PATRICK J GANNON

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519 Flood Road
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Mobile: (406) 590-4672
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OFFERING CREDENTIALS FOR

Operations and Maintenance Business Optimization Consultant

Professional Summary

- Over 26 years of progressive operations and maintenance management experience in the mining industry, with documented successes of both capital and non-capital increases in throughput, recovery, equipment reliability, and sustainable cost reduction. Results achieved through a combination of process optimization, productivity gains, problem solving, asset management strategy implementation, exception management and project management at various organizational levels.
- 19 years of strategic operations and maintenance management experience focused on performance improvement through the implementation of best practices for both cost reduction and overall business health through the practical implementation of Lean, TPM, Exception Management, RCM and visible leadership principles.
- Particular areas of expertise are leading teams to achieve improved performance, operations readiness, implementing non-capital strategic initiatives for business improvement and transitioning from a break down environment to one where the work is planned and scheduled.
- Goal oriented and focused on optimization, seeking opportunities, challenging the status quo and leading sustainable change.
- Have demonstrated successes in promoting team building while empowering decisions to be made at the lowest appropriate level.
- Demonstrated strength and ability to attract, promote, motivate, and retain, a winning, safe, productive, and innovative team.
- Proven capability of generating buy in at all levels of the business while being clear on accountabilities and managing these as required to make the team and the business successful.
- Completion of commissioning and ramp up of $1.3 Billion USD process expansion.
- Implementation of strategic non-capital asset management improvement strategies that have generated + $150 million per year.
- Implementation of best practice operations readiness strategies for greenfield sites including all PM's, corrective standard jobs, visual controls, and management systems, all based on best practices.
- Experienced and successful in managing in both unionized and non-unionized environment including the application of the collective agreement for labour relations issues and conflict management.
- Successfully implemented sustainable downsizing while increasing equipment and plant performance through optimized PM's and Operator inspections.
- Capable and comfortable in extreme and difficult work environments (high altitude and harsh weather).

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EXPERIENCE

2021 – Present – Box L Mining and Ranching:

Owner – Great Falls, Mt USA

Mining Industry Business Optimization and Improvement Management Consultant specializing in solving problems with practical solutions. Willing to travel to where the problems are and often able to identify and implement operational improvements without significant capital investment. Able to leverage not just my own personal experiences from the last +26 years in the industry but also a network of various other industry experts from around the globe.

Key roles included

- General Manager / Senior Site Leader - Improving the safety and unit cost performance of the Operation, through strategic capital and non-capital initiatives and transitioning from a breakdown environment to one where work is planned and scheduled.
- Update clients resource model and Life of Mine Plan.
- Enhance Client's Pit Dewatering process, maintain safe work environment.
- Site Management Coach - Recruiting world class management candidates to join the management team at site to continue to improve and progress the management team and develop the work force

2016 – 2020 – Minera Chinalco Peru:

Vice-President of Operations –Toromocho Project – Yauli, Peru

Toromocho is the 4th largest Copper Mine in Peru, (11th in the world), located in the district of Morococha, Yauli Province, in the Junin region, on top of the Andes (+4800M) east of Lima. Currently scheduled to process an average of 117k stpd, produce 470 MM Lbs Cu and Cu equivalent silver, annually, with an annual departmental operating budget ~ $350 Mil. Reporting directly to the CEO of Chinalco Peru, primary responsibilities include onsite leadership and change management, focused on improving productivity and cost reduction. Responsible for the Legal Compliance, and Safe Operation, with direct responsibility for; Mine Operations, Mine Maintenance, Mine Engineering/Geology, Primary Crushing, Process Operations, Process Maintenance, Metallurgical & Analytical Services, and Tailings areas, with six direct reports, and approximately 1200 employees and 1700 contractors.

Key roles included

- Senior Site Leader - Improving the safety and unit cost performance of the Operation as a whole, through strategic capital and non-capital initiatives and transitioning from a breakdown environment to one where work is planned and scheduled.
- President of the site safety committee - A combination of site hourly and management representatives, focused on improving our safety statistics and improving our incident investigations to reduce reoccurrence and unnecessary property damage and production loss.
- Management Coach - Recruiting world class management candidates to join the management team at site to continue to improve and progress the management team and develop the work force.

