Introduction

M/s. Maharashtra State Power Generation company Ltd (MSPGCL) requested the National Safety Council (NSC) to develop the detailed Environment, Health and Safety (EHS) policy, vide its work order no CGM/CEHSU/EHS policy/813/no 16516 dated 14th Sep. 2010 received from Chief General Manager, Corporate Environment Health and Safety Unit(CEHSU), Mumbai.

As per the work order NSC visited one of each type of power stations i.e., Gas Power Station, Thermal Power Station and Hydroelectric Power Station of MSPGCL.

A two member team visited the Gas Power Station, Bokarvira, Uran on 1st November, 2010. The team comprised of the following members:

1. Smt. S. Bhattacharya, Director, NSC
2. Shri M. Y. Bhalekar, Technical Officer, NSC

A two member team visited the thermal and hydroelectric power stations:

- Nasik Thermal Power Station, Eklahare - on December 7, 2010
- Hydrolectric Power Station Complex, Popholi-Ratangiri, - on January 14, 2011

The members of the team for Nasik and Pophali Power Stations are as follows:

1. Smt S. Bhattacharya, Director, NSC.
2. Shri R. S. Mathur, External Expert –Electrical Safety

The policy has been prepared based on Factories Act Section 7a) and Maharashtra Factories Rules, Rule no. 73L, in conjugation with the provisions of the Factories Act on Safety, Heath and related subjects, the other statutory provisions, the best practices followed by industries.

The following Annexures are added in the document

The organization Chart the policy as Annexure I, IA, IB and 1C.
The Sample Process for three power stations as Annexure II
The MAHAGENCO power stations as on 2011 Annexure III
The Statutory Requirements are added as Annexure IV

HEALTH, SAFETY AND ENVIRONMENT POLICY
MAHARASHTRA STATE POWER GENERATION CO. LTD.

Maharashtra State Power Generation Co. Ltd (MAHAGENCO) , company, recognize and accept its responsibility for establishing and maintaining a safe working environment for all its employees.

The responsibility arises due to:

a) Company's moral obligation to its employees to provide good working condition from the point of view of safety and to maintain a sustainable environment in and around the premises with a goal towards zero accident, zero health impairment and zero environmental pollution.,

b) Statutory requirement with respect to health, safety of employees and that of sustainable environment as per relevant legislations primarily the Factories Act 1948, the Indian Electricity Act 2003 and the Environment (Protection) Act 1987 and Rule 73L of the Maharashtra Factories Rules, 1963.

The company shall take all practical steps to ensure safe conditions of work and a sustainable environment and shall do the following:

1. Ensure that the statutory provisions, codes, standards, safe practices are followed in design, operation, maintenance and modifications to embed safety in all stages;
2. Identify hazards in all stages, analysing the risk of injury, health and environment, taking engineering risk reduction measures, informing employees about the hazards and necessary precautions to be taken;
3. Provide training to employees to upgrade the knowledge and skill commensurate to work safely;
4. Upgrading the machineries and system with the improved technology,
5. Work with stakeholders to facilitate improvement in health safety performance making obligatory to follow safety rules and practices;
6. Take steps so that solid, liquid and gaseous wastes generate from companies activities does not degrade the environment;
7. Setting responsibilities and authorities informing about that at all levels to achieve the objective of safety health and environment policy.

Signature of Chief Executive
Date

HEALTH, SAFETY AND ENVIRONMENT POLICY

MAHARASHTRA STATE POWER GENERATION CO. LTD.

Maharashtra State Power Generation Co. Ltd (MAHAGENCO) , company, recognize and accept its responsibility for establishing and maintaining a safe working environment for all its employees and Society.

The responsibility arises due to:

a) Company's moral obligation to its employees to provide good working condition from the point of view of safety and to maintain a sustainable environment in and around the premises,
b) Statutory requirement with respect to health, safety of employees and that of sustainable environment as per relevant legislations primarily the Factories Act 1948, the Indian Electricity Act 2003 and the Environment (Protection) Act 1987 and Rule 73L of the Maharashtra Factories Rules, 1963.

Goal of Health, Safety and Environment Policy

To operate the power stations owned by Maharashtra State Power Generation Company Ltd (MSPGCL) i.e., the gas based power stations, thermal power stations and hydro electric power towards zero accident, zero health impairment and zero environmental pollution.

Objective Of Health Safety Environment Policy

The objective of declared health safety and environment policy is:

- To commit to protect the health and safety of workmen and the environment and translate the commitment to implement in power generation activities in all the sectors and plants of MAHAGENCO.
- To direct the activities of MAHAGENCO to abide by all applicable government Health and Safety related legal requirements, regulations and standards.

- To inform the workers about the hazards, provide necessary safe guards to deal with the hazards and adequate training to workers for safe operation/maintenance of plant.

