



# Environmental and Social Annual Monitoring Report

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Project Number: 43903 (Loan 2722)  
December 2013

## PAKISTAN: Uch-II Power Project Environmental and Social Development Annual Monitoring Report (FY2013)

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**Asian Development Bank**

## ENVIRONMENTAL AND SOCIAL MONITORING REPORT

FY 2013

A	Project/Business Name and Summary Information	
	<b>Development of 404 MW Gas Fired Combined Cycle Power Plant by Uch-II Power (Private) Limited</b>	
(i)	<i>Location of project/business</i>	Dera Murad Jamali, Baluchistan, Pakistan
(ii)	<i>Nature</i>	Construction, commissioning and operation of gas fired combined cycle power plant
(iii)	<i>Scale/size</i>	404 MW (ISO Gross Rating) 2 Gas Turbines x 01 Steam Turbine
(iv)	<i>Date of construction/operation commencement</i>	Construction activities commenced in July 2011. Based on current rate of progress Project COD is expected by mid of April 2014.
(v)	<i>Name, designation and signature of person responsible for preparing/reviewing the report</i>	Fida Muhammad Khan, Manager HSE Uch-II / Babar Saeed Khan, Deputy General Manager Construction Uch-II
B	Relevant Environmental Permits or Compliance Certificates	
(i)	<i>Summary of permit conditions &amp; media(s) covered</i>	"No Objection Certificate issued by BEPA"
(ii)	<i>Issue by which government Agency</i>	Baluchistan Environmental Protection Agency (BEPA)
(iii)	<i>Issuance date and duration of validity</i>	December 9, 2010 (Extension required before Operational Phase)
(iv)	<i>Renewal requirements</i>	None
C	Incidents of Violations or Non-Compliance	
(i)	<i>Recorded date and responsible agencies</i>	None in Year 2013
(ii)	<i>Nature of non-compliance</i>	No reportable incident to authorities recorded during Year 2013.
(iii)	<i>Violation or non-compliance based on what environmental standards and regulations</i>	N/A
(iv)	<i>Recorded dates and authorities</i>	During Year 2013, EHS related observations of minor nature recorded during routine site monitoring. Log with corrective actions attached as Appendix A.
(v)	<i>Media or community reactions (if any)</i>	None in Year 2013
(vi)	<i>Corrective actions, deadlines, identification of responsible parties</i>	Short term corrective actions identified thru regular site walks. Please refer to Appendix-A.
	<i>(a) short-term: remedial action</i>	Please refer to Appendix A
	<i>(b) long-term: preventative measures</i>	None in Year 2013
D	Incidents of Environmental and Safety Accidents	
(i)	<i>Incident recorded dates and responsible agencies,</i>	On June 20, 2013, an unfortunate incident occurred in which EPC Contractor's worker (scaffolder) fell from the height of nearly 40 feet resulting in severe head injury. Injured patient (IP) was taken to site first aid clinic, then to specialised hospital but he expired on his way to Sukkur city. The insurance for the deceased was in place in accordance to the National Laws and Standards by the employer (EPC Contractor). In addition to the insurance coverage the employer is making further monetary support to the deceased family.
(ii)	<i>Scale of damage and injury (if any)</i>	Fatality
(iii)	<i>Authorities in charge of investigation/recording</i>	EPC Contractor / Uch-II
(iv)	<i>Media or community reactions (if any)</i>	None in Year 2013
(v)	<i>Corrective actions, deadlines, identification of responsible parties</i>	Reference to fatal accident, several immediate measures and corrective actions were taken including but not limited to strict works at height and confined spaces protocols, removal of all single hook harness from site, re induction and training of scaffolds, HSE awareness of work supervisors, usage of only chin strap helmet for works at height, and deployment of additional resources for continuous EHS supervision by Owner Engineer and O&M personnel.
	<i>(a) short-term: remedial action</i>	None in Year 2013
	<i>(b) long-term: preventative measures</i>	None in Year 2013

