

The shameful facts of the Neelum Jhelum HEP rip-off

WAPDA Chairman Syed Raghیب Abbas Shah had recently again argued in a letter (this summer) to the Federal Ministry of Water & Power that “India could clinch the water rights of the Neelum River if the construction of the Neelum Jhelum project was slowed.... etc”. A perfect example of the saying “You can fool some of the people sometimes but you cannot fool all the people all the time”. Mr. Chairman is still trying to hide the fact that India’s water rights for their Kishenganga Hydro Electric Project (KHEP) Project have been established & accepted by the International Court of Arbitration (ICA), The Hague 8 judges through their “Partial Award” dated 18 Feb 2013. The first dispute issue of “water diversion” has been settled by the ICA who concurred with the Indian position that KHEP is a “Run-of-River” plant in line with Para 15, Annex D iii) of the Indus Waters Treaty 1960. Accordingly India may divert water from the Kishenganga / Neelum River for power generation by the KHEP and may deliver the water released below the power station into the Bonar Nallah. The secondary issue of “minimum flow” in the Neelum River (for Neelum Valley’s ecology) was to be “determined” by the Court in a final Award. This Supplementary Award has been given in mid Dec 2013. India is required to ensure a flow of 9 cumecs during the low flow 7 months period (mid-August to mid-March). Therefore India will be diverting 86.8% of the flow of these 7 months. This diverted water will come into the Wullar Lake in IHK.

It has been crystal clear to many that the Neelum Jhelum HEP 969 MW project (Annual Energy 5.15Bn Units) with the longer tunnel option involving drilling below the Jhelum River Upper-Stem had become a “lemon to be squeezed” by several quarters. In Kashmir the multi-laterals such as World Bank & ADB etc are not involved. However we did not expect this monumental bluff to be carried this far. The concealment of the ICA Award of 18 Feb 2013 and talking of India clinching Water Rights (to expedite contract payments) is simply unforgiveable. The reduction of the annual energy of NJHPP in AJK from 5.15Bn units to 4.50Bn units with a plant factor of about 53%. The project cost already escalated by 2.5 times between 2008 and 2010. It will escalate further.

This project is emerging as the biggest financial & technical scam in sixty six years of the chequered history of Pakistan. Once the magnitude of the scam is understood it will become a commentary on the history of our state. It infact involves gross negligence by a series of governments and members of the engineering & hydrologic community. The Indus Waters Treaty of 19 Sep 1960 (IWT 1960) is a seriously flawed agreement. There is no exit strategy and Pakistan consistently fails to counter the Indian moves and now even falls prey to its domestic predators. **Below is the factsheet of NJ HEP, AJK.**

- A. **In chronological order the villains in this tragic scenario** are firstly the Fifth Commissioner of Indus Waters Mr. Jamaat Ali Shah who headed the Pakistan Commission of Indus Waters (PCIW) from 1991 to 2011. A great setback was his failure to respond within the time limit to the Indian announcement of the KHEP in June 1994.

Secondly one Mr. Kamal Majidulla (reportedly a journalist) who has as adviser to the PM controlled all hydrology related issues at PCIW & IRSA including the ICA deliberations between May 2010 till recently. This illegal czar of Pak hydrologic affairs was not qualified to deliberate on hydrology. He kept a tight lid on the ICA Award of 18 Feb 2013.

Thirdly WAPDA Chairman Mr. Shakeel Durrani in the period 2007-2012 played second fiddle to his Member Water Syed Raghیب Abbas Shah. Both were in perfect harmony on strategic issues i.e; oppose KBK, keep DBD on the back-burner and push a few lucrative projects like NJ HEP. They together served their respective political mentors.

