

Vale Voisey's Bay

Company: Vale Newfoundland and Labrador

Location: Voisey's Bay | Newfoundland and Labrador | Canada

Services Provided: Maintenance and Reliability Work Management
System Implementation | Management Coaching



SITE:

Vale Voisey's Bay operates an open pit nickel mine and concentrator in a remote, mountainous, "fly in/fly out" location on the North coast of Labrador. The mine produced first ore in 2005 and the concentrator began operation later that same year. The Mine and Concentrator operations are staffed by Vale direct employees; the Concentrator Maintenance organization is staffed with a contracted maintenance service provider supplemented with other contractors that travel to the site periodically to provide specialty, overhaul, and major shutdown maintenance services.

CHALLENGE:

The remote and isolated location is less than 600 miles from the Arctic Circle and presents extraordinary year-round challenges for the operation and maintenance of one of Vale's premier nickel processing facilities. The winter weather is remarkably windy with intermittent heavy fog and frequent snow storms occurring on a routine basis. The frigid temperatures that can fall to 35-50° below zero increase the risks with conducting maintenance activities outdoors for extended periods of time. Black bears freely roam the area, adding an unusual hazard to working outside during the summer months.

Although the concentrator is only 11 years old, the extremely corrosive material being processed (nickel and copper sulphide ore) is literally eating away the steel walkways, overhead cable trays, and other infrastructure by the concentrate that spills from the processing equipment during operational upsets. The spills create extra work for Operators to clean up and the corroded equipment negatively impacts reliability and increases the workload of the maintenance technicians.

An in-depth 6-week review conducted by SAMI's four-man Analysis Team uncovered a variety of issues negatively impacting performance at the site including:

- A Maintenance Work Management System was partially implemented at the site but was incomplete, not well-understood by the maintenance workforce, and inconsistently applied.
- Maintenance work orders were planned and scheduled less than two weeks, and sometimes only one week, prior to the execution week.
- Two Weekly Scheduling Meetings were conducted by the Electrical Planner and the Mechanical Planner in order to finalize a Weekly Maintenance Schedule but

but the outcome was frequently a less-than-adequately resource-loaded document that underwent numerous changes throughout the execution week.

- KPIs were published and reviewed intermittently within the maintenance organization but not used to manage or improve the operation.
- Regular daily review meetings were disorganized and unnecessarily consumed more time than should have been required each day.
- Though the maintenance service provider employed three Reliability Engineers, they were assigned so many other responsibilities that very little actual reliability work was ever performed.
- Unplanned downtime exceeded 20% and was growing.
- OEE potential was not being reached due to unreliability of equipment and regular daily slowdowns due to mill/mine tactics regarding ore delivery and crushing on night shift only.
- Wrench time of the maintenance workforce (millwrights, mechanics, and electricians) was measured at 19%.
- Compliance in executing regularly scheduled PM Work Orders was low because PMs were routinely deferred to enable technicians to address emergency work orders.
- While Schedule Compliance was not measured systematically it was observed that Weekly and Daily maintenance schedules were rarely adhered to.

HOW WE HELPED:

The Site General Manager, Peter Langlois, engaged SAMI to design and implement an improvement project focused on the assets in the concentrator and the behaviors of the employees tasked with operating and maintaining the concentrator assets. A cross-functional team consisting of Operators, Maintenance Technicians, Reliability Engineers, Planners, and Supervisors (both Ops and Maintenance) was formed to work with the SAMI team to review and update the existing Maintenance Work Management System and implement the revised work processes.

A Steering Committee comprised of the site senior leadership team was formed to provide executive oversight, supply resources, and remove barriers as they were identified during the project. The Steering Committee met monthly to review project progress and stay abreast of the accomplishments and pace of the project team.

Three “Project Champions” were selected to provide direct daily management support for the effort:

1. Concentrator Manager
2. Concentrator Maintenance Manager
3. Chief Metallurgist

Several “Project Coaches”, representing the impacted functional areas, were also recruited to provide ongoing support for the staff and hourly workforce. Two SAMI Consultants, working back-to-back, two-week-on/two-week-off rotations rounded out the Project Team.

