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SITE VISIT REPORT SATPARA MULTIPURPOSE DAM PROJECT

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SATPARA MULTIPURPOSE DAM PROJECT

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SATPARA DAM PROJECT SITE VISIT REPORT

A team of three environmental experts and senior energy expert of Energy Policy office visited Satpara Dam from Sept 27 – Sept 30, 2010 to conduct environmental assessment of the Satpara Dam Project and to collect data to prepare Environmental Monitoring and Mitigation Plan (EMMP) for the project. In addition, a review of seepage at dam foundations and from the left abutment was conducted and dam construction photographs were collected from contractor M/S Descon.

The seepage from the dam foundations and right abutment was normal; however higher seepage was noticed from left abutment, which was passing under the spillways and joining the seepage drainage channel. A copy of WAPDA's experts September 16, 2010 report (attached as Annex - 1) was also collected from site which is slightly different from the two page report previously received from Member (Water) dated Sept 22, 2010 and subsequently submitted to the Mission. Note portion which I have high-lighted in yellow.

The technical paper titled "Seepage Control for Satpara Dam" was shared with WAPDA, consultants and the contractors and they all confirmed that the recommendations given in the paper to control the seepage were fully incorporated in the design and were implemented in the construction of the Satpara Dam. The attached photographs (attached as Annex - 2) also show that the recommended measures to control seepage were implemented.

Salim Paracha

Senior Energy Expert
Energy Policy Project

REPORT ON THE PERFORMANCE OF SATPARA DAM – September 16, 2010

REPORT ON THE PERFORMANCE OF SATPARA DAM SEPTEMBER 16, 2010

The dam is founded on alluvial material (boulders, gravels, sand and silt) and not on bed rock. Due to this characteristic, a 1700 feet long impervious (silty clay) blanket in continuation of the dam core was laid on the foundation and tied with a 50 ft deep slurry concrete cutoff trench. This cutoff wall is installed through the upstream cofferdam. The blanket was wrapped around on the abutments to make an impervious barrier and check the entry of water. Another two lines of cutoff walls have been provided under headworks of the spillway.

Since the dam does not have a positive cutoff and the foundation materials are heterogeneous, therefore it was known at the design stage that there would be considerable amount of seepage. The impervious blanket and cutoff barriers were designed to limit this seepage.

In order to give a safe exit to the seepage, an elaborate drainage system was provided under the downstream shell of the dam and under the spillway structure. As a second line of defence, 12 relief wells have been provided at the downstream toe of the dam in order to intercept the seepage.

The seepage is being measured at various points: downstream toe of the dam, at the end of the spillway and the combined seepage. Some seepage is by passing these points and improvement is required in the measurement of the total seepage.

The underseepage can be reduced to some extent but at a considerable cost by grouting. This is not really required because the collected seepage is utilized to generate power at downstream located Powerhouse No. 2.

Seepage is detrimental only if it entrains soil particles leading to piping and failure of dam. The Satpara seepage water is clean and of no such concern. It is being diverted downstream into the irrigation system and not going waste.

There are about 85 instruments (piezometers) to measure hydrostatic pressures at various points in the dam body and its foundation which are being monitored regularly. The piezometric pressures are within the safe limits. Check readings were taken on September 15, 2010 and the pressure values at all locations were found to be as per designs. In our opinion there is no danger to the safety of the dam.

The above report has been prepared by:

- Abdul Khaliq Khan - Consultant WAPDA
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PHOTOGRAHS FROM SATPARA DAM – September 2010





















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