

THE NEW  
ENERGY  
IN THE  
MARKET



PALADIN ENERGY LTD

# Paladin Energy Ltd

July 2015



## Status

Paladin Energy Ltd is a uranium production company with two mines in Africa, the operating Langer Heinrich Mine (LHM), in Namibia, and the Kayelekera Mine (KM), in Malawi currently on 'care and maintenance'. These are two of the world's newest conventional uranium projects. Since the initiation of operations, Paladin has produced approximately 42Mlb  $U_3O_8$  from Langer Heinrich Mine and Kayelekera Mine.

Paladin is listed on the Australian Securities Exchange (ASX), Toronto Stock Exchange (TSX) and Namibian Stock Exchange (NSX) under the symbol PDN. The Company also trades on the Munich, Berlin, Stuttgart, and Frankfurt Exchanges under the symbol PUR.

Paladin sells its uranium production to electrical utilities for use in nuclear power reactors. Growing international recognition that nuclear power offers a critical solution to meeting the world's insatiable appetite for electricity, without adding to the atmospheric carbon load, means uranium has an excellent short and long-term market outlook. Paladin has assembled superb in-house uranium expertise and is applying it to the Company's several exciting, high quality, project development opportunities in southern Africa, Canada and Australia, providing a solid platform from which to increase shareholder value.

## Background

Paladin's corporate pedigree dates back to 1970 when Uranerz Australia started operations in Perth, Western Australia, with Mr. John Borshoff, Paladin's Managing Director/CEO, serving as Chief Executive from 1986 to 1991. Uranerz, the Australian arm of German-based uranium mining house Uranerzbergbau, explored throughout Australia, New Zealand, and Africa, focusing primarily on uranium.

When Uranerz decided to close its Australian operations, John Borshoff acquired its extensive proprietary databases, which subsequently formed the nucleus for the public float of Paladin in 1994.

## Board and Management Team

Industry-specific skills and experience are critical factors for building a successful uranium business and the Paladin Group has a highly-qualified team experienced in all aspects of the sector. Paladin's Board of Directors and dedicated management team encompass high quality project evaluation, resource development, mining, marketing (uranium specialists), and corporate management professionals. The management team works co-operatively to apply their unique skills and knowledge to Paladin's projects.

## The Strategy

Paladin's long-established objective has been to accumulate advanced uranium projects, with defined resources to position the company in the lower cost quartile. Few companies focused on uranium during the extended market downturn during the 1990's, and so Paladin, as a producer, now finds itself in the unique situation of having a highly attractive uranium project inventory.

Paladin has a global mineral resource inventory of over 549 million (M) pounds (lb) of uranium in its project pipeline from 21 deposits in five countries. The uranium spot price reached US\$136/lb in June 2007, reflecting the widening supply deficit, and whilst price fluctuations are occurring and the spot price is now in the high US\$30's per lb, there is convincing evidence that the price will soon continue its long-term trend upwards as new demand enters the market from existing plant requirements as well as from the emergence of China, Russia, India and the Middle East as significant world market participants.

## Strong Project Base

The Company's uranium projects have the added benefit of geographical diversification, including Langer Heinrich in Namibia; Kayelekera in Malawi; and Manyingee in Western Australia. Each of these projects had feasibility studies carried out by previous owners during the 1980s, and Paladin secured the projects at low cost during the depressed uranium market.

Paladin augmented its resource base in Australia through the 2007 acquisition of Valhalla Uranium Pty Ltd, whose primary assets are the 50% joint venture interests in the Valhalla, Odin and Skal deposits near Mount Isa in Queensland and 41.71% ownership of the Bigryli deposit in the Northern Territory.

In February 2009, Paladin completed the takeover of Fusion Resources, adding the Duke Batman and Honey Pot deposits to the existing Mount Isa project area. The Fusion tenements are to the north of, and contiguous with, the Summit Isa North Uranium Project tenements, affording an excellent opportunity to consolidate exploration efforts in these areas.

Paladin also has an 82.08% controlling interest in Summit Resources Limited, Valhalla's joint venture partner at Mount Isa and the holder of other promising exploration titles in the region.

