Message from
Engr. Husnain Ahmad
President
Pakistan Engineering Congress

Dear Members,

I am privileged to take you in confidence on some issues of vital significance and to seek your co-operation, goodwishes and above all guidance.

Quarterly Journal – Engineering News

The Journal of Pakistan Engineering Congress is in the 50th year (Golden Jubilee) of its publication. However, timely publication of the journal is being hampered by the lack of papers, an extremely disturbing situation because the congress has in its fold more than 4000 eminent engineers belonging to diverse disciplines. The Copies of the journal are also being dished-out to Members as well as to Engineering Universities, Professional bodies of Engineers etc free of cost. The situation though discouraging but we have not lost hope & are striving to bridge the gap. However, it is high time that every one of us comes forward and contribute papers on Engineering issues of substance to enrich the Engineering profession.

Professional Activities

As you must be well aware, the congress regularly holds Lectures, Seminars & Symposia and arranges technical visits to mega engineering projects to keep its members and delegates abreast of latest Engineering Techniques as well as of economic advancement of the country. Proper intimations are given to the members, displayed on web-site and even advertised. However, the participation to say the least is not heart-warming. I appeal to you to please spare some of your precious time and make the events memorable by your participation.

Up-dating Membership Record

A number of letters sent to members are received back un-delivered due to non-receipt of change in addresses. We are in urgent need of up-dating the membership record and request you to very kindly intimate following information about your kindself.

- Membership Number
- Designation, office address and contact numbers.
- Residential address, phone number & cell number.

Also kindly keep the secretariat informed about any changes in respect of the above from time to time.

Allah bless you all.

Yours sincerely



(Engr. Husnain Ahmad)
President

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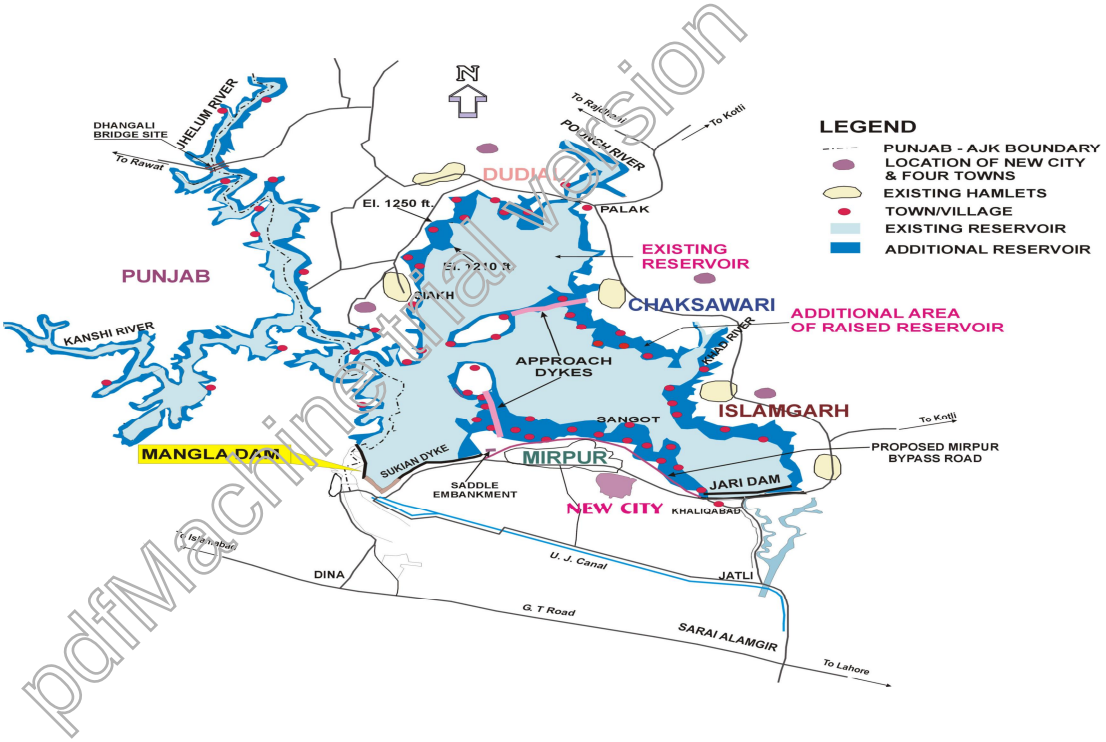
News

VISIT OF TEAM OF PAKISTAN ENGINEERING CONGRESS TO MANGLA DAM RAISING PROJECT ON 4TH APRIL 2009

A 25 members high powered delegation of Pakistan Engineering Congress headed by Engr. Husnain Ahmad, President Pakistan Engineering Congress visited Mangla Dam Raising Project on 4th April 2009. The team was welcomed by Mr. Manzoor Ali, Construction Manager alongwith Mr. Naveed Asghar, Chief Resident Engineer Construction Supervision and Mr. Muhammad Rafi, XEN Mangla Dam Raising Project WAPDA at Mangla Dam Rest House. The delegation was briefed about the Project by Construction Manager, Mr. Manzoor Ali.

