HEARING DAY 1

Cameco Corporation: Application for a licence to operate the McArthur River Operation

THE CHAIRPERSON: Thank you very much.

Then we will now move to Agenda Item No. 6, which is Hearing Day 1 for Cameco Corporation's application for a licence to operate the McArthur River Operation.

July 10th was the deadline set for filing by the applicant and the CNSC staff and both met the deadline.

August 1st was the deadline for filing supplementary information for the Applicant and for the Commission staff.

The Applicant met the deadline and staff did not provide supplementary information on this.

I would like to start by the oral presentation by Cameco Corporation as outlined in CMD Documents 01-H21.1 and 01-H21.1A.

THE CHAIRPERSON: Monsieur Michel.

01-H21.1/01-H21.1A

Oral Presentation by Cameco Corporation
MR. MICHEL: Madam Chair, this will be presented by John Jarrell first of all, supported by Bill Wakabayashi, who is General Manager of McArthur River and Key Lake for Cameco.

With your permission, I will ask John Jarrell to present the matter.

MR. JARRELL: Thank you.

For the transcript record of the hearing, my name is John Jarrell and I am Vice-President, Environment Safety for Cameco Corporation.

What I would like to do this afternoon is give you a very brief overview of our written submission.

While Rabbit Lake may be the oldest uranium mine, McArthur River is the youngest. Cameco and its predecessor have been active on the site for over 20 years. The main discovery was made in 1988 and we undertook a seven-year underground exploration and approval process prior to the start of construction.

A two-year construction period followed, then approval to operate in late 1999 by way of the issuance of the current licence. The operation is owned by both Cameco and COGEMA.
This is a picture of the site. I think what I am trying to show you here is that it is a relatively compact minesite.

You can see shaft No. 2 in the foreground in the bottom left-hand corner of the picture outfitted with exhaust fans.

You can see the main shaft or the Pollock shaft. It is fairly obvious from the headframe in the background on the right-hand side of the picture.

You also note a fairly extensive use of paving, which is somewhat unique for a minesite.

As might be expected, commissioning and start-up were not without their challenges. This slide tries to outline the main issue that we had to deal with during that period of time, specifically a change in the ore collection method.

A transportable mining unit, which was the device that we designed to collect the ore from the bottom of the raise, was replaced with a simpler ore collection chute.

The issue was really essentially one of rock characteristics below the ore which
was not seen during the commissioning work that was done in waste rock.

The change that we made was primarily made for safety and for radiation concerns. I would say as well, though, it was also made for efficiency, in other words the time that a raise is spent open.

The development alternative that we ended up with was introduced into the process in sort of a phased method. It involved a fair number of trials and reports.

Other changes that are listed in this slide include the fixed screening unit which was installed -- and I will show you a picture a little later -- was installed to reuse the ore storage capacity that was built into the circuit in the first place.

We also have a change in the ore tramming route in order to keep as much of the ore tramming route in fresh air as possible.

We sought approval for and received approval to develop a conventional ore haul procedure for material that was less than 2 per cent uranium.

We developed an underground water
recycle program and a change was also made in the backfill aggregate requirements in order to use more of the potentially acid generating waste rock which has developed.

Three other changes which are under way or proposed at present are listed on this slide, specifically the development of an underground ore storage area for process upsets, modifications to the ore slurry transportation operation and modifications to the waste rock scanning procedure.

This is an isometric view of the mine which shows the Pollock shaft or the main shaft, as well as the No. 2 and No. 3 shafts, No. 2 being the exhaust shaft and No. 3 being the supplementary air intake shaft.

It also shows that the mine has been developed at two primary levels, at the 530 metre level, which is the mining level, and a 640 metre level or production level.

It also shows isometrically the first four zones of mineralization on this property.

If you look very carefully, there are a couple of thin lines there which are the
slurry hoisting lines to the surface.

This schematic represents the type of general configuration that we find for the main ore deposit and the relative position of the two level developments.

A freeze carton has been established to prevent high pressure flowing water from entering into the mine.

Calcium chloride brine is chilled to minus 35 degrees celsius in the 700 tonne per day ammonia freeze plant on surface. For trivia buffs, the freeze plant is large enough to service 27 NHL arenas I am told.

The brine is piped to the 530 metre level into freeze holes drilled 100 metres into the ore body at about a two metre interval spacing.

In this plan view, the freeze holes are represented by blue crosses. The freeze holes extend down approximately 100 metres. This freeze curtain separates the water-bearing sandstone from the ore. Raises are depicted by the green circles.

The raise bore mining method involves drilling a 300 millimetre diameter hole
down from the 530 metre level to the 640 metre level. The hole is probed to define the ore interval and then the reamer head is attached to the drill rods and pulled up through the ore.

The ore cuttings are collected in the ore collection chute below the raise and hauled to either a SAG mill grizzly or this fixed screening unit, which I mentioned earlier, by remote scoostram.

The reamer rotates as it bores its way up through the rock into the ore. This mining method ensures that workers do not enter the ore area.

A remote breakout tool is used to remove the reamer head after completing mining of a specific raise. The use of remotely operated equipment reduces worker exposure.

Here is a picture of the raise bore machine at its upper level. In general, the accuracy of the pilot hole system has been very acceptable and the reaming rates have been as expected. Efforts continue to improve upon set up and move times and the time necessary to drill these pilot holes.

The function of the original
transporting mining unit was to capture the mined ore, screen it and pumped the undersized to coarse ore storage bins.

