SUMMARY RECORD OF DISCUSSIONS HELD IN VIII MEETING OF NATIONAL COMMITTEE ON SEISMIC DESIGN PARAMETERS HELD ON 8.9.98 AT NEW DELHI.

The VIII Meeting of National Committee on Seismic Design Parameters (NCSDP) was held on 08.09.98 in Central Water Commission (CWC) Committee Room No. 307 (S), Sewa Bhavan, R.K. Puram, New Delhi. The meeting was presided over by the Chairman of the Committee, Dr. B.K. Mittal, Member, D&R, CWC. The members of the Committee and the invitees participated in the meeting are listed in Annex-I. After welcoming the Member and other participants by the Chairman, the Member-Secretary briefed the Committee about the Agenda items for discussions. Following are the extracts of indepth discussions in the meeting:

Item No. I **Confirmation of Summary record of Discussions of VII Meeting.**

Summary Record of Discussions held in VII Meeting of NCSDP as circulated, vide No. CWC/FE&SA/2/2/98/584-635 dated 17.10.97 and as amended in Para-2 of Item No. 1 vide Annex-II was confirmed.

Item No. 2 **Tehri Dam (Uttar Pradesh)**

At the instance of Sh.Sundar Lal Bahuguna, a Group of Experts comprising of Prof. V.K.Gaur, Prof. K.N.Khattri, Prof. R.N.Iyenger, Prof. Ramesh Chander and Prof. N.C.Nigam was constituted in June, 1996 by the Ministry of Power, Govt. of India. The Group of Experts was assigned the task "To examine the available scientific and technical reports, other information and data relating to the safety of Tehri Dam and make available their recommendations."

After consideration of the different reports/studies carried out by the Deptt. of Earthquake Engineering, University of Roorkee (DEQ-UOR) and the Soviet Consultant (Hydro Project Institute,Moscow) etc. and prolonged deliberations from Aug.'96 to Feb.'98 , the Expert Group submitted a report to the Ministry of Power Govt. of India in March, 1998. They have unanimously felt that the dam structure is safe to withstand the Maximum Credible Earthquake (MCE) during the economic performance life of the storage system. Some experts amongst the five proposed that further studies may be undertaken as a matter of abundant caution for :

1. 3-D non-linear analysis of the dam to evaluate its performance against MCE;

2. A simulated Dam Break Analysis to ensure that in the unlikely event of an uncontrolled release of water, the consequences are minimum.

Keeping in view the above recommendations of the Group of Experts and subsequently affidavit filed by the Ministry of Power, Govt. of India in the Supreme Court of India, NCSDP undertook the report of the Expert Group for discussions. The report of the Expert Group was already circulated to the Members of the Committee alongwith the Agenda Notes.

After extensive deliberations the Committee Members felt that they need more time to look into the details of the reports/studies for in depth evaluation of the studies vis-a-vis the necessity of further studies as recommended by the Expert Group/Safety aspects of the Project system in question. Accordingly, it was decided that the comments on the report by the individual member / the institution will be made available to the Member secretary in 4 weeks. After receiving their comments, the next meeting of the Committee would be convened for further deliberation.

Item No. 3 **Greater Shillong Water Supply Scheme (Meghalaya)**

The project was placed 2nd time before the Committee for consideration of design seismic parameters. The Project authorities introduced the salient features of the project. It was followed by presentation of geological and seismo - tectonic features in and around the project site by the Director (GSI) (NE Region).

Site specific study carried out by Department of Earthquake Engineering, University of Roorkee (DEQUOR) as per earlier recommendations in the 7th Meeting of the Committee has been discussed in depth. Some observations on the results tabulated in Table II (Effective Peak Ground Acceleration from various Sources) in the report were reviewed.

The Committee felt that the study needs modification by considering the focal depth from the project site in lieu of the horizontal distance from the fault plane under consideration as given in the report. It was felt that the horizontal distance from the fault plane, as considered in the present study has little significance in the present case.

Since the project falls in the active seismic region of the country and frequent tremors of varied intensity have been observed in the region, the earthquake magnitude of 1897 in the region (which was more than 8 on Richter's Scale) should also be considered in the study.

The project authorities were advised to review the study as indicated above and to resubmit the report giving detailed justifications of consideration of the faults, their life and return period of probable events, nature and duration etc. for consideration of design seismic parameters in the next meeting.

Item No. 4 **Palemvagu Irrigation Project, (Andhra Pradesh)**

No representative of the project attended the meeting. In the last meeting this item could not be discussed in absence of representative of the project. The committee noted this with concern and desired that the project authorities may be requested to attend the next meeting.

Item No. 5 **Kalpong HE Project (Andaman & Nicobar Islands)**

The physical as well as the geological features of the project were presented by the project authorities. The project falls under Zone-V of Seismic Zoning Map of India (IS 1893-1984). The representative of the project informed the Committee that the study carried out by them indicated seismic horizontal values of 0.36g at top and reduced to zero at base. The committee felt that these values should be 0.24g at the base and 0.36g at top.

