Cigar Lake Project

Northern Saskatchewan, Canada

National Instrument 43-101

Technical Report

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

UNITS OF MEASURE AND ABBREVIATIONS

a	Annum (year)
%	Percent
°	Degrees
°C	Degrees Celsius
cm	Centimetres
d	Day
g	grams
g/cm^3	grams per cubic centimetre
g/m^3	grams per cubic metre
g/L	grams per Litre
h	Hour(s)
ha	Hectares (10,000 square metres)
HP	Horsepower
Hwy	Highway
IRR	Internal rate of return
K	Thousand
kg	Kilograms
km	Kilometres
km/h	Kilometres per hour
km^2	Square kilometres
kV	Kilovolts
kW	Kilowatts
L	Litre
lbs	Pounds
M	Million
Mt	Million tonnes
m	Metres
$m^2/t/d$	Square metres per tonne per day (thickening)
m^3	Cubic metres
m^3/h	Cubic metres per hour
m%U	metres times per cent uranium
$m\%U_3O_8$	metres times per cent uranium oxide
masl	Metres above sea level (elevation)
mm	Millimetres
MPa	Megapascal
Mt/a	Million dry tonnes per year
MW	Megawatts
N	Newton
NPV	Net present value
Pa	Pascal (Newtons per square metre)
ppm	Parts per million
P_{80}	80% passing (particle size nomenclature)
st	Short tons
SX	Solvent extraction
t	Tonnes (metric)
t/h	Tonnes per hour
t/d	Tonnes per day
t/a	Tonnes per year
U	Uranium
%U	Percent uranium (%U x 1.179 = % U_3O_8)
U_3O_8	Uranium oxide (yellowcake)
$\%U_3O_8$	Percent uranium oxide ($\%U_3O_8$ x 0.848 = %U)
Cdn$	Canadian Dollars

Cdn$ M	Million Canadian Dollars
US$	US dollars
US$ M	Million US dollars
$/t	Canadian dollars per tonne
US$/lb	US dollars per pound
US$/t	US dollars per tonne
v/v %	Percent solids by volume
wt%	Percent solids by weight
>	Greater than
<	Less than

1 SUMMARY

1.1 Preamble

In March of 2007, Cameco prepared and filed a Technical Report for the Cigar Lake Project, based on new scientific and technical information available at that time. The 2007 report was necessary because of the project changes resulting from the October 2006 water inflow.

Since the 2007 report, there have been further changes in the Cigar Lake Project. This Technical Report is founded on the substantial scientific, technical and field experience and information gained over the past several years. Cameco has a clearer understanding of the projects risks, has implemented actions to mitigate these risks, and is pursuing opportunities to further assure the success of this project.

Some of the more noteable changes to the project since the 2007 report include:

- an increase in Cameco's share of the aggregate capital cost estimate - from $508 million in 2007 to $911.7 million. The estimate includes historical costs as well as costs going forward from January 1, 2010 and has increased primarily as a result of the longer period over which remediation and development will occur, additional costs for inflow abatement, increases in surface capital costs and improvements to the mine plan and water management systems. See Section 18.7.2 for more details.

- an increase in estimated average cash operating costs per pound - from $14.40/lb in 2007 to $23.14/lb. The increased estimated operating costs are primarily due to general cost escalation, changes to the mine plan, lower average annual production rate in the ramp-up period and the later years of mine life, as well as additional personnel to meet regulatory requirements and provide oversight. In addition, current milling estimates no longer include any plans to co-mill other ores. See Section 18.7.3 for more details.

- an extended ramp-up period to full production - from two years in 2007 to three years due to changes in the mine plan. See Sections 18.1.8 and 18.1.9 for more details.

- an updated Mineral Reserve and Mineral Resource estimate – Cameco's share of reserves went from 113 million pounds in 2007 to 105 million pounds, due to a 12% increase in tonnes of diluted ore and an 18% reduction in average grades. Cameco's review of the Mineral Resource and Mineral Reserve classification resulted in 35% of reserves being classified as Proven

Mineral Reserves, compared to 100% previously. Notwithstanding the reclassification, the mine plan has been designed to extract all Cigar Lake Proven and Probable Mineral Reserves. See Section 17.2.6 for more details.

- change in mine plan such that all lateral development required to mine the deposit has been located further from the geological contact with the sandstone (unconformity). Mining and freezing will be conducted from the 480 m level, which is located about 25 m below the ore zone. Under the old mine plan, mining was to be conducted from the 465 m level and freezing from the 480 m level. See Section 18.1.8 for more details.

- mine dewatering and water treatment capacity will be increased to approximately 2,500 m^3/hr which is greater than either of the two previous mine inflows. See Section 18.1.8 for more details.

While the foregoing aspects of the project have changed, Cameco has plans, many of which are already in action, to realize opportunities to address these aspects of the project.

Cameco has indicated its plans for drilling in 2010 to upgrade the Phase I Mineral Resources. Studies of methods to decrease dilution by re-directing sump underflows will potentially yield increases to average grade. The continued enhancement of project management systems, tools and rigour, combined with optimization of operational strategies can provide for positive impacts to project costs. The assessment of a surface freeze strategy can result in a shorter ramp-up period for the project and potentially bring forward up to 10 million lbs of product into the first four years of operation. In addition to more production in the early years, Cameco's surface freezing strategy, if implemented, is expected to shorten the period over which existing reserves are produced and to improve project economics, including a reduction in operating costs due to a shorter mine life and an increase in the estimated NPV.

This is in addition to the strategies and actions Cameco has already taken to assure the success of this important project. Cameco has adopted an "assurance of success" program for Cigar Lake. This program involves risk-based quality assurance planning for the project. Prior to implementation, the principal processes involved in the project are thoroughly risk-assessed, with the goal of ensuring that all risks are well understood, measures are taken to mitigate those risks, and alternatives are developed to address those risks that cannot be fully mitigated. As the project is carried out, there is a systematic monitoring and evaluation of any changes or conditions that were not anticipated in the original plan. Any such changes or conditions are also risk-assessed and the plan is revised on an ongoing basis to mitigate, or develop alternatives to address, any new risks to the success of the project that are identified.

Cameco, building on its assurance of success approach to operational excellence, has already implemented enhanced water management strategies and tactics to mitigate the risk of water inflows. Cameco also has made significant changes to the Cigar Lake mine design and plans to enhance operational effectiveness. This is underpinned by significant evolutions in the systems, procedures and practices carried out in the project and demonstrated successfully in the results achieved to date, including the successful dewatering and re-entry to the mine and Shaft No. 2.

Cameco is cognizant of the risks associated with advancing the Cigar Lake project, but based on its remediation and mining plan, its operational experience, its demonstrated competence and its economic analysis, Cameco is confident in this project and its successful completion. The actions already taken, and the opportunities being pursued by Cameco, clearly address the changes that have occurred in the project and the risks that are characteristic to the development of this, and any other mining project, particularly in northern Saskatchewan's Athabasca Basin.

The authors of this report concur with Cameco's plans and confidence in the project.

1.2 Introduction

Cigar Lake is the world's second largest known high-grade uranium deposit and is located in northern Saskatchewan. The uranium grades of its Mineral Reserves are over 100 times the world average for uranium deposits. Cigar Lake is owned by joint venture partners Cameco Corporation (Cameco) (50.025%), AREVA Resources Canada Inc. (AREVA) (37.1%), Idemitsu Canada Resources Ltd. (Idemitsu) (7.875%) and TEPCO Resources Inc. (TEPCO) (5.0%). Cameco has proven expertise in operating uranium mines in Saskatchewan and is the operator of Cigar Lake and has been since January 2002.

In December 2004, the Cigar Lake Joint Venture (CLJV) decided to proceed with development of the Cigar Lake mine and received a construction licence from the Canadian Nuclear Safety Commission (CNSC) that same month. Construction of the project began on January 1, 2005. Development has been delayed due to two water inflow incidents that occurred in April and October, 2006 and an additional water inflow incident in August, 2008.

In October 2009, Cameco successfully sealed the August 2008 inflow and the underground workings were dewatered in February 2010. Safe access to the 480 m level, the main working level of the mine, has been established. Crews have re-entered this level and work to inspect, assess and secure the underground development has begun. Cameco expects work to secure the underground to be completed before October 2010 depending on the condition of the mine. This work will be followed by restoration of underground mine systems and infrastructure in preparation for resumed construction activities.

Development of the Cigar Lake mine is expected to be complete in 2013, with commissioning of the mine facilities and initial production targeted for mid 2013. The mine and facilities have been designed to produce product for sale at a rate of approximately 18 million pounds U_3O_8 per year when the mine reaches full operation.

Based on the confidence in the mining plan, a detailed remediation plan, and a positive economic analysis, Cameco plans to continue to proceed through remediation and construction to production, as described in this technical report.

This technical report has been prepared for Cameco by, or under the supervision of, internal qualified persons in support of disclosure of new scientific and technical information that is material to the Cigar Lake project as contained in Cameco's Annual Information Form for 2009, Cameco's Management Discussion and Analysis filed with securities regulators on February 25, 2010, and Cameco's press release on February 24, 2010. This new material scientific and technical information includes: (i) an updated capital cost estimate; (ii) an updated production forecast; (iii) an updated mineral reserve and mineral resource estimate, and (iv) a revised mine plan. This new information is the result of technical studies and experience gained over the last three years, additional surface drilling and the application of improved methodologies to model the deposit and to classify its Mineral Reserves and Resources.

1.3 Property Tenure

The mineral property consists of one mineral lease (ML-5521) and 25 mineral claims (Nos. S-106540 to 106564 inclusive), totalling 93,048 ha. The mineral lease and mineral claims are contiguous. The Cigar Lake deposit is located in the area subject to mineral lease ML-5521, totalling 308 ha. The right to mine this uranium deposit was acquired under this mineral lease. The current mineral lease ML-5521 expires December 1, 2011 with the right to renew for successive ten-year terms absent a default by Cameco.

Surrounding the Cigar Lake deposit there are 25 mineral claims, totalling 92,740 ha. A mineral claim grants the holder the right to explore for minerals within the claim lands and the right to apply for a mineral lease.

The surface facilities and mine shafts for the Cigar Lake project are located on lands owned by the Province of Saskatchewan. Cameco acquired the right to use and occupy the lands under a surface lease agreement with the Province. The most recent surface lease was signed in May 2004. The term of this surface lease expires in May 2037. The Cigar Lake surface lease covers a total area of 984 ha of Crown land. Cameco is in discussions with the Province to increase the area of the surface lease. The increase is required to implement the proposed discharge of treated effluent to Seru Bay at Waterbury Lake.

The Cigar Lake airstrip is under a separate surface lease agreement with the Province and covers a total of 17.2 ha. The airport lease was renewed with the Province in 2007 and will expire in May 2028.

In addition, Cameco has the right, pursuant to a Miscellaneous Use Permit (MUP) issued by the Province of Saskatchewan, to use a 41 km portion of the access road serving the surface facilities. This MUP is re-issued on an annual basis, and was most recently re-issued on November 2, 2009.

1.4 Location and Site Description

The Cigar Lake minesite is located near Waterbury Lake, approximately 660 km north of Saskatoon. Access to the property is by an all weather road and by air. All supplies to the site and shipment of product are transported by truck year round. Site activities are carried out throughout the year.

The topography and the environment are typical of the taiga forested lands common to the Athabasca basin area of northern Saskatchewan. The area is covered with 30 to 50 m of overburden. The surface facilities are at an elevation of approximately 490 masl.

The site is connected to the provincial electricity grid with a 138kV overhead power line. There are standby generators installed in case of grid power interruption.

Personnel are recruited on a preferential basis: initially from the communities of northern Saskatchewan, followed by the Province of Saskatchewan and then outside to other Provinces. The development and construction work is tendered to a number of contractors.

1.5 Geology and Mineralization

The Cigar Lake deposit is located 40 km inside the margin of the eastern part of the Athabasca basin. It is an unconformity related uranium deposit and occurs at the unconformity contact between rock of the Athabasca group and underlying lower Proterozoic Wollaston Group metasedimentary rocks, an analogous setting to the Key Lake, the McClean Lake, and the Collins Bay deposits. Cigar Lake shares many geological similarities with these deposits, including general structural setting, mineralogy, geochemistry, host rock association and the age of the mineralization.

The Cigar Lake deposit is distinguished from other similar deposits by its size, its high grade, the intensity of its alteration process, and the high degree of associated hydrothermal clay alteration. The geological setting at Cigar Lake is similar to that at the McArthur River mine in that the sandstone overlying the basement rocks of the deposit contains significant water at high hydrostatic pressure. Unlike McArthur River, however, the deposit is flat lying.

The Cigar Lake deposit is approximately 1,950 m long, 20 to 100 m wide, and ranges up to 12 m thick, with an average thickness of about 5 m. It occurs at depths ranging between 410 and 450 m below the surface.

Three distinct styles of mineralization occur within the Cigar Lake deposit: high grade mineralization at the unconformity ("unconformity" mineralization) which includes the ore; fracture controlled, vein-like mineralization higher up in the sandstone ("perched" mineralization); and fracture controlled, vein-like mineralization in the basement rock mass.

The body of high grade mineralization located at the unconformity contains the bulk of the total uranium metal in the deposit and currently represents the economically viable style of mineralization, considering the available mining methods and ground conditions. It is characterized by the occurrence of massive clays and high-grade uranium concentrations.

The high-grade, unconformity mineralization consists primarily of three dominant rock and mineral facies occurring in varying proportions. These are quartz, clay (primarily chlorite with lesser illite) and metallic minerals (oxides, arsenides, sulphides). In the two higher grade eastern lenses, the ore consists of approximately 50% clay matrix, 20% quartz and 30% metallic minerals, visually estimated by volume. In this area, the unconformity mineralization is overlain by a weakly mineralized contiguous clay cap one to five metres thick. In the lower grade western lens, the proportion changes to approximately 20% clay, 60% quartz and 20% metallic minerals.

1.6 Mineral Resources and Mineral Reserves

The known mineralization at Cigar Lake has been divided into two areas; the eastern area denoted Phase 1 and the western area denoted Phase 2. Delineation drilling of the deposit was concentrated on Phase 1, which contains all the Proven and Probable Mineral Reserves and minor amounts of Measured, Indicated, and Inferred Mineral Resources. Phase 2 has had less drilling and all resources in this area are in the Inferred Mineral Resource category. The known mineralization in Phase 1 is generally thicker and higher grade than that in Phase 2.

The Phase 1 Mineral Resource and Reserve estimate is based on 123 drillholes that intersected the orebody of which 113 are from surface and 10 are from underground. The surface drillholes intersected the orebody at a nominal grid spacing of 50 m east-west by 20 m north-south. The Phase 2 Mineral Resource estimate is based on 53 drillholes, of which 19 intersected the mineralization, from surface at a nominal drillhole grid spacing of 200 m east-west by 20 m north-south.

A summary of the Mineral Resources in the Cigar Lake deposit with an effective date of December 31, 2009 is shown in *Table 1-1*. Alain G. Mainville, P.Geo., of Cameco, is the qualified person within the meaning of National Instrument 43-101 *Standards of Disclosure for Mineral Projects* (NI 43-101) for the purpose of the Mineral Resource and Reserve estimates.

Table 1-1: Summary of Mineral Resources – December 31, 2009

Category	Area	Total Tonnes (x 1000)	Grade $\%U_3O_8$	Total Lbs U_3O_8 (millions)	Cameco's Share Lbs U_3O_8 (millions)
			Measured and Indicated		
Measured	Phase 1	8.4	2.1	0.4	0.2
Indicated	Phase 1	15.6	2.4	0.8	0.4
Total M+I	**Phase 1**	**24.0**	**2.3**	**1.2**	**0.6**
			Inferred		
Inferred	Phase 1	163.4	4.3	15.4	7.7
Inferred	Phase 2	317.0	16.9	118.1	59.1
Total Inf.	**Phase 1+2**	**480.4**	**12.6**	**133.5**	**66.8**

Notes: (1) Cameco reports Mineral Reserves and Mineral Resources separately. Reported Mineral Resources do not include amounts identified as Mineral Reserves.
(2) Cameco's share is 50.025 % of total Mineral Resources.
(3) Inferred Mineral Resources have a great amount of uncertainty as to their existence and as to whether they can be mined legally or economically. It cannot be assumed that all or any part of the Inferred Mineral Resources will ever be upgraded to a higher category.
(4) Phase 1 Mineral Resources have been estimated with a minimum mineralization thickness of 1.0 m and by applying a cut-off grade of 1.0 % U_3O_8 to the resource block model. Phase 2 Mineral Resources have been estimated with a minimum mineralization thickness of 2.5 m and by applying a cut-off grade of 5.9 % U_3O_8.
(5) The geological model employed for Cigar Lake involves geological interpretations on section and plan derived from core drillhole information.
(6) No allowance has been included for mining dilution or mining recovery.
(7) Mineral Resources were estimated based on the use of the jet boring mining method combined with bulk freezing of the orebody.
(8) Mineral Resources were estimated using a 3-dimensional block model for Phase 1 and a 2-dimensional block model for Phase 2.
(9) No known environmental, permitting, legal, title, taxation, socio-economic, political, marketing or other issues are expected to materially affect the above estimate of Mineral Resources.
(10) Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

A summary of the Mineral Reserves with an effective date of December 31, 2009 is shown in *Table 1-2*.

Table 1-2: Summary of Mineral Reserves – December 31, 2009

Category	Area	Total Tonnes (x 1000)	Grade $\%U_3O_8$	Total Lbs U_3O_8 (millions)	Cameco's Share Lbs U_3O_8 (millions)
Proven	Phase 1	130.5	25.6	73.7	36.9
Probable	Phase 1	426.8	14.4	135.6	67.8
Total	**Phase 1**	**557.3**	**17.0**	**209.3**	**104.7**

Notes: (1) Total Lbs U_3O_8 are those contained in Mineral Reserves and are before mill recovery of 98.5 % has been applied.
(2) Cameco's share is 50.025 % of total Mineral Reserves.
(3) Mineral Reserves have been estimated at a cut-off grade of 2.0% U_3O_8 and a minimum mineralization thickness of 1.5 m applied to the Phase 1 mineral resource block model, after estimating the diluted grade of the JBS cavity.
(4) The geological model employed for Cigar Lake involves geological interpretations on section and plan derived from core drillhole information.
(5) Mineral Reserves have been estimated with an allowance of 0.5 m of dilution material above and below the deposit, plus approximately 20% external dilution at 0 % U_3O_8.
(6) Mineral Reserves have been estimated based on 90 % mining recovery.
(7) Mineral Reserves were estimated based on the use of the jet boring mining method combined with bulk freezing of the orebody. Jet boring produces an ore slurry with initial processing consisting of crushing and grinding underground, leaching at the McClean Lake JEB mill and yellowcake production split between the McClean Lake JEB and Rabbit Lake mills. Mining rate assumed to vary between 100 and 140 t/d and a full mill production rate of approximately 18 million pounds U_3O_8 per year.
(8) Mineral Reserves were estimated using a 3-dimensional block model.
(9) An average uranium price of US$54/lb U_3O_8 was used to estimate the Mineral Reserves.
(10) The key economic parameters underlying the Mineral Reserves include a conversion from US dollars to Cdn dollars using a fixed exchange rate of US$1.00 = Cdn$1.05.
(11) No known environmental, permitting, legal, title, taxation, socio-economic, political, marketing or other issues are expected to materially affect the above estimate of Mineral Reserves.

The current mining project has been designed to extract all of the Cigar Lake Proven and Probable Mineral Reserves.

The updated 2009 Mineral Resource and Mineral Reserve estimates reflect changes mainly due to:

- Re-interpretation of the mineralized envelopes of the Phase 1 Area;
- Block modelling in 3-dimension (previous model was in 2D);
- Revised mine layout and dilution assumptions;
- Reclassification of the Mineral Resources and Mineral Reserves;
- Updated operating cost estimates; and
- Metal price and exchange rate assumptions.

These factors contributed to the decreases in total contained pounds of U_3O_8 in the Mineral Reserves and in the estimated average grade. Compared to previous Mineral Resources and Mineral Reserves disclosed by Cameco, as of December 31, 2008, the Mineral Reserves went from 226.3 million pounds in 2008 to 209.3 million pounds. The review of the mineral resource and reserve classification resulted in 35% of the Mineral Reserves being classified as proven, compared to 100% previously. The classification is based on drill hole spacing, geological continuity, grade continuity, estimation confidence and the anticipated ability to successfully recover all of the ore.

Phase 2 Mineral Resources have not been re-evaluated and show no change compared to last year. The Mineral Resources in Phase 2 are in the Inferred category.

1.7 Exploration of Cigar Lake Deposit

The Cigar Lake uranium deposit was discovered in 1981 on mineral lease ML-5521 by drillhole number WQS2-015 of a regional programme of diamond drill testing of geophysical anomalies (electromagnetic conductors) located by airborne and ground geophysical surveys. The deposit was subsequently delineated by a major surface drilling program during the period 1982 to 1986, followed by several small campaigns of drilling for geotechnical and infill holes to 2002 when the last surface hole prior to 2007 was drilled. An additional 51 holes were drilled from 2007 through 2009 for various geotechnical and geophysical programs. In total, 114,940 m of diamond drilling has been completed in 278 surface holes to delineate the deposit. Of the 278 surface drill holes and wedged intersections drilled, 117 have been drilled within the geologically interpreted deposit limits and intersected minimum composite intervals with grade times thickness (GT) value greater than 3.0 m%U_3O_8, equivalent to 2.5 m at 1.2% U_3O_8. The other 161 holes were drilled for purposes of geotechnical assessment and for exploration.

In addition to the surface holes, diamond drilling has been done from underground access locations primarily to ascertain rock mass characteristics in advance of development and mining, both in ore and waste rock. In the period from 1989 to 2006, 132 underground diamond drill holes totalling 11,108 m were drilled. Only ten of these underground holes have intersected the orebody. No underground drill programs have been conducted since the flooding of the mine in October 2006.

A total of 347 freeze and temperature monitoring holes have been drilled from underground workings to the end of 2006 during the construction phase, of which approximately 150 have been gamma surveyed. The freeze holes are drilled by percussion methods so no core is available for assays and uranium content is estimated by probing the holes with radiometrics. Cameco plans to reconfirm the current conversion factors for estimating uranium grade from the radiometrics by drilling several core holes and using them for calibration purposes.

1.8 Exploration of Waterbury Lake Property

Mineral lease ML-5521, which covers the Cigar Lake deposit, is surrounded by 25 mineral claims. AREVA is responsible for all exploration activity on these 25 surrounding claims under the CLJV agreements. (For the purposes of this Section 1.8, these mineral claims are called the Waterbury Lake property).

The Waterbury Lake property was initially acquired by Asamera Oil Corporation Ltd. (Asamera) with the first three claim blocks staked in 1975, a fourth in 1976 and a permit created in 1977. Asamera conducted various field investigations from 1976 to 1979 including completion of three diamond drillholes in 1978 and one in 1979. None of these drillholes intersected the deposit.

In 1980, S.E.R.U. Nucléaire Canada Limitée (SERU) took over as operator of the Waterbury Lake property. During the years 1980 to 1986, SERU (a predecessor company of AREVA) completed various airborne and ground geophysical programs, lake sediment and water sampling programs and substantial diamond drilling.

During 1981, fourteen exploration holes were drilled by SERU on the Waterbury Lake property, followed by the Cigar Lake deposit discovery hole. Subsequent to that discovery, the majority of exploration activities over the next few years were concentrated on ML-5521, which hosts the Cigar Lake deposit, with only moderate activity on the Waterbury Lake property. All exploration activities ceased after the 1986 field season for a period of 12 years, until exploration work on the Waterbury Lake property recommenced in 1999.

The 1999 work program started with a period of data compilation and review of all work conducted to date, following which additional exploration was started focussing upon developing further understanding of the Cigar trend, and developing knowledge of the large, unexplored parts of the project. Since the inception of exploration activities to the end of the 2009 drilling program, a total of 115 exploration diamond drillholes (totalling 55,024 m) and an additional 38 shallow drillholes (totalling 2,140 m) have been completed on the Waterbury Lake property.

Exploration drilling in 2006 confirmed the existence of unconformity style mineralization outside the mineral lease, approximately 650 m east of Phase 1 mineralization. Additional exploration has been conducted in this area since 2006 and has delineated a mineralized zone approximately 210 m in strike length and 30 m in across-strike length.

The data from the exploration program on the 25 mineral claims is not part of the database used for the estimate of the Mineral Resources and Mineral Reserves at Cigar Lake.

1.9 Mining

The mining of the Cigar Lake deposit faces a number of challenges including weak rock formations, relatively thin flat lying mineralization, control of groundwater and radiation protection. Based on these challenges it was identified that a non-entry mining method would be required to mine the deposit.

The mining method selected is the jet boring mining system (JBS) for the mining of the Cigar Lake deposit. This was selected after many years of exploration and test mining activities following the discovery of the deposit in 1981. The mining method consists of cutting cavities out of frozen ore, approximately 4.5 m in diameter, with a high pressure water jet in previously frozen ore. The method was developed and adapted specifically for this deposit. One of the primary features of JBS mining is its non-entry approach, whereby personnel are not directly exposed to the orebody since all mining will be conducted from headings located in basement rock below it. The levels of radiation exposure to workers is kept low and below regulatory limits through the application of non-entry mining methods, the containment of the ore cuttings within cuttings collection systems, and via the application of ground freezing. Experience with non-entry mining of high grade uranium ore at Cameco's McArthur River mine has demonstrated the effectiveness of a non-entry mining approach to manage radiation exposures.

Underground in-situ mining tests in 1992 comparing the JBS mining method to other methods proved the potential of the method and provided the basis for the design and construction of a prototype jet boring system. A further series of in-situ mining field tests were then conducted in 1999 and 2000 and demonstrated the ability of the jet boring system to perform all production procedures in a timely and effective manner. Overall, the test mining programs were considered successful with the initial objectives achieved. An estimated total of 768 t of mineralized material grading on average 17.4% U_3O_8 was mined during the various mining tests.

In conjunction with the testing of the mining method was the selection and field testing of the mine development system (MDS). The MDS consists of a 5.1 m diameter full-face tunnel boring machine and the installation of a pre-cast concrete tunnel lining for ground support. The special feature of the MDS is that it provides continuous temporary ground support during excavation and almost immediate installation of permanent ground support after excavation. This feature is critical for development in areas of poor ground conditions where there is minimal stand-up time.

Freezing the ground is key to the success of mining the deposit. This will result in several enhancements to the mining conditions. These enhancements include: (1) increasing the stability of the rocks being mined, (2) minimizing the risk of water inflows into the mine from the water bearing rock above the unconformity, and (3) reducing the radiation resulting from radon dissolved in the water.

The main access to the mine is via a 4.9 m diameter circular, concrete lined Shaft No. 1 which extends to a depth of 500 m and provides direct access to the working level on the 480 m level. The level number is the approximate depth of that level below surface in metres. Shaft No. 2 is a 6.1 m diameter circular, concrete lined shaft which has presently been sunk to a depth of 392 m with an ultimate planned depth of 500 m. This shaft is located 90 m south of Shaft No. 1 and will provide access to the 480 m level. Shaft No. 1 will be used as the main access and services shaft, and as a route for delivery of fresh ventilation underground. Shaft No. 2 will be divided into two compartments by a central airtight partition: one compartment will serve as the main path for exhaust air from the mine; the second compartment will be used to downcast additional fresh ventilation air as well as house the cage to be used for secondary egress and a number of additional services. The primary ventilation system has been designed to supply a volume of up to 250 m^3/s of fresh air to the mine.

All lateral development required to mine the deposit has been located in the basement rocks below the orebody. Mining will be conducted from the 480 m level, which is located about 25 m below the ore zone. Under the old mine plan, mining was to be conducted from the 465 m level and freezing from the 480 m level. The current plan is to abandon the 465 m level and to secure it by backfilling prior to production.

The freezing strategy is to bulk freeze the ore zone and areas above and below it prior to the commencement of mining in a given area. The first step in freezing is to drill near-vertical freeze holes from the 480 m freeze level up through the orebody. Calcium chloride brine at minus 30^0 C is delivered underground through pipes installed in Shaft No. 1 from a surface refrigeration plant. This brine is received by heat exchangers underground which in turn feed brine to freeze pipes installed in the freeze holes. This system freezes the deposit and underlying basement rock at between minus 10^0 C and 20^0 C in one to three years.

Jet boring mining will consist of cutting the ore with a high pressure water jet using the JBS. The JBS mining units will cut cavities of approximately 4.5 m diameter in the previously frozen ore from each set-up, producing approximately 230 t of ore for a typical 6.0 m ore thickness. All mining with the JBS will be done from the 480 m production level, located in the basement rock below the ore zone. Following mining, each cavity will be backfilled with concrete.

Re-evaluation of the 2004 Cigar Lake Mine design was prompted by two inflows at the mine, which occurred in October 2006 and August 2008. Geo-scientific studies completed between 2007 and 2009, and the application of lessons learned have resulted in changes to the mine design. The JBS mining method and mine development methods remain the same, albeit on a lower mining horizon. Mine water pumping and treatment capacity has been upgraded and the Mineral Reserves updated for the new plan. The required mine production of 100 to 140 t/d of ore can be produced by jetting with two JBS mining units. The mine equipment fleet will be comprised of four JBS units and other equipment for mine development, drilling and other services. Ore mined by the JBS will mix with the cuttings water to form a slurry which will be pumped through pipes directly from the JBS to the run-of-mine ore receiving facility (ROM). From the ROM the ore will be recovered and fed to an underground crushing and grinding circuit. The ground ore slurry is stored to be pumped to surface by a slurry pump through a pipeline to be installed in Shaft No. 2. At surface, the ore is stored, blended and dewatered for shipment in slurry form to the McClean Lake JEB mill for processing.

1.10 Processing

Cigar Lake ore will be processed at three locations. Size reduction will be conducted underground at Cigar Lake. Leaching will occur at McClean Lake. Purification and final yellowcake production will be split between the existing McClean Lake mill and the Rabbit Lake mill. The total estimated annual production rate of product is approximately 18 million pounds U_3O_8 when the mine is in full operation. The McClean Lake JEB mill is owned by the McClean Lake Joint Venture (MLJV) and operated by AREVA. Cameco owns and operates the Rabbit Lake mill.

The first stage of processing takes place underground at Cigar Lake. The ore slurry from the JBS will be pumped to the underground crushing and grinding facility and the resulting finely ground, high density ore slurry is pumped to surface storage tanks, thickened, then loaded into truck mounted slurry containers, similar to those currently being used at the McArthur River mine.

The containers of ore slurry will be trucked for processing at AREVA's McClean Lake operations which is 70 km by road to the northeast. Initially all the Cigar Lake ore will be processed at the McClean Lake JEB mill. As Cigar Lake production ramps to full capacity, just over half of final uranium separating and processing will be completed at Cameco's Rabbit Lake mill facility. The McClean Lake JEB mill and the Rabbit Lake mill will both require modifications to process the Cigar Lake ore.

The McClean Lake JEB mill modifications to process Cigar Lake ore slurry are largely complete. The remaining modifications are scheduled for completion in 2013, other than construction of the uranium solution loading facility, which is scheduled to be complete in 2015.

Detailed design of the Rabbit Lake mill modifications is planned to commence in 2011. A uranium solution receiving station is targeted for completion in 2015. The required transportation infrastructure includes road adjustments and a new bridge, which are targeted for completion in 2014.

The CLJV has entered into toll milling agreements for the processing of uranium from Cigar Lake at the McClean Lake JEB mill and the Rabbit Lake mill.

1.11 Environmental Assessment and Licensing

The Cigar Lake project has regulatory obligations to both the federal and provincial governments. Classified as a nuclear facility, primary regulatory authority resides with the federal government and its agency, the CNSC. The main regulatory agencies that issue permits / approvals and inspect the Cigar Lake project are: the CNSC (federal), Fisheries and Oceans Canada (federal), Environment Canada (federal), Transport Canada (federal), Saskatchewan Ministry of Advanced Education, Employment and Labour (provincial), and Saskatchewan Ministry of Environment (provincial).

One of the initial steps in the regulatory process was to assess the project under the federal and provincial environmental assessment (EA) processes.

In 1995, the Cigar Lake Project, Environmental Impact Statement (the "1995 EIS") was submitted to the Joint Federal-Provincial review panel on Uranium Mining Developments in Northern Saskatchewan (the "Panel"). In 1997, the Panel recommended that pending identification of a suitable waste rock disposal location, the project should proceed. The Canadian and Saskatchewan governments both accepted the Panel's recommendation and in 1998 both government bodies approved the project in principle.

In January 2003, the CNSC informed Cameco that due to a perceived uncertainty regarding the use of the transitional provisions of CEAA, the CNSC would require a new environmental assessment of the Cigar Lake mine portion of the project to support construction and operating licence decisions.

In February 2004, Cameco submitted an environmental assessment study report (2004 EASR) for the Cigar Lake mine portion of the project under CEAA to meet the above requirement. The 2004 EASR assessed the potential effects from the construction, operation and decommissioning of the Cigar Lake mine. The 2004 EASR did not reassess the transportation of the ore to the McClean Lake JEB and Rabbit Lake mills; milling of the ore; or the management of tailings. The 2004 EASR was accepted by the CNSC as meeting the requirements of CEAA and therefore the licensing/permitting processes for the Cigar Lake Project could proceed.

In 2004, Cameco applied for a licence to construct the Cigar Lake mine site in two parts:

(1) construction of the Shaft No. 2 surface complex and the freeze plant; and

(2) construction of all other mining and support facilities at the Cigar Lake mine site.

In July 2004, the CNSC approved the construction of the Shaft No. 2 surface complex and the freeze plant and issued the construction licence in December 2004. In December 2007, the CNSC amended the construction licence to extend its term for two years from January 1, 2008 until December 31, 2009, so that actions resulting from the 2006 inflow event could be addressed, and mine remediation could proceed. The licence was subsequently amended again in June, 2008 to enable Cameco to proceed with certain activities associated with mine dewatering, mine entry, and securing/assessing the underground workings. In August 2008, during dewatering, a new water inflow source developed, leading to the decision to suspend dewatering to ensure the cause of the inflow was understood and that appropriate measures to mitigate the inflow could be taken.

Although there was sufficient capacity for the Cigar Lake tailings in the Rabbit Lake in-pit tailings management facility (RLITMF) when the Rabbit Lake Toll Milling Agreement (described in Section 18.4.3) was originally signed, ongoing production, from the Eagle Point mine at Rabbit Lake, has consumed some of the capacity in the RLITMF. Consequently, it was determined that the RLITMF would have to be expanded. In August 2008, the Rabbit Lake Solution Processing Environmental Impact Statement was accepted. With this approval the expansion of the RLITMF commenced. The expanded facility was completed and commissioned for use in 2009.

On February 24, 2010, Cameco announced an increase in Rabbit Lake's Mineral Reserves, further extending Eagle Point's mine life. As a result, Cameco is working to increase Rabbit Lake operation's tailings capacity. Regulatory approval is required to proceed with the capacity increase. The cost estimates in this technical report do not include the cost of further expanding Rabbit Lake's tailings capacity and are not part of the economic analysis of the project contained within this report. Cameco, and not the other members of the CLJV, will be paying the cost of this additional capacity increase.

In 2009, after sealing the new inflow source, again from the surface, Cameco re-initiated dewatering of the main shaft. In addition, the CNSC licence was extended to December 31, 2013 allowing for completion of the mine construction project, including completion of remediation, Shaft No. 2, and surface construction. Additional regulatory approvals for these licence activities will be required to complete remediation and resume pre-flood underground construction and development activities.

As a result of the October 2006 and August 2008 water inflow incidents, Cameco reviewed the emergency mine dewatering strategy. It was determined that one of the safest ways to mitigate the impact of future mine inflows is to increase the mine's dewatering capacity. Doing so requires an enhancement to the mine's ability to release treated effluent to the environment. Cameco therefore re-evaluated options to address potential mine effluent discharge restrictions in the event of any future inflow scenarios. Specifically the risk of erosion in the Aline Creek system was evaluated. Consequently, Cameco has applied to federal and provincial regulatory authorities to move the discharge point directly into Seru Bay of Waterbury Lake. This is where the Aline Creek system currently enters Waterbury Lake. This application has triggered under CEAA a screening level environmental assessment. Interim approvals and measures are in place to support increased environmental discharges to the Aline Creek system if the need were to arise prior to receiving approval for the Seru Bay discharge point.

An amendment to the McClean Lake JEB mill's Licence to Operate is still required in order to process the ore from the Cigar Lake mine at the McClean Lake JEB mill. No issues surrounding this licence amendment approval are anticipated.

Concurrent with the completion of the mine construction, an operating licence application will be prepared for submission to the CNSC.

1.12 Status of Development Prior to the Water Inflow Incidents

As part of a test mining phase, Shaft No. 1 was sunk and some underground development completed between 1988 and 1991. Testing of the boxhole boring and jet boring mining methods was completed in 1991-1992. Following further development, the jet boring method was more extensively tested in 2000.

Full construction of the Cigar Lake project began in January 2005. Based on the revised mine plan as of January 1, 2010, the capital construction project at the Cigar Lake site was approximately 50% complete, excluding remediation activities.

The mine has a total depth of 500 m and the mine underground workings are at the 420 m, 465 m, 480 m, and 500 m levels.

1.13 Water Inflow Incidents and Remediation

Shaft No. 2 – April 2006

On April 5, 2006 a water inflow occurred at the base of Shaft No. 2, through a failed valve assembly on a grouting standpipe, which led to the flooding of the shaft and cessation of activities in the shaft. As the shaft was not complete and not connected through to the main mine workings, the flooding was limited to Shaft No. 2.

Dewatering was completed in April 2009 and remediation was completed in May 2009. Resumption of sinking of Shaft No. 2 is planned after remediation of the main mine workings is underway. The ground will be frozen in the area surrounding the shaft to allow sinking to be completed. A hydrostatic liner will be installed in the shaft from the current depth of 392 m through to the 480 m level, where it will transition back to a non-hydrostatic liner.

Underground Workings – October 2006 and August 2008

On October 23, 2006, the underground mine at Cigar Lake was flooded following a water inflow, which caused a suspension of underground activities. In response to the incident, Cameco developed and proceeded with its remediation plan to restore the underground workings at Cigar Lake. Cameco's plan was developed in consultation with CNSC staff and the Saskatchewan ministries of Environment and Labour.

In 2008, the source of the October 2006 water inflow was sealed and the effectiveness of the seal demonstrated. The inflow was sealed by drilling holes from surface down to the source of the water inflow and to a nearby tunnel where reinforcement was needed and pumping concrete and grout through the drillholes to an area of fallen rock.

Dewatering of the mine commenced in July 2008. It was suspended on August 12, 2008 when the rate of the inflow to the mine significantly increased. Shaft No. 1 had been pumped down to 430 m below surface when the increase was observed. The location of this inflow was later identified as a fissure located in a tunnel on the 420 m level.

On October 23, 2009, Cameco announced that the inflow on the 420 m level which forced suspension of dewatering on August 12, 2008 was sealed by remotely placing an inflatable seal between the shaft and the source of the inflow and subsequently backfilling and sealing the entire development behind the seal with concrete and grout. The 420 m level is not part of future mine plans and will be abandoned. Cameco plans to install a permanent bulkhead and fill the entire 420 m level with concrete backfill.

Crews entered Shaft No. 1 in November 2009 and work focused on refurbishing the shaft including installing the ladderway, replacing mechanical and electrical components and extending the in-shaft pumping system.

In February 2010, dewatering the underground development was completed. Crews re-entered the main working level of the mine 480 m below surface where access to the 2006 inflow could be obtained. Safe access to the 480 m level has been established and work to inspect, assess and secure the underground development has begun. This work will be followed by restoration of underground mine systems and infrastructure in preparation for resumed construction activities.

As the mine is secured, the underground rehabilitation program is significantly progressed and regulatory requirements are met, Cameco plans to resume underground construction activities that had been interrupted by the October 2006 water inflow.

Cigar Lake’s construction licence was amended effective January 1, 2010, to extend the term for four years and to cover the dewatering, remediation and construction activities, including completion of Shaft No. 2 and surface construction. Additional regulatory approvals under these licensed activities will be required to complete remediation and resume pre-flood underground construction and development activities. In addition, a condition of the CNSC licence is that the revised mine plan requires regulatory approval.

Assuming acceptance of the Seru Bay discharge environmental assessment, anticipated in 2010, further approval will be necessary for the construction and operation activities of that system from both the federal and provincial agencies.

1.14 Current Status of Development

Cameco expects to complete work to secure the underground workings before October 2010, depending upon the condition of the underground. Cameco will assess if additional remediation work is required to restore the underground mine systems and infrastructure prior to resuming construction.

At the end of 2009, a substantial number of surface facilities were completed. Just prior to the mine inflow of October 23, 2006, the capital construction project was approximately 60% complete, based on the previous mine design. Underground development required for the start of production is now estimated to be 50% complete, based on required infrastructure changes identified in the revised mine plan. Partially completed facilities include Shaft No. 2, underground development, and freeze hole drilling. Remaining underground work to be completed includes mine remediation, Shaft No. 2, installation of designed underground pumping capacity including the installation of emergency back-up pump capacity, brine system freezing infrastructure and ore freezing program, underground ore extraction system, ore processing circuit including changes due to the new mine plan, and mine development.

Surface construction is approximately 50% complete at Cigar Lake. The remaining important surface construction includes the Waterbury Centre (new administration/services building), Seru Bay pipeline, the installation of the surface ore process facilities, new propane tank farm, 138 kV Electrical Substation expansion and permanent camp expansion.

Construction of the expansion of MLJV's McClean Lake JEB mill, required to process Cigar Lake ore, is largely complete. Modifications to Cameco's Rabbit Lake mill required to complete processing of Cameco's portion of the ore have not yet started. Detailed design for the required facilities at Rabbit Lake is planned to start in 2011.

1.15 Production Plan

The mining plan for Cigar Lake has been designed to extract all of the current Mineral Reserves. The mine life based on current Mineral Reserves will be approximately 15 years with an estimated full production rate of 18 million pounds of U_3O_8 per year recovered from the mills. Cigar Lake will produce less than the full annual production rate of approximately 18 million pounds of U_3O_8 in the early and late years of the current mine life.

Subject to regulatory approvals, successful remediation of the underground mine and completion of Shaft No. 2 in a timely fashion, Cameco forecasts that commissioning activities in ore will commence in mid-2013 followed by a ramp-up period of three years before reaching the full production rate in 2017.

The following is a general summary of the Cigar Lake production schedule guidelines and parameters:

- Total mill production of 206.1 million pounds U_3O_8, based on an overall milling recovery of 98.5%.
- Total mine production of 557 thousand t of ore.
- Average mill feed grade of 17.0 %U_3O_8.
- Production is scheduled to start in mid-2013.
- Mining rate is variable to achieve a constant production level of U_3O_8. The average mine production varies annually from 100 to 140 t/d during peak production depending on the grade of ore being mined.
- Three year ramp-up to a production rate of approximately 18 million pounds U_3O_8 per year (recovered after milling).
- Mine operating life of approximately 15 years.

The Cigar Lake project production schedule is shown in *Figure 1-1* and *Figure 1-2*.

Figure 1-1: Mine Production (tonnes ore)

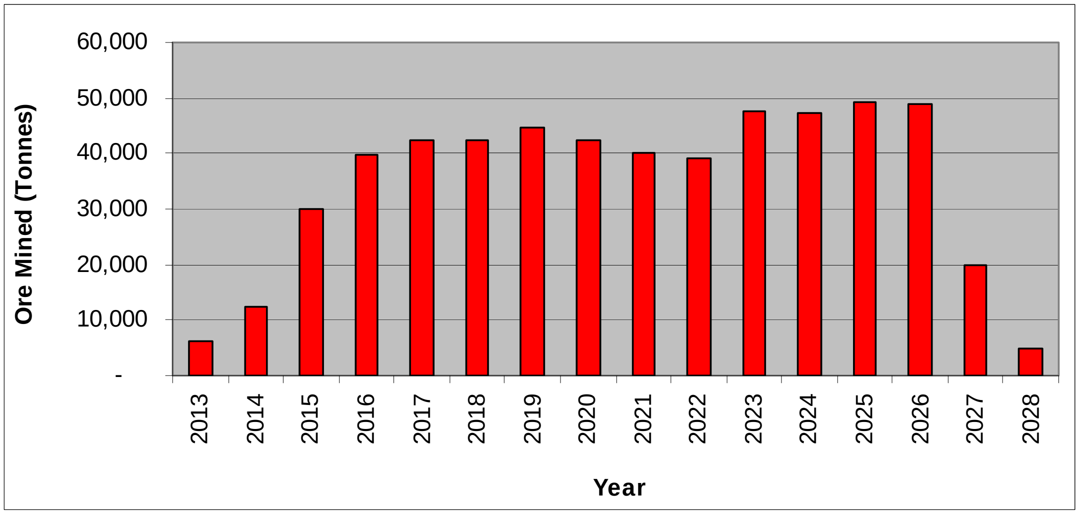
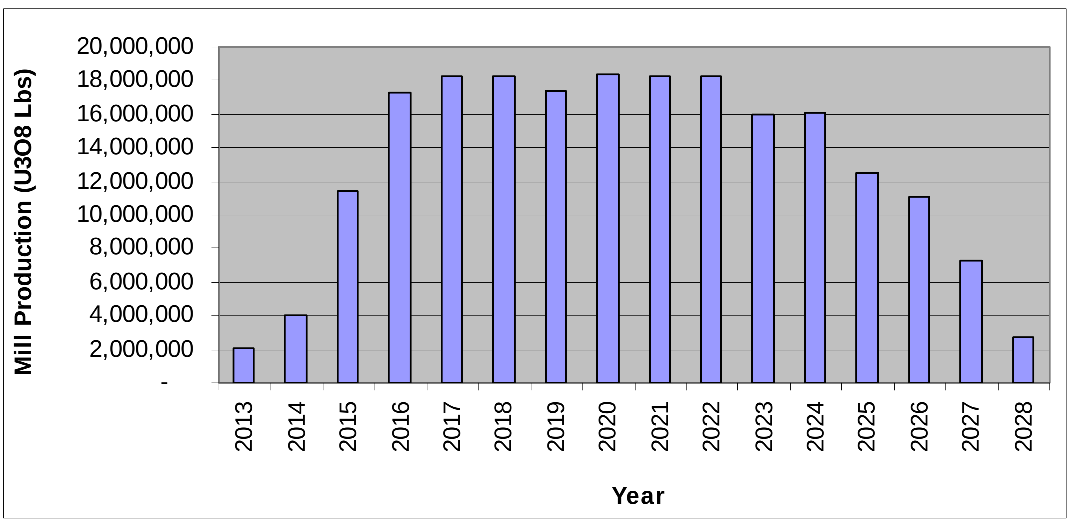


Figure 1-2: Mill Production (lbs U_3O_8)



Notes: (1) Mill production lbs U_3O_8 based on overall milling recovery of 98.5%.
(2) Quarter 2 of 2015 is expected to be the first quarter in which 2.5 million pounds of concentrate is exceeded. Reallocation of concentrate between McClean and Rabbit Lake will take place thereafter.
(3) Assuming appropriate regulatory approvals are received in the required time frame.

1.16 Economic Analysis

The economic analysis is based on Cameco's share (50.025%) of the Phase I Mineral Reserves for the Cigar Lake project. The financial projections do not contain any estimates relating to the potential mining and milling of Phase I or Phase II Mineral Resources. Only Mineral Reserves have demonstrated economic viability. Accordingly, expenditures required to bring any of the Phase I Mineral Resources or Phase 2 Inferred Mineral Resources into production or to identify additional Mineral Reserves and Mineral Resources, have not been included.

The remaining capital costs, as of January 1, 2010, for the Cigar Lake project (100% basis) are estimated to be $951.9 million, including $848.5 million to complete underground development and surface construction at Cigar Lake, $85.9 million to complete the mill modifications at Rabbit Lake and $17.5 million to complete the mill modifications at McClean Lake. The remaining costs for the water inflow remediation plan at Cigar Lake are currently estimated at $58.9 million. Stand-by costs at the McClean Lake JEB Mill are expected to be $86.0 million, for a total remaining cost of $1.1 billion (100% basis) for the Cigar Lake project. The sustaining capital expenditures are projected to be $451.9 million (100% basis) at the Cigar Lake and Rabbit Lake sites that the CLJV will be required to fund throughout the operating life of the Cigar Lake mine.

Cameco's share of the remaining capital cost to complete the Cigar Lake project is estimated to be $507.1 million, including its share of construction costs and costs to modify the McClean Lake JEB mill and Rabbit Lake mill. Including the $404.6 million spent by Cameco on construction costs and mill modification costs prior to December 31, 2009, Cameco's share of the aggregate capital cost is now estimated to be $911.7 million.

In addition to the capital costs for construction and mill modifications, Cameco estimates its share of remaining remediation costs at Cigar Lake to be $29.4 million. Including the $64 million spent and expensed by Cameco from 2006 through 2009, Cameco's share of the aggregate remediation costs at Cigar Lake are estimated to be $93.3 million.

Cameco will expense its share of the remediation costs as they are incurred. More specifically, the costs that will be expensed relate to contractor costs directly engaged in, or providing support to, the remediation efforts, and any cancellation or retention costs that were required as a result of the water inflow.

Under the terms of the JEB Toll Milling Agreement, the CLJV partners are responsible for the payment of stand-by costs to the McClean Lake JEB mill owners under certain conditions. AREVA recently announced the shut down of the McClean Lake JEB Mill is expected in July 2010. As such, it is expected that the CLJV will be required to pay stand-by costs until production start up in 2013. The total expected cost of stand-by costs to be paid by the CLJV partners is $86.0 million. Cameco's share is $43.0 million, which will be expensed as incurred.

CLJV's aggregate capital cost for Cigar Lake construction, including construction costs prior to December 31, 2009 of $808.8 million, is estimated to be approximately $1.76 billion. Total remediation costs for the CLJV are in addition to the capital cost, and are estimated at $192.9 million, including $134.0 million of remediation costs spent prior to December 31, 2009. Stand-by costs will add an additional $86.0 million to the total costs. The combined capital and other costs for the Cigar Lake project are now estimated to be approximately $2.04 billion for the CLJV.