! **History**

Mangla Dam was constructed during 1962 to 1967 by a Consortium of 8-Companies Lead by Guy F. Atkinson Co (USA) at a cost of US $ 473 million for main work and US $ 90 million for resettlement. Total quantity of earthfill and concrete was 145 million cu yd and 20 million cu yd respectively. Consultants were Binnie & Partners (UK), Harza Engineering Co. International (USA) and Preece Cardew & Riders (UK). At the design stage provision of 40 ft Raising was kept in original design.



MANGLA RESERVOIR

! **Need for Raising the Dam**

Since the completion of Mangla Dam the gross storage capacity stands reduced by about 20 % due to siltation. For the optimum utilization of the Jhelum River water resources, it was felt necessary to regain the storage capacity that had already been lost. During the study it was found that 5.88 Million Acre Feet (MAF) original capacity was reduced by 21 % and projected loss was worked out as 27 % by 2010.

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MANGLA DAM RAISING PROJECT

RESERVOIR SEDIMENTATION (MAF)

RESERVOIR	ORIGINAL STORAGE CAPACITY (MAF)	STORAGE LOSS BY 2005 (MAF)	STORAGE LOSS 2010 (PROJECTED WITHOUT MDRP) (MAF)
TARBELA	11.62 (1976)	3.25 (28%)	3.95 (34%)
MANGLA	5.88 (1967)	1.21 (21%)	1.60 (27%)
CHASHMA	0.87 (1971)	0.43 (49%)	0.48 (55%)
TOTAL	18.37	4.89(27%)	6.03 (33%) (Equals one Mangla Dam)

! **Dam Raising Options**

Keeping in view the deposition of silt, various Dam raising options from 10' to 40' were studied on the basis of different merits and demerits. The best option considered was raising of 30 ft (9.1 m) which is an optimum compared to other options.

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MANGLA DAM RAISING PROJECT

DAM RAISING OPTIONS

DAM RAISING (Ft.)	POPULATION (Persons)	HOUSES & OTHER BUILDINGS (No.)	LAND (Acres)	ADDITIONAL WATER AVAILABILITY (MAF)	COST (BaseCost +IDC) (B.Rs.)	EIRR (%)
10	25,300	4,100	6,390	1.8	Not Worked Out	-
20	34,600	6,042	11,020	2.5	Not Worked Out	-
30	43,791	8,023	15,783	2.9	62.5	18
40	50,919	9,447	20,048	3.1	82.5	16

! **Benefits**

The raised dam will augment supply of irrigation water at a time when it is needed direly. There will be additional power generation and further flood alleviation. On the average, annual water availability for irrigation releases would increase by 2.88 MAF. The average annual energy output is estimated to increase about 12 % of the present energy production.

The Project

The total revised PC-1 cost of the Project is about Rs. 102 billion. The Contractors are Joint Venture of one Chinese Company (M/s CWE) and two Pakistani Companies (M/s DESCON & SACHAL). The Consultants are a Joint Venture of five Companies lead by NESPAK.

MANGLA DAM RAISING PROJECT

SALIENT FEATURES

Dam Raising	**30 ft**
Additional Annual Water Availability	**2.9 MAF**
Additional Annual Power Generation	**644 GWh**
Land Affected	**16,384 Acres (6,630 Hectares)**
Population Affected	**50,000**
Houses and Other Buildings	**12,815 Nos**
Project Cost	**Rs. 102 billion**
EIRR	**18%**
Award of Contract (Dam Raising Works)	**June 20, 2004**
Contractual Completion Date	**September 19, 2007**
Expected Completion Date	**June 30, 2009**

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The Mangla Dam Raising Project comprises of 3 Major Components:

