Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Public hearing

Audience publique

Best Theratronics Limited:
Application to obtain a Class IB Licence for its facility located In Ottawa, Ontario

Best Theratronics Limited:
Demande visant à obtenir un permis de catégorie 1B pour son installation située à Ottawa (Ontario)

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Salle des audiences

14e étage
280, rue Slater
Ottawa (Ontario)

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Ms Lisa Thiele

Me Lisa Thiele

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--- Upon resuming at 1:03 p.m. /

Reprise à 13 h 03

THE PRESIDENT: Good afternoon. The next hearing today is on the application by Best Theratronics Limited to obtain a Class 1B licence for its facility located in Ottawa, Ontario.

Marc?

THE SECRETARY: So this is a one-day public hearing. The notice of hearing 2014-H2 was published on February 10th and a revised notice was published on March 7th to extend the deadlines for filing of documents from CNSC staff and interveners.

The submission from Best was filed on March 7th and the submissioned filed by CNSC staff was filed on March 14th.

The public was invited to participate by written submission and oral presentation. April 14th was the deadline set for filing by interveners and the Commission received one request for intervention.

April 30th was the deadline for filing of supplementary information and presentations have been filed by CNSC staff and Best Theratronics.

Mr. President.

THE PRESIDENT: Thank you.

So I would like to start the hearing by calling on the presentation from Best Theratronics Limited as outlined in Commission Member Document 14-H3.1 and H3.1A.

And I understand that Mr. Wassenaar will make the presentation. Please proceed.

CMD 14-H3.1/14-H3.1A

Oral Presentation by Best Theratronics Limited

DR. WASSENAAR: Richard Wassenaar, for the record.

Thank you very much for this opportunity. I would first like to send regrets on

behalf of our President who was initially scheduled to be here. He had rearranged his schedule to make sure he had the time.

Unfortunately, for medical reasons, he was unable to travel to Ottawa. And so he is unable to be with us today. And instead, I have Jeff Biggs, our Director of Manufacturing and Facilities Operation. As well as Moshken and Sam, two of our two Radiation Safety Personnel. So with that I would like to start our presentation.

My presentation is essentially broken up into two parts sort of, because this is our first application rather than a renewal, I wanted to spend about half the time, not quite, going over sort of who we are and what we do. I think that would give you guys a good understanding of what we are looking for.

And then the second half, why we are here asking for a Class 1B licence and why you should give us one.

We are a privately-owned company called Best Theratronics located here in Ottawa out in Kanata, actually right beside Nordion.

And I will go through our history. We have a history that has at times been part of Nordion and part of AECL. But currently we are privately-owned. Our owner, Krishnan Suthanthiran, owns a number of various healthcare companies scattered around both North America and internationally.

I want to stress that each company is a private entity out of itself, so we are not a subsidiary of another company, of Best Medical International, or anything like that. We are a standalone entity.

So we are part of the Best medical team or Best team of companies, as Krish refers to us. The values and missions for ourselves and this group of companies is for the development of products to help in prevention, detection and treatment of cancer.

And so our product line, as you will see, fit very well into that structure. And our aim is to be the one partner that clinicians will turn to. Our key themes are things like healthcare for all, cost-effective solutions, and quality service and care.

Our history. As Best Theratronics we have been around since about 2008. But as a company doing this type of work we have been around for a very long time. We were once part of Atomic Energy of Canada Limited back in 1946. Well, that is when AECL started.

One of the key points in our history was in 1951, I believe in October, was the first treatment in the world which happened in London, Ontario of a patient using Cobalt 60 (Co60). That was our initial product line and that is one we still continue today as you will see.

In the mid-1960s we moved out to March Road, we were still part of AECL, later on AECL formed two divisions; the medical division and the industrial division.

The industrial division became Nordion at a later point. The medical division was a crown corporation that became Theratronics.

A number of years later, in the late 1990s, Theratronics was bought out by Nordion, so we became one family again under the Nordion name. And then in 2008 Nordion divested this part of the

business, the Theratronics aspect of the business, which was purchased by Krishnan Suthanthiran.

And now we are privately held and we are now named Best Theratronics, the company that has the licence application before you today.

This is our facility. We are located on March Road, right on the corner of March and Carling. Like I said, this facility has been there since about 1965 with a few minor additions in the early 1970s. And since then it has remained relatively unchanged on the outside.

What we do. We are a manufacturing facility primarily. So we are about 100,000 square foot shop. We bring in raw materials, raw steel, copper, lead, et cetera, et cetera. We machine it, we mill it, we assemble it and we ship out products.

And those products are blood irradiators, Teletherapy units, and now cyclotrons, which is one of the triggers for this particular application.

We are a highly-skilled workforce, somewhere around the order of about 160 people located

in our manufacturing facilities. This includes engineers, physicists and trades people. And we have a worldwide installation base.

So our products are sold across the world, almost in every country. About 1,000 Teletherapy units, close to 2,000 Gammacell units, which is the blood irradiator. And somewhere in the order of about 200 Raycells, which is an x-ray-based blood irradiator, and I will get into that a bit more.

What we did first and what we continue to do is Co60 Teletherapy. This was of course the Canadian invention that started a new paradigm of radiation therapy. Canada Post actually, a little while back, commemorated it in a stamp.

That head you see, the therapy head and treating the radiation base, so you have a Co60 source on a drawer that slides back and forth from a shielded to an unshielded position for treatment.

Very simple, very robust, very cost-effective solution for many countries in the world still today. That head you see on the stamp was the original head more or less, and it really hasn't changed in the 50 years we have been making

Teletherapy units.

That being said, we have changed the units quite a bit. So recently, in the past eight years, since we have been Best Theratronics, we have actually put a lot of R&D in.

So the device that was sold in the 1950s, even though the guts remains the same, there have been a lot of advancements to things like the electronics so that we now have a very advanced therapy system.

Again, this sold worldwide and we have several models. We have the model you see in the picture, which is our advanced system. We also have a scaled-down version which would be more appropriate for countries where power supplies may be limiting.

We have also done a lot of R&D. So we are implementing option such as a multi-leaf collimator, so linacs today, linear accelerators is used for treatment. You can do things like conformal therapy, IMRT, that hadn't been previously done on Co60, and we have an active research program to do that.

And in the corner you actually see one of our physicists. We have an on-site fully-operational Co60 unit, which is part of the licence activities we are looking for, that we use for this type of development. And you see one of our physicists working on it.

We also make, again, same head, different body, what we call the GammaBeam. This is used for research purposes, in particular a lot of standards labs for dosimetry will use this as a reference measurement.

Co60 is a very good reference measurement because of the high penetration of the energy and the well-known decay and energy of the Cobalt.

The other product line we have been building for many decades is the blood irradiators. Here you see on the top row what we call the Gammacells, which is a Caesium-137-based unit (Cs137). In the schematics on the right, the blue there would be a Caesium 1 or 2 or 3 sources.

Basically, you put your blood bags into that canister, the machine rotates into the

radiation field, irradiates the sample, kills off the T lymphocytes so that you can inject the blood into a patient without having to worry about the donor blood attacking the patient essentially.

We also make an x-ray-based version as well, which is what you see on the bottom.

The licence we are asking for would include activities related to manufacturing and testing of the Gammacells, the Caesium-based activity. The x-ray of course falls outside the jurisdiction for CNSC.

Our newest product and one of the triggers for this licence application is Cyclotron. So when Krish bought us in 2008 he had a vision to also look at Cyclotron production, primarily again for getting that one-stop shop of producing isotopes for diagnostics and then having the end point of treatment of cancer as well. So the whole line.

And I want to be clear, what we are doing and what we are applying for is for manufacturing of Cyclotrons. It is not to setup a Cyclotron facility that will produce isotopes or a test facility. It is design of Cyclotrons, it is

supply of Cyclotrons to those who want to buy them. So it would be design Cyclotrons, manufacture Cyclotrons, test and ship.

And we are also looking at things like supplying the target. So we would have a program for designing targets as well as designing bunkers for the Cyclotrons.

We have approximately three products of Cyclotrons that we are looking at. We have what we call the 15p, which is a 15 mega-electron Cyclotron, the kind you would typically find in a hospital for trace or production.

We are also making a 70p Cyclotron, which can be used for isotope production as well, but also for research. And we have one under production in our facility that is purchased by the Italian national lab and set to ship later this year. And there you see a picture of it in our facility.

Part of the licence we will be asking for is for testing of this Cyclotron up to 70 MeV. So again, we are manufacturing, we want to test and then we would dismantle and ship.

And there are just some images of how large that 70 MeV really is. There you see in one corner the magnets, the steel used for one of the magnets, top or bottom half, and then in the picture on the right you see them putting the copper coils on the magnet to produce the electromagnetic field.

That is who we are and what we are doing. The reason we want a Class 1B licence is as follows. We currently hold five licences, we are in the process of getting a fifth licence related to service, and we can discuss, that is further on, with the CNSC.

These licences are with the Nuclear Substance Directorate or the Class 2 Facilities Directorate.

What we are looking for is for more flexibility to be able to respond to market changes, as well flexibility in our products and what we can offer, such as Cyclotrons, and we have a few other products that we are looking at down the road.

So we have had a number of discussions with the CNSC over the past few years and it was determined that a Class 1B licence would

provide the structure and framework we needed to undertake our current activities and any future proposed activities.

Our Class 1B activities would include essentially everything currently on our licences, which means import, export, possession, usage, storage of Cs137 and Co60 CO'd sources. These are Category 1 CO'd sources primarily, and sometimes they have the Category 2.

It would include possession and storage of depleted uranium, which was previously used in older model Teletherapy units, and so is a legacy product we sometimes still deal with.

It would include device manufacturing and it would include operation of an R&D Co60 unit.

These first four points are currently covered under our licenses and would be rolled into a new Class 1B licence.

The significant change in the Class 1B licence, what we are asking for that is new and not on a current licence, is testing of cyclotrons to energies greater than 1 MeV, but less than 70. So of

course testing to higher than 50 moves us into a Class 1B regime.

Class 1B would consolidate three of our existing licenses, which I have listed there. We would still have to maintain two licenses outside of our Class 1B for service work within Canada.

