Summary Record of the 17th Meeting of Expert Appraisal Committee (Nuclear) to examine Nuclear Projects attracting Environmental Impact Assessment Notification, 2006 held on 6th May, 2014

The list of participants is annexed.

The Chairman welcomed the Members and, thereafter, Member Secretary informed about the project to be discussed in the meeting as per serratum.

Item No. 17.01: Confirmation of Minutes of the 16th EAC (N) Meeting:

The minutes of the 16th meeting of the EAC (N) held on 19th November, 2013 at Rawatbhata, Rajasthan were confirmed as circulated.

Item No. 17.02: Review of action taken on the decisions of the previous meeting.

Member Secretary informed about the status of projects considered in 16th Meeting of the EAC (Nuclear) held on 19th November, 2013:

Consideration of the Projects:

Agenda item 16.05	:	Haryana Atomic Power Project (4x700 MWe) at Village Gorakhpur, District Fatehabad, Haryana by M/s Nuclear Power Corporation of India Ltd. (NPCIL) - EC	EC accorded vide letter dated 27th December, 2013.
Agenda item 16.06	:	Setting up of a Fuel Complex consisting of PHWR Fuel Fabrication Facility (PFFF) and Zircaloy Fabrication Facility (ZEF) alongwith township at near existing Rawatbhata Atomic Power Station by M/s Nuclear fuel complex, Department of Atomic Energy - EC	EC accorded vide letter dated 15th January, 2014.

Any Other Item:

Agenda item 16.07	:	Kudankulam Nuclear Power Project (KKNPP), Expansion Unit (3x4) (2x1000 MW) at Kudankulam, Tamil Nadu by M/s Nuclear Power Corporation of India Ltd. (NPCIL) - Extension of EC validity.	Extension of validity accorded vide letter dated 8th January, 2014.
Agenda item 16.08	:	Kudankulam Nuclear Power Project (KKNPP) Expansion Unit (5x6) (2x1000 MW) by M/s Nuclear Power Corporation of India Ltd. (NPCIL) - Extension of EC validity.	Extension of validity accorded vide letter dated 8th January, 2014.
Agenda item 16.09	:	Jaitapur Nuclear Power Park (6x 1650 MWe) at Village Madban, Taluka Rajapur, District Ratnagiri, Maharashtra by M/s Nuclear Power Corporation of India Ltd. (NPCIL) - Extension of time for compliance of conditions.	Extension for the submission of Fisheries study is allowed upto Sept., 2014 vide letter dated 3rd January, 2014.
Agenda item 16.10	:	Prototype Fast Breeder Reactor (PFBR), 500 MWe at Kalpakkam Nuclear Power Plant at Kalpakkam, District Kancheepuram, Tamil Nadu by Bharatiya Navbhikiya Vidyut Nigam Ltd. (Bhavini), Department of Atomic Energy- Extension of EC validity.	Name of PAs changed from IGCAR to BHAVINI and EC validity not required vide letter dated 3rd April, 2014.

Before considering the proposals, all the committee members discussed issue of site clearance and acquisition of land for the nuclear power plants prior to consideration of proposal for EC. The issue was raised whether the proposals for environmental clearance

(EC) should be considered at all in the absence of site clearance from Atomic Energy Regulatory Board (AERB) since the proposals submitted for consideration for EC do not enclose a copy of the site clearance issued by AERB although it is mentioned clearly while issuing TORs. Many members expressed that according EC without site clearance from AERB has no meaning. If the proposed site is not found suitable by AERB and the proponent has to change the site and EC will be no more valid. Representative of AERB pointed out that, the site clearance by AERB is a lengthy process involving site evaluation, geotechnical studies, design study, approval of the technology etc. It was also clarified that site clearance by AERB and EC by MoEF are considered under different Acts by different Expert Committees and by different regulators under different Ministries. The Committee recalled its earlier observation on this issue and urged NPCIL to have a dialogue with AERB to explore the possibility of getting an interim site evaluation from AERB while seeking the clearance from MoEF.

Another issue raised included that project proponents are applying for the EC without submitting any proof of acquisition of land either due to non-acquisition of the desired land or land acquisition still being in process. What, if the land proposed is not available in future due to one reason or another? The proposal for EC without acquisition of land should not be considered at all since sensitivity around the project site may change and desired land proposed for consideration for EC may not be available in future for one reason or another. In such cases, the whole exercise for consideration of the proposal for EC will become a futile exercise. It was suggested that the proponent should have proof of acquisition of substantial portion of the land required for the project while seeking EC from MoEF.

Item No. 17.03: <u>Consideration of the Projects</u>:

Item No. 17.03.01: Gujarat Atomic Power Park [Light Water Reactor (LWR), 6x1,000 MWe] at Mithivirdi, Tehsil Talaja, District Bhavnagar, Gujarat by M/s Nuclear Power Corporation of India Ltd. (NPCIL).

The proposal was considered by the Committee for consideration of the proposal for according environmental clearance. All Nuclear power projects and projects for processing of nuclear fuel are listed at S. No. 1(e) under Category 'A' under EIA notification 2006 and are appraised at the Central level.

.The project authorities and their consultant (M/s EIL, an accredited consultant for 9 sectors by the NABET/ QCI vide letter dated 14.9.2010**;** NABET/QCI has also issued a letter to M/s EIL to carry out EIA study for Nuclear Power Projects in consultation with AERB/BARC/NPCIL etc.) gave a detailed presentation on the salient features of the project and proposed environmental protection measures to be undertaken as per Draft Terms of References (TORs) awarded in the Meeting of the EAC (Nuclear) held on 14th February, 2011 for preparation of EIA/EMP. Prior to award of TORs, the proposal was also considered in the EAC (N) meeting held on 15th June, 2010 and desired additional information before considering the proposal for TORs. The committee was informed that PAs requested for extension of the validity of the TORs prescribed to the above project, since the validity of the ToRs was valid upto 10.3.2013 as per MoEF letter no. J-11013/46/2006-IA.I dated 22.3.2010. The proposal was accordingly considered for the extension of TORs validity in the EAC(N) meeting held during 22-23rd March, 2013 and extended validity of TORs by one more year i.e., up to 13th March, 2014 vide Ministry's even no. letter dated 21st May, 2014.

The committee was informed that ToRs have been awarded for the plant as well as township vide Ministry's letter No. J-1401/7/2010-IA.II (N) dated 14th March, 2011. The land for township has now been identified as 'Gaucher land' by the State Govt. of Gujarat. As per the latest Supreme Court ruling, no Gaucher land should be used for any other purpose which has come after issue of TORs. NPCIL informed that they are in search of alternate

site for residential complex. Accordingly, proposal for township has been excluded from the proposal submitted and will be considered independently by the MoEF/SEIAA/SEAC as the case may be, whenever submitted.

The Committee noted that proposal is for setting up of Gujarat Atomic Power Park [Light Water Reactor (LWR), 6x1,000 MWe] at Mithivirdi, Tehsil Talaja, District Bhavnagar, Gujarat by M/s Nuclear Power Corporation of India Ltd. (NPCIL). Project proponent informed to the Committee that while EIA/EMP is prepared by M/s EIL, New Delhi, following special studies have also been carried out for the project:

i. Marine Impact Assessment (MIA) and study of thermal dispersion of condenser cooling seawater discharges from proposed nuclear power project at Mithivirdi, Gujarat by INDOMER Coastal Hydraulics Pvt. Ltd.

ii. High Tide Line/Low Tide Line and Coastal Regulation Zone (CRZ), demarcation of Mithivirdi coast by Institute of Remote Sensing, Anna University, Chennai, T.N.

iii. Baseline environmental data collection for flora and fauna for NPP at Mithivirdi, Gujarat by Salim Ali Centre for Ornithology and Natural History, Mumbai, Maharashtra.

iv. Pre-operational Radiological Survey for Mithivirdi site by Health Physics Division, BARC, Mumbai, Maharashtra.

v. Provisional Public Dose Apportionment Study for Mithivirdi site by Health Physics Division, BARC, Mumbai, Maharashtra.

Site has been selected by the DAE Selection Committee comprising of members from AERB, CEA, BARC, DAE, NPCIL and MoEF based on location, land availability, transportation accessibility, source of cooling water, meteorology, population, seismic zones, flood analysis, sustainability of the project and environmental aspects. Total project area of Mithivirdi is 777 ha. (excluding township), out of which 606.4 ha. is agricultural land and remaining land as waste land, forest, scrub land, water body etc. The project land also includes 21 ha of forest land and have applied for the approval of 21 ha. forest land to State Forest Department, Bhavnagar, Gujarat on 24th February, 2011 ~~and~~ which is likely to be available in 3-4 months. Project Proponent has been asked to follow Ministry's OM No. J-11013/41/2006-IA.II (I) dated 9th September, 2011 and 18th May, 2012 regarding procedure to be followed where forest land is involved. Proposed site is at a distance of 48 km from the identified critically polluted area of Bhavnagar. No national park, wildlife sanctuary, tiger reserve, elephant reserve, migratory route of birds is present in 10 km. of the project site. Gujarat Maritime Board has accorded 'No Objection Certificate' for the Mithivirdi NPP vide letter no. GMB/ISP & PV Cell/Z(1)/10/2050 dated 25th March, 2013. The proposed NPP will be implemented in phases and Phase-I, Phase-II and Phase-III are likely to be completed by 2020-21, 2022-23 and 2024-25 respectively. Rs. 922.50 Crores and Rs.16.50 Crores are kept towards capital and recurring cost per annum towards pollution control equipment and environment protection and management.

Uranium-di-oxide enriched to less than 5% will be used as fuel. Reactor, steam generator, condenser cooling water system and other accessories with safety design features will be installed. Marine facilities of the power plant will include seawater intake structure, return water outfall through six tunnels at 2.5 km-3.5 km from coast and a small temporary material handling jetty to handle cargo etc. The quantity of dredged material is estimated as 3x106 m^3 and will be utilized onshore to raise the level of plant area. The dredged material will also be used for backfilling.

As per layout of nuclear power plant (NPP) super-imposed on the map, NPP at Mithivirdi site falls in CRZ-III category. However, intake channel, outfall tunnels and jetty will be located in CRZ-I. Gujarat State Coastal Zone Management Authority (GSCZMA) has recommended the project for CRZ clearance in its 19th meeting held on 11th June, 2013. Minutes of the meeting are included in EIA/EMP as Annexure-VII of Vol. II. Project proponent informed that a separate CRZ clearance will be obtained for the foreshore facilities. CRZ demarcation study has been carried out by the Institute of Remote Sensing (IRS), Anna University, Chennai, Tamil Nadu. There is no sensitive eco-system in intertidal area and 500 m. coastal zone beyond HTL. No national park or sanctuary is located nearby. The area is natural for salt pans by locals. Pavo Cristatus (Indian Peafowl) is found in the study area which is falling under Schedule-I, category of Wildlife (Protection) Act, 1972.