Average operating costs over the mine life, excluding royalties, are estimated to average $23.14/lb U_3O_8 over the life of the Cigar Lake project. In 2007, Cameco released the Cigar Lake Technical Report showing expected average operating costs of $14.40/lb U_3O_8 over the life of the Cigar Lake project. The increased operating costs are primarily due to general cost escalation, changes to the mine plan, a lower average annual production rate in the ramp-up period and the later years of mine life, as well as additional personnel to meet regulatory requirements and provide oversight. In addition, current milling estimates no longer include any plans to co-mill other ores. Cameco continues to review options to reduce these costs.

The analysis results in an estimated pre-tax NPV (at a discount rate of 8%) to Cameco, as at January 1, 2010, of $744.2 million for its share of the Cigar Lake Phase 1 Mineral Reserves. The pre-tax IRR, also calculated from January 1, 2010, is estimated to be 21.5%.

Payback for the Cigar Lake project can be considered on many different factors:

- Payback for Cameco, excluding all 2009 and prior costs as sunk costs, would be achieved during 2017 on an undiscounted, pre-tax basis.
- If the $942.8 million, including remediation costs, spent on Cigar Lake construction prior to 2010, (Cameco share equal to $471.6 million) were included in the calculation, Cameco would achieve payback during 2019 on an undiscounted, pre-tax basis.

1.17 Project Risks

Cigar Lake is a challenging deposit to develop and mine. These challenges include weak rock formation, relatively thin flat lying mineralization, control of groundwater, and radiation protection. The sandstone overlying the basement rock contains significant water at hydrostatic pressure. Cameco is undertaking a number of initiatives to mitigate the project risks associated with mining the Cigar Lake deposit and to mine the deposit in a safe and economic manner including, but not limited to, using the jet boring mining method, freezing of the ground, lowering the production horizon, and increasing mine dewatering capacity.

Specific project risks are described in more detail in Section 19.4. The construction schedule, planned commencement of production in mid-2013 and cost estimates assume Cameco will be able to successfully mitigate project risk. Cameco believes that it will be able to do so.

1.18 Conclusions and Recommendations

Cameco has implemented an assurance of success approach to the Cigar Lake project and has successfully dewatered and re-entered the Cigar Lake mine. Cameco recognizes the project risks common to other mining projects and specific to the development of the Cigar Lake project. Cameco has reinforced its commitment to its assurance of success approach to continue to address the project risks in a manner that demonstrates its operational competence.

The Cigar Lake project outlined in this report represents significant economic sources of feed material for the McClean Lake JEB and Rabbit Lake mills. With an estimated operating mine life of approximately 15 years, Cigar Lake is expected to produce an estimated 206.1 million pounds of U_3O_8. At the forecast average realized uranium price over this 15 year period, it is estimated that Cameco will receive substantial positive net cash flows from its share of Cigar Lake production.

A sensitivity analysis of the Cigar Lake project economics demonstrates that the project generates positive cash flows in various scenarios, including assumptions of higher costs, lower revenues, or lower ore grades.

The aggregate capital cost for construction spent by the CLJV, including construction costs prior to December 31, 2009 of $808.8 million, is estimated to be approximately $1.76 billion, which is a significant increase over the cost estimate disclosed in the 2007 Technical Report. The majority of the cost increase is the result of the longer period over which the remediation and development will occur, additional costs for inflow abatement, increases in surface capital costs and improvements to the mine plan and water management systems. Despite these increases to the project cost, the economics for the project remains positive.

The Cigar Lake project shows relatively low sensitivity to changes in its operating or capital cost projections. The relative sensitivity to changes in price and ore grade realized is higher due in part to the relatively high-grade nature of the deposit, and the price estimates being used, which are a reflection of the current U_3O_8 market environment.

The difference in the sensitivity between price and operating cost is made clear by the fact the economic analysis assumes an average realized price of \$61.34/lb U_3O_8, while the average operating cost is \$23.14/lb U_3O_8.

Based on the confidence in the mining plan, a detailed remediation plan, and a positive economic analysis, Cameco plans to continue to proceed through inflow remediation and construction to production, as described in this technical report.

Cameco will continue to enhance its project governance and its focus on operational excellence. It is committed to successfully deliver and optimize the long-term economics of this project.

Many aspects of the Cigar Lake project are based on the designs that have been proven and are being successfully used at the McArthur River mine. One of the challenges of mining the Cigar Lake deposit is radiation control due to its high grade. Cameco has been producing ore with similar high grades from the McArthur River mine since 1999 and the experience from McArthur has been used extensively in the design of the Cigar Lake project. These designs include remote mining for radiation protection, freezing for control of radon gas and water inflows, underground grinding of the ore and hydraulic hoisting to surface. The incorporation of these designs and practices proven to be successful at the McArthur River mine should significantly reduce the risk in numerous areas of the Cigar Lake project.

Cameco has developed and is implementing a remediation plan to return the mine to pre-inflow activities. Based on engineering analysis and planning, and work executed to date, Cameco believes that this remediation plan has a high probability of success, although there is always some uncertainty.

Cameco has updated the 2004 Cigar Lake mine plan. This update was prompted by the two inflows at the mine, which occurred in 2006 and 2008. Applying the lessons learned has resulted in changes to the mine plan, which are summarized in Section 1.9. These changes to the mine plan include expanded ground freezing and the elimination of the entire 465 m production level, amongst many improvements in design and strategy. In addition, Cameco plans to implement enhanced procedural controls and technical risk assessments for mine development. These and other actions are expected to reduce the risk of any future inflows.

Cameco has fundamentally changed its water management strategy, eliminating the use of water bulkhead doors and positioning the project to have sufficient capacity in all aspects of its water management system. The changes are expected to address non-routine water inflows at their source underground thus mitigating potential extended project and operational impacts.

Cameco has installed pumping capacity of 1,550 m^3/hr and plans to increase it to 2,500 m^3/hr. The existing installed capacity is sufficient to handle volumes greater than either of the previous two inflows. Expansions in water treatment and surface storage capacity have also been made and provide for an enhanced water management system. Cameco's view is that it has sufficient capacity to handle an estimated maximum inflow and intends to install additional capacity, as stated above, to assure the long term success of the project.

The revised mine plan and remediation program are anticipated to maintain the original objectives of the Cigar Lake project, to achieve:

- a positive economic outcome;
- a planned annual production rate of approximately 18 million pounds of U_3O_8; and
- over 200 million pounds of production.

Cameco is currently assessing an opportunity to drill freeze holes from surface that may allow portions of the orebody to be frozen sooner than could be achieved from underground. If successfully implemented, this could decrease the ramp-up time required to achieve the full production rate of approximately 18 million pounds per year and bring forward up to 10 million pounds of production into the first four years of operation.

Cameco plans to have in place a robust program for implementing and assessing the progress of the JBS mining system. This will include the training of personnel prior to start-up of operations, surface and underground testing, and reliability planning and implementation to assure as effective and efficient a start-up as possible.

Cameco has proposed and is currently working through an Environmental Assessment (under CEAA) to discharge all treated effluent (except sewage) through two pipelines directly to a single location in Seru Bay of Waterbury Lake.

Cameco plans to systematically collect density samples from future core drilling programs to add samples to the current density database. The additional samples should be used to improve or validate the density estimation formulas.

Cameco is considering having a geostatistical simulation study conducted in order to analyse the geological, grade, and density variability/uncertainty of the deposit. The results of the simulation study would be used to assess the sensitivity of the Mineral Resources and Mineral Reserves due to the various parameters used in the estimation and would be useful to analyze production scenarios.

Cameco plans to complete a 3-dimensional block model for the Phase 2 area that will incorporate the latest geological interpretation and up-to-date structural model. This information will be used to develop a preliminary assessment for Phase 2 of the Cigar Lake project. Following the results of this study, Cameco will consider proposing a diamond drilling program with the goal of upgrading the classification of the Inferred Mineral Resources in Phase 2.

Additional drilling from surface or underground will be required to upgrade the Phase 1 Indicated and Inferred Resources. Surface drilling over Phase 1 is planned for 2010.

Cameco is planning to assess opportunities to minimize or eliminate the inclusion of sump underflow material in the Mineral Reserves thus increasing the average grade.

In order to execute the Cigar Lake mine plan while mitigating risks, the proposed expenditures set out in *Tables* 18-6, 18-7 and 18-8 of this report are necessary and endorsed by the authors of this technical report.

The authors of this technical report concur with, and recommend that Cameco proceed with, the foregoing plans.

2 INTRODUCTION

2.1 Introduction and Purpose

This technical report has been prepared for Cameco, by, or under the supervision of, internal qualified persons in support of disclosure of new-scientific and technical information that is material to the Cigar Lake project as contained in Cameco's Annual Information Form for 2009, Cameco's Management Discussion and Analysis filed with securities regulators on February 25, 2010, and Cameco's press release dated February 24, 2010. This new material scientific and technical information includes: (i) an updated capital cost estimate; (ii) an updated production forecast; (iii) an updated mineral reserve and mineral resource estimate, and (iv) a revised mine plan. This new information is the result of technical studies and experience gained over the last three years, additional surface drilling and the application of improved methodologies to model the Cigar Lake deposit and to classify its Mineral Reserves and Resources.

This report has been prepared to comply with NI 43-101 by, or under the supervision of the following qualified persons:

- C. Scott Bishop, P. Eng., Chief Mine Engineer, Cigar Lake Project, Cameco Corporation;
- Grant J. H. Goddard, P. Eng, General Manager, Cigar Lake Project, Cameco Corporation;
- Alain G. Mainville, P. Geo, Director, Mineral Resources Management, Cameco Corporation; and
- Lorne D. Schwartz, P. Eng., Chief Metallurgist, Mining Division - Technical Services, Cameco Corporation.

The individuals noted above are qualified persons responsible for the content of this report. All four qualified persons have visited the Cigar Lake site. Mr. Schwartz has also visited the Rabbit Lake and McClean Lake JEB mills, where Cigar Lake ore is to be processed. The date and duration of each qualified person's most recent inspection of the Cigar Lake site are included in their respective Certificate of Qualified Persons filed with this report and are set out below.

Mr. Bishop is the Chief Mine Engineer of the Cigar Lake Project and is present at the site generally at least several times a month for periods extending up to 7 days.

Mr. Goddard is the General Manager of the Cigar Lake Project and is present at the site generally weekly for periods extending up to 4 days.

Mr. Mainville has been involved with the Cigar Lake Project since 2000 and has visited the site on two occasions. Mr. Mainville's last personal inspection of the Cigar Lake surface drilling activities occurred on March 12-13, 2009.

Mr. Schwartz has been involved with the Cigar Lake Project since 2006 and has visited the site on numerous occasions. Mr. Schwartz's last personal inspection of the Cigar Lake surface facilities occurred in December, 2008. Mr. Schwartz was a metallurgist at the McClean Lake JEB mill from 1998-2002, and at Rabbit Lake mill from 2002-2007. His most recent visit to Rabbit Lake was October 2009 for a period of one day.

2.2 Report Basis

This report has been prepared with available internal Cameco data and information and data and information prepared for the CLJV. Technical and certain financial information for processing Cigar Lake ore at the McClean Lake JEB mill was provided to Cameco by AREVA.

The principal technical documents and files relating to the Cigar Lake deposit that were used in preparation of this report are listed in Section 22.

All monetary references in this technical report are expressed in Canadian dollars, unless otherwise indicated.

3 RELIANCE ON OTHER EXPERTS

The authors have relied, and believe they have a reasonable basis to rely, upon the following individuals who have contributed the environmental, legal, marketing and taxation information stated in this report, as noted below:

Jean Alonso, P. Eng, Director of Compliance and Licensing - Mining Division, Cameco Corporation, Sections 1.11 (a description of environmental assessment and licensing), 4.6 (a description of known environmental liabilities) and 18.5 (a description of environmental considerations).

Larry Korchinski, LLB, Director, Legal Services, Securities Compliance, Cameco Corporation, Sections 4.2 (a description of mineral tenure), 6.1(a description of joint venture agreements and interests), and 18.4.3 (a description of toll milling contracts).

Penny Buye, Director, Market Planning and Analysis, **Cameco Corporation,** Section 18.3 (a description of uranium markets) and 18.4.4 (a description of uranium sales contracts).

Randy Belosowsky, Director, Special Projects - Tax, Cameco Corporation, Section 18.6 (a description of taxes and royalties).

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Cigar Lake minesite is located near Waterbury Lake, approximately 660 km north of Saskatoon, at latitude 58^0 04' 14" north and longitude 104^0 32' 18" west, and about 40 km inside the eastern margin of the Athabasca Basin Region in northern Saskatchewan. See *Figure 4-1*.

The Cigar Lake minesite is in close proximity to two uranium milling operations, McClean Lake is 69 km northeast by road and Rabbit Lake is 87 km east by road. The McArthur Rive mine is 46 km southwest by air from the Cigar Lake site.

Figure 4-1: Cigar Lake Mineral Property, Project Location

Source: Cameco

4.2 Mineral Tenure

The mineral property consists of one mineral lease (“ML-5521”) and 25 mineral claims (Nos. S-106540 to 106564 inclusive), totalling 93,048 ha. The mineral lease and mineral claims are contiguous.

The Cigar Lake deposit is located in the area subject to ML-5521, totalling 308 ha. The right to mine this uranium deposit was acquired by Cameco under this mineral lease, as renewed, effective December 1, 2001 from the Province of Saskatchewan. This mineral lease is granted by the Province of Saskatchewan under *The Crown Minerals Act* (Saskatchewan). Under the *Mineral Disposition Regulations, 1986* (Saskatchewan), issued under this act, the term of ML-5521 is for 10 years and expires on December 1, 2011, subject to a right to renew for successive ten-year terms absent a default by Cameco. The Province of Saskatchewan may only terminate ML-5521 if Cameco breaches a provision of the lease or fails to satisfy any of its obligations under *The Crown Minerals Act* (Saskatchewan) or associated regulations, or in the event that any prescribed environmental concerns arise.

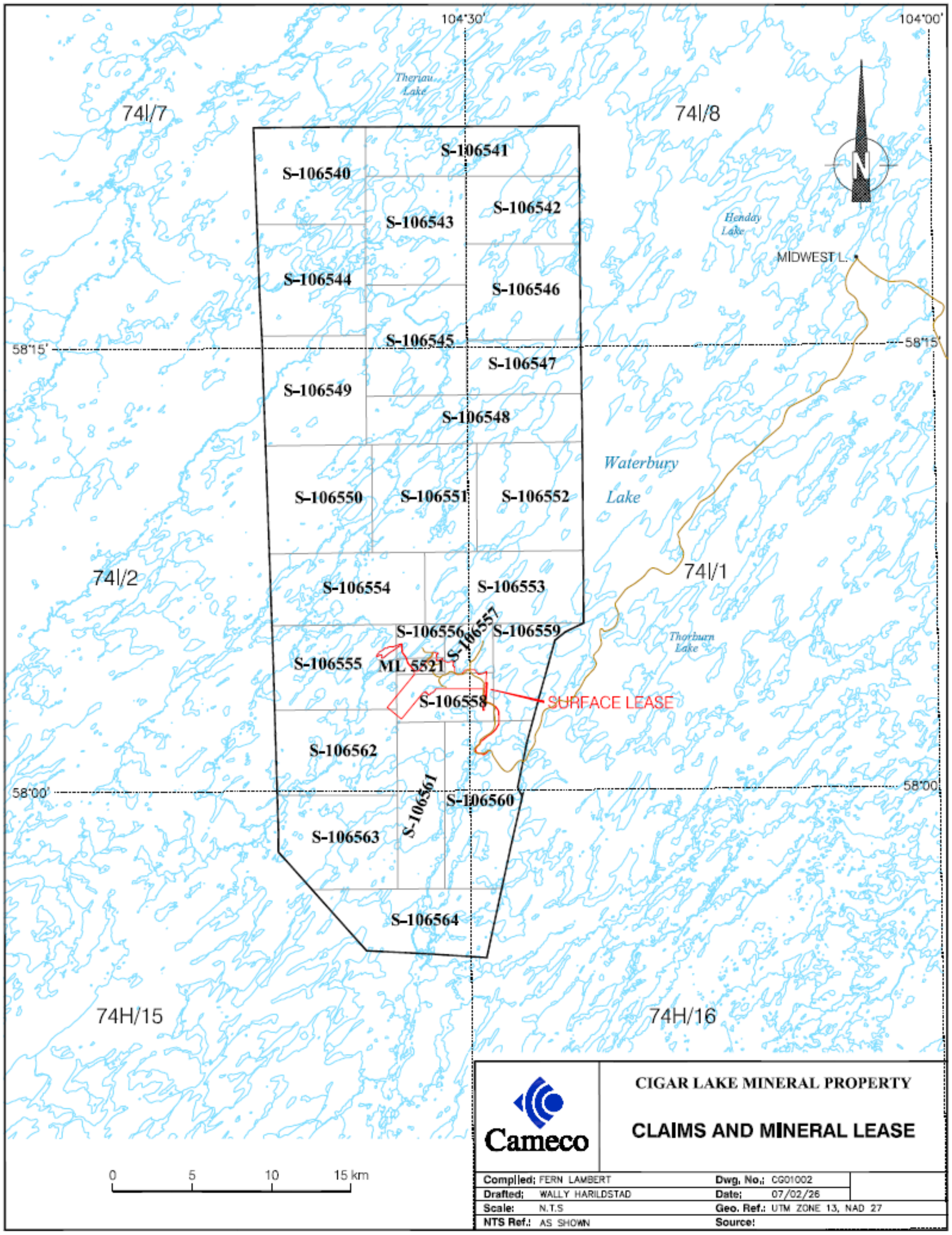
Surrounding the Cigar Lake deposit, there are twenty-five mineral claims which were also granted by the Province of Saskatchewan under *The Crown Minerals Act* (Saskatchewan) totalling 92,470 ha. These mineral claims grant the holder the right to explore for minerals within the claim lands. A holder of a mineral claim in good standing has the right to convert the mineral claim into a mineral lease. Surface exploration work of a mineral claim requires additional government approval. The mineral lease and claims are delineated on the ground by staking posts. The *Mineral Disposition Regulations,* 1986, (Saskatchewan) recognize the staked boundaries as the legal boundaries. A legal survey of the mineral claims has not been done.

There is an annual requirement of $2.3M either in work or cash to retain title to ML-5521 and the 25 mineral claims. Based on previous work submitted and approved by the Province of Saskatchewan, title is secured until 2022.

Under the Cigar Lake Joint Venture Agreement and related agreements, made effective January 1, 2002, the mineral lease and 25 mineral claims noted above were divided into the Cigar Lake lands, consisting of ML-5521 and claim S-106558, and the Waterbury Lake lands, consisting of the remaining 24 claims. AREVA is the operator of the Waterbury Lake lands and is also contract exploration operator of the Cigar Lake lands with respect to claim S-106558. Cameco is the mine operator for the Cigar Lake lands with respect to ML-5521.

Figure 4-2 shows the Cigar Lake mineral lease and mineral claims as currently registered with the Province of Saskatchewan.

Figure 4-2: Mineral Lease and Claims Map



4.3 Surface Tenure

The surface facilities and mine shafts for the Cigar Lake project are located on lands owned by the Province of Saskatchewan. Cameco acquired the right to use and occupy these lands for the purpose of developing the Cigar Lake deposit under a surface lease agreement with the Province of Saskatchewan. The most recent surface lease was signed in May 2004. The term of this surface lease expires May 27, 2037. The Province of Saskatchewan uses surface leases as a mechanism to achieve certain environmental protection and socio-economic objectives. As a result, the Cigar Lake surface lease contains certain undertakings from the CLJV in that regard, including annual reporting on the status of the environment, land development and progress made on Northern Saskatchewan employment and business development.

The Cigar Lake surface lease covers a total area of 984 ha of Crown land. It covers a portion of ML-5521 along with claims S-106555 to 106560, inclusive, and S-106562.

Cameco is in discussions with the Province to increase the area of the surface lease. The increase is required to implement the proposed discharge of treated effluent to Seru Bay at Waterbury Lake.

The Cigar Lake airstrip is under a separate surface lease covering a total of 17.2 ha. The airport lease was renewed with the Province of Saskatchewan in 2007 and will expire in May 2028.

Cameco has the right under a Miscellaneous Use Permit (MUP) issued by the Province of Saskatchewan to use a 41 km portion of the access road serving the surface facilities. This MUP is re-issued on an annual basis, and was most recently re-issued on November 2, 2009.

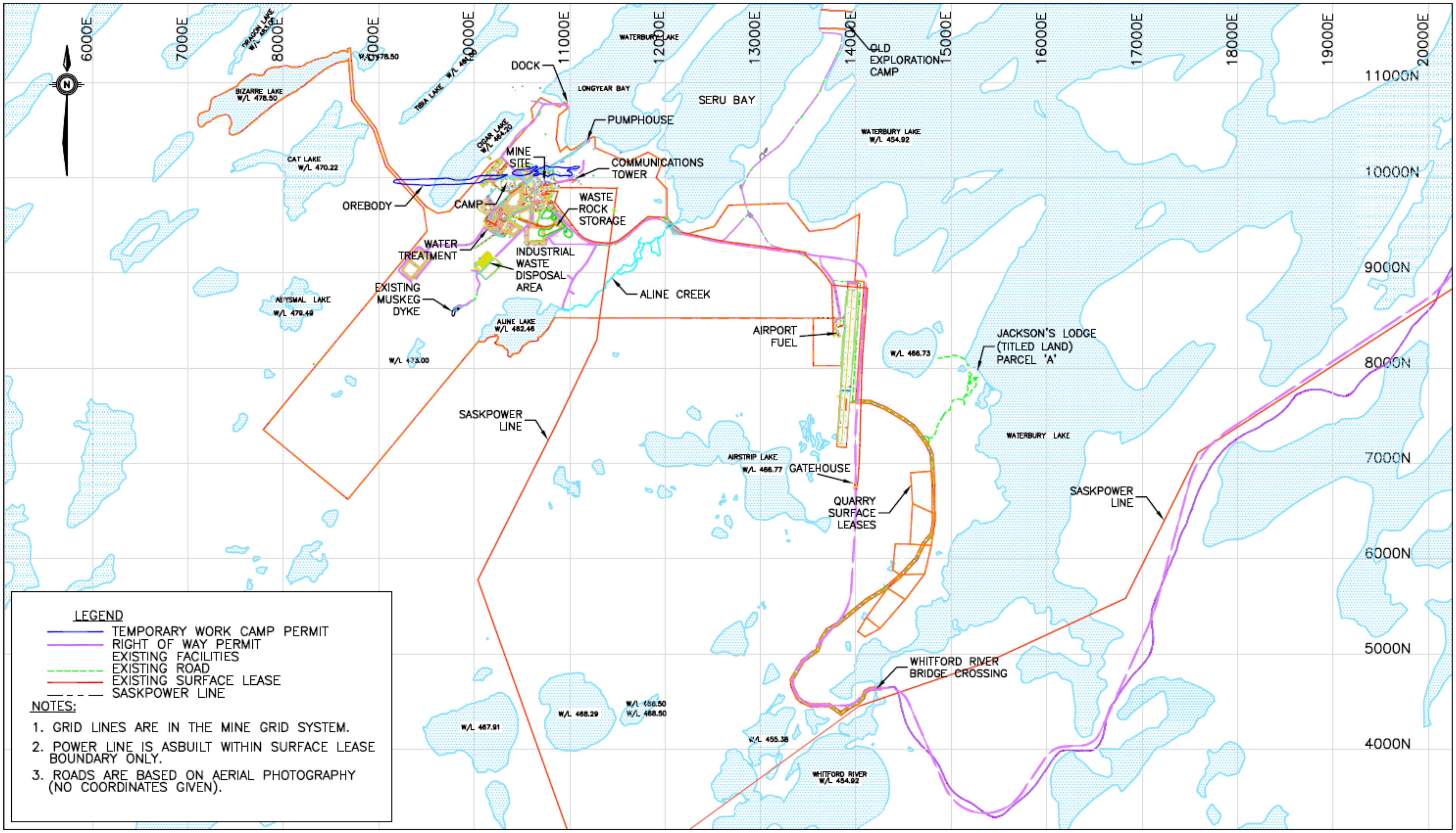
Figure 4-3 shows the Cigar Lake general site arrangement with the outline of the surface leases and MUP.

In 2009, annual rent was $151,000 for the Cigar Lake surface lease and $4,000 for the airstrip surface lease. The annual fees payable for the road MUP were $18,000.

R. G. Morrison, S.L.S., of Tri-City Surveys of Saskatoon, Saskatchewan, carried out the Cigar Lake surface lease surface survey in 1988.

Figure 4-3: Map of Mine Facilities and Surface Lease

Source - Cameco



4.4 Mine and Infrastructure

All current Mineral Reserves and Mineral Resources are contained within mineral lease ML-5521. Underground workings are confined to a small portion of the area of the mineral lease where initial test mining was concentrated.

Waste rock piles from the excavation of the two shafts and all underground development are confined to a small footprint within the surface lease. Waste rock management is further discussed in Section 5.5 and Section 18.5.6.

A total of 53 t of high grade mineralization in bulk bags from the test mining is stored on the surface storage pad.

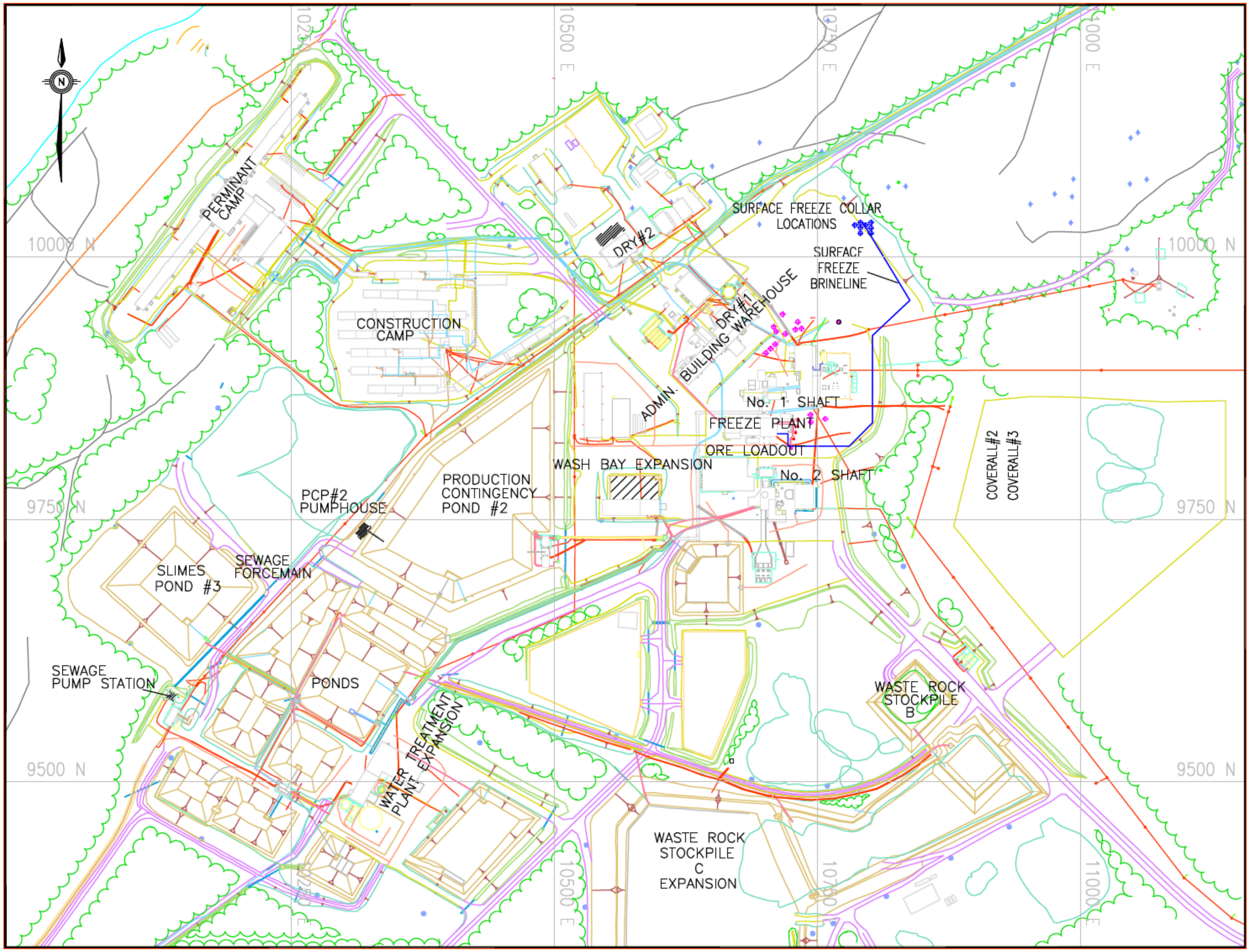
No tailings will be stored at the Cigar Lake site since all ore mined will be transported to AREVA's McClean Lake JEB mill and the Rabbit Lake mill for processing. Tailings management at the McClean Lake and Rabbit Lake sites is discussed in Section 18.5.5.

The known mineralization at Cigar Lake has been divided into two areas; the eastern area denoted Phase 1 and the western area denoted Phase 2. The Cigar Lake overlies part of the Phase 2 mineralization.

A discussion of the buildings and infrastructure facilities at the Cigar Lake site is included in Section 5.5.

A site plan of the existing and planned surface facilities is shown in *Figure 4-4*.

Figure 4-4: Site Plan Showing Existing and Planned Surface Facilities



Source – Cameco

4.5 Royalties

For a discussion of royalties, see Section 18.6.2.

4.6 Known Environmental Liabilities

For a discussion of known environmental liabilities, see Section 18.5.

4.7 Permitting

For a discussion of permitting, see Section 18.5.3.

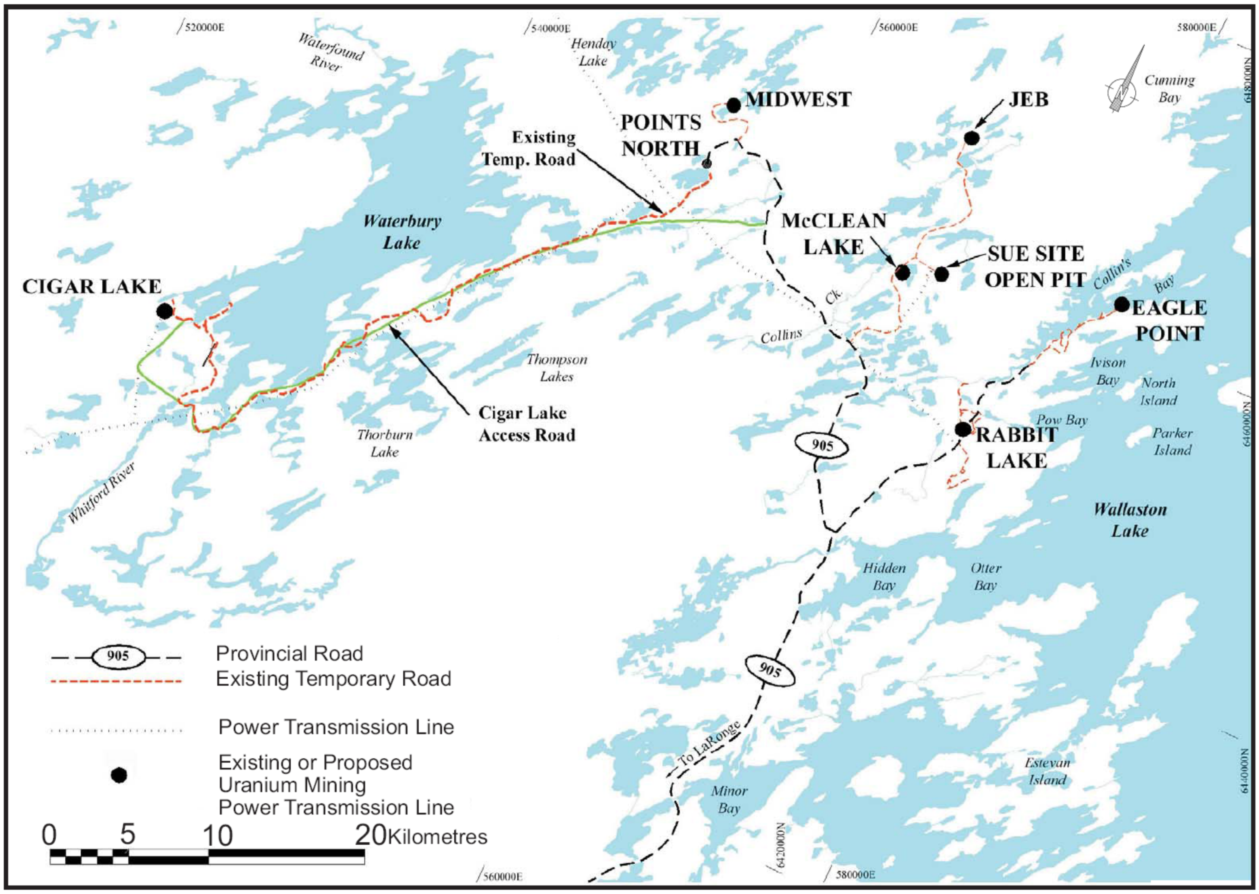
5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Access

The property is accessible by an all weather road and by air. Supplies are transported by truck and can be shipped from anywhere in North America through Cameco's transit warehouse in Saskatoon. Trucks travel north from Saskatoon, on a paved provincial road through Prince Albert and La Ronge and further north along the gravel surfaced Provincial Road 905, and finally to the minesite via a 52 km long, two lane gravel road. The latter section was upgraded by Cameco, during the summer of 2006 and is accessible to the public from the intersection with Provincial Road 905 to the access gate near the Cigar Lake airstrip situated approximately six km from the minesite. *Figure 5-1* shows the regional location of the Cigar Lake site and local roads.

An unpaved airstrip is located east of the minesite, allowing flights to the Cigar Lake property.

Figure 5-1: Cigar Lake Site – Regional Location and Roads



Source – Cameco

5.2 Climate

The climate is typical of the continental sub-arctic region of northern Saskatchewan. Summers are short and rather cool, even though daily temperatures can reach above 30^0 C on occasion. Mean daily maximum temperatures of the warmest months are around 20^0 C and only three months on average have mean daily temperature of 10^0 C or more. The winters are cold and dry with mean daily temperature for the coldest month below minus 20^0 C. Winter daily temperatures can reach below minus 40^0 C on occasion.

Freezing of surrounding lakes, in most years, begins in November and breakup occurs around the middle of May. The average frost-free period is approximately 90 days.

Average annual total precipitation for the region is approximately 450 mm, of which 70% falls as rain, more than half occurring from June to September. Snow may occur in all months but rarely falls in July or August. The prevailing annual wind direction is from the west with a mean speed of 12 km/h.

Site operations are carried out year-round despite cold winter conditions. The fresh air necessary to ventilate the underground working areas, is heated during winter months using propane-fired burners.

5.3 Physiography

The topography and vegetation at the Cigar Lake property are typical of the taiga forested land so common to the Athabasca basin area of northern Saskatchewan. The area is covered with between 30 to 50 m of overburden. The terrain is gently rolling and characterized by forested sand and dunes. Vegetation is dominated by black spruce and jack pine. Occasional small stands of white birches may occur in more productive and well-drained areas. Lowlands are generally well drained, but also can contain some muskeg and poorly drained bog areas with vegetation varying from wet open non-treed vistas to variable density stands of primarily black spruces as well as tamaracks depending on moisture and soil conditions. Productive lichen growth is common to this boreal landscape mostly associated with mature coniferous stands and treed bogs.

The minesite elevation is approximately 490 masl, Waterbury Lake is approximately 455 masl and Cigar Lake which, in part, overlays the deposit, is approximately 464 masl.

5.4 Local Resources

The closest inhabited site is Points North Landing, 56 km northeast by road from the Cigar Lake minesite, close to where the site access road connects to Provincial Road 905. The community of Wollaston Lake is approximately 80 air km east of the Cigar Lake site. The Cigar Lake site is in close proximity to two other uranium/milling operations: AREVA’s McClean Lake operation is approximately 69 km northeast by road and Cameco’s Rabbit Lake operation is approximately 87 km east by road.

Employees commute from a number of designated communities by air. Most company employees are on a week-in and week-off schedule. Contractor employees are generally on a longer work schedule.

Athabasca Basin community residents fly from various pick-up points in smaller airplanes to the minesite. Southern resident employees fly to site from Saskatoon with stop-over pick-up points in Prince Albert and La Ronge. The number of weekly flights varies with the size of the workforce.

Personnel are recruited on a preferential basis: initially from the communities of northern Saskatchewan, followed by the Province of Saskatchewan, and then outside the province.

Site activities such as development and construction work are tendered to a number of contractors which have the ability to hire qualified personnel from the major mining regions across Saskatchewan and Canada.

The Cigar Lake site is linked by road and by air to the rest of the Province of Saskatchewan facilitating easy access to any population centre for purchasing of goods at competitive prices. Saskatoon is a major population centre some 660 km south of the Cigar Lake deposit with highway and air links to the rest of North America.

5.5 Infrastructure

The Cigar Lake site is already a developed mineral property with sufficient surface rights (except in one aspect) to meet future mining operation needs for the current Mineral Reserves as well as site facilities and infrastructure including personnel accommodation, access to water, airport, site roads and other necessary buildings and infrastructure. That aspect is the proposed increase of the surface lease area that is necessary for the discharge of treated effluent to Seru Bay at Waterbury Lake. Cameco is discussing the increase with the government of Saskatchewan.

Site facilities at the end of construction will include a 1,600 m long gravel airstrip, 225 person permanent residence and recreation complex, 200 person construction camp, administration building (including maintenance and warehouse facilities), water treatment plant, freeze plant, concrete batch plant, Shaft No. 1 and Shaft No. 2 headframes and hoisthouses, site roads, powerhouse, electrical substations, ore loadout building, and miscellaneous infrastructure.

The Cigar Lake minesite has access to sufficient water from Waterbury Lake nearby for all planned industrial and residential activities. The site is connected to the provincial electricity grid with a 138-kV overhead power line. There are standby generators in case of power outages.

All ore mined will be transported to the McClean Lake JEB mill for processing to uranium solution, of which AREVA's share is further processed into yellowcake at the McClean Lake JEB mill, and Cameco's share is transported to the Rabbit

Lake mill for processing into yellowcake. Processing facilities at the McClean Lake site are discussed in Section 16.3 and at the Rabbit Lake site in Section 16.4. Tailings management facilities at the McClean Lake and Rabbit Lake sites are discussed in Section 18.5.5.

Waste rock piles from the excavation of the two shafts and all underground development are confined to a small footprint within the surface lease. The waste piles have been segregated into four separate areas; two clean waste piles, one mineralized waste pile (>0.03% U_3O_8) and one potentially acid generating waste. The latter two stockpiles are contained on lined pads; however, no mineralized waste has been identified in development to date. Waste rock management is further discussed in Section 18.5.6.

6 HISTORY

6.1 Ownership

There have been numerous changes in ownership of participating interests in the joint venture that governs Cigar Lake.

The original joint venture was established in 1976 between Canadian Kelvin Resources Ltd. and Asamera to explore the Keefe Lake area. Asamera was the operator of the joint venture. In 1977, Saskatchewan Mining Development Corporation (SMDC) acquired a 50% interest in the joint venture.

Around 1979, the Keefe Lake joint venture proceeded to divide the Keefe Lake area into three separate project areas of Dawn Lake, McArthur River and Waterbury Lake (which includes a portion of the lands now known as Cigar Lake).

In 1980, a joint venture agreement was entered into to govern exploration of the Waterbury Lake area and at that time SERU, the predecessor company to Cogema Canada Ltd. (Cogema), became the operator of the joint venture.

Effective January 1, 1985, the Waterbury Lake Joint Venture Agreement was terminated and replaced by a new joint venture agreement. Under the new joint venture agreement, the joint venture divided the Waterbury Lake area into the Waterbury Lake lands and the Cigar Lake lands. Cogema was appointed operator of the Waterbury Lake lands and Cigar Lake Mining Corporation (CLMC) was appointed the operator of the Cigar Lake lands. The participating interests in the joint venture at the time were SMDC (50.75%), Cogema (32.625%), Idemitsu (12.875%) and Corona Grande Exploration Corporation (3.75%).

In 1988, Eldorado Resources Limited and SMDC merged to form Cameco.

Effective January 1, 2002, the Cigar Lake reorganization took place and the joint venture owners, Cameco (50.025%), AREVA (37.1%), Idemitsu (7.875%), and TEPCO (5%) entered into a new joint venture agreement to give effect to the reorganization and to govern further exploration, development and production from the Waterbury Lake lands and the Cigar Lake lands. This new joint venture was called the Cigar Lake Joint Venture (CLJV). AREVA was appointed the Waterbury Lake lands operator (which includes claims No. S-106540 to 106557 and 106559 to 106564).

As part of the 2002 Cigar Lake reorganization, the CLJV entered into the Mine Operating Agreement with Cameco to engage Cameco as mine operator to operate the Cigar Lake mine property (which property includes ML – 5521, the Cigar Lake surface lease and the mine).

As a part of the 2002 Cigar Lake reorganization, the CLJV entered into the 2001 Contract Exploration Agreement to engage AREVA as contract exploration operator to operate the Cigar Lake Exploration property (Claim No. 106558).

6.2 Exploration and Development History

Between 1976 and 1979, Asamera, as operator of the Keefe Lake Joint venture, conducted exploration work on the mineral property. This activity included lake sediment and water geochemistry, airborne magnetic and Input (Questor) surveys, airborne radiometric and VLF (Geoterrex) surveys, gravimetric (Kenting) and seismic surveys.

After the division of the Keefe Lake area into three separate projects, Cogema Canada Ltd., as operator of the Waterbury joint venture project, revisited all field survey results and conducted a series of complementary exploration work on lake bottom sediment geochemistry and airborne high resolution magnetic (Geoterrex) surveys. Regional geology photo-interpretation as well as outcrop and overburden mapping and sampling activities were systematically conducted across the mineral property. Ground geophysical surveys allowed depth and conductivity evaluation of geological formations using electromagnetic frequency (Geoprobe EMR-16) and time (Crone DEEPEM) methods. During 1980, this detailed DEEPEM work activity was intensified, targeting several Waterbury Lake zones with conductor structures previously identified. These electromagnetic conductors were systematically drilled during the winter months of 1980-81. On May 9, 1981, the drilling crew brought to surface high-grade mineralized core from hole WQS2-015, which was the last one planned for the winter program.

Definition drilling programs were conducted throughout the 1980's. Currently, the deposit and its surroundings have been defined by some 278 drill holes and almost 115,000 m of core drilling from surface.

A test mine proposal to assess conditions and to field test new mining methods was approved on October 21, 1987. Test mining, including the sinking of Shaft No. 1 to a depth of 500 m and lateral development on 420, 465 and 480 m levels, was performed between that approval time and December 1992.

In September 1992, Government Environmental Review Panel guidelines were issued for the Cigar Lake project by the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan. Later the same year, consulting firms were hired to perform engineering studies and, at the same time, extensive and comprehensive metallurgical and environmental testing programs were launched.

In 1993, mine site activities were placed on a care and maintenance basis and initial engineering studies for development and operation of the property based on the jet boring mining method were started. These and other engineering studies were completed between 1993 and 1996. Several additions and improvements to site infrastructures were also performed.

In 1997, detailed engineering studies were undertaken for the purpose of developing a feasibility study of the mining project. In addition, testing of a specially designed tunnel boring machine with high strength concrete liner installation capacity (or mine development system) was conducted. In conjunction with this work, significant mine development was also carried out.

Environmental review commenced in January 1996 and was completed at the end of 1997. Early in 1998, the federal/provincial joint Environment Review Panel issued recommendations to the federal and provincial governments and the CLJV that the project proceed to the next stage of licensing. In April 1998, both governments responded favourably to the joint Environment Review Panel recommendations.

During 1999, the specially designed jetting tools for the jet boring machine were successfully tested within a three-metre thick layer of simulated ore.

In 2000, activities at the minesite were focused on the testing of several tools and systems forming the basis of the future mining method. The jet boring system was successfully tested in waste and frozen ore. In addition, the following tests were conducted successfully:

- Ore recovery from an underground slurry storage sump using a dredging clam bucket system; and
- Mining cavity and casing hole surveying system.

Further discussion of the test mining activities is provided in Section 18.1.3.

Early in December of 2000, the minesite was again placed on a care and maintenance basis.

A feasibility study was completed in May 2001, targeting peak annual production of 18 million pounds U_3O_8 during Phase 1 of the Cigar Lake project.

In December 2004, the CLJV approved an Accelerated Multi Year Development Plan for Cigar Lake to commence January 2005. The initial construction budget was approximately $450 million and included surface and underground facilities at Cigar Lake as well as changes to the milling facilities at the McClean Lake JEB and Rabbit Lake mills.

Construction of the project began in January 2005 and the Cigar Lake project has been in the construction phase since that time. The current status of the development and construction of the Cigar Lake project is discussed in Section 18.7.1.

6.3 Historical Mineral Resource and Mineral Reserve Estimates

Early Mineral Resource and Mineral Reserve estimates of the Cigar Lake deposit were based on surface drilling which provides the grade and thickness information about the mineralization. As the knowledge level increased with additional surface and underground drilling programs, and geotechnical and hydrological studies were made available, various mining methods were studied and estimates were adapted to reflect those mining methods.

Since 1984, several estimates of the Mineral Resources and Mineral Reserves of both uranium and other metals have been made. These estimates were restricted to unconformity mineralization within various parts of the deposit using different estimation methodologies and applying different values for several different parameters. Estimates reported from 1984 to 1999 have been summarized in the following section. The historical Mineral Resources and Reserves estimates from the 2001 feasibility study are disclosed in Section 6.3.2 “Historical Estimates 2000-2005”. The historical Mineral Resources and Mineral Reserve estimates issued in March 2007, and retained for the year ended December 31, 2008, are disclosed in Section 6.3.3 “Historical Estimates: 2007 - 2008”.

6.3.1 Historical Estimates: 1984 - 1999

Cigar Lake Mineral Resources and Reserves, described in this Section 6.3.1, were estimated and disclosed prior to the adoption of NI 43-101 and should be considered as historical. They were not estimated and classified in compliance with NI 43-101. Their classifications as “geological resources” or “mineable reserves” do not conform to the current “CIM Definitions Standards for Mineral Resources and Reserves” since the categories used at the time are not acceptable today. In today’s terminology they would likely be equivalent to “Mineral Resources” or “Mineral Reserves” but still lacking proper resource and reserve sub-classification. The qualified person for this section, Alain G.

Mainville, has not completed the necessary work to verify the historical estimates, their classifications and assumptions. As such, these historical estimates should not be relied upon. They may not be equivalent to current classification definitions.

In 1984 and 1985, polygonal and geostatistical resource estimates, applied in different areas of the deposit, for "geological resources of uranium", were done using a cut-off grade of 0.12% U_3O_8.

The polygonal estimate was done by SERU in November 1984 and covered the area of the deposit east of 10300E. The calculation included a total of 59 mineralized intercepts. The reported results are shown in *Table 6-1*.

Table 6-1: Historical Resource Estimate – SERU, November 1984

Year	Area	Tonnes (x 1000)	Grade %U_3O_8	Lbs U_3O_8 (millions)
1984	East of 10300E	766	14.5	244.5

Notes: (1) See Section 17, Figure 17-1 for drawing showing eastings in relation to deposit.
(2) See the cautionary statements for historical estimates in the first paragraph of Section 6.3.1.
(3) The necessary work to verify this historical estimate, its classifications and assumptions has not been completed. As such, this historical estimate should not be relied upon. It may not be equivalent to current classification definitions.

Cogema completed a geostatistical resource estimate in January 1985 covering the east and the west zones. The east zone was based on 58 mineralized intercepts and the west zone was based on 20 mineralized intercepts. The reported results are shown in *Table 6-2*.

Table 6-2: Historical Resource Estimate – Cogema, January 1985

Year	Area	Tonnes (x 1000)	Grade %U_3O_8	Lbs U_3O_8 (millions)
1985	East Zone	922	14.4	293.1
1985	West Zone	1,030	4.8	108.1

Notes: (1) See the cautionary statements for historical estimates in the first paragraph of Section 6.3.1.
(2) The necessary work to verify this historical estimate, its classifications and assumptions has not been completed. As such, this historical estimate should not be relied upon. It may not be equivalent to current classification definitions.

In September 1986, a polygonal estimate of resources of several metals, including uranium was performed in the eastern part of the deposit, using a minimum GT (grade x thickness) value of 3.0 m%U_3O_8. This area was selected as having the highest grade and uranium content and extended from 10425E to

11075E and included 61 mineralized intercepts. The estimate was done by Cogema with reported results as shown in *Table 6-3*.

Table 6-3: Historical Resource Estimate – Cogema, September 1986

Year	Area	Tonnes (x 1000)	Grade $\%U_3O_8$	Lbs U_3O_8 (millions)
1986	East of 10425E	609	19.2	257.8

Notes: (1) See Section 17, Figure 17-1 for drawing showing eastings in relation to deposit.
(2) See the cautionary statements for historical estimates in the first paragraph of Section 6.3.1.
(3) The necessary work to verify this historical estimate, its classifications and assumptions has not been completed. As such, this historical estimate should not be relied upon. It may not be equivalent to current classification definitions.

In December 1993, a "mineable reserve" estimate for uranium in part of the eastern area of the deposit between 10737E and 11025E was completed using geostatistical methods. This area was defined as "Phase 1" of development and exploitation at the time. This "Phase 1" area is not identical to that used for the current Mineral Resource and Reserve estimate used elsewhere in this technical report. The estimate was based on the jet boring mining method and the mine layout as then proposed. Various mining parameters and factors were applied including the following:

- Minimum grade cut-off on drill hole composites.
- Minimum mining thickness applied to drill hole intersections.
- Minimum contained metal in the composites.
- External and internal dilution.
- Mining and milling recoveries.
- An estimation block size of 20 m x 24 m.
- A cut-off grade on estimation blocks of 1.2 % U_3O_8.

