Annex – 3
(Immediate measures without financial implication)

Table 1: KTPS status of CPRI recommendation immediate term without financial implications.

Sl. No.	VOLUME	STATION / UNIT	CPRI Recommendations	Proposed Date / Month of Implementation	STATUS AS ON 31-12-2011	Effects / Results / Improvement seen
1	V-4	STAGE -II	Measuring the ash to water ratio on daily basis.	IMPLEMENTED	It is being measured on daily basis	Ash line leakages reduced
2	V-1	Station	The simple software may be developed for computation of UHV and GCV (as per GoI formula) from the component values instead of human calculation in EXCEL sheet or calculator	IMPLEMENTED	Computation is being done through Excel sheet .	Human error eliminated
3	V-1	Station	Trend analysis of coal may be performed by the coal Handling plant which can be used as input for more meaningful prediction.	IMPLEMENTED	Coal analysis results of rakes received from various collieries are being sent to PCR on weekly basis.	Helpful for generation planning process & predictive actions from operation point of view.
4	V-1	STAGE -II	The performance of each level will be monitored by one or two grades upwards and corrective action will be initiated in the form of providing higher-level of resources/monitoring/higher level of control/re-deployment of staff, etc	IMPLEMENTED	Daily plant performance planning etc are being discussed / monitored in daily planning meeting conveyed by higher authorities.	process improvement.

5	V-4	STAGE -II	operating single CWP & lift pumps during winter season	Implemented during winter only.	Implemented for unit 5 & 6. At unit 7 it is not implemented as load ability of unit affects. At present the unit sharing 180 MW loads.	Aux Power Saving of @ 18240 Units of each unit 5 & 6 per day.
6	V-4	STAGE -II	Operating 75 % of CT fans during Winter	Implemented during winter only.	Implemented in unit 6 & 7	Saving of @ 7000 units per day saving as each fan is of 39.5 kw. Total installed fans 30 no's
7	V-1	STAGE -II	It is recommended to have a round the clock condition monitoring group with the job responsibility of monitoring the condition of equipment like vibrations, temperature rise, leakage levels, oil depletion, loss of lubricant, leakage, etc., and recommend.	----	Monitoring the performance of boiler & turbine auxiliaries, temperature monitoring, drain survey for passing leakages, vibrations etc., are being carried out on regular basis.	For continuous performance monitoring of plant
8	V-1	STAGE -II	The spare inventory can be classified into categories based on economic value and risk (consequence of no stock or criticality of the stocks in the process). This provides opportunities for cost reduction by	Implemented	The inventory is classified on critical nature of material & rate of consumption. The	To maintain low level inventory with no emergency & risks

			maintaining optimal safe stock which are lower		procurement action is initiated on the basis of reorder level.	
9	V-1	STAGE -II	For many items rate contract can be entered into for an yearly basis to minimize inventory levels	Implemented	Rate contract is adapted for regular & high consumption materials like bearing, fasteners	To control inventory with reasonable & competitive rates
10	V-1	STAGE -II	For special components which are posing difficulty in obtaining spares, competent agencies for reverse engineering should be identified who can design the component and arrange for manufacture and supply faster than the regular OEM route	Implemented	For 200 / 210 MW units spares are available with OEM & regular suppliers in open market however Most of the critical / special components have been identified, & developed from competent agencies.	Critical Material availability has increased

11	V-4	STAGE -II	Strengthening and Improving the maintenance practices at CHP.	It is a continuous & regular process	Improvement through knowledge based maintenance, modulating frequency of maintenance and enhanced condition based monitoring.	Breakdowns , Belt snapping have been reduced & Bunkering along with house keeping has been improved. During FY 2009-10 PLF reductions due to CHP problems was 10.01% . This has been reduced to 6.06 % during 2010-11 & during 2011-12 (Till date) it is 0.77%
12	V-4	STAGE -II	Return end conveyer rollers have to be checked and maintained periodically.	Implemented	Weekly checked & carried out during preventive	--,,--
13	V-4	STAGE -II	The coal heap on either side of conveyor belts and bottom conveyor belts has to be cleared.	Implemented	Done on daily basis	--,,--
14	V-4	STAGE -II	The conveyor belts have to aligned properly to avoid spillage of coal.	Implemented	Alignment of Conveyor Belts is carried out regularly as & when required.	--,,--