Scope

The policy is applicable to

- All the employees of working in this plant.
- All visitors coming in this company.
- All the service providers like contractor and their sub-contractors, transporter and their employees

Intention to Make Safety, Health and Environment Policy Effective

1. Make all the employees and stakeholders aware of the safety policy
2. Displaying the policy at conspicuous places for familiarisation and adopting.
3. Identifying Statutory requirements, code of practices, standards to be followed in design, operation and maintenance of plant.
4. Ensuring the national statutory requirement, the national and international codes, standards and safe practices are followed in design, operation, maintenance and modifications for the purpose of embedding safety in all stages.
5. Setting responsibilities and authorities all levels to achieve the objective of safety health and environment policy.
6. Informing the workers about their responsibility towards implementation of the health safety and environment policy.
7. Selecting manpower with the required competence, compatible to fulfil the safety policy.
8. Imparting training to harmonize the knowledge and skill of the worker to work safely as per procedure.
9. Assessing the requirement of training of the worker while working and upgrading the knowledge as and when required.
10. Upgrading the machineries and system with the improved technology.

11. Identifying the hazards arising out of the operations/maintenance in power generation in all the plants and areas and analysing the risk related to safety, health and environment.
12. Reviewing the risk periodically with change in design, operation and with aging of plant and machinery and providing safety systems to reduce risk to acceptable level.
13. Maintaining system of health check up of employees in hazardous areas and providing necessary treatment for occupational disease, if any.
14. Analysing the health record to find the areas of improvement in industrial hygiene and occupational health.
15. Providing system for investigating and analysing all incidences and near misses for the purpose of preventing further similar accident and to get input in improvement of safety systems.
16. Identifying the possible emergency situation, preparing the emergency plan for the situations and conducting mock drill for emergency situations.
17. Liaisoning with nearby industries for mutual aid scheme for protecting the safety and health of the workmen, public and the environment.
18. Inviting suggestions for improvement in safety, health and environmental aspects from the workmen and analysing the viability of implementation and use.
19. Minimising the waste generated, categorising the waste and disposing the waste as per statutory requirement and keeping the environment pollution free.
20. Ensuring fund allocation for implementing goal and objective of safety committee.

Responsibilities

The responsibilities of corporate as well as plant levels are as follows. This needs to be accepted and informed to individual.

Chief General Manager

- Integrating safety policy with operational and development planning for gas based power plant, thermal power plant and hydroelectric power plant.

- Setting responsibilities and authorities at all levels to achieve the objective of safety health and environment policy.
- Adopting sustainable and continuous strategy to accomplish the goal of safety policy with the help of statutory requirements, the national and international codes, standards and safe practices.
- Providing adequate fund and manpower for maintaining a safe working area and safe practice leading to zero accident,
- Planning for reviewing the safety policy and documents related to safety, health and environment - periodically with change in operations/maintenance and/or company strategy,
- Adopting strategy for continual improvement of knowledge and skill of all workforce,
- Provide measures to protect the surrounding environment from pollution arising out of wastes generated from the unit,
- Adopt strategy for accident prevention leading to continuous improvement in safety.
- Developing system of health check up of employees in hazardous areas and providing necessary treatment/facilities for occupational disease, if any.
- Making strategy to maintain same safety standard for regular and casual/contract employees/stakeholders,
- Obtaining legal sanctions for operation of units.
- Introduction of new techniques and procedures to upgrade the level of safety.
- Planning the mitigation measures for emergency situation.
- To provide a resume of health, safety and environmental performance of the plant in Annual report

Superintendent Engineer – Responsibilities

- Adopting strategy for identification of hazard in the operation, maintenance of all MAHAGENCO activities, assessment of risk out of the hazard and take necessary measures for accident prevention,

- Integrating safety with all the activities of company – assigning responsibilities and authorities of line management w.r.t. safety health and environment,
- Developing methodologies to inform the workmen about the hazards existing in the process - preparing safety documents and planning for training and retraining of the employees for upgrading the knowledge,
- Maintaining the minimum safety standard as provided in the statute and adopt good practices from other industries,
- Implement system for investigating and analysing all incidences and near misses for the purpose of preventing further similar accident and to get input in improvement of safety systems.
- Implementing system of medical examination vis-à-vis the hazard present in the unit,
- Planning for regular monitoring of discharge as prescribed in different statutes,
- Arrangement for developing infrastructure and manpower for implementing the various aspects of safety policy

