and its cover have begun.

The legacy contamination of the Lynx Lakes has been under active study and a decommissioning plan is being developed by Cameco based on recent investigations.

A progressive reclamation of the above ground tailings management facility is continuing. The outer slopes of the facility have been contoured and armoured for long-term stability.

As an interim measure, all tailings have been covered with till, hydroseeding portions of the cover has been completed. Cameco continues to design the final cover for the facility.

In consideration of the plans and works completed to date, CNSC staff conclude that the reclamation activities at the Rabbit Lake Operation are progressing and performance is satisfactory.

I will now discuss CNSC regulation of the Rabbit Lake facility. Over the last five years, CNSC have conducted compliance activities, including focused

inspections on radiation protection, conventional health and safety, environmental protection, waste management, emergency response and fire protection, training and management systems.

All deficiencies identified in these inspections were addressed and closed. CNSC staff reviewed Cameco's submissions for regulatory compliance and environmental performance.

As I will present in later slides in more detail, Cameco's Rabbit Lake operation is in regulatory compliance and has satisfactory performance.

Technical assessments were conducted by CNSC staff on incident reports, special studies and proposals with the objective to confirm that workers, the public and the environment are protected.

I will now discuss Cameco's compliance performance. At the 2008 licence renewal hearings, staff rated Cameco's management systems, human performance and fire protection components as below expectations.

Consequently, Cameco has had to improve their programs. Staff verified the improvements through focused inspections and compliance activities.

Since 2010, CNSC staff have rated all the safety and control areas as satisfactory.

In the following slides, I will describe

the performance of Cameco's Rabbit Lake operation in the areas of radiation protection, conventional health and safety and environmental protection.

The uranium mines and mills regulations and the radiation protection regulations require that Cameco's Rabbit Lake operation put in place adequate engineering and administrative controls, including a radiation monitoring program to control and minimize worker radiation exposure to keep them below regulatory limits and as low as reasonably achievable, or ALARA.

During the licence period, CNSC staff verified through compliance activities that Cameco's radiation protection program is well developed, implemented and supported and meeting the regulatory requirements. The performance of the radiation program is rated as satisfactory.

CNSC staff verified improvements in the areas of radiation protection, consistent with the application of ALARA during the licence period. As shown in the following slide, radiation doses to workers are well below the regulatory limit.

This graph illustrates the annual effective doses to Rabbit Lake workers since 2008. The average worker dose is the blue bar and the maximum individual dose is the red bar. The limit is shown as the red line

at the top of the graph.

The average annual dose to workers remains well below the 50 millisieverts per year regulatory limit with a maximum individual worker dose only being about a quarter of this limit.

CNCS staff confirmed that radiation exposures are being adequately controlled and monitored. Workers are safe.

CNSC note -- CNSC staff note that consistent performance of the radiation program have been over the last decade.

I will now -- excuse me. I will now discuss conventional health and safety at Rabbit Lake. CNSC staff work closely with the province to provide regulatory oversight of conventional health and safety in uranium mines and mills.

Routine compliance verification activities include inspections and reviews of incident and annual compliance reports. All safety incidences were reported in compliance with the regulations.

CNSC staff identified contractor safety, particularly at that Eagle Point Mine as an area for improvement during the previous licence hearings. Cameco has implemented a contractor management program where contractors are required to understand and comply with

Rabbit Lake safety policy and program.

CNSC staff reviewed and implemented -- sorry. CNSC staff reviewed and verified implementation of the program and that safety continues to be the focus for both contractors and staff at Rabbit Lake.

Over the licence period, the Rabbit Lake operation has come to implement Cameco's corporate-wide initiative to address safety at its sites.

CNSC staff confirm through inspections and incident reviews that Cameco is using the system and the company is continually improving upon it.

Since 2008, there were 17 lost time instances. It is notable that the majority were in the first two years, with only three lost time instances since 2010. All safety-related instances were properly investigated and the resulting corrective actions were acceptable to both CNSC staff and the province.

I will now present a summary of Cameco's performance regarding environmental protection.

In the CNSC licence, Cameco is required to conduct a comprehensive monitoring program of the air, water and nearby environment. CNSC staff review and approve the monitoring program and verify the conduct of the program by Cameco.

