Minutes of the XVth Meeting of National Committee on Seismic Design Parameters (NCSDP) for River Valley Projects held on 24.02.2005 at CWC, New Delhi.

The XVth meeting of the National Committee on Seismic Design Parameters (NCSDP) for River Valley Projects was held on 24th Feb. 2005 at 1100 hrs. in the Committee Room, CWC, New Delhi. Shri S.K. Das, Member (D&R), CWC and Chairman, NCSDP could not attend the meeting as he was out of station due to important official pre-occupations. Sh. B.M. Upadhayay, Chief Engineer (DSO), CWC and member NCSDP therefore, chaired the NCSDP meeting, as desired by Member (D&R), CWC. The list of NCSDP members, project representatives and invitees, who attended the meeting is given in Annex.-I.

Item No. 15.1 Welcome by Chairman, N.C.S.D.P.

Shri B.M. Upadhayay, Chief Engineer (DSO) informed that on account of important and unavoidable commitments of Member (D&R), CWC elsewhere it was decided to hold the NCSDP meeting as per schedule, to take decisions on seismic design parameters of the projects inviting immediate attentions of the committee members. He welcomed all the participants and invitees of the XVth meeting of NCSDP. This was followed by a brief self-introduction by the participants. Thereafter, the member-secretary was requested to take up the agenda items for discussions.

Item No. 15.2 Confirmation of the Minutes of the last meeting

Minutes of XIVth meeting of NCSDP held on 29.04.2004 at Omkareshwar Project Site (M.P.) under the chairmanship of Shri S.K. Das, Member (D&R), CWC were issued to all members vide letter No. CWC/ FE&SA/2/2/2003/677-690 dated 21.05.2004. The observation of IIT Rookee vide their letter dated 31.8.2004 on the Minutes was considered. The typographical error of writing 7.5 instead of 0.75 under item No. 14.3.3 was agreed to be corrected. The other comments were on the decisions taken during the XIVth meeting and not on correct recording of the minutes of the meeting. These comments have been separately included in agenda note for the present meeting, hence no amendment to the minutes is warranted. Accordingly, the minutes of the XIVth meeting was confirmed.

Item No. 15.3 Follow up actions of Minutes of last meeting

Item No. 15.3.1 Guidelines for Site Specific Seismic Studies for River Valley Projects.

Dr. I.D. Gupta, Jt. Director, CWPRS informed that the preparation of guidelines for site specific seismic studies for river valley projects is in advanced stage and he informed that it would be completed before 31st March, 2005.

Item No. 15.3.2 Kol Dam HE Project, Himachal Pradesh

IIT Roorkee submitted a note on reconciliation of the recommended seismic design parameters by IIT Roorkee and EDF France, in which it was shown

that the 5% damping design spectra for Kol Dam site for DBE/OBE condition is almost same. For MCE condition, also the 5% damping design spectra is similar in the period range of interest for the rockfill dams (T_n > 1.0 sec). The committee noted that even though the recommended seismic design parameters were derived from entirely different approaches in the two studies, a rationale seismic hazard analysis lead to similar recommendations irrespective of the methodology adopted.

The committee, therefore, recommended that a peak ground acceleration (PGA) of 0.19g for Maximum Credible Earthquake (MCE) and 0.095g for Design Basis Earthquake (DBE) alongwith response spectra given in Fig.6 of the site specific seismic report No. EQ84-9, Project No. P-433 of Sept. 1999 of Department of Earthquake Engineering, University of Roorkee, (now IIT Roorkee) may be adopted for aseismic design of the project. The vertical ground acceleration for both MCE and DBE conditions may be taken as 2/3rd of the corresponding horizontal ground acceleration.

Item No. 15.3.3 Site specific seismic study for River Valley Projects

The committee noted that the project authorities of Upper Beda Project, Lower Goi Project and Kutni Feeder Project submitted the copies of site specific seismic study report, which are being considered as separate agenda item in this meeting. The Committee directed to Member-Secretary to issue fresh reminders to the remaining project authorities.

Item No. 15.3.4 Modification of Site Specific Seismic Studies for River Valley Projects

The Committee went through the comments of IIT Roorkee vide letter No. EQD/NCSDP/203 dt. 31st Aug. 2004 and No. EQD/NCSDP/681 dated 17.12.2004. The Committee requested IIT Roorkee to forward additional notes on fault geometry and rationale behind assigning magnitude values to each of the identified sources in respect of projects pending for want of these information namely Omkareshwar Project, Madhya Pradesh; Siang Middle (Siyom) Project, Arunachal Pradesh; Uri-II H.E. Project (J&K); Nimoo Bazgo HE Project, J&K; Kameng HE Project, Arunachal Pradesh. The IIT Roorkee agreed to forward the same as soon as possible. The Committee authorized Chairman, NCSDP to approve seismic design parameters for above mentioned projects on the basis of additional information provided by IIT Roorkee.