Fourthly Syed Raghیب Abbas Shah, after retirement in July 2009 was acting as Member Water till 2012. He was asked to continue against the rules in year 2012 as the Chairman WAPDA. He is a beneficiary of the NJ HEP project. A genuine race should

have convinced the WAPDA bureaucracy to not use the Option-2 design having longer tunnels drilled below the Jhelum upper stem. Pakistan has lost the case as expected and India will now divert Neelum waters, creating an average flow reduction during October to March of +33% & April to Sep of +11% with corresponding reduction in Electric Energy from NJ HEP. Average energy reduction of +12% annually.

- B. **False pretext of a race under the IWT-1960.** NJ HEP 969MW tunnel project with a head of 420m and a max discharge of 280m³/s was determined in 2008 at USD 1.4bn. Drill & Blast (D&B) was the agreed methodology of tunneling. Contrary to PCIW & WAPDA announcements there was no race between Indian & Pakistani projects on the Jhelum & its tributaries. WAPDA interpretation that whoever builds first will have perpetual rights over Neelum waters is not as agreed in the Indus Waters Treaty 1960. Pak side had been cleverly out-manuevered by the Indians in key tenets. Let us simply analyze the Annexure D Para 15(iii) concerning the provision in IWT 1960 for Hydro-Electric power (generation) by India on the Western Rivers. Quote: *“Where a Plant is located on a Tributary of The Jhelum on which Pakistan has any Agricultural Use or hydro-electric use, the water released below the Plant may be delivered, if necessary, into another Tributary but only to the extent that **the then** existing Agricultural Use or hydro-electric use by Pakistan on the former Tributary would not be adversely affected”*. Unquote. The phrase “the then” as appearing in Annex C, D & E of the IWT 1960 has been addressed in the 18 Feb 2013 Award. Due to this devious clause it was an uphill task. The Pak side did not even try to prove their water rights once the Indian ICIW had announced their KHEP project in their letter of June 1994. **There was never a race.**
- B. **Will generate the most expensive hydropower energy in history.** The revised feasibility by Norconsult / Norplan in 1996 (project Option-2) had the design option to go below the Jhelum upper limb & reach the Jhelum lower limb for a combined powerhouse of 969 MW. This increased the tunnel lengths nearly two times & the financial cost fourfold. Unacceptable for just a 400MW enhancement. Every opportunity has been taken to escalate the contract value. WAPDA management in 2010 decided to induct two Tunnel Boring Machines (TBMs). Every TBM is designed for specific soil conditions. Approval was taken from an in-house WAPDA Consultant almost two years after signing of the main contract. Every recognized consultant had apprehensions about the squeezing factor of the pre dominant soft Q4 soil conditions and the 2.5km overburden at some stages of the tunnel infrastructure. The convergence factor also becomes higher when minor seismic events occur. These are regular events. TBMs will be clearly facing the prospect of being trapped upto 2.5km below the surface. Some more questions arise. What is the real contract escalation after these two TBMs are inducted and the contract basis changed? These expensive moles will only be deployed for +11km (8.5m dia) of the initial C-2 section (headrace twin tunnels). Full project tunneling +50km. There can be minimum coordination with ongoing “D&B” work for the balance works of NJ HEP tunnel project. **This +USD 5bn project is not going to be completed by 2016.**

Total cost will exceed USD 5bn before calculating interest (during & after construction). If the original Option-1 design can be followed the project can be completed in about USD 1.1bn by terminating the NJ tunnel at the Jhelum upper stem (before it meets the Neelum). The Option-1 design head being 220m with a powerhouse reliable capacity of 550MW (having minimum hydraulic losses). **The major technical pitfalls are:**

- 1) **The revised design** (Option-2) by Norconsult / Norplan involves the unprecedented feature of tunneling deep below the main Jhelum River. This effort to get an additional 400 MW is clearly a very clever intrigue by the friends of India to make the project extraordinary expensive & difficult. It also ensured that Pakistan can never win the “imaginary race”. A strategic fault line in the PCIW / WAPDA’s hydrologic administration emerges.
- 2) **The NJ HEP tunnels will be the deepest hydraulic tunnels in the world.** The tunnel will have to be steel lined at great cost in the section below the upper Jhelum River but with no technical advantage. Due to hydraulic losses the 969MW rating will not be

achieved even after spending +USD 5bn; the realistic cost of the NJ HEP. The Option-1 can still be applied & the project built in two sections capable of generating +1650 MW.