Executive Engineer- Responsibilities

- Communicating safety information and standards to all the employees and stakeholders as per the policy and statutory requirement,
- Preparation and updation of safety documents such as safety report, safety manual, Onsite Emergency Plan, safe operating procedure Advising management for improvement of safety and health of the worker and the environment,
- Adopt system for keeping database on incident/ near miss, analysis of the incidents and use of the recommendation in improvement in training need, better operating and maintenance procedure etc.
- Analysing the health record to find the areas of improvement in industrial hygiene and occupational health.
- Identification of training needs for the operators and management staff as well as contractor workers,

- Identifying the possible emergency situation, preparing the emergency plan for the situations and arrangement for conducting mock drill for emergency situations.
- Liaison with external agencies for recent development of related safety system of plant and equipment and continuous improvement in safety system.
- Mobilization of fund and manpower for the areas of improvement on in the fields of safety, such as preparation of safety document, training needs, accident analysis, occupational health checkup, safety audit, risk analysis, waste management etc.
- Inviting suggestions for improvement in safety, health and environmental aspects from the workmen and analysing the viability of implementation and use.

Operation/Maintenance-in-Charge – Responsibilities

- Preparing safe operation and maintenance instruction for operators,
- Ensuring the compliance of safety instructions while carrying out a job,
- Enforcing use of personal protective equipment where ever necessary,
- Ensure regular safety inspection by competent persons of all building, equipment, workplace and operations,
- Arrangement for monitoring of environmental/discharge data,
- Arranging for maintenance/testing of the equipment and machineries as per statutes and keeping the record,
- Identify hazards in day to day operation and take necessary counter measures in consultation with management,
- Ensure required training of the operators before execution of any operation
- Introducing the work permit system for, Job Safety Analysis for hazardous job,
- Making action plan for medical treatment, reporting and analyzing incident/accident, if any.
- Maintaining good house keeping,

- Displaying policy at conspicuous places,
- Making the workers aware of the policy and making them understand the policy, translating them in local language or in the language understood by majority of workers.

Operators Responsibilities

- To follow the safety procedures, instructions, statutes and code of practices with regards to safety.
- Inform about the unsafe acts and dangerous occurrence to the immediate superior to prevent incidents/accidents arising out of that.
- Reporting any incident/accident, if any, for the purpose of medical treatment, equipment maintenance as well as for keeping record of incident
- To take part in safety committee, safety suggestion scheme, other programmes organized by the management.
- Providing suggestions for improvement in the safety systems, safety instruction, modification from the experience on operation and maintenance
- Taking effective part in safety training courses whenever called by the company.
- Ensuring that machines are properly used and maintained,
- Helping the management to maintain a good house keeping around the workplace,
- Using all reasonable tools, equipments, safety equipment and protective clothing provided by the company and these should maintain in good condition.

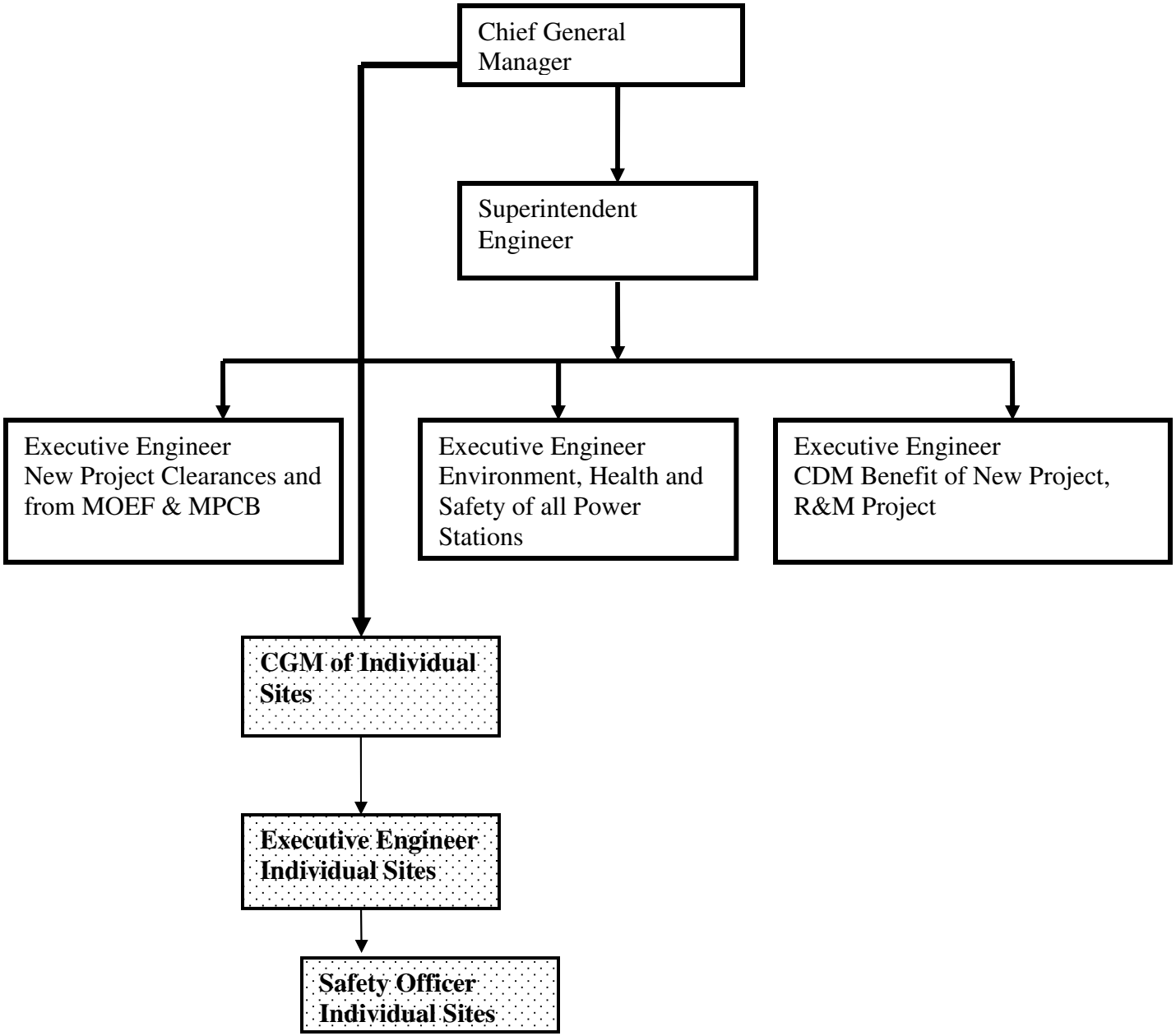
Responsibility of Contractor Supervisor/Worker