Ambient air quality is monitored at 8 locations during summer, post-monsoon and winter season during December, 2010-November, 2011 within a radius of 10 km. And indicated SPM (135-176 µg/m^3), PM_{10} (51-67 µg/m^3), $PM_{2.5}$ (11.7–20.6 µg/m^3), SO_2 (13-19.3 µg/m^3) (15.8-24.6 µg/m^3) and are well within the permissible limits. Gamma radiation level is 2.2–18.2 uR/h with an average 8.8 µR/h which is normal. ^{90}Sr and ^{137}Cs activities in water samples are below detectable limits at BDL-3.3 mBq/l respectively. Radiation activity in sand soil, vegetable, fruits, cereals, pulses, leaf, grass has also been analyzed. Dose Apportionment study is carried out by Health Physics Division, BARC. A dose of 0.41 m Sv/y is apportioned for 6x1000 MWe NPP at Mithivirdi, Gujarat for atmospheric and aquatic releases. Upper limit of effective dose to public is fixed as 1 mSv/yr by the AERB.

Gaseous waste that will be released to the environment will be continuously monitored by an appropriate radioactivity monitoring system.

Project proponent informed the committee that total fresh water requirement for plant and township will be 18 MLD (15 MLD for project and 3 MLD for township). PAs have requested Gujarat Water Infrastructure for the supply of 18 MLD water vide letter no. NPCIL/BHAV/CE/2010/042 dated 12.11.2010. The cooling water requirement for the project has been estimated as 41,760 MLD, which will be drawn from Arabian Sea. Fresh water requirement will be met either by desalination plant or by Mahi river or a combination of both but Committee insisted that the proponent should meet the sweet water requirement from desalination only being a coastal power station rather than drawing water from Mahi river. Now, Condenser cooling water will be sourced from Arabian Sea and fresh water from desalination plant to be set up at the site. The water during construction phase (about 1000 m^3/day) will be sourced from Mahi River and during operation phase from sea. Rainwater harvesting will be adopted to conserve water.

Sewage treatment plant (STP) will be set up for the treatment of sewage and treated sewage will be used for the development of green belt and gardening. Project proponent informed that condenser cooling water will be used as the source for diluting the processed wastewater to maintain the radioactive level below the discharge limit as stipulated by AERB. However, the committee insisted to follow AERB guidelines in this regard. All the liquid radioactive waste will be controlled, collected, stored and processed by an appropriate effluent treatment system before discharge. The radioactivity level in the effluents will be regularly monitored and ensured to be within the limits prescribed by AERB. Total 43,200 MLD condenser cooling water (CCW) will be discharged through six tunnels. The outfall (2.5–3.5 km) will be designed with multiple ports to enhance the jet mixing. Liquid wastes will be reduced in volume and packaged into drums and stored in rad - waste building.

Solid waste will include spent exchange resins, deep bed filtration media, spent filter cartridges, dry active wastes and mixed wastes etc. and will be packed into boxes and drums. Wet radioactive waste primarily comprising of spent resins and activated carbon will be stored in spent resin storage tanks located in the Auxiliary building and then resin will be

sluiced into high-integrity containers for the disposal to disposal facility. Spent fuel from reactor will be stored in Spent Fuel Storage Bay (SFSB) and kept under continuous radiological surveillance. The spent fuel pool has storage capacity for approximately 18 years and subsequently will be shifted to Away From Reactor (AFR) facility. An incinerator (with 2-5 large scrubbing system) will be provided to incinerate low level combustible solid waste and organic liquid waste as per AERB guidelines.

A chapter on environmental monitoring programme is included. Radioactivity levels will be monitored in the plant airborne as well as liquid effluents. The Committee observed that radioactivity baseline data should also include the radioactivity levels in the milk samples from the study area.

Safety aspects for the proposed project were discussed at length. Disaster Management Plan including on-site and off-site emergency has been prepared and included in EIA/EMP. Decommissioning strategy is mentioned in EIA/EMP Report after 50 years of safe storage period. Two DGs of 4 MW each will be installed to meet emergency power requirement. Energy conservation measures will be adopted in the buildings to save energy consumption.

PAs informed that diversity of phytoplankton and zooplankton in the area is moderate to good. Mangroves in and around project site are poor. No coral reef/patches are observed in the area. No turtle nesting grounds are noticed.

Rehabilitation and Resettlement plan is under preparation in line with LARR Act, 2013 in consultation with the State Government of Gujarat for the project affected population.

Public hearing meeting was held on 5th March, 2013 at scheduled date and venue. The main issues raised in the public hearing included land, seismic zone, rehabilitation and resettlement (R&R), site clearance, non-accreditation of consultant. Point-wise clarification and commitments made by PAs have been incorporated in the EIA/EMP report.

Ministry has also received large number of representations from various NGOs/ individuals addressed to MOEF and PMO and were sent to NPCIL to submit their comments, clarifications and commitments made to public, if any. The NPCIL vide letter dated 4th October, 2013 has submitted the query-wise response to the aforesaid representations and has included all the above queries and NPCIL responses thereon, in the Vol. III of the EIA/EMP report. Shri N.K. Patel, Deputy Secretary, Forest and Environment Department, Govt. of Gujarat including memorandums/representations/affidavits of the farmers/villagers of village Jaspura, Mithi Virdi, Mandva, Khadarpur, Sonsiya, Panyali, Chaya, Taluka District Bhavnagar, Gujarat and Aam Admi Party (AAP), Bhavnagar against the aforesaid project The same were further forwarded to the NPCIL on dated 7.01.2014 and response is still awaited. Project proponents have been asked to analyze all the representations and summarize for the comments, clarifications and commitments made to public, if any.

Project proponents confirmed that no litigation is pending in any of the Court.

After deliberating the facts presented to the Expert Appraisal Committee (Nuclear), the Committee found final EIA/EMP report is lacking in following aspects and suggested to submit revised EIA/EMP including the following:

1. Site clearance accorded by the AERB. Efforts made by NPCIL in getting the site clearance from AERB and reasons for not obtaining the same in last 3 years before submission of the proposal for consideration for environmental clearance.

2. Actual land available for the project, since township is excluded. Documents indicating land acquired so far.
3. Commitment that independent approval for township will be sought from the concerned authority and concerned department which is excluded for the present EIA/EMP and a copy will be submitted to the Ministry and its Regional Office at Bhopal, M.P.
4. Status of 21 ha forest land involved? A copy of the application may be submitted.
5. A copy of the CRZ clearance for the foreshore facilities
6. SCZMA recommendations were subject to :
   a. Detailed note on safety aspects and site selection criteria along with its advantage for the site.
   b. A site visit by GCZMA member.

   A note on safety aspects proposed and a copy of the site visit report may be submitted.
7. Base-line radioactivity data for milk samples are not covered. Model used for radioactivity dispersion should be mentioned. Impact of two hills near the site mentioned in the report on atmospheric dispersion should be studied.
8. Only 8 water samples are collected but season of collection is not mentioned. Data for three seasons may be collected and submitted.
9. Location of NSDF on the map and its impact on land and groundwater should be submitted.
10. Current status of Rehabilitation and Resettlement (R&R) as per RFCT-LARR Act, 2013.
11. Current status of detailed study regarding effect of historical tsunamis i.e. 2004 Tsunami.
12. A copy of the NOC from Irrigation Department since the project is located in command area.
13. A note on compliance to recommendations mentioned in following studies.
    i. Marine Impact Assessment (MIA) and study of thermal dispersion of condenser cooling seawater discharges from proposed nuclear power project at Mithivirdi, Gujarat by INDOMER Coastal Hydraulics Pvt. Ltd.
    ii. High Tide Line/Low Tide Line and Coastal Regulation Zone (CRZ), demarcation of Mithivirdi coast by Institute of Remove Securing, Anna University, Chennai.
    iii. Baseline environmental data collection for flora and fauna for NPP at Mithivirdi, Gujarat by Salim Ali Centre for Ornithology and Natural History.
    iv. Pre-operational radiological survey for Mithivirdi site by Health Physics Division, BARC.
    v. Provisional Public Dose apportionment study for Mithivirdi site by Health Physics Division, BARC.
11. Action proposed for conservation of endangered species. Proposed Conservation Plan for the conservation of Schedule-I species observed within 10 km. radius should be prepared in consultation with the State Wildlife Department, Govt. of Gujarat under Wildlife (Protection) Act, 1972.
12. A summary of all the representations received and your comments, clarifications and commitments made to public, if any alongwith budget provision for implementing commitments made, if any.
13. A note on follow-up of Ministry's OM No. J-11013/41/2006-IA.II (I) dated 9th September, 2011 and 18th May, 2012 regarding procedure to be followed where forest land is involved.

The proposal will be reconsidered after submission of above mentioned information. As per the existing criteria, proposal will be considered for EC only after submission of site clearance and approval of the forest land under Forest (Conservation) Act, 1980. Project Proponent have been asked to follow Ministry's OM No. J-11013/41/2006-IA.II (I) dated 9th September, 2011 and 18th May, 2012 regarding procedure to be followed where forest land

is involved. It is also suggested to constitute a sub-committee of including Dr. A.R. Reddy, Chairman; Shri A.R. Sundararajan, Vice Chairman, Dr. P. B. Rastogi, Director & Member Secretary and Dr. A. Mehrotra, Director, MoEF, Regional Office, Bhopal, M.P. to visit the project site of Gujarat Atomic Power Park [Light Water Reactor (LWR), 6x1,000 MWe] at Mithivirdi, Tehsil Talaja, District Bhavnagar, Gujarat to assess sensitivity in the surrounding environment and suggest protection measures to further improve the environment.

Item No. 17.03.02: Madhya Pradesh Atomic Power Project (MPAPP, 2x700 MWe PHWRs) alongwith Township at Village Chutka, District Mandla, Madhya Pradesh by M/s Nuclear Power Corporation of India Ltd. (NPCIL).

The proposal of Madhya Pradesh Atomic Power Project (MPAPP, 2x700 MWe PHWRs) along with Township at Village Chutka, District Mandla, Madhya Pradesh by M/s Nuclear Power Corporation of India Ltd. (NPCIL) was considered by the Committee for according environmental clearance. All Nuclear power projects and projects for processing of nuclear fuel are listed at S. No. 1(e) under Category 'A' under EIA notification 2006 and are appraised at the Central level.

The project authorities and their consultant (NEERI, Nagpur, an accreditated consultant vide NABET's letter dated 16th May, 2013) gave a detailed presentation on the salient features of the project and proposed environmental protection measures to be undertaken as per Draft Terms of References (TORs) awarded during the Meeting of the Expert Appraisal Committee (Nuclear) held on 14th February, 2011 for preparation of EIA/EMP. TORs were awarded vide Ministry's letter No. J-14011/52010-IA. II (N) dated 11th March, 2011. Prior to expiry of term of TORs on 10th March, 2013, PAs requested for the extension of validity of T**O**Rs for one year i.e. from 11th March, 2013 to 11th March, 2014 giving reasons for unavoidable delay in submission of final EIA/EMP. The request was considered in EAC (N) meeting held during 22nd–23rd March, 2013 and TORs were extended upto 10th March, 2014 vide letter dated 21st May, 2013 by the Ministry.