Early on in the mine commissioning a failure of this unit occurred due to unexpected ground conditions. The raise became blocked with rocks and clay and then became saturated with groundwater.

It was recognized that a potentially dangerous situation existed and the drift was evacuated and roped off. Approximately three hours later there was a liquefaction of this material in the raise, resulting in approximately 30 tonnes of rock being released into the extraction chamber.

This is a picture of the transportable mining unit replacement. It is clearly a simpler mechanism, easier to monitor from a distance.

The scrubber system, which is shown on the right, draws long-lived radioactive dust, radon gas and radon progeny from around the ore collection chute, thereby providing a measure of secondary containment.

Radon rich air, downcast air from
the raise, travels in the return air drift and is
exhausted up shaft No. 2. Workers are not allowed
down wind of the ore collection chute without
respiratory protection.

The scooptram is situated under
the ore collection chute in the extraction chamber
and operated remotely to allow the operator to
stand in fresh air and well back from the ore.

Once in place, the filling
operation is monitored by closed circuit
television.

Mining stops when the bucket is
approximately 70 per cent full. The scoop is
backed out of the extraction chamber in remote
control mode and the ore is dumped into the mill
for processing.

This picture shows the ore
scanning station to determine uranium content.
All buckets are scanned and mineralized material
is either sent through the underground grinding
circuit or hauled to surface, depending on grade.

This picture shows the
semi-autogenous or SAG mill. The ore is ground
into a water-based mud or slurry and I would say
that controlling the particle-size distribution is
probably the most important control aspect of this operation.

This picture shows the fixed screening unit which was built from the original transportable mining unit or TMU. It permits use of the coarse ore storage bin, as I mentioned earlier.

Ground and classified ore is thickened to approximately 50 to 55 per cent solids in one of two thirteen metre diameter underground thickeners. Note the cover installed to control radon and radon progeny emissions from this vessel.

Finally, positive displacement pumps raise the slurry to surface.

In the surface slurry load-out building ore is blended to produce a consistent grade. It is thickened again in a surface thickener and loaded into specially designed ore slurry containers which are shown here.

So, in summary, the mining sequence involves the following: First, pilot hole drilling, followed by raise boring, followed by isolating the bottom of the raise with a high strength concrete plug and then backfilling the
raise from the upper level.

Several operational changes and procedural changes were required in the milling or ore processing end of the underground process. The root cause of the necessary changes was variable characteristics of the ore.

The challenge before us is to produce a consistent product to avoid plugging and regrinding requirements. McArthur River has been successful in ramping up its production rate over the last 18 months since commissioning and start-up commenced.

Although McArthur River, in conjunction with Key Lake, was awarded the 1999 John T. Ryan Award, there was room for improvement, particularly with regard to mine development work.

Contractor performance in 2000 was not judged satisfactory by either Cameco or the contractor.

Although development work has slowed down, focus will continue to be placed on assuring that good safety performance is achieved by all people working at the site.

The other priority issue has been
assured safe performance of the shaft conveyance system.

While conventional safety performance may be judged less than desired in 2000, radiation safety performance is another story. We achieved good performance despite the newness of the activity that we were undertaking. Radiation safety is, I believe, a cornerstone of this operation and we believe that the technical design of the process is fundamentally sound.

The radiation safety program has, we believe, been responsive to changing operating conditions. The ALARA focus has been on basically three things: start-up incident investigations, establishing baseline conditions and focusing on reducing potential impacts from upset conditions.

Other priorities are housekeeping and efficiency of the radiation monitoring program.

This slide shows the year 2000 radiation exposure broken down by work group and exposure sources.

As expected, the underground workforce has the highest exposure levels relative to surface workers.
The effluent treatment system has operated well. No significant concerns have been identified in air quality monitoring. There were two minor SERM reportable spills during the licensing period.

The site has an active four hour recycle program and plans to install a new on-site contaminated garbage incinerator to further reduce waste inventories.

In the areas of community consultation, two meetings were held with the Environmental Quality Committee during the current licensing period.

One was related to radiation protection for workers to give them an overview of what information was given to workers.

The other was associated with the relicensing of the operation for SERM relicensing.

We were also involved with what is called a Mudjatik Co-Management Board which basically deals with road access issues on the road between Key Lake and McArthur, and also the Northern Labour Market Committee. Activities are coordinated out of an office in La Ronge in northern Saskatchewan.
The focus in decommissioning is obviously on revegetation, specifically revegetation of lands affected by the original construction activity. Priority is also given to controlling future waste rock liability and the decommissioning of the original site access road.

We hope to ramp up production to license production levels over the next licensing period and investigate the feasibility of increased production rates.

Beginning in the year 2003 we will need to supplement production from Zone 1 and by the year 2005 we will need to commence mining from Zone 4, subject, of course, to favourable outcome of the current licensing process.

We will need to test alternative Zone 4 mining methods. We will need to complete Shaft No. 3. We will need to enhance water pumping capabilities and continue to develop the new management systems such as were described earlier under the Rabbit Lake hearing.

In summary, we believe that McArthur River has demonstrated a high level of commitment to safety, particularly radiation safety, has given ongoing priority to radiation
safety, not just in design and construction, and has met its challenges in a responsible fashion.

McArthur River has also demonstrated ongoing commitment to reclamation and dialogue with our northern neighbours.

We therefore respectfully request that the Commission give favourable consideration to renewal of the McArthur River licence.

We also request consideration for extending the license period, given the fact that the mine plan over the next several years is generally set subject to articulation and acceptance of detailed mine development plans.

Thank you for your attention.

