PRE-FEASIBILITY REPORT

for

Efficiency Enhancement of Co-generation Plant (EECP)

Amendment of Environmental Clearance
File No. F.NO.J-11011/574/2009-IA (I)
dated 18th March 2011

December, 2014

Submitted to

ITC LIMITED
PAPERBOARDS & SPECIALITY PAPERS DIVISION
UNIT: BHADRACHALAM

SPB PROJECTS AND CONSULTANCY LIMITED
Chennai - India

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1 EXECUTIVE SUMMARY

1.1 Introduction

ITC Limited has its Paperboards & Specialty Papers Division (PSPD) headquartered at Secunderabad and is operating one of its Unit at Bhadrachalam producing range of printing & writing papers and paperboards. The unit has obtained ISO 9001, ISO 14001 and OHSAS 18001 certifications.

The mill has implemented the state-of-the-art technologies in pulping and reco ry operations by successfully commissioning the Elemental Chlorine Free (ECF) pulp mill for the first time in the country. ITC is also first time in the country producing Ozone Based Chemical Wood Pulp.

The mill gradually expanded its capacity and the present approved capacity of the mill is paper and paper board 740,000 tpa, bleached pulp 350,000 tpa and Co-Generation Power Plant 114.5 MW. The environment clearance vide letter no. F.NON.J-11011/574/2009-IA II (I), dated 18 March 2011 is enclosed as *Annexure 1*.

As a major portion of the existing power plant has been in service for long period, ITC PSPD engaged the services of SPB Projects and Consultancy limited, Chennai (SPB-PC) to study the performance of the existing power plant, in terms of availability, steam, power generation potential, operating efficiency and draw up a plan for enhancing the efficiency by replacing part of the co-generation power plant with latest and modern State of Art / BAT technology. The project is here in after referred as Efficiency Enhancement of Co-generation Plant (EECP).

The existing Co-generation plan consists of the following facilities:

- Three (3) Chemical Recovery Boilers (CRB) having total steam generation capacity of 250 tph
- Six (6) Coal Fired Boilers (CFB) having a total capacity of 530 tph and
- Seven (7) Turbo Generator (TG) with a total capacity of 114.5 MW

The power plant is operated at 62 ata pressure, while present day technology is at a level of 110 ata. Besides due to the multiplicity of the boilers and TGs each with low capacity energy consumed and generated are not in commensuration with other mills operating with higher pressures and efficiencies. This has lead to a cogeneration power plant running at lower efficiency resulting in higher cost of fuel and power.

Hence, ITC-PSPD is planning for Enhancing the Efficiency of the Co-generation Plant (EECP) by replace three (3) existing older Coal Fired Boilers (CFBs) and Three (3) TGs with a 220tph boiler and 36MW TG.

EECP will be replacing existing boilers 4, 5, and 6 in total capacity of 220 tph with one higher pressure and higher efficiency CFBC boiler and existing turbo generators TG # 1, TG # 2 and TG # 4 and to cover de-rated capacity of TG #3, by installing a new TG of 36 MW.

With the installation of new boiler and TG the total capacity of the co-generation power plant will be 114.5 MW as given in the following tables.

The objectives of the proposed EECP are:

- To increase the cycle efficiency of co-generation power plant and there by reducing fossil fuel usage.
- Reduce the coal consumption and ash generation
- To produce captive generation of steam and power at lower costs by increasing steam pressure and temperature.

1.2 Environmental Benefits of the EECP

New EECP will be with present day best available technology (BAT) and hence will be with higher efficiency replacing existing low efficiency aged boilers and TGs. Due to higher efficiency of EECP, steam consumption will be lower thus reducing coal consumption from the current level of 8 lakh tonnes per Annum (LTPA) to 7.2 LTPA. As a result the overall air emission post EECP will be considerably reduced.

Due to reduction in condensation, fresh water requirement for the blow down from the cooling tower will decrease thus marginally reducing the load on the existing Effluent Treatment Plant (ETP).

New boiler is of CFBC technology reducing un-burnt carbon in ash. Combined with reduced steam generation and lower unburnt carbon in ash, resultant ash generation will be lower than the base line level.

To summarise a new EECP will improve environment quality in the area.

Environmental protection will be monitored and implemented by a centralized environmental management cell. About Rs 25 Crores will be invested towards pollution control equipment and implementation of environmental pollution control measures.

1.3 Project Implementation Schedule

The estimated project cost of the EECP will be about Rs. 250 crores and the project will be implemented in about 24 months after obtaining the amendment in the Environmental Clearance.

2 INTRODUCTION TO PROJECT

2.1 Back drop

ITC Limited has its Paperboards & Specialty Papers Division (PSPD) headquartered at Secunderabad and is operating one of its Unit at Bhadrachalam producing range of printing & writing papers and paperboards. The unit has obtained ISO 9001, ISO 14001 and OHSAS 18001 certifications.

The mill has implemented the state-of-the-art technologies in pulping and recovery operations by successfully commissioning the Elemental Chlorine Free (ECF) pulp mill for the first time in the country. ITC BCM unit is also the first in the country, producing Ozone Based Chemical Wood Pulp.

The mill gradually expanded its capacity and the present approved capacity of the mill is paper and paper board 740,000 tpa, bleached pulp 350,000 tpa and Co-Generation Power Plant 114.5 MW. The consent for operation (CFO) is issued vide Consent order no. APPCB/VJA/KTM/10571/HO/CFO/2013 – 2845 dated 08.08.2013.

From the inception, ITC-PSPD has always been a responsible player in the paper industry by

- Adopting environment – friendly processes as far as practicable
- Being quality conscious – in products, processes service and people
- Continuously enhancing the value for all stake holders and
- Upholding societal values and expectations

The power requirement for the operations is met from co-generation power plant.