- To understand the Safety, Health Environment Policy of the company.
- To understand the safety standard of the company and provide safety precautions as per the guidelines of company and or job hazard analysis checklist.

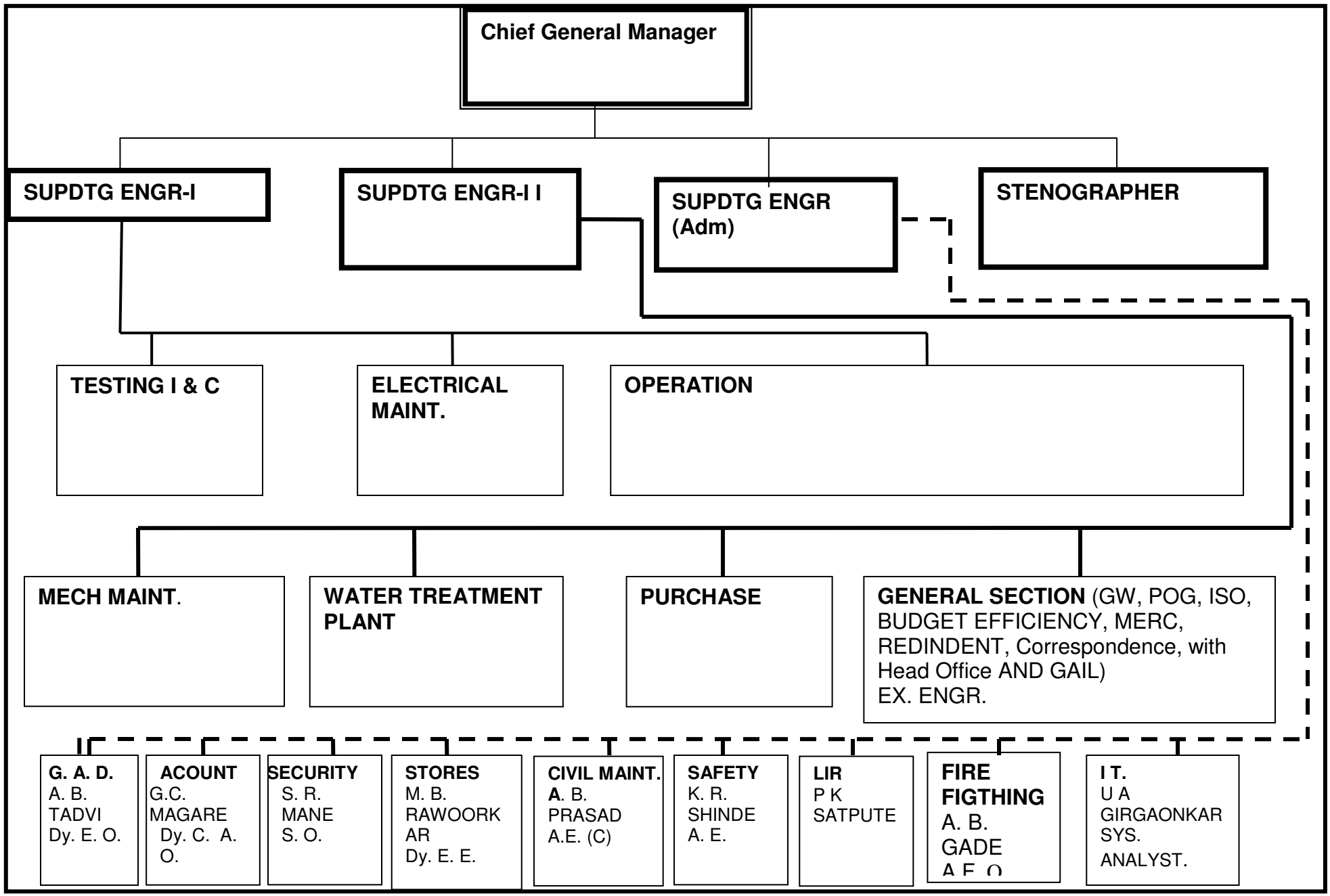
- To follow the safety procedures, instructions, statutes and code of practices with regards to safety.
- Inform about the unsafe acts and dangerous occurrence to the MAHGENCO Operation/maintenance in charge – to prevent incidents/accidents arising out of that.
- Reporting any incident/accident, if any, to the MAHAGENCO Operation/maintenance in Charge, for the immediate and corrective actions.
- To use the safety appliances as mentioned in the contract.
- Using all reasonable tools, equipment, safety equipment and protective clothing provided by the company and these should be maintain in good condition.
- To request for extra safety device or man-power or supervision in case of hazardous job, if called for.
- Taking effective part in safety training courses whenever called by the company.
- Ensuring that machines are properly used and maintained
- Helping the management to maintain a good house keeping around the workplace