THE CHAIRPERSON: Thank you very much.

With the permission of the Commission Members, I would like to turn to the presentation by the CNSC staff before we open for questions.

Therefore, I would turn to the oral presentation by CNSC staff as outlined in CMD Document 01-H21 and turn the floor over to Mr. Pereira.
01-H21

Oral Presentation by CNSC Staff

MR. PEREIRA: For the record, my name is Ken Pereira. I am the Director General of the Directorate of Fuel Cycle and Materials Regulation.

The McArthur River mining facility has been subject to regulatory control by the AECB and more recently by the CNSC since 1990.

An operating licence for the facility was granted in October 1999 and the commercial production rate was achieved late in 2000.

Over the term of the current licence, CNSC staff has conducted a number of inspections and has undertaken several assessments of the licensee's managed programs.

They have reviewed and approved a number of initial changes in the mining process. An overall evaluation of the licensee's performance is presented in CMD 01-H21.

I will now pass the presentation over to Mr. Barclay Howden, who is the Director of the Uranium Facilities Division.

MR. HOWDEN: Madam Chair, Members
of the Commission, my name is Barclay Howden.

For the McArthur River operation I would like to brief you on the environmental assessment history of this site and how it links to the Key Lake operation.

As well, I would like to note that the corporate QA issue spoken about earlier applies to this hearing and the following hearing on Key Lake.

I will not speak further on this latter issue, as the details are contained in the respective licensing CMDs.

With respect to environmental assessment, in April 1991 the Governments of Canada and Saskatchewan announced a joint federal-provincial environmental review of five proposed uranium mine developments in northern Saskatchewan.

The joint federal-provincial panel on uranium mining developments was appointed in August 1991 to conduct a public review of the proposed developments. Included in the review was a proposal to mine the McArthur River ore body and to mill this ore at Key Lake with Cameco Corporation as the operator.
Prior to the preparation of its environmental impact statement, Cameco indicated a need to assess the nature of the McArthur River ore body at depth and to carry out test mining activities.

The test mine proposal was reviewed by the joint panel. Following public hearings held in December 1992, the panel submitted a report with recommendations in January 1993. The project was licensed by the Atomic Energy Control Board under a mining facility excavation license and was allowed to proceed.

The Key Lake operation had previously undergone a provincial environmental assessment review and was already licensed by the AECB to mill Key Lake ore.

Cameco submitted its environmental impact statement for McArthur River in December 1995 and an addendum to this information in June 1996. This proposal included underground mining at McArthur River, the processing and disposal of mill tailings at the Key Lake site and the building of a road from the McArthur River mine to the existing Key Lake mill.

The joint panel held public
hearings in September and October of 1996 and submitted a report with recommendations in February 1997. The joint panel recommended that the project be approved subject to certain conditions.

The Government of Canada responded to the joint panel's report in May 1997. The federal response took into account the fact that recommendations on technical, environmental and safety issues would be addressed during the normal phased licensing process of the Atomic Energy Control Board.

AECB staff took the joint panel's recommendation and the federal response into consideration when looking at the applications for Cameco for approval to mine the ore at McArthur River and to mill that ore at Key Lake.

Based on this, AECB staff formulated licensing recommendations that were presented to the Atomic Energy Control Board. The Board subsequently authorized mining the ore body at McArthur River and milling this ore at Key Lake.

I will now turn over the presentation to Mr. Rick McCabe, who will provide
you with an overview of CNSC staff's assessment of this facility.

MR. McCABE: Thank you.

I am Rick McCabe.

Cameo's McArthur River operation is currently licensed by the CNSC.

Cameco Corporation has applied for renewal of its uranium mine operating licence for a five-year term.

The Commission is requested to consider issuing a uranium mine operating licence for a 28-month term.

The Applicant is seeking CNSC's approval to continue its uranium mine operation at McArthur River for a five-year period.

The activities requested include the following:

Mining Zone 1 and Zone 2 ore bodies;

test mining of Zone 4 ore bodies;

process uranium ore underground;

package and transport nuclear substances;

operate the Mine Water Treatment Plant;
store waste rock;
handle and store materials and
dispose of hazardous waste;
possess and use nuclear substances
and devices.

This presentation includes the
results of CNSC staff's assessment of the major
programs in place at the McArthur River operation.
CNSC staff finds that with respect
to the radiation protection that Cameco has met
the application requirements.

The year 2000 was the first full
year of ore mining and processing operations. The
average dose for a nuclear energy worker was
1.2 millisieverts and a maximum individual dose
was 9.3 millisieverts. The results indicate that
radiation doses are being adequately controlled at
the facility and are below the limits of
50 millisieverts per year and 100 millisieverts
effective dose in five years.

The proposed action levels for
effective dose of 1 millisievert per week and
5 millisieverts per quarter are considered
acceptable for this licensing period. Action
levels will be reviewed on an ongoing basis to
ensure they remain appropriate.

The radiation protection program in operation at the McArthur River operation has operated effectively during the licensing period and was able to accommodate special projects and evaluations required due to the changes in the mining and processing operations during the commissioning phase.

The radiation protection program is acceptable to CNSC staff.

CNSC staff finds the McArthur River operation's environmental program meets the application requirements in the Act and the Mining and Milling Regulations.

Cameco's policy on environmental protection is comprehensive. It includes commitments to regulatory compliance, pollution prevention, control of environmental impacts to levels as low as reasonable achievable, as well as monitoring and assessment to achieve continual improvements in environmental performance. The policy outlines applicability, accountabilities and programs to achieve these objectives.