As a major portion of the existing power plant has been in service for long period, ITC PSPD initiated the services of SPB Projects and Consultancy limited, Chennai (SPB-PC) to study the performance of the existing power plant, in terms of availability, steam and power generation potential and the efficiency and draw up a modernisation plan for replacing part of the Cogeneration power plant with latest and modern State of Art / BAT technology. The project is referred as “Efficiency Enhasement of Co-generation Plant (EECP).

2.2 Nature of the Project

All the existing coal fired boilers are with 62 ata pressure. The capacities of the boilers with year of installation are furnished below.

Description	Capacity tph	Year of Installation
Boiler # 4	50	1990
Boiler # 5	80	1997
Boiler # 6	90	2006
Boiler # 7	90	2008
Boiler # 8	90	2010
Boiler # 9	130	2012

Capacities of the existing Turbo Generators are depicted below.

Operating norm	TG #1	TG #2	TG #3	TG #4	TG #5	TG #6	TG #7	Total
Capacity (MW)	5.0	7.5	21.0	20.0	21.0	15.0	25.0	114.5

The power plant is operated at 62 ata pressure, while present day technology is at a level of 110 ata. Due to the multiplicity of the boilers and TGs each with low capacity the energy consumption is higher than the other mills operating with higher pressures and better efficiencies.

The thermal efficiency of some of the boilers has deteriorated over the years, leading to a drop of around 3 to 4 % from the design efficiency levels due to aging.

The co-generation power plant is running at low efficiency, resulting in higher cost of energy. Hence, ITC-PSPD is planning to replace part of the existing power plant, with latest and modern State of the Art higher pressure boilers and turbo generators.

The driving forces for the EECP are a combination of quest for improved environmental performance and energy conservation.

As a first step towards achieving this goal, EECP will be installed, replacing 3 existing older CFBs and 3 TGs with new one (1) 220tph boiler and one (1) 36 MW TG.

EECP will be replacing existing boilers 4, 5, and 6 having total capacity of 220 tph with one higher pressure and higher efficiency CFBC boiler.

Existing turbo generators TG # 1, TG # 2 and TG # 4 and to cover de-rated capacity of TG #3 will be replaced by a new TG of 36 MW.

With the installation of new boiler and TG the total capacity of the Cogeneration power plant will be 114.5 MW

2.3 Need for the Project and Its Importance to the Country and or Region–National Mission for Enhanced Energy Efficiency (NMEEE)

With steady increase in input costs, continuous competition from the other units, the mill has to find ways and means to make the mill more economically viable for sustenance.

A review of the existing facilities and captive generation reveals that the power cost per ton of paper is high compared to international units suggesting the following;

- The boilers can generate steam only at 62 ata pressure compared to contemporary boilers of > 100 ata pressure.
- Due to ageing of the boilers and Turbo Generators, the capacity and efficiency have come down considerably.
- The down time of the boiler is around 10% causing interruptions in production

Due to the above, ITC-PSPD, Bhadrachalam unit is disadvantageously placed in the power front and generating energy at low efficiency and high cost.

Further, Environment Ministry is giving high emphasis for energy conservation measures.

Hence, there is needed to go for a new Power plant, with a view to maximise the Co-generation power generation after meeting the process steam requirement for the paper plant.

The objectives of the proposed EECP are:

- To increase the cycle efficiency of co-generation power plant and there by reducing fossil fuel usage
- Reduce coal consumption
- Reduce ash generation
- Reduce the carbon emission

- To achieve 100% captive generation of steam and power at lower costs by going in extraction cum back pressure turbine and by increasing steam pressure and temperature.
- To adopt energy efficient plant and machinery for the proposed co-generation power plant

3 PROJECT DESCRIPTION

3.1 Project Proposals

The proposals covered under the Enhancing Efficiency of Co-generation Plant (EECP) are as below.

- One new 220 tph Coal fired Circulating Fluidised Bed Combustion Boiler (CFBC) replacing three existing coal fired AFBC boilers having total equivalent capacity
- One new 36 MW matching Extraction cum back pressure Turbo Generator (TG) replacing three existing TGs. The total capacity of the Co-generation power plant will be 114.5 MW as per previous EC
- Gradually phasing out the existing three boilers and three TGs being proposed to be replaced by new boiler and TG

