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**Mine Management / Mining Consulting / Business Improvement**

**Executive Summary**

* Twenty-five years+ in managing underground and open pit gold and metalliferous mines in Australia and overseas. **Majority of roles included design, governmental approvals and purchasing/construction of site surface and underground facilities/offices/separate toilets for women/accommodation/infrastructure with toilet waste treatment and environmentally friendly disposal off *(used mine water included)*.** Five years as a Mining Consultant/Business Improvement Specialist in Australia, Russia, Ghana, Mongolia and Philippines.
* Four and a half years with the Western Australian Department of Mines. Two and a half years as District Inspector of Mines in Kalgoorlie / Deputy Regional Mining Engineer & two years as Special Inspector of Mines *(Ventilation)*/Senior Ventilation Engineer, Karratha.
* Mining Consultant – design, Ust Kamenogorsk Regional Mines Department approval and start-up of a new, **decline-accessed only** underground mine at Suzdal Gold Project in Kazakhstan ***(and in that part of the World).*** Site visits and due diligence studies/evaluations of various mining projects for potential purchasing in Kazakhstan and Kyrgyzstan *(2004 - 2005)*.
* Mining Consulting – Business Improvement in Australia, Ghana *(AngloGold Ashanti Obuasi Gold Mine)*, Russia, Mongolia, and Philippines.
* Site Director and Consultant, Far East Siberia Russia - Nezhdaninskoye Gold Project *(2002 – 2003).*
* Executive Manager Mining - managing 1.5km deep, 8.5km long and >4,000 personnel, 2.2M T/year 380,000oz/year AngloGold Ashanti Obuasi Gold Mine with various underground mining methods; including open pit mining and old tailings re-treatment - *then (2009-2010)* the biggest operating gold mine in Ghana.
* Contract mine management in Australia *(u/g & o/pit gold, u/g nickel, o/pit iron ore)*, including highly seismically active, then *(2007)* the deepest gold mine in Australia *(Hill 50 - Mt Magnet Gold Mine, Harmony)*.
* Four years in hands-on experience/development and operating a mining company Ausvac Mining Pty Ltd specialising in recovery of mine floor material on both gold and nickel mines in Australia with **Underground Mobile Supersucker** ***(UMS)*** – first one in Australia and Best in the World– a giant highly efficient mobile underground and surface vacuum cleaner designed and constructed in Kalgoorlie, Western Australia *(based on the Australian design in the late 60-ties of previous Century to mine precious stones).*