The Environmental Code of Practice submitted with the current license application
includes both administrative and action levels.

The Environmental Monitoring Program and results obtained through it are subject to ongoing review by CNSC staff as part of the regulatory compliance activities.

The Environmental Monitoring Program also incorporates an environmental effects monitoring component for aquatic biota. This component of the program requires further evaluation when specific levels are reached in water, fish and macroinvertebrates. The evaluation determines if any effects can be observed as a result of the level having been reached and what follow-up is required, if any.

Air quality monitoring results for 2000 and to the end of February 2001 did not indicate any significant issues.

Results of surface water quality monitoring up to and including February 2001 were compared to Saskatchewan Surface Water Quality Objectives and other applicable criteria intended to protect aquatic life. No significant issues were identified.

Additional environmental and biological effects monitoring conducted in 2000...
did not indicate any significant issues and contributed to strengthening the Environmental Effects Monitoring Program. The next series of biological effects monitoring is scheduled for 2003.

There were no exceedances of the effluent discharge limits during the licensing period.

Based on the program documents and environmental monitoring records reviewed, CNSC staff concludes that the Environmental Protection Program provides adequate provision for the protection of the environment.

Quality assurance program, the same comments as has been made with regard to the Rabbit Lake operation apply to this and I will just move through that.

Given these circumstances and the commitments that have been made, the Quality Assurance program is conditionally acceptable.

I would further make comments on Slide 8 with regard to the roles of Saskatchewan Labour, Human Resources Development Canada. That portion is the same and referred to in the Rabbit Lake presentation.
I will move on to our efforts to co-ordinate reviews with Saskatchewan Labour. Saskatchewan Labour did review the CNSC staff assessment for a licence renewal. Sask Labour's position on the conventional safety program is as follows, and I quote:

"McArthur River has experienced a number of disturbing incidents, particularly in their shafts, but in other areas as well. Our inspectors have investigated these incidents and issued a number of Notices of Contraventions. We have also conducted several training sessions with their site Occupational Health Committee. In the opinion of our inspectors, safety has improved at McArthur River in recent months although we continue to monitor events at this mine closely."
CNSC staff finds, with respect to the conventional health and safety program, that Cameco has met the application requirements specified in the Regulations.

The program, as described in the documentation, is acceptable to CNSC staff.

Cameco Corporation has provided various opportunities for the public to be involved and informed of the McArthur River Operation.

Cameco is part of the Athabasca Working Group. The Athabasca Working Group consists of three uranium mining operators, COGEMA Resources, Cigar Lake and Cameco, for the three projects, McArthur, McClean and Cigar Lake in the Athabasca region, and the seven Athabasca communities.

Cameco involves the South Central Environmental Quality Committee, which consists of appointed representatives from 18 northern communities in the south central region of northern Saskatchewan. They typically meet three or four times a year and are responsible for bringing to the management of McArthur River issues and concerns from the communities and for
reporting back to the communities following committee meetings.

Cameco is also a co-sponsor of "Opportunity North", a newsletter published five times annually, and reports on mining site activities, northern business and EQC activities.

CNSC staff has participated in several of the site information sessions with the South Central Environmental Quality Committee. Based on the public consultation program described in the application and the operation's ongoing commitment as stated in the application, CNSC staff finds this program to be acceptable.

A series of inspections were conducted by CNSC staff to evaluate the licensee's compliance with the radiation protection program. CNSC staff reviewed the management of radioisotopes, radiation technician training and performance, radiation work permits, the phased implementation of the underground ventilation systems and the ore slurry transportation system.

These inspections confirmed that an effective radiation protection program was in place and that the operation was in compliance with the approved programs.
The emergency preparedness, health and safety, training, corporate quality management and security programs will be further evaluated during the licensing period.

A financial guarantee for decommissioning, in the form of an irrevocable letter of credit for the sum of $8.6 million, was put in place December 21, 1998.

There is a need to revise the plan in accordance with new CNSC requirements.

Consequently, two conditions have been included in the licence. One condition requires Cameco to maintain its current financial guarantee, while a second condition requires Cameco to review this guarantee.

The Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan reviewed the proposal to process uranium ore from the McArthur River Operation at the Key Lake facility under the federal Environmental Assessment and Review Process Guidelines Order.

The panel issued its report in February 1997, in which the potential environmental effects were determined not to be
significant, taking into account the
implementation of appropriate mitigation measures. The joint panel recommended approval of the project with several conditions. The federal government responded to the panel's report in 1997, agreeing that the project should proceed.

The AECB's position on the Government of Canada's response to the joint panel's recommendations was included in BMD 97-125 and updated in BMD 99-72.

The activities at the McArthur River facility that are to be authorized by the proposed issuance of the operating licence are the same as those authorized by the current licence, for which the conclusions of the environmental assessment remain valid. The appropriate mitigation measures have been implemented.

Accordingly, pursuant to Section 3 of the Exclusion List Regulations and Section 2 of Schedule 1, Part I of the Exclusion List Regulations, an environmental assessment of the project pursuant to the Canadian Environmental Assessment Act is not required.

Based upon this assessment, CNSC staff recommends that the Commission:
a) accept the CNSC staff assessment that the applicant is qualified to
carry on the activity that the licence will
authorize the licensee to carry on; and will, in
carrying on that activity, make adequate provision
for the protection of the environment, the health
and safety of persons and the maintenance of
national security and measures required to
implement international obligations to which
Canada has agreed;

b) accept staff's assessment that
pursuant to Section 3 of the Exclusion List
Regulations and Section 2 of Schedule 1, Part I,
of the Exclusion List Regulations, an
environmental assessment pursuant to CEAA is not
required; and

c) consider issuing the proposed
Uranium Mine Operating Licence for a period of 28
months.