The committee observed that project proponent have submitted EIA/EMP report in the name of Chutka Madhya Pradesh Atomic Power Project (CMPAPP) whereas Form-I, Prefeasibility report and TORs are in the name of Madhya Pradesh Atomic Power Project (MPAPP) and PPs were asked to apply for change in the name of the project first. Ministry has not received any application in this regard so far.

M/s Nuclear Power Corporation of India Ltd. (NPCIL) has submitted a proposal for the Madhya Pradesh Atomic Power Project (CMPAPP) (2x700 MWe, PHWRs) alongwith Township at Village Chutka, District Mandla, Madhya Pradesh. Project site is located on the right bank of Rani Avanti Bai Lodhi Sagar (RABLS) on Narmada River, about 27 km. at Latitude 22°46′34"N and Longitude 80°5′21.7"E. A township for NPCIL for CISF employees will also be set up at Village Manegaon at a distance of 6 km from the project site. There is no wet land within the project site. Proposed project is located in Schedule-V area, wherein PESA Act is mandatory. No national park and wildlife sanctuary is located within 10 km. radius of the project site. Within exclusion zone, 48.07 ha of land on the bank of Rani Avanti Bai Lodhi Sagar (RABLS) dam reservoir gets submerged during monsoon season but it is not a notified wetland. Total land being acquired for the project is 497.73 ha land (430.03 ha land for the project and 67.70 ha land for the township. 119.46 ha forest land including 65 ha reserve forest is also involved. PAs have applied for the approval of forest land on 28th December, 2011 but the same has not been approved so far even after expiry of more than 2 years. Joint forest survey has been completed. Project Proponents have been asked to follow Ministry's OM No. J-11013/41/2006-IA.II (I) dated 9th September, 2011 and 18th May, 2012 regarding procedure to be followed where forest land is involved. Total cost of the

project is Rs. 11,250.00 Crores (June, 2011) and expected completion cost of 2 units will be Rs. 16,550.00 Crores.

Pressurized Heavy Water type of reactor will be installed at MPAPP. Steam generators will supply dry saturated steam to the turbine which will be directly coupled to electric generator to produce electricity. Natural Draft Cooling Towers (NDCTs) will be used as heat sink for condenser cooling water and make up for re-circulating water will be used drawn from RABLS Dam Reservoir. Project proponent informed that PHWR project of MPAPP is similar to the 700 MWe PHWR Units of Kakrapar, Gujarat (KAPP 3 & 4) and Kota, Rajasthan (RAPP 7 & 8) with a few changes to suit site specific details.

Ambient air quality was monitored at 24 locations and data was collected during winter, 2010, summer and post-monsoon, 2011 for SPM (27-82, 90-168 & 60-98 $\mu g/m^3$), PM_{10} (22-49, 33-91 & 37-61 $\mu g/m^3$), $PM_{2.5}$ (8-21, 12-48 & 8-28 $\mu g/m^3$), SO_2 (5-15, 5-15 & 9-25 $\mu g/m^3$) NOx (12-18, 12-15 & 13-19 $\mu g/m^3$), NH_3 (11-31, 12-49 & 12-53 $\mu g/m^3$), O_3 (10-34, 9-26 & 8-26 $\mu g/m^3$), CO (0.12-1.48, 0.52-1.00 & 0.16-1.67 mg/m^3), HC (1.23-1.48, 1.24-1.47 & 1.25-1.47 ppm) besides pb, As, Ni and B(a)P and are within permissible limits. The gaseous radioactive effluents from reactor and service building ventilation exhaust system will be passed through pre-filters and absolute filters before discharge through stack (100 m). The stack discharges will be continuously monitored for radioactivity contents.

Total 9,000 m^3/hr. water required (6,348 m^3/hr for construction use and 2,654 m^3/hr to return to RABLS Dam Reservoir) from RABLS Dam Reservoir including 6 m^3/hr for township. M.P. Govt. has assured drawl of 24,465.76 m^3/hr (240 cusec) of water. Low level treated liquid waste from post-treatment tank will be monitored before injecting into the plant water discharge (blow down) piping. Liquid wastes having tritium and Beta-Gamma activity like Tritiated Waste (TTW) generated from upgrading plant rejects, moderator room sump & clean-up system and Active Non-Chemical Waste (ANCW) generated from Equipment Decontamination System (EDS) of WMP, chemical laboratory & SFSB cask wash down area, of less volume will be evaporated, diluted with exhaust air and discharged through 100 m. stack. Liquid effluent segregation system (LESS) will involve storage, treatment of disposal system for low level activity and high volume liquid waste and evaporation system after ion exchange process for evaporating relatively high active and low volume tritium bearing liquid waste followed by disposal through air stack. Besides, spent ion exchange resin fixation system, volume reduction facility, decontamination system, laundry system and incineration system will also be installed. As base line study water quality was monitored in core zone (1-5 km) and buffer zone (5-30 km) of the study area. Most of the parameters were within prescribed standard except iron being higher in a few villages in buffer zone.

Radioactive solid waste (257 m^3/yr) will be segregated at source depending upon its nature (combustible/compactable/non-combustible) and surface dose rate. Radioactive solid waste generated will be spent ion exchange resins, paper waste, cotton waste, air filter, liquid filter, shoe covers, hand gloves, mops, discarded clothing and components, sludge etc. Solid waste will be transported to in-situ Waste Management Plant (WMP) for treatment conditioning and disposed off in engineered stone lined earth trenches located at the Near Surface Disposal Facility (NSDF), depending on their surface dose rate. The NSDF area will be fenced and monitoring of ground water through bore holes will be carried out. Fuel processing plant is not envisaged at MPAPP. Spent fuel removed from the reactor core will be transferred to Spent Fuel Inspection Bay (SFIB) and then to Spent Fuel Storage Bay (SFSB).

PAs have proposed mitigation measure to control air, water, noise pollution in EIA/EMP. A monitoring programme to monitor air, water, noise, soil, flora and fauna, occupational health is also proposed.

PHWR reactors selected for MPAPP has additional engineered safety features viz. two independent shut down systems, double containment system, interleaved feeders, containment spray system, Secondary Containment Recirculation and Purge (SCRP) system, Primary Containment Controlled Discharge (PCCD) System, fire protection system, Emergency Core Cooling (ECCS) System, Passive Decay Heat Removal System and ultimate heat sink.

Green belt will be developed in 33% of total area of nuclear power plant. Noise levels have ranged between 26.4–69.4 d(B)A. Vehicular traffic is the major source of noise. CSR activities like improvement in living conditions of local population near the project in the area of health and hygiene, civic amenities, infrastructure, education, training, water supply etc. will be ensured.

Project proponent also informed that an annual dose of 100 mSv over 5 years with less than 30 mSv in any year is imposed as effective dose limit as per AERB requirements for radiation workers of NPP. Upper limit of radiation exposure is 1 mSv/yr for the members of public. Project is designed in such a way that radiation dose to public will be restricted to 0.18 mSv/yr against the AERB permitted dose 1.0 mSv/yr from all the routes and units at site. On-site/offsite radiation emergency response is prepared and mock drills are planned.

During construction and operation stage, about 4000 to 5000 persons will be deployed respectively.

Rehabilitation & Resettlement (R&R) package is under finalization in consultation with State Government of M.P. and with the Committee constituted by MP Government for Project Affected People (PAP). Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT & LARR, 2013) will be followed.

Project proponents confirmed that no litigation is ~~in~~ pending in any of the Court.

Public hearing meeting of the M.P. Nuclear Power Project was held on 17th February, 2014. The various issues raised in the public hearing included employment, jobs, houses, land, fulfilment of demands, displacement, compensation, right to live, water consumption, discharged water with radioactivity, disability, fishing problem, disposal of radioactive waste, impact on forest and biodiversity, seismicity, accident, scarcity of water, damage to fauna, diseases, cancellation of public hearing, destruction of forest and biodiversity. Ministry has also received several representations from the Chutka Parmanu Virodhi Sanghash Smiti and NPCIL for clarification to all concerned. PAs have incorporated point-wise clarification and commitments made by the NPCIL to the public in the EIA/EMP report. Participants have welcomed the project also since it will provide employment, livelihood, education, improvement in environment due to plantation, water supply, electricity, rehabilitation as per policy. Briefly, R&R will be implemented as approved by the State Government. Robust safety systems will be installed to ensure no hazards to the public. Radiation levels will be maintained within the AERB limit. Training to the workers will be provided for skill development. Health survey of the people will be carried out. The issues raised in the public hearing meeting were discussed at length and NPCIL was asked to summarize all the issues raised, comments and clarifications given and commitments made to public. The committee also desired financial budget kept for implementing commitments made.

After deliberating the facts presented the Expert Appraisal Committee (Nuclear), the Committee found final EIA/EMP report inadequate and suggested to include following in the revised EIA/EMP:

1. EIA/EMP report is submitted in the name of Chutka Madhya Pradesh Atomic Power Project (CMPAPP) whereas Form-I, Prefeasibility report and TORs have been awarded in the name of Madhya Pradesh Atomic Power Project (MPAPP). Status of change in the name of M.P. Atomic Power Plant (MPAPP) to Chutka M.P. Atomic Power Plant (CMPAPP).
2. Site clearance for the MPAPP/CMPAPP accorded by the AERB. Efforts made by NPCIL in getting the site clearance and reasons for not obtaining the same in last 3 years before submission of the proposal for consideration for environmental clearance.
3. Current status of acquisition of the 497.73 ha land (430.03 ha land for the project and 67.70 ha land for the township). Necessary documents may be submitted in support.
4. Status of 119.46 ha forest land including 65 ha reserve forest land involved? A copy of the application may be submitted.
5. A note on follow-up of Ministry's OM No. J-11013/41/2006-IA.II (I) dated 9th September, 2011 and 18th May, 2012 regarding procedure to be followed where forest land is involved.
6. Confirmation that 48.07 ha land on the bank of RABL, which is submerged during the rainy season, is not a wet land.
7. Land use data needs to be corrected and included in EIA/EMP.
8. Earth work required and source of earth material be included. Site to be raised to safe grade level against maximum flood level as per analysis and approval of AERB.
9. River is shown in the exclusion zone which might be considered to be encroachment of the river. Necessary corrections may be carried out in the map.
10. Calculation of drainage water generated and water flowing in the area.
11. Actual usage of water, justification for availability of water, reduction in the quantity of water due to rainwater harvesting.
12. Rainwater harvesting details for plant site and township independently.
13. Green belt development plan on the map showing width, total parameter to be covered by the green belt and total area to be covered at the site by plantation.
14. Authentication of flora and fauna at site.
15. Reasons for collecting secondary data for health survey. Own data regarding health survey may be collected immediately on priority.
16. Current status of Rehabilitation and Resettlement (R&R) as per RFCT-LARR Act, 2013.
17. Period of ambient air quality data collection.
18. 1:100 or 1:200 map showing topography of the area.
19. Action taken regarding proposed project being located in Schedule-V area, wherein PESA Act is mandatory.
20. A summary of all the representations received alongwith comments, clarifications and commitments made to public, if any alongwith budget provision for implementing the commitments made, if any.