The collected data is reviewed and assessed

by staff to verify that the environment is protected. During the licensing period, the concentrations of parameters and the treated effluent were well below the effluent discharge limits and the effluent passed all quality tests. There were no exceedances of action levels contained in the environmental code of practice.

CNSC staff assessment of the results of environmental monitoring confirm that any effects are localized and that Wollaston Lake and the region are protected.

Cameco reported a number of minor spills to both the provincial and federal regulators. CSNC staff reviewed and -- reviewed the corrective actions implemented and verified that spills were tracked, reported and the area cleaned up.

Over the last decade, environmental risk assessments and monitoring programs indicated the need for improved effluent quality of Rabbit Lake operation by reducing uranium, molybdenum, and to a lesser extent, selenium concentrations in the effluent.

Uranium reduction circuits began treating effluent in 2007. The concentration of uranium in the effluent was subsequently reduced to meet treatment objectives. During the current licence period, the treatment system remained effective in sustaining the

reduction of uranium in the effluent.

In the fall of 2009, Rabbit Lake upgraded the effluent treatment system to selectively reduce the concentrations of molybdenum and selenium in the effluent. As a consequence, the concentration of molybdenum was reduced by 80 percent while selenium was reduced by 30 percent.

CNSC staff are satisfied that the effluent treatment system is performing well. Environmental protection at Rabbit Lake is rated satisfactory.

Financial guarantees are required for uranium mines and mills to cover the costs associated with the final decommissioning of the operation. These guarantees are revisited every five years so as to reflect any changes and remain current.

In preparing for a licence renewal, Cameco proposed a financial guarantee of \$202.7 million. The CMD incorrectly cites the valuation of the financial guarantee as \$201.9 million.

Incorporated in the estimated decommissioning cost is the revised costs associated with the in pit tailings management facility, inflation, increased labour and material costs, and the new infrastructure to be added to the site. The financial guarantee is similar in magnitude to that of the Key Lake

uranium operation.

CNSC staff conclude that the revised decommissioning plan and the costs estimate is acceptable and meets regulatory requirements.

During the proposed licence term, staff will continue our comprehensive compliance program. This includes conducting regulatory compliance inspections on all 14 safety and control areas which includes radiation protection, environmental protection, and conventional health and safety.

Staff will continue to review the regular reports we receive from the licensee and to conduct detailed reviews of any applications.

Mining and milling are dynamic activities with continual change and improvement. It is expected that Cameco will apply to make modifications to its facility during the licence term.

These proposed activities or modifications will be assessed by staff through the License Conditions Handbook. Any application that is determined to be outside the licensing basis will be brought back to the Commission for a decision.

CNSC staff will continue to verify compliance with Cameco's operation at Rabbit Lake.

CNAC staff conclude Cameco's performance

over the licence term is satisfactory.

Cameco has the necessary programs in place to continue to operate the facility in a safe manner for the protection of workers, the public and the environment. Cameco's proposed financial guarantee is acceptable and meets the regulatory requirements.

CNSC staff will continue to assess Cameco's performance during the licence term. CNSC staff recommend that the Commission approve the licence renewal and the financial guarantee for Rabbit Lake.

This concludes staff presentations on the license renewals for Cameco's Key Lake, McArthur River, and Rabbit Lake operations.

**THE CHAIRMAN:** Thank you.

Okay, there is a lot of information that we have to absorb now.

It's 10:30; we are way behind schedule already. We had the intention to deal with the presentation of Dr. Dale Dewar and we're hoping that also Dr. James Irvine will be in the audience at the time so that we can discuss all of this, but I don't think that we all can continue to do it today.

So, Dr. Irvine, are you going to be here tomorrow?

**DR. IRVINE:** Yes.

**THE CHAIRMAN:** Okay. So what I propose to do is for us to reconvene tomorrow at 8:30, I believe, and we will start with Dr. Dewar's presentation, and we'll deal with this and hopefully Dr. Irvine can help us with this. Okay?

Thank you, goodnight.

--- Upon adjourning at 10:25 p.m./

L'audience ajournée à 22h25