Thank you.

MR. PEREIRA: That completes the
staff presentation, Madam Chair.

THE CHAIRPERSON: Thank you.
The floor is now open for
questions.
Dr. Giroux.

MEMBER GIROUX: Thank you.

Let me start with a question about units.

As I read the written document that we had, we have some indications of quantities which are expressed in kilograms, and between parentheses there is an expression in pounds.

As I read this, I thought they were giving us the equivalent in pounds of these kilograms, not being clear about this. Then it struck me that there is not 2.6 pounds to a kilogram, but 2.2. Then I started looking again and decided you were talking about two different substances. One is uranium and the other one is U₃O₈.

The next question was: Why did they change units? Was it to check the awareness of Commissioners, or is there some tradition in the system?

Both staff and Cameco do this change of units. Maybe one leads the other.

This is a light question, but is there some tradition that for uranium you talk in
kilograms and for $U_3O_8$ you talk in pounds?

MR. MICHEL: If I may answer the question, in North America one is used to pounds of $U_3O_8$. Elsewhere in the world the commodity is really traded in tons of uranium.

It would appear that the licence to us is given in millions of kilograms of uranium, which is consistent with international practice.

MEMBER GIROUX: It is interesting to see that in essentially the same quantity two units are used. I understand and thank you. As I said, it was a light question.

A more serious question to Cameco is about the numerous accidents that are reported in your report involving your staff and your contractors.

The question is, I think -- and you say you are addressing this -- what were the principal causes of the accidents? Was it procedures or human negligence?

How would you qualify them?

MR. JARRELL: First of all, it was related to the contract development work. It wasn't so much the regular mining.
Interestingly, it seemed to be experienced miners rather than the new miners. We thought and we spent a lot of time with the management of the contractor to try to examine this.

The way we dealt with it essentially was to look at breaking up teams to avoid the sort of camaraderie that you get with certain groups. We looked at the use of tour walk meetings, to examine jobs before they do them. One of the difficulties with development work is that you are doing one-off things, so there is more of a requirement to sort of think before you act.

The effort was really one of trying to change the attitude, I think, of miners and to use some of the conventional safety tools that we had before us. That was the main issue.

We struggled with this over the year 2000. We had a number of meetings with the management of the contractor to try to implement different ways, to weigh different procedural methods, different inspection techniques and so on.

We had some success towards the
end, but clearly in our view the performance in 2000 needed improvement.

I would say it is mostly procedural based. That was the main issue.

MEMBER GIROUX: Thank you. A last question for this first round.

Concerning your monitoring programming in Cameco, you indicate that you are planning to review your program. The implication, I understand, is that you might make it a bit lighter or less intensive.

I would like confirmation of that. What is your reading on this?

MR. JARRELL: I would respond as follows.

Because this was a new venture, we took the tactic that we would use a rather extensive monitoring program, at least initially, because it was new, because people were not familiar with what they were doing, and that we would perhaps go into this a little deeper than we would otherwise do on sort of a normal state.

We wanted to make sure because it was new and because the potential for exposure was higher than under a lower grade mine. So we had a
rather extensive program.

What I was referring to was sort of taking a look at the efficiency of that after we develop some routines to see where the most effective use of that effort is.

What we found, sort of paradoxically, is that during the first years we actually had to increase the number of radiation technicians to meet that need. I think what we will look at in the next licensing period is to try to put some additional efficiencies in that: reduce frequency, look at programs from the point of view of are we getting useful information on these? Where we can we make proficiencies?

I think it was based on the recognition that we probably, if anything, over-reacted initially on the radiation monitoring and now we should look at what is the resting state for it.

THE CHAIRPERSON: Mr. Graham.

MEMBER GRAHAM: I have a question for Cameco.

First of all, is your facility unionized? Are the contractors unionized?

MR. MICHEL: Our employees are
unionized. The mining contractor which was referred to earlier is not unionized.

MEMBER GRAHAM: As a second question, then: Are any of the union represented here today with you?

MR. MICHEL: No.

MEMBER GRAHAM: My question follows what Dr. Giroux had mentioned. The disturbing incidents, particularly in the shafts but in other areas as well, were all those incidents pertaining to the contractor?

MR. MICHEL: I cannot answer this question. I believe that Bill Wakabayashi can answer it.

MR. WAKABAYASHI: Bill Wakabayashi.

Yes, the shaft incidents in particular were all related to contractors and incidents related to them.

This year we had a single incident with one of our own employees who was learning the job. That is the single disabling injury that we have received to our employee.

MEMBER GRAHAM: As a second question, Occupational Health or Saskatchewan
Department of Labour have been at the site and
have been very concerned. I had asked that
question on the previous application.

On this one you have had problems
and there have been citations by Occupational
Health and Sask Labour?

MR. WAKABAYASHI: Yes, we have
been contravened by the Ministry of Labour. All
this is associated with the conveyances on the
Pollock shaft. We have since recommissioned the
shaft and the conveyances, having participated
with external experts, assigning resources,
manpower and supervisory resources, to make sure
that those recommendations were incorporated;
revamping our preventive maintenance systems to
make sure that we are paying attention to the
right things in the shaft.

Since those actions have been
taken, there have been no incidents in the shaft.

MEMBER GRAHAM: A question to CNSC
staff.