Cogema completed this Phase 1 "mineable reserve" estimate based on 61 mineralized intercepts with reported results as shown in *Table 6-4.*

Table 6-4: Historical Phase 1 Reserve Estimate – Cogema, December 1993

Year	Area	Tonnes (x 1000)	Grade $\%U_3O_8$	Lbs U_3O_8 (millions)
1993	East of 10737E	339	25.6	191.4

Notes: (1) See Section 17, Figure 17-1 for drawing showing eastings in relation to deposit.
(2) See the cautionary statements for historical estimates in the first paragraph of Section 6.3.1.
(3) The necessary work to verify this historical estimate, its classifications and assumptions has not been completed. As such, this historical estimate should not be relied upon. It may not be equivalent to current classification definitions.

In December 1993, a polygonal estimate of resources of the western part of the deposit called "Phase 2" was also completed based on 43 mineralized intercepts and using an estimation block size of 20 x 40 m and similar mining constraints. This mineralized "Phase 2" area is not identical to the one referred to elsewhere in this technical report. CLMC and Idemitsu estimated this "geological resource" with reported results as shown in *Table 6-5*.

Table 6-5: Historical Phase 2 Resource Estimate – CLMC and Idemitsu, December 1993

Year	Area	Tonnes (x 1000)	Grade $\%U_3O_8$	Lbs U_3O_8 (millions)
1993	West of 10737E	891	9.1	178.2

Notes: (1) See Section 17, Figure 17-1 for drawing showing eastings in relation to deposit
(2) See the cautionary statements for historical estimates in the first paragraph of Section 6.3.1.
(3) The necessary work to verify this historical estimate, its classifications and assumptions has not been completed. As such, this historical estimate should not be relied upon. It may not be equivalent to current classification definitions.

These 1993 reserves and resources were used as the base of the 1995 Feasibility Study. This Feasibility Study defined "mineable reserves" by applying a mining recovery factor of 95%.

The reserve figures from the 1995 Feasibility Study were retained by Cameco for reserve publication from December 1995 to December 1998. The reported results are shown in *Table 6-6*.

Table 6-6: Historical Reserves – as of December 31, 1998

Category	Area	Tonnes (x 1000)	Grade $\%U_3O_8$	Total Lbs U_3O_8 (millions)
	Phase 1Main Pod	324	25.6	182.8
	Phase 2 West Ext	852	9.1	170.5
Total		**1,176**	**13.6**	**353.3**

Notes: (1) See the cautionary statements for historical estimates in the first paragraph of Section 6.3.1.
(2) The necessary work to verify this historical estimate, its classifications and assumptions has not been completed. As such, this historical estimate should not be relied upon. It may not be equivalent to current classification definitions.

During 1999, the feasibility study was updated by CLMC. Phases 1A and 2A covered the area between 10400E and 11035E and Phase 2B was west of 10400E. The Phase 1A & 2A area was defined by 93 mineralized intercepts and the Phase 2B area was defined by 19 mineralized intercepts. The Reserves published by Cameco at the end of 1999 are presented on *Table 6-7*.

Table 6-7: Historical Reserves – as of December 31, 1999

Category	Area	Tonnes (x 1000)	Grade $\%U_3O_8$	Total Lbs U_3O_8 (millions)
Proven	Phases 1A & 2A	345	22.5	171.3
Probable	Phases 1A & 2A	236	11.3	58.5
Possible	Phase 2B	317	16.9	118.1

Notes: (1) See the cautionary statements for historical estimates in the first paragraph of Section 6.3.1.
(2) The necessary work to verify this historical estimate, its classifications and assumptions has not been completed. As such, this historical estimate should not be relied upon. It may not be equivalent to current classification definitions.

6.3.2 Historical Estimates: 2000-2005

In May 2000, a resource estimate of the unconformity mineralization was performed for a different part of the eastern area of the deposit, vis-à-vis the 1993 estimate. It was done using geostatistical methods with an estimation block size of 15 m (east-west) x 6 m (north-south) and applying similar mining parameters and values as done in 1993. As well, an estimate of resources in the western part of the deposit was done, using geostatistical methods with an estimation block size of 40 m (east-west) x 10 m (north-south). The resource estimate served to evaluate the possibility of increasing the size of Phase 1 by combining Phases 1A and 2A, compared to earlier feasibility studies, for purposes of the 2001 Feasibility Study. An "ore reserve task force" or working group consisting of technical representatives of Cameco, Cogema and CLMC was involved in this process.

Alain G. Mainville, the qualified person for this section of this technical report, has verified the mineral resource and reserve estimates reported in the 2001 Feasibility Study, along with their classifications and assumptions. The resource model, from which Mineral Reserves were defined, was prepared in a professional and competent manner. Following the re-interpretation and re-modelling of Phase 1 done in 2009, the Mineral Reserve estimate from the 2001 Feasibility Study is no longer considered relevant. The Phase 2 Mineral Resource estimate of the 2001 Feasibility Study is still considered relevant and reliable.

The Cigar Lake Mineral Reserves were defined in the 2001 Feasibility Study by applying factors for recovery and dilution to the Indicated and Measured Mineral Resources. They were retained by Cameco for reserve publication from year-ends 2001 to 2005 and are shown in *Table 6-8*.

Table 6-8: Mineral Reserves as of December 31, 2005

Category	Area	Total Tonnes (x 1000)	Grade %U_3O_8	Total Lbs U_3O_8 (millions)	Cameco Share Lbs U_3O_8 (millions)
Proven	Phase 1	497	20.7	226.3	113.2
Probable	Phase 1	54	4.4	5.2	2.6
Total	**Cigar Lake**	**551**	**19.1**	**231.5**	**115.8**

Note: (1) These historical Mineral Reserve estimates should not be relied upon as a result of a recent update.

6.3.3 Historical Estimates: 2007 and 2008

In March 2007, following the April and October 2006 water inflow incidents, revisions to the Mineral Reserve and Mineral Resource estimates of the Cigar Lake project were completed based on the key assumptions and parameters used for the May 2000 resource model.

The March 2007 Phase 1 Mineral Resource and Mineral Reserve are no longer reliable as a result of recent changes to the mine plan. The 2007 Phase 2 Mineral Resource estimate (inferred) is still considered relevant and reliable and forms part of the current Mineral Resource estimate. The March 16, 2007 and

December 31, 2008 Mineral Resource and Mineral Reserve estimates are shown in *Tables 6-9 and 6-10,* respectively.

Table 6-9: Mineral Resources as of March 16, 2007 and December 31, 2008

Category	Area	Total Tonnes (x 1000)	Grade $\%U_3O_8$	Total Lbs U_3O_8 (millions)	Cameco's Share Lbs U_3O_8 (millions)
Phase 1					
Measured	Phase 1	-	-	-	-
Indicated	Phase 1	61	4.9	6.6	3.3
Total	**Phase 1**	**61**	**4.9**	**6.6**	**3.3**
Phase 2					
Inferred	Phase 2	317	16.9	118.1	59.1

Notes: (1) These historical Mineral Resource estimates for Phase 1 should not be relied upon as a result of a recent update.
(2) The Mineral Resource estimate for Phase 2 is still considered relevant and reliable.

Table 6-10: Mineral Reserves as of March 16, 2007 and December 31, 2008

Category	Area	Total Tonnes (x 1000)	Grade $\%U_3O_8$	Total Lbs U_3O_8 (millions)	Cameco's Share Lbs U_3O_8 (millions)
Proven	Phase 1	497	20.7	226.3	113.2
Probable	Phase 1	-	-	-	-
Total	**Cigar Lake**	**497**	**20.7**	**226.3**	**113.2**

Note: (1) This historical Mineral Reserve estimate should not be relied upon as a result of a recent update. See the current Mineral Reserve estimate in Section 17 of this technical report.

6.4 Historical Production - Test Mining

Historical production from the Cigar Lake deposit results from test mining in ore conducted during three separate test mining programs and comprising five separate mining tests as follows:

- Boxhole boring of two cavities in 1991
- Jet boring tests No. 1, 2 and 3 in 1992
- Jet boring industrial tests in 2000 - 4 cavities in waste, 4 cavities in ore

Production from the tests is estimated to be approximately 767 tonnes of mineralized material at an average grade of 17.4% U_3O_8 and containing approximately 295,000 lbs U_3O_8 as shown in *Table 6-11.*

Table 6-11: Historical Production – Test Mining

Test Name and Number	Date of Test	Production		
		Mineralized Material (t)	U_3O_8 (lbs)	Grade $\%U_3O_8$
Boxhole boring	October, 1991	53	20,100	17.3
Jet boring: JB-1 and JB-2	June, September 1992	13	4,500	15.6
Jet boring: JB-3	Nov.-Dec., 1992	100	34,500	15.6
Jet boring: JBST-2000	Sept.-Nov., 2000	601	235,500	17.8
Totals		**767**	**294,600**	**17.4**

Further discussion on the test mining activities is provided in Section 18.1.3.

7 GEOLOGICAL SETTING

7.1 Regional Geology

The Cigar Lake uranium deposit is located approximately 40 km within the eastern part of the Athabasca Basin of Northern Saskatchewan, Canada. Like other major uranium deposits of the basin, it is located at the unconformity contact separating Helikian sandstones of the Athabasca group from Aphebian metasedimentary gneisses and plutonic rocks of the Wollaston Domain. The Manitou Falls Formation, within the Athabasca Group was deposited in an intra-continental sedimentary basin that was filled by fluviatile terrestrial quartz sandstones and conglomerates. The Athabasca Group appears undeformed and its actual maximum preserved thickness is about 1,500 m. On the eastern side of the basin, the sandstone units of the Manitou Falls Formation, and the metasedimentary gneisses that unconformably lie immediately beneath them, host most of the uranium mineralization. Overburden in the project area ranges from none, expressed by occasional outcrops, up to a thickness of 50 m.

The Lower Pelitic unit of the Wollaston Group, which lies directly on the Archean granite basement, is considered to be the most favourable unit for uranium mineralization. During the Hudsonian orogeny (1800-1900 Ma), the group underwent polyphase deformation and upper amphibolite facies metamorphism, with local greenschist facies retrograde metamorphism. The Hudsonian orogeny was followed by a long period of erosion and weathering and the development of a paleoweathering profile that is preserved beneath the unconformity.

7.2 Local Geology

At Cigar Lake, the Manitou Falls Formation is 250-500 m thick and corresponds to units MFd, MFc, MFb and MFa. The conglomerate MFb unit hosts the Cigar Lake deposit as the basal conglomerate MFa is absent at the deposit, wedging out against an east/west, 20 m high, basement ridge, on top of which is located the orebody.

Two major lithostructural domains are present in the metamorphic basement of the property. These are as follows:

- a southern area composed mainly of pelitic metasedimentary gneisses (Wollaston Domain),
- a northern area with large lensoid granitic domes (Mudjatik Domain).

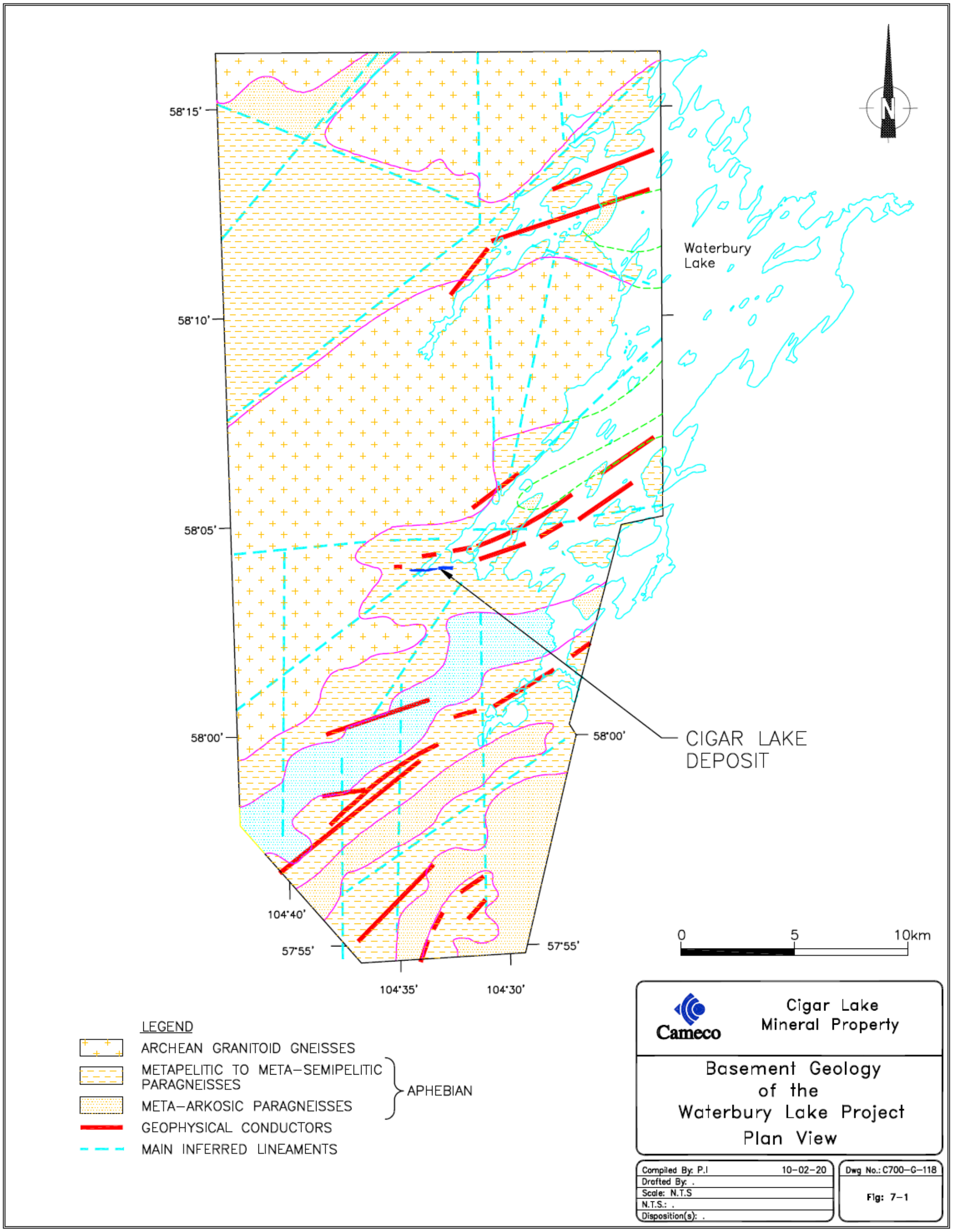
The Cigar Lake east trending pelitic unit, which is immediately beneath the deposit, is located in the transitional zone between the two domains. The metamorphic basement rocks in this unit consist mainly of graphitic metapelitic gneisses and calc-silicate gneisses, which are inferred to be part of the Lower Pelitic unit. Graphite-and pyrite-rich “augen gneisses”, an unusual facies within the graphitic metapelitic gneisses, occur primarily below the Cigar Lake orebody.

The mineralogy and geochemistry of the graphitic metapelitic gneisses suggest that they were originally carbonaceous shales. The abundance of magnesium in the intercalated carbonates layers indicates an evaporitic origin.

The structural framework in the Cigar Lake mine area is dominated by large northeast trending lineaments and wide east trending mylonitic corridors. The unconformable contact between these mylonites, which contain the augen gneisses, and the overlying Athabasca sandstones, are considered to be the most favourable features for the concentration of uranium mineralization, specifically where graphitic basement fault zones were locally reactivated as brittle faults after sandstone deposition.

The Cigar Lake basement geological setting is shown in *Figure 7-1*.

Figure 7-1: Cigar Lake Deposit – Geological Basement Setting



Source - Cameco

7.3 Property Geology

The Cigar Lake uranium deposit, which has no direct surface expression, is located at the unconformity between the Lower Proterozoic (Aphebian) Wollaston Group metasediments and the Middle Proterozoic (Helikian) Athabasca sandstone, at a depth between 410 and 450 m below surface. It has the shape of a flat-lying lens approximately 1,950 m in length, 20 to 100 m in width and ranges up to 12 m thick, with an average thickness of about 5 m. It shows a remarkable longitudinal and lateral geological continuity. Its crescent shaped cross sectional outline closely reflects the topography of the unconformity.

The deposit and host rocks consist of three principal geological and geotechnical elements:

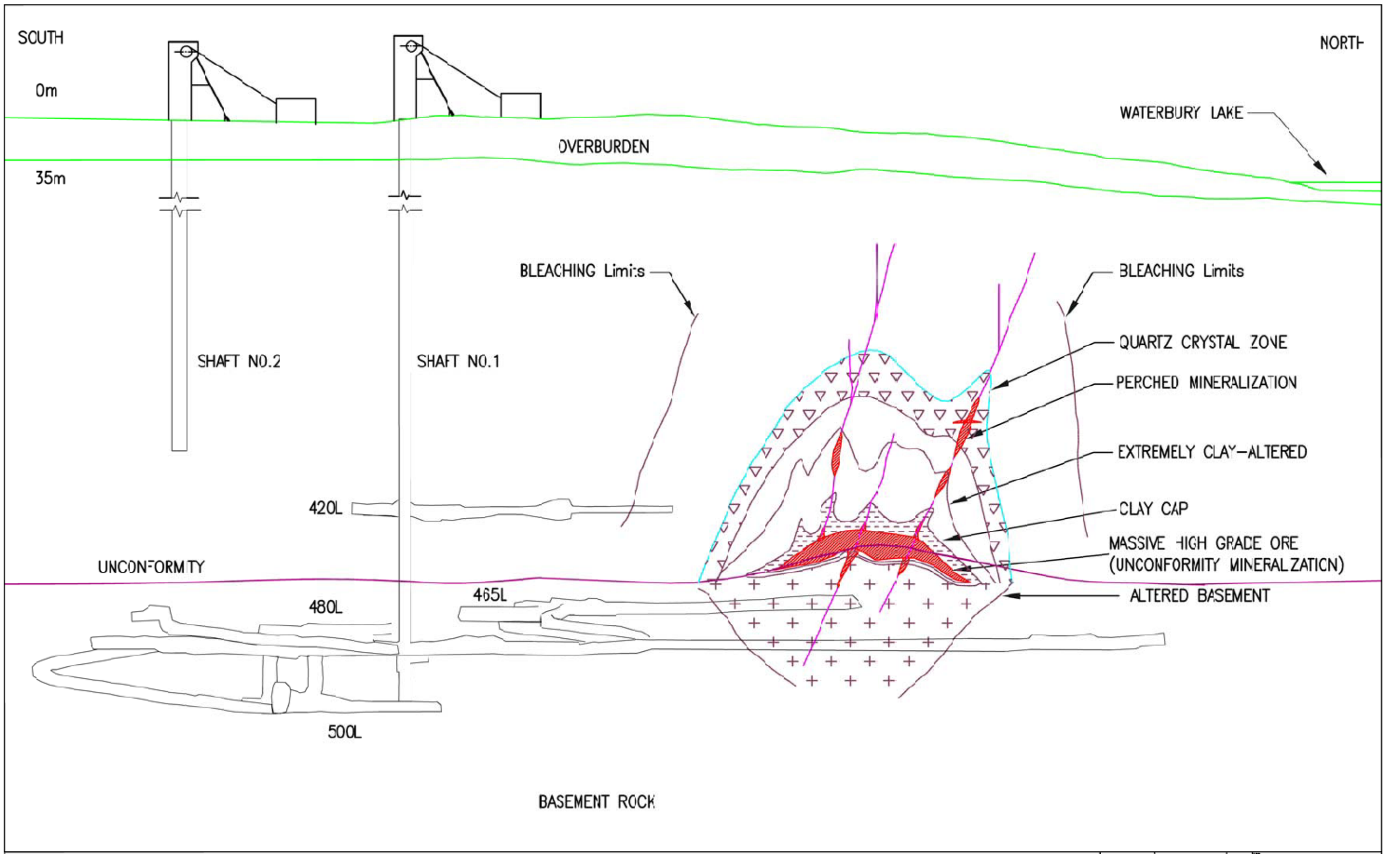
- The deposit itself.
- The overlying sandstone.
- The underlying metamorphic basement rocks.

Faulting and strong hydrothermal alteration have produced the geotechnical conditions that exist today to challenge the extraction of the resource.

The Cigar Lake orebody is controlled by an east-west trending structure developed within the graphitic metapelites of the Wollaston Group. It is surrounded by a strong alteration halo affecting both sandstone and basement rocks, characterized by extensive development of Mg-Al rich clay minerals (illite-chlorite). This alteration halo in the sandstone is centred on the deposit and reaches up to 300 m in width and height. In the basement rocks, this zone extends in the range of 200 m in width and as much as 100 m in depth below the deposit. The mineralization is hosted principally by the Athabasca sandstone and consists mainly of pitchblende and nickel and cobalt arsenides.

Figure 7-2 shows a schematic geological cross-section of the Cigar Lake orebody that illustrates the shape of the deposit and the alteration halo in the sandstone and the basement rocks.

Figure 7-2: Cigar Lake Deposit – Schematic Cross Section Looking West



Source: Cameco

8 DEPOSIT TYPES

Cigar Lake is an unconformity related uranium deposit. Deposits of this type are believed to have formed through an oxidation-reduction reaction at a contact where oxygenated fluids meet with reducing fluids and the unconformity provides that contact. The Cigar Lake deposit is an unconformity related uranium deposit and occurs at the unconformity contact between rock of the Athabasca group and underlying lower Proterozoic Wollaston Group metasedimentary rocks, an analogous setting to the Key Lake, McClean Lake, and Collins Bay deposits, also some of the zones at McArthur River. It shares many similarities with these deposits, including general structural setting, mineralogy, geochemistry, host rock association and the age of the mineralization.

Although the Cigar Lake orebody shows many similarities with other deposits of the Athabasca region, it is distinguished from them by its size, the intensity of its alteration process, the high degree of associated hydrothermal clay alteration and the presence of massive, extremely rich, high grade uranium mineralization.

The geological setting at Cigar Lake is similar to that at the McArthur River mine in that the sandstone overlying the basement rocks of the deposit contains significant water at hydrostatic pressure. However, unlike McArthur River, the deposit is flat lying.

Exploration has been conducted along the trend of the deposit focussing on targets defined by geophysical surveys and alteration halos identified by drilling.

9 MINERALIZATION

Three distinct styles of mineralization occur within the Cigar Lake deposit, as shown schematically in *Figure 7-2* (see Section 7). These are as follows:

- High grade mineralization at the unconformity ("unconformity" mineralization) which includes the ore.
- Fracture controlled, vein-like mineralization higher up in the sandstone ("perched" mineralization).
- Fracture controlled, vein-like mineralization in the basement rock mass.

The body of high grade mineralization located at the unconformity contains the bulk of the total uranium metal in the deposit and represents the only economically viable style of mineralization considering the mining methods and ground conditions. It is characterized by the occurrence of massive clays and very high-grade uranium concentrations.

The high-grade, unconformity mineralization consists primarily of three dominant rock and mineral facies occurring in varying proportions. These are quartz, clay (primarily chlorite with lesser illite) and metallic minerals (oxides, arsenides, sulphides). In the two higher grade eastern lenses, the ore consists of approximately 50% clay matrix, 20% quartz and 30% metallic minerals, visually estimated by volume. In this area, the unconformity mineralization is overlain by a very weakly mineralized contiguous clay cap one to five metres thick. In the lower grade western lens, the proportion changes to approximately 20% clay, 60% quartz and 20% metallic minerals.

While pre-mineralization and post-mineralization faulting played major roles in creating preferential pathways for uranium bearing groundwater and to some extent in re-mobilizing uranium, the internal distribution of uranium within the unconformity mineralization has likely been controlled primarily by geochemical processes. This is reflected in the good continuity and homogeneity of the mineralization and its geometry, particularly in the eastern part of the deposit. A very sharp demarcation exists between well mineralized and weakly mineralized rocks, both at the upper and particularly at the lower surface of the orebody.

Uranium oxide in the form of uraninite and pitchblende occurs in both sooty form and as botryoidal and metallic masses. It occurs as disseminated grains in aggregates ranging in size from millimetres to decimetres, and as massive metallic lenses up to one metre or more thick and inferred to be one to three metres in diameter, floating in a matrix of sandstone and clay. Coffinite (uranium silicate) is estimated to form less than 3% of the total uranium mineralization. The ore is variably green, red and black in colour.

Uranium grades of the unconformity mineralization range up to 82%U_3O_8 for a 0.5 m interval from a single drill hole intersection within the mining area. Geochemically, the deposit contains quantities of the elements Ni, Cu, Co, Pb, Zn, Mo and As, but in no economic concentrations. Higher grade intervals are associated with massive pitchblende or massive sections of arseno-sulphides.

The U-235 content of the mineralization has been determined to be the naturally occurring value of 0.71%. Uranium decay series measurements show that, in general, equilibrium exists within the unconformity mineralization and bulk dissolution of uranium is not occurring. Primary age of the unconformity mineralization has been estimated at 1.3 billion years.

The deposit has been subjected to faulting subsequent to its formation which has contributed to the formation of vein-type forms of mineralization that have been termed “perched” and basement mineralization. These mineralized bodies form volumetrically a very small part of the total mineralized rock and are of no economic significance at this time.

10 EXPLORATION

Mineral Lease ML-5521, which hosts the Cigar Lake deposit, is surrounded by 25 mineral claims. AREVA is responsible for all exploration activity outside the mineral lease, as per the CLJV joint venture agreements. The following two Sections (10.1 and 10.2) are a synopsis of exploration activity on the 25 mineral claims outside the mineral lease. For the purpose of the discussion in Sections 10.1 and 10.2, the 25 mineral claims are called the Waterbury Lake lands. Section 10.3 is a summary discussion of geophysical programs that have been conducted within the mineral lease since the October 2006 water inflow.

Drilling activity within the Mineral Lease is described in Section 11.

10.1 Asamera 1976 – 1979

The current Waterbury Lake lands were initially staked by Asamera with the first three claim blocks staked in 1975, a fourth in 1976 and a permit created in 1977.

Asamera conducted various field investigations from 1976 to 1979, at which point SERU took over as operator. The majority of Asamera's field investigations involved airborne and ground geophysical programs, followed by lake sediment and water sampling programs. Three diamond drillholes were completed during the 1978 campaign, but none intersected the unconformity. One drillhole was completed during the 1979 campaign, near the southern border of the property (Jigger Lake area).

A list of Asamera's activities is shown in *Table 10-1*.

Table 10-1: Asamera Summary of Exploration, Waterbury Lake Lands

Year	Drilling			Airborne Geophysics		Ground Geophysics	Other Exploration
	Type	Number	Metres Drilled	Type	Area	Type	Type
1976				Radiometric and Magnetic	Claim blocks only		Compilation geological map
1977				INPUT and Magnetic	Claim blocks only	Marine seismic	Lake sediment sampling
1978	Diamond	3	Unknown, did not reach unconformity	INPUT and Magnetic	Permit only	Gravity Radon, VLF	Lake sediment sampling
1979	Diamond	1	Unknown	Magnetic			Lake sediment sampling

Source: AREVA.

10.2 AREVA 1980 – Present

In March of 1980, SERU took over as operator of the Waterbury Lake Project. During the years 1980 to 1986, SERU (which became Cogema Canada Ltd. in 1984, and subsequently AREVA in 2006) completed various airborne and ground geophysical programs, lake sediment and water sampling programs and substantial diamond drilling.

During the first drilling campaign conducted by SERU (1981), the Cigar Lake uranium deposit was discovered. The majority of exploration activities were then concentrated on the deposit and adjacent regions. All exploration activities ceased after the 1986 field season.

Initial exploration activities were conducted in the southern region of the Waterbury Lake lands near Jigger Lake. Thirteen exploration drillholes (totalling 5,208 m) were completed prior to the discovery hole during the first drilling campaign in 1981, eight of which were drilled on the Q17 grid (Jigger Lake). The last drillhole (WQS2-015) completed to a depth of 563 m in 1981 was located on the QS-2 grid south of Cigar Lake and was the discovery hole for the Cigar Lake uranium deposit. Exploration activity concentrated on deposit delineation over the next few years, as outlined in Section 11.

All exploration activities ceased after the 1986 field season for a period of 12 years until work on the Waterbury Lands recommenced in 1999. After initially focussing upon data compilation and a review of all work conducted to date, new exploration has focussed upon developing further understanding of the Cigar trend, and developing knowledge of the large, unexplored parts of the project. Concurrent with this new work, a program of reboxing, relogging and sampling of historical exploration drillholes was undertaken to develop a further understanding of the Cigar Lake mineralization, alteration processes and structural setting to aid with near-mine and greenfields exploration on the project.

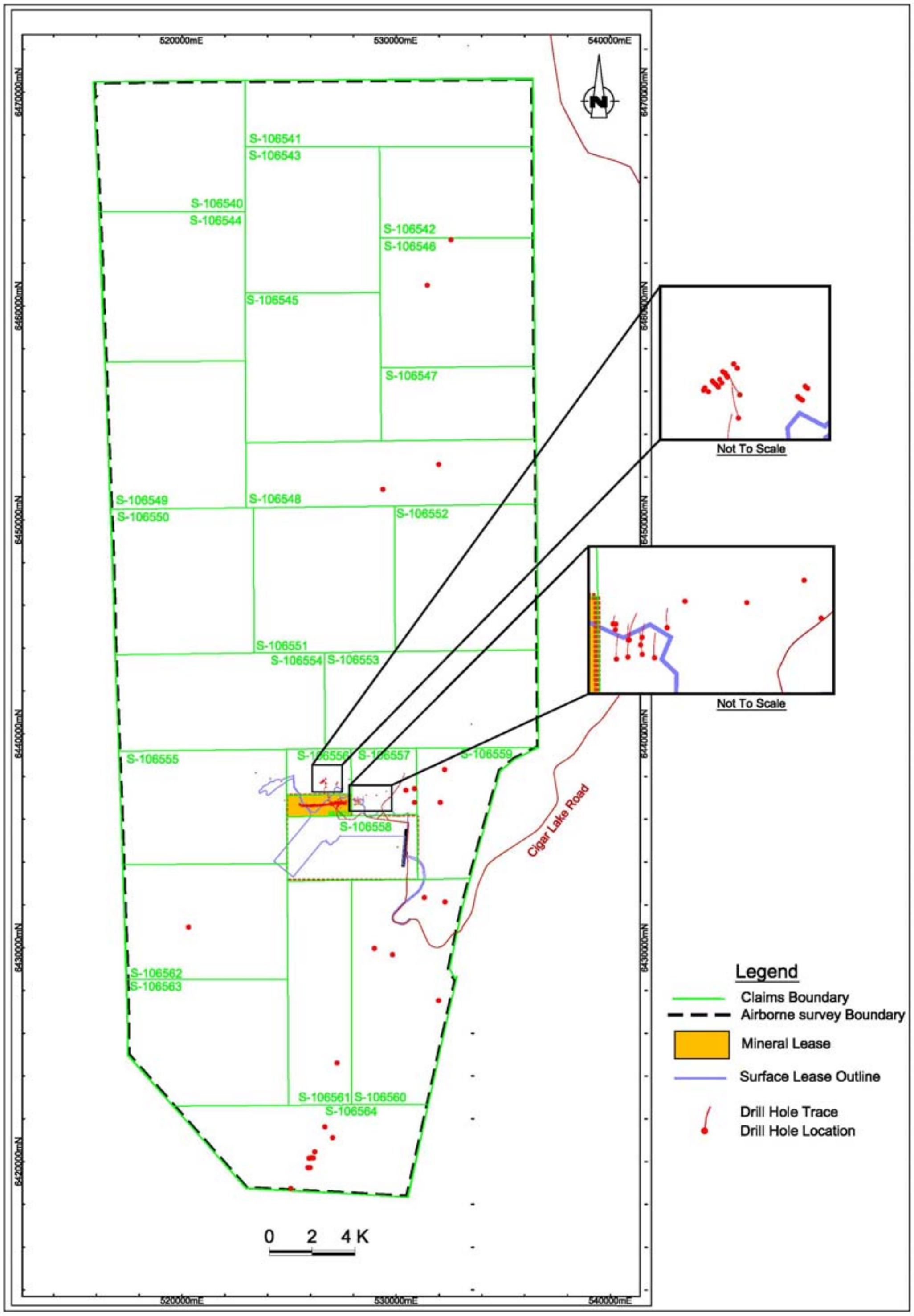
Since the inception of exploration activities to the end of the 2009 drilling program, a total of 115 exploration diamond drillholes (totalling 55,024 m) and an additional 38 shallow drillholes (totalling 2,140 m) had been completed outside of the mineral lease by AREVA (or their predecessors) on the Waterbury Lake lands. Since the recommencement of exploration in 1999, 56 drillholes for 28,460 m have been completed.

Exploration drilling in 2006 confirmed the existence of unconformity style mineralization outside the mineral lease approximately 650 m east of Phase 1 mineralization. Further exploration has been conducted in this area since 2006 and has delineated a mineralized zone approximately 210 m in strike length and

30m in across-strike width. Additional follow-up drilling is planned for this area in 2010.

The data from the exploration program on the 25 mineral claims is not part of the database used for the estimate of the Mineral Resources and Mineral Reserves at Cigar Lake. A figure displaying the location of all drillholes and grids outside the mineral lease is included as *Figure 10-1*. A list of all work completed outside the mineral lease between 1980 and 2009 is included as *Table 10-2*.

Figure 10-1: Exploration Drillholes and Grids – Waterbury Lake Lands



Source
AREVA

Table 10-2: AREVA, Summary of Exploration, Waterbury Lake Lands

Year	Holes Drilled			Airborne Geophysics		Ground Geophysics		Other Exploration
	Type	Number of Holes	Metres Drilled	Type	Line km	Type	Length	Type
1980				Magnetic, VLF and radiometric survey	Project-wide	EM soundings DEEPEM	60 km	
1981	Diamond	13	5208 m			DEEPEM	134 km	Lake sediment sampling
1982	Diamond	4	1845 m			DEEPEM EM-37 Gravity	588 km 28 km 59 km	Lake sediment sampling
1983	Diamond	5	2616 m	INPUT	2685 km	DEEPEM	545 km	Lake sediment sampling
1984	Diamond	4	1654 m					
1985	Diamond	16	7135 m			DEEPEM	120 km	Lake sediment sampling
1986	Diamond Shallow Geochemistry	17 38	8106 m 2138 m			DEEPEM	135 km	
1987-88				No exploration activities				
1999								Data Compilation Structural Study Historical drillcore logging and resampling
2000				GEOTEM	3587 km			Boulder sampling
2001						Moving Loop EM Fixed Loop EM Pole-pole DC 2D Resistivity	26 km 57 km 5km	
2002	Diamond	2	1150 m			Pole-pole 2D Resistivity Pole-pole DC3D Resistivity	16 km 51 km	
2003	Diamond	4	1790 m			Moving Loop EM	11 km	Historical drillcore logging and resampling
2004						Moving Loop EM Pole-pole DC 2D Resistivity	29 km 18 km	Historical drillcore logging and resampling
2005	Diamond	4	1705 m					
2006	Diamond	7	4075 m			Pole-pole DC 2D Resistivity	84 km	Historical drillcore logging and resampling
2007	Diamond	13	6515 m	FALCON Gravity survey	Project-wide	Moving Loop EM	11 km	Historical drillcore logging and resampling
2008	Diamond	12	5492 m	Magnetic survey	Project-wide	Pole-pole DC 2D Resistivity Fixed Loop EM	86 km 51 km	Historical drillcore logging and resampling
2009	Diamond	14	7733 m			Fixed Loop EM Small Moving Loop EM Pole-pole DC 2D Resistivity	51 km 44 km 51 km	Historical drillcore logging and resampling
Total		**153**	**55,024 m**		**6,272 km**		**1,966 km**	

Note: This table includes all activity between 1980-2009 outside the area of ML-5521 (activity on the deposit is excluded)

Source: AREVA

10.3 Cameco 2007 - Present

After the 2006 inflow events, it was recognized that more detailed geophysical information in the immediate deposit area was required. The initial focus was to gain an understanding of the structure associated with the Shaft No. 2 inflow event. Ground surveys including gravity, TITAN (DC/IP resistivity and magnetotelluric survey), and VLF electromagnetic surveys were conducted in the summer of 2007 over a portion of the Phase 1 ore zone.

In the fall of 2007 a supplementary geophysical program was conducted over the Phase 1 ore zone, to identify major structures within the sandstone column over the existing mine workings. The survey was conducted in six boreholes to produce three Vertical Seismic Profiles (VSP) and six single-hole side-scan seismic surveys around the mine site to meet these objectives. Both of these survey designs are best for optimally imaging vertical to sub-vertical structures at various scales based on their input frequencies.

The application of the knowledge gained of structures and fault zones, identified through the correlation of all the geophysical datasets – particularly seismic – with geological mapping and engineering parameters will allow for better mine planning and mitigation of potential risk.

11 DRILLING

11.1 Surface Drilling

The Cigar Lake uranium deposit was discovered in 1981 by drillhole number WQS2-015 of a regional programme of diamond drill testing of geophysical anomalies (electromagnetic conductors) located by airborne and ground geophysical surveys. The deposit was subsequently delineated by surface drilling during the period 1982 to 1986, followed by several small campaigns of drilling for geotechnical and infill holes to 2002 when the last surface hole prior to 2007 was drilled. An additional 51 holes were drilled from 2007 through 2009 for various geotechnical and geophysical programs. Drilling since 1986 has primarily been geotechnical in nature, with minor fill-in delineation drilling. The number of holes that have been drilled within Mineral Lease ML-5521 are listed in *Table 11-1*.

Table 11-1: Summary of Holes Drilled within ML-5521

Year	No. of Holes Drilled in Ore Zone	No. of Holes Drilled Outside of Ore Zone	Total Drilled (m)
1981	1	-	562
1982	10	16	12,372
1983	39	30	26,971
1984	29	33	26,415
1985	3	22	11,501
1986	6	4	3,898
1987	-	5	2,331
1988	-	-	-
1989	1	1	866
1990	4	-	2,127
1991	-	-	-
1992	11	1	1,977
1993	-	-	-
1994	-	1	502
1995-1997	-	-	-
1998	8	-	1,472
1999	-	1	518
2000-2001	-	-	-
2002	-	1	510
2003-2006	-	-	-
2007	-	21	9,165
2008	-	16	6,711
2009	5	9	7,042
Total	**117**	**161**	**114,940**

Source:Cameco

A total of 114,940 m of diamond drilling from surface has been drilled in 278 holes to delineate the deposit, to outline uranium resources and to assess the geotechnical properties of the deposit and host rocks. Holes collared by wedging off from a primary hole are considered as separate holes.

Of the 278 surface drill holes and wedged intersections drilled, 117 have been drilled within the geologically interpreted deposit limits and intersected minimum composite intervals with grade times thickness (GT) value greater than 3.0 m%U_3O_8, equivalent to 2.5 m at 1.2% U_3O_8. The other 161 holes were drilled for purposes of geotechnical assessment, including investigation of ground conditions in areas of proposed mining development and sampling for determination of material properties, and for exploration. Seven of the 161 holes were drilled to test ground conditions in areas of proposed shafts.

The locations of the surface holes for Phase 2 are shown in *Figure 11-1* and for Phase 1 in *Figure 11-2*. Complete listings of all the drill holes that intersect Phase 1 and Phase 2 orebodies are included in *Appendix 1* and *Appendix 2* respectively.

The higher grade, eastern part of the deposit was discovered in 1983. Since 1985, all drilling has been done in this area, and none has been done west of section 10400E. Drilling in the eastern part of the deposit has been done at a nominal drill hole grid spacing of 50 m east-west by 20 m north-south. Some fill-in fences into ore were drilled primarily to test the spatial continuity of the mineralization. In this area, 98 holes intersected ore grade unconformity style mineralization, 23 holes intersected only low grade mineralized rock or fracture controlled mineralization, and 104 holes intersected no mineralization.

The western part of the deposit has been drilled at a nominal drill hole grid spacing of 200 m east-west by 20 m north-south. This area of the deposit has been outlined by 53 holes in total, of which 19 holes intersected unconformity style mineralization, 11 holes intersected low grade or fracture controlled mineralization, and 23 holes intersected only weak mineralization or were barren.

The orientation and shape of the orebody was recognized at an early stage of the exploration drilling. It was soon learned that the bulk of the mineralization was of high grade and positioned at and sub parallel to the unconformity, although vein like bodies of mineralized rock were also present. Subsequently, almost all drilling was completed using vertical drill holes rather than inclined drill holes, because it was recognized that vertical intersections were essentially normal to the dominant orientation of the orebody. These intersections therefore represent the true thickness of the flat lying orebody.

Well established drilling industry techniques were used in the drilling programs, including wireline core drilling. Core recovery was generally very good; in some areas where ground conditions dictated, triple tube drilling to maximize core recovery was done. Wedging techniques were used in some areas to obtain step-out intersections without the expense of collaring additional holes. A total of 54 wedged holes have been completed.

All pre-2007 holes were surveyed for direction using single shot or multi-shot surveying tools. Holes drilled since January 2007 have been surveyed either with a gyroscope or a Reflex tool.

The more recent surface drill holes (since 1988) have been grouted in their entirety. Holes drilled prior to 1988 were plugged in the range 250 to 350 m depth by mechanical plugs and/or cement plugs up to 10 m thick.

In almost all cases, gamma surveys have been done through the orebody in these holes. For further discussion see Section 13.4.

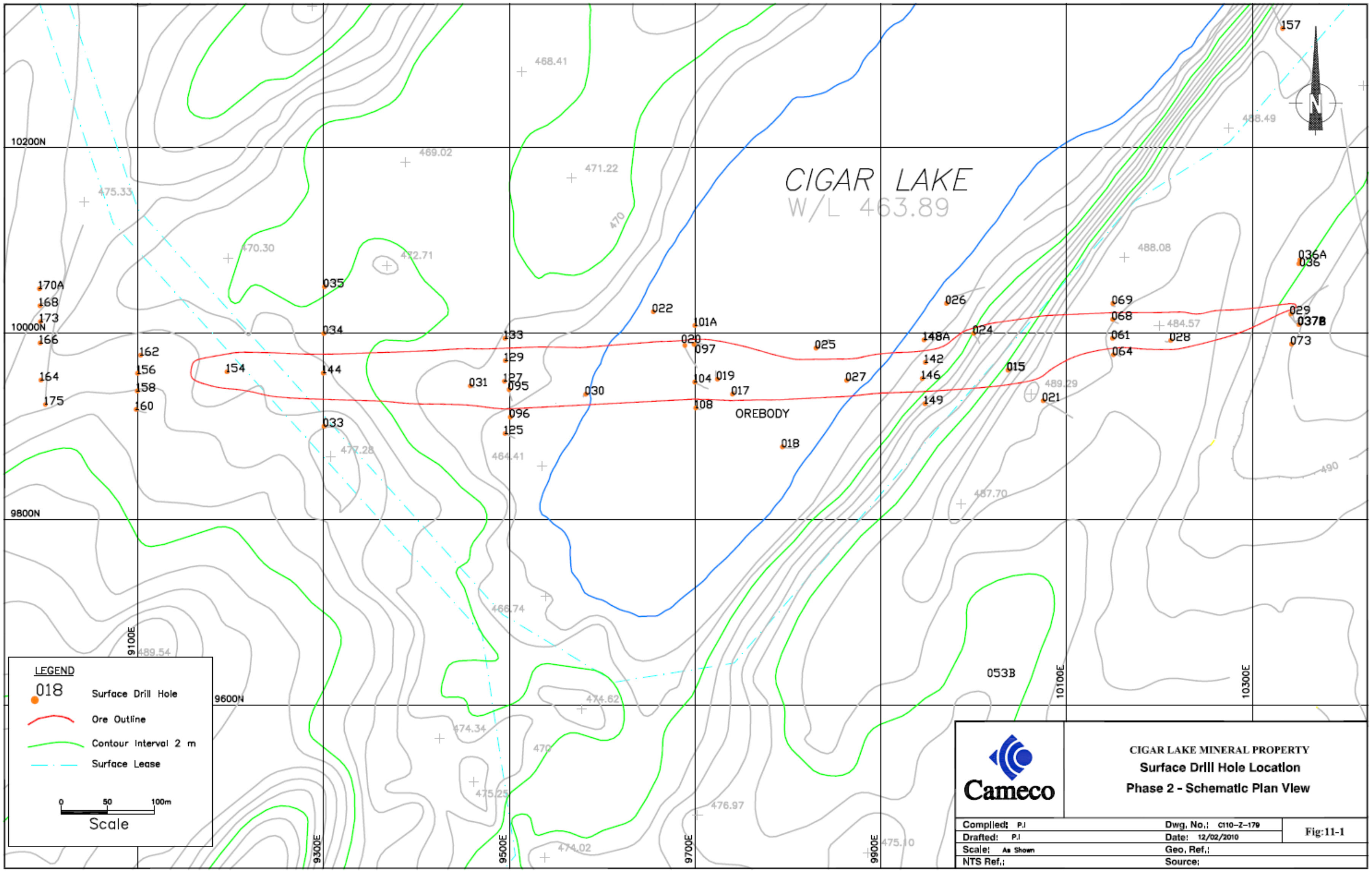
Additional drilling from surface or underground will be required to upgrade the Phase I Indicated and Inferred Resources east of section 11020E and west of section 10437E. This drilling is planned for 2010.

The collar locations of drill holes within the area of the surface infrastructure footprint have been surveyed by Cameco and their locations confirmed.

The deposit was delineated by a major surface drilling program during the period 1982 to 1986, followed by several small campaigns of drilling for geotechnical and infill holes to 2002 when the last surface hole prior to 2007 was drilled. An additional 51 holes were drilled from 2007 through 2009 for various geotechnical and geophysical programs.

Figure 11-1: Cigar Lake Deposit – Surface Drill Hole Locations Phase 2

Source: Cameco



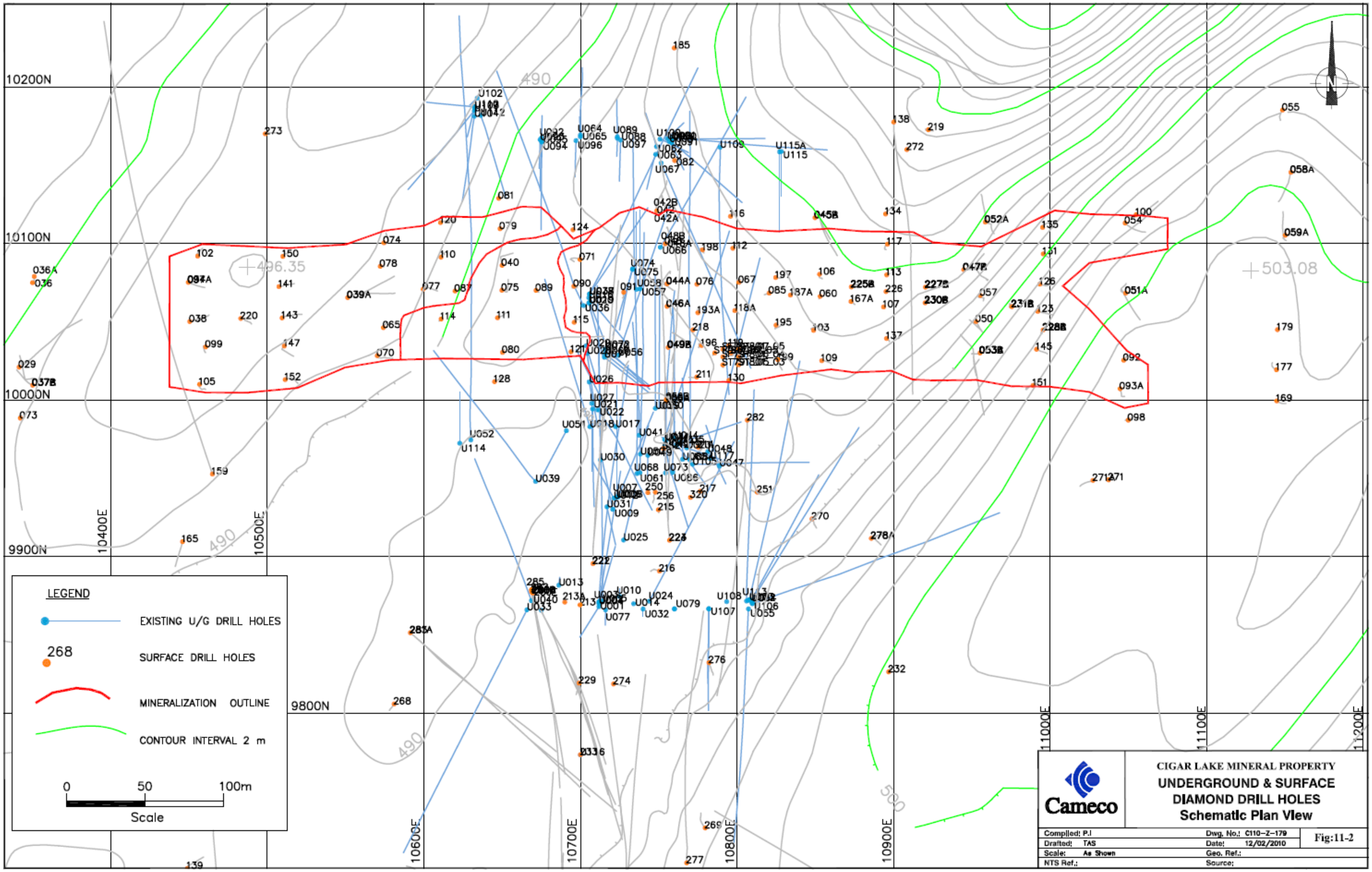
11.2 Underground Drilling

Diamond core drilling from underground access locations has been done primarily to ascertain rock mass characteristics in advance of development and mining, both in ore and waste rock. In the period from 1989 to 2006, 132 underground diamond drill holes totalling 11,108 m were drilled. No underground drilling was conducted during the period 2007-2009, due to the flooding of the underground workings. Only 10 of the holes drilled from underground intersected the orebody. Most of the underground holes have been surveyed for deviation using single shot or multi-shot surveying tools. The 41 holes drilled since 2001 have used a Reflex tool for hole orientation.