Annexure 1

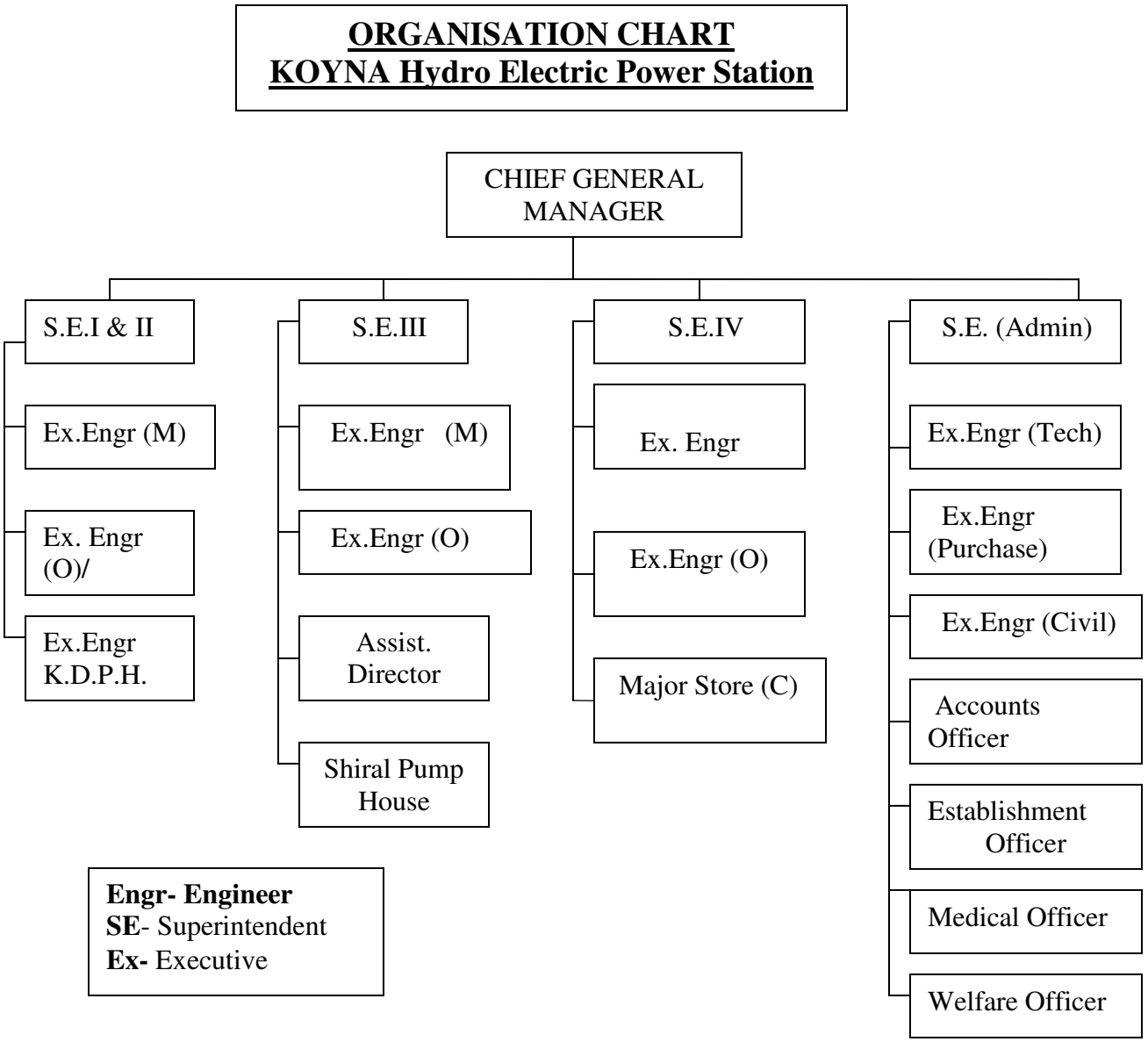
Organisation Chart of MAHAGENCO Corporate Office Showing the Position of Safety, Health and Environment Officer and connection with Individual Sites