In that same slide in the
presentation, you say that the program as
described in this documentation is acceptable.

Are you saying as it exists now or
as it was when the accidents were occurring?

MR. PEREIRA: We are talking about now. But I will ask Mr. McCabe to comment on the issue at greater length.

MR. McCABE: We are referring to as the document exists now, given the qualifications that we have put in the text of the presentation and the CMD, that our role in the conventional safety area is limited.

We receive reports on conventional issues. The ones that we receive, we review. We then request of Saskatchewan Labour or Human Resources Development Canada follow-up action.

What we are looking for here is have they met their requirements to notify us that they have a system in place to notify us of these incidents? Yes, they have met that requirement. It is not an extensive program in that sense.

MEMBER GRAHAM: What you are saying, if I followed correctly, you are aware of these incidents as they happened. They were reported to you?

MR. McCABE: Yes. They are required now, under the new Regulations, to do just that.
MEMBER GRAHAM: Not now. I mean when they happened. The disturbing incidents that are referred to in Slide 8, were you aware of them as they happened?

MR. McCabe: Yes, most of them, I am sure. I couldn't categorically say the initial ones; but yes, we were aware of this as a situation.

MEMBER GRAHAM: Then my question to staff is: When does this become a significant development that is reported to the Commission? What is the judgment of how severe the incident is before you report it?

MR. McCabe: Well, the frequency of these incidents was of concern. The nature of most of the incidences, I understand, was with regard to alignment of the equipment; one of the incidents going into the dump.

These are significant incidents, but somewhat within the line of what happens within the mining industry.

At that time we didn't deem these to be reportable to the Commission. It didn't seem at the time that that was needed.

The other incident with regard to
a personal cage that was being used and experienced some difficulty, we spent some significant effort co-ordinating the response and the remedy of this with Human Resources Development Canada and Saskatchewan Labour.

They were not neglected in that sense, but they were not reported to the Commission.

MEMBER GRAHAM: One other question I have.

On page 2 -- I think it is Slide 4 -- you gave a proposed action level for exposed dose of 1 millisievert per week, or 5 millisieverts per quarter.

Has that ever been exceeded?

MR. McCABE: At the McArthur River Operation, no.

MEMBER GRAHAM: It hasn't.

MR. McCABE: I don't believe so.

No.

MEMBER GRAHAM: Thank you.

THE CHAIRPERSON: Dr. Barnes.

MEMBER BARNES: I have a few specific questions again.

I am looking at the staff
presentation, 4.1.1, Clean Waste-Rock Storage and
the Potentially Acid-Generating Waste-Storage,
4.1.2.

Probably the question is to the
Applicant Cameco.

I notice currently for the
potential acid generating waste storage there is
74,000 cubic metres been placed on pads.

If I go to the normal clean waste
rock, it tells me that there is 83,000 cubic
metres and gives a number of 900,000 which will be
stored during the location of the mine, which is a
20-year period.

But it doesn't give an indication
of the expected amount of acid-generating waste
storage material that will in a sense be
accumulated during the lifespan of the mine.

It does refer to some material
being placed in the mine, but at the moment it is
only 10 per cent. I know the mine has not been
fully operating, and so on.

What do we see through the
lifetime of the mine of the amount of
acid-generating waste storage being on surface?

MR. WAKABAYASHI: We have a good
idea on how much waste we will be generating in
developing and accessing other mining areas, and
that is really just developing our mining plans
and pursuing those plans.

As part of that, while we are in
the development phase, we do come across
potentially acid-generating materials. We don't
have a good prediction of the amount of material
that we will generate, but it will be much lower
than the normal clean waste that we would generate
in the mining development of the orebody.

MEMBER BARNES: Even though at the
moment it is about the same volume.

MR. WAKABAYASHI: Yes, that is
correct. The clean waste material is used for
other purposes, and it is very difficult to say in
the area that we are proceeding to, the south end
of the strike of the orebody, what the acid
generating potential would be of some of that
material.

MEMBER BARNES: In the zones that
you are mining, is there a significant fluid
pressure at those depths?

MR. WAKABAYASHI: We are only
mining in Zone 2 currently. All the production
from McArthur River has come from the Zone 2 area. The experience with the TMU right at the beginning of the mining cycle was a good example of the pressure relief that was associated with that zone.

We do anticipate, as we expand into panel three of Zone 2, which should occur sometime next month, that we will experience a similar event, where there will have to be some sort of pressure relief of the stresses that are built up in that particular area.

We have taken measures that we were not prepared to take when we first went into the mine to mitigate any events that may occur there.

Pressure build-up is created, of course, by the growth of the freeze wall and the expansion of the freeze wall, creating internal pressures in the ore zone.

MEMBER BARNES: Under Condition G5 -- that is the decommissioning plan -- I assume when that plan is submitted it will come back to this Commission.

Is that right?

MR. PEREIRA: No. The plan will
be reviewed by staff, and we will then look at the financial guarantee, whether it is adequate to support the plan.

Eventually, when we come to decommissioning of the mine and a licence is issued, that will be a hearing before the Commission.

MEMBER BARNES: Could I ask on what basis the present value of $8.6 million has been established.

MR. PEREIRA: It is based on the existing plan that was in place, and a new plan will be considered as a basis for a revision of that figure, if necessary.

MEMBER BARNES: What are the criteria that you use in establishing for a facility of this type, that the commissioning is only requiring $8.6 million?

I think Cameco may wish to reply.