In talking with the CNSC we had a number of discussions about whether they could be rolled into a Class 1B or not, and it was decided that because of the type of licence, a Class 1B is facility-based, service would not be included or could not be included. And we would need two licenses for service; one for the Gammacells and one for the Class 2 equipment.

We have submitted our documentation to the CNSC staff to address the various safety and control areas. And I believe and I think the CNSC staff document shows that we are qualified to undertake the proposed activities and that we have indeed made adequate provisions for protection of both the environment, our employees and the public.

We are an ISO 9001 company, and that has stemmed from the fact that we are a manufacturer

of medical equipment. So we have always been ISO-certified or for a significant amount of time.

We are privately owned. Oversight of day to day activities is provided by the senior management team, which includes myself and Mr. Biggs beside me.

As well, we have developed a very extensive procedural framework that defines roles and responsibilities for personnel.

Our Class 1B licence triggered an environmental assessment, and which we hired a third-party consultant to undertake on our behalf. That was prepared in late 2012, early 2013. We submitted it, CNSC reviewed it, performed an environmental assessment, and that was sent out for public review a while back.

The conclusion of the environmental impact statement that we have submitted was that our activities and the proposed activities of the Class 1B licence would not result in any significant environmental effects.

We have been working with radiation

for a very long time, since our beginning. So we have a very extensive radiation protection program and a very robust ALARA program.

Here is an overview of the doses we have had since we have been Best Theratronics. So this includes service personnel as well who work on the devices, manufacturing personnel working on the devices and anybody considered a nuclear energy worker.

As you can see, we have a number who are considered nuclear energy workers and our badged, and the vast majority fall below half a millisievert. Typically every year we have maybe one that is above 1 mSv, but is below 5. So we have a very robust program.

We also have a very robust health and safety program. We believe we have a very strong record. You will notice that the number of injuries seemed to be increasing, and that was because two or three years ago we became more restrictive in reporting these.

So, basically, we just began reporting more of the smaller health and safety

injuries. So anything that required a band-aid essentially had to be reported, so that is why you see a jump in that.

But again, this is monitored monthly by our health and safety committee, which is made up of both management and union staff, so it is half and half representation. And they meet monthly to go over the statistics and any areas of concern.

Now, on the last few slides I would like to concentrate on the newest activity, and that is Cyclotrons. What we are asking for is to be able to test Cyclotrons for the purposes of factory-acceptance testing to greater than 1 MeV.

We have developed Cyclotron operating room instructions, which does define how operators are to work to minimize their dose and the dose to those around them. We will be developing a Cyclotron dismantling procedure as well which will define how we dismantle and measure the Cyclotron components to make sure that they are not activated and are okay for transport.

For testing, we have had to design a bunker. Now, this bunker fits within the current

facility, so we have not had to increase the footprint of our facility. We have managed to do this internally.

As well, because we are a manufacturer, we are not building one Cyclotron for testing or use, we want the ability to test multiple Cyclotrons as the need may occur. We have designed a modular bunker, which you see here, the circle in the center.

The modular bunker is made up of a number of concrete panels which will be for easy removal. So this bunker can be removed or erected as needed. And the main target is within a more solid concrete cave up in the left-hand corner.

Our initial estimates had the dose to operators at about 2.5 mSv per year, which is well within our administrative limits.

As well we have also, based off of that and based off of some engineering requirements, made the walls thicker than they needed to be. So we expect that dose to be reduced.

In conclusion, I would like to

reiterate that we are here for the Class 1B licence because in consultation with the CNSC we believe this will provide the framework we need for growing our business in the future.

We have a number of new products as well that we foresee maybe coming down the road, and we want to make sure that whatever framework we have will be able to meet that. As well, we are qualified to undertake the proposed activities.

So in ending, I would like to say again that we are committed to ensuring the safety of the environment, of our employees, and of the public. I would like to thank you for your attention. If there are any questions, I would be happy to take them.

THE PRESIDENT: Oh, I am sure we have lots of questions. But before we do that, I would like to move to a presentation from CNSC as outlined, CMD 14-H3 and 14-H3.A.

Mr. Elder, the floor is yours.

CMD 14-H3 and 14-H3.A

Oral Presentation by CNSC staff

MR. ELDER: Thank you. Good afternoon, Mr. President and Members of the Commission.

My name is Peter Elder, I am the Director General, Director Nuclear Cycle and Facilities Regulation.

With me today are Mr. Don Howard, Director of our Waste and Decommissioning Division and Ms Anne McLay, Senior Project Officer who has been responsible for the licensing of Best Theratronics.

We also have with us a number of subject matter experts from the CNSC who have participated in the review of this application.

While the activities covered in Best Theratronics' application would be considered at the low end of the risk for a Class 1B facility, CNSC staff included review elements from all relevant areas of expertise, like cyclotrons and processing facilities to confirm that Best has appropriate safety and control measures in place.

As has been noted by Best Theratronics, they are already licensed by the CNSC for the developing and testing of Cobalt-60 teletherapy devices and the manufacturing of self-shielded irradiators.

Best Theratronics is requesting all these activities be combined under one Class 1B licence and, in addition, is requesting authorization for the development and testing of cyclotrons with a beam energy up to a maximum of 70 MeV.

I will now pass the presentation over to Don Howard.

MR. HOWARD: Good afternoon, Mr. President and Members of the Commission. For the record, my name is Don Howard.

This presentation will review CNSC staff's assessment of Best Theratronics' application for a Class 1B licence. The CNSC presentation will briefly review current operations at Best Theratronics and then we will discuss CNSC staff's assessment of the application.

Best Theratronics has submitted an

application for a Class 1B licence that would consolidate existing licenses for its Kanata operations under a single licence and would allow Best Theratronics to develop and test Cyclotrons up to 70 MeV.

The cyclotrons will not be used for any medical application. Under this license, Best Theratronics would be authorized to perform limited testing prior to disassembling the cyclotron before shipment, therefore radiation will only be present for a short time the beam is on.

I will now pass the presentation over to Ms McLay, who will continue with CNSC staff's presentation.

MS McLAY: Good afternoon, Mr. President and Members of the Commission.

For the record, my name is Anne McLay.

This slide presents an overview map of the location of Best Theratronics. Best Theratronics is located at 413 March Road in Kanata. It is located within an industrial zone adjacent to

the Nordion facility. The surrounding area is a mixture of residential, commercial and industrial zoning.

In the 1960s it was part of Atomic Energy of Canada Ltd. and was sold to Nordion in 1998. In 2008 it was sold to Best Theratronics, which is privately-owned company.

Currently Best Theratronics manufactures Cobalt-60 teletherapy machines, self-shielded irradiators and small cyclotrons. They also store sealed sources for two purposes.

First, they use sealed sources as either check sources for equipment calibration or sources required for research projects.

Secondly, they store used Cobalt-60 and Cesium-137 sources that are being returned from customers prior to shipment to Chalk River for long-term management.

Best Theratronics also handles depleted uranium from older teletherapy units which use depleted uranium for shielding. For modern equipment depleted uranium is no longer used. Best

Theratronics has specific procedures in place for handling this material.

Current storage of the majority of Best Theratronics sealed sources and all hotcell-related work is provided under contract to Nordion at Nordion's adjacent facility.

After the equipment is manufactured, it is shipped to Nordion where the Cesium-137 sealed sources are loaded into the equipment. The loaded equipment is then transferred back to Best Theratronics for final testing prior to shipment to customers.

As previously mentioned, these activities are authorized under three separate CNSC-designated officer licences that will form part of the proposed Class 1B licence.

Best Theratronics has also applied to include a new activity which is for the testing of cyclotrons, also known as particle accelerators, and for extracting the beam with a beam energy greater than 50 MeV.

Particle accelerators with a beam

energy greater than or equal to 50 MeV are regulated under the CNSC *Class 1 Nuclear Facility Regulations*. As previously mentioned, Best Theratronics does not intend to use the cyclotron for any medical application, but is seeking authorization to perform limited testing prior to disassembling the cyclotron before shipment.

The following slides provide some generation information on cyclotrons. Cyclotrons use a magnetic field generated by two large circular magnetic poles to bent charge particles into a spiral path. Acceleration is achieved by applying an electric field across a narrow gap between two electro chambers which are sandwiched between the two magnetic poles.

Once the charged particles reach the desired energy, they are extracted down a hollow tube called a beam line. They then travel down the beam line to strike a target. This causes a nuclear reaction in the target material, resulting in the production of a radio isotope. In this example Fluorine-18 is produced when protons hit an Oxygen-18 target.

Fluorine-18 is commonly used as a radioactive tracer in positron emission tomography or pet scans. A pet scan is a nuclear medicine imaging test that can be used to evaluate normal and abnormal biological function of cells and organs.

There are two types of radiation hazards from accelerators, prompt radiation and induced activity. The main radiation hazard from an accelerator is the prompt radiation, which is produced when the beam of particles impacts upon the target material.

Prompt radiation is instantaneous, appearing when the accelerator is turned on and disappearing when it is switched off.

After the beam is turned off, all that is left is whatever radioactive material has been produced in the components and target as induced activity.

Best Theratronics is only building a test facility, not a full-scale production set-up so activation of the component should be minimal.

Nevertheless, there are many safety

and controls required to shut down the beam automatically. There are door interlocks where the beam will shut off should the door be open during periods of beam operation greater than 1 MeV. This will ensure that no one can enter the cyclotron bunker while it is being operated.

There is an emergency pull chain that shuts down the beam and opens a lock from inside the room in the unlikely event that a person is locked within the room.

There are emergency stop buttons located on the console, in the high bay and inside the shielding bunker so that a person can shut down the beam within 5 seconds.

In the instance that the beam is grossly misaligned and hits the beam line, the cyclotron is designed to shut off in less than a second.

Some key facts are:

The radionuclides produced are usually short-lived. For example, Sodium-24 has a 15-hour half-life. Activation occurs mainly in beam

line components exposed to the beam such as stripper foils, beam line and beam target.

Radionuclides on the components are not easily removed, you would have to take the cyclotron apart to get access to them, and there is no loose contamination. The amount of activation depends on the material properties of the components, the beam energy, beam current and the time that the cyclotron is on.