Sample Organisation Chart for Gas Based Power Station MAHAGENCO



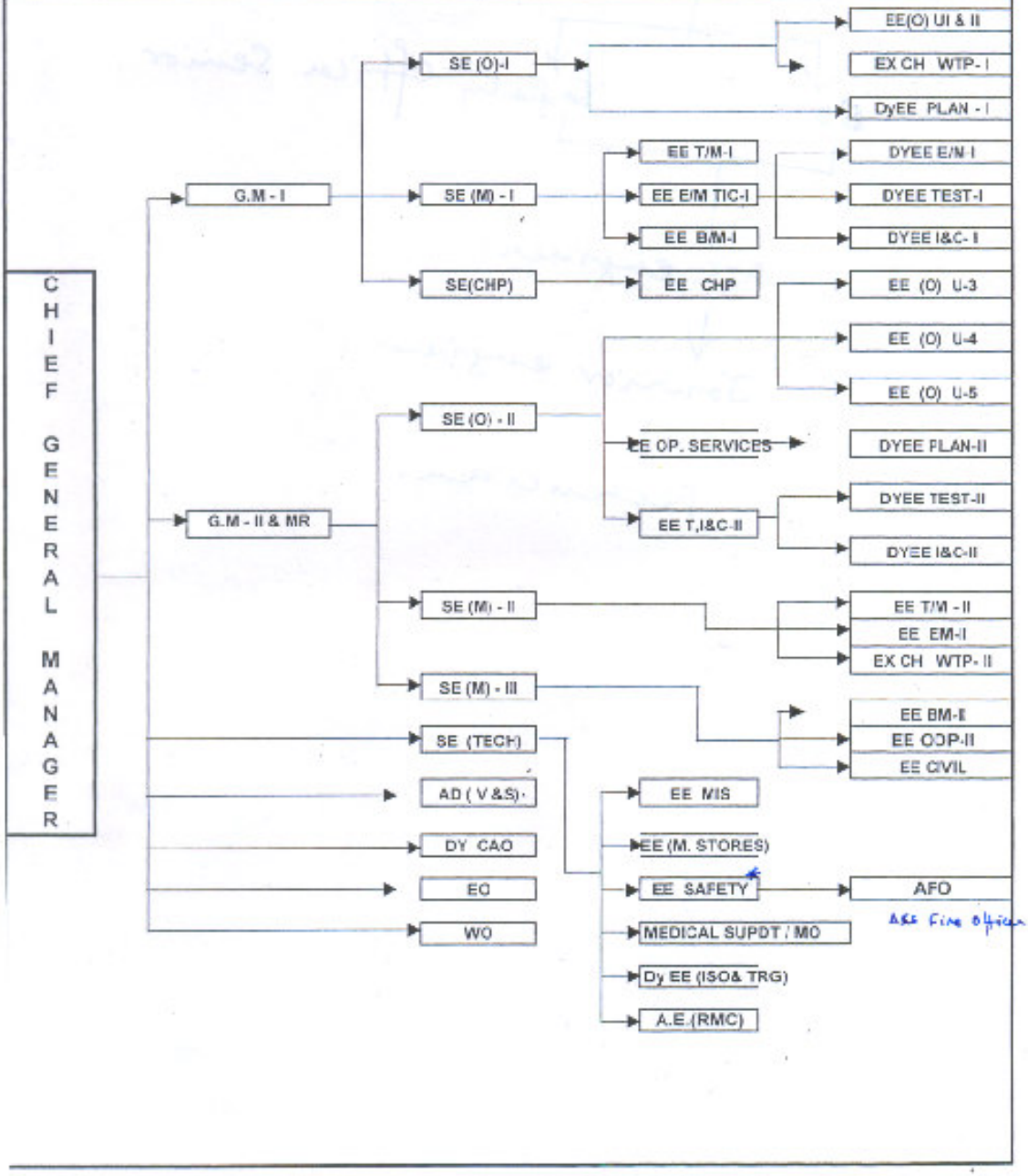
Sample Organisation Chart for Hydro Electric Power Station MAHAGENCO