MR. JARRELL: I think I could add to it, because it is a bit paradoxical. $8 million doesn't seem like a lot of money. I would say two things. First of all, I think what it reflects is an ongoing commitment to reduce the
waste rock liability by taking waste rock material, mineralized waste rock, to Key Lake. So we basically are controlling the growth of liability with waste rock.

Second of all, decommissioning plans under the current guidelines tend to focus on surface facilities, not necessarily underground works. Basically, we don't expect to see large growths in that number just because we control the liability of the waste rock, which I think is the main driver in this.

As long as developments stay underground, as long as there are not additional surface developments, I don't see there is any real need to change that number substantially.

MEMBER BARNES: Except you just told me, or at least your colleague did, that you don't know how much waste rock.

MR. JARRELL: That is true. But, for example, on the acid generating rock we are also trying to use that material for backfill too.

MEMBER BARNES: At the moment only 10 per cent of the amount -- or less than that; only about 8 per cent of the amount that you presently have is being used for backfill.
MR. JARRELL: That is correct. I guess what I am trying to say is that it probably would reflect the ongoing change of waste rock inventory. You are quite correct.

MEMBER BARNES: I would like to come to the environmental monitoring program, and again perhaps Dr. Thompson can help me. I am a little persistent in this, but I do worry about the fish and micro invertebrates a little.

I am curious that in establishing the environmental monitoring program, on the one hand I am told from the previous licensing action that there are no provincial regulations. So what I see in Appendix C are some limits established on essentially water quality of a number of arsenic, nickel, radium-226, et cetera.

I think in other licences that have come before us there has also been built in some attempt to have a toxicity test in having specific samples of fish in which, if half of them die, you have a problem sort of thing. But when this came up at the last one, I was told -- at least I don't think that situation was built into the environmental monitoring plan, and it doesn't seem to be built in here.
But I read, if I can be a little facetious, we have a level and if we reach that level and we go beyond it, then we start to get worried about it.

Could you tell me how you design this environmental monitoring plan that it really does work to protect the water fish and micro invertebrates, that I believe it is intended to?

Perhaps Dr. Thompson might start.

DR. THOMPSON: I could start possibly with a clarification of what at least I intended to say a few minutes ago.

When I mentioned that there were no regulatory criteria, it was in terms of water quality, for example. Water quality guidelines don't tend to be, in general, regulatory limits where if a limit is exceeded we would take compliance action or enforcement actions.

They tend to be values that are representative of concentrations in water, for example, of a contaminant that is deemed to be of no harm to fish or other organisms.

There are regulatory limits and action levels in the effluent monitoring program and the effluent control program, and possibly
that is where the difference is.

In terms of the environmental monitoring program, there are two parts to that program. There is the what I would call more routine or operational monitoring program that requires water quality samples to be taken at certain locations on a frequent basis.

What we have also done is required Cameco to implement an environmental effects monitoring program in a risk management framework. The intent is to monitor water and sediment quality, as well as fish and benthic invertebrates on a regular basis and associate with that monitoring trigger values at which additional assessments would be required.

We have been working with chemicals to set those trigger values low enough that we don't expect to see significant environmental effects when those triggers are reached.

When the triggers are reached, it is an indication that there may be an effect. Then additional assessment would be done to see whether it is the case, whether there is indeed an environmental effect; and if there is, what the
extent is.

The triggers are intended to be set low enough to be preventive in nature and not to wait until we are in an environmental situation which would not be acceptable.

MEMBER BARNES: Looking at Appendix C -- and this is at pages 8 and 9 of 13 in the staff presentation -- the effluent discharge limits, it says nothing in there about sediment analysis.

Is that right?

DR. THOMPSON: No. Those are values that apply to the treated effluent before it is being discharged. There are values that have to be met in order for the effluent to be discharged.

MEMBER BARNES: So the details of the environmental monitoring plan are not actually in this licence.

Is that right?

DR. THOMPSON: That's right.

MEMBER BARNES: Is that normal?

DR. THOMPSON: My understanding is that the environmental monitoring program and the associated environmental effects monitoring and
risk management framework are part of the program
document for environmental protection and not part
of the licence.

MEMBER BARNES: Perhaps you could
look at page 9 of 13. That is still in Appendix
C. I may be misreading it here, but seems to defy
logic to me.

That is the total radium-226,
where it says:

"However, should the
concentration of total
radium-226 in any sample
obtained exceed 0.37 Bq/L,
all subsequent samples of
final effluent collected over
the remainder of the calendar
month shall be analysed for
dissolved radium-226."

As I understand it, if you catch
this on the first, you sample for the next 30
days. But if you sample it on the 31st, you don’t
sample at all.

Is that right?

What does that mean "over the
remainder of the calendar month"?
DR. THOMPSON: I can explain the intent of that. I would have to think about the calendar month.

MEMBER BARNES: I assume the intent was you sample for a month, isn't it, or 30 days? But, as written, you can sample for as many days as are left in the month.

DR. THOMPSON: There is a monthly average value which essentially for radium, for example, is .37. That is for dissolved.

To measure for dissolved radium is a little bit more complicated. There are extra steps to measure for dissolved radium than there are for total radium. Essentially, the initial measurements are for total radium, and if total radium is at that level or exceeded, then we require that dissolved radium be analyzed.

Generally, dissolved radium is lower, or should be lower, than total radium and represents the more bio available fraction. If for total radium we exceed .37, we may not exceed .37 for dissolved radium, which represents the bio available fraction.

I don't think that answers the question.
MEMBER BARNES: It is over the remainder of the calendar month that I am curious about.

MR. PEREIRA: I will ask Mr. McCabe to comment on it, since he is more connected with the drafting of the licence.