! Preparatory Works

! Main Works

! Resettlement Works

Preparatory Works

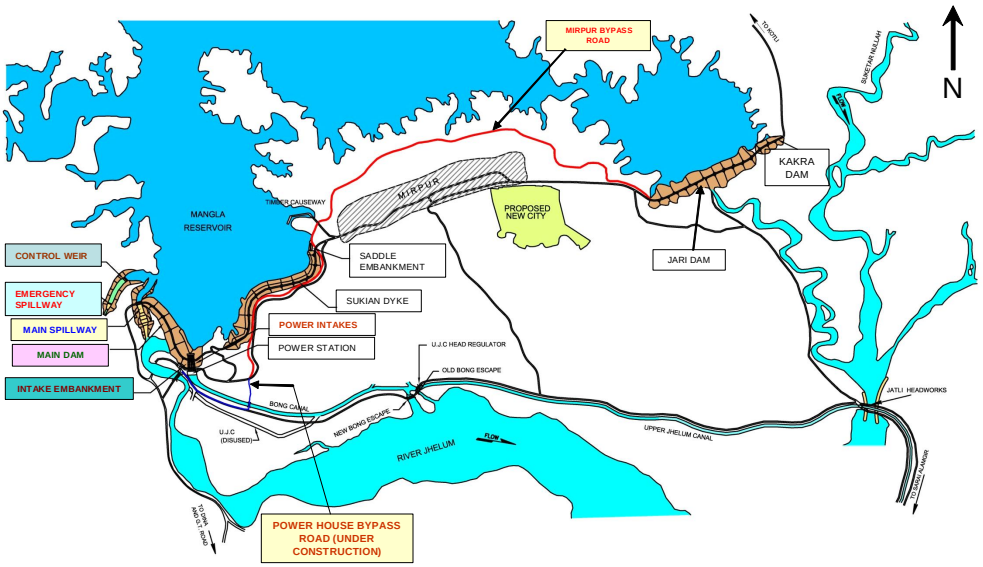
Preparatory works associated with Raising of Mangla Dam comprises of an embankment across a saddle just east of Sukian Dyke has been constructed where the lowest natural ground level on the reservoir periphery was about El.1230 ft. Also a bypass road is trafficable which starts from the bridge over river Jhelum and traverses along right bank of Bong Canal, crosses the Bong Canal to join the existing single lane road, which in turn, joins the Mirpur Road as presently the road between Mangla and Mirpur, thus skipping the sensitive area of Power House and switchyard of Mangla Dam.

Main Works

The major components of the works comprise raising of the dams (Main Dam, Sukian Dyke & Jari Dam) and Main spillway head works, construction of a control weir upstream of the Emergency Spillway and Mirpur bypass road. The work commenced in June 2004 and was completed in June 2009. The total length of dams is 13.4 km whereas length of bypass road is 21 km. Main Works includes the excavation of 8.6 million cu yds, 38.00 million cu yds earthfill, 0.2 million cu yd of concrete and silt dredging of 0.2 million cu yd from upstream toe weight has been executed.

MANGLA DAM RAISING PROJECT

PROJECT LAYOUT



During the briefing on Main Works, sequence of construction of placing various zones of embankments, Roller Compacted Concrete, at Control Weir, base slab of Main Spillway Concrete placing method, dredging of silt from upstream of toe weight and silt blanket on upstream of Sukian Dyke was explained in detail.

Resettlement and Compensation

At the time of original construction of the Mangla Dam, land on the periphery of the reservoir was acquired upto El. 1210 ft. (368.8 m). For the raised Mangla reservoir, additional land upto El. 1250 ft. (381 m), measuring 16,385 acres (6,630 ha), has been acquired. About 20% of the land acquisition is in Punjab and the remaining in AJK. By raising of the dam about 50,000 persons are being displaced and about 12,815 houses & other buildings are affected.

A formal agreement for compensation and resettlement covering details of package for the project affectees was signed between Governments of Pakistan (GOP), Azad Jammu Kashmir (GoAJK), and WAPDA on June 27, 2003.

For resettlement of the displaced population, a New City adjacent to Mirpur is being developed. In addition, four small towns adjacent to Islamgarh, Chaksawari, Dudial and Siakh are also being developed on the periphery of the reservoir for the affectees who will be able to resettle near to their original habitat. In addition to resettlement package one Bridge at Dhangali and two Dyke are being constructed under confidence building measures (CBM).