The SAMI Consultants:

- Provided maintenance and reliability subject matter expertise
- Trained the Champions and Coaches
- Provided one-on-one and group coaching to the Vale Champions, Coaches, and staff
- Ensured the project team continued to make progress to implement the designed improvements and deliver the estimated benefits

One of the first tasks the project team undertook was to craft a name for the project. They selected “VBAM” (Voisey’s Bay Asset Management) for the project name and “Charting Our Course” as the project theme.

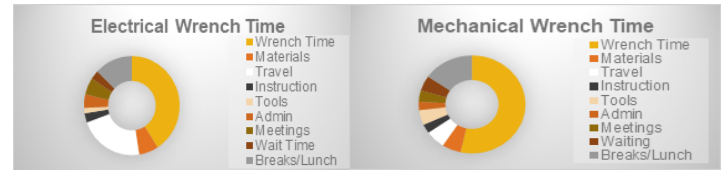
“Charting our Course” was chosen so the team would remain steadfast in their focus on:

- The future state of the facility and the work processes being improved for their benefit
- The individual ability and responsibility each of them had to make a positive impact on the direction of the project and the ultimate outcomes achieved.

Using the SAMI APDISC Process, Pyramid Model, APEX software tool, and behavioral change management tools and techniques SAMI guided the project team to implement permanent sustainable improvements in key areas within the concentrator. Daily and weekly meetings were redesigned to follow standard agendas and involve only those individuals that needed to attend. The meeting owners were trained to properly control the meeting and achieve the desired outcomes in the time allotted. The existing work management system was revised to reflect maintenance best practices. The VBAM team updated the work management system documentation so the text and process flows were accurate and up-to-date. RACI charts for all key work processes were developed and implemented so all employees now understand who needs to be involved in each task. Special emphasis was placed on the planning and scheduling function to provide a greater level of structure and discipline for systematically identifying, planning, and scheduling maintenance work, both in the concentrator and anywhere throughout the site where the maintenance service provider had responsibility for maintaining facility fixed assets. Reliability Engineers and other key staff members were trained to conduct FMEAs and RCFAs. While some Root Cause analysis was being performed prior to VBAM the volume of completed RCFAs was more than quadrupled during the project.

RESULTS:

The improvements that were implemented resulted in increased uptime, improved OEE, and additional throughput in the Concentrator. Unplanned downtime was cut in half (presently down to 605 hours YTD in 2016 from 1215 hours in 2014 with processes in place to continue the downward trend). Wrench time increased to 41% for the electrical trades and 53% for the mechanics and millwrights. PM Compliance is routinely in the 90-100% range which has led to increased reliability and uptime. Schedule compliance is near 100% most weeks with some challenges still being experienced due to the condition of the facility and unexpected equipment failures.



CLIENT TESTIMONIALS:

“We’re a lot better than we were at this time last year. Operations works better with Maintenance and we both understand each other’s needs. Our revamped morning meeting helps us to quickly understand what’s going on and what everyone needs today without all the wasted time we used to go through.” - Dana Marche, Vale Operations Supervisor

“We’ve made leaps and bounds during this past year. We were in turmoil last year and we’ve gotten a lot more in control because of the work processes SAMI helped us get into place.” - Peter Blake, Mechanical Maintenance Supervisor

“Now that I’ve been using the 13 Zone Walkdown and the T-7 scheduling process for a few months I realize how much better it is than our old way. I feel so much more in control of the work, I’m way more organized, and I can’t imagine going back to the old method. Our electricians are getting more work done now too. Everything really came together for me after we received the Prometheus scheduling training. That was the final piece of the puzzle for me.” - Mary Ann Snow, Electrical Planner/Scheduler

SAMI was founded in 1996 to help national and international industrial organizations modify both functional processes and workforce behaviors in pursuit of sustainable performance improvements. SAMI’s top-level consultants, all of whom are highly-accomplished veterans from such fields as energy, transportation, construction and engineering, offer client firms unique new approaches that positively transform all levels of an organization so that they can reach and maintain new heights of success. The company is headquartered in the U.S. in Farmington, CT and can be reached at 860.675.0439. SAMI also has offices in Europe, South America, India, Australia and the Middle East. On the web they can be found at www.samicorp.com.