Annexure 1C

NASHIK THERMAL POWER STATION

Intigrated Management System	Doc.No. : Annexure - A	Issue : 01	Issue Date 01.08.09
	Page : 1 of 1	Rev. No co	Issue Date 01.08.09



Annexure II

PROCESS DESCRIPTION

MAHAGENCO (previously known as MSEB) is an organization has committed to generate the Electrical Power in any part of the Maharashtra State and supply this power to MAHATRANSCO & MAHADISCOM. While performing this activity MAHAGENCO has to follow the rules & regulations framed/targets set up by the various Central/State Government Authorities like CEA, Planning Commission, CERC, MERC etc. The activities uses three types of processes, the thermal power station, the gas based power station and hydroelectric power station.

SAMPLE - PROCESS DESCRIPTION OF THERMAL POWER STATION NASIK

The Nasik Thermal Power Station is a two stage process.

The state – 1 comprises of 2 x 140 MW units. The first unit was synchronized on 16th August 1970 followed by the second unit on 21st March 1971.

Coal received from collieries are crushed, ground and used in furnace for generation of heat.

The pulverized fuel boilers of the unit are front fired type form Babcock and Wilcock of France and the Turbines also are from France. Both these units are controlled from a single control room.

The stage – II of the Nashik Thermal Power Station comprises of three units of 210 MW each of BHEL make. The first of the 210 MW units was synchronized on 26th April 1979 at a total project cost of Rs. 94.73 crores. The next two units i.e. unit No. 4 and 5 of 210 MW were commissioned on 10th July 1980 and 30th January 1981 respectively. The equipment for station 'B' i.e. 3x210MW was supplied by BHEL. Boilers are corner fired using pulverized fuel and incorporate

American design made by Combustion Engineering. The Turbines are of Russian design. Each unit has an independent control room, housing all sophisticated equipment.

SAMPLE- PROCESS DESCRIPTION of GAS TURBINE POWER STATION, URAN

Gas Turbine Power Station is the only power generating station of MSPGCL where natural gas is fired as fuel.

The Gas Turbine power station comprises of 4 x 108 MW Gas turbine units and 2 x 120 MW waste heat recovery units connected to 108 MW Gas turbine units.

Gas turbine Power Station gets its i.e. natural gas from ONGC Uran Gas Terminal Bombay High through two underground pipelines of 10" diameter at the pressure of 30 kg/cm^2. Gas is obtained to the tune of 2.5 Million Metric Cubic Metre per day (MMCMD) to 3.0 MMCMD against the requirement of 4.5 MMCMD. Natural gas comes to users end at main receiving station and goes to Gas Control Station. At Gas Control Station the gas is filtered (to remove reached hydrocarbons) and after heating and it passes through the gas reduction station for required pressure to 16 bar. The Hot Natural Gas as received at Gas Skid Control Room and then distributed to different units (1 to 8 units) for heating the compressed air.

SAMPLE HYDROLECTRIC POWER STATION STAGE I-IV - KOYNA

The water for Hydroelectric Power Station is collected in Shivajisagar Reservoir in every rainy season and the Quantum of 67.5 TMC of water is allotted by Water resource department of Govt. of Maharashtra KGSC for Power Generation. The Generation Target is given by CEA, Planning Commission, & State Load Dispatch Centre. The water in the dam is conducted up to Stage I & II Power Station through specially designed water conductor system and the potential head generated is used to run the turbine for generation of electricity. The water

is made to run the large size 8 Nos. of Pelton Turbines coupled to 8 Generators. The Generators generate Electric Power at the Generating voltage of 11 KV which is stepped up to 220 KV with the help of step up transformers and Electrical Power at 220 KV is fed to KGSC's Stage I&II switch yard 220 KV Bus. From this 220 KV bus the power is transmitted/distributed in the Grid with the help of 6 outgoing 220 KV feeders. MAHAMAHATRANSCO Company looks after the Transmission of Electrical Power from KGSC 220 KV Bus.

