

Advanced technology Supavac® mobile solids transfer pump unearthed this overwhelmed submersible pump; restoring full holding capacity to critical drainage sump.

Vale's South Mine is a hard rock mine in the heart of the Sudbury mining basin. Presently, this mine extracts over one million tons annually of rich ore deposits, comprised primarily of nickel and copper base metals. Access to South Mine's underground is gained through both a ramp system and a 4,100-foot deep shaft. Present reserves will allow for another 8 years of operation, with future expansion expected to push the mine's life to 30 years.

As in most hard rock underground mines there is always a substantial amount of water used for drilling, cutting, washing and regular maintenance plus the normal seepage of ground water. In all cases, this water is pumped or gravity fed back to holding areas with drainage sumps. In this harsh environment, there are always a large amount of fine rock cuttings, residual slimes and mud that build up in the sumps, eventually decreasing the sumps holding capacity for mine waste water. If the sumps are not cleaned of these solids on a regular basis, the material becomes very dry hard mud referred to as "mine slimes". The only way to clean some sumps in the past was with a scoop tram: see photo #2.

In the case of South Mine, a particular sump located on 4130 level was too small to facilitate cleaning by scoop tram. Mark Moffatt, Planner for Division 2, now mine manager, had not been able to use this sump to its fullest capacity for over a year because of slime build up. Mark was looking for way to clean the solids from this sump to regain its full holding capacity.

At the same time, the new Supavac pump was introduced to Mark. A Guzzla Model SV60 pneumatic displacement vacuum recovery pressure discharge solids transfer pump was just the right pump to handle this job. The setup time was less than one hour and removal of the hard mud like material began. Vacuuming of the mine slimes was done using two 20-foot lengths of 3-inch suction hose with a Guzzla pickup nozzle and discharging was through 150 feet of 4-inch special bull hose.

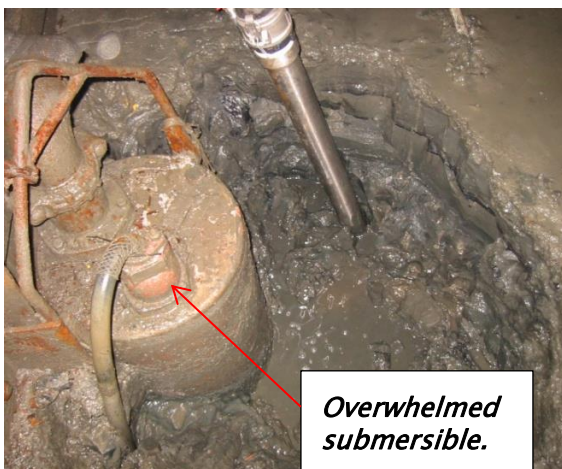


Photo #1: The Supavac proprietary pickup nozzle shown vacuum recovering settled muck and solids from around this overwhelmed submersible pump at the 4130 level at this major underground mine.

Photo #2: Scoop trams have been used to cleanout drainage sumps. The main problems using scoop trams are: access in tight quarters; damage to drive train being submerged under water, and spills along the way.

Mark Moffatt, Vale's South Mine Division 2 Planner: "I have lots of positive response to the new Supavac pump. When we did the test on 4130 level, I was totally amazed at how thick the slimes were and that pump sucked it up and out. At the suction end, the slimes where so thick, I was waiting for the line to fill up and plug, but when you looked at the discharge it was spitting out like dirty water. I was very impressed with the Supavac. I think it has a bright future in the mining industry."

The sump clean out process was quickly completed removing over 40 cubic meters of mine slimes and hard solids, restoring the full holding capacity back to Mark's sump.

The patented vacuum recovery and pressure discharge technology is the key to the operation of these pumps. With no rotating parts or electricity and with no moving parts in contact with the flow, extremely high reliability is the experience. All that is required is a supply of compressed air.

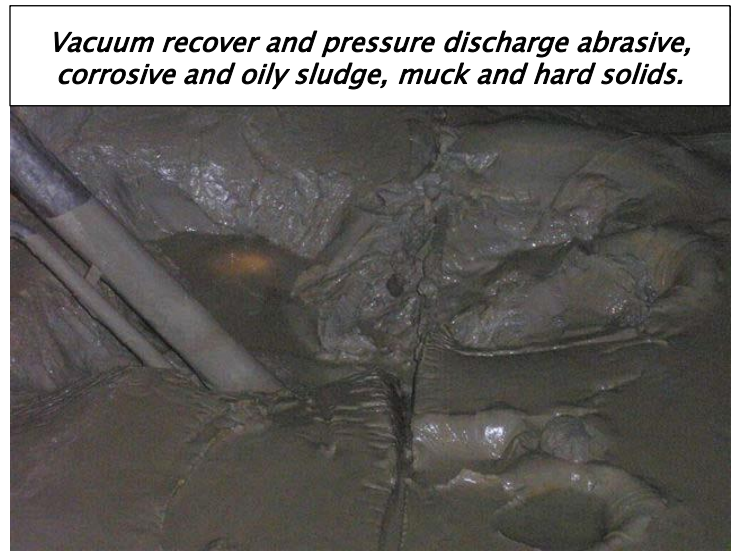
Supavac pumps are proven to reliably transfer flowable sludge, hard solids, trash, slurries and even sand and rock, where the use of submersible, centrifugal and diaphragm pumps results in excessive maintenance and downtime or is not a viable option.

In order to move lots of solids, centrifugal and submersible pumps must operate with high flows, usually having to oversize for the job. This can lead to cavitation, maintenance and downtime. Supavac solids transfer pumps are specially designed to move lots of solids with a minimum amount of flow, and the addition of makeup water is often not required at all.

While we do not plan to replace vacuum trucks; Supavac pumps can effectively perform many of the same tasks at a much lower cost. In fact, Supavac pumps can transfer flows through a fully contained pipeline or hose up to a kilometer away.



Photo #3: Supavac model SV60 solids transfer pump being repositioned at another underground mine.



Vacuum recover and pressure discharge abrasive, corrosive and oily sludge, muck and hard solids.

Photo #4: This is typical cleanout of thick settled muck and hard solids in another underground drainage sump.

Installations include: sludge/slurry transfers; conveyor spillage; lagoons and ponds; upset sumps; digesters and thickeners; underwater cleanups; bypass pumping; pneumatic excavation and conveyance; drilling and tunneling; intrinsically safe operation for x-p areas and underground.

Applications include: abrasive and corrosive slurries; mine tailings and muck; sand and rock, hazardous waste; hydrocarbon sludge; drilling mud waste and cuttings; wet and dry spills; and more.

Supavac SX pump models and systems provide solids transfer rates from 8 to 40 m³/h and higher. Mobile units are compact and fully enclosed for zero discharge environmental compliance. Complete pump systems are available for rental and purchase anywhere, with percent rental recapture available for select pump systems. Onsite supervision of startup and training provided.

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