This slide shows two examples of CNSC-licensed operating cyclotrons in Canada.

In comparison to the cyclotron that Best is proposing, TRIUMF has the beam energy of 520 MeV with a current up to 0.25 mA.

Advanced Cyclotron Systems has a cyclotron with a beam energy of 24 MeV and a beam current up to 0.75 mA. In comparison, the beam current for Best Theratronics is very small at 10 to the -5 mA for testing up to an energy of 70 MeV.

Due to the low current used and the short testing times, there is very little induced activity in the components of the cyclotron.

CNSC staff performed a comprehensive and rigorous review of Best Theratronics application, which included an environmental impact statement, a decommissioning plan and financial guarantee for the complete site and programs covering all safety and control areas.

I would note that Best Theratronics needed to revise and update their existing programs in a number of safety and control areas to meet the application requirements for the Class 1B facility as compared to the current licenses.

An EA was initiated under the *Canadian Environmental Assessment Act, 2012* and completed under the *Nuclear Safety and Control Act* after changes in the *CEAA Regulations* in the fall of 2013. CNSC staff used all the information in reaching a final conclusion under the *NSCA*.

Best Theratronics was required to consider a wide range of accidents and malfunctions for the environmental assessment. This included more extreme events such as flooding. Essentially this is very similar to what other Class IB licenses were required to do after the Fukushima accidents.

The EA concluded that there were limited interactions between the facility and the environment. With the current mitigations in place no significant effects were predicted. Also, the current monitoring conducted by Best Theratronics was determined to be sufficient and no specific follow-up activities were recommended.

CNSC staff concluded a thorough assessment of Best Theratronics application. As mentioned, this included preparing the Environmental Assessment Report which is attached to our CMD.

In a number of areas Best Theratronics was required to resubmit programs. CNSC staff continued to require improvements until all programs were considered acceptable. The next few slides discuss some of these areas.

One area where Best Theratronics was required to update programs and procedures was around operation of the cyclotrons. Since Best Theratronics plans to test and then dismantle the cyclotrons, the operational requirements for both commissioning and dismantling are considered to be significant events from a safety point of view.

Therefore, CNSC staff have proposed specific license conditions, 16.1 and 16.2, that requires Best Theratronics to submit detailed procedures prior to conducting these activities. The conditions act as hold points so that CNSC staff can confirm that the health and safety of workers is protected.

CNSC staff required Best Theratronics to make specific program improvements for management systems. There were required revisions to records management, change management, operating experience, and management of contractor documents.

For training, there were revisions to the responsibilities, qualifications, and training program. And for security, we asked Best Theratronics to provide a threat and risk assessment for the 70 MeV cyclotron. The revised programs were evaluated by CNSC staff and found to be satisfactory.

I would now like to discuss radiation protection, which is a key safety and control area for Best Theratronics. While Best Theratronics deals with sealed sources and fixed radiation, the sources can pose a serious hazard to workers if all safety

barriers fail. The past history of Best Theratronics demonstrates that these barriers remain in place and have been effective.

The maximum dose to workers has typically been less than two and a half millisieverts per year. This is for personnel who install and remove sources from the teletherapy equipment. The majority of workers receive less than 0.5 millisieverts per year.

The licence application assessment included that Best Theratronics has an infective RP program in place and is adequate for the new cyclotron testing activities. Radiation doses at Best Theratronics are presented on this slide. The annual regulatory dose limit of 50 millisieverts is at the top of the slide. Best Theratronics' action level of 8 millisieverts and administrative control level of 6 millisieverts are also shown on this slide.

In the past five years doses to workers has ranged from 0.9 to 2.5 millisieverts per year, which are all well below these limits. CNSC staff conclude that with the new activities the levels remain appropriate and doses are expected to stay low.

The next two slides summarize CNSC staff's review of the application, taking into consideration the improvements required by CNSC staff. Best Theratronics has made the necessary program improvements so that the programs in all areas are satisfactory.

These are the rest of the safety an control areas' ratings. There are no outstanding compliance issues from recent inspections under the current licences. The most significant compliance event was an order which was issued to Best Theratronics by a designated officer in July 2012 regarding sealed sources tracking, after evidence was found that Best Theratronics was not reporting transfers of sources as required by its licence.

Best immediately addressed the conditions of the order and submitted an action plan. The requirements were met in July 2012. Since 2012 CSNC inspectors have confirmed that Best remains in compliance. And CNSC staff confirmed that the improvements at Best Theratronics connected to the order were included in the application.

This concludes the review of

compliance and I will not pass the presentation over to Mr. Don Howard to discuss the financial guarantee. Thank you.

MR. HOWARD: Best Theratronic currently has a financial guarantee of $129,000 for storage of sealed sources. It was recognized by CNSC staff that this guarantee did not cover its complete facility under a Class 1B licence. Therefore, as part of this application Best was required to submit a preliminary decommissioning plan and update the financial guarantee to cover all activities.

CNSC staff assessed this plan against regulatory expectations and concluded that the plan was acceptable. CNCS staff also reviewed the financial guarantee and concluded that the cost estimate of $3.75 million was acceptable. This is considered sufficient to cover removal of all radioactive material and hazardous material from the facility. This also includes removal of all sealed sources stored at the Nordion facility.

Best has proposed a surety bond as its financial guarantee. A surety bond is a promise to pay one party a certain amount if a second party

fails to meet some obligation. This is used heavily in the construction industry by general contractor so that they will adhere to provisions of the contract. CNSC staff concluded that surety bonds are acceptable to form part of a financial guarantee with the appropriate commitments and monitoring.

Examples of monitoring include reporting the financial -- that the financial guarantee remains valid, in effect, and adequate to fund decommissioning of the facility. Also the wording of the surety bond will be subjected to a legal review in order to minimize any financial risk.

Therefore, CNSC staff is proposing a two-phase approach. Provide a financial guarantee, such as a letter of credit, to place -- that will place the facility in a safe storage. And the remainder of the financial guarantee can be in the form of a surety bond. The proposed licence requires Best to have a financial guarantee in place by January 31st, 2015. And update on the progress of the financial guarantee will be presented to the Commission in October 2014.

CNSC staff assessed the public

information disclosure program against RDGD99.3, titled *Public Information and Disclosure*. CNSC staff concluded that Best Theratronics revised program meets regulatory requirements. CNSC staff will include Best Theratronics in the annual performance report with other nuclear processing facilities.

CNSC staff therefore recommends that the Commission issue a Class 1B operating licence for a period of five years. A five year licence is common for facilities when transitioning from an activity-based licence to a facility-based licence. The five year license will allow Best Theratronics to implement all programs and for CNSC staff to verify their implementation.

CNSC staff also recommends that the Commission endorse the delegation of authority to act as a person authorized by the Commission, as is normal for this type of licence. In particular, CNSC staff are recommending that an authorized person can approve the commissioning and dismantling plants. The criteria of these approvals are listed in the licence condition handbook.

This concludes the presentation and

staff is available to answer any questions. Thank you.

THE PRESIDENT: Thank you.

So as usual I'd like to start by looking at our written submission. There's one written submission by Nordion. Nordion has been mentioned a few times, so why don't we start with that. That's a submission by Nordion as outlined in CMD 14-H3.2.

CMD 14-H3.2

Written submission from Nordion (Canada) Inc.

THE PRESIDENT: Anybody has a question about that particular letter of support?

So why don't you -- why don't you tell us a little bit more -- clarify this relationship between you and Noridon. Particularly, I want to get some clarity about who stores what in which facility. What is in your facility, what's in Noridon's facility?

MR. WASSENAAR: Richard Wassenaar for the record.

In some eyes I guess it could be considered a complicated relationship. Again, we were kind of one company at one point, we were separate companies, we were one company, and now we're separate companies again. So we have a very connected history.

That being said, currently we are two separate companies. We provide services to each other under contract. So we have contracts to provide certain services. Those services from Nordion's end include storage of some of our sources within their facility. Typically they store new sources that are -- arrive, cesium sources and cobalt sources.

They manufacture our cobalt sources as well and they store them onsite and they do loading into our devices because they have the hot cell capabilities. Our facility at this point does not have a hot cell capability. My understanding of that is previously in our history, and I don't know when, there was such capabilities and it was since removed. So we contract that type of work out to Nordion.

In terms of where are our sources

stored, under our current licences, Nordion is listed as a storage site under two of our licences. So we are allowed to store our sources either at Noridon or at our facility, depending on the licence. Typically sources that are returned from the field usually as part of a source exchange -- we sell a new source, we take back the old source. Those are typically stored at Nordion or received by Nordion until we have an end of life management plan which could include disposal, or reuse, or recycling of the source.

We do store some of our sources at our facility. Again, it's -- the reason for one or the other really depends on space constraints between the two facilities and what Noridon's prepared to have on hand given all their other activities, and what we have. So the majority of our sources currently are at Nordion, again, because they have the space and the resources, and because they do a lot of our work under contract.

THE PRESIDENT: So just to be clear, so you do -- Nordion storage for you is almost like you're renting the facility from them, if I'm using loose language correct me please. But do they also ask for you from some guarantee that you'll be there

to clean up, or you transfer the financial guarantee to them?

MR. WASSENAAR: Richard Wassenaar for the record.

The liability for the sources and whatever we may have at Nordion, those sources remain under our licence. They remain our liability and as part of our contract, Nordion is requiring that we have some sort of financial guarantee in place as well, whether that be with the Commission or with them directly, so that Nordion doesn't have that liability.

THE PRESIDENT: Staff you -- this is very clear in your mind, correct?

MR. ELDER: Peter Elder for the record.

It's very clear because we've told both companies to make it very clear in terms of it is a unique situation where the possession, the control is by Nordion, but the ownership is by Best. And we told Nordion either you require and made very clear that the liability is Best's and that Best has appropriate mechanisms, or Nordion would have to

reply -- have to include that in their financial guarantee.

So in our mind the situation is clear. Best has included the liability in their proposed -- in their decommissioning plan and in their proposed financial guarantee.