The Water utilized for Generating Electrical power at Stage I & II & IV is collected centrally in a Tail Race tunnel and delivered in the Kolkewadi Reservoir. The water collected in this reservoir is used for generating the Electrical power with the help of 4 Nos. of Francis Turbines connected to 4 Nos. of Generators

Annexure III

MAHAGENCO Hydro Power Stations*

Sr No.	Name of power stations	Capacity in MW
1.	KOYNA – I, POPHALI	4 X 70
2.	KOYNA – II	4 X 80
3.	KOYNA – IV	4 X 250
4.	KOYNA – III, ALORE	4 X 80
5.	K.D.P.H.	2 X 18
6.	VAITARANA	1 X 60
7.	VAITARANA, DAM TOE	1 X 1.5
8.	BHATSA	1 X 15
9.	SURYA	1 X 60
10.	SURYA RB	1 X 0.75
11.	BHIRA TAILRACE	2 X 40
12.	YELDARI	3 X 7.5
13.	PAITHAN	1 X 2
14.	VEER	2 X 4.5
15.	BHATGAR	1 X 16
16.	KANHER	1 X 4
17.	DHOM	2 X 1
18.	UJJANI	1 X 12
19.	WARNA	2 X 8
20.	PAWANA	1 X 10
21.	PANSHET	1 X 8
22.	VARASGAON	1 X 8
23.	MANIKDOH	1 X 6
24.	DIMBHE	1 X 6
25.	TILLARI	1 X 66
26.	DHUDHGANGA	2 X 12
27.	RADHANAGARI	4 X 1.2
28.	TERWANMENDHE	1 X 0.2

* As on 2011

MAHAGENCO- Thermal Power Stations*

Sr No.	Name of power stations	Capacity in MW
1	**Thermal P. S.**	
	Koradi 1 to 7	1100
	Nasik to to 5	910
	Bhusawal 1 to 3	482.5
	Paras Unit 2	62.5
	Paras Extension Unit 3	250
	Parli 1 to 6	940
	K'Kheda 1, 2,3 & 4	840
	Chandrapur 1 to 7	2340

MAHAGENCO -Gas Power Stations*

1	**Gas Turbine P.S.**	
	Uran G.T.	612
	W.H.R. 1 & 2 240	240

*As on 2011

Annexure IV

Statutory Requirements for the MAHAGENCO

Important Acts/Rules applicable for all MAHAGENCO plants		
1	1948	The Factories Act1948/amended 1987, 2001
3	1989	Central Motor Vehicle Rules 1989 amended 2005
4	2003	The Electricity Act 2003/Rules 1956 amended 2006
5	1934/76	The Petroleum Act & Rules
6	2008	The Explosive Act 1884/1983 The Explosive Rules 2008
6	1912	The Bombay Smoke Nuisance Act / Rules
7	2001	The Energy Conservation Act 2001
8	2005	The Disaster Management Act 2005
2	1988	The Motor Vehicles Act 1988
1	1974	The water (Prevention & Control of Pollution) Act 1974 & Amendment 1988
2	1975	The water (Prevention & Control of Pollution) Rule 1975
3	1977	The water (Prevention & Control of Pollution) Cess Act amendment 2003
4	1978	The water (Prevention & Control of Pollution) Cess Rules 1978
13	2002	The Environment (Protection) Rules, 1986 amended 2010
17	2006	The Environment Impact Assessment Notification 2006
18	1996	The Public Hearing of Projects
20	1993	The Public Liability Insurance Rules, amended 1993.

Important Acts/Rules applicable for all MAHAGENCO plants		
22	1997	The National Environment Appellate Authority Act, 1997
24	2000	The Hazardous Wastes (Management & Handling and Transboundary Movement) Rules, 2008
26	1989	Manufacture, Storage & Import of Hazardous Chemicals Amendment Rules, 1989 amended 2000,
27	1996	Chemical Accidents (Emergency Planning, Preparedness & Response) Rules 1996
29	2001	Batteries (Management & Handling) Rules
30	1999	Re-cycles Plastics Manufacture & Usage Rules & Amendment Rules 2003
31	-	Dumping & Disposal of Fly Ash – Notification 1999 and amendment 2003.
33	1998	Municipal Solid Wastes (Management & Handling) Rules
34	1998	The Bio-medical Waste (Management & Handling) rules 1998
35	1998	The Bio-medical Waste (Management & Handling) (Amendment) rules 2003
36	2000	Noise Pollution (Regulation & Control) Rules, 2000 amendment in 2010
37	2000	Ozone Depleting Substances (Regulation) Rules 2000/amemded 2007
38	1994	Restriction & Prohibitions on the Expansion & Modernisation of any activity or new projects unless environmental clearance has been accorded amended 2001, 2003
46		Scheme of Labeling of Environment Friendly Products (ECO – MARKS)
47	1927	The Indian Forest Act

Important Acts/Rules applicable for all MAHAGENCO plants		
48	1980	The Forest Conservation Act
49	1981	The Forest Conservation Rules
50	1988	National Forest Policy