Ground freezing holes, not included in the above totals, have been drilled into the orebody for the purposes of freezing the ground prior to mining. A total of 83 holes at a spacing of 1.0-1.5 m were drilled in two phases of drilling in 1991 and again in 1999. Generally, these holes were rotary drilled holes from which no core was recovered, however, in a limited number of cases, core was recovered and sampled and, in almost all cases, gamma surveys of the holes were done through the orebody. Freeze hole drilling started up again in late 2004 with the start of the construction phase of development. During this phase, a total of 347 freeze and temperature monitoring holes were drilled, of which approximately 150 have been gamma surveyed before the underground workings were flooded in 2006. The freeze holes are drilled by percussion methods so no core is available for assays and uranium content is estimated by probing the holes with radiometrics. The gamma surveys show the ore to be generally conformable with the projected ore outline. A gyro tool was used for directional surveying in the latest phase of freeze hole drilling. No freeze holes or temperature drilling was conducted from 2007 to 2009. Cameco plans to reconfirm the current conversion factors for estimating uranium grade from the freeze holes radiometrics by drilling several core holes and using them for calibration purposes.

The locations of the underground and surface drill holes in Phase 1 are shown in *Figure 11-2*.

Figure 11-2: Cigar Lake Deposit – Underground and Surface Drill Hole Locations – Phase 1



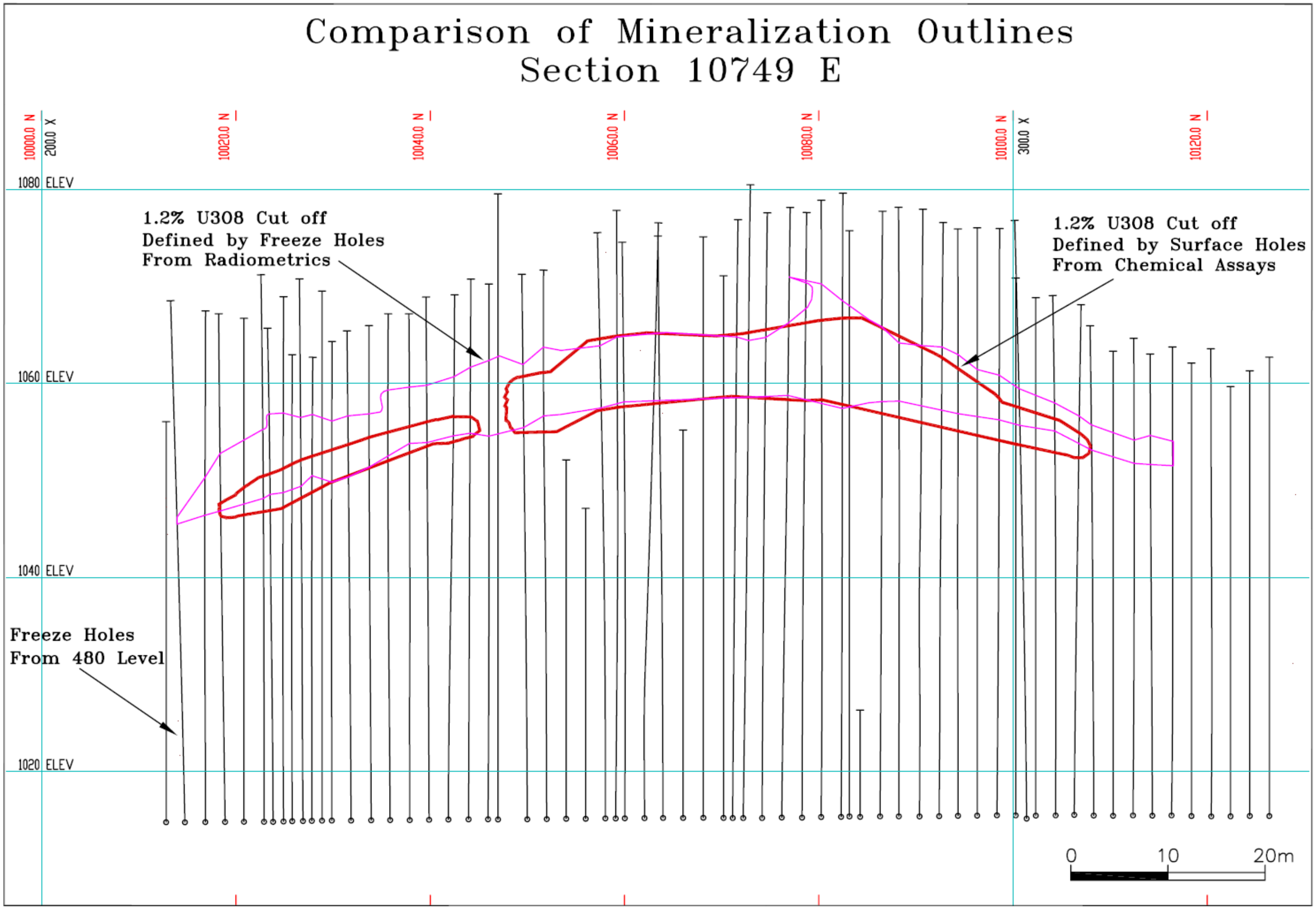
11.3 Comparison of Exploration and Underground Freeze Hole Drill Results

The geological characteristics of the orebody evaluated during test mining were its location, grade and continuity. Core and rotary drilling into the test mine area, both from surface and from underground, and core sampling and gamma flux geophysical surveys within the drill holes, confirmed the location of the orebody and the grades and thickness of the high grade unconformity mineralization. These drill holes included ground freezing holes that were as closely spaced as 1.25 m apart. Throughout the test mine area, geological characteristics of the orebody were observed to conform within acceptable variability to those indicated by exploration and delineation surface drill holes spaced at 10 to 20 m along the fences and drilled prior to test mining.

A correlation coefficient was developed by an independent consultant (Lambda Research Ltd.) to compare assay and radiometric data from the 1991 freeze hole program. Given the changes in the radiometric tools and conditions since 1991, this coefficient, used for freeze holes drilled since 2004, will be updated with another calibration core drilling program, once secure access to the underground areas is re-established.

Vertical freeze holes have been completed through the mineralization in both the 480-737 and 480-749 MDS crosscuts at a spacing of 2 m between holes. These crosscuts are located on the 480 m level along eastings 10737E and 10749E. A geological cross section (See *Figure 11-3*) looking west at 10749E shows a comparison of the mineralized envelope at a cut-off of 1.2% U_3O_8 from both the surface delineation drilling and the freeze hole radiometrics. The figure displays the excellent continuity between the two separate data sets, with increased mineralization thickness on the south limb.

Figure 11-3: Extent of Mineralization as Defined by Surface and Underground Drilling, Section 10749E



Source – Cameco

12 SAMPLING METHOD AND APPROACH

12.1 Sample Density and Sampling Methods

Drilling in the eastern part of the deposit, an area 700 m long by 150 m wide, labelled Phase 1, has been done at a nominal drill hole fence spacing of 50 m (east-west), with holes at 20 m (north-south) spacing on the fences. On three of these fences (sections 10,575E, 10,750E and 10,950E), wedging from primary holes generated intersections at 10 m spacing along the fences. Two fill-in fences (10,775E and 10,825E) were drilled at a spacing of 25 m, with holes at nominally 20 m along the fences. As well, along the central east-west axis of the eastern zone, 5 holes were drilled at 25 m spacing.

The western part of the deposit, an area 1200 m long by 100 m wide, labelled Phase 2, has been drilled at a nominal drill hole fence spacing of 200 m, with holes at 20 m spacing on the fences.

All holes were core drilled. All holes were gamma probed. In-hole gamma surveys and hand held scintillometer surveys were used to guide sampling of core for assay purposes. After recognition of the significance of the deposit and its geometry, in 1982, sampling of core was thereafter primarily concerned with ensuring that all core within the mineralized zone containing at least 1000 ppm (0.1 %) U_3O_8 was sampled and assayed.

In the early stages of exploration drilling, sampling of mineralized intervals was done on a geological basis, whereby sample limits were determined based on geological differences in the character of the mineralization. Samples were of various lengths, up to 50 cm. Beginning in 1983, sampling intervals for core from the orebody have been fixed at the property standard 50 cm. Subsequently, all sample results have been mathematically normalized to the standard interval of 50 cm for Mineral Resource estimation purposes.

On the upper and lower contacts of the mineralized zone, two additional 50 cm samples were taken to ensure that the zone was fully sampled at the 1000 ppm (0.1 %) U_3O_8 cut-off.

Except for some of the earliest sampling, in 1981 and 1982, the entire core from each sample interval was taken for assay. There were two reasons for doing this:

- to reduce the variability inherent in sampling, given the high-grade nature and variability of the grades of the mineralization,

- to minimize worker exposure to gamma radiation and radon gas during the sampling process.

In total, more than 4,400 samples have been assayed from all the surface and underground holes drilled to define and delineate the deposit.

Sampling of drill core and gamma probing of underground drill holes was undertaken to the same standards as done for surface holes, for holes drilled into the deposit. However, as discussed in Section 11.2, most of the holes drilled into the deposit were rotary holes for ground freezing, from which no core was recovered. In these holes, reliance will be placed on radiometric assays for grade determinations to be used in future Mineral Resource and Mineral Reserve estimations.

Sampling was done only after all other geological logging, including photography of the core, was done. Sampling was done in a separate room (laboratory) attached to the core shack, in order to maintain cleanliness in the laboratory area and to reduce gamma flux levels in the main core logging area.

The typical sample collection process included the following procedures:

- Marking the sample intervals on the core boxes, at the standardized 50 cm sample length, by the geologist.
- Collection of the samples in plastic bags, taking the entire core.
- Documentation of the sample location, including assigning a sample number, and description of the sample, including radiometric assay with a hand held device.
- Bagging and sealing, with sample tags inside bags and sample numbers on the bags.
- Placement of samples in steel drums for shipping.

12.2 Core Recovery

Reliance for grade determinations in mineralized rock has been placed primarily on chemical assays of drill core. Core recovery through the ore zone has generally been very good. Where necessary, uranium grade determination has been supplemented by radiometric probing from gamma logs (gamma surveys within the drill holes).

For Mineral Resource and Reserve estimation purposes, where core recovery was less than 100%, the assayed value was assumed to be representative of the whole interval. Only 48 samples were identified with recoveries less than 75% out of a total of 2,612 assayed samples for Phase 1 mineralization.

From about 1983 onward, all drilling and sampling procedures have been standardized and documented. This has imparted a high degree of confidence in the accuracy and reliability of results of all phases of the work.

12.3 Sample Quality and Representativeness

Of the 278 surface holes drilled, 207 were cored with NQ size rods, 59 with HQ size rods, 9 with PQ size rods, and 3 with BQ size rods. The majority of samples were whole core assayed, with the exception of some intersections that were cut with a rock saw and sealed under plexiglass for display purposes. Some of this core remains available for viewing at the site in a gated compound. The practice of sampling the entire core reduces the sample bias inherent when splitting core.

12.4 Sample Composites with Values and Estimated True Widths

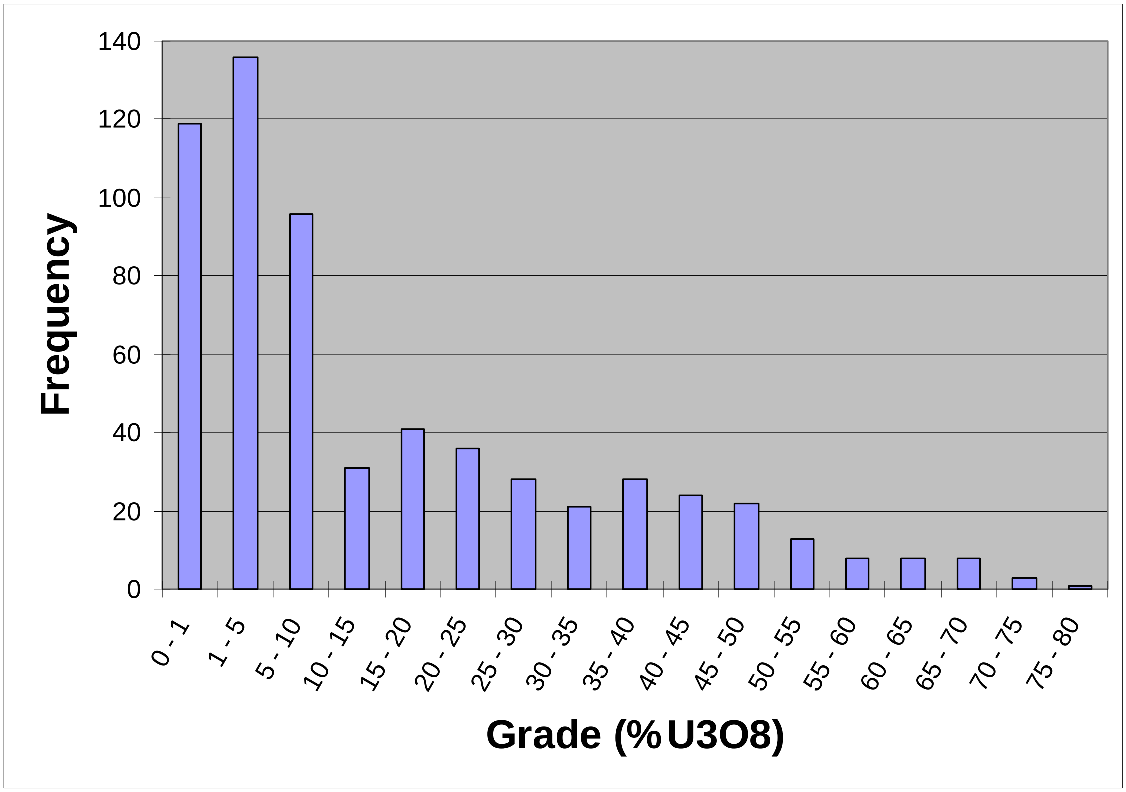
In total, more than 4,400 samples exist in the deposit database from 213 drill holes, both from underground and surface. Of these 213 drill holes, 118 were used in the estimation of Phase 1 and 19 were used in the estimation of Phase 2. Sample composites were calculated by taking the weighted average for the mineralized intercept in each drill hole using a 1.0% U_3O_8 cut-off grade. Surface drill holes are generally vertical and, as a result, their down hole intercepts represent the approximate true thickness of the zone since the mineralization is flat lying. The greatest true width among the drill hole composites is 11.5 m, and the lowest, 0.5 m with an average true width of about 5 m.

The highest and lowest assay values among the samples are respectively 82.9% U_3O_8 and 0.0% U_3O_8. The highest and lowest density values among the samples are, respectively, 8.44 g/cm^3 and 1.27 g/cm^3.

The highest and lowest composited drill hole intercepts used in the Mineral Reserve estimate are respectively, 55.0% U_3O_8 and 0.0% U_3O_8. The highest and lowest density values among the composited intercepts are respectively 4.92 g/cm^3 and 1.79 g/cm^3.

A histogram displaying the frequency of all 1m composites used in the estimation of Phase 1 is shown in *Figure 12-1*. A list of all the diamond drill holes used in the Mineral Resource and Mineral Reserve estimates with the composited intercept grades is included in *Appendix 1* for Phase 1 and in *Appendix 2* for Phase 2.

Figure 12-1: Histogram of Phase 1 Composite Grades (1.0 m length)



Source: Cameco

13 SAMPLE PREPARATION, ANALYSES AND SECURITY

13.1 Sample Preparation by Cameco Employees

None of the samples that were sent to testing laboratories prior to January 1, 2002 were prepared by an employee, officer, or director of Cameco, however, limited assaying was carried out at Cameco's Rabbit Lake mill laboratory as discussed in Section 13.3. All samples for Cigar Lake prior to this date were prepared by employees of AREVA or its predecessor companies or CLMC. This would include all samples used in the Mineral Resource and Mineral Reserve estimates. The vast majority of mineralized samples were whole core assayed to avoid any sample bias from splitting the core. A discussion of the practice of whole core assaying is included in Section 13.8

In 2009, a series of eight tightly spaced holes were drilled straddling the southern contact of the Phase 1 orebody between 10786E and 10801E. Five of these holes intersected ore grade mineralization. All intervals were whole core sampled by Cigar Lake Project personnel.

Since January 2009, the qualified person of this section, Alain Mainville, has been involved with providing support and guidance for sampling of mineralization.

13.2 Sample Preparation

The majority of samples that were used for the Mineral Resource estimate were prepared and analysed by Loring Laboratories Ltd. (Loring). The location of Loring Laboratories Ltd. is 629 Beaverdam Road NE, Calgary, Alberta.

Sample preparation at Loring consisted of drying the sample if necessary, followed by primary (jaw) and secondary (cone) crush, homogenization, and cutting the sample using a "Jones type riffle" down to 25-300 gram portions for pulp preparation. The material was then pulverized in a "TM vibratory pulverizer" to maintain a 95% passing 150 mesh sieve. Samples were then rolled 100 times on a rolling mat to ensure total homogeneity and placed in a numbered sample bag ready for analysis. Any particulates created from sample preparation were carefully swept up from all areas and placed in a separate container for return to the property site along with all pulps and reject material after the sample had been analyzed.

Sampling since 2002 has been conducted by Saskatchewan research Council Geoanalytical Laboratories (SRC), located at 125-15 Innovation Blvd., Saskatoon, Saskatchewan.

Sample preparation for U_3O_8 analysis at SRC involves jaw crushing to 60% @ -2mm and splitting out a 100-200g sub-sample using a riffler. The sub-sample is pulverized to 90% @ -106 microns using a puck and ring grinding mill. The pulp is then transferred to a labelled plastic snap top vial.

13.3 Assaying

Assaying of drill core for uranium has been performed at four different commercial laboratories, and Cameco's Rabbit Lake laboratory in the period from 1981 to 2009.

As referenced in Section 13.2, Loring did all the assaying for uranium between the winter of 1983 to 1994, and this would represent the majority of samples that were used for the Mineral Resource and Mineral Reserve estimate. They were not certified by any standards association at that time.

Cameco's Rabbit Lake mill laboratory has carried out limited assaying since 1994 and SRC was used after 2001. The Rabbit Lake laboratory was not formally certified at that time, however, between July 1994 and July 1997, there were inter-laboratory tests on uranium determination (Rabbit Lake, Key Lake, Cluff Lake, Rio Algom, and SRC laboratories participated). Different analytical methods were used in the comparison studies. The results from the Rabbit Lake laboratory were within the accepted limits. Certified reference standard ECM:U3O8:6, supplied by the Fuel Services Division of Cameco, Uranium Standards from High-Purity, and uranium standard from SCP Science were used at the Rabbit Lake laboratory as the calibration standards. Those standards are traceable to NIST Standard Reference Material 3164. A recent study shows the relative uncertainty of the analytical method used at Rabbit Lake laboratory (Analytical Procedure, LAB.201.WI13: Determination of uranium by potentiometric titration) is less than 5.0% at a level of confidence of 95%. The Rabbit Lake laboratory was accredited to International Standard ISO/IEC 17025:2005 on July 28, 2006 by the Canadian Association for Environmental Analytical Laboratories (CAEAL).

Records indicate that SERU deemed that the assay results from two commercial laboratories, from drilling done in 1982, were not calibrated properly. As a result, the assay results from this period were adjusted in 1983 based upon a systematic comparison of laboratory results and cross checks. These adjusted grades applied to only 4 holes (38, 39, 39A, 40) out of 93 holes included in the Phase 1 Mineral Resource and Mineral Reserve estimate. Nineteen of the 23 holes affected were from the Phase 2 portion of the mineralization. These holes have not been re-assayed and are included in the Mineral Resource and Mineral Reserve estimates.

Assaying by Loring was done by both the fluorimetric method and the volumetric method (volumetric ferrous iron reduction in phosphoric acid). All samples assaying greater than 5% U_3O_8 as determined by fluorimetry were re-assayed using the volumetric method. Chemical standards were systematically assayed on a regular basis to ensure the accuracy of the assaying procedure. Senior staff of the operator at the time (CLMC) visited Loring on a regular basis to view and discuss laboratory procedures with the Loring senior staff.

Assaying at the Rabbit Lake mill was done by the fluorimetric method for low grade samples, and by a combination of titration and x-ray fluorescence for high grade samples, collected for metallurgical purposes in 1998.

Assaying by SRC involved digesting an aliquot of pulp in a 100ml volumetric flask in concentrated 3:1 $HCl:HNO_3$, on a hot plate for approximately 1 hour. The lost volume is then made up using deionized water prior to analysis by ICP-OES. Instruments used in the analysis are calibrated using certified commercial solutions. This method is ISO/IEC 17025:2005 accredited by the Standards Council of Canada.

Chemical assay results were systematically checked against radiometric assays to ensure accuracy of results. Sample pulps and reject materials were retained and systematically catalogued and stored by CLMC on site. Check assays were done on an as-required basis. Cameco has not independently verified the condition of these samples.

13.4 Radiometric Surveying and Assaying

The majority of the holes were surveyed for total gamma flux by in-hole probing. In 1982 and to the end of the winter program in 1983, the surveying was done with a Century Geophysics probe model 9067 using a scintillometer for detection of gamma rays. This type of detector is efficient at relatively low flux rates but inefficient and inaccurate at high flux rates. Beginning in the summer of 1983, high flux probes using Geiger-Müller tubes and manufactured by Cogema in France, Models ST22-2T and ST22-2T-FC were used.

The usefulness of the high-flux tool lies in its ability to measure accurately the high gamma flux emanating from high-grade uranium mineralization without becoming saturated, and therefore unreliable. The ST22-2T probe uses two ZP-1200 Geiger- Müller tubes whereas the ST22-2T-FC probe uses two ZP-1320 tubes, which count at a rate of approximately one half that of the ZP-1200 tubes. The ZP-1320 tubes are therefore able to evaluate much higher grade uranium mineralization which would saturate the ZP-1200 tubes.

Total gamma flux measurements were collected at 10 cm intervals during probing.

Prior to each survey, the probe was checked by means of a gamma source to confirm operation. The Geiger-Müller tubes in the probes were replaced on approximately an annual basis.

For the purposes of Mineral Resource and Mineral Reserve estimation, chemical assay determinations of uranium grade were used. In areas of lost core or missing samples, reliance was placed on radiometric grade determined from the gamma probing.

Correlation and calibration of gamma probing results with chemical assays showed a very good correlation, indicating that secular equilibrium exists within the orebody. This also established the usefulness of gamma probing results as a reliable estimator of uranium grades.

During the delineation drilling period until 1990, drill hole No. 115 was maintained in an open, cased and accessible state for use as a calibration hole. On a regular basis, gamma probes were run in this calibration hole to confirm the physical stability and reliability of the probes, or to calibrate new probes introduced to the exploration program.

Two fundamental characteristics of the mineralization that pertain to an estimation of resources are apparent:

- Uranium is present in extremely variable quantities, ranging from hundreds of ppm to more than 80% U_3O_8 over a standard sample width.
- The density of the samples varies widely, from about 1.4 t/m^3 to more than 6 t/m^3, due to the intensity of the alteration and the variable presence of the heavy minerals pitchblende, cobaltite, niccolite and others.

13.5 Density Determinations

The determination of densities is described in the report, “Geostatistical Estimation of the Global Uranium Reserves of The Cigar Lake Deposit”, by C. Demange, dated January 1985. Actual laboratory determinations were done for many of the original intersections during the period 1982-84. From this group, a set of 146 samples were identified where the density measurement was deemed to be of superior quality. These samples were then used to produce three estimators of density as follows:

I. As a function of the grades of uranium, nickel + cobalt, and aluminium

II. As a function of uranium, nickel and cobalt for holes where aluminium was not analysed

III. As a function of uranium

The formulas have subsequently been applied in holes where radiometric grades were used for assay determination, and where densities were not directly measured.

During 2009, twenty density samples were collected from an 8-hole surface drilling program and incorporated in the database. The validity of the 1985 density estimation formulas was confirmed as part of a recent third-party review.

13.6 Quality Assurance/Quality Control (QA/QC)

The majority of uranium assays in the database were obtained from Loring as they were the laboratory of choice when most of the deposit delineation drilling was carried out (1983-94). Loring's uranium assaying procedures were as follows:

Uranium assays up to 5% U_3O_8:

I. Multi acid dissolution using HCl, HNO_3, H_2SO_4 and HF acids ensuring complete digestion.

II. Samples were then made to correct volumes.

III. Correct aliquots were placed in platinum dishes.

IV. Samples were fused and then read fluorimetrically.

V. Twelve standards and two blanks were run with every fusion (Certified standards were used).

Uranium assays over 5% U_3O_8:

I. Multi acid dissolution using HCl, HNO_3, H_2SO_4 and HF acids ensuring complete digestion.

II. The "Volumetric Ferrous Iron Reduction in Phosphoric Acid" procedure was used after dissolution. Numerous steps were taken to do with extractions, filtrations and isolation of the Uranium and finished with titration. A minimum of four standards were analyzed with each run.

An additional check that was done was to compare in-hole gamma survey results to hand-held scintillometer surveys on core to validate the core depths.

Quality control for the more recent assaying at SRC includes the preparation and analysis of standards, duplicates and blanks. Standards used are BL2a, BL-3, BL-4a and BL-5, all from CANMET, and an in-house sample, UHU-1. A standard is prepared and analyzed for each batch of samples and one out of every 40 samples is analyzed in duplicate. All quality control results must be within specified limits otherwise corrective action is taken.

The QA-QC procedures that were used were typical for the time period of the analyses. The qualified person for this section, Alain Mainville, has reviewed the data and is of the opinion that the data are of adequate quality to be used for Mineral Resource and Mineral Reserve estimation purposes.

13.7 Sample Security

The qualified person for this section, Alain Mainville, is not aware of the security measures in place at the time of the deposit delineation. However, the current core logging area is the same facility as was used during the delineation drilling. It is well removed from the mine site and a locked gate bars road access to anyone not authorized.

13.8 Adequacy of Sample Preparation, Assaying, QA/QC, and Security

The qualified person for this section, Alain Mainville, is satisfied with all aspects of sample preparation and assaying. The drilling records are meticulously documented and samples were whole core assayed to avoid bias, although some ore intersections were sawn in half for display purposes. The assaying was done to a high standard and the QA/QC procedures employed by the laboratories were adequate for the time. The qualified person has no reason to doubt that sample security was maintained throughout the process. Furthermore, the continuity and high grade nature of the ore zone has been confirmed from radiometrics of closely spaced underground freeze hole drilling.

14 DATA VERIFICATION

The original database, from which the Mineral Resource and Mineral Reserves were estimated, was compiled by previous operators. Many of the original signed assay certificates are available and have been reviewed by Cameco geologists. A total of 1,286 assays, representing 29% of the surface and underground drill hole results, were checked to confirm data integrity. One error (0.07% of the total reviewed) was found resulting from conversion from the assay certificate % U_3O_8 value to the database %U value. In this case the error would result in increasing a 0.5 m composite from 37.2% U_3O_8 to 43.8% U_3O_8 as the lab certificate showed 43.8% U_3O_8.

The qualified person for this section, Alain Mainville, is satisfied with the quality of the data and considers it valid for use in the estimation of the Mineral Resources and Mineral Reserves.

A discussion of the quality assurance and quality control measures undertaken in included in Section 13.6.

15 ADJACENT PROPERTIES

Information on adjacent properties is not applicable to this technical report since there are no adjacent properties with exploration results of note.

16 MINERAL PROCESSING AND METALLURGICAL TESTING

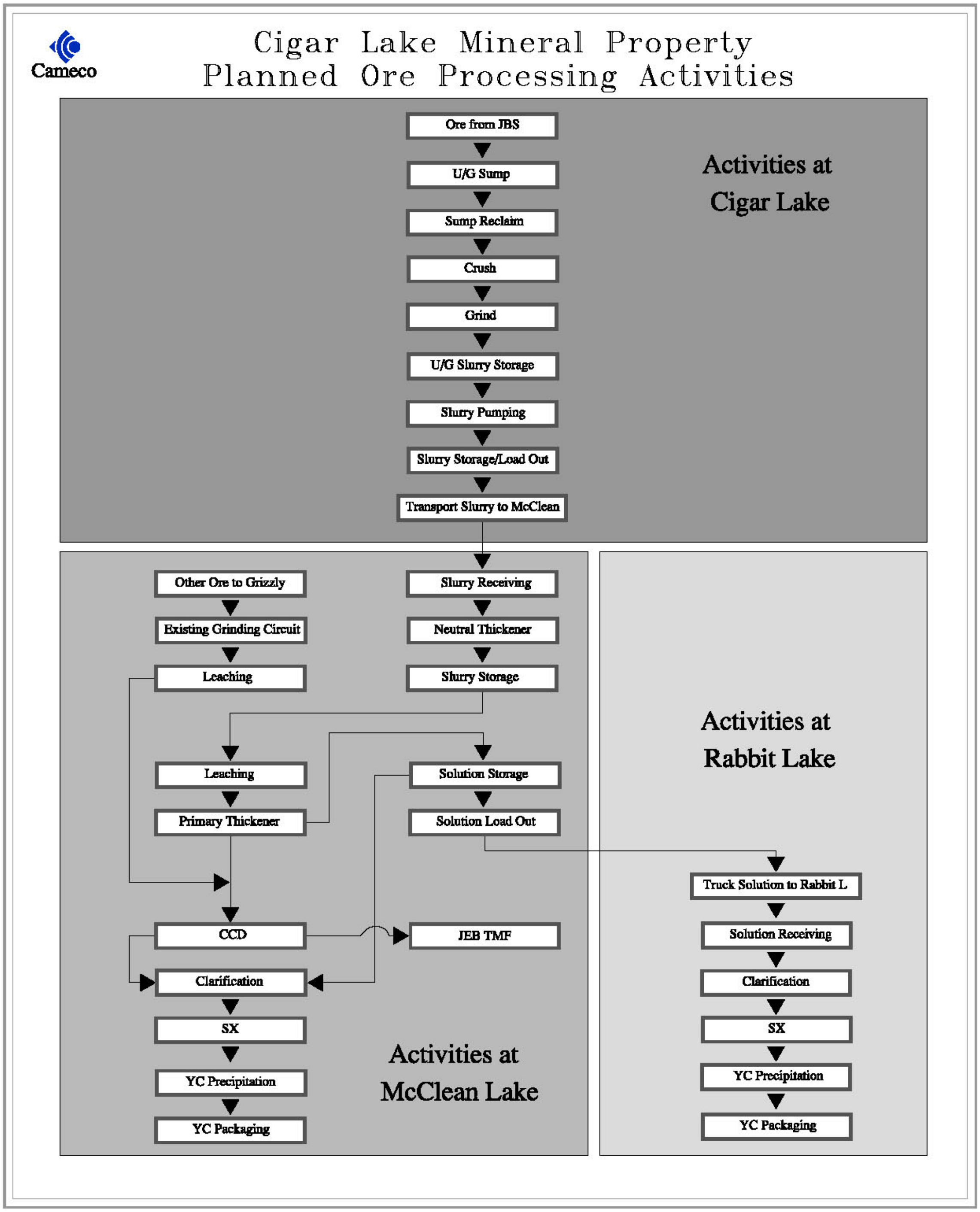
16.1 Overview

Cigar Lake ore will be processed at three locations. Size reduction will be conducted at Cigar Lake, leaching will occur at McClean Lake and final yellowcake production will be split between McClean Lake and Rabbit Lake for a total estimated annual production rate of 18 million pounds U_3O_8 when the mine is in full operation. Where possible, design of the processing facilities for Cigar Lake ore has been modeled on those successfully operating at McArthur River and Key Lake.

The CLJV has entered into toll milling agreements for the processing of Cigar Lake uranium at the McClean Lake JEB mill and the Rabbit Lake mill. These toll milling agreements are described in Section 18.4.3 of this report.

A high level operation flow sheet of the project ore processing activities is shown in *Figure 16-1*.

Figure 16-1: Cigar Lake Ore Processing Activities – Block Flow Sheet



16.2 Processing at Cigar Lake

Initial processing of the ore slurry produced by the jet boring mining system at Cigar Lake will take place underground including crushing, grinding, density control and water handling circuits. The ore slurry from the jet boring mining system will be pumped to the run of mine ore receiving facility. From there, it will be recovered and introduced into the underground crushing and grinding facility. The resulting finely ground, high density ore slurry will be pumped to surface storage tanks, thickened and loaded into truck mounted containers for delivery to McClean Lake. Contaminated water from both underground and surface, after recycling to the maximum extent possible, will be treated in a two stage treatment plant and the excess released to the environment.

16.2.1 Metallurgical Testwork

The design for processing ore at Cigar Lake has largely been based on the experience gained at McArthur River, including modifications and improvements incorporated since this operation was commissioned in early 2000. The primary difference between the two sites is that mining at McArthur River is carried out using dry methods whereas mining will be done wet at Cigar Lake. As a result, coarse low density slurry will be pumped at Cigar Lake from the discharge of the mining machines to the underground ore storage facilities. Several testing programs between 1996 and 1999 were conducted utilizing simulated Cigar Lake ore at SRC's Pipeline Research Center to establish design criteria for this system. The key findings from these test programs included the determination of minimum slurry velocities and practical pump box designs. In addition, wet crushing testwork on simulated Cigar Lake ore was carried out in 1998 by Cron Metallurgical Engineering Ltd. on a prototype of a reduced size version of a Nordberg water flush cone crusher. Capacities exceeding 40 t/h were achieved on a maximum 75 mm feed to produce a product suitable for grinding in a ball mill.

Simulated Cigar Lake ore was utilized for these programs because the test facilities (located in Saskatoon) are not licensed to receive radioactive materials. In the case of the water flush cone crusher tests, the feed was prepared to a target size range utilizing a mixture of clay and coarse rock in gravel. For the SRC testwork, slurries in the 1 to 4 wt% solids range were produced using solids consisting of clay, selected size fractions of rock and various sizes of steel pieces.

16.2.2 Cigar Lake Flowsheet

Mined ore and drill cuttings will be piped into local pump boxes as a slurry for transfer to run of mine ore storage sumps. Partially dewatered ore will be reclaimed from the sumps by an overhead crane mounted clamshell and fed by belt feeder through a water flush cone crusher on to a ball mill operating in closed circuit with cyclones. Thickened cyclone overflow will be pumped to an ore slurry storage pachuca tank located underground. From there, the ore slurry will be pumped up Shaft No. 2 to storage pachucas located on the surface. Excess water will be removed from the ore slurry in a thickener and then the slurry will be loaded into $5m^3$ containers for shipment by road to McClean Lake.

As much as reasonably possible, untreated water will be recirculated underground in the process. Excess water will be pumped to surface and treated in a conventional two stage water treatment plant. Treated water will be utilized in the mining and processing circuits where required and the excess released to the environment via a monitoring pond system similar to that used successfully at other facilities such as McArthur River and Key Lake. Precipitated solids from the water treatment process will be filtered and stored on-site for future disposal underground.

Engineering design for the underground processing facilities is being revised in accordance with updates to the mine plan and dewatering pump systems. Construction of the water treatment plant is substantially complete while construction on the surface processing facilities has been initiated. Underground processing plant construction was underway at the time of the water inflow in October 2006. The continued construction on the underground portion of the process equipment will commence in accordance with the mine remediation plan.

16.3 Processing at McClean Lake

The McClean Lake JEB mill has been expanded to receive and leach 100% of the Cigar Lake ore. The ore will be trucked in slurry form from Cigar Lake to the JEB mill in purpose-built containers identical to those used successfully to transport McArthur River ore slurry to the Key Lake mill. Up to 57.3% (10.3 million pounds U_3O_8 annually) of the Cigar Lake uranium will be shipped in solution to Rabbit Lake. The remaining 42.7% (7.7 million pounds U_3O_8 annually) will be converted to yellowcake at the JEB mill. This allocation between the JEB and Rabbit Lake mills for solution processing applies to Phase 1 (a) ore and is adjusted for Phase 1 (b) ore. For further discussion see Section 18.4.3.

16.3.1 Metallurgical Testwork

Extensive metallurgical testwork has been performed on representative core samples of Cigar Lake ore over a 7 year period from 1992 to 1999. The work was performed in France at AREVA's (formerly Cogema) SEPA test center. The results of this testwork have provided the core process criteria for the design of the additions and modifications required at the McClean Lake JEB mill for processing Cigar Lake ore.

For design purposes an overall uranium recovery of 98.5% has been assumed. Anticipated losses are distributed as follows:

- Leach Residue Loss: 0.2%.
- Counter Current Decantation Soluble Loss: 0.5%.
- Counter Current Cyclone Soluble Loss: 0.35%.
- Solvent Extraction Raffinate Loss: 0.3%.
- Solvent Extraction Regeneration Loss: 0.15%.

This recovery is similar to that achieved at Cameco's other Saskatchewan operations. For reference, historically the Key Lake mill treating McArthur River mine ore achieves a recovery of approximately 98.8% and the Rabbit Lake mill treating Eagle Point mine ore achieves a recovery of approximately 97.0%. The lower recovery at the Rabbit Lake mill is due to the lower feed grade from the mine to the mill as compared to the McArthur River ore feeding the Key Lake mill.

16.3.2 McClean Lake JEB Flowsheet Modifications

Finely ground Cigar Lake ore averaging 17.0% U_3O_8 will be trucked by B-trains carrying four 5 m^3 slurry containers (3.9 t solids capacity each) to a new receiving facility located at McClean Lake. Slurry receiving at McClean Lake has been modeled on the Key Lake ore slurry receiving facility with enhancements. The slurry will be off-loaded by vacuum, thickened and pumped to storage pachuca tanks.

The existing two stage near atmospheric pressure leach circuit will be reconfigured to two parallel low pressure single stage circuits to allow Cigar Lake ore to be leached separately from other ore feeds to McClean Lake. Leach cooling and hydrogen gas concentration control have been added respectively to deal with the exothermic reaction and potential for hydrogen evolution from leaching the high grade Cigar Lake ore. An oxygen plant was constructed for use as the leach oxidizing agent, while the original hydrogen peroxide system is still available as an alternative. The existing primary thickener will be utilised to produce uranium solution from Cigar Lake ore, which will be shipped to Rabbit Lake from the solution loadout facility planned to be constructed, located adjacent to the new slurry receiving plant. Additional clarification and storage capacity will be provided for pregnant leach solution.

The construction of the new and modified facilities required at McClean Lake for processing Cigar Lake ore is largely complete. Slurry offloading facilities were constructed, but not yet commissioned. To handle higher tonnage resulting from treating 100% of the Cigar Lake ore along with other ores, the tonnage capacity for the counter current decantation circuit (CCD) may be supplemented by use of a new counter current cyclone circuit (CCC). A new sand filter and a second pregnant aqueous holding tank was installed for additional solvent extraction feed capacity. Two carbon columns were added to the molybdenum removal circuit, and a second ammonia reagent supply tank was added for solvent extraction and precipitation. Modifications were made to the ammonium sulphate crystallization plant, and its capacity is adequate to deal with the increased ammonia consumption resulting from the additional uranium production of up to 12 million pounds per year U_3O_8. Extra storage capacity as well as on-site production for ferric sulphate solution reagent was added, and enlarged mixing and storage capacity will be added for mixed barium chloride solution reagent.

For further discussion of the McClean Lake JEB mill modifications see Section 18.7.1.

16.4 Processing at Rabbit Lake

Cigar Lake uranium solution (US), prepared by leaching Cigar Lake ore at McClean Lake, will be trucked to Rabbit Lake in purpose-built containers for processing in the Rabbit Lake solvent extraction circuit. Following the removal of impurities dissolved during the leaching process, the purified uranium will be precipitated as a uranium peroxide yellowcake and dried for shipment in drums to refineries located around the world. The impurities will be precipitated with lime in the Rabbit Lake neutralization plant and disposed of to the existing Rabbit Lake in-pit tailings management facility (RLITMF). Liquid effluent will be purified in the Rabbit Lake effluent treatment plant for release to the environment.

With the expected mine life of Eagle Point extended to 2015, it is possible that the Cigar Lake US may be co-milled with production derived from milling Eagle Point ore. The “Rabbit Lake Solution Processing Project – Environmental Impact Statement” (RL-EIS) assessed both the co-milling and US-only scenarios for Phase 1 of Cigar Lake production, and was formally accepted by the regulatory agencies in 2008.

When Eagle Point or other potential local ore sources have been exhausted, only uranium from Cigar Lake US will be processed through the Rabbit Lake mill. In this case, dilution of the US with acidic water will be required to reduce the uranium concentration to a level acceptable for feed to the solvent extraction process.

Testwork was undertaken in support of the RL-EIS, to determine the acceptability of grinding low grade and/or waste material stockpiled at Rabbit Lake, or sand, to produce two types of blend materials suitable for mixing with Cigar Lake impurity precipitates for disposal at higher density in the RLITMF. The third option is direct disposal of unblended Cigar Lake precipitates. The testwork concluded that all three tailings alternatives are viable.

To provide additional capacity in the RLITMF for tailings for both the co-milling and solution-only phases, a lateral expansion was completed in 2009. Further, the RL-EIS included an increase in final tailings level from 421 to 426 masl. On February 24, 2010, Cameco announced an increase in Rabbit Lake Mineral Reserves, further extending the Eagle Point mine life at Rabbit Lake. As a result, Cameco is working to increase Rabbit Lake tailings capacity. Regulatory approval is required to proceed with the increase. For a discussion of ongoing advances to increase tailings capacity at Rabbit Lake see Sections 18.5.2 and 18.5.5.

16.4.1 Metallurgical Testwork

Several bench scale test programs were carried out between 1998 and 2006 to generate tailings products from Cigar Lake US for geochemical characterization and predicting porewater chemistry, as well as testwork related to options for modifications in the existing Rabbit Lake neutralization (effluent treatment) system. No testwork has been carried out to date to specifically optimize the metallurgical performance of the existing Rabbit Lake solvent extraction circuit on Cigar Lake US, as it is likely to fit within historical parameters. If necessary, this testwork will be carried out during the Phase 1 ramp-up period when all Cigar Lake US is being processed through to yellowcake at McClean Lake. For design purposes a uranium recovery of 99.55% of the Cigar Lake solution feed from McClean Lake has been assumed.

16.4.2 Rabbit Lake Flowsheet Modifications

The Rabbit Lake mill requires a number of relatively minor modifications and additions to receive and process US from McClean Lake. Detailed design of the new and modified facilities required at Rabbit Lake for processing Cigar Lake US received from McClean Lake will proceed in accordance with advancement of the

Cigar Lake remediation plan. The current plan is to start detailed engineering in 2011.

The US will be delivered by B-train truck over a new haul road between Rabbit Lake and McClean Lake. Each truck will carry four 7.5 m^3 containers similar to those used to transport ore slurry from the Cigar Lake mine site to McClean Lake. The trucks will enter an off-loading bay at the mill and the US will be pumped from the containers to an agitated measuring tank. After the weight and volume of each shipment is recorded, the US will be sampled and assayed for accounting purposes as it is transferred by pump to a large outdoor storage tank.

From the storage tank the US will be pumped through a bank of sand filters to remove any residual solids and then on to a tank for feeding the clarified US to the existing Rabbit Lake solvent extraction circuit feed storage tank. The clarified US will be mixed with Rabbit Lake uranium solution via an in-line mixer during this transfer.

Several minor modifications throughout the mill are planned to facilitate co-milling. A number of other major modifications have recently been completed for the Rabbit Lake mill. Although not all of these are specifically for Cigar Lake US, these changes generally enhance mill environmental performance, and were anticipated as part of the RL-EIS. Significant effluent treatment upgrades were commissioned over the past several years. The Uranium in Effluent Reduction project was substantially completed in the fall of 2006, with the conversion of a thickener into the High pH Clarifier for lowered uranium in effluent. In the fall of 2009, a new low pH clarifier for enhanced removal of molybdenum and selenium from the effluent was commissioned. Over 2008 and 2009, the flooring was epoxy coated and concrete joints were re-sealed in many areas of the mill.

17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

A Mineral Resource model of the Phase 1 unconformity mineralization was created in September 2009 using the latest drilling results and the results of the re-interpretation of the mineralized envelopes. Methodologies, assumptions and parameters used to create the 2009 Mineral Resource model and to define the current Mineral Reserves are described in this section.

17.1 Definitions

The Cigar Lake Mineral Reserves include allowances for dilution and mining recovery. No such allowances are applied to Mineral Resources. Stated Mineral Reserves and Resources are derived from estimated quantities of mineralized material recoverable by established or tested mining methods. Mineral Reserves include material in place and stored on surface and underground. Only Mineral Reserves have demonstrated economic viability.

The Cigar Lake Mineral Reserve and Mineral Resource estimates have been updated and reviewed by Cameco. No independent verification of the current Cigar Lake Mineral Reserve and Mineral Resource estimates was performed.

There are numerous uncertainties inherent in estimating Mineral Reserves and Mineral Resources. The accuracy of any Reserve and Resource estimation is the function of the quality of available data and of engineering and geological interpretation and judgment. Results from drilling, testing and production, as well as material changes in uranium prices, subsequent to the date of the estimate may justify revision of such estimates.

The classification of Mineral Reserves and Resources and the subcategories of each, conform to the definitions adopted by CIM Council on December 11, 2005, which are incorporated by reference in NI 43-101. Cameco reports Mineral Reserves and Resources separately. The amount of reported Mineral Resources does not include those amounts identified as Mineral Reserves. Mineral Resources, which are not Mineral Reserves, do not have demonstrated economic viability.

17.2 Mineral Resources and Mineral Reserves

17.2.1 Key Assumptions

The key assumptions used in the Mineral Resource and Mineral Reserve estimates for Cigar Lake are:

- Phase 1 Mineral Resources have been estimated within a 3-dimensional mineralized envelope with a minimum mineralization thickness of 1.0 m and by applying a cut-off grade of 1% U_3O_8 to the resource block model. Their classification is based on sampling density, interpretation of geological continuity and grade continuity, and estimation confidence. The Inferred Mineral Resources of Phase 2 have been estimated within a 2-dimensional block model with a minimum mineralization thickness of 2.5 m and by applying a cut-off grade of 5.9% U_3O_8 to the resource block model.
- Phase 1 Mineral Resources do not include dilution or allowance for mining loss. Phase 2 Mineral Resources incorporate an allowance of 0.5 m of dilution material above and below the deposit at 0% U_3O_8.
- Mineral Reserves have been estimated at a cut-off grade of 2.0% U_3O_8 and a minimum mineralization thickness of 1.5 m applied to the Phase 1 Mineral Resource block model after estimating the diluted grade of the JBS cavity.
- Mineral Reserves have been estimated with an allowance of 0.5 m of dilution material above and below the deposit, plus approximately 20% external dilution at 0% U_3O_8. Mineral Reserves have been estimated based on 90% mining recovery. Dilution from sump slimes and drilling cuttings is also included as part of the 20% external dilution.
- Mining rates are assumed to vary between 100 and 140 tonnes per day and a full mill production rate of approximately 18 million pounds of saleable U_3O_8 per year based on 98.5% mill recovery.
- An average uranium price of US$54 per pound U_3O_8 was used to estimate the Mineral Reserves.

17.2.2 Key Parameters

The key parameters used in the Mineral Resource and Mineral Reserve estimates for Cigar Lake are:

- Grades (% U_3O_8) were obtained from assaying of drill core and checked against radiometric results. In areas of lost core or missing samples, reliance was placed on radiometric grade determined from the gamma probing.
- Where density was not directly measured for each sample, a correlation between uranium grade and density was applied.
- Mineral Reserves at Cigar Lake are based upon estimated quantities of uranium recoverable by a tested mining method.
- The key economic parameters underlying the Mineral Reserves include a conversion from US dollars to Cdn dollars using a fixed exchange rate of

US$1.00 = Cdn$1.05 (reflecting the exchange rate at December 31, 2009).

17.2.3 Key Methods

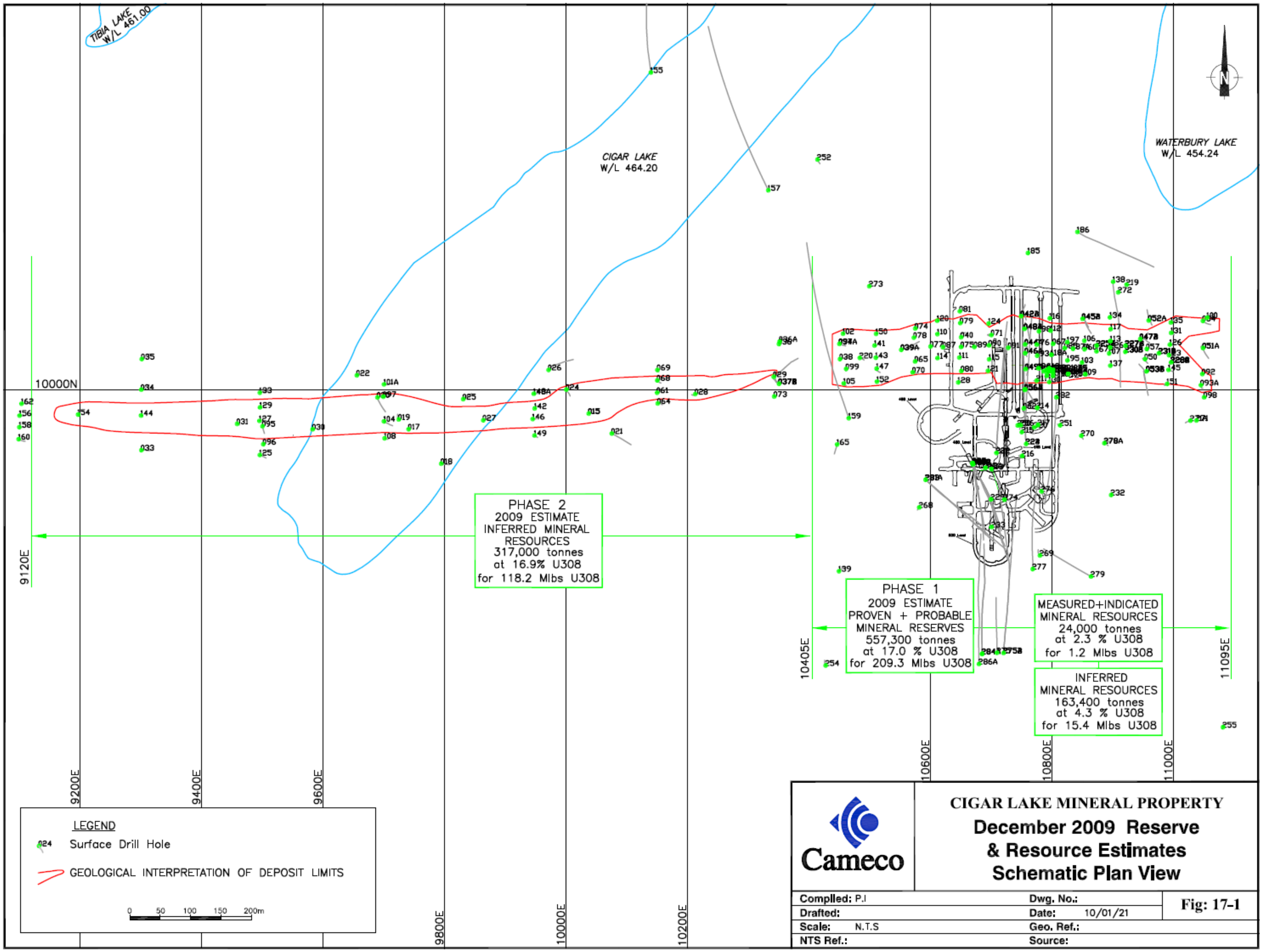
The key methods used in the Mineral Resource and Mineral Reserve estimates for Cigar Lake are:

- Mineral Resources and Reserves were estimated based on the use of the jet boring mining method combined with bulk freezing of the ore body. Jet boring produces an ore slurry with initial processing consisting of crushing and grinding underground, leaching at the McClean Lake JEB mill and yellowcake production split between the McClean Lake JEB mill and Rabbit Lake mill.
- The geological interpretation of the ore body outline was done on section and plan views derived from surface and underground drill hole information. Phase 1 Mineral Resources and Mineral Reserves were estimated using 3-dimensional block models and a block size of 4 m x 4 m x 1 m. Phase 2 Mineral Resources were estimated using a 2-dimensional block model and a block size of 40 m x 10 m.
- The geological model does not incorporate the grades of the underground freeze holes since the conversion of radioactivity measurements to uranium grade has not yet been confirmed by chemical assays.
- Ordinary kriging served to estimate the grade and density of the blocks.
- Mineral Reserves are defined as the economically mineable part of the Indicated and Measured Resources. Only Mineral Reserves have demonstrated economic viability. Reported Mineral Resources do not include those amounts identified as Mineral Reserves.