THE PRESIDENT: So that amount covers everything, both on the --

MR. WASSENAAR: That amount covers the 3.75 million, includes in fact a big chunk of it is for the sources that are stored at Nordion.

THE PRESIDENT: Thank -- go ahead, please.

MEMBER McEWAN: Sorry, so you said that when you're doing the storage of the source you might store them or Noridon might store them depending on availability of space. Does that mean if space availability changes, a source could be shunted from one facility to the other and back, and back because it suited your space requirements? Or once they're there, they're there until you've made a final disposal decision?

MR. WASSENAAR: Richard Wassenaar for the record.

It is possible that sources can be shunted back and forth depending on space. It's not something that we do on a regular basis. We don't want to shut sources on a constant basis just because just for the sake of shunting them. We work very closely with Nordion, based on our contracts, to make sure that we have a plan as to what needs to be moved where.

What is the best use of resources from both companies and where those sources should be? Recently we have done some shunting of sources of sources from Nordion because they have had a few space constraints and they asked us if they -- we could take back a few sources, and we said, yes we could. In that case they were shunted.

But I want to be clear. We're not shunting sources back and forth for the sake of shunting source back and forth. But shunts do happen.

MEMBER McEWAN: So staff, is that an acceptable risk? It seems to my -- these sources are still pretty radioactive and the more moves that are

made, the more risk that there remains -- there is within the system.

MR. JAMMAL: Ramzi Jammal for the record.

You're asking the question with respect to the storage of sources and the movements. First of all they have to meet the transport requirement to be moved from one point -- for Nordion to Best Theratronics. Just one thing I'd like to clarify to the Commission though, that we're not going to allow Best Theratronics to exceed their capacity for financial guarantee on their own physical site as exists today.

So in other words, as long as they are meeting all the transfer requirement in accordance with our regulation and they do not exceed the financial guarantee that they currently have to cover their sealed sources, the sources at Nordion stay where they are till the financial guarantee is updated to cover for the full cost as a standalone -- excuse me -- storage facility at Best Theratronics.

MEMBER McEWAN: I'm not sure you've answered the question. I mean, it seems to me that

every time you move a cobalt-60 source from A to B, there is a risk that movement will not be entirely safe, risk free.

If something is going into storage, why does it not remain in storage until there is a final decision on disposal? Why is it moved backward and forwards whilst that final decision is being made?

MR. JAMMAL: Sorry, not before answering your question -- it's Ramzi Jammal for the record.

There is a couple of things -- so you're asking the question -- is -- how safe is the transfer of sources from point A to point B from MDS Nordion to Best Theratronics? They have -- both the requirement for packaging that source and moving it from MDS Nordion -- or sorry. I'm calling them all -- that shows my age in the business here. From Nordion to Best Theratronics requires a proper packaging, require proper watt testing, so it's being moved from one facility to the other.

In addition to the inventory control, they are required to track the transfer of sources from point A to point B. I'm just going to ask you

to -- if I'm not answering your question to tell me I am not answering the question. But from safety, it is maintained at all times.

So when the source is transferred from MDS Nordion pool for example, it must be packaged according to our packaging requirements and handled safely, and the packaging requirements are applied of a transfer of a sealed source from one location to the other. Obviously I'm not answering you question.

MEMBER VELSHI: No, mine was a slightly different question. So you'll be happy with yours and then ---

THE PRESIDENT: Why don't we go through the cue now, I'm sure this will come up often. And we have Mr. Tolgyesi at the beginning here and you guys start thinking about clarification.

MEMBER TOLGYESI: Yeah. You are next one or other one? So when you are talking transportation you are talking transportation on the highway or across the backyard? And what requirements are there if we do a kind of shortcut, you know? We are neighbours, so I move it to your place, you move it back to my place. We don't go on the highway and

that means public facility.

MR. WASSENAAR: Richard Wassenaar for the record.

Yes. We are neighbours. We share property. There is a private road between our facility and Nordion's facility that is used for the shuts. They do not go on the private road. That being said, we do have a procedure in place that was reviewed as part of this application, as to how we transfer sources. How we shunt sources between the two locations. It is done very safely.

The sources are contained within the units, or within an overpack, depending on what the source is. So they are fully contained, they are secured within the truck. We essentially placard the truck. We do TIs on it as if it were going on a road. We prepare bill of ladings even though it's going on a private load, just so we're sure, clarifying on each end what is being transported as well. So we do operate in a very safe manner, but we do operate on private roads under a strict procedure.

MEMBER TOLGYESI: Staff, do you need -- how far you licence private roads? Do you

have anything to do with or not?

MR. ELDER: Peter Elder for the record.

I'll ask Jeff Ramsay, who's our transportation specialist, how we look at transfers. They are part of the facility operation and how they are covered, and what we look at for this type of transfer.

MR. RAMSAY: Yeah, Jeff Ramsay, transport specialist for the record.

As Best was saying, the transfers are on the private property so because it's not leaving the site -- but because it's on private property they can transfer the sources in between, as Peter said, under the facility licence, and we have looked at how they affect those transfers.

So we've reviewed the transport packages that they use to transfer the sources, they way they put them in the trucks, how they cordon off the road. They cordon off the road so there's no public access whatsoever during the transport. So we've reviewed that and approved their procedures for

doing that.

MEMBER TOLGYESI: And when you're handling them, I suppose you are loading on your side to a truck. The truck is moving to the Noridon, they are unloading them that -- by their facility, their equipment and their operators. Do -- should we -- should the CNSC licence in case of Nordion I think they are licensed as a nuclear facility. But if not, do you need a licence to -- and I mean by the neighbour where the storage happens, or where the equipment is used from one side and from other side?

MR. ELDER: Peter Elder for the record.

Just to make sure I understand your question, in this case Nordion is fully licensed to do all these activities they do for Best, because they also do it for other reasons as well. So it's, you know, they -- Nordion actually manufactures the cobalt-60 sources. So they ship them and transfer them on a routine basis.

In general, if someone else was doing this one, yes, this type of service would require a licence, absolutely. It would, you know, require a

full licence on that one.

I'll go back to try to clarify Dr. McEwan's question around the shunting. Part of the reason there is shunting is under the current licence, until Nordion had a full financial guarantee in place, we put a limit on how much sources Best were allowed to store on their site. So that is why there is occasionally of shunting on this one.

If then under the new licence and new financial guarantee in place, that Best has appropriate guarantee for all its sources that is owned, then it will have more capacity to do this, or to do storage on its site which would reduce the amount of shunting that would be required. So in some point the shunting is artificial because we wanted it -- more of the sources to be left at Nordion.

THE PRESIDENT: Mr. Tolgyesi?

MEMBER TOLGYESI: What means that in this $3.7 million which covers both sides under this new one, they could move the stock back to Best's side because it's covered?

MR. ELDER: Peter Elder for the

record.

Some of the material would move, like, but there would be some ones where it would not make sense to store it at Best because the next operation would be done at Nordion. For example, a new source coming in where the loading into the machine is -- can only be done at Nordion, it would make sense to ship it initially to Nordion.

What it would do is give a little more flexibility or more logic to it on the back end of the cycle. I would still say it's never going to be terribly simple because these sources coming back aren't only for disposal. Some of them can be repackaged and again, the repackaging is normally done at Nordion.

THE PRESIDENT: Look, I think we've discussed this. I'm very concerned that we should not get into the micromanagement, both licensees, Nordion and Best Theratronics are fully licensed, they also know what the transportation rules are, they have to use approved equipment with approved procedures.

I'm sure it's a pain to shunt between the two, they'll try to minimize it. It's not like

sending somebody for coffee, go and move, bring me a cup of cobalt.

So I think I understand the situation here and there's just a limit to how much -- all we should do is make sure that we inspect, make sure they abide by the rules of the transport and move on. There are many other questions. I suggest we start moving into some other subject.

MEMBER TOLGYESI: I will move from there. Page 26 of the Staff presentation says that:

> "Access to the site is not regulated. Both sites indicate that that is a private company." (As read)

So how do you control? You know, you handle radioactive material, you handle that on a daily basis, but there is no access control, anybody who wants to go there, or from a backside because you have an access through Nordion, they could do that.

So how do you ensure security?

MR. WASSENAAR: Richard Wassenaar, for the record. It's true, we are a private company,

but I mean, our driveways are open. It's not like a power reactor where you have to go through a security clearance just to get your car into the parking lot. We are open, we are available.

But our security mechanisms don't start at the parking lot, they start with the facility itself. So you can come into our property, but in order to get into the facility that's where the security comes into place when we have -- essentially visitors must come through the security, we have 24/7 on-site security that sign people in, that monitor the front door, monitor our cameras, et cetera, et cetera.

All of our exterior doors are locked and a few are accessible to personnel with badges. And then internally, the radiation sensitive areas, let's call them, the radiation controlled areas are further secured by various mechanisms, whether that be cages or large doors with security access and cameras.

THE PRESIDENT: So did I understand, you have actual live warm bodies 24/7 on-site?

MR. WASSENAAR: Richard Wassenaar, for the record. That is correct, we have one security officer on-site at all times.

THE PRESIDENT: Mr. Tolgyesi...?

MEMBER TOLGYESI: I'm going a little bit to these health and safety numbers, it's on slide 23 of Best. You were saying that the number of first aid injuries increased because you were requesting much more reporting, reporting all injuries, that's why it increased.

However, when I'm looking at the injuries that required off-site treatment, they increased quite a bit from 2012 to 2013, from one to seven. I don't see any frequencies here, I don't know why, but usually we see the frequencies of lost time injuries and the severity, but I don't see that here.

Do you have anything like this, and if yes, why it's not in the report?

MR. WASSENAAR: We typically don't track lost time injuries. I believe historically for our facility and the types of injuries we've seen, I don't think it made a lot of sense. I actually have a record here of the types of injuries that have been recorded, both those that required treatment and those that didn't. And when I look at the increase, again, there's no clear explanation why we increased over the

last year.

We had a few extra back sprains, we had people that hurt themselves, knees. To be honest, I think partly it was due to the winter we had and the ice we had in our parking lot. But even going back, and we supplied this information to the CNSC Staff, there are no very significant injuries that resulted in any significant lost time.