3.2 Project Location Aspects

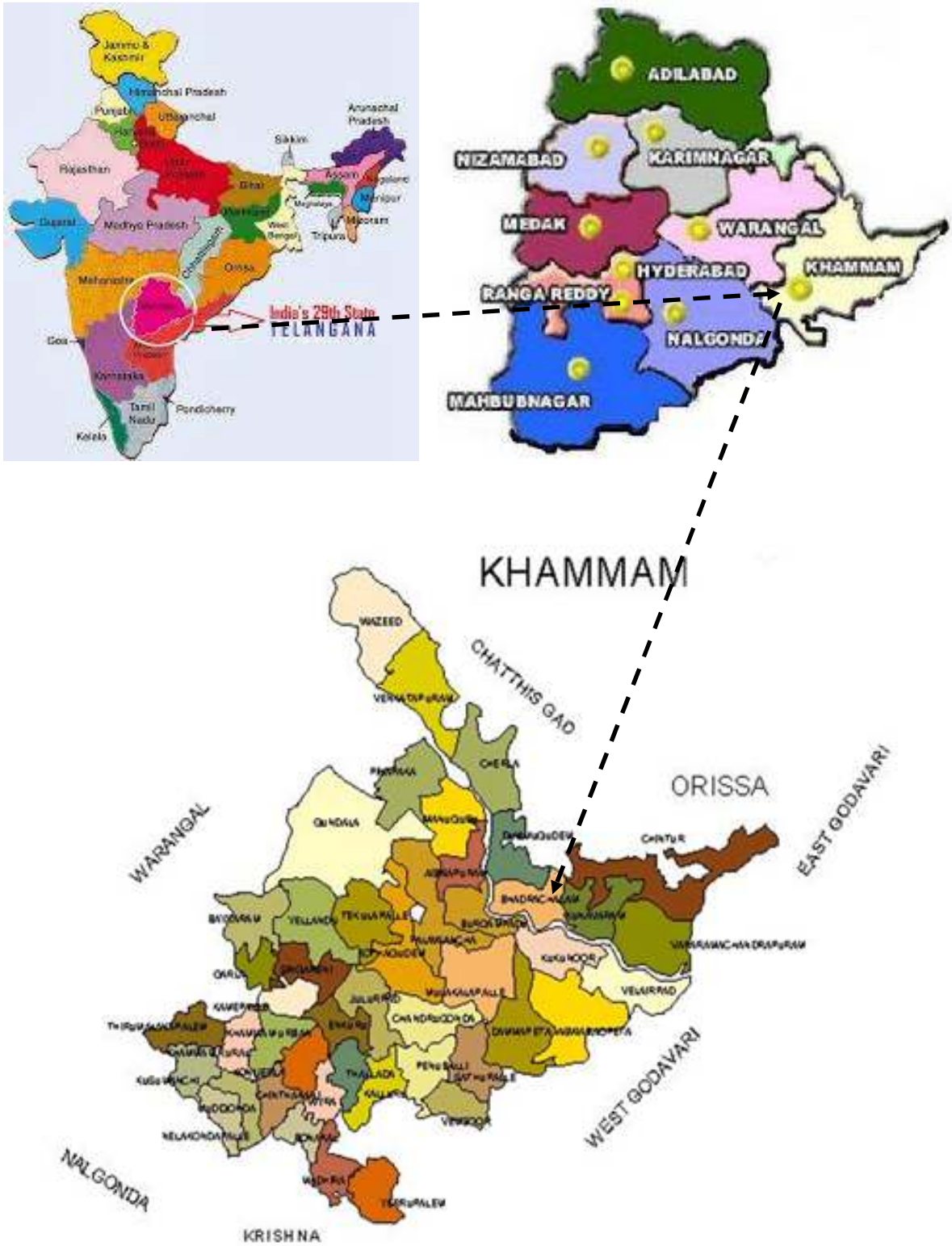
ITC Limited-PSPD, Unit: Bhadrachalam is located at Sarapaka village, Near Bhadrachalam. Khammam district, Telangana, about 5 km from Bhadrachalam town in south central part of India.

Enhancing Efficiency of Co-generation Plant (EECP) project is proposed to be located with in the existing paper mill.

The existing facility is located at the intersection of longitude 80°52'05" E and latitude 17°41'19" N and falls under Survey of India Topo sheet No. 65C/13 and 65C/14.

The existing facility is about 100 km (aerial) from Khammam, the district headquarters and it is on the State Highway No.9 and nearest airport is at Hyderabad.

3.2.1 Location Map



3.2.2 Existing Mill View

Google Map Showing Existing Facility

3.3 Project Description

The Enhancing Efficiency of Co-generation Plant (EECP) will comprise of

- 220 tph, 110 ata, 530°C, Circulating Fluidized Bed Boiler with fuel and ash handling facilities
- 36 MW extraction cum back pressure TG along with electrical distribution

The proposals considered for the project are described in the following paragraphs.

3.3.1 Boiler

Proposed boiler is be a natural circulation, single drum, semi-outdoor, top supported, balance draught boiler, adopting Circulating Fluidised bed Combustion (CFBC), designed for firing high ash content coal. Furnace section will be formed with water wall tubes of fusion welded, membrane construction, arranged as a gas and pressure tight chamber.

Circulation system of the boiler is complete with down comers, riser, water wall headers.

Superheater system will be of semi-radiant convective type comprising of primary and secondary section placed at furnace outlet. Desuperheater shall be provided in the steam flow between one primary and secondary superheater and shall be controlled from the superheater outlet temperature. Secondary superheater will be located in the duct connecting furnace to ash separator

Boiler will be provided with an electrostatic precipitator to control the particulate matter emission of the outlet flue gas.

3.3.2 Turbo Generator (TG)

The turbine selected is of impulse/reaction type. The guide blade carriers are of cast construction. Blading system, attached to rotor, consist of a set of impulse blading and multiple stages of reaction blading. The output speed of the turbine is reduced to 1500 rpm at gearbox before Generator. The gearbox will be of single stage, double helical, parallel shaft with flexible coupling at input and output ends. The turbine will be provided with electrically operated turning device.

Steam admission to the turbine will be accomplished by a set of control valves. Controlled extraction system will be provided for low pressure steam, achieved by electronic governor and a set of control valves.

Turbine oil system consists of oil tank, main oil pump and AC motor driven auxiliary oil pumps, DC motor driven emergency oil pump, oil purifier, oil coolers etc. The main oil pump will be shaft driven from the gearbox.

Generator rotor is of salient pole design and the insulation of the winding will be of class F category, with temperature rise limited to class B. Temperature detectors are provided for continuous monitoring of winding temperature. The cooling method employed for Generator is of closed air circuit, water cooled design. Brushless excitation is considered. Solid state automatic voltage regulator is included.

3.3.3 Augmentation of Existing Fuel Handling Plant

Existing coal handling system will be augmented by addition of suitable conveyors

3.3.4 Ash Handling System

Similar to the existing unit, ash handling facilities for the 220 tph boiler will be provided and basic outline of the facilities are discussed here under.

3.3.4.1 Bed Ash

The bed ash from the boiler will be cooled in the bed ash cooler and discharged through a telescopic chute.

3.3.4.2 Economiser /APH Ash

Below each hopper outlet at ECO/APH, suitable MS surge chute with a manually operated isolation plate valve and an expansion joint will be provided. A level probe is also provided in each surge chute for automatic operation of the system.