The proposal will be reconsidered after submission of above mentioned information. As per the existing guidelines proposal will be considered for EC only after submission of site clearance from AERB and approval of the forest land under Forest (Conservation) Act, 1980. Project proponents have been asked to follow Ministry's OM No. J-11013/41/2006-IA.II (I) dated 9th September, 2011 and 18th May, 2012 regarding procedure to be followed where forest land is involved. It is also suggested to constitute a sub-committee including Dr. A.R. Reddy, Chairman; Shri A.R. Sundararajan, Vice Chairman, Dr. P. B. Rastogi, Director & Member Secretary and Dr. A. Mehrotra, Director, MoEF, Regional Office, Bhopal, M.P. to visit the project site of Madhya Pradesh Atomic Power Project (MPAPP, 2x700 MWe PHWRs) alongwith Township at Village Chutka, District Mandla, Madhya Pradesh to assess sensitivity in the surrounding environment and suggest protection measures to further improve the environment.

Item No. 17.03.03: Mahi Banswara Rajasthan Atomic Power Project (MBRAPP, 4x700 MW PHWR) at Mahi–Banswara, District Banswara, Rajasthan by M/s Nuclear Power Corporation of India Ltd. (NPCIL)

The project authorities (Mecon Ltd. was not allowed due to non-accreditated consultant) gave a detailed presentation on the salient features of the project and proposed environmental protection measures to be undertaken for preparation of EIA/EMP. The proposal was considered by the Committee to determine the Terms of References (TORs) for undertaking detailed EIA/EMP study for the purpose of obtaining environmental clearance in accordance with the provisions of the EIA Notification, 2006. Project proponent has submitted information in the prescribed format (Form-1) alongwith pre-feasibility report. All Nuclear power projects and projects for processing of nuclear fuel are listed at S. No. 1(e) under Category 'A' under EIA notification 2006 and are appraised at the Central level.

The Committee noted that proposal is for setting up of Mahi Banswara Rajasthan Atomic Power Project (MBRAPP, 4x700 MWe PHWR) at Mahi–Banswara, District Banswara, Rajasthan by M/s Nuclear Power Corporation of India Ltd. (NPCIL). Proposed MBRAPP Unit 1 to 4 are similar to 700 MW PHWR units being taken up for construction of Kakrapar Gujarat (KAPP 3 8 4) and Kota-Rajasthan (RAPP 7 & 8) with a few changes to suit site specific details. Project will be located at Latitude 23^{o} 31' 46" N and Longitude 74^{o} 35' 26" E in Villages Adibhoet, Bari, Rei Sajwania, Katumbi, Khandiadeo, Tehsil Chhoti Sarvan and Ambapura, District Banswara, Rajasthan. Total project area is 623 ha for the project and 70 ha. for township & CISF Colony (56 ha+14 ha). Out of 70 ha for township, ground coverage will be 23.92 ha (34.17%) and built up area will be 21.8 ha (FSI 0.31). Township will be developed with civic amenities. Three primary schools will be relocated for the affected villages in project area. 107.57 ha forest land is involved and have applied to State Govt. of Rajasthan for the approval of forest land vide application No. 311 on dated 24th February, 2014. M.P. State border is at 8 km. In-principle approval for setting up Nuclear Power Plant at Mahi-Banswara site has been accorded by the Department of Atomic Energy, GOI, vide letter No. 1/5 (5)/2010-Power/9100 dated 17th August, 2011. Pundia and Bunder rivers are at 2.5 and 9 kms. Total 2,307 people will be affected. No litigation case is in pending. Total 5,339 trees and 307 houses are present at the site as per satellite imagery but only 656 trees located in central zone are to be cleared and all the 307 houses to be demolished.

No other project/industry exists nearby except land acquisition for two super critical thermal power plants at Wagatalab and Phephar at 9 km., where work is in progress. Mahi-Bajaj Sagar Reservoir is one of the important wetland of Rajasthan but does not fall under Ramsar Wetland site. Total estimated cost of the Stage-I will be Rs. 11,250.00 Crores and completion cost as Rs. 16,650.00 Crores (for 2 units only).

Natural Uranium will be used as fuel. Heavy Water (Deuterium dioxide D_2O) will be used as coolant and moderator. Steam generators will supply dry saturated steam to the turbine to produce electricity.

As such, no conventional pollutants like SPM, SO_2, NOx etc. will be generated by the nuclear plant. Dust emissions from vehicles during transportation will be controlled by using water sprinklers. But, emissions will be generated by the chimney of the DG sets and incinerators. Radioactive gaseous emissions and effluents will be controlled within specified limits of AERB. The gaseous radioactive emissions from reactor building will pass through High Efficiency Particulate (HEPA) filters and continuously monitored through 100 m high stack. Gamma(Y) detectors and monitors will be provided in Reactor Building and Ventilation exhaust ducts. An oil fired incinerator will be provided to incinerate organic liquid waste and

low level combustible solid waste. Two stage scrubber and 30 m tall chimney will be provided and gases will be continuously monitored.

Total water requirement from Mahi-Bajajsagar Reservoir for the plant as well as township will be 782 MLD, out of which 331 MLD water will be consumed and 451 MLD water will be returned back to the system. No ground water will be used. A sewage treatment plant (STP) with 'zero' discharge will be provided for township at project area. Liquid effluent treatment plant will be installed. Radioactive liquid effluent will be treated to achieve AERB specifications before discharge.

Domestic waste generated from project and township will be treated as per CPCB/ MoEF/statutory norms and disposed off. Sewage sludge will be used as manure for green belt development. Soil overburdens generated during excavation will be used for refilling of low lying area and backfilling. Radioactive solid waste will be segregated, conditioned, treated and stored as per AERB specifications in Near Surface Disposal Facility (NSDF) within exclusion zone boundary. Spent oil and lubricants will be given to authorized processors as per statutory norms. Monitoring bore holes will be provided all around the disposal site. Spent fuel will be stored in Spent Fuel Storage Bay (SFSB).

A green belt will be provided all around the plant boundary limits at township but committee asked to develop green belt at least in 33 % area. Rainwater harvesting measures will be adopted for recharging ground water. Environmental Survey Laboratory will be set up in township to monitor land, air and water quality on continuous basis.

Rajasthan Government has constituted a Committee for finalizing Rehabilitation and Resettlement (R&R) Plan involving members from State Government and NPCIL representatives. About 8000 persons will be deployed during construction phase.

10 MW electricity will be sources from State Grid / Discoms and methods will be adapted to minimize energy consumption. Solar energy will also be used for various purposes. DG set (500 KVA) will be provided as standby. Noise level for all the activities will be maintained within permissible limits. Acoustic enclosures will be provided to DG sets.

Extensive safety provisions will be taken. AERB approved emergency preparedness plant will be followed strictly. Decommissioning of the plant will be carried out as per AERB guidelines.

After detailed deliberations, the Expert Appraisal Committee prescribed the following TORs for preparation of EIA/EMP for the Mahi Banswara Rajasthan Atomic Power Project (MBRAPP, 4x700 MWe PHWR) at Mahi–Banswara, District Banswara, Rajasthan. Following should ne included in EIA/EMP report:

i. A note on site selection should be included in the EIA report.
ii. A copy of the site clearance accorded by the Atomic Energy Regulatory Board (AERB).
iii. The data contained in the EIA report should be for the ultimate capacity of the plant.
iv. All the corner coordinates of the plant site as well as the township with toposheet should be given.
v. Distance between the boundary of two super critical thermal power plants at Wagatalab and Phephar and proposed nuclear power plant.
vi. A copy of the application submitted to the State Government of Rajasthan for forest land approval. A note on follow-up of Ministry's OM No. J-11013/41/2006-IA.II (I) dated 9th September, 2011 and 18th May, 2012 regarding procedure to be followed where forest land is involved.

vii. The impact of the project should include both terrestrial as well as aquatic components including sacred grooves and Bheels.
viii. The study area should cover an area of 10 km radius around the proposed site for conventional pollutants and 30 km radius for radiological parameters.
ix. Impact of 2 thermal power plants proposed within 10 km. on the nuclear power plant and vice versa should also be incorporated.
x. Land use of the study area as well as the project area shall be given separately.
xi. Location of any national park, sanctuary, elephant/tiger reserve (existing as well as proposed), migratory routes, biosphere reserve, heritage site, eco-sensitive areas, if any, within 10 km of the project site shall be specified and marked on the map duly authenticated by the Chief Wildlife Warden.
xii. Documentary proof indicating that Mahi-Bajaj Sagar Reservoir is one of the important wetland of Rajasthan but does not fall under Ramsar Wetland site.
xiii. Land requirement for the project alongwith usage for different purposes should be given. It should also give information relating to as well as details of township.
xiv. The EIA report should also include the process details.
xv. Design details of incinerator as per CPCB guidelines.
xvi. Location of intake and outfall points (with coordinates) should be given.
xvii. Topography of the area should be given clearly indicating whether the site requires any filling. If so, details of filling, quantity of fill material required, its source, transportation etc. should be given.
xviii. Impact on drainage of the area and the surroundings should be given.
xix. Information regarding surface hydrology and water regime and impact of the same, if any due to the project should be given.
xx. One season site-specific meteorological data shall be provided. ~~(xvii)~~ One complete season AAQ data (except monsoon) to be given along with the dates of monitoring for the purpose of the EIA report for obtaining environmental clearance; however, data collection should continue for the entire one year (three seasons). The parameters to be covered shall include PM_{10}, $PM_{2.5}$, SO_2 and NO_X. Besides, conventional pollutants information on long lived radio nuclides and background natural radio activity, gross alpha and gross beta levels should also be given. Food chain sample matrix chosen for base line survey should include inter alia milk samples from the study area. The location of the monitoring stations should be so decided so as to take into consideration the pre-dominant downwind direction, population zone and sensitive receptors including reserved forests. There should be at least one monitoring station in the upwind direction. There should be at least one monitoring station in the pre dominant downwind direction at a location where maximum ground level concentration is likely to occur. Baseline data on noise levels may also be generated.
xxi. Detailed biological study covering both terrestrial and aquatic environment should be carried out and details furnished in the EIA report.
xxii. Impact of the project on the AAQ of the area. Details of the model used and the input data used for modeling should also be provided. The air quality contours may be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The wind roses should also be shown on this map. Levels due to radioactive releases should also be predicted and radiation dose there from at the fence post should also be worked out.
xxiii. Source of water and its availability. Commitment regarding availability of requisite quantity of water from the competent authority. Efforts should be made to reduce water consumption. Water balance cycle indicating clearly water intake, recycle/reuse in the process/green belt development and discharge. It may clearly be stated whether any groundwater is to be used in the project or township. If so, detailed hydro-geological study should be carried out. Otherwise, commitment that no ground water will be used for the project related activities and township.
xxiv. Details of rainwater harvesting during construction and operation phase.