**Significant Achievements**

* In 2009 fast implemented at AngloGold Ashanti Obuasi Gold Mine in Ghana Australian-style same color overalls for all underground employees *(orange used)* ***(i.e. remove white-color overalls)*** – **Managing Directors** included.
* Requested by AngloGold Ashanti in March 2011 to return to Obuasi for one *(1)* year to assist in completing the Projects commenced during tenure 2009 – 2010. ***(Resigned due to contracting malaria in late 2010).***
* Whilst managing seismically active Long Shaft Victor Complex at WMC Kambalda Nickel Operations *(KNO)* responsible for ~40% of total KNO nickel production at very low costs *(total KNO output 37K Ni tones/year).*
  + **With mining cash cost ~$S1.00/lb. – the cheapest KNO nickel producer then**
* Introduced *(1994)* underground shot-cretting/fiber-cretting – Victor Nickel Mine with Byrnecut Jetcrete Mining
* Designed, constructed and fast-implemented with Victor Mine Mining and KNO Maintenance Team *(1994)*:
  + Australia-first short rail on Atlas Copco single-boom jumbo reducing ore dilution with waste by 40 % when mining 50 deg dipping narrow-vein nickel orebody with flatback cut and fill mining method
  + “Frog-mouth” bucket on 3 cubic yard Elphinstone LHD to clean/bogged out ore under the hanging wall of 50 deg dipping orebody – i.e.not to leave/waste it *(with Peter Nazzarri and Nick Supljeglav)*
* Introduced Western Australia-first rock-burst resistant South African cone bolts at WMC KNO Long Victor Complex in 1995 *(with Peter Lourence -Geotechnical Engineer then Consultant hired from SRK in South Africa).*
* In 2001, at the Central Norseman Gold Corporation *(CNGC – 50.5% owned by WMC Resources)* led the Mining Team to the highest sustainable gold production in the 65 years Company continuous mining history *(128,300oz/year)* with C1 and C3 costs being in the **first quartile of the cheapest** gold producers **in the World** with **gold price ~US$320/oz**. and excellent safety record – in very narrow vein mining operations. **43rd place** on the list of **289 World Gold Producers** - **Refer to the attached testimonials.**
* Initiated and implemented 12-hour continuous roster systems and various payment systems *(flat-rate included)*
* Designed environmentally friendly alternative capital mine access and hoisting system for small tonnage, high-grade underground deposits – an upgrade/modification of the old design previously used in Norseman in Western Australia/other States and other Countries.
* Designed, fully approved *(by local Dept. of Mines)* and successfully commenced cost efficient Australian style underground gold mine **decline accessed only** at Suzdal Gold Mine near the town of Semipalatinsk in Kazakhstan with first ore mined within 2.5 months from commencement of the decline with access from surface/pit portal.
* Conceptualised and developed Australia’s first mine floor recovery system with a truly mobile underground supersucker – a giant highly efficient vacuum cleaner to recover high-grade ore left behind on the underground floors of ore drives and stopes. Successfully completed eight *(8)* practical hands-on underground trials on various nickel and gold mines in Australia. Achieved floor material recovery rate of up to 40tonnes+ per 12hr shift with two *(2)* operators in a typical ore drive and horizontal/semi-horizontal stope excavation *(a 500%+ increase from the initial trials of 5.0t/shift with two operators).* **~Aus$700,000 - Aus$9,200,000/month**extra profit/revenue, depending on grade and gold/nickel price ***(an-extra profit/revenue left behind on mine floors and wasted)***
* Designed and fast implemented a grade enhancement T-bone stoping mining method *(40% grade increase).*
* Designed and fast implemented then Australia-first one-pass separation blasting to significantly increase ore-driving grade with the prototype TMU Swedish-made mini-jumbo *(with 193m/month achieved in March 2000+).*
* Implemented high-grade stopes wash-downs with water.
* **Australia-first diamond wire saw trial underground** for high-grade narrow-vein pillars gold recovery *(used U/G in South Africa and in hard-rock quarries in Australia and other countries).*
* Fundamental productivity improvements – **up to 270% with no pay increases** on a **flat-rate payment system.**
* Came up and fast-installed open pit wall stability monitoring system – 1990 Plus in Kalgoorlie Goldfields, WA
* Significantly contributed to establishment of mines rescue systems on gold and metal mines in Western Australia

**Qualifications**

* Bachelor of Engineering - Mining *(Honors)*
* Western Australian First Class Mine Manager’s Certificate of Competency *(Metalliferous)* No 284, 1989
* Western Australian First Class Mine Manager’s Certificate of Competency *(Coal)* No A-1-89, 1989
* Western Australian Driving Licence No. 3473215

**Skills**

* Personnel management, development and mentoring of operational and technical employees – mine workers included; **And listening to all of them - cleaning stuff included**
* Mining projects feasibility studies, mining contracts tender evaluation, negotiations and preparations
* Starting-up new underground and surface mining projects with mine infrastructure included
* Operational and mine capital budget management *($ AU 100M Plus)*
* Non-compromising approach to safety management; **Safety/Safety Practices at home included**
* Innovative and practical - consistent record of implementing unique initiatives and systems to **improve safety**, minimise ore dilution, reduce pollution to environment, improve productivity and reduce costs. With mine results publicly displayed on big-size graphs *(updated daily)* for all Members of Mining and Mine Support Team and showing 2- years results and trends. And thoroughly discussing the results and trends with the Team prior to each shift.
* Management and change-over from owner – operator workforce to contractor workforce/and vice-versa
* Managed seismically active nickel mines at WMC P/L KNO Long Shaft Victor Complex and Harmony Hill-50 Gold Mine at Mt Magnet, WA
* Management of narrow-vein high-grade gold mines *(Central Norseman Gold Corporation)*
* Languages: English – fluent; Polish - native tongue; Russian – fluent - no interpreters required