Unfortunately, I don't have the statistics as to what the lost time was, but it's quite low. I don't even know if it's a day last year.

MEMBER TOLGYESI: Staff, the Ontario Workers' Compensation Board doesn't require this reporting and you don't require them?

MR. ELDER: Peter Elder, for the record. We will be requiring this type of reporting going forward. This is one of the things that happens when you change to a Class 1 type of facility, is that in their annual compliance report we will be asking them to formally give the lost time, the accidents and the frequencies of this one.

We have enough information in terms

of accidents to assess that there hasn't been any particular concerns about this, and especially in terms of application, most of their activities accidents seem to be related to their manufacturing activities and not related to the part that are nuclear related in terms of treatment of the sources, in terms of handling of sources.

THE PRESIDENT: So I am going to ask the same question. Are we treating them like NPP? We are talking about 160 people.

MR. ELDER: No, we're --

THE PRESIDENT: What statistically do you want to collect?

MR. ELDER: We want to collect, as Mr. Tolgyesi said, type of accident, of information that Ontario Workplace Safety would be looking for.

THE PRESIDENT: Well, would they come under that requirement, or do they have a smaller section?

MR. ELDER: If they are big enough --

THE PRESIDENT: If they are big

enough...?

MR. ELDER: If they are big enough to have a health and safety committee, they are big enough to have that sort of reporting.

THE PRESIDENT: As long as --

MR. ELDER: It's not onerous, it's just normalizing the numbers that they've given us.

THE PRESIDENT: Yes.

MR. ELDER: It will allow going forward a comparison to other similar size facilities.

THE PRESIDENT: Thank you. Mr. Tolgyesi...?

MEMBER TOLGYESI: Did I understand well, you were saying that a 70 megawatts cyclotron is under construction now?

MR. WASSENAAR: That is correct. We have one under construction which we had an image of in our presentation.

MEMBER TOLGYESI: Do they have a licence to do these things because they do that?

MS MURTHY: Kavita Murthy, for the record. The act of constructing a cyclotron does not actually require a licence, it's when you turn the beam on and the beam energy is over one MeV that the *Nuclear Safety and Control Act* kicks in and over 50 MeV beam energy is when you have a requirement for a Class 1 facility licence.

There is another company in Canada that manufactures these cyclotrons routinely, that is ACSI and they do not actually need a licence to do the manufacturing because there is no radioactive source in it, it is electrical equipment that you turn on and turn off. So the act of building it is merely assembling the parts.

MEMBER TOLGYESI: So really they don't need a licence if they build this one?

MS MURTHY: Kavita Murthy, for the record. No, they don't.

MEMBER TOLGYESI: So why do we require that if they want to build a cyclotron from one to 70 megawatts they want to be transferred Licence 1B, type 1B?

MR. ELDER: Peter Elder, for the record. The difference is not actually construction of the cyclotron, it's the fact that they want to test the cyclotron, so use it for its intended purpose, even if it's a very short period of time.

And one of the things that then becomes important in that one is actually the shielding that you have to have in place, and that's why we were looking at if there is appropriate shielding to protect workers when that beam, when the cyclotron is actually used.

THE PRESIDENT: Let's move on. M. Harvey...?

MEMBER HARVEY: Just one. You mentioned that they have a modular bunker for easy removal. Is this to say that you will use it just once, one time, or you will place it if you build another one, another unit?

MR. WASSENAAR: Richard Wassenaar, for the record. The modular bunker is one that we can reuse over and over. Again, the scenario we're looking at is to be able to test cyclotrons up to 70 MeV which may be a requirement of whatever contract we

have for sale of the cyclotron to the end user.

So we would have the opportunity, if we were required to test the cyclotron to put the bunker up. Well, first assemble the cyclotron, erect the bunker, test, disassemble the bunker, or at least part of the bunker and ship the cyclotron to the end user.

If the next contract we had required testing as well, we would do the same thing and we would keep the same bunker and it can be stored either within the facility or off-site somewhere.

MEMBER HARVEY: But why you say, if you need testing, or it's not automatic, if you build one, there will be test?

MR. WASSENAAR: It's not automatic. As was pointed out, there's another company that have a licence and they basically build cyclotrons, test them to just under one MeV, in which case you can ship out, and that's actually the model we're looking at for the smaller cyclotrons, the 15 MeV cyclotron.

We would test basically up to a one MeV point to make sure that the beam is getting into

the cyclotron and it's starting a couple of turns, then you would ship to the end user and the end user would install and you would finish your testing on-site.

However, there is among some users a requirement or a desire to have the cyclotron tested at full energy before it comes on-site. As you can imagine something this large, the end user wants to make sure that when it gets to their site they're not going to have any surprises.

MEMBER HARVEY: And, Staff, you don't have any problem with such equipment that you can place and dismantle and replace?

MR. ELDER: Peter Elder, for record. I guess when we look at it, and we discuss in the presentation about two specific licence conditions and they are all around the fact that this bunker, which I mean can be reconfigured, taken apart, so every time they want to use it we want to make sure that they come and convince us that they are ready to use it and have appropriate dismantling procedures in place as well.

If it's done properly, it's not a big

risk, but you want make sure you're doing it properly. And we do recognize as well that what tests they need to do will depend on what their customer is asking them to do.

So they've built in flexibility and we've sort of built in flexibility in the licence by saying, it's not a fixed procedure, but every time you will come and let us review and approve the procedure.

MEMBER HARVEY: And you will have to go back there and --

MR. ELDER: And then it gives us something to assess compliance against to the specific test.

MEMBER HARVEY: Okay. About the safety analysis, I can see that you required deterministic safety analysis and hazard analysis.

If we compare to NPP, for example, I suppose it's not at all the same thing. It's much --

MR. ELDER: It's -- Peter Elder, for the record.

No, it's not at all the same thing, but I'll ask Kavita Murthy to talk about what sort of

analysis we're looking for in this.

MS MURTHY: Kavita Murthy, for the record.

A complete independent analysis of the shielding requirements, shielding documents submitted by Best was done on first principles to ensure that our estimations matched theirs. The staff has estimated that the worst-case scenario, if they ran the 70 MEV for 100 hours, the dose at the control console will be 17 microsieverts, so no, this does not scale well with nuclear power plants. It is very, very low risk activity.

MEMBER HARVEY: And you don't have any problem with the requirements.

MS MURTHY: Kavita Murthy, for the record.

MEMBER HARVEY: No.

MS MURTHY: Oh, I'm sorry.

MEMBER HARVEY: I'm addressing to --

MR. WASSENAAR: Which requirements are you referring to?

MEMBER HARVEY: I mean the safety analysis. You don't have any problem to produce.

MR. WASSENAAR: Richard Wassenaar, for the record.

No, we've been doing safety analysis reports for quite some time. It's sort of ingrained in how we do things.

This was just another one we had to do, and the independent review by the CNSC showed that the analysis we did was correct and so we have no issues.

THE PRESIDENT: Okay. So you're quite content with the Licence Condition Handbook and all the stuff in it that you now -- under licence 1B you have to comply with.

Did you know before you agreed to 1B what the requirements are?

MR. WASSENAAR: Richard Wassenaar, for the record.

I think this has been a much larger process than anybody probably first imagined when we first started this several years back. That being

said, we have had a chance to review the licensing handbook and we've had no major issues.

I mean, we've discussed it with CNSC staff what their intentions are with certain restrictions and conditions, and in its form, we currently have no major issues.

THE PRESIDENT: Thank you.

MEMBER HARVEY: Last question.

So your waste management program, and to that point, I'm coming back to the first question about the storage.

What is the importance of the storage both places? And in your management program, do you have some provision for reduce the volume, reduce the thing and dispose of a certain part of the material?

MR. WASSENAAR: Richard Wassenaar, for the record.

The intention for storage, there's two storage regimes. One is for new sources that would be used in new units to support our ongoing business. The second is for what we call just used sources, that is, sources returned from the field.

Again, these are all sealed sources, typically special form sealed source meeting the requirements of the IAEA special form.

Those sources come back as part of our business plan, so typically, if we sell a new source, we take back the old source or if facilities are decommissioning, we will be contracted to do decommissioning, including retrieval of the old sources that we initially made. So that also supports our business.

The end point of that is not, of course, storage at either Nordion or Best Theratronics. Those are interim storage solutions.

We have an end of life management program where we look at all the sources that have been returned or are being returned, and we basically move them into various streams, which could be something such as reuse into a new unit.

Many of the sources that come back are still viable for other customers and can be placed in the new unit and resold.

Likewise, sometimes we recycle the

cobalt into a new source. We might mix lower activity cobalt with higher activity cobalt to get an intermediate source that is appropriate for end users. Or it could be disposal at a disposal facility such as Chalk River.

As well, we've found a number of other end point end of life solutions.

What we deal with tends to be very high activity in the medical field, and there is sometimes a market in other fields such as industrial radiography to reuse some of the sources we have or the activity contained in those sources, and so we've pursued a few avenues related to that for getting rid of our sources to another party that will actually reuse or recycle the activity.

So we have a number of different dispositions at our -- sort of in our tool chest, if you want to say, as to what to do with returned sources.

Storage is just there until we figure out and apply those various mechanisms, whatever it may be.

MEMBER HARVEY: But for the moment, the storage will continue to grow. I mean, it seems that you've got plans, but --

MR. WASSENAAR: Richard Wassenaar, for the record.

Historically, we've had sources grow over a number of years because we were limited in our end of life management programs. In the past few years, we have put significant efforts into finding new avenues such as recycling.

That is not something we've been doing for very long. It's something that, really, we've only begun in the last few years.

And so a lot of what Nordion is storing on our behalf under contract is what we would call legacy sources, sources that have sort of come to us over many years, many, many years, not just under Best Theratronics, but under Nordion and, I suspect, even under AECL days.

We are working away reducing those, and so our plan is, in the next few years, to put a significant reduction in how much activity we have in

storage.

So we will continuously bring sources back as part of our business plan, but the majority of sources we have in storage, just used sources, are related to legacy activities, and so we expect to see a significant decrease in our total number of stored sources in the next few years as we get rid of that.