The Committee also felt that though the dam height is comparatively low, keeping in view of the hazards associated with failure of the dam, specific studies may be carried out considering larger earthquake magnitude (8 or more on Richter's Scale).

The project authorities were advised to carry out the studies for consideration of the Committee in the next meeting.

Item No. 6 **Tungabhadra Dam(Karnataka)**

This is an old existing project for which comprehensive safety review of the dam has been taken up by the Tungabhadra Board. The project authorities explained about the geo-physical and seismo-tectonic features of the project. Detailed regional geology could not be explained by them in absence of relevant data and concerned Director, Engg. Geology. The Committee deliberated about the project. The project authorities were requested that the information may be made available to the Committee to make recommendation in the next meeting. The Committee suggested that the life of the project would be evaluated giving due consideration of Ballary earthquake which had 5.5 magnitude on Richter's Scale.

The Committee also suggested to review the study in consultation with NGRI, CWPRS etc. and to check the maximum value of seismic parameters (Pseudo static Analysis) at which the dam is safe. The project would be considered after the study report as stated above is received.

The meeting ended with Vote of Thanks to the Chair.

Annex I

List of the Participants in VIII Meeting of the National Committee on Seismic Design Parameters (NCSDP) held on 8th September, 1998.

Sl.No.	Name & Designation	Position in NCSDPCommittee
1.	Dr.B.K.Mittal Member (D&R) CWC, Sewa Bhawan, R.K.Puram, New Delhi-110066.	Chairman
2.	Dr.S.N.Bhattacharya Deputy Director General Meteorology (Seismology) Govt.of India, IMD, Office of the Director General of Meteorology, Mausam Bhawan, Lodhi Road, New Delhi-110003.	Member
3.	Sh.K.S. Jamwal, Director, GSI, Shillong.	Member
4.	Prof. Susant Basu Professor & Head Deptt. of Earthquake Engg. University of Roorkee Roorkee-247667.	Member
5.	Sh.S.C.Bhatia Scientist 'F' National Geophysical Research Institute, Hyderabad-500007.	Member
6.	Sh.P.L.Narula, Deputy Director General GSI, OP. PH & HP NH 5P, NIT, Faridabad-121001. (Haryana)	Member

7.	Sh.V.K.Jha, Director Indian Institute of Remote Sensing 4, Kalidas Road Dehradun-248001.	Member
8.	Sh.D.P.Issar Director, G&R Branch Survey of India Dehradun-248001.	Member
9.	Sh.B.M.Upadhyay C.E. (DSO), CWC, R.K.Puram, New Delhi-110066.	Member
10.	Sh.Narendra Kumar Director (FE&SA), CWC Room No.712(S), Sewa Bhawan, R.K.Puram, New Delhi-110066.	Member-Secretary

Project Authorities

11.	Sh.B.L.Jatana Consultant, THDC
12.	Kultar S.Sharma Director (Technical) THDC, Noida.
13.	Sh.M.Aggarwal Senior Engineer, THDC.
14.	Sh.L.K.Bansal DGM, THDC Rishikesh.
15.	Dr.P.C.Nawani Party Chief, GSI Tehri Dam Project Bhagirathi Puram Tehri-249001.
16.	Sh.A.K.Mukherjee C.E., PHED, Meghalaya, Shillong.

17. Sh.H.Datta Roy
Addl.C.E., PHED
Meghalaya, Shillong-1.

18. Dr.Gopal Dhawan
Chief (Geol.)
NHPC Ltd. Sector-33,
Faridabad.

19. Sh.C.Paul
Geologist (S.R.)
Engineering Geology Division, GSI,
NER, Shillong.

20. Sh.A.K.Mishra
Senior Manager (Design)
NHPC Ltd.,
Secor-33, Faridabad.

21. Sh.P.K.Gupta
Manager, (Geology)
Design Division, NHPC Ltd.
Sector-33, Faridabad.

22. Sh.J.K.Yachu
DM (Geology) NHPC Ltd.
Sector-33, Faridabad.

23. Sh.P.K.Dixit
Deputy Manager, NHPC Ltd.

24. Sh.Sandeep Singhai
Deputy Manager (Design)
NHPC Ltd.

25. Sh.A.C.Tyagi,
Secretary, Tungabhadra Board,
Hospet
Karnataka.

CWC Officers

26. Sh.M.Gopalakrishnan,
Chief Engineer (Design)N&W, CWC,
Sewa Bhawan, R.K.Puram,N.D.

27. Sh.G.S.Purba,
Director, Embankment (N&W)
CWC,Sewa Bhawan,
R.K.Puram, New Delhi-110066.

28. Sh.A.B.Pandya
Director, DSR,
CWC.

29. Sh.R.K.Pal,
A.D. (FE&SA)
CWC.