

Maine Drilling & Blasting Introduces New Equipment on Kibby Mountain

In the past, Maine Drilling & Blasting (MD&B) has been faced with many challenges, but nothing the company worked on was as rugged as the terrain encountered at the Kibby Mountain wind project in northern Franklin County, Maine.

In January 2008, TransCanada got approval from the Land Use Regulation Commission to construct 44 wind turbines on the boundary of mountains with roads and foundations across two ridgelines and 10 miles into the Maine woods. The \$320 million project is expected to generate about 357 million kilowatt-hours of electricity annually – enough to power about 50,000 Maine homes.

During construction, foundations for these towers required Maine-based MD&B to arrive on the scene to install 616 rock anchors. This infrastructure is in a mountain climate unique to this elevation of 3,000 feet.

One of the challenges of this project is that it required some road construction to fill-in valleys often utilizing rock from the next peak. Drilling and blasting for these remote peaks requires equipment, material and crew across valleys of industrial forests with steep terrain. Between weather and rugged terrain, it takes extraordinary efforts to achieve 5,000 cubic yards of rock blasted every day for fills in the valleys.

The team met the challenge by blasting through huge topographical features to create both the material needed and the grades required. Rock anchors for the foundations are designed with a larger diameter anchor than previously utilized. Testing these anchors to 679,000 pounds has proven the bond passes all PTI specifications.

Working alongside Reed & Reed and Sargent Corporation, workers have been carving roadways through the thick Maine woods and traveling across the northern Appalachian Mountain ranges. Due to the rugged nature of the project, the crew necessarily prepared themselves for such isolated locations not only to have a competitive edge, but also to grant their employees better working conditions and to enable them be more efficient on the job.

“Together, our ingenuity and our corporate culture have enabled us to succeed at projects with logistic challenges,” said Bill Purington, MD&B president and CEO. “We’ve developed the ability and equipment it takes to perform these isolated projects efficiently.”

With an eye on increasing productivity and safety, MD&B investigated a more proficient way get bulk emulsion, as opposed to traditional explosive product, onto isolated sites and move supplies and workers on and off the jobs



The Bulk Skid was dragged by a D-8 Class dozer, so 10,000 pounds of bulk can be pumped to multiple holes in an area where there are no roads.



more quickly and safely. It was determined that new equipment would be necessary to transport supplies and workers more efficiently. Purchasing and specially outfitting two Komatsu crawler carriers to the tasks, and utilizing in-house engineers to design a Bulk Remote Transportation Skid, MD&B was able to boost productivity.

Prior to purchasing this equipment, the blasting sites at Kibby were mostly inaccessible by truck. With the large amount of summer rain, the roadways were muddy at times. Employees were using a snow groomer, often referred to as the “mud buggy” on site, to transport workers to the shots. One worker described the ride in the mud buggy as “pounding your teeth out of your head,” and declared, “I would have rather walked.” In fact, at times, walking while laden with materials was the only way in.

Crew members were also transporting equipment via four-wheelers and six-wheelers, which resulted in low productivity. Employees are now transported in one of the Komatsu crawlers. When not loaded with employees, the Komatsu crawler is also utilized as transportation for supplies.

With the employee transportation difficulties solved, it became necessary to increase shot efficiency on the job. MD&B’s team knew that they could increase efficiency rapidly by pumping bulk emulsion instead of hand-loading sticks or hauling tube.

With a need for bulk on shots came a demand for a piece of equipment that could transport bulk on and off the shots in extremely isolated locations. MD&B’s in-house engineers supplied the solution by



The rock bolts for the tower foundations are bonded 35 feet below this grade. These three-inch-diameter anchors will be post-tensioned to 350 tons each. The white PVC allows the rock bolt to slip through the foundation that will be placed with the anchor bolts in the background.

Left: The detonation system connections are taped to ensure positive connections in this rocky terrain.



Crew access to a pioneered area is assured with the Komatsu crew transport. The pipe is used to sleeve blasting holes to avoid collapse in the weather conditions.

designing a bulk emulsion transport pulled by a large dozer. This proprietary Bulk Skid is capable of holding and directly pumping up to 10,000 pounds of explosives. The use of bulk allows for a more efficient shot by saving time, energy and manpower. Last year bulk could only be used once due to the incapability of having a bulk truck on the shots. This year, thanks to the Bulk Skid, 90 percent of shots were bulk.

"The Bulk Skid saved us," said Nate Ayers, MD&B project superintendent at Kibby. "Decreasing the amount of manual labor was a big concern from both standpoints of safety and productivity. Previous to the Bulk Skid, employees were lugging bags all over the shot, up muddy, slippery hills causing potential slips, trips and falls. The Bulk Skid has greatly reduced the amount of safety hazards on shots. Along with the reduction in hazards, using bulk on the shots has allowed for bigger patterns, getting jobs done quicker and more efficiently with less labor."

Thomas Baker, layout surveyor/foreman from Sargent Corp., agrees with Ay-

ers. "The Bulk Skid is a lot quicker," Baker said. "There's been a big difference. Holes are being filled and shots are off in half the time at any point in the day. It's a case of having the right tools to get the job done, and Maine Drilling has certainly invested in the right resources to help make this project successful."

With these new transport team members, MD&B was able to reach rock in what had previously been the most unreachable locations. Just recently a second, differently adapted Komatsu was deployed as a means of efficiently moving large amounts of bagged and boxed explosives to remote areas of Vermont for the construction of an electrical transmission project from Vernon to Coolidge, Vt. The explosive magazine held 7,000 pounds of product along with detonators. Equipped with a hydraulic lift-gate, employees were able to work at an ergonomic waist height, increasing safety and efficiency on the job site.

By October's end, 22 of the 44 windmills for the Kibby Wind Power Project were up and running, providing energy for about 25,000 homes. It is expected that the other 22 windmills will be up and running sometime in 2010. ■