An ash vessel will be installed below each surge hopper. Material will be conveyed through a common conveying pipeline. Conveyed material will be discharged into the fly ash silo with the help of one terminal box provided on its top.

3.3.4.3 ESP Ash

Below each ESP hopper outlet, suitable adapter / MS surge chute with fluidising arrangement, one (1) manually operated isolation plate valve and one (1) expansion joint will be provided. A level probe is also provided in each surge chute for automatic operation of the system.

An Ash vessel will be installed below ESP hopper. Material will be conveyed through a common MS ERW heavy duty conveying pipeline. Conveyed material will be discharged into the fly ash silo with the help of a terminal box provided on its top.

One (1) chain wheel operated plate valve with rotary feeder will be provided along with ash conditioners and canvas type retractable chute below the silo for dust free unloading of fly ash on the truck.

One (1) set of fluidising pads and roots blowers will also be considered for the fly ash silo. A level probe will be provided at the silo for high level sensing. The ash will be provided with vent filters on top to prevent any dust fly off.

One (1) fly ash silo will be constructed for fly ash.

Two (2) air compressors will be provided for ash conveying.

3.3.5 Instrumentation

All the field measuring instruments in boiler and turbine, including their auxiliaries, shall be electronic, SMART with HART protocol. All control valves shall be non-SMART with electro-pneumatic positioner. All on-off valves and

dampers shall be equipped with proximity switches for end position status in remote control system. All local panels shall have provision for retransmitting signals to remote control system in control room. The control system for the boiler and turbine shall be a Distributed Control System (DCS).

3.3.6 Electrical

The 36 MW Steam Turbine Generator will generate power at 11 kV. The STGs will be connected to the existing 11 kV Co-gen Switchboard panel. The surplus power after meeting in-house loads of the co-generation plant will be fed by 11 kV cables to 11 kv board from where 16/20 MVA grid transformer 11 kV feeding is also available.

To meet the requirement of auxiliary power for EECP, a separate Switchboard will be provided and one (1) 11/0.433 kV, 2.5 MVA Auxiliary Power Transformer will feed LT loads. Auxiliary Power Transformer is connected to the 415 V PCC through 415 V non- segregated phase bus ducts. The LT loads will be fed through different 415 V MCCs, which are connected to the PCC. Lighting, UPS feeders, battery and battery charger feeders and other auxiliary supply etc. will also be fed from PCC.

Power for LT Switchboard will be fed from 2.5 MVA, 11/0.433 kV Distribution Transformer which will be connected to 11 kV Cogen Switchboard by 11 kV XLPE cable.

The HT motors of 11 kV will be fed from newly installed 11 kV panel.

3.4 Input Requirement

3.4.1 Fuel

The fuel required for the mill in the power boilers is coal and the average annual requirement and the saving due to EECP is given below:

FUEL REQUIREMENT

Fuel	Unit	Existing	Post EECP	Incremental
Coal	lakh tpa	8.0	7.2	(-) 0.8

3.4.2 Power

The internal consumption of power of the Power Plant will be met by the Cogeneration Project.

3.4.3 Sources of input

Coal

The fuel used is the coal, which is being procured from Singereni coal fields and the same will be continued.

3.5 Resource Optimisation

The following recycling or resource optimization are envisaged in EECP

S.No	Description	Recycling / Optimisation
1	CFBC Boiler	Un burnt carbon will be lower, which enhances quality of fly ash
2	High Pressure (110 ata) and higher temp 530°C	Improved boiler efficiency
3	High Pressure Turbo generator	Higher power generation per tonne of steam
4	Water conservation	Due to reduction in condensing steam with the EECP, reduction in makeup water in cooling tower.

3.6 Power Plant Capacity

3.6.1 Power Boiler

Coal Fired Boilers 4,5 & 6 aggregating to capacity of 220 tph will be stopped & will be replaced by single boiler of 220 tph. No change in the total installed capacity of the boilers.

The details are as below.

Boilers	Pressure in ata	Present Capacity (tph)	Present Status	Post Project (tph)	Post project Status
CFB 7	62	90	In Operation	90	In Operation
CFB 8	62	90	In Operation	90	In Operation
CFB 9	62	130	In Operation	130	In Operation
CFB - New	110	-		220	In Operation
CFB 4	62	50	In Operation	0	Will be stopped and kept as standby *
CFB 5	62	80	In Operation	0	Will be stopped and kept as standby *
CFB 6	62	90	In Operation	0	Will be stopped and kept as standby *
Total		530		530	

* These boilers will be operated for short duration whenever any of the boilers in operation are taken for maintenance/ IBR requirements. However at any time the overall steam generation from coal fired boilers will not exceed 530 tph.

This initiative is part of Enhancing Energy Efficiency of the plant to upgrade the Boiler technology from AFBC to CFBC and increase the boiler operating pressure from 62ata to 110ata and temperature from 480°C to 530°C.

3.6.2 Turbo Generators

One new Turbo Generator in place of Turbo Generators 1, 2 & 4 aggregating to 32.5 MW.

Turbo generator 3 was de-rated from 21 MW to 17.5 MW as it could not be loaded more than 17.5 MW since last 5 yrs

Considering the shortfall in Turbo generator 3 and replacement of three TGs, one new 36.0 MW Turbo generator is proposed to be installed.

The total installed capacity of the TGs will remain same at 114.5 MW, as per the details given below

TG	Present capacity (MW)	Present Status	Post project MW	Post Project Status
TG 1	5.0	Retired	-	Retired
TG 2	7.5	In Operation	-	Will be stopped and kept as standby
TG 3	21.0	In Operation	17.5	In Operation
TG 4	20.0	In Operation	-	Will be stopped and kept as standby
TG 5	21.0	In Operation	21.0	In Operation
TG 6	15.0	In Operation	15.0	In Operation
TG 7	25.0	In Operation	25.0	In Operation
TG - New	-	-	36.0	In Operation
Total	**114.5**		**114.5**	

The new turbo generator will be designed for 107 ata & 530°C steam. Increase in steam pressure and temperature will increase the specific power generation per tonne of steam passed through the turbine.