After the briefing, Emergency Spillway, Main Spillway, Main Dam, Intake Area and Mangla Fort were visited. Detailed discussions were held on various construction activities. Engr. Husnain Ahmad President Pakistan Engineering Congress appreciated the quality of work being achieved for concrete as well as earth work. At the last leg of the visit a momento was presented to Mr. Manzoor Ali Construction Manager by Engr. Husnain Ahmad on conducting excellent briefing and site visit.

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Glimpses of Pakistan Engineering Congress
Delegation's Visit to Mangla Dam Raising Project



Engr. Husnain Ahmad President Pakistan Engineering Congress in deep discussion



Mr. Naveed Asghar CRE (CS) briefing Engr. Husnain Ahmad President Pakistan Engineering Congress & the delegation at Mirpur Bypass Road

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From Left : Engr. Husnain Ahmad President Pakistan Engineering Congress, Engr. Shabir Ahmad Qureshi Member Executive Council, Engr. S. M. A. Zaidi Vice-President (PEC) Engr. Anwar-ul-Hassan Member Executive Council

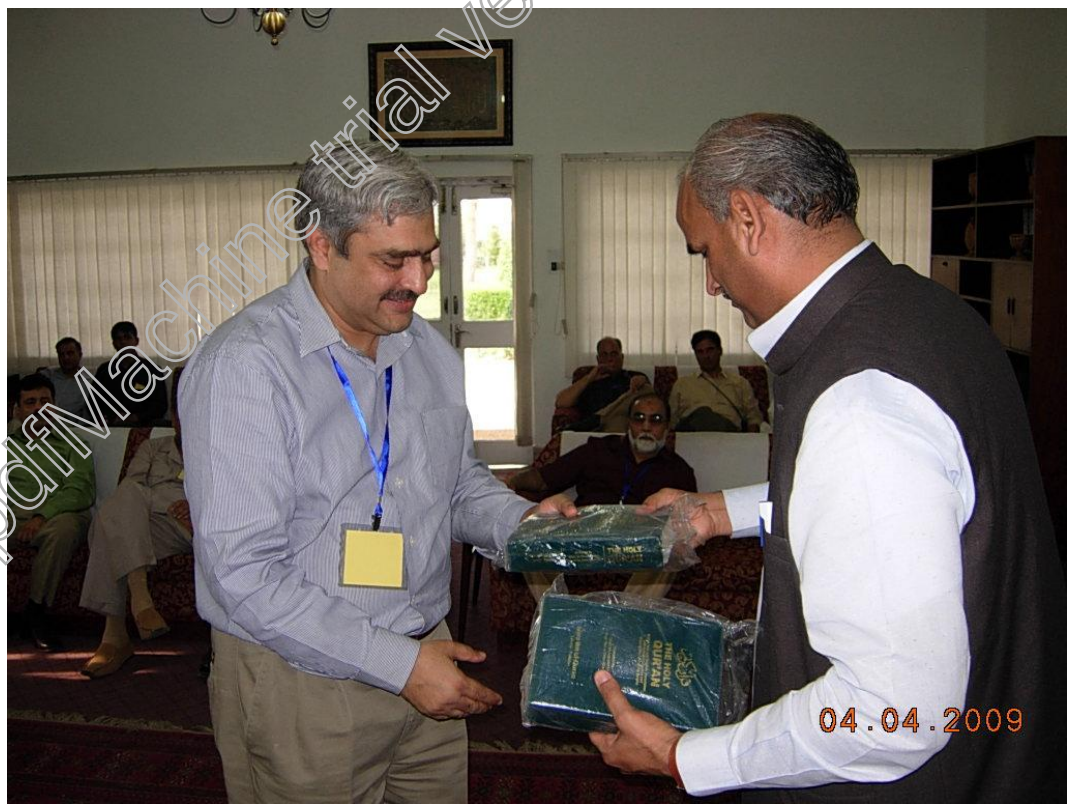
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Down Stream View of Main Spillway Showing Chute & Stilling Basin



Engr. Husnain Ahmad President Pakistan Engineering Congress awarding Shield to Mr. Manzoor Ali Construction Manager MJV



Mr. Muhammad Rafi XEN WAPDA MDRP receiving Holy Quran Translated in English from Engr. Husnain Ahmad President Pakistan Engineering Congress

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General View of Main Spillway after Completion



Construction of Control Weir on Upstream of Emergency Spillway is in Progress

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Mr. Muhammad Rafi XEN WAPDA MDRP & PEC delegation Members Visiting the Main Dam Site



Visit of PEC delegation to Control Weir u/s of Emergency Spillway

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Under Water Filling at Upstream Intake Toe Weight is in Progress

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