

~~10 February 1999~~

To: Mark Pont, MCI/Quetta

From: Dick Scott, MCI/Lashkar Gah

~~Subject: Boghra Canal Intake Gates: A Need for Action~~

The Boghra Canal intake gates have been near completion for some time. The final gate was installed by Mohd. Omer on 27 January 1999 with the help of a HAVA dragline and accompanying staff. It was truly a team effort with Taliban representatives on the scene. Mohd. Omer swung the gate into place since the dragline reach was a bit short. While all the gates have now been installed, their operation is flawed.

There are a total of seven gates on the Boghra Canal "L" shaped diversion/intake structure. There are three gates in the diversion element that is built across the main channel of the Helmand River. When these gates are open, most of the river flow continues down the river channel. When these gates are closed, the water level in the channel rises and water is diverted into the Boghra Canal. These gates are raised and lowered by a mobile quadruped hoist that moves from one gate to the next on tracks.

At the present time there appears to be some minor problem with the tracking mechanism. Either the tracks and wheels are slightly out of alignment as a result of damage sustained at the time the Russians targeted the structure or when two of the legs were replaced due to damage or there is need of wheel lubrication. There appears to be some resistance in the tracking mechanism. In time, resistance under such weight could result in breakage.

With this original system, only one gate at a time can be moved. The newly replaced hoist mechanism has a 10 ton rating and is geared so low that one man can easily lift one of the big gates, given a substantial amount of time. It takes about two hours to open the three gates, assuming little time is taken to rest. Sometimes, in time of Helmand flood, time is a very important element in the Boghra diversion/intake operation. A Helmand River flood down the Boghra Canal can and has caused major damage to the irrigation system, including blowing out canal embankments and flooding nearby land. This past week, some gates were damaged by flood level water in the canal, and one canal embankment was blown out near the damaged Siphon 73+962.5 in Marja.

There are four gates on the intake structure of the canal. Each gate has its own lift mechanism including wheels and gears. When asked why the gates were not closed recently when the Boghra Canal was imperfectly "closed" simply by opening the diversion gates noted above, the gate custodian, a man of 15 to 20 years experience at the site, said that he could close them but could

~~not open them with the newly replaced lift mechanisms. He would have to use an additional hoist ("come-along") to lift the heavy gates. He said that these gates were not tested after installation~~

The lift mechanisms are duplicates of the originals installed by Morrison-Knutson in the mid-1940's, recently duplicated in Pakistan. But the original gates had a system of counter-balance weights, apparently destroyed or displaced by Russian artillery fire during the 1980's, to help lift the gates. These missing weights will have to be replaced.

In short, while the gates in the Boghra Canal intake/diversion structure appear to be complete as a project, there is still work to be done and adjustments to be made. Mohd. Omer indicated that his job was to install the gates. Engineer Samad indicated that there was some part needed from Quetta before the counter weights could be made. When pressed, he said that Engineer Wardak would be in charge of the final actions to complete the work. I will discuss this with Engineer Wardak in the near future.

On or about 20 January 1999, we received a letter from Mullah Abdul Samad Khujandi, head of HAVA, pointing out some of these problems with the gates, as reported to him by Mohd. Amin, the gates custodian. He was worried that we thought that we were finished with the work on the gates. I informed him in writing that we were aware that the work was not yet completed. Among other things, the fourth intake gate was not yet in place. When Engineer Samad returned, he would focus on the completion of this work. Engineer Samad has seen this correspondence. I noted that engineers from both MCI and HAVA would have to agree when this project has been completed. This would involve a joint inspection and testing of the gates.

Besides the counter weights and the needed adjustments noted above, I would suggest a replacement hoist be found that would allow the diversion gates to be opened more rapidly than is possible at present. Helmand floods rise rapidly and the diversion gates must open rapidly in response if more damage is to be averted. Aside from bullet holes in gates and damage resulting from vandalism, mostly the theft of lift mechanisms for scrap, a high percentage of damage sustained over the past 18 years in the Boghra Canal has resulted from the uncontrolled flow of water through the system especially at the time of Helmand River flood. The embankments on the down stream side of virtually every structure has been eroded by the excessive flow of water through the system. In several cases this erosion has taken out as much as half of the service road surface. It is necessary to control the flow of water through the irrigation system especially at the time of Helmand River flood. This can only be done by an alert custodian at the site (sometimes), early warning from Kajaki Dam (not likely at the present time), and gates that

can be moved in a timely manner (probably not with the present hoist).

As a side note, the problem of flood water entering the Boghra Canal for several days and causing damage following the rains of 5, 6, 7 February resulted from the gate custodian being "away" without a replacement, without anyone at the site with the authority or the knowledge to respond to the flood. HAVA Deputy Akundzada indicated that there was one person in charge at the gates with the responsibility to control them. The gates would be closed on his return to duty. There was no "editorial" comment on this situation and I did not press for one.