3.7 Water

Total fresh water requirement will not change from the baseline scenario of 79,000 m^3/day.

3.8 Environmental Management

3.8.1 Construction Phase

The construction activities of new installation will not necessitate any displacement of people as the construction will be carried out within the

existing premises of the mill. This phase does not involve major changes in the terrain.

3.8.2 Air Environment

Since the overall coal consumption in the Co-generation facility will be reduced by 80,000 tpa the overall SO_2, NO_x and Particulate emission will be reduced significantly from the baseline scenario.

High efficiency ESP will be installed to control the particulate matter from the proposed 220 tph boiler and the chimney will designed as per minimum guidelines suggested by CPCB.

3.8.3 Wastewater

Since there is no change in over all capacity of the Co-generation plant the treated wastewater discharge from the facility will remain unchanged from the baseline scenario.

3.8.4 Solid Waste Generation and Disposal

The fly ash generation post EECP will come down from the existing 1070 tpd to about 960 tpd due to lesser consumption of coal and the existing ash utilization program will be continued.

3.8.5 Noise Environment

- The noise level of the all the equipment will be kept within the CPCB standard in and around the work zone.

3.8.6 Socio – Economics:

- Land proposed for the project is existing land. There will not be any resettlement and rehabilitation. Thus, there will not be any adverse socio economic implications.

- The economic status of the area is likely to improve, as there will be direct /indirect employment generation during construction and indirect employment during operational phase.

3.8.7 Risk Assessment & DMP

- No major hazards with potential for any emergency situation exist in the process plants. On site and off site emergency measures shall mitigate the effect on any risk.

4 PLANNING BRIEF

4.1 Planning Concept

EECP will be implemented in about 24 months after obtaining necessary amendment in Environmental Clearance.

4.2 Population Projection

The existing manpower is adequate to operate the Co-generation facilities.

4.3 Land Use Planning

The proposed EECP project will be implemented in the proximity of the existing Co-generation plant. The land is fully developed and hence site development activities are not envisaged.

Mill layout, showing the proposed locations of the new facilities, is enclosed as *Annexure 2*.

5 PROJECT SCHEDULE AND COST ESTIMATES

5.1 Implementation Schedule

The major activities are highlighted below and the completion time indicated are from the "zero date" which is the date of Environment Clearance(EC)

Start date	"Zero Date"
Ordering of long delivery plant and equipment	2nd to 3rd month
Commencement of Civil Construction	6th month
Delivery of plant equipment	12th to 18th month
Erection of equipment	15th to 22nd month
Commencement of start-up trial & commissioning	23rd to 24th month
Commencement of commercial production	25th month

5.2 Project Cost

Total investment for the installation of EECP is Rs 250 Crores as per broad break up given below:

PROJECT COST

S. No	Description	Cost in Crores
1	Civil Works	50
2	Plant & Machinery Cost (including erection and engineering)	200
	Total	**250**

5.3 Environmental protection

As environmental protection will be monitored and implemented by a centralized environmental management cell. The fiscal estimates have been arrived for the proposed EECP are as below.

Since the overall coal consumption in the Co-generation facility will be reduced by 80,000 tpa the overall SO_2, NO_x and Particulate emission will be reduced significantly from the baseline scenario.

The break-up of investment for procuring the equipment for environmental protection and monitoring of pollution are as below.

Section	Rs. Crore
ESP and Chimney	15
Ash handling system	4
Dust extraction system in fuel handling plant	1
Condensate polishing unit	1
Fire fighting system	2
Green cover	1
Online environmental control equipment	1
Total	**25**

5.4 Economic Benefit

Due to the reduction in the overall coal consumption by an order of 80,000 tpa and substitution of outsourced power in the existing operations with Co-generated power after EECP, about Rs 35 crores is estimated to be the reduction in the operating cost.

F. No. J-11011/574/2009- IA II (I)
Government of India
Ministry of Environment and Forests
(I.A. Division)

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Dated: 18th March, 2011

To,

The Executive Vice President,
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Paper Board and Specialty Papers Division,
Unit- Bhadrachalam, Sarapaka- 507 128,
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Sub: Mill expansion by increasing the Paper and Board production (from 5,20,000 MTPA to 7,40,000 MTPA) along with balancing of pulping lines to achieve 3,50,000 BDTPA of bleached hard Wood Pulp, Deinking Pulp (42,000 TPA) and Multi Fuel fired boiler based Captive power plant (CFBC, 25 MW) at ITC Paper Board and Specialty Papers Division, Unit : Bhadrachalam, Village Sarapaka, Mandal Burgampahad, District Khammam in Andhra Pradesh by **M/s ITC Limited- regarding Environmental Clearance**

Sir,

This has reference to your letter no. nil dated 5.10.2010 along with copies of EIA/EMP and public hearing reports seeking environmental clearance under the provisions of EIA Notification, 2006.

2. The Ministry of Environment and Forests has examined your application. It is noted that M/s ITC Limited have proposed for mill expansion by increasing the Paper & Board Production from 5,20,000 MTPA to 7,40,000 MTPA along with balancing of pulping lines to achieve 3,50,000 BDTPA of bleached hard wood pulp, Deinked Pulp (42,000 TPA) and multi-fuel fired boiler based Captive Power Plant (CFBC, 25 MW) at ITC Paper Boards & Speciality Papers Division, Unit Bhadrachalam, Village Sarapaka, Mandal Burgampahad, District Khammam in Andhra Pradesh Environmental clearance for existing plant was obtained vide Ministry's letter dated 13th November, 2006. Total project area is 375 acres of which green belt has been developed in 289.24 acres. No additional land is required for the proposed expansion. Burgampahad reserve forest (0.8 km NW), Paloncha RF (8.7 km SW), Bhadrachalam RF (4.9 km E) and Timmampeta reserve forest (8.1 km, SE) are located within 10 km radius of the proposed project. The company has adopted state of the art technologies in pulping and recovery operations, by using Elemental Chlorine Free (ECF) using ozone to minimize the use of chlorine dioxide. Total cost of the proposed expansion will be Rs. 1100.0 Crores. Rs. 120.0 Crores and Rs. 3.0 Crores will be earmarked towards total capital cost and recurring cost/annum for environmental pollution control measures in the proposed expansion.