In February 2008, Paladin, in conjunction with joint venture partner Cameco, was selected from a highly-competitive field to explore the Angela and Pamela deposits located approximately 25km south of the town of Alice Springs in the Northern Territory. Following successful completion of two drilling programmes, an updated Mineral Resource estimate was completed by the JV partners in July 2011. In April 2013, Paladin assumed full ownership of the Angela project by acquiring all of Cameco's interest.

In 2011, the Company acquired the uranium assets of Aurora Energy Resources Inc (Aurora) in the province of Newfoundland and Labrador, Canada. At the time, the Aurora deposits were considered one of the last sizable uranium assets available for acquisition.

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## Proprietary Database – Project Generating Advantage

In 1994, Paladin acquired the Australian archival proprietary database and data reference system from Uranerz after that company ceased its Australian operations in 1991. This unique asset resulted from a US\$38M (unadjusted) exploration effort in Australia carried out over a 20-year period. In 1998, Paladin also acquired the residual uranium technical database from Uranerz Germany, which covered Africa, the Americas, and Asia, where the company had worked extensively over a 30-year period.

This vast database, which was primarily focused on uranium, represents an invaluable information resource for generating future uranium projects. As clearly demonstrated in 1997 when the Company quickly secured projects containing in excess of 60Mlb  $U_3O_8$ , this data has given Paladin enormous and long-term competitive advantage in its ongoing worldwide exploration efforts.

## African Focus

LHM in Namibia is Paladin's flagship project. Having reached its initial production of 2.7Mlb pa  $U_3O_8$  in 2008, the mine completed its Stage 2 ramp-up to 3.7Mlb pa in the 2010 financial year. Subsequently, the Company has completed a Stage 3 expansion and is now producing at a design rate of 5.2Mlb. An additional expansion stage is possible which could take production to approximately 7.5Mlb pa. The Company has stated it will not develop any new mines or expand capacity at uranium prices below US\$70/lb. Langer Heinrich will be a core long term production centre for Paladin in the continuing positive outlook for uranium. Paladin acquired Langer Heinrich in 2002 and commenced a BFS in 2004. Paladin's Board approved the development proposal at a capital cost of US\$92M in 2005; site works began in September 2005; and, the project construction was completed on time and within budget. The mine was officially opened by the President of the Republic of Namibia in March 2007.

In July 2014, Paladin completed the sale of a 25% stake in the Langer Heinrich Mine to CNNC Overseas Uranium Holding Ltd (CNNC), a wholly owned subsidiary of China National Nuclear Corporation. The offtake component of the agreement allows CNNC to purchase its pro-rata share of product at the prevailing market spot price. There is also opportunity for Paladin to secure additional long-term offtake agreements with CNNC. The sale is expected to enhance the long-term growth and development of the Langer Heinrich operation.

KM in Malawi, the Company's second mine, provided an excellent follow-up to Langer Heinrich. A Development Agreement with the Government of Malawi was executed in February 2007, which provides fiscal stability for the project for ten years. KM was officially opened in April 2009 and has achieved the design production rates of 3.3Mlb  $U_3O_8$  pa. Unfortunately, despite improvements to both processing recoveries and costs, the extended downturn in uranium prices resulted in KM being placed on 'care and maintenance' in February 2014 awaiting a significant improvement in the uranium price outlook. Regional exploration is underway to identify feedstocks to extend the current project life.

In November 2010, Paladin completed the takeover of NGM Resources Ltd, which gave the Company access to a significant area of ground prospective for uranium in Niger. This acquisition gives Paladin a foothold in a country with a substantial and long standing uranium production history.

## Canada

In February 2011, Paladin completed the acquisition of its first Canadian project, establishing the Company on another continent. Paladin acquired the uranium assets of Canadian company Aurora which added a significant tenement package in the highly prospective Central Mineral Belt (CMB) in the province of Newfoundland and Labrador. Aurora had already established a Mineral Resource base of 40.2Mt at 0.09% U<sub>3</sub>O<sub>8</sub> (83.8Mlb) of Measured and Indicated category material, with an additional 29.0Mt at 0.08% U<sub>3</sub>O<sub>8</sub> (53.0Mlb) of Inferred category resources. These mineral resources are located in six individual deposits within the CMB, with the majority (75%) being at the Michelin deposit.