xxv. Impact of the thermal discharge on the aquatic life should be studied in detail. In this regard, information from some existing operating units should also be given in terms of the thermal range which is normally achieved in such power plants.

xxvi. Modeling study should be carried out to determine the impact zone due to thermal discharge.

xxvii. Impact of the project on any other community, if any, should be clearly brought out in the EIA report along with necessary mitigation / safeguard measures.

xxviii. Details of water balance taking into account reuse and re-circulation of effluents.

xxix. Details of dredging involved, if any, and disposal / management of dredged material should be given in the report.

xxx. Details of green belt in 33 % area i.e. land with not less than 1500 trees per ha giving details of species, width of plantation, planning schedule etc.

xxxi. Detailed Rehabilitation and Resettlement (R&R) plan/compensation package in consonance with the National / State R&R Policy for the project affected people including that due to fuel transportation system/pipeline and their ROW, if any, shall be prepared taking into account the socio-economic status of the area, homestead oustees, land oustees, landless laborers. R & R plan should be as per LARR-2013.

xxxii. Details of flora and fauna duly authenticated should be provided.

xxxiii. Project involves scheduled fauna (Black buck and Chinkara) in the study area. Conservation plan should be prepared in consultation with State Wildlife Department and included.

xxxiv. Details regarding waste management, liquid and solid waste (conventional and radioactive) should be given in the EIA report.

xxxv. Details regarding storage and management of spent fuel should be given.

xxxvi. Details regarding storage of hazardous chemical including maximum inventory to be stored at any point of time should be given.

xxxvii. Detailed risk assessment and disaster management plan should be given. The risk contours may be plotted on location map. The impact of the highest high tide on the proposed facilities should also be discussed in the EIA report.

xxxviii. Issues relating to de-commissioning of the plant and the related environmental issues should be discussed.

xxxix. Demographic data of the study area as well as pre-project health survey of the population in study area around the project site should be collected.

xl. Detailed environmental management plan to mitigate the adverse environmental impacts due to the project should be given. It should also include possibility of use of solar energy for the project including measures for energy conservation.

xli. Details of post-project monitoring should also include in the EIA report.

xlii. Details regarding infrastructure facilities such as sanitation, fuel, rest room, medical facilities, safety during construction phase etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.

xliii. Public hearing issues raised and commitment of the project proponent on the same. An action plan to address the issues raised during public hearing and the necessary allocation of funds for the same should be provided.

xliv. Measures of socio-economic influence to the local community proposed to be provided by project proponent. As far as possible, quantitative dimension to be given.

xlv. Impact of the project on local infrastructure of the area such as road network and whether any additional infrastructure would need to be constructed and the agency responsible for the same with time frame particularly keeping in view the transportation of over sized consignments should be given.

xlvi. EMP to mitigate the adverse impacts due to the project alongwith item-wise cost of its implementation.

xlvii. Budget allocation for CSR activities and details of activities to be carried out.

xlviii. Any litigation pending against the project and /or any direction /order passed by any Court of Law against the project, if so, details thereof.

TORs for township:

i. A site plan showing the project site and its surroundings with physical features and topographical details, such as land use, contours and drainage pattern, along with photographs of the site from all four sides, shall be examined in detail.
ii. If the site is low lying and will require extra earth, examine the quantity required and identify the area from where the earth will be borrowed and whether any permission will be required or not.
iii. Examine in detail the proposed site with reference to impact on infrastructure covering water supply, storm water drainage, sewerage, power, etc., and the disposal of treated/ raw wastes from the complex on land/water body and into sewerage system.
iv. Consider soil characteristics and permeability for rainwater harvesting proposals, which should be made with due safeguards for ground water quality. Maximize recycling of water and utilization of rainwater.
v. Provision should be made for guard pond and other provisions for safety against failure in the operation of wastewater treatment facilities. Identify acceptable outfall for treated effluent.
vi. Examine existing education and health facilities, police and other services and include adequate provisions in the proposal.
vii. Study the existing flora and fauna of the area and the impact of the project on them.
viii. Landscape plan, green belts and open spaces should be described.
ix. Assess soil erosion in view of the soil characteristics, topography and rainfall pattern.
x. Application of renewable energy/alternate energy, such as solar and wind energy may be described including solar water heating. Provide for conservation of resources, energy efficiency and use of renewable sources of energy in the light of ECBC code.
xi. Arrangements for waste management may be described as also the common facilities for waste collection, treatment, recycling and disposal of all effluent, emission and refuse including MSW. Identification of recyclable wastes and waste utilization arrangements may be made.
xii. Traffic management plan including parking and loading / unloading areas may be described. Traffic survey should be carried out both on weekdays and weekend.
xiii. Use of local building materials should be described.
xiv. Application of resettlement and rehabilitation policy may be described. Project affected persons should be identified and rehabilitation and resettlement plan should be prepared.
xv. Examine separately the details for construction and operation phases both for Environmental Management Plan and Environmental Monitoring Plan.
xvi. Examine and prepare in detail the Disaster Management Plan and emergency Evacuation Plan for natural and manmade disasters like earthquakes, cyclones/flooding, Tsunami and terrorists attack.

TORs prescribed above by the EAC (Nuclear) should be considered for preparation of EIA / EMP report for the above mentioned project in addition to all the relevant information as per the Generic Structure of EIA given in Appendix III and IIIA in the EIA Notification, 2006 and submitted to the Rajasthan Pollution Control Board for conducting public hearing as per EIA Notification, 2006. The final EIA/EMP report alongwith the responses to the issues raised during public hearing and Certificate of Accreditation issued by the QCI should be submitted to the Ministry for obtaining environmental clearance.

The prescribed TORs would be valid for a period of two years for submission of the EIA/EMP reports, as per the O.M. No. J-11013/41/2006-IA.II(I) dated 22.3.2010.

Project proponent requested for allowing use of one season data (excluding non-monsoon period) for inclusion in draft EIA/EMP to be submitted to Rajasthan Pollution Control Board but data for all the 3 seasons will be collected and incorporated in the final EIA/EMP. The EAC (Nuclear) agreed for the same.

Item No. 17.04: Any Other Item:

Item No. 17.04.01: Jaitapur Nuclear Power Park (6x 1650 MWe) at Village Madban, Taluka Rajapur, District Ratnagiri, Maharashtra by M/s Nuclear Power Corporation of India Ltd. (NPCIL).

The committee was informed that MOEF has granted environmental clearance to Jaitapur Nuclear Power Park (6x 1650 MWe) at Village Madban, Taluka Rajapur, District Ratnagiri, Maharashtra by M/s Nuclear Power Corporation of India Ltd. (NPCIL) vide letter dated 26th November, 2010 with certain environmental safeguards which inter-alia includes:

(i) Condition No. 4(ii): The following additional details shall be submitted within 12 months:

1. A comprehensive biodiversity conservation plan shall be prepared for the Jaitapur within twelve months in consultation with the BNHS and the state forests and wildlife department. This plan will also deal with measures needed to maintain the health of the mangroves in the creek area outside the plant site. The total mangrove area according to the BNHS may be around 150 hectares.

2. A monitoring committee comprising of outside experts and institutions (including the BNHS, College of Fisheries, Ratnagiri and the Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli) would be constituted by the NPCIL to oversee the implementation of environmental management measures stipulated as part of environmental clearance. The deliberations of the monitoring committee would be put on the website of the NPCIL on a regular basis.

3. A special plan will be made to put in place appropriate safeguard measures to ensure that the fisheries in the sea adjoining Ambolgad are not affected adversely due to the project. BNHS and other agencies should be involved in this exercise. Kasheli is another critical area that needs to be safeguarded. A special plan for mitigating adverse impacts on fishing livelihoods in the region will also be implemented. Musakazi is an important fishing village and jetty which is less than a kilometer away from the project site. Access to fishing communities should be ensured at all times.

4. Design of cooling water discharge system will be finalized with demonstrably adequate provision for its extension into the marine area beyond 2.2 kms, if needed to minimize the adverse impact on biodiversity/coral reefs/aquatic fauna in the larger Jaitapur area.

5. NPCIL's on-going environmental stewardship programme should be substantially strengthened with a focus on the Western Ghats since three of its power generating complexes-Tarapur, Kaiga and now Jaitapur-are located in this ecologically sensitive region. This programme must build a network of independent scholars and sentinels for nature conservation.

1&2. Preparation of Biodiversity Conservation Plan & Monitoring:

NPCIL earlier requested that time for preparation of Biodiversity Conservation Plan (BCP) may be extended up to September, 2013 due to work still in progress at BNHS, Mumbai, College of Forestry, Dapoli and other two institutes. The Committee after considering the progress made in the matter agreed to grant extension of time for preparing and to submit BCP and a Special Plan to the MOEF upto September, 2013 for taking further necessary action as per EC conditions. The BCP for Jaitapur Region is specifically for terrestrial, inter-tidal and mangrove areas. Accordingly, CMD, NPCIL constituted Committee vide letter dated 15th December, 2010. The Chairman, JNPP Biodiversity Conservation Plan Committee submitted its report on 27th September, 2013 and the copies of the report were

sent to members of the EAC (N) on 8th January, 2014 for their perusal and review. Status of biodiversity of the proposed site was assessed in 10 km. radius. BNHS and College of Forestry (CoFo) initiated studies in December, 2012 and April, 2012 respectively.

A Monitoring Committee has been constituted to oversee the implementation of environmental management measures stipulated as part of environmental clearance for JNPP. In line with recommendations of the Monitoring Committee, NPCIL has awarded work orders to BNHS, Mumbai, Dr. BSKKV College of Forestry, Dapoli, Dr. BSKKV College of Fisheries, Ratnagiri; Central Institute of Fisheries Education (CIFE), Mumbai; Central Marine Fisheries Research Institute (CMFRI), Mumbai.

Project proponent informed to the Committee that as per BCP plan, no protected area exists within 10 km. of the proposed Jaitapur Power Plants. Rajapur Creek, Vijaydurg Creek and Ansure Creek are located at 4 km., 4.8 km. and 5 km. distance. The site is adjacent to sea and fall in CRZ-III. The plant will require sea-water for condenser cooling and fresh water requirement for plant and township will be met by desalination plant. The specific temperature difference of the discharged cooling water with respect to intake water will be less than 5^0C at the point of discharge as per MoEF guidelines. It was also mentioned that BCP will also include measures needed to maintain the health of the mangroves in the creek area outside the plant site. The total mangrove area according to BNHS may be around 150 ha.