**Professional Experience**

*Ausvac Mining Pty Ltd, Perth WA, March 2011 – to date*

**Mine Management, Business Improvement, Mining Consulting Assignments**

**Assignments included:**

* **Alternate Underground Manager** | Mt Magnet | Ramelius Resources Pty Ltd WA, *(Nov 17 – Nov 19)*
* **Business Improvement / Mining Consulting** | TransSiberian Gold – Far East Russia Kamchatka Peninsula *(Aug 2012 & Aug 2017)*
* **Project Manager –Underground Water Tank Hill** | Mt Magnet Ramelius Resources, WA, *(Jul 16 – Feb 17)*
* **Business Improvement Mining Consulting** | Australia, Russia for McMahons *(Khabarovsk Region)*, Mongolia and Philippines / **ASX Appointed Director of Operations** of MUB Mongolian underground gold operations *(2013)*
* **Alternate Resident Manager/General Manager and Mining Manager** | Kentor Gold near Meekatharra WA; running five *(5)* open pits and UG gold mining re-start/de-watering *(2012)*
* **Manager Mine Projects** Member of Task Force to Long-term fix the Obuasi Gold Mine | AngloGold Ashanti, Ghana *(Mar 2011 – March 2012)*
* **Owner/Operator** Norseman Gold NL, Norseman WA| Recovery of high-grade gold bearing mine floor material at the Harlequin Underground Gold Mine *(Nov 2010 – Jan 2011)*

*AngloGold Ashanti Obuasi Gold Mine, Ghana, 2009 to 2010 (1.5 years - based in Ghana)*

**Executive Manager – Mining**

* Responsible for safety and all mining activities, including all surface mining (open pits and tailings reclamation) for an operation employing + 3500 personnel underground, producing 2.2 million tons of ore for 380,000oz per annum, with fully mechanized long-hole cemented cut and fill and sub-level caving stoping methods, from several sub-vertical ore bodies 3m – 40m wide, 8.5km long along the strike and 1.5km deep. Lateral development was then performed by hand-held techniques up to 2,000m/month
* Initiated and successfully introduced/implemented daily updated mine production and safety graphs across all sections of the mine to ensure all mine employees *(all mine workers included*) knew gold production and safety record ***(showing 2-years results + trends)****.*
* Initiated and constructed: surface toilets/sewage systems in surface change rooms, underground crib rooms/refuge chambers, meal deliveries for the underground workforce, industrial washing and drying machines for the workforce in surface change rooms, purchased personnel carriers for underground workforce.
* Introduced tele-remote mucking to replace line-of-sight technique in open stopes, remotely controlled rock breakers to operate inside stope voids, IT service vehicles, charge-up machines underground, two-stage air-leg machines to replace single-stage ones for correct ground support installation and more efficient drilling.
* Improved safety underground through the purchasing of light - weight cap lamps, replaced the use of steel piping with poly piping; fast introduced flexible ventilation ducting to replace expensive spiral steel ducting.
* Designed and led the introduction of Longitudinal Retreat Mining Method *(LRMM)* in narrower orebodies, to eliminate costly and time-consuming waste footwall development for ore-body definition diamond drilling.
* Introduced 12hrs continuous roster system underground in line with similar rosters in other parts of the world
* Introduced and implemented several managerial initiatives to improve communication, safety and production
* Came up and introduced several technical changes/initiatives underground *(e.g. centralized firing, new blasting agents, leaky feeder communication* ***and many, many more****).*

*Ausvac Mining Pty Ltd, Kalgoorlie-Boulder/Perth, WA, 2005 to 2009*

**Mine Management, Business Improvement, Mining Consulting**

* **Mining Consultant** - Business Improvement for the AngloGold Ashanti Obuasi Gold Mine *(three times/trips in 2008 – 2009)*
* **Consulting work** on underground narrow-vein mining at Aginskoye Gold Mine on Kamchatka Peninsula, Far East Russia, *(2008)*
* **Contract Manager Mining at Windarling/Mt Jackson** iron ore open pit operations for Portman Iron Ore Limited, Western Australia *(WA)*; 7.2mln t/year iron ore production from a multi-pit operation *(2008)* – **the only mine in my career we had to slow down production for the railway system to handle our quality iron ore delivery from Southern Cross to the Esperance Port for overseas shipment.**
* **Contract Mine Manager of Hill 50** - highly seismically active, then deepest gold mine in Australia *(1.5km)* and St George Underground Mine, Harmony Gold, Mt Magnet WA; 500,000t ore for 85,000oz/year production *(2007).* Introduction and fast implementation of rock-burst resistant cone bolts.
* **Contract Mine Manager** of Argo and Junction Underground Gold Mines at St Ives Gold Mines, Goldfields, Kambalda, WA with 700,000t ore for 120,000oz/year production *(2005 – 2006).*
* **Operator** Mine floor material recovery with UMS in WA’s and Victoria’s underground mines *(nickel and gold)*.