The Company's aim is to significantly expand the existing resource base which it is hoped will lead to medium term

development opportunities and will build upon the excellent stakeholder relations and community programmes already developed by Aurora.

In June 2015 the Canadian Government granted an exemption to Paladin to the current Non-Resident Ownership Policy under which, by the stage of first production, Canadian resident ownership must be at least 51%. The exemption, which followed an extensive and rigorous appraisal process by the Government allows Paladin, at the appropriate time, to proceed to production on its own account with no requirement for a majority Canadian partner.

## Paladin Uranium Project Summary

A summary of the status for each of the Company's key advanced projects is detailed in the following table. This table does not include Mineral Resources from Bikini, Andersons, Mirrioola and Watta/Warwai deriving from Paladin's 82.08% ownership of Summit Resources Ltd or the 100% owned Duke Batman and Honey Pot deposits.

Project	Overview	Mining Method/ Deposit Type	Outlook	Resources
<b>Uranium Mines</b>				
*Langer Heinrich Mine - 75% (Namibia, Southern Africa)	The Company's cornerstone asset commenced production in 2007. The Stage 3 expansion is complete with production at 5.2Mlb per annum (pa).	Conventional open pit; calcrete	Project life in excess of 20 years. An expansion is uranium price dependent.	M&I (inc stockpiles): 119.8Mt @ 0.052% (136.2Mlb U <sub>3</sub> O <sub>8</sub> ) Inferred: 17.6Mt @ 0.06% (22.6Mlb U <sub>3</sub> O <sub>8</sub> )
*Kayelekera Mine - 100% (Malawi, Southern Africa)	Paladin's second uranium mine, capable of operating at near nameplate of 3.3Mlb pa.	Conventional open pit; sandstone	Currently on 'care and maintenance' due to low uranium price	M&I (inc stockpiles): 15.0Mt @ 0.072% (23.9Mlb U <sub>3</sub> O <sub>8</sub> ) Inferred: 5.4Mt @ 0.06% (7.4Mlb U <sub>3</sub> O <sub>8</sub> )
<b>Uranium Development</b>				
*Aurora Project - 100% (Labrador, Canada)	Paladin's first entry into Canada. Resource definition and additional exploration commenced in the second half of calendar year 2012 and is ongoing.	Open pit - underground; metasomatic	Resource definition and extension drilling has commenced	M&I: 47.6Mt @ 0.10% (100.8Mlb U <sub>3</sub> O <sub>8</sub> ) Inferred: 21.9Mt @ 0.08% (39.8Mlb U <sub>3</sub> O <sub>8</sub> )
**Manyingee Project - 100% (Western Pilbara, Western Australia)	Resource definition and extension drilling commenced in July 2012 and is ongoing.	In-situ recovery; sandstone	3 year staged feasibility study required	M&I: 8.4Mt @ 0.09% (15.7Mlb U <sub>3</sub> O <sub>8</sub> ) Inferred: 5.4Mt @ 0.09% (10.2Mlb U <sub>3</sub> O <sub>8</sub> )
Oobagooma Project - 100% (West Kimberley, Western Australia)	A key pipeline asset for Paladin.	In-situ recovery; sandstone	3 year reserve/resource drilling required	Exploration target: 8.0Mt @ 0.12%-0.14% (U <sub>3</sub> O <sub>8</sub> )
*Valhalla, Skål & Odin Deposits - 91.04% (Queensland, Australia)	Paladin's primary Australian asset. Efforts are ongoing to develop a flow sheet and expand the resource before moving towards a Feasibility Study.	Open pit - underground; metasomatic	Development dependent on market conditions	M&I: 57.2Mt @ 0.07% (93.7Mlb U <sub>3</sub> O <sub>8</sub> ) Inferred: 16.3Mt @ 0.06% (22.0Mlb U <sub>3</sub> O <sub>8</sub> )
*Bigriyi Deposit - 41.71% (Northern Territory, Australia)	Limited work within the JV tenements. Co-operative arrangement to assess nearby regional targets.	Open pit - underground; sandstone	Future direction of project will be determined by market conditions	M&I: 4.7Mt @ 0.14% (14.1Mlb U <sub>3</sub> O <sub>8</sub> ) Inferred: 2.8Mt @ 0.11% (7.1Mlb U <sub>3</sub> O <sub>8</sub> )
*Angela Deposit - 100% (Northern Territory, Australia)	A core resource delineated having potential for extension.	Open pit - underground; sandstone	Future direction of project will be determined by market conditions	Inferred: 10.7Mt @ 0.13% (30.8Mlb U <sub>3</sub> O <sub>8</sub> )