Item No. 15.3.5 Upper Beda Project, Madhya Pradesh

The salient features along with the geological / geo-tectonic set up of the project were briefly presented by the project representatives. The Upper Beda project is a medium irrigation project of Beda river, a tributary of Narmada river in Khargone district of Madhya Pradesh. The project site is located in seismic zone-III of seismic zoning map of India as per IS 1893 (Part-I) 2002. The site specific seismic study was carried out by CWPRS, Pune. IIT Roorkee commented on the choice of MMI attenuation to justify the use of spectrum scaling relation in the site specific seismic study. Dr. I.D. Gupta, Joint Director, CWPRS explained that MMI attenuation trend has been used only as a corroborative evidence. Primarily various attenuation relationships had been checked for their applicability in the said project region and the best fit relation has been used for arriving seismic design parameters.

The committee, therefore, recommended the horizontal and vertical components of the peak ground acceleration (PGA) to be 0.238g and 0.179g respectively for MCE condition. The design basis earthquake (DBE) level of ground motion to be used for actual design of various structure can be taken as one half of the MCE level of ground motions. The above peak ground accelerations along with response spectra given in Fig.11 and 12 of the site specific seismic study report No. 4159 of Sept. 2004 of CWPRS, Pune may be adopted for aseismic design of the project.

Item No. 15.3.6 Kutni Feeder Reservoir Project, Madhya Pradesh.

The salient features along with the geological / geo-tectonic set up of the project were briefly presented by the project representatives. The Kutni Feeder Reservoir Project, Madhya Pradesh envisages the construction of 30.36m high and 2625m long composite (earth and masonry) dam across Kutni river, a tributary of the Ken river in Chattarpur district of Madhya Pradesh. The project site is located in Zone-II of Seismic Zoning Map of India as per IS 1893 (Part-I) 2002. The site specific seismic study has been carried out by CWPRS, Pune. The committee noted the comments of IIT roorkee and explanation submitted by CWPRS.

The committee, therefore, recommended the horizontal and vertical components of the peak ground acceleration (PGA) to be 0.13g and 0.10g respectively for MCE condition. The design basis earthquake (DBE) level of ground motion to be used for actual design of various structure can be taken as one half of the MCE level of ground motions. The above peak ground accelerations along with response spectra given in Fig.9 and 10 of the site specific seismic study report No. 4182 of November, 2004 of CWPRS, Pune may be adopted for aseismic design of the project.

Item No. 15.3.7 Lower Goi Project, Madhya Pradesh

The salient features along with the geological / geo-tectonic set up of the project were briefly presented by the project representatives. Lower Goi project envisages construction of 2211m long earthen dam with 175m long concrete spillway across Goi river, a tributary of Narmada river in Barwani district of Madhya Pradesh. The project site is located in Zone-III of Seismic Zoning Map of India IS 1893 (Part-I) 2002. The Committee noted the comments of IIT Roorkee, an explanation submitted by CWPRS, Pune on similar lines as expressed for Upper Beda and Kutni Feeder Reservoir Project.

The committee, therefore, recommended the horizontal and vertical components of the peak ground acceleration (PGA) to be 0.2473g and 0.1856g respectively for MCE condition. The design basis earthquake (DBE) level of ground motion to be used for actual design of various structure can be taken as one half of the MCE level of ground motions. The above peak ground accelerations along with response spectra given in Fig.14 and 15 of the site specific seismic study report No. 4189 of December, 2004 of CWPRS, Pune may be adopted for aseismic design of the project.

Item No. 15.4 New Projects

Item No. 15.4.1 Koteshwar HE Project, Uttaranchal

The salient features along with the geological / geo-tectonic set up of the project were briefly presented by the project representatives. Koteshwar HE project envisages a concrete gravity dam across Bhagirithi river in district Tehri, Uttaranchal. The project site lies in seismic Zone-IV of Seismic Zoning Map of India IS 1893 (Part-I) 2002, but is very close to Zone-V. The Committee noted that the site specific seismic study was carried out by IIT Roorkee in 1993 and asked the project authorities to get it reviewed by their consultants considering recent earthquake occurrences. The project authorities informed that concrete pouring for the Koteshwar Dam is to begin shortly and therefore, provisional clearance of seismic design parameters be issued, so that the project progress do not get affected adversely. The Committee requested IIT Roorkee to expeditiously review their site specific seismic study for Koteshwar dam by the end of March, 2005. The Head of the Department of Earthquake Engineering, IIT Roorkee agreed to this request.

The Committee also authorized Chairman, NCSDP to finalise recommendation with regard to seismic design parameters for Koteshwar HE Project on the basis of revised site specific seismic study report of Koteshwar HE Project, Uttaranchal.