3. To control particulate emissions, dust suppression measures will be implemented in coal handling plant and stock yards. The closed conveyor belt will be installed to prevent dust emission and asphalting of the roads would be done within the plant area. Dust extraction system will be provided at transfer points of conveyor system. Adequate stack height would be provided for wider dispersion of gaseous emissions and regular stack monitoring would be done as per CPCB guidelines. High efficiency ESP (99.9 %) will be provided to control the PM below 50 mg/Nm^3. Low NOx burners will be installed.

4. It is noted that there will be an additional water requirement of 10,000 m^3/day for the proposed expansion in addition to the present water requirement of 69,000 m^3/day. The existing plant has water drawl permission for about 80,000 m^3/day and hence, no new permission is required. The water will be drawn from the River Godavari. The expansion will aim at maximum recycling of back water, thereby minimizing the wastewater discharge from new paper machine. The existing wastewater treatment plant will be adequate for treatment of wastewater from proposed expansion. Treated wastewater along with cooling tower blow down will be used for dust suppression at coal handling system and for ash management. State of the art disc filter will be installed in the paper machine to recover and recycle the water. Treated sanitary waste / sewage will be used for greenbelt development / maintenance. Black liquor will be completely recovered and burnt in the chemical recovery boiler.

5. Fly ash will be used in the brick manufacturing and construction activities or supplied to cement industries. Sludge from deinking plant will be dried and fired in the boiler. Lime sludge will be dried and sold to cement mills. STP sludge will be used as manure for greenbelt development. Oil sludge generated from waste water treatment plant (WWTP) will be disposed as per prescribed HWM rules. Waste fibre will be used in board mill. Waste pulp from WWTP will be used for card board / fired in boiler.

6. All the new equipments will be designed for low noise level at source. Total power requirement of 97.9 MW (after expansion) will be met from Captive Power Plant (97.6 MW) and Andhra Pradesh State Electricity Board (APSEB, 0.3 MW). Additional coal requirement will be about 800 TPD.

7. The pulp and paper industry are listed at S.No. 5(i) under category 'A' of the Schedule of EIA Notification, 2006 and appraised at the Central level.

8. The proposal was considered by the Expert Appraisal Committee-1 (industry) in its 15th meeting held during 25th - 27th October, 2010. After the site inspection in January, 2011, the proposal was reconsidered by the Expert Appraisal Committee -1 (Industry) in its 18th meeting held during 24th - 25th January, 2011. The Committee recommended the proposal for environmental clearance subject to stipulation of specific conditions along with other environmental conditions. Public hearing of the project was held on 13th April, 2010.

9. Based on the information submitted by you, presentation made by you and consultant, M/s Vimta Labs, Hyderabad, the Ministry of Environment and Forests hereby accords environmental clearance to the above project under the provisions of EIA Notification dated 14th September 2006 subject to strict compliance of the following Specific and General conditions:

A. SPECIFIC CONDITIONS :

(i) The company shall compiy with the conditions stipulated for the existing plant vide Ministry's letter no. J-11011/56/2001-IA.II (I) dated 12.12.2010.

(ii) A joint site inspection by a team of pulp & paper expert, RO, MoEF at Bangalore and APPCB official shall be carried out once a year till the satisfactory performance of the project after expansion.

(iii) The environmental wing shall be further strengthened w.r.t the qualified personnel, laboratory infrastructure etc. so as to minimize the dependency on external agencies for sample collection and analysis.

(iv) The company shall install high volume, low concentration NCG collection & destruction system to mitigate all malodorous gases emitted and to submit compliance report to APPCB & Regional office of MoEF.

(v) The project authority shall install multi cyclones, wet scrubbers with the boilers to achieve the particulate emission below 50 mg/Nm^3. The emissions from Fluidised Bed Reactor (FBR) in chemical recovery section shall be controlled through primary and secondary ventury scrubbers.

(vi) The company shall install dust collection system to reduce fugitive dust from all the units operations and vehicular movement. Efficiency of all the ESP (Electrostatic Precipitator) to be regularly monitored, both in Chemical Recovery Boilers & Power Boilers and all parameters to be met as per CPCB norms (NOx, SOx, particulate matter etc as per MoEF notification dated Nov. 16, 2009).

(vii) Data on ambient air, stack and fugitive emissions shall be regularly submitted online to Ministry's Regional office at Bangalore, APPCB and CPCB as well as hard copy once in six months and display data on RSPM, SO_2 and NOx outside the plant premises at the appropriate place for the general public.

(viii) The proponent shall follow International Standards of safety for ClO_2 generation and storage system, and ozone plant, and certification on regular basis may be submitted to APPCB & Regional office of MoEF. Provision for adequate safety for personnel in case of any accidental leakage to be put up in place, and the same shall be reported to APPCB & Regional office of MoEF.

(ix) In case of treatment process disturbances/failure of pollution control equipment adopted by the unit, the respective unit shall be shut down and shall not be restarted until the control measures are rectified to achieve the desired efficiency.