15	V-3	UNIT 5	Maintain mill internals. Replacement of mill internals on performance basis rather than hour basis.	Implemented	As per recommends of OEM the replacement is required after 6500 Rhs. Fineness of the coal from coal mill is weekly measure for each mill& on that basis the replacement of the various parts is carried out.	complete life utilization of the components on the performance basis
16	V-3	UNIT 6	Maintain mill internals. Replacement of mill internals on performance basis rather than hour basis.	Implemented	---,,--	complete life utilization of the components on the performance basis
17	V-3	UNIT 7	Maintain mill internals. Replacement of mill internals on performance basis rather than hour basis.	Implemented	---,,--	complete life utilization of the components on the performance basis
18	V-2	UNIT 5	Gas velocity at the gap between the ECO coil bundle and the boiler furnace optimization	Implemented	In every overhaul the test is carried out & rectifications are done as required	
19	V-2	UNIT 5	Improvement in cleanliness levels in the boiler and turbine area to prevent secondary damage.	Implemented	Extra manpower has been deputed . Water	Environment Improvement

					washing is being done & improvement .	
20	V-2	UNIT 5	Periodic cleaning of ash and debris collection in fan duct during any available outage.	Implemented	During every opportunity it is cleaned	Full Fan capacity utilization without flow obstacle
21	V-2	UNIT 6	Gas velocity at the gap between the ECO coil bundle and the boiler furnace optimization	Implemented	In every overhaul the test is carried out & rectifications are done as required	Tube leakages have been reduced
22	V-2	UNIT 6	Improvement in cleanliness levels in the boiler and turbine area to prevent secondary damage.	Implemented	Extra manpower has been deputed . Water washing is being done & improvement achieved	Environment Improvement
23	V-2	UNIT 7	Gas velocity at the gap between the ECO coil bundle and the boiler furnace optimization	Implemented	In every overhaul the test is carried out & rectifications are done as required	Tube leakages have been reduced
24	V-2	UNIT 7	Improvement in cleanliness levels in the boiler and turbine area to prevent secondary damage.	Implemented	Extra manpower has been deputed . Water washing is being done & improvement .	Environment Improvement
25	V-2	UNIT 7	Periodic cleaning of ash and debris collection in fan duct during any available	Implemented	During short shutdown & AOH it is	Environment Improvement

			outage.		attended	
26	V-4	STAGE -II	Overhauling the Fly ash Slurry Discharge Pump (FSDP) 1 pump and motor to avoid overloading.	Implemented	Regular practice of overhauling once in a two year	Smooth operation of ash slurry pumps & disposal system
27	V-4	STAGE -II	Cleaning of inter-stage cooler heat exchanger of compressors.	Implemented	Cleaning frequency is six monthly.	Smooth operation of compressors
28	V-4	STAGE -II	The non-return valves of air compressors have to serviced.	Implemented	valve replaced if found passing. It is checked monthly.	Increase in compressor efficiency
29	V-4	STAGE -II	The air leaks in compressors and piping system have to be checked and leakages have to be arrested	Implemented	It is regularly monitored & attended regularly.	Saving in specific auxiliary consumption
30	V-4	UNIT 6	Periodic cleaning of ash and debris collection in fan duct during any available outage.	Implemented	During short shutdown & AOH it is attended	smooth operation
31	V-1	STAGE -II	Each and every maintenance action must be reviewed and unnecessary planned scheduled maintenance frequency may be modulated based on reliability and risk indices	Implemented	Maintenance schedule is reviewed & modified on performance basis	For economy maintenance by taking care of systems & avoiding emergencies.
32	V-4	STAGE -II	Optimizing the time for wagon tipplers no 2&3 as tippler no. 4	Implemented	The wagon tipping cycle of wagon tippler 1,2 & 3 studied. The constraints for carrying out efficient wagon unloading	Improvement plant performance with decrease in deummarage on wagons. Demurage hrs during 2009-10 it is 19242, During FY 2010-11 it was

					identified, action plan prepared & executed to achieve efficient unloading at wagon tippler no 1,2 & 3	11275 & during 2011-12 till date it is 8221 hrs.
33	V-4	STAGE -II	Clearing the coal from the conveyor bottom and sides	Implemented	Clearing of coal heaps is regularly carried out. It is a routine practice. The distorted structure of conveyors is being restored	Belt snapping has been reduced
34	V-4	STAGE -II	The vibratory screens have to be taken into service.	Mar-10	All screens have been put in service.	For better control of coal feeding
35	V-1	STAGE -II	**Training in attitudinal change** and **re-orientation of the concept of performance** is required for maintenance staff. This is more true for Stage I staff where there is a sense of indispensability because of the peculiarities of the machineries	Implemented	Training in Attitudinal change already started at DOT Koardi. & it is continual process	For performance improvement
36	V-1	STAGE -II	It is recommended that all operators of Stage I & II must undergo simulator training over a period for upgrading their skills	ALREADY IN PRACTICE & IS CONTINUAL PROCESS	Simulator training is being given at DOT Koardi. & it is continual	For performance improvement