Item No. 15.4.2 Kameng H.E. Project (Arunachal Pradesh)

The salient features along with the geological / geo-tectonic set up of the project were briefly presented by the project representatives. The Kameng HE project is located across the river Bichom / Tenga in Arunachal Pradesh. The project site is located in Zone-V of Seismic Zoning Map of India IS 1893 (Part-I) 2002. The site specific seismic study was done by IIT Roorkee. The Committee felt that seismic design parameters appear to be on a lower side. It was requested to IIT Roorkee to provide some more information on fault geometry and rationale behind assigning magnitude faults to each of the identified sources, so that the Committee could consider seismic design parameters accordingly.

Item No. 15.4.3 Teesta Low Dam Project Stage-IV (West Bengal)

The salient features along with geological / geo-tectonic set up of the project were briefly presented by the project representatives. The Teesta Low Dam Project Stage-IV (West Bengal) comprises of 45m high concrete gravity dam across river Teesta in district of West Bengal. The project site lies in Seismic Zone-IV of Seismic Zoning Map of India IS 1893 (Part-I) 2002.

The committee, therefore, recommended a peak ground acceleration (PGA) of 0.44g for Maximum Credible Earthquake (MCE) and 0.22g for Design Basis Earthquake (DBE) alongwith response spectra given in Fig.3 of the site specific seismic report Project No. P-2001-17 of Sept. 2002 of Department of Earthquake Engineering, IIT Roorkee may be adopted for aseismic design of the project. The vertical ground acceleration for both MCE and DBE conditions may be taken as 2/3rd of the corresponding horizontal ground acceleration.

The meeting ended with vote of thanks to the Chairman.

Annex-I

XV Meeting of National Committee on Seismic Design Parameters (NCSDP) on River Valley Projects (24.02.2005)

Attendance

Sl. No.	Name & Address	Designation	Deptt./Org.	Status / Representative
I.	***Committee Members***			
1.	Sh. B.M. Upadhayay	C.E. (DSO)	CWC, New Delhi	Chairman, (Officiating) NCSDP
2.	Sh. A.K. Bajaj	C.E. (Designs) N&W	-do-	Special Invitee
3.	Sh. C.S. Mathur	Director, CMDD (N&W)	-do-	-do-
4.	Sh. I.D. Gupta	Jt. Director	CWPRS, Pune	Member
5.	Sh. Sujit Das Gupta	Director	GSI, Kolkata	-do-
6.	Dr. D.K. Paul	Head, DEQ	IIT Roorkee	-do-
7.	Dr. S. Basu	Professor	-do-	Representative of IIT Roorkee
8.	Dr. Manish Shrikhande	-do-	-do-	-do-
9.	Dr. M.L. Sharma	-do-	-do-	-do-
10.	Sh. M.K. Sinha	Director, FE&SA	CWC, New Delhi	Member-Secy. NCSDP
11.	Sh. N.N. Rai	-do-	-do-	NCSDP Sectt. Representative
II.	***Project Representative and Consultants***			
1.	Sh. Satish C. Sharma	Director, Technical	THDC	Koteshwar Project
2.	Sh. L.K. Bansal	G.M. Design	-do-	-do-
3.	Sh. Sandeep Kumar	Manager	-do-	-do-
4.	Sh. H.K. Jindal	Sr. Engineer	-do-	-do-
5.	Sh. J.L. Narang	D.G.M. Designs	-do-	-do-
6.	Sh. H.C. Khanduri	Sr. Geologist	GSI, Dehradun	-do-
7.	Sh. Harish Bahuguna	Geologist	-do-	-do-
8.	Sh. R.L. Sahu	Sr. Geologist	GSI, Bhopal	Upper Beda Project
9.	Sh. S.S. Chongad	Executive Engineer	Narmada Valley Development Authority	-do-
10.	Sh. C.K. Soni	Geologist	-do-	-do-

11.	Sh. P.C. Diwan	Executive Engineer	-do-	Lower Goi Project
12.	Sh. M.P. Srivastav	Sr. Geologist	GSI, Bhopal	-do-
13.	Sh. M.B. Narolia	Executive Engineer	Kutni Dam	Kutni Lower Feeder Reservoir Project
14.	Dr. B.B. Tripathi	Asstt. Engineer	-do-	-do-
15.	Sh. N. Bhatttacharya	G.M. (Civil)	NEEPCO	Kameng HE Project
16.	Sh. V.C. Bhowmik	Sr. Manager (Civil)	-do-	-do-
17.	Sh. I.D. Singh	D.G.M.(Civil)	-do-	-do-
18.	Sh. Ashok Prasun		-do-	-do-
19.	Sh. C.R. John Zeliang	Sr. Geologist	-do-	-do-
20.	Sh. Anil Kr. Jain	C.E. (Designs)	NHPC, Faridabad	Teesta Low Dam Project
21.	Sh. B.N.S. Navin Kumar	Geologist	-do-	-do-
22.	Sh. J.K. Yachu	Sr. Manager	-do-	-do-
23.	Sh. V.K. Joshi	-do-	-do-	-do-
24.	Sh. P. Punetha	-do-	-do-	-do-