Mineral Resources are quoted inclusive of any Ore Reserves that may be applicable.

Mineral Resources detailed above in all cases represent 100% of the resource - not the participant's share.

\*Complies with JORC(2004) guidelines and is NI 43-101 Compliant. The mineral resource for the Michelin deposit also conforms to JORC(2012)

\*\* Complies with JORC(2012) guidelines and is NI 43-101 Compliant.

(a) For Kayelekera, the Government of Malawi holds a 15% equity interest in the subsidiary, Paladin (Africa) Ltd, the holder of the Kayelekera Mining Licence.

(b) For Valhalla, Skål & Odin, Paladin's interest is based on 50% deriving from the Isa Uranium Joint Venture and 41.04% via Paladin's 82.08% ownership of Summit Resources Ltd.

Langer Heinrich and Kayelekera Mineral Resources have been depleted for mining to the end of June 2014.

M&I = Measured and Indicated.

## The Uranium Market

The March 2011 Great East Japan Earthquake and resultant tsunami inflicted severe damage on the Fukushima- Daiichi reactors causing most countries to undertake comprehensive safety reviews of existing nuclear power plants. Reactor construction was temporarily suspended in some countries, but only Germany has taken the decision to eventually phase-out its commercial nuclear power programme.

In response to new safety standards promulgated by the independent Nuclear Regulatory Authority (NRA) of Japan, Japanese nuclear utilities have applied for safety reviews of 24 reactors (located at 13 sites) idled since the Fukushima earthquake. As of June 2015, the NRA has approved safety evaluations for a total of five reactors with phased reactor restarts to commence during September 2015 (Sendai 1 & 2 operated by the Kyushu Electric Power Company). Paladin anticipates that up to two-thirds of operable Japanese nuclear capacity will reinitiate operations over the next few

years and that Japan will pursue a nuclear power programme representing 20-22% of total electricity generation by 2030.

Elsewhere, post-Fukushima, worldwide reactor plans have been re-affirmed and work resumed on reactors under construction accompanied by governmental approvals for more units. Worldwide, there are now 66 nuclear power plants under construction, four more than at the time of the Fukushima events. In China, the installed nuclear capacity has risen from 13 reactors (March 2011) to the current total of 26 operating units with 24 additional reactors being built.

Currently, there are 437 operational reactors consuming more than 170Mlb pa  $U_3O_8$ . Paladin forecasts that global uranium demand will reach 230Mlb pa  $U_3O_8$  by 2020 and that the uranium production industry will struggle to meet that rapidly growing demand. Negatively impacted by persistent low uranium prices, total global uranium production declined to 145 Mlb in 2014, a decrease of 9Mlb from the 2013 total.



Aerial view over the Langer Heinrich Mine

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*The information in this document relating to exploration and mineral resources is, except where stated, based on information compiled by David Princep B.Sc who is a Fellow of the AusIMM. Mr Princep has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves", and as a Qualified Person as defined in NI 43-101. Mr Princep is a full-time employee of Paladin Energy Ltd and consents to the inclusion of this information in the form and context in which it appears.*

*Unless otherwise stated, information on mineral resources was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with JORC Code 2012 on the basis that the information that the estimates are derived from has not materially changed since it was last reported.*

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