Project proponent informed to the committee that following were the conclusions of the BCP plan:

1. Coral bleaching was prevalent at certain locations such as Ambolgad, Kasheli and Vijaydurg suggesting seasonable temperature impact. Regular monitoring is essential to ascertain temperature related bleaching of corals in the region.

2. 8 IUCN evaluated species have been identified as vulnerable which fall under Wildlife (Protection) Act, 1972, amended in 2001.

3. Immense study is necessary to create a base line data for all parifera (sponges) which are under Schedule-III of W (P) Act, 1972.

4. It is necessary to study the effect of elevated temperature on corals due to warm water discharge from the power plant outfall at both inter-tidal as well as sub-tidal corals.

5. Seasonal monitoring is necessary for conservation priority rites of Ambolgad, Vijaydurg, Ansure. A phenomenon of species disappearance and re-appearance within particular season needs to be studied within the area.

6. Specific study is essential to know the trend and status of inter-tidal nudibranchs (mollusca) so that they can be used as indicator.

NPCIL informed to the committee that they would be responsible for implementation of the research and conservation plan within its own area of jurisdiction. However, suitable directions from MoEF may be issued for the sites identified which fall either with State/Central Government jurisdiction or private ownership and which are beyond ownership of NPCIL.

After deliberations, the committee recommended Biodiversity Conservation Plan (BCP) for approval by the Ministry. The committee observed that BCP is a unique and important document identifying various issues required for the biodiversity conservation in the Jaitapur

area and now action has to be taken in short-term and long-term. NPCIL should be responsible to implement the plan in its study area and any other scope in its program. The Monitoring Committee, already constituted by the NPCIL, may continue to monitor satisfactory implementation of BCP programme in its study area.

3. Report on special plan for fisheries:

Project proponent informed that study for special plan for fisheries is already initiated by College of Fisheries, Ratnagiri and Central Institute for Fisheries' Research Education (CIFE) and is likely to be completed by August, 2014 and submitted to the Ministry by September, 2014.

4. 3-D Model (MIKE-3) study for dispersion of condenser cooling water discharge from Jaitapur Nuclear Power Plant prepared by CWPRS, Pune:

NPCIL vide letter dated 28th January, 2014 have submitted 3-D Model (MIKE-3) study for dispersion of condenser cooling water discharge from Jaitapur Nuclear Power Plant prepared by CWPRS, Pune.

As per the study report, it is concluded that when all the six units are in operating condition, the rise in temperature near the outfalls will not exceed 5°C during transition period. The study also confirmed that when all the six units are in operation, the rise in temperature near the outfalls would be within 3.9^0C when currents are in northward and southward direction. Further temperature rise in transition period at the intakes would be within 1.4^0C and in creeks would be less than 1.0^0C.

5. **Implication of the project in reference to Western Ghats Ecology Expert Panel report :**

Project Proponent vide their letter dated 2nd May, 2014 has informed that implications of report of High Level Working Group on Western Ghats was evaluated with regard to Ecologically Sensitive Area (ESA) in the Western Ghat region for the acquired land of Jaitapur Nuclear Power Plant site (located in village Madban and Warilwada) and its residential complex (Village Niveli, Karel and Mithgavane) do not fall in the ESA. Stewardship programme with a focus on Western Ghat is in progress.

Item No. 17.04.02: Gorakhpur Haryana Anu Vidyut Pariyojna (Formerly, Haryana Atomic Power Project (4X700 MWe) at Village Gorakhpur, District Fatehabad, Haryana by M/s Nuclear Power Corporation of India Ltd. (NPCIL).

Environment clearance was accorded to Gorakhpur Haryana Anu Vidyut Pariyojna (Formerly, Haryana Atomic Power Project (4X700 MWe) at Village Gorakhpur, District Fatehabad, Haryana vide Ministry's letter dated 27th December, 2013. Now, NPCIL has requested for amendment in certain stipulated environment condition giving reasons. The matter was placed before the committee to reconsider stipulated conditions. Following are the details:

Clause /Condition No.	Existing Clause / Condition	Modification sought by PP in Clauses/Conditions	Reasons for seeking amendment	EAC (N) decision
Clause 3,	Flue gases will be passed through	Clause should be deleted	'No flue gases are produced during	The committee noted that gases will be generated by

Page 1, Last Para, Last line	scrubber and scrubbed water will be disposed in RCC trenches.		the operation of Nuclear Power Plant'. Hence the clause is not applicable.	the DG sets and incinerator. Accordingly, condition can be amended as follows: "Regular monitoring of ambient air quality for SPM, SO_2, NO_X and CO shall be carried out in and around the power plant and records maintained. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry at Chandigarh". Following will be deleted: "Flue gases will be passed through scrubber and scrubbed water will be disposed in RCC trenches."
Clause 3, Page 2, First Para, 5th line	The cooling water discharge will be discharged in the Fatehabad Branch Canal after secondary dilution and monitored for radioactivity levels.	"The liquid effluents will be discharged in the Fatehabad branch canal after dilution in the plant boundary using cooling water blow down and monitored for radioactivity levels".	The modifications are suggested in line with design features.	The committee agreed to amend condition as follows: "The treated liquid effluents will be discharged in the Fatehabad branch canal after dilution using cooling water blow down and monitored to ensure discharges are within the limits prescribed by AERB for radioactive parameters and within the CPCB / SPCB limits for conventional parameters "
6 (iv)	Regular monitoring of ambient air quality shall be carried out in and around the power plant and records maintained. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with Haryana State Pollution Control Board (HPCB). *Flue gases shall pass through 2-stage water scrubber and scrubbed water after solidification/ embedment in cement shall be*	"Regular monitoring of ambient air quality shall be carried out in and around the power plant and records maintained. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with Haryana State Pollution Control Board (HSPCB). Periodic Reports shall be submitted to the	'No flue gases are produced during the operation of Nuclear Power Plant.' Hence the portion of the para marked up in italics font is not applicable and so needs to be deleted.	No change in following: "Regular monitoring of ambient air quality shall be carried out in and around the power plant and records maintained. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with Haryana State Pollution Control Board (HPCB). Periodic reports shall be submitted to the Regional Office of this Ministry. Besides air quality, water, food samples and soil shall also be monitored regularly for radioactive levels in the surrounding areas and records maintained".

	disposed in RCC trenches. Periodic reports shall be submitted to the Regional Office of this Ministry. Besides air quality, water, food samples and soil shall also be monitored regularly for radioactive levels in the surrounding areas and records maintained.	Regional Office of this Ministry. Besides air quality, water, food samples and soil shall also be monitored regularly for radioactive levels in the surrounding areas and records maintained.		Only following can be deleted: "Flue gases shall pass through 2-stage water scrubber and scrubbed water after solidification/ embedment in cement shall be disposed in RCC trenches."
6 (xiv)	Radioactive solid waste shall be collected, segregated, treated at source and disposed off with the application of advanced technology as per AERB guidelines in Near Surface Disposal Facility (NSDF) which shall be fenced and dose rate shall not exceed 0.01 mGy/h. Spent fuel removed from the reactor shall be stored in spent fuel storage bay (SFSB) till it cools down to dry storage levels (about 5 yrs.) and shall be disposed as per the guidelines and procedures prescribed by the AERB in this regard. The solid radioactive waste shall be stored above the ground elevation as per the standard EPR design after it is duly reviewed by AERB and in compliance with their requirements.	"Radioactive solid waste shall be collected, segregated, treated at source and disposed off with the application of advance technology as per AERB guideline in Near Surface Disposal Facility (NSDF) which shall be fenced. Spent fuel removed from the reactor shall be stored in spent fuel storage bay (SFSB) till it cools down to dry storage level (about five years) and shall be disposed as per the guidelines and procedures prescribed by AERB in this regard."	In GHAVP, 2x700 MWe Indian PHWR based reactors are being set up. Hence features of EPR type foreign reactors are not applicable for these types of reactors. Hence these provisions shown in italics font need to be deleted.	No change in following: "Radioactive solid waste shall be collected, segregated, treated at source and disposed off with the application of advanced technology as per AERB guidelines in Near Surface Disposal Facility (NSDF) which shall be fenced and dose rate shall not exceed 0.01 mGy/h. Spent fuel removed from the reactor shall be stored in spent fuel storage bay (SFSB) till it cools down to dry storage levels (about 5 yrs.) and shall be disposed as per the guidelines and procedures prescribed by the AERB in this regard." Following can be deleted: "The solid radioactive waste shall be stored above the ground elevation as per the standard EPR design after it is duly reviewed by AERB and in compliance with their requirements".
6 (xviii)	Provision shall be made for the housing of construction labour with all necessary	Provision shall be made for the housing of construction labour with all	The land acquired for the nuclear power project is only for locating main plant buildings	No change in following: "Provision shall be made for the housing of construction labour with all necessary

	infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project and shall be within project area.	necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structure to be removed after the completion of project.	and other infrastructure facilities to be built on permanent basis. Housing of construction labour is not envisaged to be built on this land. Majority of construction labour will be local from the neighbouring villages and they will commute from their houses and no housing is to be provided to them. Labourers of migratory origin will be accommodated in the nearby villages and/or, in temporary facilities to be built on nearby land to be acquired for the purpose on lease for limited period.	infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project." PAs informed that colony for labourers will be outside project area. Therefore, EAC (N) suggested to delete last line i.e. "and shall be within project area".

After deliberations, the committee recommended amendment (addition or deletion or modification) in the conditions stipulated in the environmental clearance as per the decision taken above.

Item No. 17.04.03: Prototype Fast Breeder Reactor (PFBR), 500 MWe at Kalpakkam Nuclear Power Plant at Kalpakkam, District Kancheepuram, Tamil Nadu by Bharatiya Navbhikiya Vidyut Nigam Ltd. (Bhavini), Department of Atomic Energy - Extension of EC validity.

Project proponent vide their letter dated 20.4.2013 and 10.10.2013 have informed that environmental clearance to Prototype Fast Breeder Reactor (PFBR; 500 MWe) at Kalpakkam, District Kancheepuram, Tamil Nadu was accorded to Indira Gandhi Centre for Atomic Research (IGCAR), Department of Atomic Energy vide Ministry's letter No. K-14011/3/2001-IA.II (N) on 17th April, 2003. Now, Bharatiya Navbhikiya Vidyut Nigam Ltd. (BHAVINI), Department of Atomic Energy, Kalpakkam, Kancheepuram, Tamil Nadu has requested for the extension of validity of EC dated 17th April, 2013 vide letter dated 20.4.2013 and 10.10.2013. Project proponent has submitted updated Form-I and Prefeasibility Report for Prototype Fast Breeder Reactor (PFBR) for 500 MWe.