*Celtic Resources Holdings Plc., Suzdal Gold Project, Semipalatinsk, Kazakhstan, 2004 to 2005 (13 months)*

**Mining Consultant**

* Design, approval and start-up of a new, **decline-accessed only** *(first one in Kazakhstan)* underground 100,000oz/year gold mine at the Suzdal Gold Project located some 70km from Semipalatinsk in North-East Kazakhstan.
* Overseeing/controlling a multi-pit mining operation and design and construction of site accommodation and office facilities.
* Various due diligence studies/projects evaluation work including site visits in Kazakhstan and Kyrgyzstan.

*Ausvac Mining Pty Ltd, Kalgoorlie-Boulder, WA, 2003 to 2004*

**Owner/Director/Operator**

* Established a company specialising in underground high-grade ore recovery left behind on mine floors
* Designed and constructed one of the world’s first truly Underground Mobile Supersucker ***(UMS)*** – a giant highly efficient mobile vacuum cleaner. The UMS together with other auxiliary equipment, forms part of a mine floor material recovery system, aimed at the enhancement of return on mine investment, i.e. providing an extra revenue through the reclamation of material that is normally lost in the course of “normal” mining activities.
* Conducted eight *(8)* hands-on mine floor material recovery projects on gold and nickel mines in Australia including Mt Pleasant Placer Dome, Otter-Juan Kambalda, Cosmos Nickel Mine, Agnew Gold Mine, Long-Victor Complex, Redross at Mincor in Widgiemooltha, Norseman Gold *(all in WA)* and Bendigo Gold Mine in Victoria.

*Celtic Resources Holdings Plc. Nezhdaninskoye Gold Project, Far East Siberia, Russia, 2002 to 2003 (11 months)*

**Site Director, Mining Consultant**

* Staffing of management and workforce was based on a fly-in fly-out *(FIFO)* roster system, with up to 200 personnel on site with continued gold production from underground operations.
* Providing advice to the company on all aspects of Nezhdaninskoye Gold Mining Project, a project with more than 20 million ounces of gold and 150 million ounces of silver in reserves.
* Ensuring that strategic goals of the Company were met.
* Day to day running of an underground gold project with Russian management and workforce *(~200 Russian staff)*, and a limited number of expatriate staff on site *(2 to 4),* in an environment down to **minus 52degrees Celsius temperature**, underground permafrost conditions and communication and supply / logistical challenges due to its remote mountainous terrain and low temperatures during winter time.

**Mine Engineer** *(2002)*

* Mine feasibility studies and mine equipment selection.
* Preparation of short, medium and long term mine forecast and budgets.
* Establishment of gold production monitoring and reconciliation systems *(mine to mill).*
* Preparation and review of documents for submission to Russian Authorities.
* Close liaison with all departments to ensure safe and efficient running of the operations.
* Design and re-construction of the existing office/surface facilities and infrastructure to cater for low winter temperatures.

**Employment History Pre 2002**

Central Norseman Gold Corporation Ltd, WA (51% owned by WMC) 1997 to 2002

**Manager Mining** *(2001 – 2002)*

**Mine Manager** *(2000 – 2001 – few months)*

**Manager Mining Projects** *(1999 - 2000)*

**Technical Services** Manager *(1999)*

**Manager Mining** *(1997 - 1999)*

WMC Resources Ltd Kambalda Nickel Operations, WA, 1992 - 1997

**Registered Mine Manager** Long Shaft Victor Complex

**Underground Manager** *(various UG Nickel Operations in Kambalda)*

* **Australia-first introduction of a road-header on the Otter-Juan Nickel Mine with Richard Laufmann as Project Manager - 1993**