Geological Modelling

As illustrated in *Figure 17-1*, the known mineralization at Cigar Lake has been divided into two areas. The Phase 1 area extends from grid easting 10405E to grid easting 11095E. The western Phase 2 covers the area between grid easting 9120E to 10405E.

Figure 17-1: Mineral Resource and Mineral Reserve Estimates – December 31, 2009



Source - Cameco

The surface drilling density within the deposit area is variable. East of section 10405E, the holes are spaced nominally at 20 m centres on drillhole fences 50 m apart. Some closer spaced holes and fences exist within this area. West of section 10405E, the holes are spaced nominally at 20 m centres on drillhole fences 200 m apart. The grade and apparent continuity of the uranium mineralization is highest approximately between sections 10735E and 11025E.

For Phase 1, a three-dimensional wire frame model was created from the geological interpretation of mineralization domains using lithology and uranium grade information. The interpretation was done on 12.5 m spaced vertical cross-sections and validated on plan views. Two stages of domaining were used to subdivide the wire frame model. The first stage divided the orebody into three pods; a high grade eastern pod, a high grade western pod, and a low grade central pod as shown in *Figure 17-2*. These three pods are similar to historic models where it was recognized that there are significant grade variations along the strike of the deposit and these boundaries will constrain the influence of the high grade mineralization. The second stage of domaining subdivided the eastern and western pods into three and two parts respectively (as shown in *Figure 17-3*) that were based on geological constraints and grade continuity.

One metre mineralized drill hole composites were calculated within the wire frame models. No additional dilution from above or below the deposit was included in the composites. The cut-off grade used for defining the limits of the mineralization of the various models is 1.0% U_3O_8 vertically and 0.1% U_3O_8 horizontally. Surface drillhole composites of the mineralized intersections formed the bulk of the database for this assessment. Underground diamond drill holes and freeze holes were only used were there were assay results available.

The vein-like, perched and basement mineralization have not been evaluated in detail and as such, no estimate of resources have been made for these mineralized bodies. The quantities of metals in these bodies are considered insignificant with respect to that of the unconformity mineralization and impractical to mine at this stage and in the near future.

For Phase 2, the two dimensional model is based on composites that incorporate an assumed minimum mineralization thickness of 2.5 m, a cut-off grade on the composites of 1.2% U_3O_8, and a half metre of external dilution at both the upper and lower limits of the ore intercept at zero grade. The horizontal limits of the orebody, interpreted at cut-offs of 3.0m%U_3O_8 for grade x thickness ("GT") and 1.2% U_3O_8, were projected on a plan view.

Figure 17-2: Phase 1 Mineral Resources Domaining – Stage 1 – Schematic Plan View

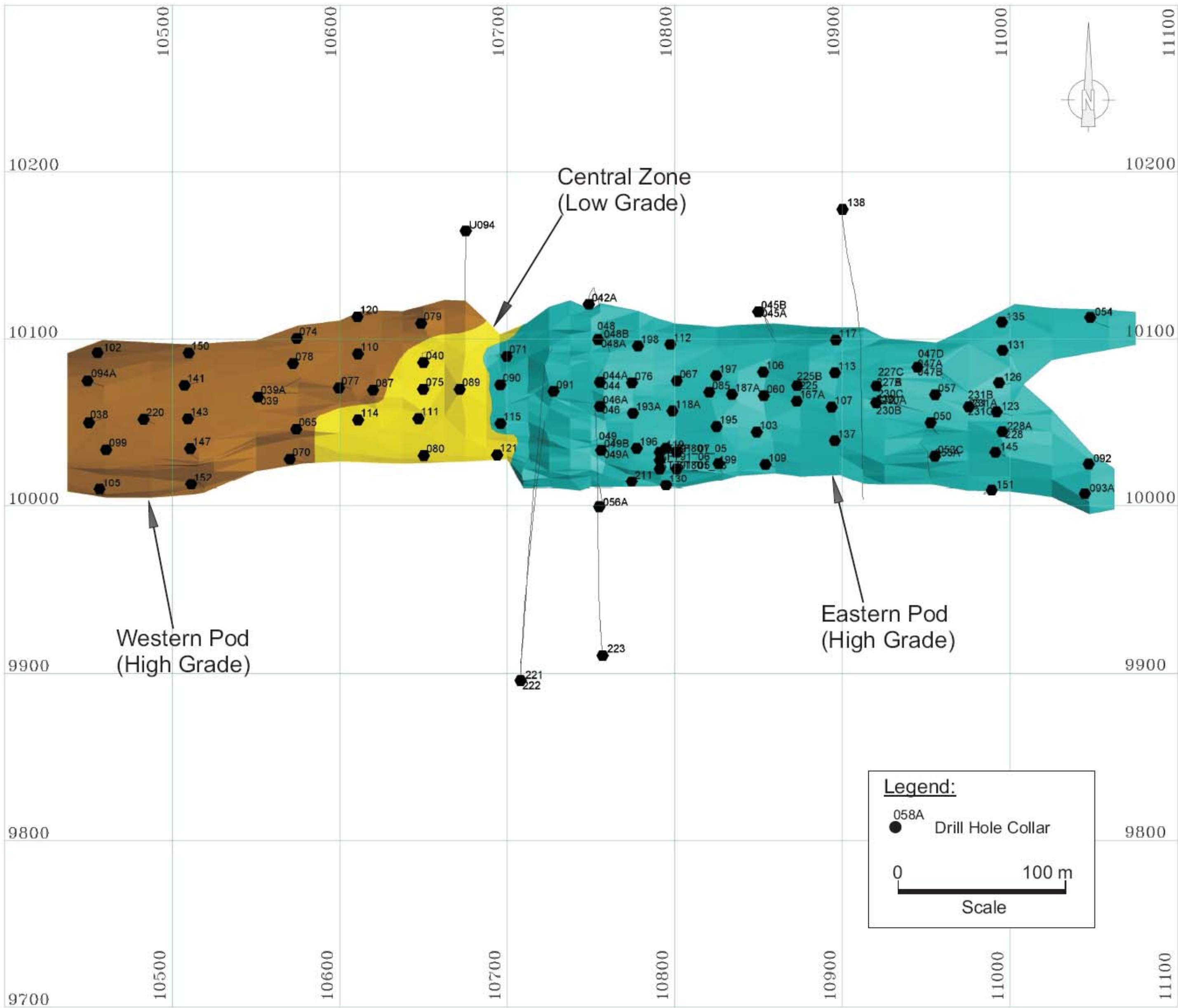
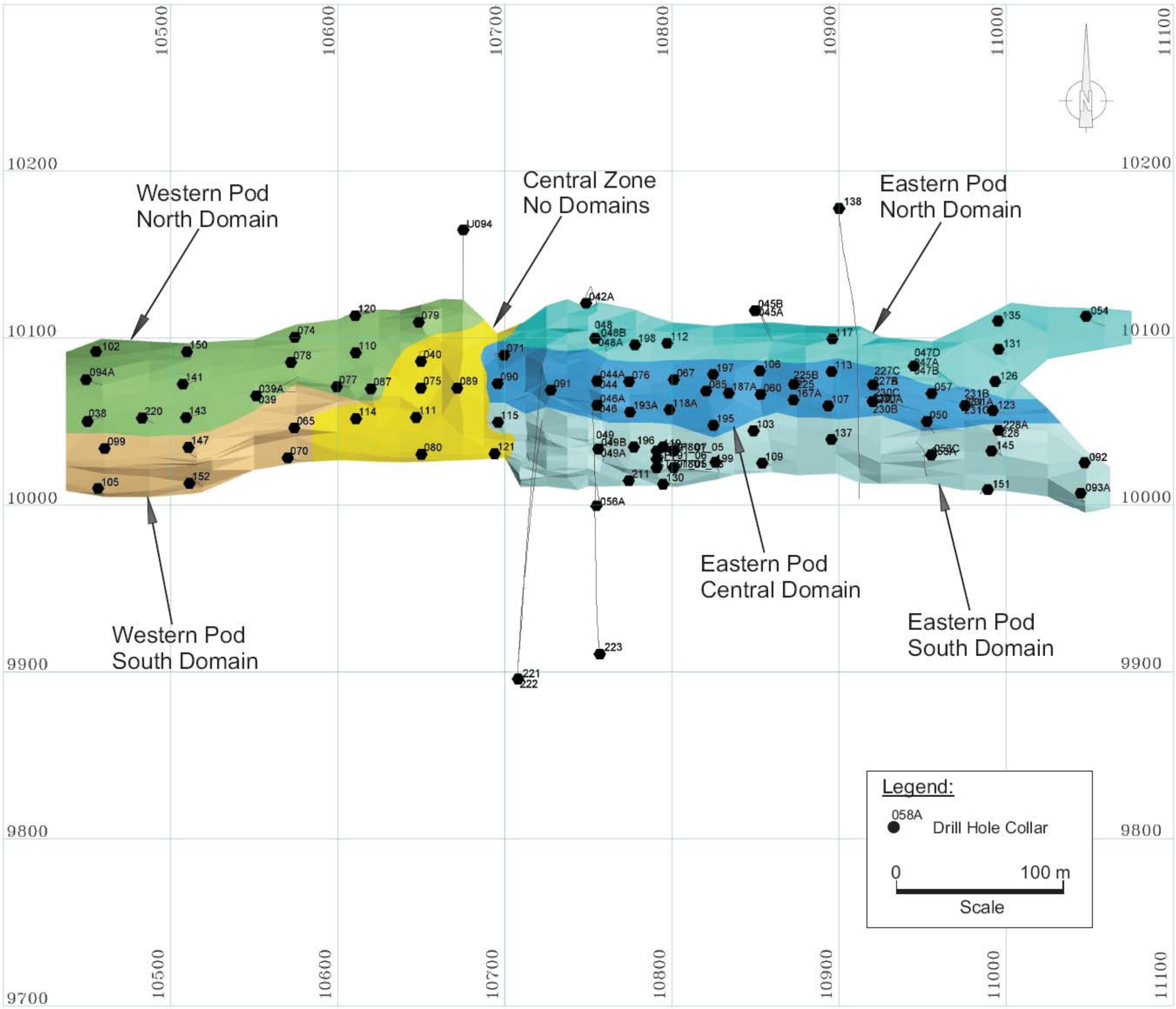


Figure 17-3: Phase 1 Mineral Resources Domaining – Stage 2 – Schematic Plan View



Source - Cameco

Block Modelling

Phase 1

A three-dimension model of Phase 1, based on the latest drill hole data, was created using the Vulcan version 7.5 mining Maptek software. The Phase 1 area was defined by 123 mineralized drillholes

Variograms of two variables, DG (density x grade) and D (density), were calculated and they were similar to historic results. Estimates of the variables DG and D were obtained with the Ordinary Kiriging method for blocks of 4m East-West x 4m North-South x 1m vertical with sub-blocks of 4m x 1m x 1m. The estimated grade of each block was obtained by dividing DG by D.

Block models were validated using various estimation methods and multiple runs using different search parameters. The final model used a three stage estimation procedure with variable search box dimensions for each three-dimensional wire frame model. The nominal search distance used is 60m East-West, 15m North-South, and 2.5m vertical. This procedure honours the influence of both the low-grade and high-grade composites and reflects the extreme grade variability of the deposit. The resulting grade estimate for Phase 1 area is shown in *Figure 17-4*.

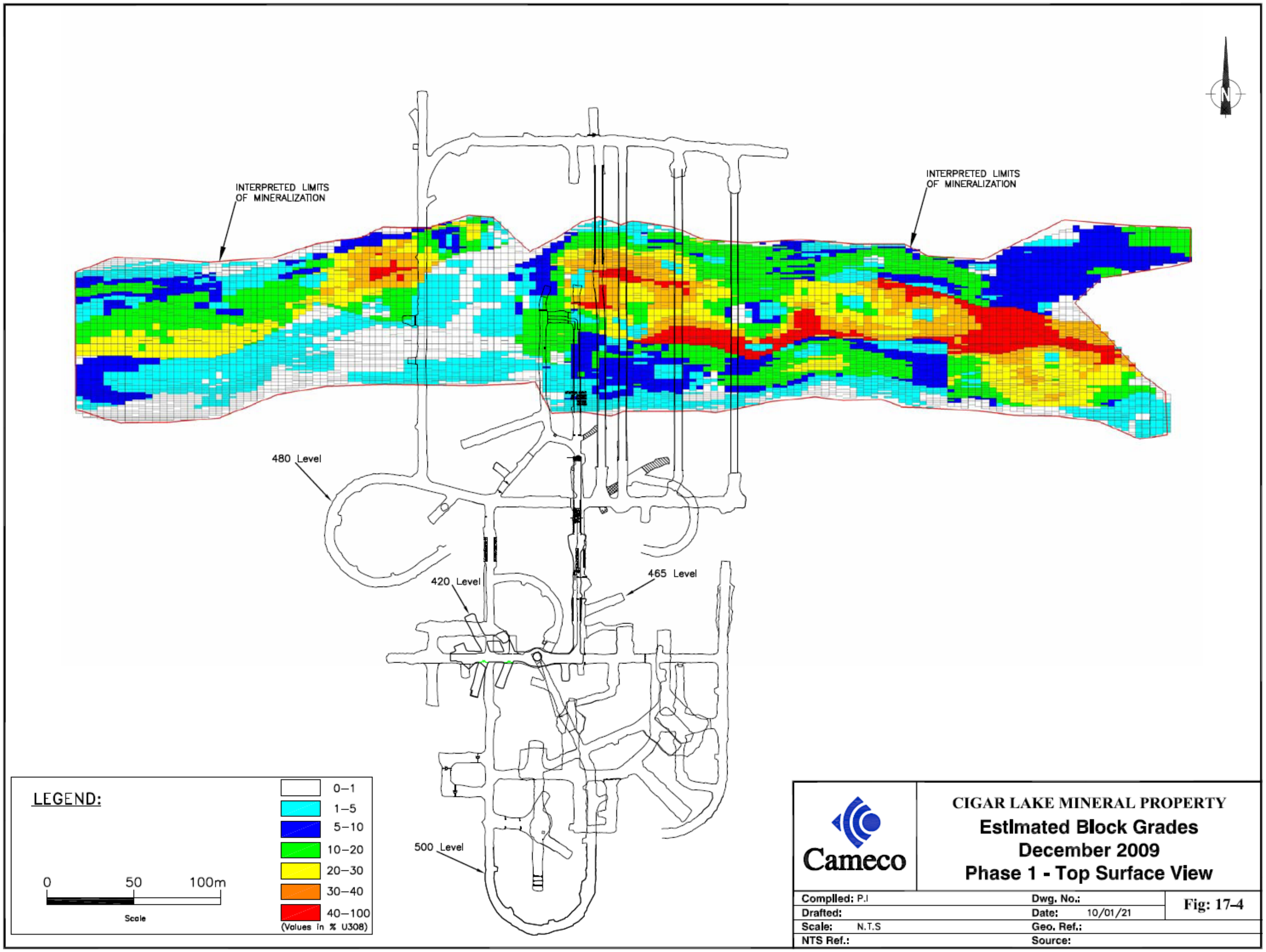
Phase 2

For Phase 2, a two dimensional modelling approach was selected. It was performed using the 1994 version of the SERMINE geological and geostatistical software package developed by AREVA. The Phase 2 area was defined by 19 mineralized drill holes. The two dimension model of Phase 2 was not updated since there was no new drilling data.

The variable ‘grade x thickness x density’ (GTD) represents the metal content on a "per unit area" basis. Two additional variables were estimated. They are: ‘thickness x density’ (TD), representing a tonnage per squared metre, and the ‘thickness of mineralization’ (T). The estimated grade for each block was obtained by dividing GTD by TD.

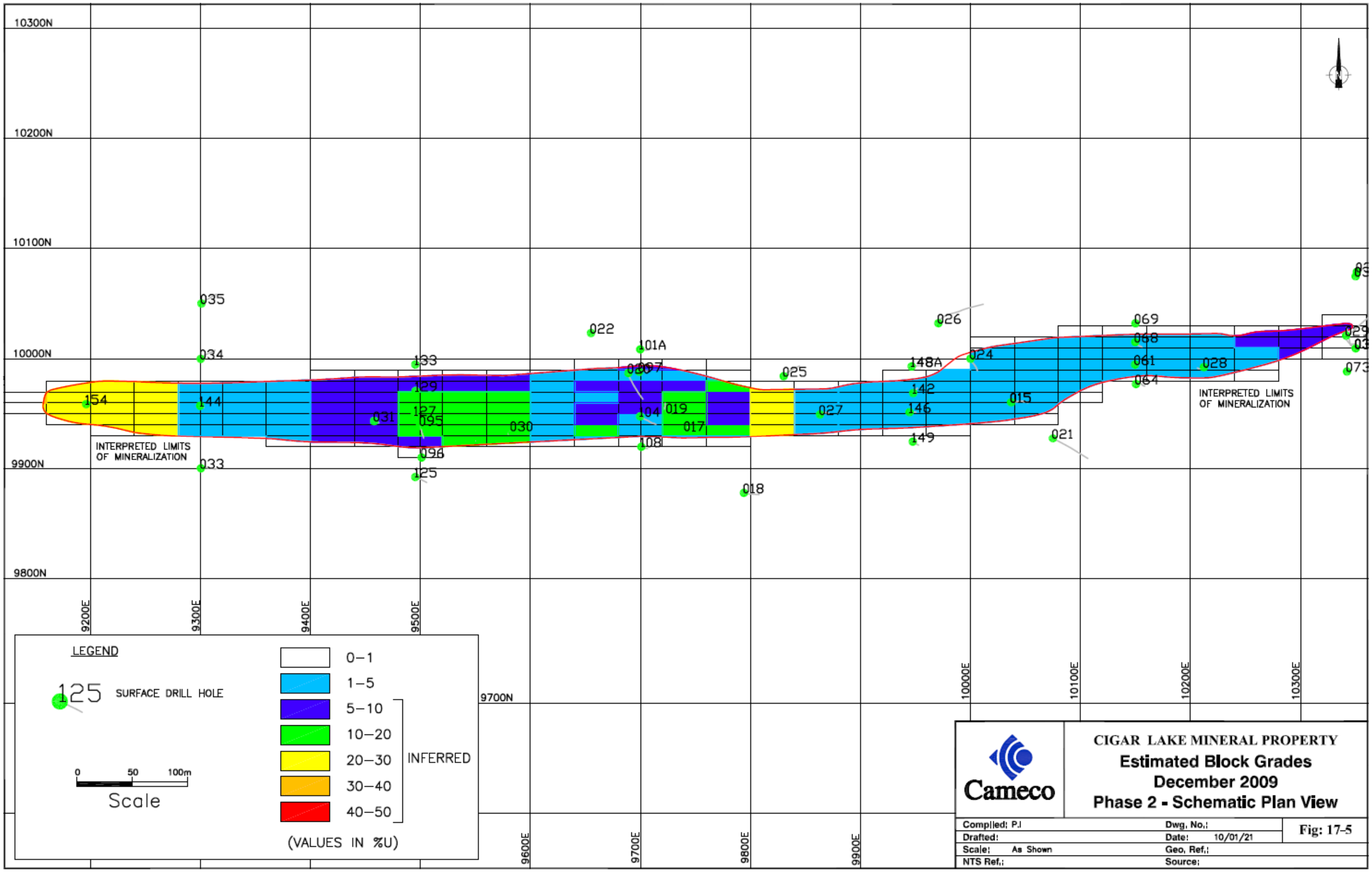
Variograms of the three variables GTD, TD and T were calculated. No anisotropy was modelled in the plan of the mineralization. All three variograms show similarities in their ranges of continuity. Comparing all three variables, the variogram on GTD indicates the best continuity over distances of 20 metres. In SERMINE, the search distances are a function of the block size. Given the drilling spacing at Phase 2, the block size was set to 40m by 10m. The search distances for Phase 2 were 100m by 25m. Ordinary kriging was used for interpolation within the interpreted outlines of mineralization. In the Phase 2 area, only blocks with an estimated grade at or above a cut-off grade of 5.9% U_3O_8 were retained as part of the resources. No limit on the grade-thickness was used. The resulting grade estimate for Phase 2 area is shown in *Figure 17-5.*

Figure 17-4: Phase 1 Mineral Reserves and Mineral Resources – December 31, 2009



Source - Cameco

Figure 17-5: Phase 2 Mineral Resources – December 31, 2009



17.2.4 Resource Classification

Mineral Resources:

The criteria for the classification of the Mineral Resources are the levels of confidence on the geological interpretation, continuity of the uranium grade between sample locations, estimation confidence, and drilling density. The criteria in general for each resource confidence level are as follows:

Measured Resources: Excellent drillhole spacing (<25 m on average between drillholes along strike) supplemented by underground freezehole drilling (with assay or probing results), excellent geological continuity (ie. no significant geological questions remain that could greatly alter the current interpretation), and excellent grade continuity between drillholes.

Indicated Resources: Good drillhole spacing (25-50 m on average between drillholes along strike) supplemented by good geological continuity (ie. some geological questions remain that could alter the current interpretation but to a lesser degree) and moderate grade variability between drillhole intercepts.

Inferred Resources: Sparse drillhole spacing (>50 m on average between drillholes along strike) with poor geological continuity (ie. significant geological questions remain that could lead to large changes in the current interpretation) and a high degree of grade variability between drillhole intercepts.

Phase 1 Area

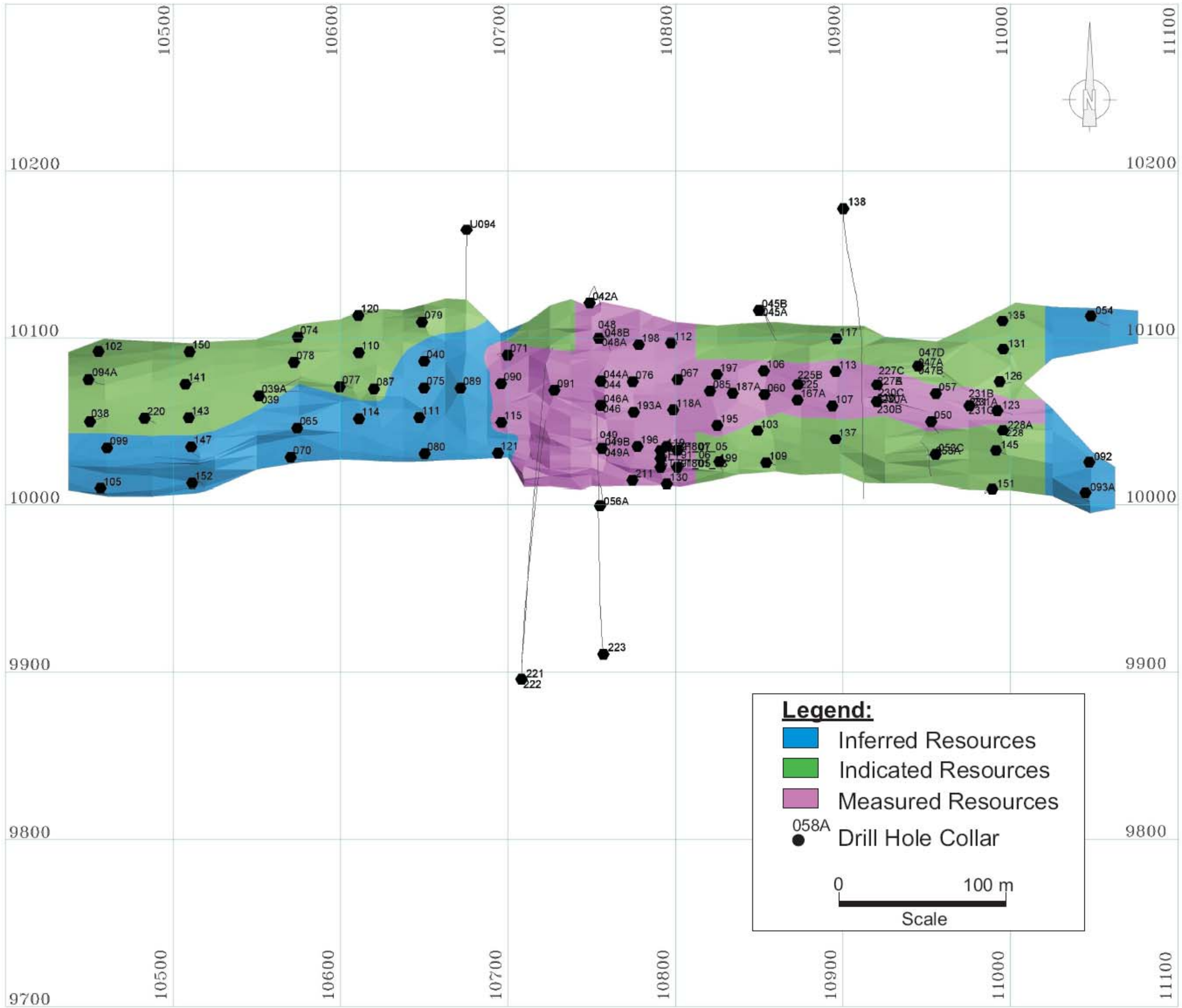
The final distribution of resource classifications is shown in *Figure 17-6*.

The latest 3-dimensional modeling indicated that uncertainties remain in some areas in regards to the shape of the mineralized envelope and the continuity of the uranium grade. This leads to a lower proportion of the mineralization being classified as measured resources compared to the previous model and increases in the volume of indicated and inferred resources. The classification was based on drill hole spacing, geological continuity, grade continuity and estimation confidence.

Phase 2 Area

There is no change in resource estimate or classification for the Phase 2 area. In the Phase 2 area, only blocks with an estimated grade at or above a cut-off grade of 5.9% U_3O_8 were retained as part of the resources. No limit on the grade-thickness was used. On the basis of assumed grade and thickness continuity between the widely spaced drillholes (200 m by 20 m) supported by observations in the more densely drilled Phase 1, the resources blocks of Phase 2 were classified as Inferred Mineral Resources.

Figure 17-6: Phase 1 Mineral Resources Classification – Schematic Plan View



Source - Cameco

17.2.5 Cut-off Grade

The cut-off grade used to define the Cigar Lake Mineral Reserves is based on the incremental cost of mining and mill processing to produce U_3O_8. The incremental costs include jet boring costs, backfilling, underground crushing and grinding, ore slurry hoisting, trucking costs from Cigar Lake to the JEB mill and the cost of processing the Cigar Lake ore slurry to final U_3O_8 (yellowcake) at both the McClean Lake JEB and Rabbit Lake mills.

Other economic factors used for deriving the cut-off grade are shown in *Table 17-1*.

Table 17-1: Cut-off Grade Parameters

Uranium Price	US$65/lb
Exchange Rate	US$1.00 = Cdn$1.05
Mining Dilution	Variable for each cavity, based on 0.5 m of dilution material above and below the deposit, plus approximately 20%
Mine Recovery	90%
Process Recovery	98.5%

The value of the ore for the purposes of calculating cut-off grade represents the value from uranium only. Trace metals such as nickel, copper, cobalt and molybdenum are considered to have no economic value.

Based on the above factors, the calculated cut-off grade used to define the Mineral Reserves is 2.0% U_3O_8.

Incremental mining cost was chosen over full mining cost to define cut-off grade. This approach was considered valid based on the following parameters:

- The lateral (E-W) extent of the mining zone was based on ensuring that the total costs to develop, freeze, mine and process the mineral were covered by the value of the uranium in that particular production panel.
- All remaining underground mining costs and all surface costs were considered as fixed, meaning that the same costs would be incurred regardless of production rate.

An average price of US$54/lb U_3O_8 was used to estimate the Mineral Reserves. Economic analysis confirms the production schedule has a positive cash flow over the life of the project.

A sensitivity study of the Mineral Reserves has shown that using an uranium price of US$65/lb, instead of US$54/lb U_3O_8, changes the estimated total pounds by an insignificant amount.

17.2.6 Mineral Resource and Mineral Reserve Estimates

In order to classify Mineral Resources as Mineral Reserves, a viable mine layout and realistic allowances for recovery and dilution must be applied. The mining cavity size and production criteria are listed in Section 18.1.6 and the mine layout is described in Section 18.1.8. The current mining project has been designed to extract the Mineral Reserves in Phase 1. Mineral Resources in Phase 2 are in the Inferred Mineral Resource category. Further drilling and mining studies are needed before these resources can be better evaluated.

The Mineral Reserves classification follows CIM definitions where economically mineable Measured and Indicated Resources can be converted to Proven and Probable Reserves, but Inferred Resources cannot be reported as reserves. The Cigar Lake Mineral Reserves are defined by applying factors for mining recovery, dilution and minimum mineral thickness to the Indicated and Measured Resources. Mill recovery of 98.5 % has been applied in the economic model, as in earlier feasibility studies. Mineral Reserve classification also uses a mining confidence factor, in addition to resource classification, to define Proven and Probable Mineral Reserves.

Mining recovery is estimated at 90% for both tonnes of ore and metal.

Hanging wall and footwall dilution, estimated at 0.5 m each, have been included in the dilution estimate along with backfill dilution. The rock cuttings from the jet boring casing holes will be directed to the ore stream rather than segregated as waste rock and will therefore also dilute the ore. Further, dilution from sump underflow material and freeze hole drilling cuttings has been estimated and added to the mineral reserves. This material, which will be directed into the ore stream, is assumed to have zero grade.

The revised Cigar Lake Mineral Resources and Reserves, with an effective date of December 31, 2009, are presented in *Table 17-2* and *Table 17-3.* The mine plan for the project includes only the Mineral Reserves contained in Phase 1. Alain G. Mainville, P.Geo., of Cameco, is the qualified person within the meaning of NI 43-101 for the purpose of these Mineral Resource and Reserve estimates.

Table 17-2: Summary of Mineral Resources – December 31, 2009

Category	Area	Total Tonnes (x 1000)	Grade %U_3O_8	Total Lbs U_3O_8 (millions)	Cameco's Share Lbs U_3O_8 (millions)
			Measured and Indicated		
Measured	Phase 1	8.4	2.1	0.4	0.2
Indicated	Phase 1	15.6	2.4	0.8	0.4
Total M+I	**Phase 1**	**24.0**	**2.3**	**1.2**	**0.6**
			Inferred		
Inferred	Phase 1	163.4	4.3	15.4	7.7
Inferred	Phase 2	317.0	16.9	118.1	59.1
Total Inf.	**Phase 1+2**	**480.4**	**12.6**	**133.5**	**66.8**

Notes: (1) Cameco reports Mineral Reserves and Mineral Resources separately. Reported Mineral Resources do not include amounts identified as Mineral Reserves.
(2) Cameco's share is 50.025 % of total Mineral Resources.
(3) Inferred Mineral Resources have a great amount of uncertainty as to their existence and as to whether they can be mined legally or economically. It cannot be assumed that all or any part of the Inferred Mineral Resources will ever be upgraded to a higher category.
(4) Phase 1 Mineral Resources have been estimated with a minimum mineralization thickness of 1.0 m and by applying a cut-off grade of 1.0 % U_3O_8 to the resource block model. Phase 2 Mineral Resources have been estimated with a minimum mineralization thickness of 2.5 m and by applying a cut-off grade of 5.9 % U_3O_8.
(5) The geological model employed for Cigar Lake involves geological interpretations on section and plan derived from core drillhole information.
(6) No allowance has been included for mining dilution or mining recovery.
(7) Mineral Resources were estimated based on the use of the jet boring mining method combined with bulk freezing of the orebody.
(8) Mineral Resources were estimated using a 3-dimensional block model for Phase 1 and a 2-dimensional block model for Phase 2.
(9) No known environmental, permitting, legal, title, taxation, socio-economic, political, marketing or other issues are expected to materially affect the above estimate of Mineral Resources.
(10) Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Table 17-3: Summary of Mineral Reserves – December 31, 2009

Category	Area	Total Tonnes (x 1000)	Grade $\%U_3O_8$	Total Lbs U_3O_8 (millions)	Cameco's Share Lbs U_3O_8 (millions)
Proven	Phase 1	130.5	25.6	73.7	36.9
Probable	Phase 1	426.8	14.4	135.6	67.8
Total	**Phase 1**	**557.3**	**17.0**	**209.3**	**104.7**

Notes: (1) Total Lbs U_3O_8 are those contained in Mineral Reserves and are before mill recovery of 98.5 % has been applied.
(2) Cameco's share is 50.025 % of total Mineral Reserves.
(3) Mineral Reserves have been estimated at a cut-off grade of 2.0% U_3O_8 and a minimum mineralization thickness of 1.5 m applied to the Phase 1 mineral resource block model, after estimating the diluted grade of the JBS cavity.
(4) The geological model employed for Cigar Lake involves geological interpretations on section and plan derived from core drillhole information.
(5) Mineral Reserves have been estimated with an allowance of 0.5 m of dilution material above and below the deposit, plus approximately 20% external dilution at 0 % U_3O_8.
(6) Mineral Reserves have been estimated based on 90 % mining recovery.
(7) Mineral Reserves were estimated based on the use of the jet boring mining method combined with bulk freezing of the orebody. Jet boring produces an ore slurry with initial processing consisting of crushing and grinding underground, leaching at the McClean Lake JEB mill and yellowcake production split between the McClean Lake JEB and Rabbit Lake mills. Mining rate assumed to vary between 100 and 140 t/d and a full mill production rate of 18 million pounds U_3O_8 per year.
(8) Mineral Reserves were estimated using a 3-dimensional block model.
(9) An average uranium price of US$54/lb was used to estimate the Mineral Reserves.
(10) The key economic parameters underlying the Mineral Reserves include a conversion from US dollars to Cdn dollars using a fixed exchange rate of US$1.00 = Cdn$1.05.
(11) No known environmental, permitting, legal, title, taxation, socio-economic, political, marketing or other issues are expected to materially affect the above estimate of Mineral Reserves.

The updated 2009 Mineral Reserve and Resource estimates reflect the changes mainly due to:

- Re-interpretation of the mineralized envelopes of the Phase 1 Area;
- Block modelling in 3-dimension (previous model was in 2D);
- Revised mine layout and dilution assumptions;
- Reclassification of the resources and reserves;
- Updated mine operating cost estimates; and
- Metal price and exchange rate assumptions.

These factors contributed to the decreases in total contained pounds of U_3O_8 in the reserves and in the estimated average grade.

Compared to previous Mineral Resources and Reserves disclosed by Cameco, as of December 31st, 2008, the reserves went from 226.3 million pounds in 2008 to 209.3 million pounds. The review of the mineral resource and reserve classification resulted in 35% of the reserves being classified as proven, compared to 100% previously. The classification is based on drill hole spacing, geological continuity, grade continuity, estimation confidence and the anticipated ability to successfully recover all of the ore. A summary of the changes in uranium reserves and resources is shown in *Table 17-4*.

Table 17-4: Changes in Uranium Reserves and Resources

	Year-end 2008			Year-end 2009			Changes	
Category	**Total Tonnes (x 1000)**	**Grade %U_3O_8**	**Total Lbs U_3O_8 (millions)**	**Total Tonnes (x 1000)**	**Grade %U_3O_8**	**Total Lbs U_3O_8 (millions)**	**Total Lbs U_3O_8 (millions)**	**Cameco's Share(1) Lbs U_3O_8 (millions)**
Mineral Reserves								
Proven	497.0	20.7	226.3	130.5	25.6	73.7	(152.6)	(76.3)
Probable	-	-	-	426.8	14.4	135.6	135.6	67.8
Total P & P	**497.0**	**20.7**	**226.3**	**557.3**	**17.0**	**209.3**	**(17.0)**	**(8.5)**
Mineral Resources								
Measured	-	-	-	8.4	2.1	0.4	0.4	0.2
Indicated	61.2	4.9	6.6	15.6	2.4	0.8	(5.8)	(2.9)
Total M & I	**61.2**	**4.9**	**6.6**	**24.0**	**2.3**	**1.2**	**(5.4)**	**(2.7)**
Inferred	317.0	16.9	118.1	480.4	12.6	133.5	15.4	7.7

Note: (1) Cameco's share is 50.025% of Total Lbs U_3O_8

Compared to previous estimate of Mineral Reserves disclosed by Cameco, as of December 31st, 2008, the Mineral Reserves saw an increase in tonnage of 12%, a decrease in average grade of 18% and a lowering of the estimated contained pounds by 8%.

17.3 Discussion on Factors Potentially Affecting Materiality of Resources and Reserves

In the western Phase 2 area, where there is sparse drilling density, weaker geological continuity, and high degree of uranium grade variability, drilling to date is not sufficient to represent this part of the deposit well enough to permit the estimation of Mineral Reserves. Future drilling in the Phase 2 area has potential to result in a major increase or decrease of the Phase 2 Mineral Resources given the drillhole spacing and the ranges of influence applied during the estimate. Inferred Mineral Resources have a great amount of uncertainty as to their existence and as to whether they can be mined legally or economically. It cannot be assumed that all or any part of the Inferred Mineral Resources will ever be upgraded to a higher category.

The Cigar Lake drill hole data is considered to be very reliable. The largest area of uncertainty is associated with mining, and relate to the jet boring mining method, which has not previously been used on a large production scale basis. Values for factors such as recovery and dilution are undetermined on a production basis at this time, although they are considered very reasonable assumptions based upon test mine experience and the experience of the technical staff involved. Similarly, mining and production costs, which directly impact cut-off grades, are undetermined on a production basis at this time. Nevertheless, it is considered that reasonable assumptions were made in these areas.

As is the case for most mining projects the extent to which the estimate of Mineral Resources and Mineral Reserves may be affected by environmental, permitting, legal, title, taxation, socio-economic, political, marketing or other issues could vary from major gains to total losses of resources and reserves. None of these issues that are known to the author of this section, however, are expected to materially affect the Cigar Lake Mineral Resources and Reserves estimates.

The jet boring mining method and the overall mining and freezing plans for the Cigar Lake project have been developed specifically to mitigate the mining challenges, like the low strength of the rock formation, the groundwater and the high level radiation, and to mine the deposit in a safe and economic manner. Unexpected geological or hydrological conditions or adverse mining conditions could lead to partial losses of Mineral Reserves. Cameco believes that their associated effect would not materially affect the Cigar Lake Mineral Reserves, but could delay production and increase costs.

Over the years, Cameco and AREVA have developed expert knowledge and experience with the metallurgical treatment of uranium mineralization. Cameco believes no metallurgical issue will materially impact the Cigar Lake Mineral Reserves.

Cameco has chosen to state the Mineral Reserves for Cigar Lake based on the estimated tonnes and grade of ore delivered to the McLean Lake JEB Mill. Because it will be part of the ore stream, the material from sump slimes and cuttings from freeze hole drilling has been included in the Mineral Reserve estimate as additional dilution material. The operating cost estimate for the project includes the cost of processing and transporting this material. Cameco will be initiating studies to evaluate methods of removing portions of this material from the ore stream. If successfully implemented, this would increase the average grade of the Mineral Reserves. There are no costs within either the capital or operating cost estimates to implement a process to remove this material from the ore stream.

Cameco will be conducting a surface drilling program in 2010 with the purpose of infill drilling the Phase 1 Indicated and Inferred Mineral Resources. This additional drilling may provide sufficient information to allow upgrading at least some of these Mineral Resources to a higher category. Further evaluation of these Mineral Resources would then be required against the mining plan to determine whether they could be added to the Mineral Reserve inventory. It cannot be assumed that all or any part of the Inferred Mineral Resources at Cigar Lake will ever be upgraded to a higher category.

18 ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES

18.1 Mining

This section describes the technical aspects of underground mine operations, including the mine stability and ground support, hydrogeology, test mining activities, selection of mining method, mine development, mining system and services.

18.1.1 Geotechnical Characteristics of the Deposit

The massive high-grade core is formed by metal oxides, arsenides and sulphides in a matrix of generally well indurated greenish clay, or claystone. It is capped by a layer of similarly indurated clay that is variably 1-5 m thick. Above this cap there is a highly heterogeneous, highly permeable zone from 20 m to 50 m thick consisting of soft to moderately indurated sandy clay, unconsolidated sand and variably altered sandstone.

Two of the primary geotechnical challenges in constructing the mine are control of groundwater and ground support in areas of weak rock. These challenges occur concurrently in the immediate area of massive mineralization and the overlaying saturated alteration zone, and within fractures zones in the sandstone.

On the basis of the drilling and development during test mining and rock mechanics studies, eight geotechnically distinct zones have been identified at the orebody and mining elevations, the most challenging of which include the massive clay formation that hosts the ore, the extremely clay altered and fractured rock mass overlying the deposit, and the strongly altered rock mass that underlies the deposit. These zones are summarized in *Table 18-1*.

Table 18-1: Rock Geotechnical Classification

Geotechnical Zone	Name	Rock Quality	Rock Mass Classification MRMR(1) System
I	Sandstone – unaltered	Good to excellent	60-70
II	Sandstone - altered	Poor to extremely poor	<30
III	Ore zone & Clay Cap	Fair to poor	Not determined
IV	Regolith	Fair to good	<40
V	Biotite Metapelite	Good to excellent	41-70
VI	Meta-Arkose	Fair to very good	65-70
VII	Graphitic Metapelite – Altered	Extremely poor to good	5-50
VIII	Graphitic Metapelite – weakly altered	Fair to good	About 50

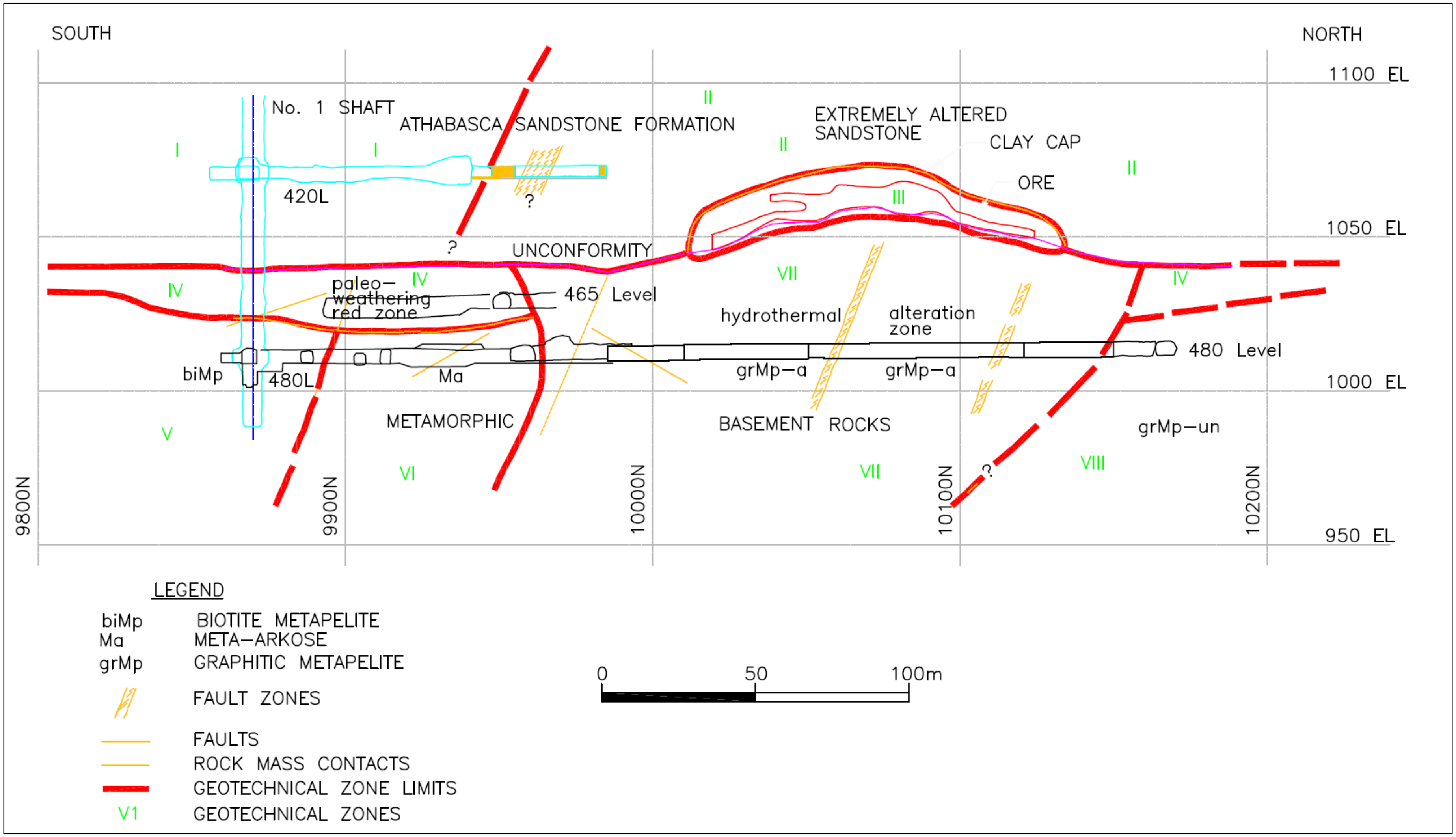
Note: (1) MRMR – Modified Rock Mass Rating

Geotechnical Zones I and II are found in the sandstone and lie above the deposit. Zone III is the ore deposit itself. Zones IV to VIII are all basement rocks and represent a large range of rock quality from Zone V "good to excellent" to "extremely poor to good" in Zone VII. The majority of future mine development will occur directly below the orebody in geotechnical Zone VII, where rock strength is in part very weak, varying considerably over distances as short as one metre. Within the basement rocks as a whole, ground conditions generally deteriorate and the degree of ground support required increases with increasing proximity to the deposit and to the unconformity, in both vertical and horizontal directions. The ore is classified as Geotechnical Zone III and for which the overall rock mass strength is highly variable, ranging from very strong (massive pitchblende) to very weak in some clay facies, which are subject to squeezing and creep.

A typical section of the deposit and surrounding rocks showing the geotechnical classification of the various mining areas is shown in *Figure 18-1*.

Source: Cameco

Figure 18-1: Schematic Geotechnical Model of the Deposit – Looking West



The geotechnical model was the basis to develop the mine plan including ground support guidelines, excavation methods and parameters, and freezing strategy. The geotechnical model and mine plan was prepared with the assistance of a number of Canadian and international specialist geotechnical consultants through detailed investigations and analysis.

18.1.2 Hydrogeology

The deposit and sandstone are highly fractured. Post-mineralization fracturing is the dominant control of hydraulic conductivity and where it transects the otherwise impervious claystone core of the deposit, fracturing acts as conduits for water, sand and soft clay. The basement rocks are much tighter, with very minimal groundwater flow.

Hydrogeological studies were completed by a consultant in conjunction with the geotechnical work. Generally, the geotechnical zone classification can be used to classify the hydrogeological properties. A three dimensional groundwater water flow model was constructed based on the geological model developed from the data collected from geotechnical work.

The most permeable zone occurs in the sandstones with Geotechnical Zone II being higher than that of Zone I. Within the basement rock masses the hydraulic conductivity is entirely fracture controlled and two to three orders of magnitude below that of sandstone, typically due to the tightness of the fracturing and the clay and chlorite alteration of the fracture surface, particularly in Zone VII.

As can be seen in *Figure 18-1*, Zone II lies directly on top of the unconformity in the areas surrounding the deposit. The primary risk associated with this situation is the potential for high and uncontrolled groundwater inflow into the underground workings arising from mining activities, particularly:

- falls of ground that make connection with the overlying water bearing zones; and
- holes drilled from the basement rocks that connect with the water bearing zones.

The initial 2004 mine design under execution prior to October 2006, was based on minimizing the risk of water inflow from the water bearing rock above the mine workings, reducing radon exposure in mine water and increasing the stability of the rocks being mine. Various techniques to control and/or minimize potential groundwater inflow as required were adopted at the project to minimize the risks associated with these types of occurrences. These practices included probe hole drilling, grouting and ground freezing.

Three water inflows including the April 2006 flooding of Shaft No. 2, the October 2006 inflow on the 465 m level, and the August 2008 inflow on the 420 m level, the latter two of which resulted in the flooding of the mine, resulted in a re-evaluation and revision of the mine design and practices to minimize water inflow risk. The current mine plan and the steps taken to minimize the risk of new water inflows are described in Section 18.1.8.

18.1.3 Test Mining Activities

Due to the complex geotechnical nature of the orebody and host rocks, test mining at Cigar Lake focused on an evaluation of mining and development methods and procedures, and to a much lesser extent on an evaluation of the geological characteristics of the orebody (e.g. grade and continuity of mineralization). Emphasis during test mining in ore was placed on the geomechanical and hydrogeological nature of the orebody with respect to developing a cost effective, efficient and safe method for mining of the ore. The test mining objectives included groundwater control, reduction of radiation and radon exposure, evaluation of ground stability and determining the potential ore recovery.