(x) The water requirement shall not exceed 10,000 m3/day. No ground water shall be withdrawn. The industry shall ensure the compliance of the standards for discharge of the treated effluent from the unit as stipulated under the EPA rules or SPCB whichever is more stringent. The company shall make efforts to limit the water consumption upto 75 m^3/tonne of product. Mill should adopt modern RO/UF or any other compatible technology to reduce both water consumption and ultimate discharge to the river.

(xi) Continuous and regular monitoring of ETP performance and waste water discharged from all the process operations of the mill (for all the relevant pollution parameters), before and after expansion for a period - Present to 2 years after expansion is completed. The report to be submitted to Andhra Pradesh Pollution Control Board (APPCB) and Regional office of Ministry of Environment and Forests (MoEF). The pollution parameters shall be certified by an accredited lab and must be within permissible standards laid down by State / Central Pollution Control Board (CPCB).

(xii) Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the State Pollution Control Board and regular monitoring shall be carried out for all relevant parameters to maintain the effluent treatment efficiency. The report shall be submitted to Ministry's Regional Office at Bangalore, APPCB and CPCB.

(xiii) Regular (Quarterly) monitoring of Ground water quality near the areas where effluent is used for irrigation as well as upstream and downstream water quality assessment of River Godavari where part of mill effluent is discharged.

(xiv) The company shall install Oxygen Delignification (ODL) Plant and shall maintain AOX below 1 kg/tonne of paper production.

(xv) ECF technology shall be used and within 2 yrs lime kiln shall be installed to manage lime sludge

(xvi) The company shall submit the comprehensive water management plan along with monitoring plan for the ground water quality and the level, within three months from date of issue of this letter.

(xvii) The ash generated from the plant shall be disposed of in accordance with the provisions of the Fly Ash Notification, 2009.

(xviii) The project authority shall dispose of hazardous waste as per the provision of Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2003.

(xix) The company shall develop green belt in 33% of the total land as per the CPCB guidelines and in consultation with DFO to mitigate the effect of fugitive emissions. The plantations for raw material shall not be considered as green belt.

(xx) Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act. Due importance to treatment of Musculo-skeletal disorders and other disorders such as backache, fatigue, body exhaustion & other MSD. Health effects due to work should be a part of managerial training

(xxi) The company shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling.

(xxii) All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the pulp and paper sector shall be strictly implemented.

(xxiii) All the commitments made to the public during the Public Hearing / public consultation meeting held on 30th April, 2010 shall be satisfactorily implemented and a separate budget for implementing the same should be allocated and information submitted to the Ministry's Regional Office at Bangalore.

(xxiv) At least 2 % of the total cost of the project shall be earmarked towards the corporate social responsibility and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office at Bangalore. Implementation of such program shall be ensured accordingly in a time bound manner. The CSR shall include increase in the number of permanent employees, provision of better education & health facilities to locals, drinking water facilities, drainage system, development of roads, green belt development in the Sarapaka village etc. The existing dispensary catering the health needs of the workers shall be augmented with better health check up facilities etc. Similarly, the PHCs of Nellipaka & Burgampahad shall be augmented with better health check up facilities etc. and M/s ITC should take responsibility of the sophisticated equipments by proper maintenance of them & training to the PHC employees.

(xxv) Provision shall be made for the housing of construction labour within the site 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.

B. GENERAL CONDITIONS:

i. The project authorities must strictly adhere to the stipulations made by the A.P. Pollution Control Board and the State Government.

ii. No further expansion or modernization in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.

iii. One ambient air quality monitoring station shall be installed in downwind direction. Ambient air quality including ambient noise levels shall not exceed the standards stipulated under EPA or by the State authorities. Monitoring of ambient air quality and stack emissions shall be carried out regularly in consultation with UPPCB and report submitted to the APPCB quarterly and to the Ministry's Regional Office at Bangalore half-yearly.

iv. In-plant control measures for checking fugitive emissions from all the vulnerable sources like spillage/raw materials/coal handlings etc. shall be provided. Bag filters shall be provided at transfer points and dedusting stacks to control fugitive emissions. Water sprinkling, black topping of internal roads and green belt development shall be carried out to control the fugitive dust emissions due to vehicular movement. Dust suppression and extraction system shall be provided to control secondary fugitive emission during raw material handling and processing.

v. Proper house keeping and cleanliness must be maintained within and outside the plant.

vi. The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).

vii. The company shall undertake rainwater harvesting measures to recharge the ground water.

viii. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report.

ix. The implementation of the project vis-à-vis environmental action plans shall be monitored by Ministry's Regional Office at Bangalore / APPCB /CPCB. A six monthly compliance status report shall be submitted to monitoring agencies.

x. Adequate provisions for infrastructure facilities such as water supply, fuel, sanitation etc. shall be ensured for construction workers during the

construction phase so as to avoid felling of trees and pollution of water and the surroundings.

xi. The project proponent shall have a scheme for social upliftment in the surrounding villages with reference to contribution in road construction, education, establishment of health centers, sanitation facilities, drinking water supply, community awareness and employment to local people whenever and wherever possible both for technical and non-technical jobs.

xii. A separate Environmental Management Cell equipped with full fledged laboratory facilities to carry out the various Environmental Management and Monitoring functions shall be set up under the control of Senior Executive.

xiii. The requisite amount shall be earmarked towards capital cost and recurring cost/annum for implementing environment pollution control measures respectively and used judiciously to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government and an implementation schedule for implementing all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.

xiv. The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; RSPM, SO_2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

xv. The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bangalore/CPCB/SPCB shall monitor the stipulated conditions.

xvi. The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company alongwith the status of compliance of environmental conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.

xvii. The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at the Website of the Ministry of Environment and Forests at http:/envfor.nic.in. This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office at Bangalore.

10. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

11. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.

12. The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 and the Public (Insurance) Liability Act, 1991 along with their amendments and rules.