					process	
37	V-1	STAGE -II	Objective oriented training programs aimed at result orientation through 360° feedback is essential	ALREADY IN PRACTICE & IS CONTINUAL PROCESS	In-house training already started	For performance improvement
38	V-1	STAGE -II	Areas of training must be those which have immediate or very serious relevance to MSPGCL like reduction in auxiliary power, reduction in fuel oil, conservation of DM water, improvements in O & M procedures, etc	ALREADY IN PRACTICE & IS CONTINUAL PROCESS	In-house training already started	For performance improvement
39	V-1	STAGE -II	The training programs are recommended to be techno-economic-managerial aimed at achieving the objectives of training. The feedback on the results should be on the effectiveness of the training based on track record of the candidate in the next few days.	ALREADY IN PRACTICE & IS CONTINUAL PROCESS	In-house training already started	Techno economical improvement
40	V-1	STAGE -II	The time constraints for obtaining approvals for training may be reduced by simplification of process of obtaining approvals directly from Station Head instead of from Head Office	Mar-10	Approval for fulfilling training got from H.O.	Expedition of training approval process
41	V-1	STAGE -II	While procuring replacement spares, material up gradation and new technology options must be kept in mind instead of old time tested	Implemented	Material up gradation is considered wherever found necessary	For state of art improvement

			spares			
42	V-2	UNIT 5	Maintenance of APH during a shut down opportunity Renewal of radial seals Adjustment of radial sector plate. APH water washing	Implemented	To replace damaged Radial seal , Water washing , Adjustment of radial sector plate is in regular practice during short shut downs & AOH.	Reduction APH outlet flue gas temp.
43	V-2	UNIT 5	Arresting of steam leaks from soot blower and auxiliary steam lines.	Implemented	Regular maint of the soot blower & auxiliary steam line is in practice.	Reduction in SHR & steam Leakages
44	V-2	UNIT 5	Insulation of steam lines	Implemented	It is in practice. The insulation is carried out wherever necessary in overhauls & shutdowns.	Reduction in heat losses
45	V-2	UNIT 6	Maintenance of APH during a shut down opportunity Renewal of radial seals Adjustment of radial sector plate. APH water washing	Implemented	Replacing the damaged seals, Water washing , Adjustment of radial sector plate is in regular practice during short shut downs & AOH.	Reduction APH outlet flue gas temp.

46	V-2	UNIT 6	Arresting of steam leaks from soot blower and auxiliary steam lines.	Implemented	Regular maint of the soot blower & auxiliary steam line is in practice.	Reduction in SHR & steam Leakages
47	V-2	UNIT 6	Insulation of steam lines	Implemented	It is in routine maint , the re-insulation is carried out wherever necessary	Reduction in heat losses
48	V-2	UNIT 7	Maintenance of APH during a shut down opportunity Renewal of radial seals Adjustment of radial sector plate. APH water washing	Implemented	To replace damaged Radial seal , Water washing , Adjustment of radial sector plate is in regular practice during short shut downs & AOH.	Reduction APH outlet flue gas temp. After the recent O/H at unit 7 the FG temp was 162/148 at 183 MW. Before overhaul it was 162 / 148 at 154 MW
49	V-2	UNIT 7	Arresting of steam leaks from soot blower and auxiliary steam lines.	Implemented	Regular maint of the soot blower & auxiliary steam line is in practice.	Reduction in steam Leakages
50	V-2	UNIT 7	Insulation of steam lines	Implemented	It is in routine maint , the reinsulation is carried out wherever necessary	Reduction in heat losses
51	V-2	STAGE -II	Optimizing the voltage at clear water pump motor terminals.	Implemented	Station bus voltage optimized.	Energy saving

52	V-2	STAGE -II	The pressure settings of air compressors need to be checked periodically (may be bi-monthly or half yearly).	Implemented	Bi-monthly scheduled.	Energy saving
53	V-2	UNIT 5	Overhauling of pulse air compressor and motors .	Implemented	During every overhaul it is done	For smooth operation
54	V-4	STAGE -II	The transformer tap position of CHP has to be reduced.	---	The Tap changing is not required as the voltage received from main plant is optimum	-
55	v2	STAGE -II	Minimizing energy for hot , warm & cold start up	Implemented	regular efforts are taken	Average no of outages per month have been reduced from 5.91 in 2010-11 to 5.22 in 2011-12. Energy loss in startup reduced. Also sp. Oil consumption reduced from 8.3 to 6,67 ml/kwh in 2011-12
56	v-2	**STAGE-II**	Minimizing rejects to below 1%	Dec-12	It mainly depends on coal quality. It ensured that only reject is discharged by Mill by measuring the CV of reject.	----

					Presently mill maintenance is being done one by one. Also,mill upgradation is proposed in R&M of the units	