Underground in-situ mining tests in 1992 comparing the JBS mining method to other methods proved the potential of the method and provided the basis for the design and construction of a prototype jet boring system. A further series of in-situ mining field tests were then conducted in 1999 and 2000 and demonstrated the ability of the jet boring system to perform all production procedures in a timely and effective manner. Overall, the test mining programs were considered successful with the initial objectives achieved. An estimated total of 768 t of mineralized material grading on average 17.4% U_3O_8 was mined during the various mining tests.

In 1997, detailed engineering studies were undertaken for the purpose of developing a full feasibility study of the mining project. In addition, testing of a specially designed tunnel boring machine with the ability to install a reinforced concrete liner began. The mine development system (MDS) was tested and used successfully in underground infrastructure development below the orebody.

The other major thrust of the test mining activities was the development and testing of two different non-entry mining methods: boxhole boring and jet boring.

The boxhole boring and the jet boring mining methods were both successfully field tested during the initial test mining program. Both methods were able to utilize a non-entry approach, as mining was conducted from headings located below the orebody. The ore was collected at the bottom of the access drill holes and contained within a cutting collection system. Ground freezing stabilized the water saturated weak rock mass in which the orebody occurs and effectively prevented any possible inrush of ground water. Through the application of non-entry mining methods, the containment of the ore cuttings within cuttings collection systems, and the application of ground freezing, the levels of radiation exposure to workers were acceptable and below regulatory limits. Experience with non-entry mining of high grade uranium ore at Cameco's McArthur River mine has demonstrated the effectiveness of this mining approach to manage radiation exposures.

Boxhole Boring

The boxhole boring test consisted of the vertical boring of two 1.5 m diameter holes into the ore. The dry material was allowed to fall through an enclosed chute arrangement into a specialized car. The material collected from the test was remotely transported to the shaft and removed to surface for storage. Approximately 53 t of ore with a grade of about 17% U_3O_8 were mined with the boxhole boring mining method.

A small test of an expandable reamer assembly, as part of the modified boxhole boring system, was tested in waste. The access drill hole was 1.5 m diameter and the cavity created after deployment of the expandable reaming arm was 2.7 m diameter.

Jet Boring

The jet boring method utilizes a high energy water jet which rotates and oscillates within a remote cavity to mine the ore. This mining method was tested and refined at the Cigar Lake site in 1992, 1999 and 2000.

In 1992, initial tests consisted of three trials and demonstrated the potential of the method and its numerous benefits and provided the basis for the design and construction of a prototype jet boring system. Cavities approaching two metres in diameter could be excavated in frozen ore even with the rudimentary, low powered system available at the time. Considerable engineering and laboratory/shop testing in the following years led to the development of a jet boring system consisting of high pressure pumps/piping, jet borer, jetting tools and slurry circuit.

In 1999, the Jet Boring Tools test involved the testing of a high pressure pumping system and engineered jetting tools in simulated ore in a culvert lined raise. The tools tested included nozzle sub, blade screen, and dual wall jetting pipes, swivel, fibreglass casing and preventor. The most significant results of these tests were the ability to excavate a cavity three meters in diameter (limited by culvert), the ability of the jet to mine 250 MPa material, the achievement of the predicted, average productivity rate of 7 to 10 t/h, and the ability of material to flow out of the cavity and through the preventor without plugging.

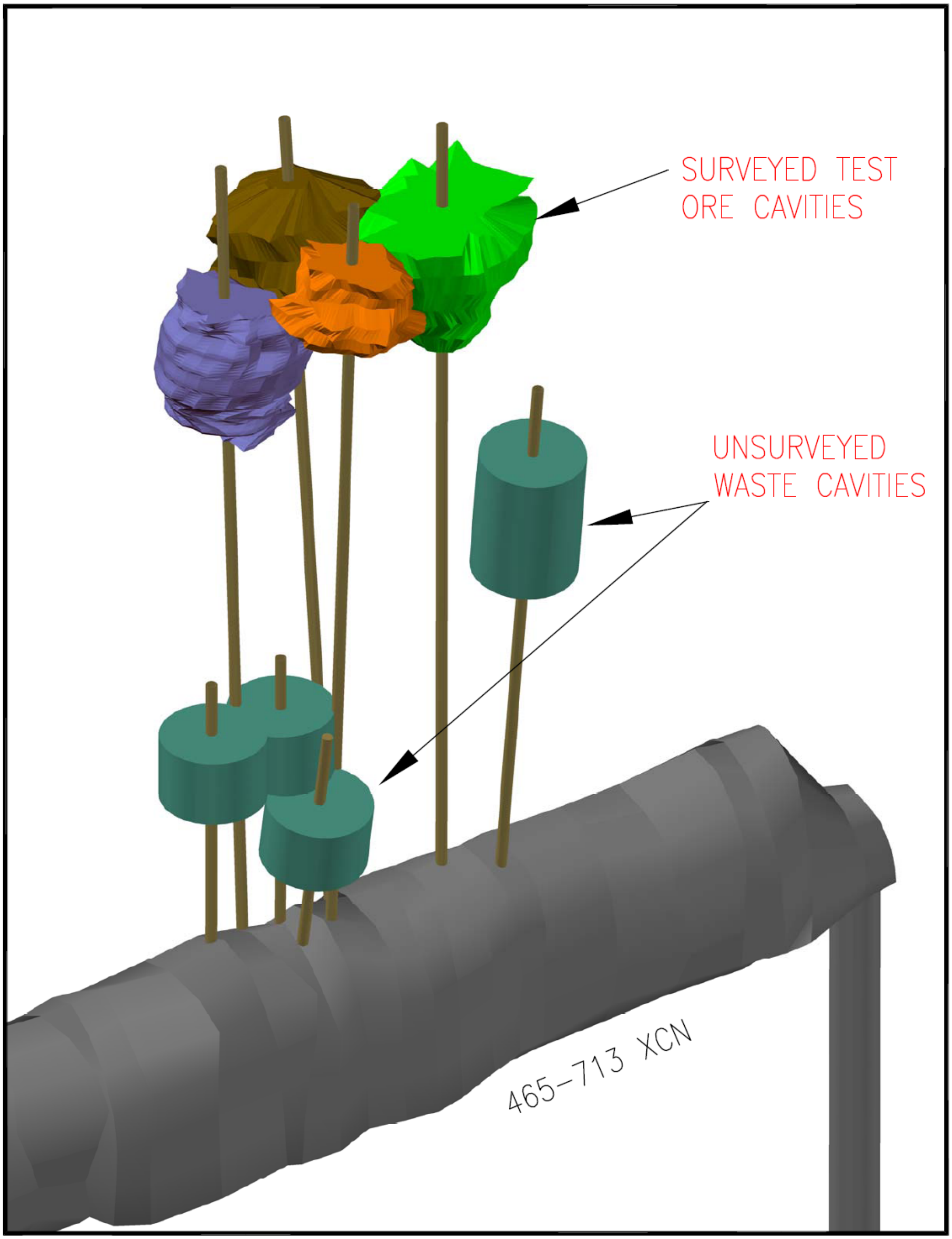
In 2000, a "Waste Test" was undertaken in a culvert lined raise and involved the testing of the jet borer drill car, cavity survey system and improved jet string tools. The tests demonstrated the ability of the jet borer drill car and controls to perform the jetting functions, the survivability of the cavity survey system and the improved performance of the jet string tools.

Also in 2000, the Jet Boring Systems (JBS) test involved the mining of cavities in frozen waste and ore using the complete prototype JBS and slurry circuit. The JBS, consisting of a drill car, two rod/casing cars, shuttle car and a slurry car, was set up in a culvert lined crosscut approximately 20 m below the ore. The slurry circuit tested included a slurry line from the slurry car to a cuttings storage sump and a recycle water line from the sump back to the slurry car. Four cavities were mined in waste rock below the ore and resulted in improvements to the jetting tools and procedures. Four cavities were also successfully mined in ore as shown in *Figure 18-2*.

In addition in 2000, the following tests were conducted successfully:

- Ore recovery from an underground slurry storage sump using a dredging clam bucket system,
- Mining cavity and casing hole surveying system, and
- Concrete cavity backfilling

Figure 18-2: Jet Boring Test 2000



Source
Cameco

Jet Boring System Test Results

The JBS test demonstrated the ability of the entire jet boring system to perform all production procedures in a timely and effective manner. Approximately 600 t of ore was mined in four cavities during the 2000 test. A table showing the details of the ore mined in each cavity is included in Section 6.4. The results of the test were:

- The ability to excavate roughly circular cavities with an average diameter of more than four metres, without attempting any optimization.
- The achievement of the predicted, average productivity rate of 7 to 10 t/h.
- Cycle times determined to be approximately 160 hours per cavity which, with identifiable modest improvements, confirmed pre-test estimations for production.
- The ability of the ore to flow from the cavity, through the preventor and slurry car, and pumping of the ore slurry down the pipeline to the storage facility.
- The ability to use Portland, 40 MPa concrete as backfill (as opposed to cement Fondu) and its ability to withstand jetting from an adjacent cavity.
- The reliability of all equipment meeting or exceeding expectations.

Following the completion of the test mining programs, the jet boring method was selected over boxhole boring as the safest and most viable economic method of mining in the Phase 1 area of the orebody. Overall, the test mining programs were considered successful with the initial objectives achieved. An estimated total of 768 t of mineralized material grading on average 17.4% U_3O_8 was mined during the various mining tests.

18.1.4 Mine Operations

Introduction

Underground activities required for the mine during operations will generally include:

- ground freezing,
- development of access drifts and MDS crosscuts,
- additional shaft access (Shaft No. 2),
- ore processing facilities, and

- support facilities including maintenance shop, electrical substations, sumps and pump stations

The orebody will be mined using a series of crosscuts and access drifts on the 480 m level. A strategy of bulk freezing the orebody has been adopted to minimize the risk of large water inflows, control radiation resulting from radon being released from flowing water, and increase the strength the rock to be mined. Freezing will be undertaken from the 480 m level. All production mining is planned to occur from the 480 m level using the non-entry jet boring mining method.

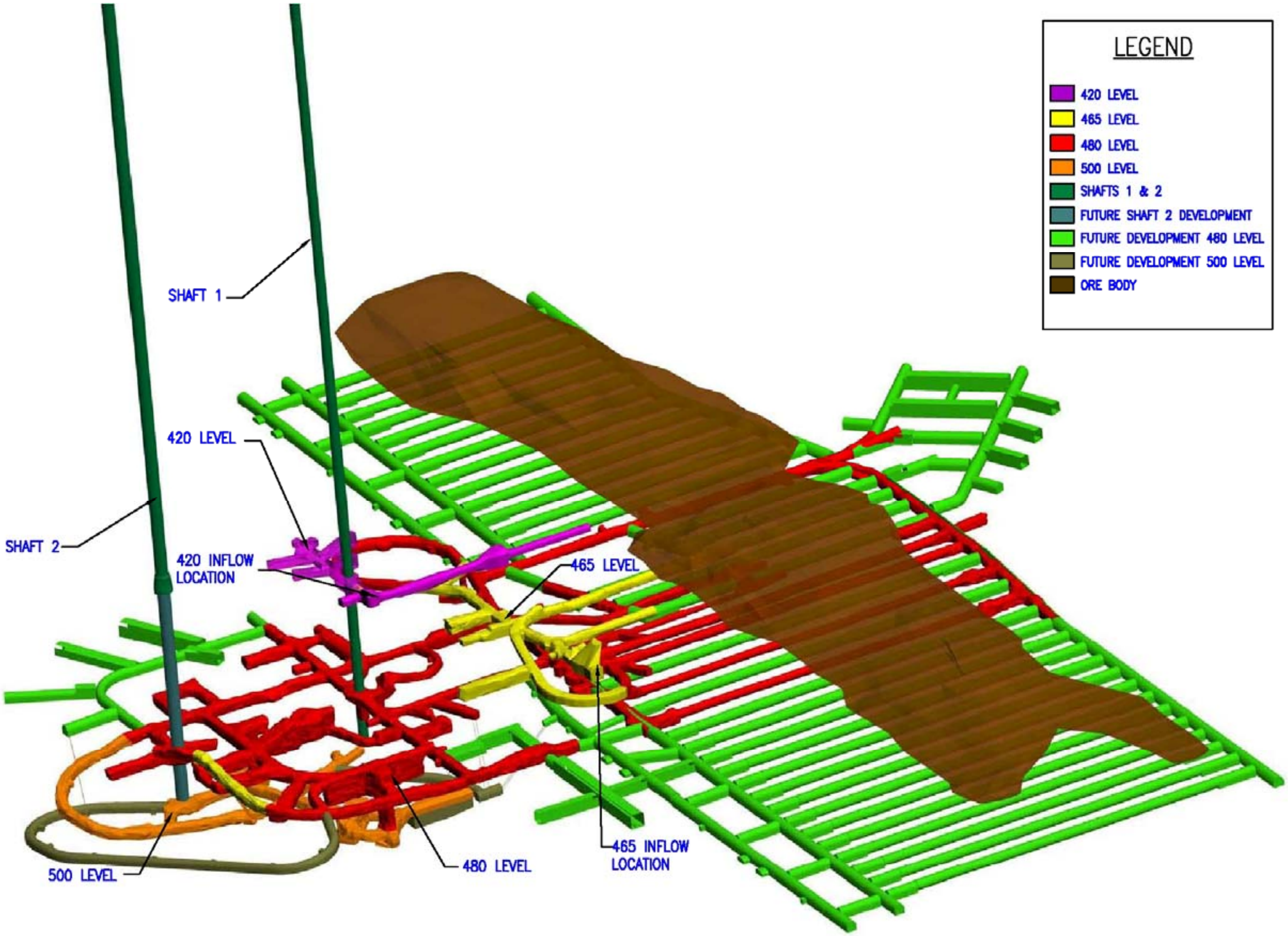
In total, more than 11,000 m of lateral and vertical excavation (excluding the Shaft No. 2) is planned to be developed over the life of the project, with nearly 4,600 m in the construction phase alone. Approximately 2,300 m of development was completed prior to the 2006 mine flood, leaving an additional 2,300 m required prior to initial production. Additional development requirements have been identified in the updated mine design, and they are included in these quantities. The majority of the excavation work will be sited on the 480 and 500 m levels, which together represent the main operating area of the mine.

Figure 18-3 provides a three dimensional view of the existing and proposed development for Phase 1 of the Cigar Lake mine. The layout is a function of the jet boring method and the need to freeze the orebody due to ground conditions and groundwater and radon control issues. The layout is also a function of overall ventilation, radiation protection and support services requirements.

The following subsections describe in more detail the construction and development activities required as part of the project completion.

Figure 18-3: Three Dimensional General Mine Layout – looking northwest

Source - Cameco



Cigar Lake Challenges

Selection and optimization of a mining method capable of extracting the ore efficiently and economically required addressing several natural occurring geotechnical and hydrogeological challenges such as:

- The low strength of the rock formations encompassing and underlying the orebody and necessary ground support required to stabilize these formations.
- The presence of large volumes of groundwater expected to be encountered while mining the ore or drilling in the overlying sandstone rock formation (including for freeze hole drilling) and the potential for a water inflow.
- The high level of radiation emanating from the ore and the associated radon gas from the water in contact with the ore, necessitating containment and isolation to provide adequate protection to the workers.

The jet boring mining method and overall mining plan for the Cigar Lake project have been developed specifically to mitigate these challenges and mine the deposit in a safe and economic manner.

18.1.5 Jet Boring Mining Method

Jet boring mining will consist of cutting the ore with a high pressure water jet using the JBS. The JBS mining units will cut cavities of approximately 4.5 m diameter in the previously frozen ore from each set-up, producing approximately 230 t of ore for a typical 6 m ore thickness. All mining with the JBS will be done from the 480 m production level, located in the basement rock below the ore zone. Following mining, each cavity will be backfilled with concrete backfill.

The features of jet boring as a mining method at Cigar Lake are:

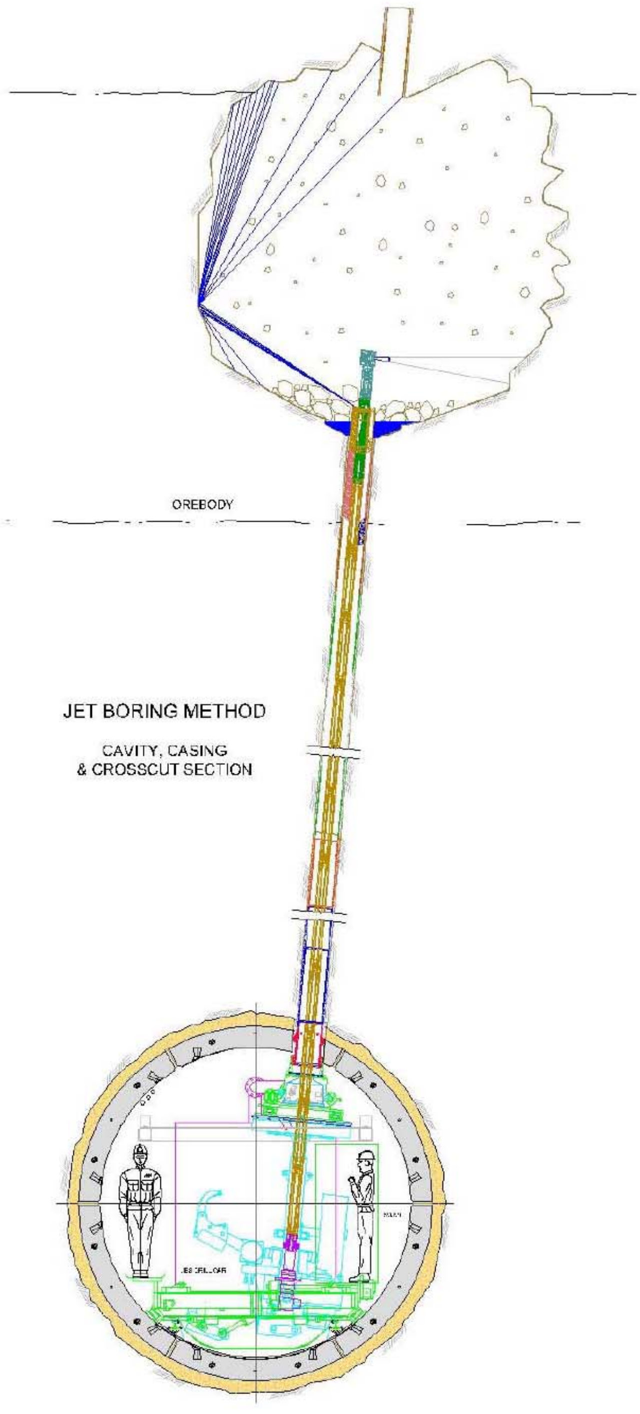
- The method is a non-entry mining method as personnel do not enter into the ore zone, and an operator located some distance away from the jet borer can control the equipment remotely. These are two essential requirements for radiation control during mining of the high grade deposit.
- The cutting of ore with high pressure water produces a slurry which can be pumped in pipelines. This provides the complete containment necessary for minimizing radiation exposure to workers while utilizing a relatively simple and cost effective method for pumping the slurry away from the mining area.
- The generation of airborne dust can be eliminated since the cutting and material transport are both wet and contained processes. This is a

significant advantage for radiation control of the mining of high grade uranium ore.

- The incorporation of a preventor within the jet boring system provides a final point of control for managing a potential inrush of water associated with mining.
- Jetting represents a selective method of ore excavation as cutting can be closely controlled to limit excavation into the hanging wall and footwall
- Water jets provide the opportunity to excavate ore next to a backfilled cavity without incurring significant dilution from concrete with careful control, through in-hole cavity monitoring.
- Jet boring incorporates a fan pattern for drilling the jet bore holes from the production crosscuts, resulting in a design with a reasonable spacing of these headings considering geotechnical stability and economics.

The jet boring mining method is illustrated in *Figure 18-4*.

Figure 18-4: Representative Section of the JBS Mining Method



Source
Cameco

18.1.6 Production Criteria and Assumptions

The design criteria and scheduling assumptions for jet boring during production were developed from the results of the test mining and are summarized as follows:

- Average cavity size of 4.5 m diameter and 6 m height resulting in approximately 230 t of ore in place for an average cavity.
- 160 hour average cycle time per cavity.
- Four jet boring machines required to produce 18 Mlb/yr of U_3O_8.
- Two jet boring machines will be required to mine at a given time. Due to limitations on high-pressure water availability, no more than two units will be able to jet at any one time.
- The third and fourth jet boring units will be either moving, setting up, undergoing maintenance, or in rare instances, waiting for high-pressure water for jetting.

18.1.7 Excavation and Ground Support

Mine development in construction and operation periods use two basic development systems: drill and blast with conventional ground support, and Mine Development System (MDS), a 5.1 m diameter full face tunnel boring machine, which installs a precast concrete tunnel lining for ground support. Use of a roadheader excavator is under evaluation for those areas of weak ground away from the orebody.

Conventional Drill and Blast Development

Drill and blast method, utilizing full face advance, is being applied in the competent ground. Grouted rebar and shotcrete are used as the primary support system. The rebar is extended around the top of the heading and midway down each side. Wire mesh and straps are used locally, as required. Rockbolt spacing and shotcrete thickness vary with localized ground conditions. Spiling installed ahead of the excavation is used locally in poor ground. Cable bolts, typically 5 m in length, are also to be installed in the back of large excavations, such as thickener and ball mill room, as well as at most “t” intersections.

Mine Development System (MDS)

The special feature of the MDS is that it provides continuous temporary ground support during excavation and almost immediate installation of permanent ground support after excavation. This feature is critical for development in areas of poor ground conditions underneath the orebody where there is minimal stand-up time.

The MDS excavates a 5.1 m diameter heading with a finished inside diameter of 4.25 m. The annular space between liner and rock mass is filled with grout. Six concrete segments are required for each metre of crosscut advance. During the test mine period, two freeze level crosscuts and one partially excavated production level crosscut were completed using the MDS. Since that time two additional crosscuts have been excavated.

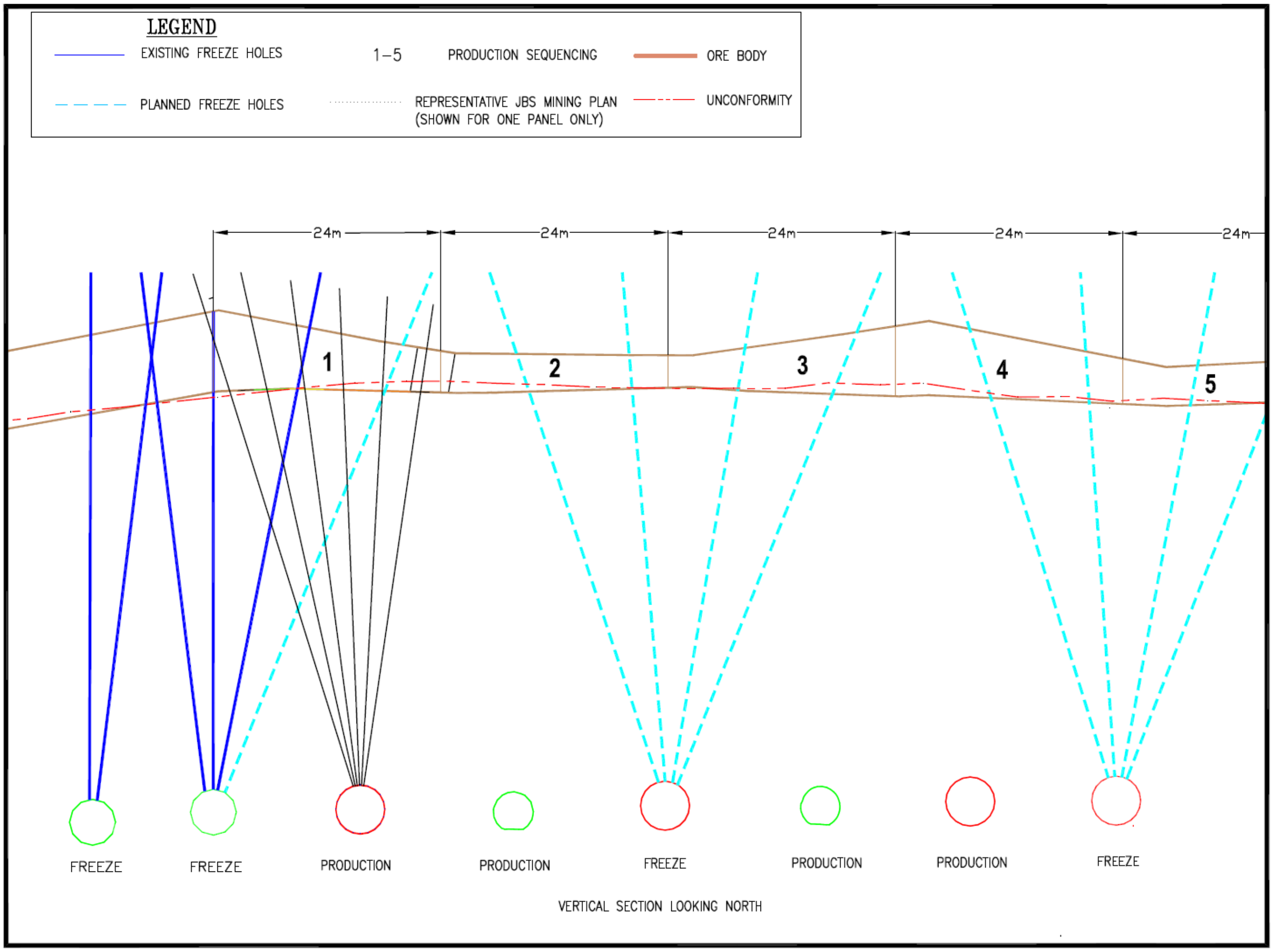
Freezing

Test mining experience and modelling studies have demonstrated the advantages of ground freezing over other potential ground conditioning methods. These advantages include stabilizing and strengthening the weak ore and the surrounding ground, minimization of ground water inflows while mining, and attenuation of radon release. The ground to be frozen includes the ore body, the weak, water bearing sandstone above the ore, as well as a zone extending both laterally away from the orebody and beneath it.

The freezing strategy is to bulk freeze the ore zone prior to start of mining in a given area. Where required, the ground above the MDS tunnels may be frozen prior to MDS development as there is a potential risk of inflow from historical unsecured surface diamond drill holes.

Orebody ground freezing activities are conducted from beneath the ore zone on the 480 m level in tunnels typically referred to as freeze cross-cuts. Ground freezing is accomplished by drilling holes from the freeze cross-cuts to a minimum of 15 m above the ore zone using specially designed drills. Holes are generally drilled on a 2 m by 11 m pattern, although tighter spacing can be used to help reduced the time required to freeze the ground. Typically the freeze cross-cuts will be spaced 48 m apart. The typical JBS and freeze hole arrangement is shown in section on *Figure 18- 5*.

Figure 18-5: JBS and Freeze Hole Arrangement – Section Looking North



Source: Cameco

Prior to drilling each hole, a standpipe or casing is installed in the hole collar to support the preventor system. The preventor system is installed to secure the hole in the event that water is intersected while drilling. The rods used to drill through the ore are left in place and become used as the freeze pipes. Temperature monitoring holes are also drilled from the freeze cross-cuts approximately every 6 to 12 m, to measure ground temperatures and indicate the progress of freezing.

The ground freezing system consists of an ammonia refrigeration plant on surface, a surface and underground brine piping system and in-situ freeze pipes. Calcium chloride brine at minus 30^0 C is delivered underground through pipes installed in Shaft No. 1 from a surface refrigeration plant. The brine is received by heat exchangers underground which in turn feed brine to freeze pipes installed in the freeze holes. This system freezes the deposit and underlying basement rock at between minus 10^0 C and 20^0 C in one to three years, depending on freeze pipe geometry and ground properties such as water content, thermal conductivity, etc.

The refrigerant is circulated underground via two 300 mm diameter shaft brine mains installed in Shaft No. 1. Receiving the refrigerant underground are four heat exchangers which feed brine to the feed pipes installed in the ground. Three of these heat exchangers were operating and the fourth was being installed at the time of the October 2006 water inflow.

18.1.8 Revisions to Mine Design

Re-evaluation of the 2004 Cigar Lake Mine design was prompted by two inflows at the mine, which occurred in October 2006 and August 2008. Geo-scientific studies completed between 2007 and 2009, and the application of lessons learned, have resulted in changes to the mine design.

The JBS mining method and mine development methods, remain the same, albeit on a lower mining horizon. Mine water management has been upgraded and the Mineral Reserves updated for the new plan.

The re-evaluation resulted in two major changes to the mine design:

Revisions to Dewatering System

Hydrogeological flow modeling of the Cigar Lake deposit was commissioned after the initial flooding of the mine in October 2006, when it was recognized that a better understanding of the complex hydrogeology was required for managing non routine inflows. It was completed by an independent consultant in 2008.

In response, a mine water handling strategy has been developed that includes increasing the mine's water-handling capabilities for future routine and potential non-routine inflows above the existing capability previously assessed by Cameco (2004) in the Cigar Lake Project Environmental Assessment Study Report (EASR).

The hydrogeological flow model predicted an instantaneous inflow rate of up to 1,250 m^3/hr, falling to a sustained rate of 900 m^3/hr after approximately three days. Installed mine dewatering capacity will be increased to approximately 2,500 m^3/hr. Mine water treatment capacity has been increased accordingly to

2,550 m^3/hr and an environmental permit to discharge routine and non-routine treated water to Seru Bay is in process.

The contingency mine dewatering system will have installed pumping capacity of 800 m^3/hr provided by four high speed multistage centrifugal pumps located in a new pump room on the 480 m level. With the increase in pumping capacity, and the ability to direct water to the contingency dewatering system, the water tight bulkhead doors that were to be used to control water in the event of an inflow have been eliminated. In total approximately 100,000 m^3 of surface storage for mine water is available.

Water from any non-routine inflow will be treated and released to the environment until such time as any inflow can be mitigated at the source. Cameco has proposed and is currently working through an Environmental Assessment (under CEAA) to discharge all treated effluent (except sewage) through two pipelines directly to a single location in Seru Bay of Waterbury Lake.

A comprehensive management strategy and inflow abatement plan entitled the “Cigar Lake Contingency Inflow Abatement Plan” was completed in September 2009.

Increasing Distance Between Excavations and the Unconformity

Following the 2006 mine inflow event, a comprehensive re-evaluation including numerical modeling demonstrated that increasing the distance between proposed excavations and the unconformity decreased the risk of excavation failure, ultimately leading to the proposal to lower the production horizon to the 480 m level.

By increasing the distance between new mine development and the unconformity:

- Freezing for access drift development is not required as a ground stabilization technique because the ground conditions in the location of the proposed development are better than that closer to the unconformity;
- Unravelling or caving of the back resulting in a breach of the unconformity is thought to be essentially eliminated by having sufficient distance such that the failing rock will choke itself off before it reaches that elevation;
- Conventional support could still be used in non-MDS development if the pillar between the excavation and the unconformity were sufficiently large to offset the effect of the hydraulic gradient acting on the opening; and
- The risk of production interruption from an inflow in the supporting excavations will be significantly reduced as ground failure at a lower

elevation would be unlikely to result in an inflow from the unconformity above.

Other revisions to the mine design

A number of additional revisions were made to the mine plan, including:

- Backfilling and abandonment of the 420 m level;
- Backfilling of the 465 m level to reduce the likelihood of further ground failure on that horizon;
- With the abandonment of the 465 m level, new excavations for services are required on the 480 m level;
- Modifications to the underground processing facilities, primarily in the areas of water handling and treatment, are required with the addition of one JBS unit as well as a second high pressure pump room;
- Water handling, drainage and sumps to accommodate the additional mine dewatering infrastructure; and
- Other changes designed to increase efficiency during mining operations.

18.1.9 Jet Boring Production

Lowering the production horizon to 480 m level from the 465 m level prompted a review of the JBS productivity cycle time.

The pre-October 2006 mine plan incorporated two JBS mining units producing 18M lbs of U_3O_8 after an initial ramp-up period of two years, based on a 120 hour cycle time. Only one unit was expected to jet at one time. The revised cycle time incorporated not only the effect of a longer pilot hole, but also the addition of proposed collar security—a risk mitigation measure identified in a post 2006 risk assessment—and backfill cycle time reflecting the need for the JBS to remain static every fifth cavity. The revised cycle time has been estimated at 160 hrs.

The change in cycle time increased the number of JBS mining units required to reliably produce 18 M lbs annually, from three to four. It also required an increase in the number of JBS units jetting, from one to two, thus requiring twice the number of high pressure pumps. Further analysis showed that confidence in meeting the production cycles were improved by modifying the system to provide water to the third JBS unit for non jetting parts of the mining cycle.

18.1.10 Mine Access and Development

Shaft Access

Shaft No. 1 currently provides access to the underground mine workings and will serve as the main service and access shaft during Phase 1 construction and production and as a route for delivery of fresh air underground. It extends from surface to a depth of 500 m and provides direct access to the 420 and 480 m levels. The level number is the approximate depth of that level below surface in meters. Shaft No. 1 is circular, concrete lined with a hydrostatic liner, and has an internal diameter of 4.9 m. A drift connecting the shaft bottom and 500 m level facilitates maintenance and removal of spillage from waste rock hoisting.

Shaft No. 2 is located approximately 90 m south of Shaft No. 1 and has been sunk to a depth of 392 m out of ultimate planned depth of 500 m. (See Section 19.3 for a discussion on the status of this shaft). It is a circular, concrete lined with a non-hydrostatic liner and an internal finished diameter of 6.1 m. To complete the shaft below the 390 m elevation, the rock will be frozen prior to resumption of sinking to eliminate the chance of further flooding. At this time, engineering of the shaft freezing and a hydrostatic liner for the remainder of the shaft is underway.

Shaft No. 2 will provide access for personnel and materials to 480 m level. Shaft services will include ore slurry pipes, concrete slick lines, power cables and a communication cable. To supplement underground fresh air requirements and permit removal of mine exhaust air, Shaft No. 2 will be constructed with a central airtight partition which will divide the shaft into two independent compartments. One compartment will serve as the main path for exhaust air from the mine; and the second will be used to downcast additional fresh air as well as house the cage to be used for secondary egress.

Lateral Development

There will be two main levels in the mine: the 480 and 500 m levels. Both levels are located in the basement rocks below the unconformity. The current 420 m level, located in the sandstone above the basement rock, no longer has a use in the updated mine plan and will eventually be backfilled to reduce the likelihood of another inflow event similar to that of August, 2008. The 465 m level is accessed via ramp from the 480 m level. With the lowering of the production horizon to the 480 m level, the 465 m level is no longer required as part of the mine plan, and will be backfilled to reduce the likelihood of further ground failure on that horizon.

The 420 m level was developed from Shaft No. 1, above the top of the orebody, during the test mining phase. Existing development includes the main mine water pumping station and the main sump and the electrical facilities. The only additional construction and development work that was done on this level during mine construction was the collaring and excavation of a brine pipeline/exhaust ventilation raise down to the 480 m level. The main sumps and electrical facilities will be relocated to the 480 m level prior to backfilling of the 420 m level. The brine pipeline will be extended in Shaft No. 1 to the 480 m level.

The 480 level was developed from Shaft No. 1 and access to the orebody is provided from this level, which is typically located more than 25 m below the ore zone. Mine development to the south of Shaft No. 1 provides access to Shaft No. 2, the ore recovery and reclaim water facilities, the clarifier and the clarifier underflow pachuca. The main underground processing and infrastructure facilities are located on this level. These facilities consist of the heat exchanger room, warehouse, backfill loading station, laboratory, electrical room(s). Excavations still required to complete construction include additional shop facilities, exhaust air decline, additional pumping stations and electrical rooms, new heat exchanger room, as well as the remainder of below-orebody crosscuts.

The 500 m level was developed from a ramp down from the 480 m level. Facilities on this level include the recycled water tank, ball mill, base of the clarifier underflow (U/F) pachuca and the ore slurry hoisting pump. A heading has been excavated from the main 500 m level drift connecting with the bottom of Shaft No. 1. Excavation still required to complete construction consist of the new main mine sump.

The pre-October 2006 mine plan had two mining levels - a freeze horizon on 480 m level and a production horizon on 465 m level, with supporting infrastructure (shops, storage, electrical rooms, etc.) on both elevations. The change in production horizon from 465 m level to 480 m level required the re-assessment of key JBS-related criteria to ensure that the JBS mining method was feasible at the lower elevation, and to assess the effects potential changes would have on the overall mine plan.

MDS tunnels will be developed on 16 m centres with two JBS production tunnels flanked on either side by a freeze tunnel. The new configuration (Freeze-Production-Production-Freeze) creates production panels 24 m wide. Six rows of JBS holes are required to cover the 24m wide production block. The proposed mining sequence is east, central, west. Geotechnical drilling and analysis of ground conditions will be completed prior to confirming permanent infrastructure locations.

With the exception of the MDS headings, the drill drifts and the access drifts are being constructed using conventional drill and blast mining methods, although the use of a road header for some drifts access drifts is being evaluated.

18.1.11 Ventilation

The mine ventilation system has been designed to supply fresh air to the working areas, remove contaminated air from the mine and to reduce the potential for radon emanation.

The primary ventilation system has been designed to supply a volume of up to 250 m^3/s of fresh air to the mine. The primary ventilation fans are three 800 HP fans on surface at Shaft No. 2 exhausting mine air up through the exhaust compartment in that shaft. The second compartment in Shaft No. 2 will intake fresh air to the mine and for this service three 200 HP fans and a mine air heater have been installed. Shaft No. 1 will be the main fresh air pathway to the mine and are equipped with a mine air heater and two associated 60 HP fans.

The mine air heaters will be used during the winter months to heat the ventilating air to approximately plus 5^0 C. The heaters will be direct fired propane heaters; installed at the ventilation intake locations at Shaft No. 1 and Shaft No. 2. Total installed heating capacity will be approximately 105M BTU/h.

The auxiliary ventilation system will draw airflow from the primary circuit, and through the use of fans and vent ducting will provide appropriate ventilation to the production and development headings and other work areas and facilities.

Local extraction systems to remove potentially contaminated air will be established at a number of locations as part of the secondary ventilation system. Once captured inside a duct, the contaminated air will be discharged directly into the main exhaust ramp or released directly into Shaft No. 2 and subsequently discharged to surface.

The designed mine ventilation volume of 250 m^3/s is anticipated to provide sufficient airflow through the mine for use of diesel equipment and radiation protection at a sustained production rate of approximately 18 million pounds per year U_3O_8. Should this volume of air prove inadequate for radiation protection at the designed production rate, the rate of production would be negatively impacted without additional capital expenditure to increase the ventilation throughput.

18.1.12 Mining Equipment

The required mine production of 100 to 140 t/d of ore will be produced from two JBS mining units. The mine equipment fleet will be comprised of four JBS units: (two in production, one being moved or set-up, and the fourth undergoing maintenance) and other equipment for mine development drilling and other services. Ore mined by the JBS will mix with the cuttings water to form a coarse slurry which will be pumped through pipes directly from the JBS to the run-of-mine ore receiving facility, from which it will be subsequently recovered and fed into the underground crushing and grinding circuit. Following crushing and grinding underground, the ground ore slurry will be pumped to surface by a slurry pump through a pipeline to be installed in Shaft No. 2. At surface, the ore is stored, blended and dewatered for shipment in slurry form to the McClean Lake JEB mill for processing.

Table 18- 2 shows a list of the key underground mining equipment that that will be used for development and production to achieve the production schedule.

Table 18-2: Underground Mining Equipment

Description	Number Units
Freeze Drills	6
Jet Boring Units	4
MDS Units	1
Roadheader	1*
Grout Plant for MDS	1
Scooptrams (various sizes)	3
Electric Hydraulic Jumbo Drill	1
Rock Bolting Rig	1
Scissor Lift Truck	1
Concrete Pump – for backfill	2
Shotcrete Machine	1
Concrete Transmixer Truck	1
Utility Vehicle/ Bobcat	4
Anfo Loader	1

*Use of the roadheader unit is currently in the evaluation stage, but is included in the capital cost estimate.

18.1.13 Production Schedule

The mining plan for Cigar Lake has been designed to extract all of the current Mineral Reserves. The mine life based on current Mineral Reserves will be approximately 15 years. Cigar Lake will produce less than the full annual production rate of 18 million pounds of U_3O_8 in the early and late years of the current mine life of 15 years.

Subject to successful remediation of the underground mine, Cameco forecasts that commissioning activities in ore will commence in mid-2013 followed by a ramp-up period of three years before reaching the full production rate in 2017.

The following is a general summary of the Phase 1 production schedule guidelines and parameters:

- Total mill production of 206.1 million pounds U_3O_8, based upon an overall milling recovery of 98.5%.
- Total mine production of 557 thousand t ore.
- Average mill feed grade of 17.0% U_3O_8.
- Mine operating life of approximately 15 years.
- Production is scheduled to start in mid-2013.
- Mining rate is variable to produce at a constant production level of U_3O_8. The average mine production varies annually from 100 to 140 t/d during peak production depending on the grade of ore being mined.
- Three year ramp-up to a production rate of approximately 18 million pounds U_3O_8 per year (recovered after milling).

The production schedule for the Cigar Lake project is shown in *Table 18-3 and Figure 18-6* and *Figure 18-7.*

The Cigar Lake production schedule relies upon the ground being sufficiently frozen prior to the start of JBS mining. As part of the mining plan, the orebody has been divided into production panels, with one JBS unit operating in any panel. At least four production panels need to be frozen at any point in time to achieve the full production rate of approximately 18 million pounds U_3O_8 per year. Cameco's base case production schedule assumes all of the ground freezing is conducted from underground. An option to drill freeze holes from surface is being evaluated, that may allow the first four to five panels to be frozen sooner than could be achieved from underground. If successfully implemented, this could decrease the ramp-up time required to the full production rate of approximately 18 million pounds per year U_3O_8 and bring forward up to 10 million pounds of product into the first four years of operation. Costs associated with this option have not been included within the capital or operating cost estimates.

To address the inherent risk of a new mining method, Cameco plans to build an implementation plan specific to the JBS. This plan will include surface and underground testing of the JBS unit, training of personnel on the unit in a non-production scenario, conducting reliability engineering studies, and implementing the findings of these studies into both the training of personnel and modification of the JBS system to assure as effective and efficient a start-up as possible.

Table 18-3: Cigar Lake Production Schedule Summary

Description	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Mill Production (Mlbs U_3O_8)	2.1	3.9	11.3	17.1	18.0	18.0	17.1	18.1	18.0	18.0	15.7	15.8	12.3	10.9	7.2	2.7	**206.1**
Mine Production (t x 1000)	6.2	12.4	29.9	39.9	42.4	42.5	44.8	42.3	40.2	39.1	47.5	47.2	49.2	48.8	20.0	5.0	**557.4**
Mill Feed Grade (% U_3O_8)	15.6	14.6	17.3	19.7	19.6	19.5	17.6	19.7	20.6	21.2	15.2	15.5	11.5	10.3	16.6	24.9	**17.0**

Figure 18-6: Mill Production (lbs U_3O_8)

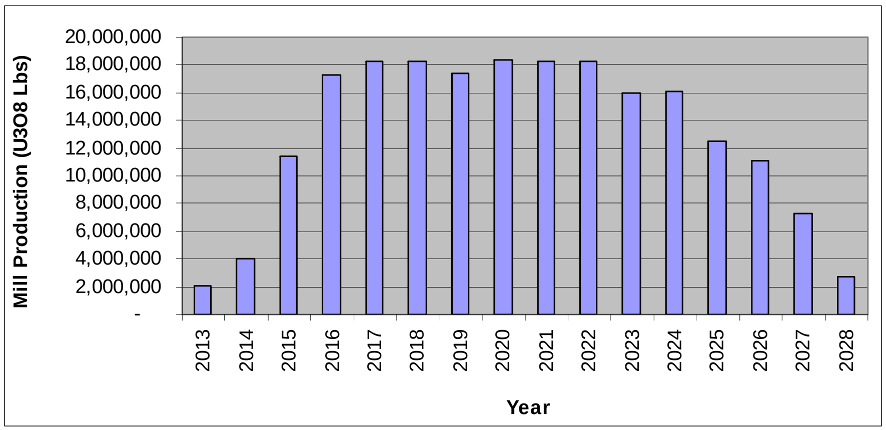
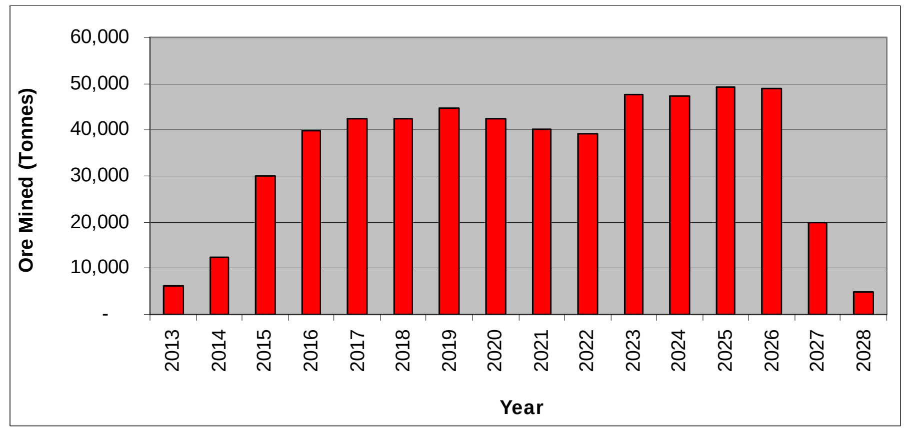


Figure 18-7: Mine Production (tonnes ore)



Notes: (1) Mill production lbs U_3O_8 based on overall milling recovery of 98.5%.
(2) Quarter 2 of 2015 is expected to be the first quarter in which 2.5 million pounds of concentrate is exceeded. Reallocation of concentrate between McClean Lake and Rabbit Lake will take place thereafter.
(3) Assuming appropriate regulatory approvals are received in the required time frame.

18.2 Recoverability

For design purposes an overall uranium process mill recovery of 98.5 % has been used. The processing of Cigar Lake ore is described in Section 16 and details of the anticipated process losses are listed in Section 16.3.

The metallurgical recovery of uranium could vary slightly depending on whether it is completely treated through to final yellowcake product in the JEB mill at McClean Lake (AREVA's share) or whether it is partially treated at the McClean Lake JEB mill and then transported in solution to the Rabbit Lake mill (Cameco's share) for final processing. For design purposes, however, the recovery of 98.5% of the Cigar Lake uranium feed has been used for either processing location.

This recovery is similar to that achieved at Cameco's other Saskatchewan operations. For reference, historically the Key Lake mill treating McArthur River mine ore achieves a recovery of approximately 98.8% and the Rabbit Lake mill treating Eagle Point mine ore achieves a recovery of approximately 97.0%. The lower recovery at the Rabbit Lake mill is due to the lower feed grade from the mine to the mill as compared to the McArthur River ore feeding the Key Lake mill.

For a discussion of mining recovery supporting the determination of the Mineral Reserve estimate see Section 17.2.6.

18.3 Markets

Nuclear plants around the world use uranium to generate electricity. The following is an overview of the uranium market.

Uranium Demand

The demand for U_3O_8 is directly linked to the level of electricity generated by nuclear power plants. World uranium consumption has increased from approximately 75 million pounds U_3O_8 in 1980 to about 169 million pounds in 2009.

Uranium Supply

Uranium supply sources include primary mine production and secondary sources such as excess inventories, uranium made available from the decommissioning of nuclear weapons, re-enriched depleted uranium tails, and used reactor fuel that has been reprocessed.

Mine Production

The uranium production industry is international in scope with a small number of companies operating in relatively few countries. In 2009, primary production was estimated at 130 million pounds U_3O_8, representing about 77% of world uranium consumption.

An estimated 88% of the world production of 130 million pounds U_3O_8 was provided by ten producers. In 2009, over 90% of estimated world production was sourced from eight countries:

Major Uranium Producers

By Company	%
Areva	17%
Cameco	16%
Rio Tinto	16%
Kazatomprom	13%
ARMZ	9%
BHP	6%
Navoi	5%
Uranium One	3%
Paladin	2%
General Atomics	1%
Others	12%

By Country	%
Kazakhstan	26%
Canada	20%
Australia	16%
Namibia	9%
Russia	7%
Niger	6%
Uzbekistan	5%
United States	3%
Other	8%

Source: Cameco estimate

Uranium Markets and Prices

Uranium is not traded in meaningful quantities on a commodity exchange. Utilities buy the majority of their uranium products under long term contracts with suppliers and meet the rest of their needs on the spot market.

Uranium Spot Market

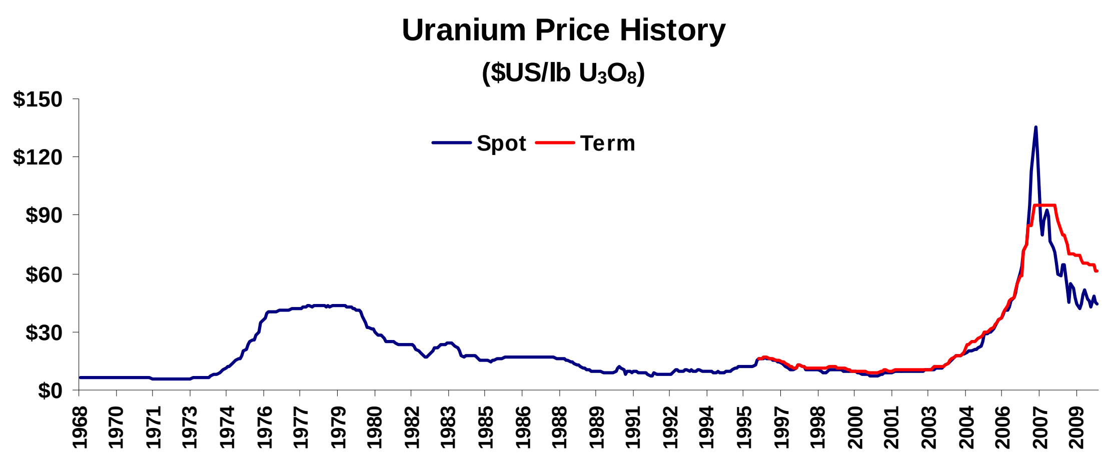
The industry average spot price (TradeTech and UxC) on December 31, 2009 was US$44.50 per pound U_3O_8, down 15% from US$52.50 per pound U_3O_8 at the end of 2008.