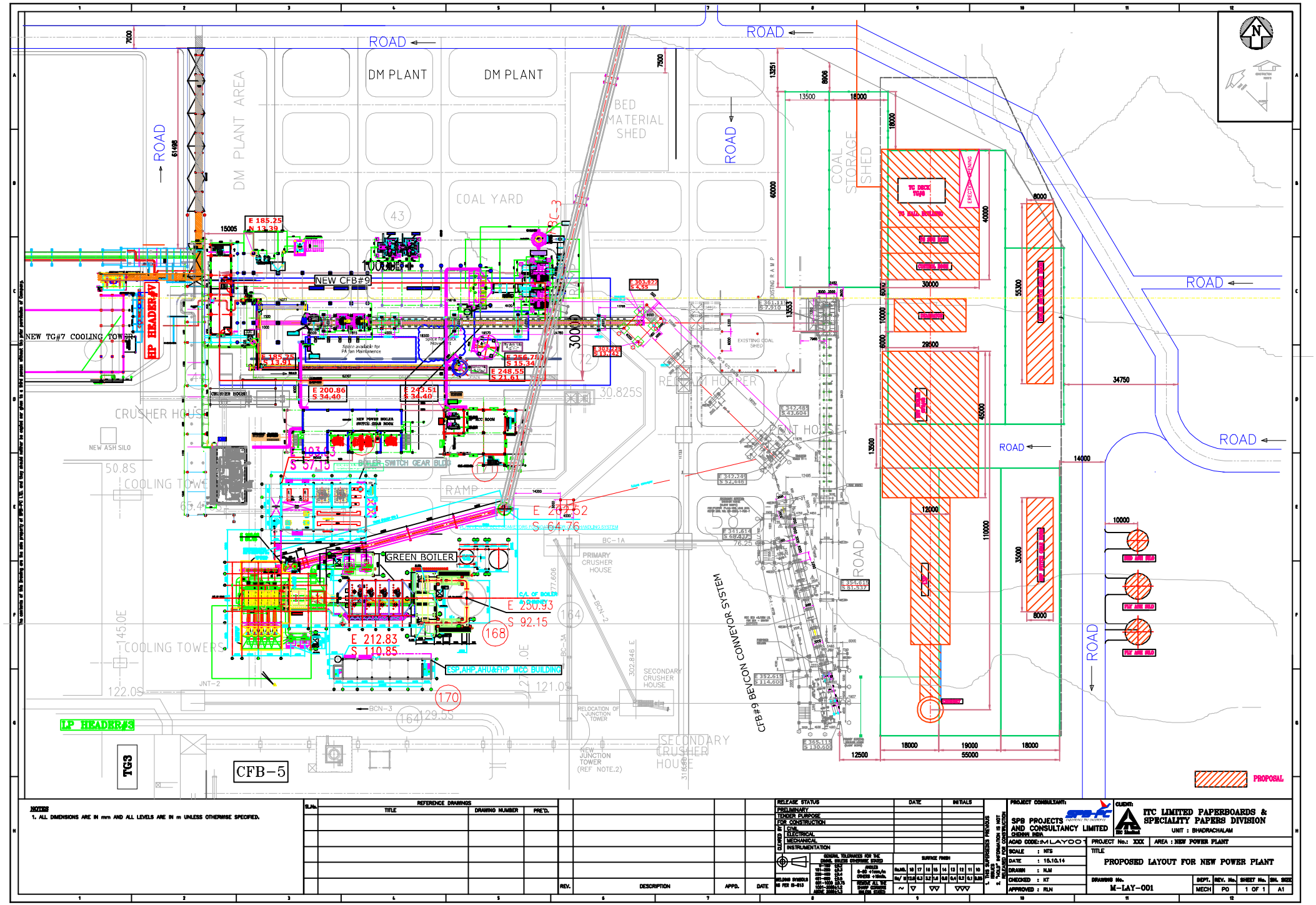
P. Ahujarai

(Dr. P.L. Ahujarai)
Scientist 'F'

Copy to:

1. The Secretary, State Department of Environment, Government of Andhra Pradesh, Mantralaya, Hyderabad.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
3. The Chairman, Andhra Pradesh State Pollution Control Board, 2nd Floor, HUDA Complex, Maitrivaram, S.R.Nagar, Hyderabad- 500 038.
4. The Chief Conservator of Forests (Central), Regional Office (SZ), Kendriya Sadan, IVth Floor, E&F Wing, 17th Main Road, Koramangala, Bangalore-560034.
5. Monitoring Cell, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi- 110003.
6. Guard file / Record file/Monitoring file.

(Dr. P.L. Ahujarai)
Scientist 'F'



NOTES
1. ALL DIMENSIONS ARE IN mm AND ALL LEVELS ARE IN m UNLESS OTHERWISE SPECIFIED.

SL.No.	REFERENCE DRAWINGS TITLE	DRAWING NUMBER	PRE'D.

REV.	DESCRIPTION	APPD.	DATE

RELEASE STATUS	DATE	INITIALS
PRELIMINARY		
TENDER PURPOSE		
FOR CONSTRUCTION		
CLEARED BY: CIVIL		
ELECTRICAL		
MECHANICAL		
INSTRUMENTATION		

PROJECT CONSULTANT: SPB PROJECTS AND CONSULTANCY LIMITED, CHENNAI INDIA
CLIENT: ITC LIMITED PAPERBOARDS & SPECIALITY PAPERS DIVISION, UNIT : BHADRACHALAM
ACAD CODE: MLAYOO1 | PROJECT No.: XXX | AREA : NEW POWER PLANT
SCALE : NTS
DATE : 15.10.14
DRAWN : N.M
CHECKED : KT
APPROVED : RLN
TITLE: PROPOSED LAYOUT FOR NEW POWER PLANT
DRAWING No. M-LAY-001
DEPT. MECH | REV. No. PO | SHEET No. 1 OF 1 | SHL SIZE A1