Project proponent informed to the Committee that construction work at the site started in October, 2003. However, due to tsunami at site on 26th Dec., 2004, construction work at the site was hampered tremendously. As on today, out of total cost of the project of Rs. 5,677 Crores, Rs. 4,310 Crores is spent. 96% work is almost completed. Air and water consent have been accorded by the Tamil Nadu Pollution Control Board (TNPCB) on 18th February, 2013. Project proponent further informed that erection of reactor components have been completed except a few minor components. Auxiliary boiler has been commissioned. Turbo-Generator system is under testing. 90% of the ventilation system

equipments have been erected. 100% chillers have been commissioned. Remaining work is likely to be completed by December, 2013. As per Government approval, criticality of the project is fixed for September, 2014 and commercial operation likely to start by March, 2015. At present, the project is at commissioning stage and likely to start by September 2014.

The proposal was considered in the 16th EAC (N) meeting held on 19th November, 2013 to discuss further revalidation of the EC and change in the name of the project proponent from IGCAR to BHAVINI. The Committee desired following information

a. Reasons for not applying for the revalidation within the stipulated time frame.
b. Details of the construction progress (both physical and financial) made during 17.04.2003 to 16.04.2008.
c. Documents including :
   (i) Transfer deed;
   (ii) "Memorandum of Understanding" signed between IGCAR and M/s BHAVINI;
   (iii) Commitment from BHAVINI for complying stipulated environmental conditions;
   (iv) "No objection" from IGCAR.

Project Proponent have submitted desired information vide their letter dated 10th January, 2014 intimating that:

(i) Reasons for not applying for the revalidation within the stipulated time frame.
(ii) Physical and financial progress made during 17.04.2003 to 16.04.2008 indicating that 96.5% work at the project site is already over and Rs. 4395.29 Crores are spent till December, 2013.
(iii) Transfer deed and "Memorandum of Understanding" signed between IGCAR and M/s BHAVINI;
(iv) Commitment from BHAVINI for complying stipulated environmental conditions;
(v) "No objection" from IGCAR;
(vi) Certificate of Incorporation of BHAVINI with the Registrar of Companies, Tamil Nadu.

The Committee noted that the project has been accorded environment clearance on 17th April, 2003 and it has to be considered as per EIA Notification, 1994 and not as per EIA Notification, 2006.

The committee was informed that since PP has submitted all the requisite information regarding change in the name of Project Proponent from IGCAR to BHAVINI, a letter regarding change in the name of the Project has already been issued by the Ministry vide letter no. K-14011/3/2001-IA-II (N) dated 3rd April, 2014.

Regarding revalidation of EC, it is observed that EC was accorded on 17th April, 2003 and excavation and construction activities at the site started in August, 2003 itself, which is well within the 5 years of validity of EC. 96.5% work at the project site is already over and Rs. 4,395.29 Crores are spent till December, 2013. PP has further submitted information indicating physical and financial progress made during 17th April, 2003–31st March, 2008 (5 years) and also for the period 17th April, 2003–31st March, 2013 (10 years) duly authenticated by the Charted Accountant. It was also informed to the committee that a Gazette Notification (S.O. No. 1956) dated 22nd August, 2013 has been issued clarifying that in the EIA Notification dated 4th May, 1994, the expression "for a period of five years", shall mean "for a period of five years for commencement of the construction or operation and not five years from commencement of the construction or operation". In the instant case, EC was accorded on 17th April, 2003 and excavation work at the site started in August, 2003 itself. Thus, EC accorded is still valid since the construction work at the site started within 5 years in the same year itself in 2003 and does not need any revalidation.

Item No. 17.04.04: Fast Breeder Reactor (FBR 1&2, 2x500 MWe), Kalpakkam, Tamil Nadu by Bharatiya Nabhikiya Vidyut Nigam Ltd. (BHAVINI) – Extension of ToRs validity.

Bharatiya Nabhikiya Vidyut Nigam Ltd. (BHAVINI), Kalpakkam, Tamil Nadu, vide their letter no. BHAVINI/CMD/2014/279 dated 22nd April, 2014 has informed that ToRs have been accorded by the Ministry for the Fast Breeder Reactor (FBR 1&2, 2x500 MWe at Kalpakkam, Tamil Nadu vide Ministry's letter no. J-14011/02/2011-IA.II (N) dated 8th July, 2011 and M/s MECON Ltd. (a Government of India Enterprise) has prepared the draft EIA/EMP Report. The draft EIA/EMP report was submitted to Tamil Nadu State Pollution Control Board (TNPCB) on 14th June, 2013 for conducting public hearing but could not be conducted due to various reasons including:

(i) Recurrent agitation by the public, in connection with KKNPP, Tamil Nadu.
(ii) Influence of KKNPP agitation on local population with respect of Nuclear Power Plants.
(iii) Agreeable venue and date by TNPCB and BHAVINI to conduct public hearing.
(iv) Non-availability of suitable date with district authorities due to their frequent transfers.
(v) Code of Conduct enforced by the Election Commission of India for the forthcoming Lok Sabha elections and may not be possible before August, 2014 due to 30 days notice period and other formalities.

The prescribed TORs were valid for a period of two years upto 7th July, 2013 for submission of the EIA/EMP reports, as per the O.M. No. J-11013/41/2006-IA.II (I) dated 22.3.2010.

Since ToRs awarded on 8th July, 2011 have already expired on 7th July, 2013, project proponent have requested Ministry on 24th April, 2014, after expiry of validity period, for the extension of validity as per EIA Notification, 2006. BHAVINI has submitted a copy of Form-I, Form-IA and pre-feasibility report for consideration for extension of validity of ToRs.

During deliberations, PP requested for the revalidation of ToRs issued vide Ministry's letter dated 8th July, 2011 for another two years upto July, 2015. PP also informed to the Committee that they have already collected three seasons baseline data for the period July, 2011 to May, 2012 excluding monsoon season (October to December, 2011) for Tamil Nadu and requested to use in the EIA/EMP. Besides, it is also conveyed that no industrial development has taken place during and after the baseline data collection. PP also informed that there is no change in the technology and the site for the proposed FBR project at Kalpakkam.

After deliberations, the Committee examined the matter and observed that delay in not conducting public hearing is due to TNPCB where project proponent have submitted draft EIA/EMP report as early as on 14th June, 2013. However, since PP have not submitted EIA/EMP alongwith the public hearing report, to the Ministry within 2 year as per the O.M. no. J-11013/41/2006-IA.II (I) dated 22.3.2010, the committee conveyed that TORs awarded are no longer valid and asked to reapply for the fresh TORs alongwith Form-I , Form-IA and pre-feasibility report**.**

Since there is no change in technology, proposed site, project area, township, any other activity in the surrounding environment and data has already been collected for ambient air, water, ground water, soil, etc. during July, 2011 to May, 2012 (except during monsoon season i.e. in T.N. October-December 2011), the Committee recommended to

issue the same Terms of References to the PP which were issued by the Ministry vide letter No. J-14011/2/2011-IA.II (N) dated 8th July, 2011

The Committee prescribed the following ToRs for undertaking detailed EIA study:-

(i) Compliance report to the earlier EC conditions with supporting data and photographs should be included in the EIA report.
(ii) A note on site selection should be given in the EIA report
(iii) The data contained in the EIA report should be for the ultimate capacity on the plant.
(iv) All the corner coordinates of the plant site as well as the township with toposheet should be given
(v) Does the company have a well laid down environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
(vi) Does the environment Policy prescribe for standard operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? If so, it may be detailed in the EIA.
(vii) What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions. Details of this system may be given.
(viii) Does the company have a system of reporting of non compliances violations of environmental norms to the Board of Directors of the company and/ or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA report.
(ix) A CRZ map showing the LTL, HTL and the setback lines duly demarcated by one of the authorized agencies, super imposing thereon the various activities to be undertaken in the CRZ area including the route of the pipeline, intake and outfall structure etc should be furnished. The recommendations of the State Coastal Zone Management Authority for undertaking the activities in CRZ should also be furnished.
(x) The EIA report should also include the impacts of the foreshore activities.
(xi) The impact of the project should include both terrestrial as well as aquatic components.
(xii) The EIA report should project the comprehensive impact taking into account the activities which are under construction and yet to be commissioned.
(xiii) The study area should cover an area of 10 km radius around the proposed site for conventional pollutants and 30 km radius for radiological parameters.
(xiv) Land use of the study area as well as the project area shall be given separately.
(xv) Location of any National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as proposed), migratory routes, if any, within 10 km of the project site shall be specified and marked on the map duly authenticated by the Chief wildlife Warden.
(xvi) Land requirement for the project along with usage for different purposes should be given. IT should also give information relating to right of way (ROW), if any required for pipeline etc. as well as details of township.
(xvii) Location of intake and outfall points (with coordinates) should be given.
(xviii) Topography of the area should be given clearly indicating whether the site requires any filling. If so, details of filling, quantity of fill material required, its source, transportation etc. should be given.
(xix) Impact on drainage of the area and the surroundings should be given.
(xx) Information regarding surface hydrology and water regime and impact of the same, if any due to the project should be given
(xxi) One season site-specific meteorological data shall be provided.
(xxii) One complete season AAQ data (except monosoon) to be given along with the dates of monitoring for the purpose of the EIA report for obtaining environmental

clearance; however, data collection should continue for the entire one year (three seasons). The parameters to be covered shall include PM10, PM2.5, SO2 and NOx. Besides conventional pollutants, information on long lived radio nuclides and background natural radio activity, gross alpha and gross beta levels should also be given. The location of the monitoring stations should be so decided so as to take into consideration the pre-dominant downwind direction, population zone and sensitive receptors. There should be at least one monitoring station in the upwind direction. There should be at least one monitoring station in the pre dominant downwind direction at a location where maximum ground level concentration is likely to occur. Baseline data on noise levels may also be generated.

(xxiii) Detailed biological study covering both terrestrial and aquatic environment should be carried out and details furnished in the EIA report.

(xxiv) Impact of the project on the AAQ of he area. Details of the model used and the input data used for modeling should also be provided. The air quality contours may be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The wind roses should also be shown on thismap. Levels due to radioactive releases should also be predicted and radiation does there from at the fence post should also be worked out.

(xxv) Source of water and its availability. Commitment regarding availability of requisite quantity of water from the competent authority. It may clearly be stated whether any groundwater is to be used in the project or township. If so, detailed hydro-geological study should be carried out .

(xxvi) Details of desalination plant, if any, proposed in the project. It should also include information regarding disposal of brine, point of discharge and its impact on aquatic life.

(xxvii) Details of rainwater harvesting and how it will be used in the plant.