Key accomplishments and Improvements include

- Ramp up and operation of the new mill expansion (50% increase in milling capacity).
- Facilitated the update of the Life of Mine Plan, and 5-year strategic plan.
- Provided stability and accountability for the execution of the operational plan (2017-2020 were the safest most productive years ever at Toromocho).
- Supported optimization of the annual and monthly plans to improve productivity and efficiency.

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- Implemented a consistent weekly planning and operations cycle. Aligning all departments between Mine Maintenance, Engineering and Operations, with the monthly and annual plans, to maximize stability in the Mill, reduce costs and improve overall production.
- Identified key additional required critical spares to support major component repair in a timely manner.
- Increased Mill Throughput by optimizing recirculating loads and power utilization between grinding circuits, with minor changes in operating strategies.
- Increased blasting efficiencies in ore, reducing powder factors in waste.
- Restarted Moly plant after reconfiguring pumping and piping constraints, improving reagent scheme and cost profile, successfully removing Moly and Talc, and decreasing final concentrate moisture to increase copper concentration in the final copper concentrate by 2-4%, estimate $28.0 Mil in increased revenue annually.
- Identified opportunity and initiated grinding ball recycle program.
- Implemented on site operator inspection boards and safe work plans, to improve operator consistency, maintenance work identification and execution.
- Significantly improving shift by shift operating consistency and reducing contractor work force by optimizing maintenance PM tasks and transiting the work identification to operators.
- Completed improvements to Tailings discharge systems and deposition strategy.

2013 – 2016 – Taseko Mines Limited:

Manager, Milling – Gibraltar Mine – McLeese Lake, BC

Second largest Copper Mine in Canada, scheduled to process an average of 86k stpd, and produce 130 MM Lbs Cu annually, with an annual departmental operating budget ~ $120 Mil. Reported directly to the VP - General Manager and acted on his behalf in his absence. Responsible for Legal Compliance, Safe Operation, Maintenance, Metallurgical & Analytical Services, primary crushing, milling, leaching and tailings areas, with six direct reports, 185 employees. Improved the safety and unit cost performance of the Copper mill through strategic non-capital initiatives and transitioning the mill from a breakdown environment to one where work is planned and scheduled.

Key roles included

- Chairman of the site Environmental Management Committee (EMC) - Completed establishment and implementation of a functioning ISO compliant Environmental Management System (EMS) and transferred the role to the newly created position of Superintendent of Environment.
- Member/Co-chair of the Joint Occupational Safety and Health Committee (JOSHC) - Committee focused on improving incident investigations, weekly shift cycle inspections, and reducing hand injuries. Site achieved 2.4 years with no lost time injuries.
- Designated Manager of Tailings Operation - A 900 Million cubic meter storage facility, partially dry stack impoundment by design, permitted to discharge effluent seasonally to the Fraser River.
- Senior Site Leader - Actively participated in quarterly Employee Information Sessions to review site performance, plans and respond to and follow-up on employee questions and suggestions.

Key accomplishments and Improvements included

- Implemented a continuous improvement process that identified exceptions to base business performance expectations such as recovery, throughput and safety in real time and generated real time actions to address the exceptions while also developing remedial actions aimed at preventing a reoccurrence. These were logged, implemented and tracked.

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- Maintenance now being done with JHA/JSA where before work was being done without proper risk evaluation and controls. This was done to address the unacceptable work execution practices and repeat incidents that were there previously.
- Transitioned the mill from being totally reactive in a breakdown mode to one where unscheduled failures were the exception as opposed to being the norm.
- Increased Mill Throughput 20%
    - Optimizing recirculating loads and power utilization between grinding circuits, with minor changes in liner packages, screen deck, cyclones, pumps and the installation of an automated rate of change controller.
    - Decreased unscheduled downtime through the implementation of proactive PM's and operator inspections to transition from a breakdown environment to one that is planned and scheduled.
- Increased Bulk Recovery (3-5% Cu, 10-12% Mo) Introduced a new blend of reagents to enhance and complement the existing SIPX and diesel-based chemistry. Achieved significant results specifically with coarse and partially oxidized minerals.
- Reduced Costs/Increase Revenue
    - Initiated grinding ball recycle program, $3 Mil YTD 2016.
    - Installed Capstone historian to piggyback the Delta-V Control System to help automate analysis and control.
    - Developed, installed and implemented onsite operator inspection boards and safe work plans, to improve operator consistency, maintenance work identification and execution. This enabled operations to report symptoms prior to failure as opposed to reporting failures, which is what was being done initially.
    - Reduced the maintenance workforce by 40% by optimizing maintenance PM tasks and transiting the work identification to operators.
    - Significantly improved shift by shift operating consistency through the use of onsite operator tasks and inspections as part of operator rounds.
- Restarted Moly plant after reconfiguring pumping and piping constraints, improving reagent scheme and cost profile, and acquiring better downstream treatment charge terms. Estimate $8.8Mil in increased revenue annually.
- Completed significant improvements to Tailings Impoundment, water treatment and discharge systems.
- Navigated through adjustments in response; to challenging economic times, a 30% reduction in head grade, the startups and shutdowns of both the SXEW and Moly plants, and three organizational layoffs.