**Assistant Underground Manager** Long Shaft

Western Australian Department of Minerals and Energy, WA 1987 – 1992

**District Inspector of Mines; Deputy Regional Mining Engineer, Kalgoorlie**

* Member of WA Chamber of Mines Committee establishing mines rescue system on WA’s metalliferous u/g mines
* Nominated by Mr. Jim Torlach – then WA State Mining Engineer to introduce legislative changes to geotechnical requirements for mining projects – together with Dr Chris Swindells – then Deputy Director of WA Geological Survey

**Special Inspector of Mines (Ventilation)/Senior Ventilation Officer, Karratha**

Forklift Engineering (Aust.), Melbourne, Australia 1986 to 1987

**Design Engineer (working as Mechanical Engineer)**

Regional Mines Rescue Station, Walbrzych, Poland 1981 to 1985; 25,000+ People working underground in the 500 years old Walbrzych/Waldenburg Coal Mining Region

**Mines Rescue Superintendent**

Walbrzych Underground Colliery, Poland, 1977 to 1981 – **Poland then the second in the World coal producer**

**Acting Section Manager, Mine Foreman, Underground Supervisor/Shift Boss/Deputy, Trainee Mining Engineer**

* **Including experience with road-headers**

**Special Courses**

* Various Senior Management Courses
* SAP Integrated Management System
* Contract Management Courses and Training
* Various Safety Courses
* Various Accident Investigation Courses
* Computer Courses (Excel, Word, Typequick, Power Point, Microsoft Project)
* Rock Mechanic Courses
* Mine Blasting Courses
* Mines Rescue Courses
* Datamine
* Whittle open pit optimisation

**Referees**

Names and current contacts of Referees are available on request *(in Australia, Russia, Kazakhstan and Ghana)*

**Publications**

Mine Floors Material Vacuuming not yet Part of Mining Cycle in Most Countries in the World and Governments, Mining Companies Executives and Shareholders Allow to Leave Behind Never to be Recovered Capitally Accessed and Broken High-Grade Ore Underground Worth Billions of Dollars ++++++ MINEX Forum Europe 2020 London July 2020

Lowering Risk in Complex Mineralisation: Application of Mobile Supersucker Development – Complex Orebodies 2018 AusImm Conference 19 – 21 November 2018 Brisbane; Co-author Prof. Dr. S C Dominy.

Why do Governments Allow Mining Companies to Leave Behind Never to be Recovered High-grade Capitally Accessed Broken Ore Underground I.e. Wasting Billions of Dollars? - Energy Mines and Money Australia Conference – Brisbane 20 – 21 June 2018.

Why Do Shareholders and Mining Executives Allow Mine Managers to Leave Behind High-Grade Broken Ore Underground? Proceedings of the Australian Institute of Mining and Metallurgy *(AusIMM)* International Narrow Vein Mining Conference, Perth Western Australia, 26-27 March 2012.

Recovery of Broken Ore Stocks Left on the Mine Floor and Other Applications of Underground Mobile Supersucker”, Proceedings of the AusIMM Narrow Vein Mining Conference, Ballarat, Victoria, Australia, 14-15 October 2008. **Member of the Conference’s Organising Committee.**

“Lowering Orebody Risk in Complex Gold Veins – Application of Underground Mobile Supersucker Winzing”, Proceedings of the 5th International Mining Geology Conference, Bendigo, Australia, November 2003 *(with Dr Simon Dominy)***.**

“Attaining Proven Reserves Prior to Capital Commitment”, the Australian Institute of Mining and Metallurgy *(AusIMM)*, Proceedings of the Underground Operators’ Conference, Townsville, Australia, July 2002.

“One-pass Separation Blasting at CNGC Bullen Mine” – WMC Mining Conference, 7-8 October 1999, Kalgoorlie, Western Australia.

“Alternative Mine Access, Mining and Hoisting System for Underground Deposits”, Balkema, Proceedings of the 9th International Symposium on Mine Planning and Equipment Selection, Athens, Greece, November 2000.

Title as above, the Australian Institute of Mining and Metallurgy, Proceedings of the MassMin2000 International Conference, Brisbane, Australia, November 2000.

Underground Supersucker Winzing - Defining the Mining Environment”, Balkema, Mining in the New Millennium – Challenges and Opportunities, Proceedings of the American-Polish Mining Symposium, Las Vegas, Nevada, USA, October 2000.

**TESTIMONIALS – Ken Brinsden 17 03 2012 Q&A Top of Second Column; ASX Appointments Page 13&14**

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