MR. McCABE: Just with the wording that we have here, these values and the wording and the sampling protocols, as on page 8 of 13 and 9 of 13, including the notes 1 to 7, are virtually verbatim from the Metal Mining Liquid Effluent Regulations, Department of Fisheries and Oceans Regulations. Yes, you are quite correct that that is a little confusing and probably, in some cases, if you missed your sample on the 29th, you only have to do it for two days. A good point.

The derivation of this wording came from the Metal Mining Liquid Effluent Regulations. So, we haven't revised it.

MEMBER BARNES: But you might?

MR. McCABE: We might, yes.

THE CHAIRPERSON: I think there was a certain indication that perhaps we may want to look at those in line with those.

I think that the Applicant wishes
to comment, Dr. Barnes, on this.

MR. JARRELL: Just a couple of points on environmental monitoring.

First of all, some of the confusion may arise because some of the requirements that are before us are on a SERM licence and some are on a CNSC licence. For example, your first concern about monitoring fish and sediments, that has always been a requirement under the provincial licence to do that. What is new here is the requirements to look at the effect on biota. That is probably the new event here, but in terms of monitoring sediment and fish, that has always been a licence condition, but it is carried in the provincial licence, not the federal licence.

The federal licence, as I understand essentially, as Mr. McCabe says, basically affects the Metal Mining Liquid Effluent Regulations. That likely will change because there has been modifications proposed to the Metal Mining Liquid Effluent Regulations which require enhanced environmental monitoring in addition. So, I think that you will see changes in this as time goes on.
As far as the radium results go, I think probably what that is from my perspective is an artifact of the requirement for a monthly average. I think that is what is driving that thing.

MEMBER BARNES: Perhaps if I could stitch some of my points together, it is always difficult, I know, to put everything in a document like this, but there clearly is some concern on the environmental effects. Here we are looking at a high-grade deposit. We have waste rock, which is substantial at the moment, or could be a lot more, but you have told me you don't know how much more it is going to be.

When I look in here for some kind of Environmental Monitoring Plan, there are very few details in it for me, reading this document. So, I don't have the information here to be convinced that there is an Environmental Monitoring Plan that is going to provide adequate protection for water, fish and the micro-invertebrates or biota. It may be that it is built in.

I was trying to fish, as it were, for some additional information here and then
found these curious regulations that have some
strange logic to them as well.

MR. JARRELL: I guess from my
perspective, there is a fairly substantial
enhanced Environmental Monitoring Program on the
table.

The other thing to bear in mind is
there has been an enormous amount of biological
studies done with respect to licensing this in the
first place. So, I can assure you that there is
an extensive program that has been developed with
the CNSC staff. We probably haven't done justice
to it in these presentations.

THE CHAIRPERSON: Mr. Pereira?

MR. PEREIRA: We can commit to
provide the Commission in the Day 2 update some
information on the Environmental Monitoring
Program.

Mr. McCabe will also provide some
additional comments with respect to the issues you
raise.

MR. MCCABE: I was concerned that
the impression was left that this is not a legal
or reference document. With the hierarchy of
documents that we have referred to in our licence,
under Appendix B of this licence, we refer to the Mining Facility Licensing Manual. That references policies and programs and procedures. Those documents, therefore, have legal bearing with regard to this licence, even though we haven't provided them to the Commission.

I want you to be assured that they do have that legal path through the licence to make them legal documents.

THE CHAIRPERSON: I wonder if it would be appropriate, Mr. Pereira, when that update is done to also reflect some of the provisions that may be necessary with the new effluent regulations?

MR. PEREIRA: Yes, we can do that.

THE CHAIRPERSON: I think that would be appropriate. Thank you very much.

Further questions? Dr. Giroux.

MEMBER GIROUX: A question for the Applicant concerning the duration of the licence. You argue for a five-year licence, indicating that you expect to be coming back for a licence amendment to increase the production at the mine. Staff recommends a 28-month licence.

I was wondering if there is a good
probability of timing your request for an amendment with the 28 months which is proposed by staff. Increasing production isn't something that you have to have approval for within a month or two. We are talking about long-term planning in your development, and you will see this coming ahead of time.

What is the likelihood that a 28-month licence might be synchronous with your probable request for an amendment?

MR. MICHEL: We will do everything to ensure that the request for an amendment will coincide with the end of the period of 28 months.

THE CHAIRPERSON: If that is the decision of the Commission? Just to qualify that that isn't --

MR. MICHEL: This is what I am assuming, Madam Chair.

THE CHAIRPERSON: That is certainly left to a later part of the hearing. I think what Dr. Giroux asked is a question with regards to possibilities of that.

Thank you very much for that.

Further questions?

MR. JACK: Then that brings us to
a close of today's proceedings on this particular
application by Cameco Corporation for an
application for a licence to operate the McArthur
River operation.

This hearing will continue on the
4th of October here in Ottawa at the CNSC offices.

According to the Commission Rules
of Procedure, the Applicant is required to be
present and Commission staff will also be present.
The public is invited to participate, either by
oral presentation or by written submission on that
date. Anybody wishing to do so must file
submissions with the Office of the Secretary here
at the CNSC in Ottawa by September 4th, 2001.

Today's hearing is, therefore,
adjourned until the 4th of October.

THE CHAIRPERSON: I would suggest
at this point that we take a break. We will take
a 20-minute break until half past the hour. We
will start promptly at half past with item number
7. Thank you very much.

--- Upon recessing at 3:10 p.m.