MEMBER HARVEY: Could you comment? Do you have some idea about that and what should be done, and are you following that?

MR. ELDER: Peter Elder, for the record.

Best is required to have inventory sources and maintain inventory sources and then also, under their waste management program, is to have this end of life management.

So we have enough information coming in in their normal reporting to see if they are actually following through with their program to -- around the sources.

But considering what they do, it's -- it would be what we would consider normal waste

management process that you do not maintain more waste than you need on site.

MEMBER HARVEY: Merci.

THE PRESIDENT: Ms Velshi.

MEMBER VELSHI: Thank you.

My first question to staff, more a general -- more philosophical question is why the need for a Class 1B. And I understand that it's more than 50 mega electron volt beams, but if you look at just what the actual risk is or potential risk, is there any flexibility or consideration on is this really necessary?

MR. ELDER: Peter Elder, for the record.

I'll start. We looked at this fairly carefully because we recognized it was a change. And as Best has mentioned, a lot of it was actually talking with Best about what their future needs may be.

So they were talking about potentially having more sources on site, more facilities, doing some of the operations that are now

done by Nordion to see if they could do them in-house.

That would clearly tip them over, and we thought, well, rather than going through a more convoluted argument of whether this does or not, why don't you come in and then you'd have more certainty of your business going forward that you have the proper framework to add additional activities going in the future.

MEMBER VELSHI: So if they did not have plans for doing anything else, then there could have been an option of just not going to Class 1B licence.

MR. ELDER: The -- Peter Elder, for the record.

We -- I think one of the takeaways we'll have to look at the regulations around this type of limited testing capability.

Certainly the original intent would not -- you know, but the regulations, as written, are fairly clear, but we will be looking at the regulations as well.

But we also looked, in this case,

there were other reasons, combining the licences, more flexibility going forward.

MEMBER VELSHI: And --

THE PRESIDENT: Mr. Jammal, you wanted to jump in here?

MR. JAMMAL: It's Ramzi Jammal, for the record.

It's a couple of things. I agree with what Peter mentioned. Ms Velshi, your question is very valid.

Should we have come before you and say grant this activity from a Class 1 activity requirements, hence no need for EN and so on and so forth? The answer is, yes, we could have, but we evaluated what is the future element associated with this global policy activity of this facility.

As Peter mentioned, the future is going to be that's the intent, is to move what they call currently disused sources.

And I want to clearly define what disused source means for the public.

If a source is pulled into a therapy machine or a blood irradiator, it decays over time. Even though it decays over time, but that source is still what we call a high risk source category that requires proper storage requirement, proper transfer rather than shunting, but proper packaging, transferring. And they are obligated, regardless of the plan of the life, even from the cradle to the grave, it's tracked by the CNSC and it's tracked from every transfer from point A to point B to the final disposal. And the final disposition has the record of that source.

So I want to clarify what does disused mean.

As part of the cycle, the manufacturer is authorized, through a licence, to repackage that source, recycle it for other activities, but we should not forget the fact that even though the source, we call it disused because it's no longer valid for its primary purpose, but you can use it for other things and it still is a high risk.

So the longer-term element, as Mr.

Elder mentioned, is once these sources are moved from current storage and for their business plan of this applicant, it will save a lot of grief in the future to start right now implemented integrated approach as a Class 1 facility for them to expand without major -- let me put it this way.

Regulatory certainty is of benefit to the applicant at this point than to try to do it in the future.

MEMBER VELSHI: So trying to understand what they can do with a Class 1B licence, right now they've said it's minimum testing, but down the road -- and we don't -- I mean, I don't know. Maybe it's in here. The business plan may say they actually do loading of the sources that Nordion does at the moment.

Would that be in the scope of the environmental impact statement? Is that -- do they have to come back to the CNSC for approval for any additional scope of work?

MR. CASTERTON: Lee Casterton, for the record, Environmental Assessment Officer.

This application only considered the activities that were proposed as were stated in the CMD.

When a new application would come in for any future activities, we would do an assessment if those activities were within the bounds of that environmental assessment.

MEMBER VELSHI: So they do have to come back and get approval for that specific scope, then.

MR. CASTERTON: Lee Casterton, for the record.

They would have to come back for the licence application, and that would have to have the new activities within it.

When that application is submitted, we would do a determination to see if an EA is required.

MR. JAMMAL: Ramzi Jammal, for the record.

It's -- as you know right now, currently, every submission for change in the

application or the current licensing basis, the current application is focused on the testing of this 70 MEV particle accelerator. In the future, under the NSCA, as you see the document -- as a matter of fact, the Commission right now is -- this is the first application such where you are determining an EA under the NSCA and a licence under Class 1B in order to authorize the operation.

So you are breaking new ground here. The Commission is tackling exactly what the new -- not the new requirements, but the SCEA 2012 has authorized the Commission to be rendering its decision at the same time.

So the -- every -- we do environmental assessment for every application that comes before us and we determine the validity of the environmental assessment under the NSCA.

And accordingly, based on changes in their operation, we will evaluate and determine. But it will be done under the *Nuclear Safety Control Act*.

MEMBER VELSHI: Staff, in your presentation, I think I heard you say that the applicant is fully compliant with all CNSC

requirements necessary to move to a Class 1B licence. And yet when I read the licensee's submission, there were a number of programs where they said they were still in transition and needed more time to get into compliance with various Reg Docs.

I just wondered if there was inconsistency in the two statements.

MR. HOWARD: Don Howard, for the record.

CNSC staff, when we reviewed the programs that were submitted for the various safety and control areas, the information provided by Best was deemed to be acceptable, recognizing that as we move forward, there are some areas that needed to be enhanced or improved. But what they have in place is acceptable from a safety point of view.

So basically, we will be working with Best over -- as we go into implementation and do improvements to ensure that we have a robust program, but we felt that when we did review the programs, the information for the programs, that they met CNSC requirements and they were deemed to be acceptable.

MEMBER VELSHI: So I'm a little uncomfortable with that because I know for some Best very specifically says "We're in transition. Expect to be in compliance by July of 2014", whereas in other areas there is no committed date and it seems a little open-ended.

So perhaps that needs to be tightened up.

I don't have the specific programmatic gaps in front of me, but I think there are a couple.

MR. HOWARD: Don Howard, for the record.

Dr. Velshi, we'll take that and we want to make sure that -- I think for the program elements, we deemed them to be acceptable. As far as implementation, again, I think we -- yes, we need to work with Best to make sure that all elements of the programs are implemented and, if improvements are required, we will ensure that they are put into place.

MEMBER VELSHI: Thank you.

My next one was around financial

guarantees where you said what's needed to bring the facility to a safe state, there'd be a financial guarantee, and for the balance you can have a surety bond.

So of the $3.75 million estimate, what portion is required for being in safe state?

MR. HOWARD: Don Howard, for the record.

Again, the overall amount that Best has proposed as a financial guarantee, we examined that and we determined to actually decommission the site $3.7 million was satisfactory.

Now what we need to do is because they have proposed a surety bond instrument in order to secure that -- those funds, we looked at the security bond and we found that to be what you might call a high financial risk associated with surety bonds, so what we wanted to do was find a mechanism in order to reduce that high risk to something that was acceptable.

So when -- we proposed a two-prong approach. One is to ensure that we have a low-risk

something like a letter of credit to -- for enough money to put it into safe state of storage and this is something that we will be working with Best over the next few months to see what portion will be in the letter of credit, what portion will be in the surety bond.

And this has -- we put in the licensing condition this has to be completed by January 2015.

MEMBER VELSHI: Sorry. I did want to say letter of credit and not financial guarantee.

Okay. So by end of January is when you'll expect to know what portion of the 3.7 million will need to be in a more certain form of a guarantee.

MR. ELDER: Peter Elder, for the record.

We put in licence condition that it must be in place by that time. We expect to be in a position when we come to the next annual report around these type of facilities in October to be able to give you an update on where they are in this one because there's going to be -- you have to set the amount and

there's always a lot of -- tends to be a lot of paperwork around financial guarantees to actually put them in place.

So this is something that we will continue to work on very -- you know, from -- we've been working on since we issued the CMD today and we will continue to push on this one to have a resolution early in the fall.

THE PRESIDENT: Two questions per round and then --

MEMBER VELSHI: Okay. I'll wait for the next round.

THE PRESIDENT: Dr. McEwan.

MEMBER McEWAN: Thank you.

So I'd like just to go to the bunker that you described and you've put in the slide.

You have -- as far as I can see, your removable wall is on the cave side of the bunker. Is that right?

MR. WASSENAAR: Richard Wassenaar, for the record.

The removable wall is actually all of the wall.

MEMBER McEWAN: So all of the wall.

So you would just take it down and put it up and take it down as you brought a new cyclotron in.

MR. WASSENAAR: Richard Wassenaar, for the record.

We actually designed it and, more specifically, we hired a consulting -- an engineering consulting firm to design it, so we had a firm design it based off of shielding characteristics and what we needed for shielding. Then we went to an engineering firm to actually take those shielding input parameters and design a bunker that would basically stand up under the conditions we would see, earthquake, et cetera with the shielding characteristics. And this is what they came up with in our requirements for a removable bunker.

The way it's set up is if, you're looking at the slide 25, on the left-hand side, the bunker side, the target cave side, that wall can come

down and the cyclotron can actually lift it out and you can keep the other three walls standing in a safe configuration. Not for shielding, that is, but in terms of just structural integrity.

We then would have the possibility either to take the whole bunker down or just remove that one wall and put the new cyclotron in if so required and build it up, put the wall back, test again if required or we have the option to remove the whole entire bunker from the facility and do a different cyclotron if we needed the space.

So it's partially -- it can be partially disassembled or fully disassembled.

MEMBER McEWAN: So if it was partially disassembled, would there be requirements for testing the integrity of the shielding in the reassembled wall before you could do the testing?

MR. WASSENAAR: Richard Wassenaar, for the record.

I believe that is -- one of the hold points is if we were to disassemble and -- any disassembly and then reassembly for testing would

require this hold point for procedural review.

MEMBER McEWAN: Okay. Presumably you've got theoretical dose rate calculations at the wall. You've got a door in the bottom right-hand side.