2007 – 2013 – Thompson Creek Metals Company:

Plant Manager – Mt Milligan Project – Mackenzie, BC

Greenfield startup and construction of an open pit mine and 60ktpd Cu flotation, gravity Au, concentrator, in north central British Columbia, Canada.

Key roles included

- Design Review - Involved at the engineering and design phase ($1.5 Billion Project); actively participated in the HAZOP review, and approval of key engineering documents such as: Design criteria, Process Flow Diagrams, P&ID, Facility Lay-out, Equipment selection, critical spare parts list, Delta – V control screens / HMI templates.

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- Operational Readiness - Transferred to site and assumed overall responsibility for the recruitment and development of plant operations, maintenance, and engineering, including both analytical & metallurgical laboratory personnel. Redefined the proposed organization chart and ensured that staffing requirements were met by successfully selecting and hiring world-class department leadership (three Superintendents, multiple General Forman, Engineers, and Trainers). Defined and oversaw the mill operations training program.
- Cost Control - Managed annual budget activities for the department with respect to manpower requirements, both capital and operating costs ($8-10 million/month), required operating schedules to meet budgeted production.
- Asset Management Champion - Identified and implemented a mill maintenance reliability centered program and helped retool the corporation's computerized maintenance management system to support it.
- Mobile Mill Technical Support - Supported the startup and operation of a new 50 ktpd ($650 Million) Moly Concentrator at the TCM Endako Mine, in January 2011 (during extreme weather conditions).

Key accomplishments include

- Implemented best practice asset management program as part of the operations readiness initiative that included:
- Comprehensive maintenance PM program and tasks.
- Comprehensive onsite visual operator inspections and operator round tasks for operations tasks and advanced work identification.
- Detailed work management processes for operations, maintenance, reliability, shut management, reliability, quality control, continuous improvement etc.
- Roles and responsibilities defined and linked to work management processes.
- Management systems consisting of all meetings, reviews, meeting agendas, with exception and continuous improvement management integrated at all levels.
- Majority of corrective standard jobs with JSA entered in the CMMS.
- CMMS all set up including entity structure, PM's, correctives, reporting and set up for use as continuous improvement tool.

Mill Operations Superintendent – Thompson Creek Mine – Clayton, ID

Open Pit Mine, 35ktpd Moly Concentrator producing 24 million pounds of Mo annually, and water treatment plant to meet discharge requirements. Reported to the Mill Manager. Responsible for Mill Operations Department included 5 salaried supervisors, and 43 hourly employees.

Key accomplishments included

- Achieved a zero citation MSHA inspection in 2011.
- 14% increase in Mill Throughput and 3% increase in Recovery, achieved by maximizing utilization of horsepower and minimizing over grinding.
- Reduced Maintenance/Operating Costs by 10% by properly loading equipment.
- Installation of a new regrind cyclone pack (minimized losses in fines due to over grinding).

Senior Mill Metallurgist/Project Manager/Tailings Coordinator – Clayton, ID

Key accomplishments included;

- Phase VII tailings expansion $15M: permitting, timber sale, construction of overhead power lines, electrical substation, back-up generators, new tailings pump station, 5 miles of new road, associated pipelines and the relocation of an old electrical sub-station.