- 3) There has been no detailed design study of the project (with or without TBM deployment) after the 08 October 2005 massive geological changes.

Conclusion:

- I. Final project cost will be +USD 5 bn. The original USD 1.4 bn was a bluff. Can anyone afford to spend USD 4 bn for an additional 400MW? A terrible financial & technical scam. Analyzed in The News of 11 March 2012 (Dr. Farrukh Saleem)
- II. The project under Option-2 must be suspended before several billion USD are lost. The alternate is to execute in two stages as per Option-1 concept of Dec 1987. The tunnels must be surfaced (day lighted) at the Upper Jhelum River. A power house of 550MW be established as per original feasibility within three years in about USD 1.1bn without any dangerous & costly adventures. The Neelum waters will be adequately utilized for 550MW Power & transferred to the Jhelum. **Later a second stage power house from Jhelum to Jhelum could be built including the diverted Neelum water delivered by the Indian Kishenganga/KHEP.** The estimated cost of a 1100 MW second stage executed by WAPDA is USD 1.2 bn. The second stage is infact a realigned Kohala HEP which would use Jhelum waters to the Jhelum lower limb. A new intake at the Jhelum upper stem will be required for the second stage. The powerhouse infrastructure available from the present work of NJ HEP will be utilized for the second stage. The first stage 550 MW can finally also attempt to circumvent the Muzaffarabad fault line by a careful selection of the upper stem powerhouse. Unfortunately & irretrievably the projects' Neelum River intake infrastructure at Nauseri's is on an active fault line /MBT. Something the consultants had denied before 08 Oct 2005. The first & second stage Run-of-River HPPs can together generate +1650 MW without expensive experiments. The Kohala HPP can be made into a 12km tunnel project on the upper Jhelum stem. It can provide 550 MW without involving huge expense. The grand total thus is 2200 MW.
- III. Some political war chests depended on this project. On 08 May 2012 WAPDA declared at the Pak China Energy Forum at Islamabad (while pleading for additional financing) that the project status is 22% complete. This was a bluff. Today they claim +50% completion which is another shameful bluff. WAPDA is using every channel to state that they will complete the project by 2016. WAPDA was desperate to award a +USD 250mn Transmission Line Contract (from NJ HEP to Gujranwala) on this plea. An offer lower by USD 75mn is being ignored because it involves an Iranian contractor. Infact Transmission Lines upto 500kV can be built in Pakistan by local manufacturers & contractors. Why accept a Buyer's Credit when the line can be built in PKRs at around half of the bid cost? Let the nation win.
- IV. WAPDA has to be made solvent. The nation has to bring WAPDA out of this impasse. NJ HEP based on a longer tunnel option involves extreme incompetence & corruption which will jack final costs to +USD 5bn. It should have been a smaller tunnel option HEP even before the ICA Award of 18 Feb 2013. Now the attempt to create the world's deepest hydraulic tunnels in the world by going below the Jhelum upper stem should be forthwith stopped. The tunnels be "day lighted" at the Jhelum upper stem & initially a 550 MW powerhouse built. **Let WAPDA save USD 3bn and strengthen its Balance Sheet.** WAPDA must again provide 24/7 technical assistance to the PCIW. The nation must face the joint might of the Indian ICIW & the Indian ICID the later reputed to be the world's greatest think tank in hydraulics. When some of our own senior engineers & bureaucrats become part of the internal cancer then it is time to react with great force. We await the results of the enquiry on how Mr. Kamal Majidullah managed to hijack the PCIW under the title of an alien Pakistan Trans-border Water Organization (PTWO).

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