Long-Term Uranium Market

The industry average long-term price (TradeTech and UxC) on December 31, 2009 was US\$61/lb U_3O_8, down 13% from US\$70/lb U_3O_8 on December 31, 2008.

The price history of uranium is shown in *Figure 18-8*.

Figure 18-8: Uranium Price History



18.4 Contracts

18.4.1 Construction Period

With surface construction about 50% complete at Cigar Lake, the remaining important surface construction contracts are for the Waterbury Centre (new administration/services building), Seru Bay pipeline, the installation of the surface ore process facilities, new propane tank farm, 138 kV Electrical Substation expansion and permanent camp expansion. The work under these contracts is scheduled for 2010 to 2013.

There are a number of underground contracts relating to development and other work. Due to the October 2006 water inflow incident and the subsequent 2008 water inflow incident, Cameco suspended work on the underground contracts. It is anticipated that work will resume under these contracts or new contracts during the later phases of remediation of the underground. This will include:

- mine remediation;

- completion of the Shaft No. 2, which includes freezing the bottom of the shaft, shaft excavation/sinking and shaft furnishing;
- completing the installation of designed underground pumping capacity including the installation of emergency back up pump capacity;
- completion of the brine system freezing infrastructure and ore freezing program;
- completion of the underground ore extraction system (jet boring);
- completion of the ore processing circuit including changes due to new mine plan; and
- mine development - excavations and MDS development.

The work under these contracts is scheduled for 2010 to 2013.

The terms of Cameco's surface and underground development contracts generally reflect industry standards and rates for Saskatchewan uranium properties in a development phase. Cameco expects that its future development contracts will also generally conform to the same standards and rates.

18.4.2 Operating Period

A number of contracts will be entered into for the Cigar Lake operation phase. Some of the more important contracts include an underground mining contract, a freeze hole drilling contract and transportation contract to haul Cigar Lake uranium ore slurry to AREVA's McClean Lake JEB mill for processing and to haul a portion of the resulting uranium solution produced at JEB to the Rabbit Lake mill for further processing into uranium concentrates.

Cameco anticipates the terms of contracts to be entered into for the Cigar Lake operation phase will generally reflect industry standards and rates for Saskatchewan uranium properties in the operation phase.

18.4.3 Toll Milling Contracts

Initially, Cigar Lake ore will be processed at the JEB mill located at AREVA's McClean Lake operations, 70 km to the northeast. The MLJV owns the McClean Lake operation, including the JEB mill, and AREVA is the operator of the MLJV. As Cigar Lake production ramps up to planned full capacity, a portion of the uranium processing will be completed at Cameco's Rabbit Lake mill. These milling arrangements are subject to two toll milling agreements described below. These toll milling agreements were an integral part of the arrangements that resulted in the CLJV deciding in late 2004 to proceed with development of Cigar Lake. Cameco considers the terms of these agreements generally within industry norms.

JEB Toll Milling Agreement

The JEB Toll Milling Agreement, made effective January 1, 2002, sets out the terms and conditions by which the MLJV will process Phase 1 ore delivered to the JEB mill into JEB uranium solution, further process the JEB uranium solution into uranium concentrates and process any potential Phase 2 ore into uranium concentrates at the JEB mill. Phase 1 ore is the current Cigar Lake Mineral Reserves and Phase 2 is part of the current Cigar Lake Mineral Resources. Mineral Resources in Phase 2 are in the Inferred category. Further drilling and mining studies are needed before these resources can be fully evaluated.

All uranium solution resulting from the mill processing at the JEB mill of Phase 1 ore is allocated for further processing between the JEB mill and the Rabbit Lake mill based upon two categories: Phase 1 (a) ore and Phase 1 (b) ore. Phase 1 (a) ore represents the first 160 million pounds U_3O_8 recovered collectively by the JEB and Rabbit Lake mills. Phase 1(b) ore represents the balance of the Phase 1 ore which is equal to approximately 47 million pounds of Cigar Lake Mineral Reserves.

Subject to certain exceptions, the allocation for Phase 1 (a) ore is as follows:

(a) 100 % of the uranium solution resulting from the processing of Phase 1 ore is allocated to the JEB mill to be further processed into uranium concentrates. This allocation ends on the latter of the expiration of the initial ramp period of 730 days (the period starts after the testing and commissioning) and the date the JEB mill achieves 2.5 million pounds of uranium concentrates from processing Phase 1 ore during any consecutive three-month period.

(b) After the end of the allocation outlined in (a) above, 42.73% of the uranium solution is allocated to the JEB mill for further processing into uranium concentrates and 57.27 % of the uranium solution is allocated to the Rabbit Lake mill for further processing into uranium concentrates.

After the end of the allocation outlined in (a) above, the maximum capacity in the JEB mill that the MLJV must make available to process uranium solution derived from Phase 1 (a) ore in any year is capacity sufficient to produce 7.69 million pounds of uranium concentrates.

Subject to certain exceptions, the allocation for Phase 1(b) ore is 50.00 % of the uranium solution to the JEB mill for further processing into uranium concentrates and 50.00 % of the uranium solution to the Rabbit Lake mill for further processing into uranium concentrates.

The maximum capacity in the JEB mill that the MLJV must make available to process uranium solution derived from Phase 1 (b) ore in any year is capacity sufficient to produce 7.5 million pounds of uranium concentrates.

For the toll milling and related services, the CLJV pays the MLJV toll milling charges comprising the CLJV's share of JEB mill expenses and a toll milling fee based upon the type of Cigar Lake ore being processed (Phase 1 (a), Phase 1(b) and, if applicable, Phase 2).

The agreement requires the MLJV to modify the JEB mill to process Phase 1 ore. The CLJV agreed to pay a portion of the costs to modify the JEB mill to a specified maximum amount, which limit has been met. This contribution limit may be exceeded in certain circumstances. The balance of the costs is the MLJV's responsibility. The main modifications are largely complete, other than the construction of the uranium solution off-loading facility. See Section 18.7.1 for discussion of the status of the JEB mill modifications.

Subject to certain restrictions, the CLJV pays standby costs if the Phase 1 ore JEB mill modifications are complete, the JEB mill is ready to process Phase 1 ore, and Phase 1 ore is not delivered to the JEB mill for processing; provided standby costs are only payable if no other ore is being processed at the JEB mill. The cost estimates and economic modeling (Section 18.7.4) in this technical report assume these charges are payable.

The MLJV is responsible for all costs of decommissioning the JEB mill.

Rabbit Lake Toll Milling Agreement

As described above under JEB Toll Milling Agreement, all uranium solution resulting from the processing at the JEB mill of Phase 1 ore is allocated for further processing between the JEB mill and the Rabbit Lake mill. The Rabbit Lake Toll Milling agreement made effective January 1, 2002, sets out the terms and conditions by which Cameco will process its allocation of uranium solution from Phase 1 ore into uranium concentrates.

The maximum capacity in the Rabbit Lake mill that Cameco must make available to process uranium solution derived from Phase 1(a) ore in any year is capacity sufficient to produce 10.31 million pounds of uranium concentrates.

The maximum capacity in the Rabbit Lake mill that Cameco must make available to process uranium solution derived from Phase 1(b) ore in any year is capacity sufficient to produce 7.5 million pounds of uranium concentrates.

For the toll milling and related services, the CLJV pays Cameco toll milling charges comprising the CLJV's share of Rabbit Lake mill expenses and a toll milling fee based upon the type of Cigar Lake ore being processed (Phase 1 (a) and Phase 1(b)).

The agreement requires Cameco to modify the Rabbit Lake mill to process its allocation of uranium solution and Cameco is planning to complete the modifications by 2015. The majority of these modification costs will be incurred by Cameco in either its capacity as mill owner or 50.025% CLJV owner. The cost estimates and economic modelling in this technical report take this into account. See Section 18.7.1 for a discussion of the status of the Rabbit Lake mill modifications.

Subject to certain restrictions, the CLJV is responsible to pay standby costs if the Phase 1 ore Rabbit Lake mill modifications are complete, the Rabbit Lake mill is ready to process its share of uranium solution, and the uranium solution is not delivered to the Rabbit Lake mill; provided standby costs are only payable if no other ore is being processed at the Rabbit Lake mill. The cost estimates and the economic modelling (Section 18.7.4) in this technical report assume these charges are not payable as currently under the agreement none are expected to be payable.

Cameco is responsible for all costs of decommissioning the Rabbit Lake mill.

18.4.4 Uranium Sales Contracts

Uranium Sales Contracts Portfolio

Cameco has a long-term uranium sales contract portfolio where it commits to supply uranium to its customers. This uranium is projected to come from Cameco's operating mines and mines under development, including Cigar Lake, and from Cameco's spot and long term uranium purchase contracts. The commercial terms under these contracts are confidential.

Cameco has also entered into a number of long-term contracts for sale of Cigar Lake production. These contracts were put in place to base load the development of Cigar Lake.

A majority of Cameco's long term uranium sales contracts contain supply interruption provisions which allow Cameco to reduce, defer or terminate deliveries in the event of any shortfall in planned production or deliveries of purchases under the HEU agreement. Since the Cigar Lake water inflows, Cameco has been in discussions with its customers to address the production delay at the mine and its effects on uranium deliveries. For Cigar Lake base load contracts that had scheduled deliveries in 2007 through 2010, these volumes are being deferred to the end of the various contracts. For deliveries beyond 2010, Cameco will hold discussions with the customers impacted. For the remainder of the contracts with supply interruption language provisions that have deliveries scheduled through 2012, Cameco plans to defer a portion of the deliveries impacted by this language, generally for a five to seven year period.

Impact of Uranium Sales Contracts on Cigar Lake Economic Analysis

Uranium contract terms generally reflect market conditions when the contracts are negotiated. After a contract is accepted, deliveries under a long-term contract do not begin for several years. In the case of the Cigar Lake base load contracts, the time period will be longer as these contracts were negotiated in 2004 and the first deliveries will not take place until after the commencement of production, which is now planned for 2013. Cameco believes the terms of its long-term uranium sales contracts, including the Cigar Lake base load contracts, generally reflect industry norms.

As a result of Cameco's contracting strategy and the increase in the uranium price over the past few years, Cameco average realized price for uranium sales in 2009 was US$38.25/lb U_3O_8. The industry average spot price (Trade Tech and UxC) during 2009 was US$46.06/lb U_3O_8. The industry average long-term uranium price (Trade Tech and UxC) during 2009 was US$65.50/lb U_3O_8.

Uranium Price Assumptions

A spot price projection, as of the first quarter of 2010, has been incorporated into the realized price projection for the purpose of the economic analysis. The spot price projection is consistent with various independent forecasts of supply and demand fundamentals and price projections at that time. To the extent the independent forecasts did not extend their projections to cover the entire expected mine life of Cigar Lake, the projections have been extrapolated forward to the end of the anticipated mine life.

Cameco has historically sold U_3O_8 under long-term contracts with its customers, at prices that reflect the market conditions at the time the contract is accepted. Cameco has committed a significant quantity of its future production and purchased material to be delivered through its existing portfolio of long-term sales contracts. The remaining future production will be sold under yet to be negotiated arrangements. For purposes of the economic analysis, Cameco's portion of Cigar Lake production is assumed to be sold into a mix of committed volumes and uncommitted volumes in the same proportion that Cameco expects to sell based on its current level of committed sales relative to its total sales targets.

Table 18-4 outlines the projected average realized prices, taking into account Cameco's current level of sales commitments and the independent spot price projections. The price projections are stated in constant 2010 dollars.

Table 18-4: Expected Average Realized Prices

Price Assumptions	2013	2014	2015	2016	2017	2018	2019	2020
Cigar Lake Average Price $USD/lb	60	58	53	54	54	54	55	55
Cigar Lake Average Price $Cdn/lb	**63**	**63**	**58**	**59**	**59**	**60**	**60**	**60**
Price Assumptions	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Cigar Lake Average Price $USD/lb	56	57	57	57	57	58	58	58
Cigar Lake Average Price $Cdn/lb	**62**	**63**	**63**	**63**	**63**	**63**	**64**	**63**

Notes: (1) Average price is partly based on committed volumes, which are derived from Cameco's current contract portfolio commitments, which extend out to 2028.
(2) The projected average price is weighted to the proportion of committed and uncommitted sales volume at the respective committed price and spot price for each year.
(3) Cameco's sales volume targets assume no interruption in the company's supply from its production or third party sources.
(4) The projections are stated in constant 2010 dollars.

In preparing the cash flow analysis included in Section 18.7.4 of this report, the impact of Cameco's forward uranium sales strategy has been taken into account.

18.5 Environmental Considerations

18.5.1 Regulatory Framework

The Cigar Lake project has regulatory obligations to both the federal and provincial governments. Being a nuclear facility, primary regulatory authority resides with the federal government and its agency, the CNSC. Provincial regulatory authority is generally described in the surface lease between the Province of Saskatchewan and the CLJV. In numerous situations there is coordination amongst the federal and provincial regulatory agencies, but each agency retains responsibility for administering its own regulations, approvals, licences and permits where required. The main regulatory agencies that issue permits / approvals and inspect the Cigar Lake project are: the CNSC (federal), Fisheries and Oceans Canada (federal), Environment Canada (federal), Transport Canada (federal), Saskatchewan Ministry of Advanced Education, Employment and Labour (provincial), and Saskatchewan Ministry of Environment (provincial).

One of the initial steps in the regulatory process was to assess the project under the federal and provincial environmental assessment (“EA”) processes.

18.5.2 Environmental Assessment

The Cigar Lake project includes the Cigar Lake mine and associated mine site infrastructure, the processing of the recovered ore at the both McClean Lake JEB mill and the Rabbit Lake mill, and the road infrastructure that connects Cigar Lake to the existing road network. Potential effects from the Cigar Lake project have been evaluated as part of several environmental assessments going back to 1987. All aspects of the Cigar Lake project have undergone the required EA and regulatory approval, to allow for the current licensing of the Cigar Lake mine. In 2008, the Rabbit Lake aspect of this project completed the environmental assessment process. A brief summary of these assessments and approvals follows.

In 1995, the Cigar Lake Project, Environmental Impact Statement (1995 EIS) was submitted to the Joint Federal-Provincial review panel on Uranium Mining Developments in Northern Saskatchewan (the “Panel”). The 1995 EIS evaluated the operation of a high-grade uranium mine at Cigar Lake, producing ore over a 40-year period, with ore being transported by truck to the nearby McClean Lake uranium mill for processing. In 1997, the Panel recommended that pending identification of a suitable waste rock disposal location, the project should proceed. The Canadian and Saskatchewan governments both accepted the Panel’s recommendation and in 1998 both government bodies approved the project in principle.

A 1999 review of the waste rock disposal options concluded that the Sue C pit at McClean Lake Operation was the best waste rock disposal option. The Disposal of Cigar Lake Waste Rock Environmental Impact Statement (2001 EIS) was submitted in August 2001, under the harmonized federal-provincial environmental assessment process. This 2001 EIS also assessed the future construction of a permanent access road to Cigar Lake site and the future transportation of waste rock over that access road. In August 2003, the CNSC concluded that the 2001 EIS and associated documents met the requirements of the *Canadian Environmental Assessment Act* (CEAA) and that the licensing/permitting processes for the Sue C pit as a waste rock disposal site and construction of the permanent access road could proceed (Cameco EASR, 2004).

In January 2003, the CNSC informed Cameco that due to a perceived uncertainty regarding the use of the transitional provisions of CEAA, the CNSC would require a new environmental assessment of the Cigar Lake mine portion of the project to support construction and operation licence decisions. However, Saskatchewan Environment (now referred to as the Saskatchewan Ministry of Environment) indicated that the assessment requirements under the *Saskatchewan Environmental Assessment Act* had been fully met by the 1995 EIS and 2001 EIS submission and approval processes.

In February 2004, Cameco submitted an environmental assessment study report (2004 EASR) for the Cigar Lake mine portion of the project under CEAA to meet the above requirement. In the 2004 EASR, the CNSC was identified as the sole "Responsible Authority". The 2004 EASR assessed the potential effects from the construction, operation and decommissioning of the Cigar Lake mine. The 2004 EASR did not reassess the transportation of the ore to the McClean Lake JEB and Rabbit Lake mills; milling of the ore; or the management of tailings. The 2004 EASR was accepted by the CNSC as meeting the requirements of CEAA and therefore the licensing/permitting processes for the Cigar Lake Project could proceed.

AREVA is the operator of the McClean Lake JEB Mill on behalf of the MLJV. The processing of all the ore slurry from the Cigar Lake mine will be at the McClean Lake JEB Mill. This was assessed and approved as part of the 1995 EIS. An amendment to the McClean Lake JEB mill's Licence to Operate is still required in order to process the ore from the Cigar Lake mine at the McClean Lake JEB mill. No issues surrounding this licence amendment approval are anticipated.

To address the processing of the uranium solution from McClean Lake JEB mill at the Rabbit Lake mill and the associated development, Cameco and AREVA on behalf of the CLJV submitted, in November 2006, a draft Rabbit Lake Solution Processing Project Environmental Impact Statement (Rabbit Lake EIS), and received final approval in 2008. The Rabbit Lake EIS indicates that the potential environmental effects associated with the Cigar Lake project will be temporary and will be within the assimilative capacity of the local ecosystems. This document also indicated that potential health impact on humans from exposure to metals and radioactivity will be below acceptable limits

Although there was sufficient capacity for the Cigar Lake tailings in the Rabbit Lake in-pit tailings management facility (RLITMF) when the Rabbit Lake Toll Milling Agreement (described in Section 18.4.3) was originally signed, ongoing production, from the Eagle Point mine at Rabbit Lake, has consumed some of the capacity in the RLITMF. Consequently, it was determined that the RLITMF would have to be expanded. Following acceptance of the Rabbit Lake EIS in

August 2008, the approval to extend the pit crest of the RLITMF was received. The pit crest expansion project was completed and commissioned for use in 2009.

On February 24, 2010, Cameco announced an increase in Rabbit Lake's Mineral Reserves, further extending Eagle Point's mine life. As a result, Cameco is working to increase Rabbit Lake's tailings capacity. Regulatory approval is required to proceed with the capacity increase. The cost estimates and economic analysis in this technical report do not include the cost of further expanding Rabbit Lake's tailings capacity. Cameco, and not the other members of the CLJV, will be paying the cost for this additional capacity increase.

In December 2008, Cameco submitted to the CNSC a project description for measures intended to better manage the increased quantities of water inflow that could potentially be experienced during the construction and operation of the Cigar Lake project. This will involve establishing infrastructure to allow for the discharge of treated water directly to Seru Bay of Waterbury Lake. A decision on this assessment is anticipated in 2010.

18.5.3 Licences and Permits

As previously discussed, the regulatory framework for the normal construction and operation of any mine site is subject to an ongoing process during which permits, licences and approvals are requested, reported on, amended, expire and are renewed.

Based on the acceptance by the CNSC of the 2004 EASR, Cameco, in 2004, applied for a licence to construct the Cigar Lake mine site in two parts:

(1) construction of the Shaft No. 2 surface complex and the freeze plant; and

(2) construction of all other mining and support facilities at the Cigar Lake mine site.

In July 2004, the CNSC approved the construction of the Shaft No. 2 surface complex and the freeze plant. The CNSC issued the construction licence in December 2004 for a three-year term expiring in December 2007. As a result of the October 2006 water inflow, the construction licence was amended in December 2007 to extend its term from December 31, 2007 until December 31, 2009, so that actions resulting from the 2006 inflow event could be addressed and mine remediation could proceed. The licence was subsequently amended in June, 2008 to enable Cameco to proceed with a limited scope of work including mine dewatering, shaft remediation and mine entry to secure/assess the underground workings. In August 2008, during dewatering, a new water inflow source developed, leading to the decision to suspend dewatering to ensure it was understood and that appropriate measures to mitigate the inflow could be taken.

In 2009, after plugging the new source, again from the surface, Cameco re-initiated dewatering of the main shaft. In addition, the CNSC licence was again extended to December 31, 2013 allowing for completion of the mine construction project, including completion of remediation, Shaft No. 2 and surface construction. Additional regulatory approvals of details supporting the licensed activities, such as the mine plan, will be required to complete remediation and resume pre-flood underground construction and development.

Assuming acceptance of the Seru Bay discharge environmental assessment, anticipated to be in 2010, further approval will be necessary for the construction and operation activities of that system from both the federal and provincial agencies.

An amendment to the McClean Lake JEB mill's Licence to Operate is still required in order to process the ore from the Cigar Lake mine at the McClean Lake JEB mill. No issues surrounding this licence amendment approval are anticipated.

Concurrent with mine construction, an operating licence application will be prepared for submission to the CNSC. The operating licence process is expected to consist of two formal hearings per the CNSC process. To facilitate a smooth transition to operations, the process will be initiated while construction of the facilities is being completed.

On May 27, 2004, the Government of Saskatchewan entered into a surface lease with the CLJV. This surface lease covers approximately 989 ha around the Cigar Lake site and stipulates various provisions and conditions for the use of this land. Cameco is compliant with the terms and provisions in the surface lease. Some minor amendments to the surface lease will be necessary to accommodate the installation of the proposed Seru Bay discharge infrastructure.

18.5.4 Water Treatment and Effluent Discharge

The water treatment / effluent discharge system employed at the Cigar Lake mine site has been designed based both on the results of metallurgical test work programs and Cameco's experience at other facilities. The design is intended for both typical and emergency water treatment and effluent discharge scenarios.

The current system, as described below, is approved and licensed by the CNSC and Saskatchewan Ministry of Environment (SMOE).

Retained surface water and recovered groundwater from the mine are pumped to the water treatment plant (WTP). The WTP uses a two-stage treatment process. Both stages involve chemical addition, precipitation and filtration.

Under normal operating conditions, treated water from the WTP is designed to be discharged to the environment on a batch discharge basis. As per the design, treated water from the WTP is discharged to one of four lined ponds. The water in these ponds is tested prior to release to the environment. All water that fails to meet licence / operating approval requirements is returned to the WTP for re-treatment. Two surge ponds are included in the WTP design to allow for the safe storage of excess water.

The WTP is designed to be able to treat water up to 550 m^3/h however normal operating conditions are expected to average up to 135 m^3/h. The treatment is complimented with additional surface storage capacity of approximately 100,000 m^3. In addition, to ensure all water is treated prior to discharge, contingency treatment capacity can be activated to match the planned pumping capacity of the mine.

As a result of the October 2006 and August 2008 water inflow incidents, Cameco reviewed the emergency mine dewatering strategy. It was determined that one of the safest ways to mitigate the impact of future mine inflows is to increase the mine's dewatering capacity. Doing so requires an enhancement to the mine's ability to release treated effluent to the environment. Cameco therefore re-evaluated options to address potential mine effluent discharge restrictions in the event of any future inflow scenarios. Specifically the risk of erosion in the Aline Creek system was evaluated. In December 2008, an application was made to move the discharge point and to discharge treated effluent directly to Seru Bay of Waterbury Lake. This is where the Aline Creek system currently enters Waterbury Lake. This application has triggered under CEAA a joint federal/provincial screening level environmental assessment, which the project is currently undergoing. A decision on this assessment is anticipated in 2010, after which approval to proceed with construction and then operation would be required. Interim approvals and measures are in place to support increased environmental discharges to the Aline Creek system if the need were to arise prior to receiving approval for the Seru Bay discharge point.

The underground mine has existing installed pumping capacity of 1,550 m^3/hr consisting of 1,250 m^3/hr through surface boreholes and 300 m^3/hr in-shaft. Cameco plans to increase the installed pumping capacity to 2,500 m^3/hr after the mine has been secured, sufficient to handle volumes greater than either of the previous two inflows.

To accommodate remediation activities in the mine while the Seru Bay EA process is advancing, interim approval was received in 2009 for increased non-routine discharge capacity, up to 1,100 m^3/h. The Seru Bay discharge capacity currently being reviewed is consistent with the planned mine dewatering capacity.

In summary, the plan to increase pumping capacity and expansions in capacity to water treatment and surface storage capacity provide for an enhanced water management system.

Cameco's view is that it has sufficient capacity to handle an estimated maximum inflow and, as noted in this report, intends to install additional capacity to assure the long term success for the project.

The updated capital cost estimate contemplates that Cameco proceeds with its plans to increase the emergency mine dewatering capacity.

18.5.5 Ore Processing and Tailings

The McClean Lake JEB mill will process the Cigar Lake ore slurry in a dedicated leach circuit separate from other ores that will be concurrently processed in the McClean Lake JEB mill. Generally 57% of the uranium solution produced from this dedicated circuit will be shipped to the Rabbit Lake mill, while the remaining approximately 43% of the uranium solution would be further processed into yellow cake product at the McClean Lake JEB mill. (See Section 16.3)

During mining of Cigar Lake, tailings will be generated at both the McClean Lake JEB mill and at the Rabbit Lake mill. The CLJV owners entered into an agreement with the MLJV owners (JEB Mill Toll Milling Agreement) that covered the generation of tailings at the McClean Lake facility (for discussion of the JEB Mill Toll Milling Agreement refer to Section 18.4.3). The CLJV also entered into an agreement with the owner of the Rabbit Lake mill (Rabbit Lake Toll Milling Agreement) that covered the generation of tailings at the Rabbit Lake facility. These two toll milling agreements manage the financial liabilities associated with these tailings.

See Section 18.5.2 for a discussion of Rabbit Lake tailings capacity.

18.5.6 Waste Rock

Waste rock generated at the Cigar Lake mine site is currently stored on-site in one of four waste rock piles on site, depending on the nature of the waste rock. The first two of these are the clean waste stockpiles, which will remain at the minesite. The third is mineralized waste (>0.03% U_3O_8), contained on a lined pad, which is planned to be disposed of underground at the Cigar Lake mine. No mineralized waste has been identified in the development to date. The fourth is potentially acid generating waste rock which will be temporarily stored at site on a lined pad and will be eventually transported to the Sue C pit at the McClean Lake facility for permanent disposal. The costs of the eventual disposal of the Cigar Lake potentially acid generating waste rock in Sue C pit, as described in the Waste Rock EIS noted above, is covered by the Potentially Reactive Waste Rock Disposal Agreement between the MLJV and CLJV dated January 1, 2002. The cost of this disposal is included in the Cigar Lake mine operating cost estimate.

18.5.7 Reclamation / Remediation

The Cigar Lake project Preliminary Decommissioning Plan (PDP) was initially completed in May 2002 and was most recently revised as part of the licensing that occurred in 2008. This preliminary decommissioning plan considers the environmental liabilities up to the end of the construction of the facility. This PDP was approved by both federal and provincial regulatory agencies and is supported by a financial assurance based on a preliminary decommissioning cost estimate (PDCE) of $27.7 million. The financial assurance is posted with Saskatchewan Ministry of Environment.

Once operations begin, Cameco will need to review the PDP and account for changes to the reclamation and remediation liabilities associated with the management of the ore and any associated wastes. As such the PDCE will also be reviewed and if required revised to reflect any changes in the PDP. The Cigar Lake PDP discusses the approach to addressing the liabilities that are associated with mining. The future liabilities will be addressed in subsequent revisions to the Cigar Lake PDP.

The reclamation and remediation activities associated with the Cigar Lake project waste rock and/or tailings at the McClean Lake and Rabbit Lake facilities are covered by the PDP and PDCE prepared for these facilities.

18.6 Taxes and Royalties

18.6.1 Taxes

The Cigar Lake Project operates as an unincorporated joint venture and is therefore not subject to direct income taxation at the joint venture level. Cameco, as the mine operator, operates the mine on behalf of the CLJV and distributes the resulting U_3O_8 production to the CLJV partners in proportion to their joint venture interests.

Cameco is subject to federal and provincial (Saskatchewan and Ontario) income tax in Canada. Royalties are fully deductible for income tax purposes. For Ontario tax purposes, an additional tax is charged (at normal Ontario corporate tax rates) if the royalty deduction exceeds a notional Ontario resource allowance.

Cameco is no longer subject to capital taxes on paid-up capital (as defined for capital tax purposes in the relevant provincial legislation) in respect of its Canadian operations. These taxes have been eliminated. As a resource corporation in Saskatchewan, Cameco pays a corporate resource surcharge of 3.0% of the value of resource sales.

For the purposes of the economic analysis, the projected impact of income taxes has been excluded due to the nature of the required calculations. Taxable income for Cameco is comprised of results from several discrete operations, which are combined to determine Cameco's taxable income and its related tax liabilities. It is not practical to allocate a resulting income tax cost to Cameco's portion of Cigar Lake, as Cameco's tax expense is a function of several variables, most of which are independent of the investment in Cigar Lake. However, the projected future impact of the Saskatchewan corporate resource surcharge is included in the economic analysis.

18.6.2 Royalties

Cameco pays royalties to the province of Saskatchewan on the sale of uranium extracted from ore bodies within the province under the terms of Part III of the *Crown Mineral Royalty Schedule*, 1986 (Saskatchewan) (the "Schedule"), as amended. The Schedule provides for the calculation and payment of both a basic royalty and a tiered royalty. The basic royalty is equal to 5% of gross sales of uranium and is reduced by the Saskatchewan resource credit, which is equal to 1% of the gross sales of uranium.

The tiered royalty is an additional levy on the gross sales of uranium, which applies only when the sales price of uranium exceeds levels prescribed by the Schedule. Uranium sales subject to the tiered royalty are first reduced by capital allowances, as permitted by the Schedule, for new mine or mill construction and certain mill expansion. Additions of capital allowances for new mines and mills are determined using amounts prescribed by the Schedule based on the design capacity of the new facility, and not on the actual construction costs. The aggregate of the allowances, less any allowance deductions, determines the balance in the capital recovery bank (CRB). When the allowable annual deduction from the CRB is fully maximized or the CRB is reduced to zero, tiered royalties become payable. Both the sales prices at which the tiered royalties become payable and the CRB, as defined in the Schedule, are adjusted annually to reflect changes in the Canadian gross domestic product.

The tiered royalty is calculated on the positive difference between the sales price per pound of U_3O_8 and the prescribed prices according to the following:

	Tiered Royalty rate	**Canadian dollar ($/lb U_3O_8) Sales price in excess of:**
	6%	$17.82
Plus	4%	$26.74
Plus	5%	$35.65

The above sales prices are applicable to 2009 and are in Canadian dollars. The index value required to calculate 2010 rates is expected to be published in April 2010. For example, if the sales price realized by Cameco was $40 per pound in Canadian dollars, the tiered royalty payable would be calculated as follows (assuming all capital allowances have been reduced to zero):

[6% x ($40.00 – $17.82) x pounds sold] + [4% x ($40.00 – $26.74) x pounds sold] + [5% x ($40.00 - $35.65) x pounds sold]

= $2.0787 x pounds sold

In 2007, Cameco's CRB was fully claimed and therefore, Cameco was subject to tiered royalties starting in that year. Cameco will be eligible for additional capital allowances, as permitted by the Schedule, once Cigar Lake commences production in mid-2013. As a result, Cameco expects that the payment of tiered royalties relating to Cigar Lake will not be required until 2015.

Table 18-5 below sets out the expected royalties that will be incurred by Cameco on its share of production from Cigar Lake. The projected royalties are based on the realized prices set out in *Table 18-4,* and are quoted in constant 2009 dollars.

The economic analysis for tiered royalties has been done on an incremental basis, and assumes that the capital bank additions to the CRB would only be used to offset the tiered royalties otherwise payable on Cameco's share of Cigar Lake production. In reality, the CRB will be available to shelter tiered royalties payable on all of Cameco's Canadian production centers, including Cigar Lake. As a result, the CRB will be exhausted in an accelerated fashion by the use of higher deductions in 2013 and 2014 to offset tiered royalties payable by Cameco from all of its Canadian production centers.

Table 18-5: Expected Royalties to be Incurred by Cameco for Cigar Lake

Royalties ($Cdn M)	2013	2014	2015	2016	2017	2018	2019	2020
Basic Royalty	2.6	5.0	13.2	20.3	21.4	21.6	20.7	21.8
Tiered Royalty	-	-	4.8	38.7	44.8	45.6	43.9	46.4
Resource Surcharge	2.0	3.8	9.9	15.2	16.0	16.2	15.5	16.4
Total Royalties	**$ 4.6**	**$ 8.8**	**$ 27.9**	**$ 74.2**	**$ 82.2**	**$ 83.4**	**$ 80.1**	**$ 84.6**

Royalties ($Cdn M)	2021	2022	2023	2024	2025	2026	2027	2028	Total
Basic Royalty	22.3	22.6	19.7	20.0	15.6	13.8	9.2	3.4	253.2
Tiered Royalty	48.5	49.4	43.1	43.8	34.2	30.4	20.4	7.5	501.5
Resource Surcharge	16.8	16.9	14.8	15.0	11.7	10.4	6.9	2.6	190.1
Total Royalties	**$ 87.6**	**$ 88.9**	**$ 77.6**	**$ 78.8**	**$ 61.5**	**$ 54.6**	**$ 36.5**	**$ 13.5**	**$ 944.8**

Note: Expected Royalties in Table 18-5 are on Cameco's share of production only.

18.7 Capital and Operating Cost Estimates

18.7.1 Project Construction Status – February 2010

Cigar Lake Mine

Test mining development was conducted from 1987 to 1993, including the sinking of Shaft No. 1 and development on the 420, 480 and 465 m levels. Some surface infrastructure was also constructed during the test-mining phase including a 550 m^3/hr water treatment plant. Pre-construction activities were started at the Cigar Lake site in 2002. Full construction activities on the Cigar Lake site began in January 2005 following approval of the project by the CLJV partners in December of 2004. Just prior to the mine inflow of October 23, 2006, the capital construction project was approximately 60% complete (under the old mine plan).

Underground development required for the start of production is now estimated at 50% complete, based on required infrastructure changes identified in the updated mine plan.

Reflected in the historical costs are remediation costs to date as well as the completed facilities to date including:

- Permanent access road to Provincial Road 905;
- Shaft No. 2 surface facilities (hoist, collar house and batch plant);
- Airport upgrade;
- Mine site pipe rack;
- Utilities infrastructure for fire water and potable water storage and treatment and distribution, as well as storage and distribution facilities for propane, diesel fuel, and gasoline;
- Freeze plant expansion;
- Underground excavations for the underground process ore circuit;
- Surface borehole pumping system installation;
- Water treatment ponds;
- Increased surface water handling and treatment facilities;
- Waste rock stock piles and site grading;
- Permanent camp facilities ;
- Electrical substation and emergency power expansions;
- Ore loadout building structure; and
- Intake and exhaust fans at Shaft No. 2

Also included in the historical costs and current commitments are the following partially completed facilities:

- Shaft No. 2, which was excavated to a depth of 392 m of the total of 500 m when it was stopped due the April 5th 2006 water inflow; and
- Underground development and freeze hole drilling.

The cost estimate to complete underground development and surface facilities at the Cigar Lake site for the years 2010, 2011, 2012 and 2013 will consist of:

- Mine development and freeze hole drilling which include the costs to complete the underground development and the freeze hole drilling;
- Site services, which include the support costs for site administration, licences and taxes, commuting and camp operating costs, electricity and fuel costs, warehousing, as well as engineering and construction management;
- Mine remediation which include the costs to dewater and restore the mine to its pre-flood state;
- Updated mine plan scope additions which include expanded sumps, new high pressure pump room, underground shop facilities, electrical rooms;
- Completion of the Shaft No. 2, which includes the costs to freeze the bottom of the shaft, excavate, install a hydrostatic liner, and furnish the shaft;
- Completion of the Underground Mine Capital, which includes the brine system freezing infrastructure, the underground ore extraction system (jet boring), the ore processing circuit, and water handling; and
- Completion of the remaining surface facilities, which includes the Waterbury Centre (new administration/services building), the installation of the surface ore process facilities, new propane tank farm and permanent camp expansion.

McClean Lake JEB Mill

The McClean Lake JEB mill was modified from 2005 to 2007 in order to receive and process the Cigar Lake ore. The following modifications were completed:

- An ore receiving building to receive and unload the ore slurry from the Cigar containers, trucked to McClean Lake;
- A Counter Current Cyclone (CCC) circuit that may supplement the Counter Current Decantation circuit to separate the solids from the uranium bearing solution;
- An oxygen plant, oxygen being the primary oxidant in the leaching process of the Cigar Lake ore;
- An increase of the capacity of the ammonium sulphate crystallization circuit in order to deal with the increased ammonia consumption resulting from the additional uranium production of up to 12 million pounds per year U_3O_8;
- Modifications to the secondary leach circuit so that Cigar Lake ore can be leached separately from other ore feeds to the McClean Lake JEB mill. Leach cooling and hydrogen gas concentration control were also added

to the secondary leach vessels to deal with the exothermic reaction and potential for hydrogen evolution from leaching the high grade Cigar Lake ore;

- Addition of one new sand filter and a second pregnant aqueous holding tank for additional solvent extraction feed capacity;
- Two carbon columns added to the molybdenum removal circuit; and
- A second ammonia reagent supply tank added for solvent extraction and precipitation.

Prior to receiving Cigar Lake ore, the following needs to be done:

- Repairs to the floor slabs in the ore receiving building;
- Commissioning of the ore receiving and CCC circuits with ore slurry (the other modifications are commissioned);
- Back-up power generation for the new buildings (mainly ore receiving and oxygen plant); and
- Uranium rich solution off-loading facility (required when a portion of the uranium bearing solution is shipped to Rabbit Lake for further processing).

The remaining modifications are scheduled for completion in 2013, other than the construction of the uranium solution loading facility, which is scheduled to be complete in 2015.

Rabbit Lake Mill

The status of the Rabbit Lake Mill Modifications is as follows:

- Primary clarifier (also known as Low pH clarifier) is complete and in operation. The circuit is performing as expected.

Due to a change in timeline for Cigar Lake uranium bearing solution arrival at Rabbit Lake, the following projects were put on hold. Detailed design of the Rabbit Lake mill modifications is planned to commence in 2011. The new timelines, set to coincide with the new arrival date, are as follows:

- The membrane plant is targeted to begin engineering in 2012, with construction being completed in 2015;

- Uranium solution receiving station and associated solution handling equipment is targeted to begin engineering in 2012, with construction being completed in 2015; and
- Uranium transportation infrastructure is targeted to begin engineering in 2011, with construction being completed in 2014.

18.7.2 Capital and Other Costs

In 2007, Cameco released the Cigar Technical Report showing expected capital and remediation costs to the end of construction of approximately $1.1 billion. Since that time, the forecast capital cost has escalated significantly due to a number of factors. The majority of the cost increase is the result of the longer period over which the remediation and development will occur, additional costs for inflow abatement, increases in surface capital costs and improvements to the mine plan and water management systems.

The remaining capital cost estimate as of January 1, 2010 for the Cigar Lake Project is summarized in *Table 18-6*. The majority of the expenditures in the mine, plant and mills are for development, construction and equipment in order to achieve the required production. The capital and remediation cost projections are stated in constant 2010 dollars.

Table 18-6: Cigar Lake Capital and Other Costs Forecast by Year

Capital Costs ($Cdn M)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Cigar Lake Development	$228.8	$296.8	$267.5	$55.4	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$848.5
Rabbit Lake Mill Modifications	-	0.6	10.7	8.1	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.2
Rabbit Lake Costs - above cap	-	-	1.0	9.4	26.0	25.3	-	-	-	-	-	-	-	-	-	-	-	-	-	61.7
McClean Lake JEB Mill Modifications	7.6	0.6	1.0	1.8	4.9	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	17.5
Cigar Lake Sustaining	-	-	-	6.2	11.8	11.8	7.1	7.1	14.6	13.4	15.6	16.5	14.4	14.8	12.9	12.1	8.2	2.5	-	169.0
Rabbit Lake Sustaining	-	-	-	-	-	6.5	23.5	23.5	23.5	8.5	8.6	8.6	8.6	8.3	8.2	7.8	7.7	5.2	2.5	151.0
McClean Lake JEB Mil Sustaining	-	-	-	6.1	7.4	8.8	8.9	9.1	9.1	9.0	9.1	9.0	9.0	8.9	9.2	8.8	8.6	7.5	3.4	131.9
Total Capital Costs	**$ 236.4**	**$ 298.0**	**$ 280.2**	**$ 87.0**	**$ 54.9**	**$ 54.0**	**$ 39.5**	**$ 39.7**	**$ 47.2**	**$ 30.9**	**$ 33.3**	**$ 34.1**	**$ 32.0**	**$ 32.0**	**$ 30.3**	**$ 28.7**	**$ 24.5**	**$ 15.2**	**$ 5.9**	**$ 1,403.8**
McClean Lake Standby Costs	**$ 20.5**	**$ 31.0**	**$ 34.5**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 86.0**
Cigar Lake Remediation Costs	**$ 49.9**	**$ 7.8**	**$ 1.2**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 58.9**

** **presented as total cost to the Cigar Lake Joint Venture**

As shown in *Table 18-6* the remaining capital costs, as of January 1, 2010, for the Cigar Lake Project are estimated to be $951.9 million, including $848.5 million to complete underground development and surface construction at Cigar Lake, $85.9 million to complete the mill modifications at Rabbit Lake and $17.5 million to complete the mill modifications at McClean Lake. The remaining costs for the water inflow remediation plan at Cigar Lake are currently estimated at $58.9 million. Stand-by costs at the McLean Lake JEB mill are expected to be $86.0 million, for a total remaining cost of $1.1 billion for the Cigar Lake project. *Table 18-6* also includes projected sustaining capital expenditures of $451.9 million at the Cigar Lake and Rabbit Lake sites that the CLJV will be required to fund throughout the operating life of the Cigar Lake mine. The costs estimates in this paragraph are on a 100% basis.

Cameco's share of the remaining capital cost to complete the Cigar Lake project is estimated to be $507.1 million, including its share of construction costs and costs to modify the McClean Lake JEB mill and Rabbit Lake mill. Including the $404.6 million spent by Cameco on construction costs and mill modification costs prior to December 31, 2009, Cameco's share of the aggregate capital cost is now estimated to be $911.7 million. In addition, Cameco's share of the projected sustaining capital expenditures for Cigar Lake and Rabbit Lake sites is $226 million.

Cameco's share of the aggregate capital cost is estimated to be $911.7 million, a significant increase over the 2007 Cigar Lake Technical Report estimate of $508 million. The reasons for this increase are discussed in the first paragraph of this section.

In addition to the capital costs for construction and mill modifications, Cameco estimates its share of remaining remediation costs at Cigar Lake to be $29.4 million. Including the $64 million spent and expensed by Cameco from 2006 through 2009, Cameco's share of the aggregate remediation cost at Cigar Lake is estimated to be $93.3 million.

Cameco will expense its share of the remediation costs as they are incurred. More specifically, the costs that will be expensed relate to contractor costs directly engaged in, or providing support to, the remediation efforts, and any cancellation or retention costs that were required as a result of the water inflow.

Under the terms of the JEB Toll Milling Agreement, the CLJV partners are responsible for the payment of stand-by costs to the JEB mill owners under certain conditions. AREVA recently announced the shut down of the JEB Mill is expected in July 2010. As such, it is expected that the CLJV will be required to pay stand-by costs until production start up in 2013. The total expected cost of stand-by costs to be paid by the CLJV partners is $86.0 million. Cameco's share is $43.0 million, which will be expensed as incurred.

CLJV's aggregate capital cost for Cigar Lake construction, including construction costs prior to December 31, 2009 of $808.8 million, is estimated to be approximately $1.76 billion. Total remediation costs for the CLJV are in addition to the capital cost, and are estimated at $192.9 million, including $134.0 million of remediation costs spent prior to December 31, 2009. Stand-by costs will add an additional $86.0 million to the total costs. The combined capital and other costs for the Cigar Lake project are now estimated to be approximately $2.04 billion for the CLJV. The cost estimates in this paragraph are on a 100% basis.

The major components of the revised cost estimates, including Cameco's share are detailed in *Table 18-7*.

Table 18-7: Summary of Project Costs by Cost Area

	Cost (Cdn $ millions)			
Cost Area Description	**CLJV 2004-2009**	**CLJV 2010-2015**	**CLJV Total (100%)**	**Cameco Share (50.025%)**
Cigar Lake Minesite				
Mine Development	102.5	136.9	239.4	**119.8**
Site Services	275.7	284.1	559.8	**280.0**
Mine Remedation - Capital	38.9	-	38.9	**19.5**
Mine Remedation - Expense	134.0	58.9	192.9	**93.3**
Mine Plan Scope Additions	16.5	4.0	20.5	**10.3**
Number 2 Shaft	57.7	35.2	92.9	**46.5**
Mine Capital Underground	58.0	121.3	179.3	**89.7**
Surface Capital	133.9	137.6	271.5	**135.8**
Other	36.0	129.4	165.4	**82.7**
Total Cigar Lake Minesite	**853.2**	**907.4**	**1,760.6**	**877.6**
Rabbit Lake Mill Modifications				
EIS & Licensing	1.1	-	1.1	**0.6**
Mill Modifications capped amount	5.5	2.2	7.7	**3.9**
Mill Modifications in excess of cap	-	61.7	61.7	**61.7**
US Transportation	-	22.0	22.0	**11.0**
Total Rabbit Lake Mill Modifications	**6.6**	**85.9**	**92.5**	**77.2**
McLean Lake JEB Mill Modifications				
Mill Modifications	83.0	17.5	100.5	**50.3**
Standby Costs	-	86.0	86.0	**43.0**
Total McLean Lake JEB mill Modifications	**83.0**	**103.5**	**186.5**	**93.3**
TOTAL Cigar Lake Project	**942.8**	**1,096.8**	**2,039.6**	**1,048.1**

Note : Rabbit Lake mill modifications in excess of the escalated cap are shown as a 100% Cameco cost. All other cost elements are allocated to Cameco in proportion to its 50.025% ownership interest.

The responsibility of the CLJV to fund capital costs for the required modifications to the Rabbit Lake and McClean Lake mills are subject to caps according to the provisions of the toll milling agreements as described in Section 18.4.3. These caps were to be escalated for inflation using three specific price indices as published by Statistics Canada. Subsequent to the toll milling agreements being finalized, all three of these indices were terminated and replaced with new indices. It is Cameco's opinion that the replacement indices do not correlate with the original intent under the toll milling agreements, and ongoing discussions with the CLJV partners to address this development have taken place.

For the purposes of the economic analysis, the capital cost caps relating to Cigar Lake for the mill modifications at both Rabbit Lake and McClean Lake have been escalated using the general Consumer Price Inflation index.

The $56.6 million negotiated cap related to McClean Lake JEB mill modifications has been escalated to approximately $66.2 million as at January 1, 2010. The $7.6 million negotiated cap for Rabbit Lake has been escalated to an estimated $8.9 million, also as at January 1, 2010. The cap relating to the McClean Lake JEB mill modifications was met during 2007. Since that time, Cameco has continued to fund its proportionate share of the costs, while negotiations continue. These costs have been included in the economic analysis. To the extent the costs for the Rabbit Lake modifications are projected to exceed the escalated cap, the excess amount of $61.1 million, which will be borne by Cameco, has also been included in the economic analysis.

18.7.3 Operating Cost Estimates

Estimated operating expenditures for the underground mining operation and for toll milling charges and fees are presented in *Table 18-8*.

Operating costs consist of annual expenditures at Cigar Lake, after the commencement of production (anticipated to be in mid-2013), to mine the ore, treat the ore underground, including crushing, grinding and density control, followed by pumping the resulting slurry to surface for transportation to McClean Lake.

Operating costs at McClean Lake consist of the cost of leaching 100% of the Cigar Lake ore slurry into uranium solution and further processing of up to 42.7% of the Phase 1(a) uranium solution into yellowcake (50% of Phase 1(b) ore). McClean Lake will send up to 57.3% of the Phase 1(a) uranium solution to Rabbit Lake for further processing into yellowcake (50% of Phase 1(b) ore).

Rabbit Lake operating costs will consist of the costs to receive and precipitate the uranium solution into yellowcake, including disposal of all impurities in the Rabbit Lake in-pit tailings management facility.

To the extent that either of the Rabbit Lake or McClean Lake JEB mills are co-processing ore from other mine sites, the respective toll milling agreements have provisions addressing the sharing of operating costs with the Cigar Lake Project.

Operating costs for the Cigar Lake project, as a whole, are expected to average approximately $23.14/lb U_3O_8 over the life of the Cigar Lake project. In 2007, Cameco released the Cigar Technical Report showing expected operating costs to average $14.40/lb U_3O_8 over the life of the Cigar Lake project. The increased operating costs are primarily due to general cost escalation, changes to the mine plan, a lower average annual production rate in the ramp-up period and the later years of mine life, as well as additional personnel to meet regulatory requirements and provide oversight. In addition, current milling estimates no longer include any plans to co-mill other ores. Cameco continues to review options in order to reduce these costs.

The operating cost projections are stated in constant 2010 dollars and assume the throughput outlined in the production schedule in Section 18.1.13.

Although the project is targeted to start production in mid-2013, costs incurred during the commissioning phase will be capitalized as pre-operating costs until commercial production is achieved.