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- Tailings Coordinator: supervise/manage operation of the Thompson Creek Mine Tailings Impoundment including sand deposition during cyclone season and significant header line repair during the winter in extreme weather conditions.
- Water treatment plant feed tank, pipelines and return pumps $ 0.5 M: Extremely fast track project including the engineering, procurement and construction of the pipelines, pumps and tank (3 months).
- Support day-to-day operations of the Thompson Creek Milling Operation. Specific equipment included trouble shooting and maintaining the Courier 5 On-stream analyzer and installing a Larox filter press.

2002 – 2007– Stillwater Mining Company:

Senior Metallurgist Base Metals Refinery – Columbus, MT

Stillwater Base Metals Refinery removed Nickel, Cobalt and Copper from the Platinum Group Metals final smelter product producing a Nickel/Cobalt crystal, and Copper Cathode, upgrading the PGM concentration for offsite treatment. Smelter is fed from the two underground mines (Stillwater and East Boulder concentrators flotation concentrate), as well as various recycled metal materials.

Key accomplishments included;

- Increased the electro-winning current efficiency from 40% to 90%, and increased production rates per cell by 160% above historical performance (achieved primarily with operator training and improved housekeeping).
- Created an Excel cost model for the refinery.
- Oversaw the installation of computers in the process labs and control room to track and communicate data electronically.
- Planned and executed the realigning, upgrading and replacing of the bus bar system in the Electro-winning circuit.

1998 – 2002 – Phelps Dodge Morenci Inc.:

Project Engineer Leach Stockpile Division – Morenci, AZ

Morenci is a large open pit Copper Operation. The Leach Stockpile Division placed a total of 700,000 tons per day of ore and actively leached over 40 million square feet with 90,000 plus gpm of leach solution. The leach solution was then processed by the Hydromet Division to produce Copper Cathode.

Key accomplishments included

- Designed piping layout, evaluated economics and coordinated piping side slopes of identified high grade material on several leach stockpiles.
- Created a branch wide process solution balance sheet (including 5 separate leach systems and 4 different processing facilities, all detailed on a one-page schematic).
- Commissioned three pump stations, trouble shot and optimized existing pump stations, supported water balancers to identify problems at pump stations, and maintained correct application rates on the stockpiles.
- Actively participated as a member of several, high intensity, multi-level, small work groups designed to identify and implement significant cost savings in a 12-week time period.
- General activities included facilitating the weekly mine coordination meeting to clearly communicate objectives between different divisions (Mine Planning, Haulage, Loading, Leach Stockpiles and Hydro-met), the review and prioritization of capital projects and economic project evaluation for the

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Division. Actively involved in both the short and long range mine planning reviews and provided guidance on necessary piping layouts and pump station locations and capabilities. Coordinated 410,000 tons per year of Sulfuric acid deliveries and usage.

Technical Services Metallurgist Hydromet Division – Morenci, AZ

The Technical Services group supported the Hydromet Division's operation and maintenance of the four different solution extraction plants and 3 electrowinning facilities to produce and ship 3.5 Million pounds of copper per day.

Key accomplishments included

- Directly involved in the feasibility and design of the Mine-for-Leach conversion, a $220 million-dollar capital project, including the expansion of an existing solution extraction plant and the construction of a new EW Tankhouse and two mobile stacking conveyors.
- Developed the 2001 Operating Budget for the Hydrometallurgical Division ($135 million).
- Managed the scope, cost, and schedule of several appropriations requests, ranging in value between $40,000 and $500,000.
- Reduced organic entrainment to the electrolyte at the Stargo SX plant (by designing and implementing plumbing changes to better separate aqueous and organic solutions).
- Specified and laid out the cathode maintenance and handling equipment for the Stargo Tankhouse.
- Other responsibilities included supporting the Leach Stockpiles Division, managing and coordinating water placement and leach cycle times and maintaining team scorecards.
- Familiar with the GPS/GIS technology and its application in the Morenci Leach Stockpile Access database.

Central Tank house Supervisor Hydromet Division – Morenci, AZ

The Central Tank house produced 1.1 Million lbs. of cathode copper per day and employed up to fifty-two (52) employees, on rotating 12-hour shifts.

Key accomplishments included

- Conversion from copper starter sheet to Stainless Steel Cathode technology
- Coordinated daily production and maintenance needs between crafts, operations, and contractors.
- Actively trained, developed, motivated and, when necessary, terminated employees.
- Improved the safety performance and production of crews and facilitated teamwork between crews, including many new and temporary employees (average age of employee was 22).

