The Merowe Dam Project is a hydro-electric scheme intended to double the power generating capacity of Sudan and in particular to increase supply of electricity to Khartoum. The Dam implementation Unit (DIU) had engaged Laymeyer of Germany as project consultants and Chinese firm CCMD as main contractors.

The central core of the dam was causing some problems. A fine-to-medium sand layer was thought to be incapable of supporting the main earth core and fears of settlement needed to be addressed. Professor Morgenstein, an independent consultant from W. Canada, had seen RIC in action in Canada and suggested that this could be the tool to use.

The intention was to improve the sand layer to at least 10 Mpa bearing capacity up to depths of 6m. The unknown was the seepage effect from the dammed river - the water level behind the earth works being 8m above the surface to be compacted.

The area to be compacted was 200m x 36m - small in terms of the usual applications for RIC. Due to the need to make progress with the next stage of Construction a fast solution was required.

BSP air-freighted in at short notice an RIC9000 unit which was mounted on a Hyundai R450. Working in partnership with RIC-Africa the compaction was completed in a 2-3 week period.

The site was marked with compaction points spaced on a 3m grid. Up to 80 blows being imparted to each point. Penetrations around 0,8m were seen at the surface.

The machine had to cope with penetrating the crust caused by previous vibro-rolling and hence more blows than normal were required to break through the top layer.

The Pre-CPT tests had been done a few weeks before and these were repeated after compaction was complete. These validated the faith shown in the system and bearing capacities in excess of 15 Mpa were seen in the upper layers and at the 5-6m depths were averaging 10-12 Mpa.

The Post-CPT's were done soon after compaction. At depths below 6m there was some variation in strength. There was apparent decrease in strength in some parts at those depths, this was attributed to the seepage effect of the water from the Nile in the interim between tests; not to any loosening effect by the action of compaction.
Summary of CPT Results

TB = results some weeks before compaction  TA = results immediately after compaction  Target $q_c = 10,000$ kPa down to 6m