Table 18-8: Cigar Lake Project Operating Cost Forecast by Year

Operating Costs ($Cdn M)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Cigar Lake Mining	$ 85.5	$ 119.7	$ 139.4	$ 141.1	$ 143.0	$ 146.3	$ 134.0	$ 155.7	$ 164.6	$ 144.1	$ 147.6	$ 128.5	$ 120.9	$ 117.5	$ 83.8	$ 35.7	$ 2,007.4
McClean Lake JEB Milling	61.9	77.0	90.5	91.8	93.5	93.5	92.9	93.5	93.1	92.8	91.8	94.6	91.0	89.0	77.6	34.9	1,359.4
Rabbit Lake Milling	-	-	58.7	89.1	90.0	90.0	88.7	89.0	88.9	88.9	86.6	85.0	81.5	80.3	72.4	51.4	1,140.5
Total	147.4	196.7	288.6	322.0	326.5	329.8	315.6	338.2	346.6	325.8	326.0	308.1	293.4	286.8	233.8	122.0	4,507.3
McClean Lake JEB Toll Milling	3.1	5.8	11.1	10.8	11.4	11.4	10.8	11.4	11.4	11.4	9.9	11.4	9.1	8.0	5.3	2.0	144.3
Rabbit Lake Toll Milling	-	-	4.4	11.3	12.0	12.0	11.4	12.0	12.0	12.0	10.4	7.1	4.9	4.4	2.9	1.1	117.9
Total Operating Costs	**$ 150.5**	**$ 202.5**	**$ 304.1**	**$ 344.1**	**$ 349.9**	**$ 353.2**	**$ 337.8**	**$ 361.6**	**$ 370.0**	**$ 349.2**	**$ 346.3**	**$ 326.6**	**$ 307.4**	**$ 299.2**	**$ 242.0**	**$ 125.1**	**$ 4,769.5**
Total Operating Cost per lb U3O8	**$ 72.38**	**$ 51.43**	**$ 26.97**	**$ 20.18**	**$ 19.42**	**$ 19.62**	**$ 19.74**	**$ 20.03**	**$ 20.55**	**$ 19.41**	**$ 22.04**	**$ 20.62**	**$ 24.99**	**$ 27.47**	**$ 33.66**	**$ 46.55**	**$ 23.14**

**** presented as total cost to the Cigar Lake Joint Venture**

18.7.4 Economic Analysis

The following economic analysis as shown in *Table 18-9* for the Cigar Lake Project is based on the current mine plan which contemplates the mining and milling of the Phase I Mineral Reserves. The analysis does not contain any estimates involving the potential mining and milling of the Mineral Resources from either Phase 1 or 2. Expenditures required to bring any of the Phase I or Phase 2 Mineral Resources into production, or to identify additional Mineral Reserves and Mineral Resources, have not been included.

The analysis provided is from the point of view of Cameco, which owns 50.025% of the CLJV, and incorporates Cameco's projected sales revenue from its proportionate share of the related production, less its share of the related operating and capital costs of the CLJV, as well as all royalties that will be payable on the sale of the concentrates.

Table 18-9: Cigar Lake Project Economic Analysis – Cameco's Share

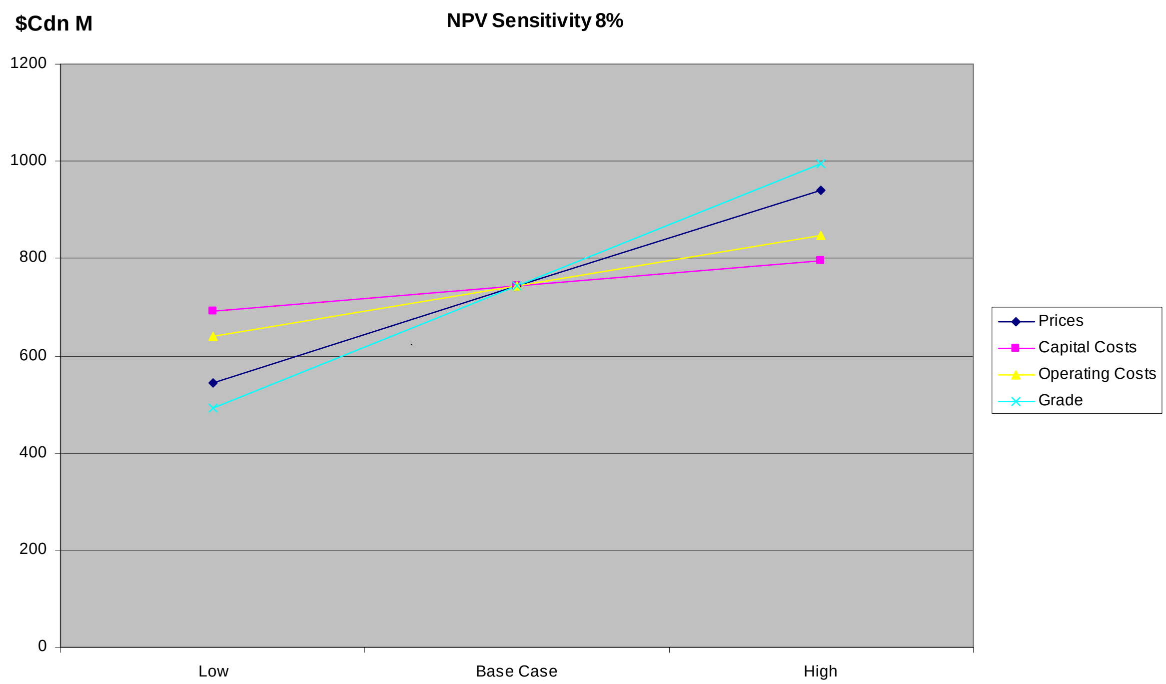
Economic Analysis ($Cdn M)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Production volume (000's lbs U3O8)	-	-	-	1,040	1,970	5,640	8,532	9,012	9,007	8,561	9,030	9,008	9,000	7,860	7,924	6,154	5,448	3,597	1,344	**103,127**
Sales revenue	$ -	$ -	$ -	$ 65.1	$ 125.1	$ 329.4	$ 506.4	$ 534.3	$ 539.3	$ 516.3	$ 545.5	$ 558.6	$ 564.3	$ 492.8	$ 499.3	$ 388.9	$ 345.4	$ 229.7	$ 85.1	**$ 6,325.5**
Operating costs	-	-	-	75.2	101.3	152.1	172.1	175.0	176.7	169.0	180.9	185.1	174.7	173.2	163.4	153.8	149.7	121.1	62.6	**2,385.9**
Rabbit Lake toll milling fee	-	-	-	-	-	(4.4)	(11.3)	(12.0)	(12.0)	(11.4)	(12.0)	(12.0)	(12.0)	(10.4)	(7.1)	(4.9)	(4.4)	(2.9)	(1.1)	**(117.9)**
Standby costs	10.3	15.5	17.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**43.1**
Remediation costs	24.9	3.9	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**29.4**
Capital costs	118.2	149.1	140.7	48.2	40.5	39.7	19.7	19.9	23.6	15.5	16.6	17.0	16.0	16.0	15.1	14.4	12.3	7.6	2.9	**733.0**
Basic royalty	-	-	-	2.6	5.0	13.2	20.3	21.4	21.6	20.7	21.8	22.3	22.6	19.7	20.0	15.6	13.8	9.2	3.4	**253.2**
Resource Capital tax	-	-	-	2.0	3.8	9.9	15.2	16.0	16.2	15.5	16.4	16.8	16.9	14.8	15.0	11.7	10.4	6.9	2.6	**190.1**
Tiered royalties	-	-	-	-	-	4.8	38.7	44.8	45.6	43.9	46.4	48.5	49.4	43.1	43.8	34.2	30.4	20.4	7.5	**501.5**
Net pre-tax cash flow	**$ (153.4)**	**$ (168.5)**	**$ (158.6)**	**$ (62.9)**	**$ (25.5)**	**$ 114.1**	**$ 251.7**	**$ 269.2**	**$ 267.6**	**$ 263.1**	**$ 275.4**	**$ 280.9**	**$ 296.7**	**$ 236.4**	**$ 249.1**	**$ 164.1**	**$ 133.2**	**$ 67.4**	**$ 7.2**	**$ 2,307.2**
Pre-tax NPV (8%)	$ 744.2																			
Pre-tax IRR (%)	21.5%																			

The analysis results in an estimated pre-tax NPV (at a discount rate of 8%) to Cameco, for net cash flows from January 1, 2010 forward, of $744.2 million for its share of the Cigar Lake Phase 1 Mineral Reserves. The pre-tax IRR, also calculated from January 1, 2010, is estimated to be 21.5%.

Sensitivities

The graph in *Figure 18-8* illustrates the project's sensitivity to changes in uranium grade, capital cost, operating cost, and uranium prices (including the mitigating effects of Cameco's level of committed sales through its sales contract portfolio). The graph illustrates the variability around the base case pre-tax net present value of $744.2 million using sensitivities of plus and minus 10% on all variables. For uranium price, the high and low cases represent a plus or minus 10% deviation from the average spot price projections incorporated in the base case realized prices as shown in *Table 18-4*.

Figure 18-9: Cigar Lake Project Sensitivity Analysis



The Cigar Lake project shows relatively low sensitivity to changes in its operating or capital cost projections. The relative sensitivity to changes in uranium price and ore grade realized is significantly higher due in part to the relatively high-grade nature of the deposit, and the price estimates being used, which are a reflection of the current U_3O_8 market environment.

The difference in the sensitivity between price and operating cost is made clear by the fact the economic analysis assumes an average realized price of \$61.34/lb U_3O_8, while the average operating cost is \$23.14/lb U_3O_8.

18.7.5 Payback

Payback for the Cigar Lake project can be considered on many different factors.

Payback for Cameco, excluding all 2009 and prior costs as sunk costs, would be achieved during 2017 on an undiscounted, pre-tax basis.

If the \$942.8 million, including remediation costs, spent on Cigar Lake construction prior to 2010, (Cameco share equal to \$471.6 million) were included in the calculation, Cameco would achieve payback during 2019 on an undiscounted, pre-tax basis.

18.7.6 Mine Life

The Cigar Lake Project is based on the current Mineral Reserves that will produce 206.1 million mill recovered pounds of U_3O_8. This production is referenced as Phase 1 of the Cigar Lake mining project. The expected life of Phase 1 project is approximately 15 years of sustained production from the Mineral Reserves, based on the planned annual production rate of approximately 18 million pounds of U_3O_8. Cigar Lake will produce less than the full annual production rate of approximately 18 million pounds of U_3O_8 in the early and late years of the Mineral Reserve life of 15 years.

If the Mineral Resources are upgraded and then converted to Mineral Reserves through a positive feasibility study, that could extend the mine life. It cannot be assumed that all or any part of the Inferred Mineral Resources at Cigar Lake will ever be upgraded to a higher category. Mineral Resources that are not Mineral Reserves have no demonstrated economic viability.

19 OTHER RELEVANT DATA AND INFORMATION

19.1 Cigar Lake Water Inflow Incidents

April 5, 2006, October 23, 2006 and August 12, 2008 Water Inflow Incidents

19.1.1 Shaft No. 2 – April 2006

On April 5, 2006, a water inflow occurred at the base of Shaft No. 2, through a failed valve assembly on a grouting standpipe, which led to the flooding of the shaft and cessation of activities in the shaft. As the shaft was not complete and not connected through to the main mine workings, the flooding was limited to Shaft No. 2.

Dewatering was completed in April 2009 and remediation was completed in May 2009. Resumption of sinking of Shaft No. 2 is planned after remediation of the main mine workings is underway. The ground will be frozen in the area surrounding the shaft to allow sinking to be completed. A hydrostatic liner will be installed in the shaft from the current depth at 392 m through to the 480 m level, where it will transition back to a non-hydrostatic liner.

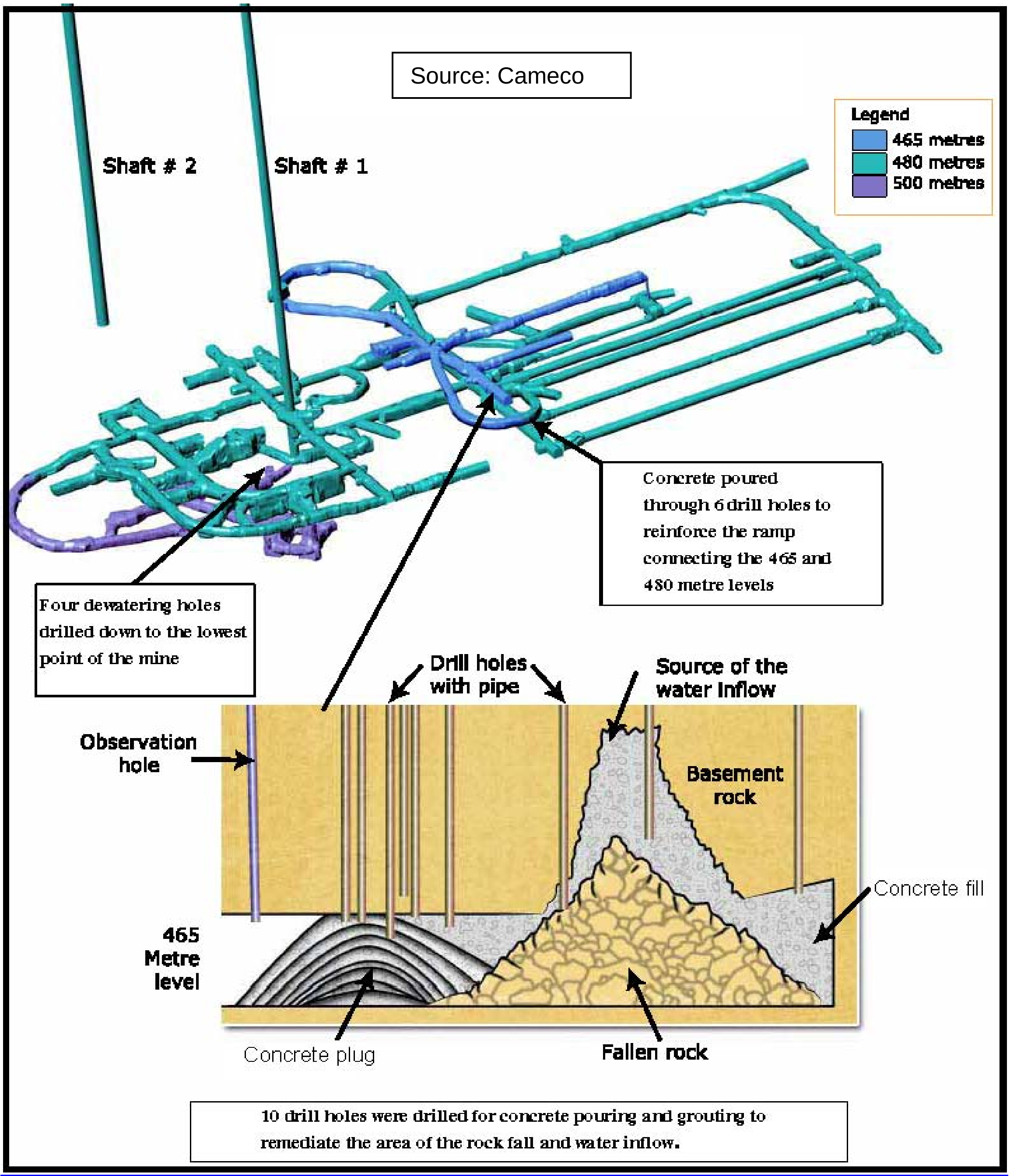
19.1.2 Underground Workings – October 2006 and August 2008

On October 23, 2006, the underground mine at Cigar Lake was flooded following a water inflow, which caused a suspension of underground activities. In response to the incident, Cameco developed and proceeded with its remediation plan to restore the underground workings at Cigar Lake. Cameco's plan was developed in consultation with CNSC staff and the Saskatchewan ministries of Environment and Labour.

The activities associated with each of the proposed remediation phases was described in the 2007 Technical Report and since that time, as work has been executed and plans refined, the remediation phases have been refined and greater understanding of how the phases interact with each other has been gained. This is generally described in Section 19.2 below.

In 2008, the source of the October 2006 water inflow was sealed and the effectiveness of the seal demonstrated. The inflow was sealed by drilling holes from surface down to the source of the water inflow and to a nearby tunnel where reinforcement was needed and pumping concrete and grout through the drillholes to an area of fallen rock. The remediation of the October 2006 water inflow is shown in *Figure 19-1.*

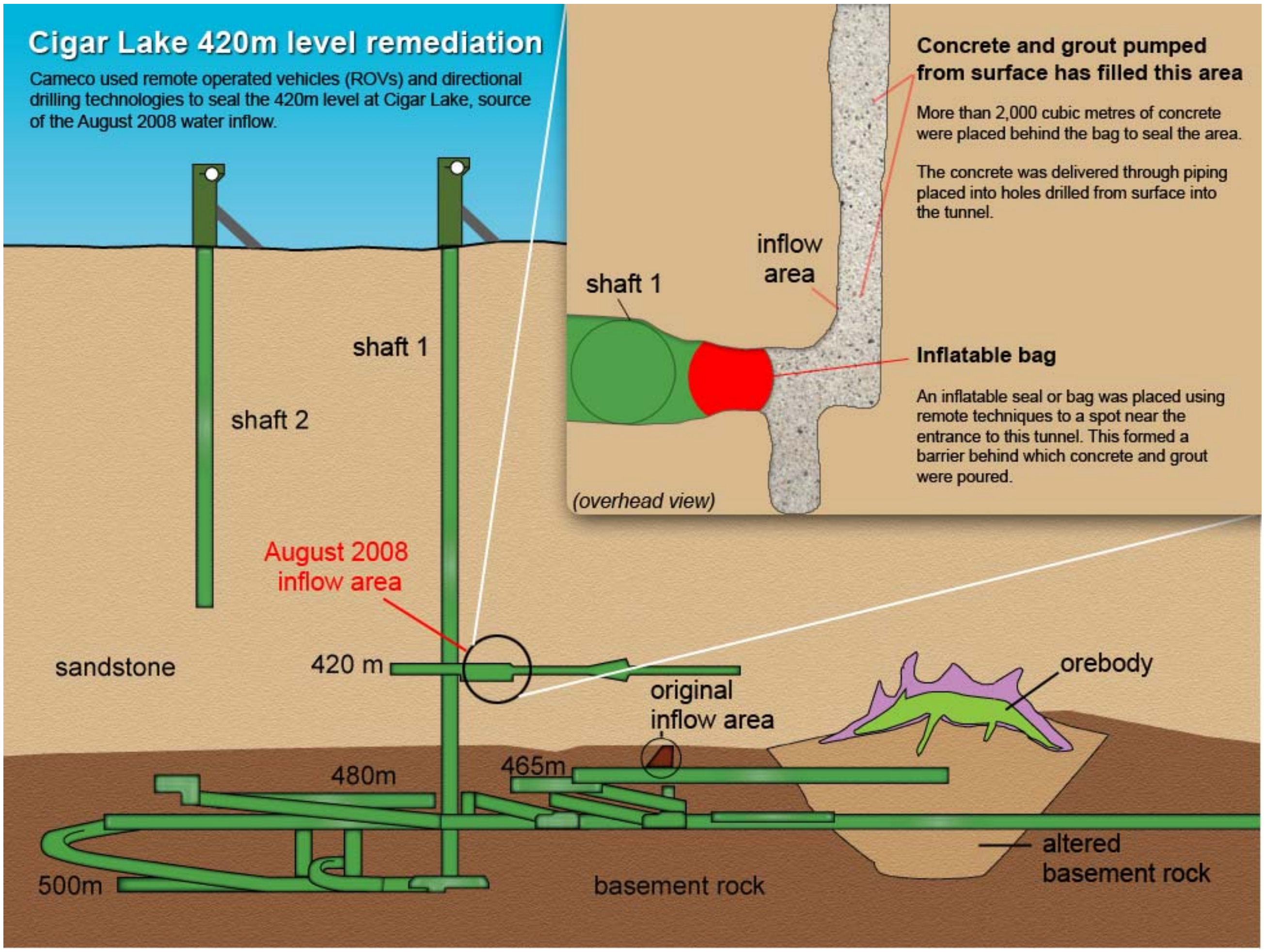
Figure 19-1: Cigar Lake Remediation Plan October 2006 Water Inflow



Dewatering of the mine commenced in July 2008. It was suspended on August 12, 2008 when the rate of the inflow to the mine significantly increased. Shaft No. 1 had been pumped down to 430 m below surface when the increase was observed. The location of this inflow was later identified as a fissure located in a tunnel on the 420 m level. The 420 m level was developed many years ago to assess the practicality of developing a working level above the orebody. Further development on the 420 m level proved not to be feasible due to poor ground conditions. A concrete bulkhead was put in place and the remainder of the area was used for mine infrastructure and storage.

On October 23, 2009, Cameco announced that the inflow on the 420 m level which forced suspension of dewatering on August 12, 2008 was sealed by remotely placing an inflatable seal between the shaft and the source of the inflow and subsequently backfilling and sealing the entire development behind the seal with concrete and grout. The 420 m level is not part of future mine plans and will be abandoned. Cameco plans to install a permanent bulkhead and fill the entire 420 m level with concrete backfill. The remediation for the August 2008 water inflow is shown in *Figure 19-2*.

Figure 19-2: Cigar Lake Remediation Plan – August 2008 Water Inflow



Source: Cameco

Crews entered Shaft No. 1 in November 2009 and work focused on refurbishing the shaft including installing the ladderway, replacing mechanical and electrical components and extending the in-shaft pumping system.

In February 2010, dewatering the underground development was completed. Crews re-entered the main working level of the mine 480 m below surface where access to the 2006 inflow could be obtained. Safe access to the 480 m level has been established and work to inspect, assess and secure the underground development has begun. This work will be followed by restoration of underground mine systems and infrastructure in preparation for resumed construction activities.

19.2 Mine Inflow Remediation Plan

Cameco developed and is proceeding with its remediation plan to restore the underground workings at Cigar Lake. The key aspects of the plan are summarized below, which relate to underground remediation through to the resumption of construction to bring the mine to the start-up of operations.

Cameco's remediation plan was developed in consultation with CNSC staff and the Saskatchewan ministries of Environment and Advanced Education, Employment and Labour.

Cigar Lake's construction licence was amended effective January 1, 2010, to extend the term for four years and to cover dewatering, remediation and construction activities, including completion of Shaft No. 2 and surface construction. Additional regulatory approvals under these licence activities will be required to complete remediation and resume pre-flood underground construction and development activities. Under Cameco's licence, the updated mine plan requires regulatory approval, which is planned to be applied for in 2010.

Secure the Mine

This involves inspecting the mine and completing any additional remedial work identified such as determining if additional reinforcement is required in higher risk areas.

The objective is to make the mine safe from an inflow and significant ground failure perspective. Cameco expects the mine to be secured before October 2010 depending on the condition of the mine.

Underground Rehabilitation Program

This involves rehabilitating the remaining lower priority areas of the mine (including 480 and 500 m levels) and re-establishing the full mine ventilation circuits. Some of the specific tasks will include re-establishing the permanent refuge stations and communications, the installation of the emergency back up pump capacity, completing the installation and rehabilitation of the designed underground pumping capacity, re-establishing the ore body freezing program, commencing the Shaft No. 2 freezing program, and generally preparing areas to resume construction/development activities. A large portion of this work is related to the replacement of electrical components and equipment damaged due to flooding.

As part of securing the mine and underground rehabilitation program, detailed assessments of the underground conditions will provide further input to the overall Cigar Lake design and strategy, allowing the mine plan to be further optimized.

Resumption of Construction Activities – Pre-Inflow

As the mine is secured, the underground rehabilitation program is significantly progressed and regulatory requirements are met, Cameco plans to resume underground construction activities that had been interrupted by the October 2006 water inflow.

Commissioning in ore and initial production is targeted to commence in 2013.

19.3 Staged Remediation and Completion Plan for Shaft No. 2

The development of Shaft No. 2 at the Cigar Lake Project is primarily to provide ventilation and services to the mine for planned future operations. Cameco completed the dewatering of Shaft No. 2 in April 2009 and remediation of the shaft in May 2009. The completion of Shaft No. 2 will be undertaken in a staged approach generally as described below.

Stage 1 – Ground Freezing

Drilling of the freeze holes to cover the affected area of Shaft No. 2 will be carried out from the 480 m level after refurbishing the main areas of the underground mine. On completion of the freezing, a freeze wall thickness of approximately six meters surrounding the shaft will be achieved, cutting off the potential water inflow source(s) to the shaft.

Stage 2 - Shaft Sinking and Completion of Shaft Furnishing

Resumption of shaft sinking activities will take place following confirmation of the thickness of the freeze wall. The shaft will be sunk to its planned final depth of 500 m (from the current 392 m depth). A hydrostatic liner will be installed during sinking, and the 480 m level shaft station will be established.

Following sinking, a concrete partition will be cast from the 500 m level to surface to allow for segregation of the fresh, downcast air from the contaminated exhaust air. Shaft furnishings, including a 22 person cage, counterweight, ore slurry pipes and other services will be installed in the fresh air compartment.

Completion of shaft sinking and shaft furnishing is scheduled for 2012.

19.4 Project Risks

Cigar Lake is a challenging deposit to develop and mine. These challenges include weak rock formation, relatively thin flat lying mineralization, control of groundwater, and radiation protection. The sandstone overlying the basement rock contains significant water at hydrostatic pressure. Cameco is undertaking a number of initiatives to mitigate the project risks associated with mining the Cigar Lake deposit and to mine the deposit in a safe and economic manner including, but not limited to using the jet boring mining method, freezing of the ground, lowering the production horizon and increasing mine dewatering capacity.

Freezing the ground is expected to result in several enhancements to the ground conditions, including: (1) minimizing the risk of water inflows from saturated rock above the unconformity; (2) reducing radiation exposure from radon dissolved in the ground water; and (3) increasing rock stability. However, freezing will only reduce, not eliminate, these challenges.

The greatest risk to development and production is from water inflows. The 2006 and 2008 water inflows were significant setbacks. Although steps to mitigate the risks of water inflow are being taken, there can be no guarantee these will be successful.

There is a possibility of a water inflow during the drilling of holes to freeze the ground, mine development and JBS mining. The consequences of another water inflow will depend upon the magnitude, location and timing of any such event, but could include a significant delay in Cigar Lake's remediation, development or production, a material increase in costs, a loss of Mineral Reserves or require Cameco to give notice to many of its customers that it is declaring an interruption in planned uranium supply. Such consequences could have a material adverse impact on Cameco. Water inflows are generally not insurable.

Cigar Lake's remediation, construction and production schedules are based upon certain assumptions including assumptions about the condition of the underground infrastructure at the mine. At the time of issuance of this report re-entry to both the 420 m and 480 m levels has been established. This will allow for assessment of the condition of the underground. Assessment of its condition, however, will not be completed until after the mine is secure. Depending upon the condition of the mine, Cameco expects the mine to be secure before October 2010. If the underground infrastructure has been impaired, this could adversely impact the schedules and cost estimates.

The time to complete and assess the outcome of a remediation activity could impact the schedule of another remediation activity and, ultimately, the construction schedule and planned commencement of production in 2013 as well as cost estimates.

Remediation, construction and production schedules could be impacted by regulatory approvals. Cameco has received from the CNSC a construction licence, which expires December 31, 2013, allowing for completion of the mine remediation plan, Shaft No. 2 and surface and underground construction. As a condition of the licence, certain activities require regulatory approval. In addition, under the licence, the revised mine plan requires regulatory approval. Concurrent with the completion of the mine construction, an operating licence application will be prepared for submission to the CNSC. An amendment to the McClean Lake JEB mill's Licence to Operate is still required in order to process ore from Cigar Lake at the McClean Lake JEB mill. Cameco is working to increase Rabbit Lake tailings capacity. Increasing tailings capacity at Rabbit Lake is subject to regulatory approval. Delay in receiving regulatory approvals could impact the planned commencement of production in 2013.

Working with the regulatory authorities to receive approvals for the actual execution of the work including any changes related to the implementation of the revised mine plan, e.g. process infrastructure changes, may impact the remediation and production schedules and cost estimates.

Demonstrated successfully in trials, the JBS mining method has not yet been proven on a full production basis. Even though enhancements have been made to the design of the JBS unit, there is a risk that the Cigar Lake Project ramp-up to an annual production rate of approximately 18 million pounds U_3O_8 may take longer than the three years as planned. In addition, there is a risk that the Cigar Lake Project may not be able to achieve the annual planned production rate of approximately 18 million pounds U_3O_8 on a sustained and consistent basis. Despite this risk, Cameco is confident that the choice of this mining method is a practical and prudent selection.

Engineering design for the underground processing facilities is being revised in accordance with updates to the mine plan and dewatering pump systems. There is a risk that this engineering will not be completed on schedule and may delay the underground construction.

The designed mine ventilation volume of 250 m^3/s is anticipated to provide sufficient airflow through the mine for use of diesel equipment and radiation protection at a sustained production rate of approximately 18 million pounds U_3O_8 per year. Should this volume of air prove inadequate for radiation protection at the designed production rate, the rate of production would be negatively impacted without additional capital expenditure to increase the ventilation throughput.

20 INTERPRETATION AND CONCLUSIONS

Cameco has implemented an assurance of success approach to the Cigar Lake project and has successfully dewatered and re-entered the Cigar Lake mine. Cameco recognizes the project risks common to other mining projects and specific to the development of the Cigar Lake project. Cameco has reinforced its commitment to its assurance of success approach to continue to address the project risks in a manner that demonstrates its operational competence.

The Cigar Lake project outlined in this report represents significant economic sources of feed material for the McClean Lake JEB and Rabbit Lake mills. With an estimated operating mine life of approximately 15 years, Cigar Lake is expected to produce an estimated 206.1 million pounds of U_3O_8. At the forecast average realized uranium price over this 15 year period, it is estimated that Cameco will receive substantial positive net cash flows from its share of Cigar Lake production.

The analysis results in an estimated pre-tax NPV (at a discount rate of 8%) to Cameco, as at January 1, 2010, of $744.2 million for its share of the Cigar Lake Phase 1 Mineral Reserves. The pre-tax IRR, also calculated from January 1, 2010, is estimated to be 21.5%. A sensitivity analysis of the Cigar Lake project economics demonstrates that the project generates positive cash flows in various scenarios, including assumptions of higher costs, lower revenues, or lower ore grades.

The aggregate capital cost for construction spent by the CLJV, including construction costs prior to December 31, 2009 of $808.8 million, is estimated to be approximately $1.76 billion, which is a significant increase over the cost estimate disclosed in the 2007 Technical Report. The majority of the cost increase is the result of the longer period over which the remediation and development will occur, additional costs for inflow abatement, increases in surface capital costs and improvements to the mine plan and water management systems. Despite these increases to the project cost, the economics for the project remains positive.

The Cigar Lake project shows relatively low sensitivity to changes in its operating or capital cost projections. The relative sensitivity to changes in uranium price and ore grade realized is significantly higher due in part to the relatively high-grade nature of the deposit, and the price estimates being used, which are a reflection of the current U_3O_8 market environment.

The difference in the sensitivity between price and operating cost is made clear by the fact the economic analysis assumes an average realized price of $61.34/lb U_3O_8, while the average operating cost is $23.14/lb U_3O_8.

The development and construction of the project has been interrupted by two major water inflow incidents in 2006 and one major water inflow in 2008 that resulted in the flooding of the partially completed Shaft No. 2 and the underground workings. These incidents stopped all underground excavation and construction activities and are expected to delay the start of production until mid-2013. Cameco has developed and is implementing a remediation plan to return the mine to pre-inflow activities.

Based on the engineering analysis and planning, and the work executed to date, Cameco believes that this remediation plan has a high probability of success, although there is always some uncertainty. If the inflow abatement work completed successfully to date is not entirely effective, long term plans are in place to provide for further securing of any leakage/water flow from underground, at the source. However, additional time will be required to carry out this work and this could negatively impact the remediation schedule, costs and the commencement of production.

Cameco has updated the 2004 Cigar Lake mine design. This was prompted by the two inflows at the mine, which occurred in 2006 and 2008. Applying the lessons learned has resulted in changes to the mine design. These changes to the mine plan include expanded ground freezing and the elimination of the entire 465 m production level, amongst many improvements in design and strategy. The installed pumping capacity will be expanded to 2,500 m^3/hr, sufficient to handle volumes in excess of the previous two inflows, and expansions in water treatment and surface storage capacity to provide for an enhanced water management system. In addition, Cameco plans to implement enhanced procedural controls and technical risk assessments for mine development. These and other actions are expected to reduce the risk of any future inflows. Cameco still plans to employ a strategy of bulk freezing the ore zone prior to the commencement of production mining in a given area.

The revised mine plan and remediation program are anticipated to maintain the original objectives of the Cigar Lake project, to achieve:

- a positive economic outcome;
- a planned annual production rate of approximately 18 million pounds of U_3O_8; and
- over 200 million pounds of production.

There are a number of risks and challenges associated with developing and mining Cigar Lake, which are discussed in Section 19.4. The construction schedule, the planned commencement of production in mid-2013, and the cost estimates assume that Cameco will be able to successfully mitigate project risk. Cameco believes it will be able to do so.

Many aspects of the Cigar Lake project are based on the designs that have been proven and are being successfully used at the McArthur River mine. One of the challenges of mining the Cigar Lake deposit is radiation control due to its high grade. Cameco has been producing ore with similar high grades from the McArthur River mine since 1999 and the experience from McArthur has been used extensively in the design of the Cigar Lake project. These designs include remote mining for radiation protection, freezing for control of radon gas and water inflows, underground grinding of the ore and hydraulic hoisting to surface. The incorporation at Cigar Lake of these designs and practices proven to be successful at the McArthur River mine significantly reduce the risk in numerous aspects of the Cigar Lake project.

The jet boring mining method planned for Cigar Lake has been successfully tested with prototype equipment and the mining plan has been engineered to suit this method. Because of the high grade of the ore the actual ore tonnage requirements to be mined per day to meet the U_3O_8 production requirement are modest, ranging between 100 and 140 t/d at full production of approximately 18 million pounds of U_3O_8 per year. In general, the projections for jet boring productivity are considered to be realistic. Nevertheless, the method has not yet been proven on a full production basis, so there is a risk that the planned ramp-up to full production on a continuous basis may require more than the three years in the production schedule. Despite this risk, Cameco is confident that the choice of this mining method is a practical and prudent selection.

Most of the core drilling used to define the Cigar Lake deposit was completed between 1981 and 1998 by SERU, a predecessor of AREVA, and CLMC prior to Cameco becoming operator in January 2002. Cameco has received the drill hole data base that was used as the basis of the Mineral Resource and Mineral Reserve estimate from CLMC. Cameco has performed a summary audit of this data base, is satisfied with the quality of the data and considers it valid for use in the estimation of the Mineral Resources and Mineral Reserves.

Substantial quantities of underground drilling through the deposit have been completed for geotechnical and freeze hole drilling. The core from the geotechnical holes has been logged, assayed, and incorporated into the Mineral Resource and Mineral Reserve estimates. Most freeze holes are percussion holes so no core is available from them, however, they are probed using in-hole loggers for radiometric grade data. This data is a valuable source of information and has become part of the resource data base.

In addition to the Phase 1 Mineral Resources and Mineral Reserves, the Cigar Lake deposit contains an estimated Inferred Mineral Resource of 133.5 million pounds of U_3O_8 with an estimated grade of 12.6 % U_3O_8. This represents significant exploration potential and, if these Inferred Mineral Resources could be upgraded to Mineral Reserves and their economic viability confirmed, it is possible they could be mined from the existing and future shafts and supporting facilities of the Cigar Lake site. Further drilling and mining studies are needed before these Mineral Resources can be better evaluated. It cannot be assumed that all or any part of the Inferred Mineral Resources will ever be upgraded to a higher category. Mineral Resources that are not Mineral Reserves have no demonstrated economic viability.

21 RECOMMENDATIONS

Based on the confidence in the mining plan, a detailed remediation plan, and a positive economic analysis, Cameco plans to continue to proceed through inflow remediation and construction to production as described in this technical report. This is supported by the economic analysis, showing a strong pre-tax NPV and IRR that is resilient to changes in cost estimates, and to a lesser extent lower prices and grades.

Cameco has adopted an assurance of success program for the Cigar Lake project and intends that this be followed.

In response to the two 2006 water inflow incidents, and the 2008 inflow, the mine plan has been optimized to include expanded ground freezing and the elimination of the entire 465 production level, amongst many improvements in design and strategy. In addition, Cameco plans to implement enhanced procedural controls and technical risk assessments for mine development.

Cameco plans to upgrade the installed pumping capacity to 2,500 m^3/hr sufficient to handle volumes in excess of the previous inflows. Both surface storage and water treatment capacities have been correspondingly increased to complement the larger planned installed pumping capacity.

Cameco has proposed and is currently working through an Environmental Assessment (under CEAA) to discharge all treated effluent (except sewage) through two pipelines directly to a single location in Seru Bay of Waterbury Lake.

Cameco is currently assessing an opportunity to bring forward up to 10 million pounds of U_3O_8 into the first four years of the mining schedule through the use of surface freezing of the orebody, to provide for accelerated freezing of initial ore panels, and thereby supplementing the long term underground freeze operations resulting in earlier access to ore for enhanced production ramp-up. In addition to more production in the early years, Cameco's surface freezing strategy, if implemented, is expected to shorten the period over which existing reserves are produced and to improve project economics, including a reduction in operating costs due to a shorter mine life and an increase in the estimated NPV.

Cameco plans to have in place a robust program for implementing and assessing the progress of the JBS mining system. This will include the training of personnel prior to start up of operations, surface and underground testing, and reliability planning and implementation to assure as effective and efficient a start-up as possible.

Cameco is, and plans to continue to, ensure that systems, tools and personnel resources are enhanced and assessed for sufficiency, on a periodic basis, to assure the successful delivery of the project from engineering through field execution.

Cameco plans to systematically collect density samples from future core drilling programs to add samples to the current density database. The additional samples should be used to improve or validate the density estimation formulas.

Cameco is considering having a geostatistical simulation study conducted to analyse the geological, grade, and density variability/uncertainty of the deposit. The results of the simulation study would be used to assess the sensitivity of the Mineral Resources and Mineral Reserves due to the various parameters used in the estimation and would be useful to analyze production scenarios.

Cameco plans to complete a 3-dimensional block model for the Phase 2 area that will incorporate the latest geological interpretation and up-to-date structural model. This information will be used to develop a preliminary assessment for Phase 2 of the Cigar Lake project. Following the results of this study, Cameco will consider proposing a diamond drilling program with the goal of upgrading the classification of the Inferred Mineral Resources in Phase 2.

Additional drilling from surface or underground will be required to upgrade the Phase 1 Indicated and Inferred Resources. Surface drilling over Phase 1 is planned for 2010. Inferred Mineral Resources have a great amount of uncertainty as to their existence and as to whether they can be mined legally or economically. It cannot be assumed that all or any part of the Inferred Mineral Resources at Cigar Lake will ever be upgraded to a higher category.

Cameco is planning to assess opportunities to minimize or eliminate the inclusion of sump underflow material in the Mineral Reserves thus increasing the average grade.

In order to execute the Cigar Lake mine plan while mitigating risks, the proposed expenditures set out in *Tables 18-6, 18-7* and *18-8* of this report are necessary and endorsed by the authors of this technical report.

The authors of this technical report concur with, and recommend that Cameco proceed with, the foregoing plans.

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23 DATE AND SIGNATURE PAGE

This NI 43-101 technical report titled "Cigar Lake Project, Northern Saskatchewan, Canada", dated March 31, 2010 with an effective date of December 31, 2009 has been prepared under the supervision of the undersigned. The format and content of the report conform to Form 43-101F1 of NI 43-101 of the Canadian Securities Administrators.

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APPENDIX 1 – PHASE 1 UNDERGROUND AND SURFACE DRILL HOLES

APPENDIX 1

CIGAR LAKE PROJECT - TECHNICAL REPORT

LIST OF DRILLHOLE INTERSECTIONS USED IN THE 2009 PHASE 1 RESOURCE ESTIMATE

Drillhole	From (m)	To (m)	Thickness (m)	Region	Density (g/cm^3)	U_3O_8 (%)	DG
038	434.25	439.43	5.18	WEST	2.88	19.63	56.60
039	439.70	444.85	5.15	WEST	2.32	0.85	1.96
039A	436.65	442.65	6.00	WEST	3.01	16.03	48.25
040	432.95	439.46	6.51	CENT	2.37	0.40	0.94
042A	433.95	435.20	1.25	EAST	2.17	5.42	11.76
044	420.20	426.70	6.50	EAST	2.61	23.94	62.54
044A	420.10	427.50	7.40	EAST	4.53	53.22	241.08
045A	429.00	432.50	3.50	EAST	1.87	2.08	3.90
045B	426.00	429.50	3.50	EAST	2.25	6.06	13.64
046	420.80	428.05	7.25	EAST	2.60	22.03	57.20
046A	422.90	430.90	8.00	EAST	3.26	34.88	113.60
047A	421.70	425.20	3.50	EAST	2.14	10.68	22.83
047B	422.25	424.75	2.50	EAST	2.09	3.86	8.07
047D	424.30	428.30	4.00	EAST	2.14	4.61	9.87
048	427.70	431.70	4.00	EAST	2.09	13.14	27.40
048A	432.80	434.00	1.20	EAST	2.28	3.12	7.12
048B	423.20	428.70	5.50	EAST	3.16	37.13	117.29
049	430.25	431.68	1.43	EAST	1.98	4.59	9.08
049A	431.30	435.30	4.00	EAST	2.12	6.03	12.78
049B	434.90	439.50	4.60	EAST	2.09	5.29	11.04
050	426.75	431.75	5.00	EAST	3.72	46.54	172.97
053	431.75	436.25	4.50	EAST	2.06	4.57	9.40
053A	441.13	442.63	1.50	EAST	2.02	0.25	0.50
053C	434.80	436.80	2.00	EAST	1.99	5.98	11.91
054	439.25	443.25	4.00	EAST	2.29	9.75	22.28
056A	440.85	441.35	0.50	EAST	2.08	1.27	2.64
057	422.35	425.85	3.50	EAST	4.17	44.95	187.58
060	421.15	425.10	3.95	EAST	2.91	31.10	90.63
065	432.60	438.20	5.60	WEST	2.42	2.11	5.10
067	421.84	425.85	4.01	EAST	2.43	15.41	37.42
070	446.50	447.50	1.00	WEST	2.13	0.12	0.24
071	433.15	436.15	3.00	EAST	2.52	7.73	19.48
074	439.90	441.23	1.33	WEST	2.09	0.00	0.00
075	432.41	439.34	6.93	CENT	2.42	0.75	1.81
076	421.35	426.35	5.00	EAST	2.53	19.34	48.99
077	432.40	439.40	7.00	WEST	2.43	9.31	22.60
078	435.70	441.70	6.00	WEST	2.32	7.54	17.46
079	428.75	439.75	11.00	WEST	2.54	7.11	18.01
080	440.50	445.00	4.50	CENT	2.38	2.24	5.33
085	418.00	425.00	7.00	EAST	3.04	26.81	81.62
087	430.50	438.95	8.45	WEST	2.35	5.76	13.52
089	430.40	441.20	10.80	CENT	2.32	0.88	2.03
090	430.95	435.45	4.50	EAST	2.18	0.96	2.09

Appendix 1: Page 1 of 3

Drillhole	From (m)	To (m)	Thickness (m)	Region	Density (g/cm^3)	U_3O_8 (%)	DG
091	425.35	431.40	6.05	EAST	2.28	10.18	23.17
092	444.00	445.50	1.50	EAST	2.12	0.08	0.16
093A	439.00	445.50	6.50	EAST	2.38	1.72	4.09
094A	434.90	442.90	8.00	WEST	2.19	8.24	18.02
099	433.35	439.35	6.00	WEST	2.15	5.01	10.78
102	451.50	453.50	2.00	WEST	2.13	0.09	0.18
103	424.30	429.80	5.50	EAST	2.39	16.80	40.10
105	447.30	449.90	2.60	WEST	2.22	0.31	0.70
106	421.70	426.20	4.50	EAST	2.72	16.63	45.24
107	417.95	424.45	6.50	EAST	3.17	32.14	101.79
109	437.40	438.40	1.00	EAST	2.10	0.15	0.30
110	435.40	440.40	5.00	WEST	4.60	47.66	219.39
111	435.15	438.65	3.50	CENT	2.41	0.19	0.46
112	427.10	431.60	4.50	EAST	2.43	16.42	39.98
113	418.10	424.10	6.00	EAST	3.19	36.29	115.74
114	436.55	440.20	3.65	CENT	2.09	0.00	0.00
115	433.50	443.50	10.00	EAST	2.39	12.74	30.48
117	422.80	426.30	3.50	EAST	2.35	12.95	30.39
118A	424.50	427.00	2.50	EAST	2.99	37.27	111.43
119	429.65	433.65	4.00	EAST	2.54	22.03	55.86
120	443.88	444.89	1.01	WEST	2.09	0.00	0.00
121	440.80	442.45	1.65	CENT	2.09	0.00	0.00
123	435.26	439.75	4.50	EAST	3.61	29.14	105.05
126	438.50	440.50	2.00	EAST	2.03	0.06	0.12
130	440.00	442.50	2.50	EAST	1.83	0.27	0.49
131	435.20	438.70	3.50	EAST	2.36	9.73	22.97
135	435.20	436.20	1.00	EAST	2.46	0.46	1.12
137	427.50	430.00	2.50	EAST	2.16	6.24	13.47
138	453.50	455.50	2.00	EAST	2.15	1.52	3.27
141	437.10	442.10	5.00	WEST	2.27	2.06	4.69
143	433.85	439.35	5.50	WEST	2.55	13.34	34.06
145	435.30	444.80	9.50	EAST	2.96	24.91	73.82
147	429.10	435.10	6.00	WEST	2.30	2.64	6.07
150	441.70	444.20	2.50	WEST	2.29	0.93	2.13
151	448.36	449.14	0.78	EAST	2.09	0.00	0.00
152	450.00	451.00	1.00	WEST	1.99	0.20	0.40
167A	418.68	425.18	6.50	EAST	3.32	32.84	108.86
187A	417.17	426.19	9.02	EAST	2.99	23.83	71.12
193A	425.25	429.19	3.94	EAST	4.01	48.71	195.26
195	423.35	428.35	5.00	EAST	3.25	33.05	107.45
196	426.10	435.60	9.50	EAST	2.41	11.87	28.66
197	420.00	425.50	5.50	EAST	2.40	13.76	33.00
198	424.00	430.00	6.00	EAST	2.37	10.43	24.70
199	433.40	436.40	3.00	EAST	2.14	1.12	2.40
211	437.60	439.10	1.50	EAST	2.06	2.60	5.37
220	432.60	438.20	5.60	WEST	2.55	14.84	37.81
221	460.00	465.00	5.00	EAST	2.74	23.65	64.89
222	466.06	477.06	11.00	EAST	2.27	6.58	14.92
223	452.50	458.00	5.50	EAST	2.27	7.00	15.91
225	415.60	420.60	5.00	EAST	2.72	22.02	59.78
225B	415.60	422.10	6.50	EAST	2.54	16.54	41.97

Appendix 1: Page 2 of 3

Drillhole	From (m)	To (m)	Thickness (m)	Region	Density (g/cm^3)	U_3O_8 (%)	DG
227	415.10	421.90	6.80	EAST	3.44	36.18	124.61
227A	414.90	421.90	7.00	EAST	2.98	28.57	85.21
227B	415.00	421.96	6.96	EAST	3.06	30.04	91.92
227C	415.00	421.96	6.96	EAST	3.21	32.24	103.40
228	431.00	437.70	6.70	EAST	2.95	27.91	82.29
228A	431.00	438.00	7.00	EAST	3.16	32.62	103.00
230	417.52	423.00	5.48	EAST	2.89	22.16	64.00
230A	417.50	423.00	5.50	EAST	2.58	16.35	42.21
230B	417.50	423.00	5.50	EAST	2.85	22.73	64.88
230C	419.50	424.00	4.50	EAST	3.32	32.87	109.16
231	428.50	434.50	6.00	EAST	4.19	42.20	176.60
231A	428.50	434.50	6.00	EAST	4.09	43.61	178.50
231B	429.00	434.50	5.50	EAST	4.92	55.00	270.41
231C	429.00	434.50	5.50	EAST	3.63	36.72	133.12
H_F170_02	36.10	40.70	4.60	EAST	2.31	10.42	24.06
H_F170_11	36.30	40.10	3.80	EAST	2.68	25.45	68.19
H_F170_16	37.20	40.40	3.20	EAST	2.46	16.49	40.54
SF791_06	434.30	439.90	5.60	EAST	1.79	2.19	3.91
SF791_07	433.10	439.30	6.20	EAST	1.88	14.31	26.90
SF801_05	433.90	439.90	6.00	EAST	1.82	11.60	21.16
ST791_05	435.15	440.50	5.35	EAST	2.15	0.70	1.50
ST801_03	435.30	440.70	5.40	EAST	2.06	0.74	1.53
U015	50.00	59.50	9.50	EAST	2.70	15.43	41.58
U016	45.50	51.80	6.30	EAST	2.25	7.20	16.16
U019	40.80	42.40	1.60	EAST	2.09	0.12	0.25
U020	44.70	47.80	3.10	EAST	2.17	4.02	8.71
U029	35.50	43.00	7.50	EAST	2.12	1.42	3.00
U070	38.30	38.80	0.50	EAST	2.10	0.29	0.60
U094	58.50	70.00	11.50	WEST	2.26	5.81	13.15

123 drillholes used in the 2009 estimate

Appendix 1: Page 3 of 3

APPENDIX 2 – PHASE 2 SURFACE DRILL HOLES

APPENDIX 2

CIGAR LAKE PROJECT - TECHNICAL REPORT

LIST OF DRILLHOLE INTERSECTIONS
USED IN THE 1999 PHASE 2 RESOURCE ESTIMATE

Drillhole	**From** (m)	**To** (m)	**Thickness** (m)	**Region**	**Density** (g/cm^3)	U_3O_8 (%)
015	429.5	440.0	10.5	Phase 2	2.21	3.23
019	422.5	426.0	3.5	Phase 2	2.93	23.79
020	422.2	426.7	4.5	Phase 2	2.28	2.35
024	427.5	431.0	3.5	Phase 2	2.17	2.89
027	421.3	425.5	4.2	Phase 2	2.10	0.54
028	432.3	436.3	4.0	Phase 2	2.24	5.17
031	421.5	426.0	4.5	Phase 2	2.17	2.78
037C	444.4	447.9	3.5	Phase 2	2.36	10.47
061	440.2	443.7	3.5	Phase 2	2.30	1.50
068	444.9	448.4	3.5	Phase 2	2.13	1.67
095	430.0	433.5	3.5	Phase 2	1.97	3.27
097	419.2	427.2	8.0	Phase 2	2.44	6.01
104	417.7	423.7	6.0	Phase 2	1.85	1.70
127	427.5	433.0	5.5	Phase 2	2.74	23.74
129	423.5	433.0	9.5	Phase 2	2.53	10.77
142	426.8	430.3	3.5	Phase 2	1.96	1.04
144	435.0	439.0	4.0	Phase 2	2.47	5.85
146	421.9	425.4	3.5	Phase 2	2.34	2.51
154	435.1	443.1	8.0	Phase 2	3.17	34.33