(xxviii) Impact of the thermal discharge on the aquatic life should be studied in detail. In this regard, information from some existing operating units should also be given in terms of the thermal range which is normally achieved in such power plants.

(xxix) Modeling study should be carried out to determine the impact zone due to thermal discharge.

(xxx) Details of water balance taking in to account reuse and re-circulation of effluents.

(xxxi) Details of dredging involved, if any, and disposal/management of dredged material should be given in the report.

(xxxii) Details of greenbelt i.e land with not less than 1500 trees per ha giving details of species, width of plantation, planning schedule etc.

(xxxiii) Detailed R & R plan/compensation package in consonance with the National/State R & R Policy for the project affected people, if any, shall be prepared taking into account the socio economic status of the area homestead oustees, land oustees, landless laborers.

(xxxiv) Details of flora and fauna duly authenticated should be provided. In case of any scheduled fauna, conservation plan should be provided.

(xxxv) Details regarding waste management liquid and solid waste (conventional and radioactive) should be given in the EIA report.

(xxxvi) Details regarding storage and management of spent fuel should be given

(xxxvii) Details regarding storage of hazardous chemical including maximum inventory to be stored at any point of time should be given.

(xxxviii) Detailed risk assessment and disaster management plan should be given . The risk contours may be plotted on location map. The impact of the highest high tide on the proposed facilities should also be discussed in the EIA report.

(xxxix) Issues relating to de-commissioning of the plant and the related environmental issues should be discussed.

(xl) Demographic data of the study area as well as pre-project health survey of the population in study area around the project site should be collected.

(xli) Details environmental management plan to mitigate the adverse environmental impacts due to the project should be given. It should also include possibility of use of solar energy for the project including measures for energy conservation.

(xlii) Details of post project monitoring should also include in the EIA report

(xliii) Details regarding infrastructure facilities such as sanitation, fuel, restroom, medical facilities, safety during construction phase etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase

(xliv) Public hearing points raised and commitment of the project proponent on the same. An action plan to address the issues raised during public hearing and the necessary allocation of funds for the same should be provided.

(xlv) Measures of socio economic influence to the local community proposed to be provided by project proponent. As far as possible, quantitative dimension to be given.

(xlvi) Impact of the project on local infrastructure of the area such as road network and whether any additional infrastructure would need to be constructed and the agency responsible for the same with time frame particularly keeping in view the transportation of over sized consignments should be given .

(xlvii) EMP to mitigate the adverse impacts due to the project along with item wise cost of its implementation.

(xlviii) Any litigation pending against the project and / or any direction/ order passed by any Court of Law against the project, if so details thereof.

In respect of the township, the following TORs are prescribed for addressing the same in the EIA report

(i) A site plan showing the project site and its surroundings with physical features and t topographical details, such as land use, contours and drainage pattern, along with photographs of the site from all four sides , shall be examined in detail.

(ii) If the site is low lying and will require extra earth, examine the quantity required and identify the area from where the earth will be borrowed and whether any permission will be required or not.

(iii) Examine in detail the proposed site with reference to impact on infrastructure covering water supply, storm water drainage, sewerage power, etc. and the disposal of treated/ raw wastes from the complex on land/water body and into sewerage system.

(iv) Consider soil characteristics and permeability for rainwater harvesting proposals, which should be made with due safeguards for ground water quality. Maximise recycling of water and utilization of rainwater.

(v) Provision should be made for guard pond and other provisions for safety against failure in the operation of wastewater treatment facilities. Identify acceptable outfall for treated effluent.

(vi) Examine existing education and health facilities, police and other services and include adequate provisions in the proposal.

(vii) Study the existing flora and fauna of the area and the impact of the project on them

(viii) Landscape plan, green belts, and open spaces should be described.

(ix) Assess soil erosion in view of the soil characteristics, topography and rainfall pattern.

(x) Application of renewable energy/alternate energy, such as solar and wind energy may be described including solar water heating, Provide for conservation of resources, energy efficiency and use of renewable sources of energy in the light of ECBC code.

(xi) Arrangements for waste management may be described as also the common facilities for waste collection, treatment, recycling and disposal of all effluent, emission and refuse including MSW. Identification of recyclable wastes and waste utilization arrangements may be made.

(xii) Traffic management plan including parking and loading/ unloading areas may be described. Traffic survey should be carried out both on weekdays and weekend.

(xiii) Use of local building materials should be described.

(xiv) Application of resettlement and rehabilitation policy may be described. Project affected persons should be identified and rehabilitation and resettlement plan should be prepared.

(xv) Examine separately the details for construction and operation phases both for Environmental Management Plan and Environmental Monitoring plan.

(xvi) Examine and prepare in details the Disaster Management Plan and emergency Evacuation Plan for natural and manmade disasters like earthquakes, cyclones/flooding, Tsunami and terrorists attack.

It is also requested to collect one month pre-monsoon data for the ambient air quality, incorporate in draft EIA/EMP report (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned issues and submit the revised draft EIA/EMP to TNPCB for conducting public hearing. It is also requested to include all the issues raised during public hearing alongwith comments, clarifications and commitments made to the public during the public hearing in the final EIA/EMP report and submit to the Ministry for consideration for environment clearance in accordance with the procedure prescribed under the EIA Notification, 2006.

Item No. 17.04.05: Applicability of EIA Notification, 2006 for enhancement/expansion of production capacity of Heavy Water Plants – reg.

Heavy Water Board, Department of Atomic Energy, vide their letter dated 16th January, 2014 has informed the Ministry that they are operating four heavy water plants in India and are planning to enhance the production capacity and also expand the existing heavy water plants at Manuguru, Hazira and Thal.

It is mentioned that heavy water is separated from natural water and synthesis gas (N_2+H_2) by chemical exchange process. It is also mentioned that activity of heavy water production is not listed in the schedule of EIA notification, 2006. Accordingly, it **was** presumed that enhancement of production capacity and expansion of heavy water production facility may not require environment clearance from the MoEF.

It was also mentioned in the letter that Ministry has clarified in reference to Elemental Boron Project at Heavy Water Plant, Manuguru vide letter No J-11013/110/2007-IA.II (I) that

the project activity does not come under the purview of EIA Notification, 2006 and does not require environment clearance since it is not listed in the schedule of EIA Notification, 2006.

Project proponents have again requested vide letter dated 16th January, 2014 to confirm non-requirement of environment clearance for the heavy water plants.

The Committee deliberated on the subject whether projects of Heavy Water Board require environment clearance or not? If yes, who should consider such projects - industry sector or nuclear sector?

The Committee observed that:

i. Most of the Heavy Water Board projects are located in ammonia based fertilizer plant and are kept under Category 'A'. Such projects involve uranium recovery from fertilizers and are always considered in the industry sector.

ii. Heavy water plants are also located near nuclear power projects since heavy water is used in nuclear power projects. Production of solvents and sodium metal is generally used for nuclear facilities. Since no radioactivity is involved in such projects, the proposal should be considered by the industry sector and not by the nuclear sector. However, siting of heavy water projects requires clearance from the AERB.

iii. Since heavy water is separated from natural water and synthesis gas (N_2+H_2) involving chemical exchange process, such projects should be dealt by industry sector.

iv. One of the Expert Member of the Nuclear Sector, who is also also Expert Member in the Industry Sector confirmed that such projects have been considered in the past in the industry sector and not in the nuclear sector.

Keeping all these factors in mind, the Committee recommended that all the Heavy Water Board projects certainly require environment clearance under the EIA Notification, 2006 and should be dealt by the industry sector keeping the process and non-radioactivity nature of the heavy water in mind. These projects will also require air and water consents from the concerned State Pollution Control Board besides authorisation for waste management.

The meeting ended with a vote of thanks to the Chair.

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Annexure-1

List of Participants

A. From Expert Appraisal Committee (Nuclear):		
1. Dr. A.R. Reddy	Chairman	P
2. Shri A.R. Sundararajan	Member & Vice-Chairman	P
3. Prof. C.K. Varshney	Member	P
4. Shri R.K. Garg	Member	P
5. Shri S. Krishan	Member	P
6. Shri U.N. Gaitonde	Member	P
7. Dr. K.K.S. Bhatia	Member	P
8. Dr. A. A. Khan	Member	A
9. Sh. R. Bhattachaya	Member	P
10. Dr. D.N. Sharma	Member	P
11. Chairman, (Nominee: Dr. S.K. Paliwal), CPCB	Member	A
12. Dr. R.S. Dhaliwal	Member	A
13. Secretary, Ministry of Rural Development	Member	A
B. From Ministry of Environment & Forests, New Delhi		
1. Dr. P.B. Rastogi, Director, MoEF	Member Secretary	
2. Shri Y.P. Singh, Deputy Director	MoEF	
C. **From Nuclear Power Project at Mithivirdi, Bhavanagar, Gujarat by M/s NPCIL**		
1. Shri R. S. Prasad		P
2. Shri D. K. Parikh		P
3. Sh. M./ R. Kinare		P
4. Shri P. Chandra Mohan		P
5. Dr. Jitendra Singh		P
6. Shri P.M. Shah		P

7. Shri U.C Murthibodh		P
8. Shri. R. Banerjee		P
9. Shri. B.N Jha		P
10 Shri. K. R. Anil Kumar		P
11. Shri. G. Chatterjee		P
12. Shri Syed Parveez Ahmed		P
13. Shri K.T. Rao		P
14. Shri Arun Sameta		P
15. Shri Jayant K. Josh		P
16. Shri Saurabh Katiyar		P
17. Shri C. Pattanaik		P
18. Shri Puskar Pal		P
19. Sh. U.P. Singh		P
20. Shri K.S. Mahesh Kumar		P
21. Shri S. K. Sharma		P
22. Shri N. Madhu Sudana Rao		P
D. From M. P. Atomic Power Project at Chutka, Mandla, MP by NPCIL		
1. Ms Hemlata Vijay		P
2. Dr. Jitendra Singh		P
3. Shri Ranjay Sharan		P
4. Shri W.C muktibadh		P
5. Shri R. Banerjee		P
6. Shri S. K Pathak		P
7. Shri B.D Jha		P
8. Shri S. Simpha Roy		P
9. Shri Syed Parveez Ahmed		P
10. Shri U.P.Singh		P

E. From Mahi Banswara Project at Banswara, Rajasthan by NPCIL		
1. Shri K.S Mahesh Kumar		P
2. Shri Hemlata Vijay		P
3. Shri A. K. Gupta		P
4. Shri P.K. Srivastav		P
5. Shri B.D Jha		P
6. Dr. Jitendra Singh		P
7 Shri R. Banerjee		P
1. Shri U.C Muktibodh		P
2. Shri S Simpha Roy		P
3. Shri S.K. Sharma		P
4. Shri U.P. Singh		P
5. Shri Syed Parveez Ahmed		P
6. Shri Puskar Pal		P
7. Shri K.T.Rao		P
8. Shri N Madhusudana		P

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