Does that affect the safety integrity of that part of the bunker?

MR. WASSENAAR: Richard Wassenaar, for the record.

Our initial calculations were with a door that would have been completely sealed and of the same shielding material or same shielding properties as the wall itself and, therefore, not impede any of the radiation protection properties.

That has yet to be finalized, and will be part of the procedure or documents we submit to the CNSC for removal of the hold point before testing.

MEMBER McEWAN: Now, you're taking it up to 69 MEV, I think. It was less than 70. At 10-5 million?

MR. WASSENAAR: Richard Wassenaar,

for the record.

Yeah, we're basically operating at the nano amp level.

MEMBER McEWAN: Right. So would you have any requirements to increase it to the micro amp level?

MR. WASSENAAR: And --

MEMBER McEWAN: So I guess the second question is would you have any requirements, what would do that to shielding calculations, what would it do to calculation calculations?

MR. WASSENAAR: Richard Wassenaar for the record. The design basis we used for our shielding calculations and the dose considerations was operating the cyclotron basically to 70 MeV on a specific target material, which is listed in the Licensing Handbook at these currents. These currents were picked because they represented what we believed we needed for testing, our worst case scenario, and then the hours required for testing as well.

If in the future we wanted to change those design parameters in terms of the current used,

it would most definitely affect the radiation parameters that we get out, and we would have to go back and do another reassessment of the -- the bunker and whether it's adequate and fit within the design basis we currently have.

MEMBER McEWAN: Would it do anything for activation, particularly of -- of the beam line?

MR. WASSENAAR: Richard Wassenaar for the record. It -- it would potentially change activation. Of course activation primarily -- what you activate, of course, is related to the energy. How much you activate is related to both the time you have on and the current you have. So if we were to increase the current but have a decrease in the time on, there would be no change in activation. If we were to increase the current to keep the same time on, there may be a change in activation that would have to be assessed.

MEMBER McEWAN: So just in terms of -- of process, should you decide that you wanted to change those parameters, and I presume you will actually want to increase the current at sort of less than 1 MeV to test -- to test that component?

MR. WASSENAAR: Richard Wassenaar for the record. No, we've -- we've chosen these parameters and these currents based off of what we believe we need for testing. So if we test anything between -- on the cyclotron between 1 and 70 MeV, these are the parameters. If we -- if we change our current, we will have to do a reassessment but at this point we have no -- we have not looked at changing the current. There is no requirement to change the current.

MEMBER McEWAN: -- be required for the 35 MeV system you're building, you wouldn't be required to have a Class 1B Licence. You'd presumably -- if you were asked by the customer to do in-house testing, you'd use the same setup for the 35?

MR. WASSENAAR: Richard Wassenaar for the record. Yes, we would potentially use the same setup because worst case scenario is the 70 MeV, but the geometry could potentially change because you're looking at whether it's in the same location, what level is it at. This -- this 70, if you recall from the presentation, the image we have early on, it's -- it's sitting about 7 feet high or so, 6 feet high. So if we were to do a different cyclotron, we would have

to do a different safety analysis report and, again, that would go back to the CNSC staff for assessment of that hold point.

MEMBER McEWAN: You couldn't use at least this as a basis for -- for in-house testing?

MR. WASSENAAR: Exactly. This --

MEMBER McEWAN: Yeah.

MR. WASSENAAR: -- this would be the basis for all of our testing because it is right now our worst case scenario.

MEMBER McEWAN: Okay. Thank you.

THE PRESIDENT: Okay. We're moving into the second round. A question, Ms Velshi.

MEMBER VELSHI: In -- Best, in your submission on page 23, you -- on the import/export you talk about some issues with end users and not understanding or appreciating CNSC's expectations. Can you please elaborate on that and where you are on that, please?

MR. WASSENAAR: Richard Wassenaar for the record. Yes. So we -- we are a major exporter of

Category 1 courses, Cesium and Cobalt. Often as part of that export there is a corresponding import or return of a older sealed source. The issues we have is we are not the consign-- consigner of those return shipments, we're the consignee, but we have very little say in what happens. So we send our service personnel. They -- they do the -- the exchange. Typically they placard the containers properly. They use our containers, of course, the same containers we ship out, type B container. Typically our guys would do the TI, the Transport Index, and get everything ready. And then they leave and then it's up to the end user or whoever is returning it, whoever the exporter from that country is to find a carrier, send it off to the port, et cetera, et cetera, do up the shipping documents, get the proper import permits. Unfortunately that's outside of our control, and -- and, to be honest, in some of these places it's clear that sometimes they're not aware what happens. Sometimes these shipments, and we've seen it with our colleagues as well, who have the similar issues, you know, it'll get to a port, everything will be fine, it'll get to a port and whoever is doing the clearance through the port decides that, no, that's wrong and they put their own stuff on or take our stuff off

or -- or change TIs or whatever. It's an industry concern. It's something IAEA I believe is also looking at and it's something we don't have a lot of control over except when we get things that are not quite right we do report it back to the transport group here and I -- and my understanding is the CNSC would then sort of through the IAEA go back to whatever the exporting authority was and -- and follow up that way.

THE PRESIDENT: It's a bit more complicated than that. You have been accused of -- we, Canada have been accused of allowing for some materials to be stranded, abandoned. And IAEA get very, very excited about those -- those pieces of equipment that are completely abandoned and there's no ownership. So -- and it's a difficult question. So my question to you guys is do you feel any -- any obligation in your marketing when you sell the material, do you ever promise to take it back on your own as one-stop shopping, sell, operate, return?

MR. WASSENAAR: Richard Wassenaar for the record. It is a very complicated issue. It's an issue I've talked with colleagues about. It's an issue I've -- I have seen raised at the IAEA. We

always provide a -- a note saying that we will take our sources back. So we -- we believe we have a corporate responsibility to take our -- our sources back and that includes legacy sources that may have been sold under AECL or Nordion, but there is a cost associated with that and sometimes that cost can be quite prohibitive. And so, we never -- we never provide a blanket statement saying we will take it back, no questions asked. It's -- it always has to be associated with we will take it back but we have to figure out who's paying for what. Because in reality some of these sources are in use, and I don't abandoned, I mean in continued use for 20 or even 30 years. We have some of our -- our -- our units, model number 3 or 4, that are in use still today with the same sources, Cesium sources, and they're not abandoned, they're in very well-maintained facilities and the researchers or whoever doesn't want to give it up because it's still working very well and they don't want to have to buy a new unit. And so in that case, you know, 30 years ago we could not have promised that we would take it back unconditionally. That's just not commercially feasible. What we do is we do provide reassurances that when the end user wishes to bring it back we will work with them to take it back.

But again, it's not a unconditional receipt. There has to be some sort of contract in place which involves who has to pay for it.

THE PRESIDENT: So forget about the legacy issue. As of today do you have an arrangement on a new piece of equipment as to what's going to happen at the end of life?

MR. WASSENAAR: Richard Wassenaar for the record. With our cobalt sources in the units they are used, and they typically get replaced every five years, seven years, depending on the end use, as part of our service contract we often have in there that we will replace the source and take back the old source. So in that mechanism we ensure that we are bringing back disused sources that are maybe no longer useful for the end user and replacing it with sources that are still useful, which ensures the unit remains in use, which is always a -- a better scenario than if it's not in use and people forget about it. But that's about as far as we can go. There is just too many unknowns for us to -- to start putting into our contracts that we would take it back and then implement financial guarantees on the end users. We typically leave it up to the regulatory authorities to

require licensees to have some sort of financial guarantee that they would have the -- the financial means to return the source or to contract us or a different group, there are others who will do it, for return of that source at the end of life.

THE PRESIDENT: So, staff, does it make sense to put as a condition of export that the thing doesn't get abandoned somewhere? I'm trying to -- it's an open question. I don't know the answer to that. Does it make -- you know, when we have export and import licences, does it make sense to add any such clause that -- at the end? Because I can tell you it's an issue and it's been raised with us a couple of times, and I don't know what the international solution to this is.

MR. JAMMAL: Ramzi Jammal for the record. There's a couple things I'd like to clarify is the -- there are two things, the importing state. As Best was mentioning about their own business requirement ... So under the Code of Conduct, if a -- we've got our import/export colleagues usually will precisely tell you the process, but Canada is -- has given its political commitment to the Code of Conduct of Sources that calls on the member state that has

signed on the Code of Conduct to have the management capability to manage the sources, both to -- in order to authorize the import or the export. So the -- our colleagues from international -- with respect to the import/export, they ensure that the regulatory authority of the importing state has authorized the end user to have, first, the licensed activity to operate and to have in place assurances of the long-term management of that source. So, very -- you know me, I'm not a diplomat, bluntly, we can put all kind of requirements on the exports, but once it leaves Canada's borders it becomes an issue who is in charge. So that's why the Code of Conduct as an international instrument exists, allowing -- encouraging member states to take back disused sources. And the reason they are being called disused, it's a loophole against the International Joint Convention of Waste because you have some member states who do not authorize waste to come back to the origin of the supplier.

So the Code of Conduct is the instrument that is currently driving the international harmonization with respect to import/export authorization of the importation and the exportation.

I will ask one of my colleagues to elaborate.

THE PRESIDENT: No, we've got quite enough. This is a bit off topic for this particular licence.

So, Ms Velshi.

MEMBER VELSHI: So there's been a lot of reference made to hold point, and I couldn't find a section that describes what the hold points are. So can you refer me to where that is, please, staff?

MS MURTHY: Kavita Murthy for the record. The license condition 16.1 and 16.2, I believe, refer to the hold points.

MR. ELDER: And Peter Elder. Just to add, if you look on the criteria around there, if you look on the LCH, it's page 62 and 63 of the LCH -- or sorry, yes, 62 to 65.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Just in terms of process, it would be nice for you guys, hold points should be part of the recommendations. Just a list, just for ease of reference, so I don't have to read 20

pages to try to find out where all the hold points are.

MEMBER VELSHI: That was it, thank you.