Tankhouse Metallurgist Hydromet Division – Morenci, AZ

Key accomplishments included

- Optimized the harvest and cell maintenance schedules to maximize equipment availability.
- Supported the conversion of the tankhouse from starter sheet to permanent blank technology.
- Verified chloride pitting and organic contamination was the main contributors to cathode sticking problems at the Central Tank house and identified and implemented corrective measures.
- Actively participated in the conversion of the Morenci workforce to a salaried status.
- Directly involved in the ISO 9002 Certification of the Hydrometallurgical Division.

1997-1998 – Newmont Gold Company:

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Metallurgist, Twin Creeks Mine – Golconda, NV

Twin Creeks an open pit gold property, with the construction and commissioning of the Sage Mill (sulfide pressure oxidation), production was increased to 1 million ounces of gold per year.

Key accomplishments included

- Supported the sulfide Sage mill construction and startup, including 10,000 ton per day SAG and ball mill grinding and autoclave circuits.
- Developed and coordinated ore blending philosophy, working with multiple departments, to maximize gold recovery and minimize operating costs.
- Scheduled ore and reagent deliveries from other mines for processing at the Sage mill.
- Founding member of the Twin Creek's Safety Action Team.

1996-1997– Santa Fe Pacific Gold:

Metallurgist, Twin Creeks Mine – Golconda, NV

Key accomplishments included

- Supervised the Metallurgical Laboratory, including a staff of six (6) technicians.
- Prioritized, scheduled, coordinated and reported test work results, including: bench scale autoclave, multiple leaching tests and screen analysis.
- Responsible for daily metallurgical accounting/inventory and month end reconciliation.
- Implemented a consistent training/development program for the technicians in the Met Lab.
- Relief Dump Leach supervisor for of a crew of seven when needed.

1995-1996– Santa Fe Pacific Gold:

Metallurgist, Twin Creeks Mine – Golconda, NV

Key accomplishments included

- Provided technical support to the operations staff at the Juniper mill (4000 ton per day oxide gold mill and refinery) and the north dump leach.
- Completed multiple reagent tests (flocculants and anti-scalents).
- Monitored carbon loadings and inventories.
- Reduced Anti-scalent consumption by 20%.

Related Experience:

1993 & 1994– Pegasus Gold Corporation:

Metallurgical Technician, Zortman Mining Inc, – Zortman, MT

Oxide gold heap leach operation operated test leach pad and evaluated recovery benefits of crushing pad feed. Evaluated and published results from over 200 column leach tests.

1991 – Cominco Alaska:

Metallurgical Technician, Red Dog Mine – Kotzebue, AK

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FIFO camp just inside the Arctic Circle, the Red Dog Mine is a relatively small but very high-grade Lead/Zinc open pit/flotation operation. Completed various flotation and size analysis test work, both in and out of the lab, recommended and supported process changes.

ACADEMIC CREDENTIALS

B. S., Metallurgical Engineering, Montana Tech, E.I.T. – Butte, MT (May 1995)

PROFESSIONAL DEVELOPMENT

Member of the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM)
Member of Society of Mining, Metallurgy, and Geophysics (SME)
A US Citizen, Canadian resident, maintain current Passport, Global Entry, APEC Business Travel
Mine Rescue Captain TCM Mine 2008-2011, Active member Volunteer Fire Departments 1998-2012
Emergency Medical Technician (EMT-B) 2004-2012, Firefighter I and II (Oct. 2001),
Mt Milligan Leadership Academy Graduate – TMC/MTM
Alcohol and Substance Abuse Training for Supervisors, Labor Relations Training (M.A.R.C.) – SMC
Managing Excellence Through Active Leadership in Safety (M.E.T.A.L.S.) – P.D.M.I.
ISO Internal Auditor Training – Gladhill Associates International
Joiner 7 Step Method Problem Solving Course – PDMI Hydrometallurgical Division
Collaborating for Results – DeLaPorte & Associates, Inc
Several workshops – Supervisor, Leader/Manager, & Social Styles – Wilson Learning Center
Together Employees and Morenci Succeed (T.E.A.M.S.) – Development Dimensions International
Whole Systems Design – W.W. Graham & Company, Inc.
Seven Habits of Highly Effective People – Covey Leadership Center
METSIM – Metallurgical Simulation Software