MEMBER TOLGYESI: One more. On your -- page 20 of your presentation, you are saying that in the spring 2013 you also engaged the Ottawa Police Services, and the Ottawa Police Services upgraded the facility designation. Could you (microphone cuts out) how you hired the police to do these things and what it means when the police upgrades your facility designation.

MR. WASSENAAR: Richard Wassenaar for the record. So the way -- my understanding is the way the -- the Ottawa Police Services work is they have various designations for how quickly they respond to various facilities. As part of this Class 1 application and part of it is our general emergency preparedness and security program, we approached the Ottawa Police, since it had been some time, let them know who we were, what we did, invited them out for a tour, which they were receptive to but were unable to. But at that time we also indicated what we did and why

we believed we were, what we would say, a higher security risk facility. And based off of those conversations, they decided to upgrade their response time to our facility.

So if a call were to come in now from our facility to the Ottawa Police, they would respond more quickly than they previously maybe would have. It would come up on their -- their screen that we are a -- a higher risk facility and they would respond accordingly.

MEMBER TOLGYESI: And the last one. You said you have 165 employees of -- and half of them they are involved in licensing activities. Also you were saying that in the last four years there was 150 qualified personnel hired. That means it's close to a hundred percent replacement. So have you managed to maintain the productivity, the training, and all those things?

MR. WASSENAAR: Richard Wassenaar for the record. The -- the number of about 150 of replacement workers are not replacement workers. That's sort of total workers hired. That includes we actually have a satellite office, a Theratronics

satellite office out of Vancouver of engineers that do cyclotron design work. They would not be specifically related to licensing activities except in the design aspect. So, you know, there is a fairly substantial part of that. It would include summer students that come in; we've had a fair number of those over the past several years. So that reduces at that 150 in terms of replacements.

But we still have had a fairly high turnover recently. We -- we have been around for a very long time and a number of our employees within the manufacturing facility have been around for a very long time with it. We've had people retire with 20, 30 years' experience. So they're at that age now where there's a turnover.

Training has ... Training is always a challenge, especially when you have turnover. It hasn't been as bad as maybe the numbers look like. So, we haven't lost everybody and had to replace everybody sort of the next day. That's most definitely not what has happened. It's a continuous sort of in and out-type procedure. And as new employees come in, we've been training them appropriately. More specifically, we have a key

irradiation safety office, myself, Moshkin and Sam as well, that are now trained to look after those key areas. So, we have a -- a stable office that can look after the license activities and ensure that employees are trained to work safely and -- and according to procedure..

MEMBER TOLGYESI: Staff, do you have something to add to the training and the -- how you see that?

MR. ELDER: Peter Elder for the record. Our review of the training program was actually focused around how they do radiation protection and making sure that the radiation protection program and the training around it is appropriate so that -- that each job description clearly defines what sort of training they need for those type of jobs. So we did, but it was very focused around the radiation protection aspect, as opposed to what sort of training you would need for in the machine shop.

THE PRESIDENT: Anybody else? Dr. McEwan.

MEMBER McEWAN: Sorry, one final

question. It's going back to Ms Velshi's first broader philosophical question. It seems to me that this licence is covering, in a sense, two quite separate businesses. It's covering a well-established sales source business related to your irradiation units. The other one is an entirely new endeavour which is related to testing a cyclotron beyond the parameters that -- that any other cyclotron manufacturer that I am aware of is doing. It seems to me the learning curve for Best is going to be quite different for those two activities. The one is something that you've done for a long time, you're very used to, and -- and the regulations have changed incrementally, so you have been able to keep up with them. This is an entirely new endeavour. Are there protocols in place that will ensure that there is a reasonable hope that each separate business can be monitored effectively and appropriately without impacting the other, and also to facilitate whatever learning curve Best has to go through?

MR. ELDER: Peter Elder for the record. I think you've just good -- did a very good summary of why we're including hold points around the new operation. So that will make us and give us

some -- some comfort and -- and be able to verify that before they do these new operations they have the appropriate procedures in place.

In terms of, you know, we actually are looking at this one is -- is in terms of inspections there will be joint inspections from our specialists on accelerators with the ones who are more familiar and more focused on -- on nuclear processing facilities as well.

I also am going to take this chance to -- to note that we have noted that there is an error in our draft licence around -- it's still including clauses around construction and site preparation of a Class 1B. So we will take that out and provide the Secretariat with a clean version of the licence in that one. But what you are talking to is the reason why we thought it was worthy to have specific licence conditions around those hold points that are really around the new hazards -- or hazards -- new activities that Best will be doing.

THE PRESIDENT: On the other hand, just to give some complements or entrepreneurial spirit to try something new, that's fine. I think -- I was going to ask you whether you are now eyeballing the 2016, when you will stop producing isotope and you guys are going to start selling all those cyclotron to all those hospitals. Is that the market?

MR. WASSENAAR: Richard Wassenaar for the record. There are two different markets, right? So the Cobalt-60 is therapy. You can't make that with the cyclotron

that I know of, at least I haven't thought about a way yet, although it would be nice. We're definitely looking at ACL and -- and how it's moving forward, particularly as it moves to the GoCo model. What will happen in 2016 we're watching very carefully, and of course as a business we are looking at various options and -- and we're hoping that it will continue well into that. It still serves a very strong need both here in Canada and internationally. But, yes, it's -- it's something we think about and -- and something we -- we do discuss regularly.

THE PRESIDENT: So in that spirit let me ask you something that's been bothering me for a long time. How come food irradiation is not the growth industry? After the shut down of -- you know, of food poisoning and all that stuff. I asked that of Nordion and didn't get much of an answer. I'm asking you guys, you are in the blood irradiation, why are you not in the food irradiation, bidding up on everybody's door to try to deal with some of this stuff?

MR. WASSENAAR: Richard Wassenaar for the record. Large-scale irradiators, which is typically what you would see for food irradiation, is Nordion's business. When we separated, we -- we sort of cut the two businesses and made it clear what we were allowed to do with each other. We didn't want to impede on each other's business early on. So it's --

I'll leave it to Nordion. If -- if they didn't give you a good answer, well, I'm afraid we probably won't be able to either because it's not our area of expertise.

Now, if you were to ask me why people don't use irradiation therapy-based cobalt, that's a -- a different question and -- and I would say I don't know but they should be. It's -- it's a very cost effective, very good solution that I think should be seen in more places, not just where we're currently selling, in -- in developing countries or underdeveloped countries.

MEMBER McEWAN: Sorry. Your -- your IMRT, is that still a work in progress or -- or is it actually now in the field?

MR. WASSENAAR: Richard Wassenaar for the record. I don't believe we have regulatory approval yet for it. That is something we're currently looking at right now. And if you're interested, we can talk after and we can discuss timelines.

THE PRESIDENT: Any other questions?

Okay. So now the real -- the most fundamental question to me is we started with five licences. We're moving now to three consolidated into this Class 1B. What happened to the other two? You mentioned. And I was trying to do -- to

understand whether one of the two are at the Vancouver office. Somewhere along the line you were talking about a Vancouver office. Is that a licensed facility?

MR. WASSENAAR: Richard Wassenaar for the record. No, the Vancouver office is not a licensed facility. It's a design facility. So it -- it's basically an office of -- of a number of engineers who are doing design work that feeds into our location and we do the assembly and the testing. Now, it is part of Best Theratronics, so it's not a -- it's essentially a satellite office, but the employees are Best Theratronics employees. You are not licensed in that office and that office does not have any CNSC licences because of the type of activity it -- it does. It's purely design and -- and some mechanical design testing, I guess you could call, engineering playroom.

Your other question about how many licences we're going to. We currently have four. We have applied for a servicing licence to -- for servicing of our gamma cells, which falls under the Nuclear Substance Directorate, which would give us five licences. Three of those will be consolidated into the Class 1B, but we have to -- and Peter will probably speak to this better. My understanding is we have to keep two of the servicing licences because they do not fit into a Class 1 framework.

THE PRESIDENT: Okay. So now you lost me. Somebody explain to me why then -- we just talked about the advantage of going to 1B. And so we went from 5 to 3. You know, it doesn't sound to me like a big increase in flexibility.

MR. ELDER: Peter Elder for the record. So the ones that we have not included is this consolidated lic-- the -- the consolidated -- the Class 1 licence will allow -- cover all activities they do at the Kanata facility. What we haven't included are the licences that allow them to do work anywhere in Canada to service particular pieces of equipment that they have sold. And so there are lots -- there are different requirements when you go out and saying to do that service requirement. So it becomes a question of saying the requirements around those services licence are completely than are around the facility licence. So it's -- it's to allow them to go do work in a hospital in Montreal as opposed to ... So what we have done is consolidate everything that allows them to do work in Kanata, but there's a separate licence that they bring and show the hospital in Montreal that they're allowed to service that piece of equipment.

THE PRESIDENT: And what's the other one?

MR. ELDER: The other one is -- is for their other pieces of -- there are two -- the gamma cells, so that

the different bases of equipment. Because each of those specific pieces of equipment are individually certified as -- as licensed, you know, pieces of equipment.

THE PRESIDENT: Did we do the same thing with Nordion? I thought Nordion we now have one -- one -- one site for -- one -- do we have also multiple licences in Nordion?

MR. ELDER: Yes --

THE PRESIDENT: How many?

MR. ELDER: -- in terms of the surface. I'd -- I'd have to get the precise number on Nordion, but yeah.

THE PRESIDENT: Okay. Anyhow, it's not to be discussed here now -- now, but it's something that I -- you know, that -- the multiple licences always worries me, rather than one umbrella with multiple line of activities, for one entity, one corporate entity. But this is -- we should discuss this. Off topic here now.

Anybody else?

Okay. Thank you. Thank you very much and all the best to you guys.

THE SECRETARY: So, what will happen now is that the Commission will confer with regards to the information that it has considered today and will then determine if further

information is needed or if the Commission is ready to proceed with a decision and we will advise you accordingly.

And, Mr. President, we have a Commission meeting. We're going to take a break until 3:15?

THE PRESIDENT: Yeah.

THE SECRETARY: And we'll resume with the Commission meeting at 3:15. Thank you. Bye-bye.

THE PRESIDENT: Thank you.

--- Upon recessing at 2:04 p.m. /

Suspension à 14 h 02