<b>E</b>	<b>Labour Relations and Conditions</b>	
(i)	<i>Nature of labour dispute or grievance</i>	None reported by EPC in Year 2013
(ii)	<i>Legal requirements, Permit conditions and renewal requirements</i>	None in Year 2013
(iii)	<i>Authorities in charge of investigation/recording</i>	EPC contractor responsible for managing its labour relations and conditions
(iv)	<i>Media or community reactions (if any)</i>	None in Year 2013
(v)	<i>Corrective actions, deadlines, identification of responsible parties</i>	N/A
(vi)	<i>Labour relations and living conditions for construction labour force</i>	<p>No Labor related issues recorded during Year 2013. Majority of labor residing at site in dormitories with satisfactory living conditions. Basic Medical facility with a qualified Doctor and nurse also available at site.</p> <p>EPC contractor's labour policies are in compliance with ILO core labour standards. EPC contractor use to revisit payrolls of labour as per requirement of Government policies (GOP minimum wages applicable in each cadre and local market). EPC workers also insured (group life insurance) as per national law.</p> <p>As per contractor's procedure for "Camp and Security Management" In-charge Personal &amp; Administration dept. at project site is responsible for maintenance of working and living conditions at site. Regular housekeeping inspections, hygiene inspections for messing facilities, toilet facilities of labor housing compound are performed by site HSE team.</p> <p>A mechanism for registering of complaints is available for labour. Workers complaint register and complaint drop boxes available at site and camp. No labour union exists at project site.</p>
<b>F</b>	<b>Environmental Capacity</b>	
(i)	<i>Staff capacities in environmental management (as relevant)</i>	Please find the EHS Organogram indicating Uch-II, Owners Engineer and EPC team attached as Appendix B. Uch-II HSE Manager, HSE Officer and 02 HSE Site Coordinators are also present at site.
(ii)	<i>Degree of awareness of: (i) environmental management, (ii) health and safety, (iii) environmental laws and regulations</i>	Relevant EPC, OE and Uch-II staff aware about the Project EMP & H&S Mgt plan and all other Environmental applicable & relevant Laws and regulations.
(iii)	<i>Training programs carried out</i>	<p>EPC contractor carried out regular site HSE induction as per their procedure for its entire staff as well as subcontractors. Specific in house trainings regarding Environment management plan, PTW / LOTO procedure, commissioning safety, housekeeping, HAZMAT, work at height protocols, heavy lifting, slip trip falls, confined space protocols, scaffolding protocols, manual handling, JSA/RA, hot jobs, firefighting, safe driving, first aid and other relevant topics carried out by EPC Health &amp; Safety management team. Altogether a total of 5399 workers trained on different EHS topics in Year 2013.</p> <p>HIV/AIDs/STD awareness sessions are also conducted with site work force in Year 2013 as per HSE training plan. Please refer to Appendix C</p> <p>Appendix C (<i>EPC In house Training Statistics FY- 2013</i>)</p>
(iv)	<i>Needs assessment of environmental management capacity (as relevant)</i>	EPC, EHS staff capacity monitored regularly for effective implementation of EHS Program. Project EHS Organogram attached as Appendix B.
(v)	<i>Compliance audits carried out</i>	Uch-II biannual HSE audits FY-2013 performed as per plan in March & Nov 2013. Mid project third party audit and Independent HSE audit by O.E carried out in January 2013 and September 2013 respectively. Appendix D (Corrective Action Plan Matrix) EMP March-2013 and November-2013 Biannual Audit.
<b>G</b>	<b>Stakeholder Consultation/CSR Activities</b>	
(i)	<i>Details of consultations, if any, with local communities, nongovernmental</i>	None has been conducted in Year 2013

	<i>organizations, civil society groups, and other stakeholders, including affected people</i>		
(ii)	<i>Describe efforts to promote community relations and local development for inhabitants of the project area.</i>	Local manpower employed in project by EPC contractor and subsequently trained unskilled workers. Please find attached Appendix-I narrating nature of trainings provided to unskilled work force in Year 2013. EPC contractor distributed stationary and books among the students of a school situated in Dera Murad Jamali, Baluchistan. No migration / movement of communities residing in the vicinity of project site.	
(iii)	<i>Project procedures for (a) hiring and (b) acquisition of goods and services</i>	EPC labour hiring procedure in place. Historical data of the labor hired in construction activities during Year 2013 is presented in attached Appendix-G.	
(iv)	<i>Provide List of grievances and status of grievance resolution</i>	None in Year 2013. Grievance redress mechanism and LPU & GRTG available and in place.	
<b>H</b>	<b>Issues, Status of Implementation of Mitigating Measures in the Environmental and Social Management Plan and Compliance with Environmental Qualities and Standards (national and international, as relevant) and Environmental and Social Requirements</b>		
	<b>Parameter</b>	<b>Issue</b>	<b>Status</b>
1	<i>Air</i>	None	Dust monitoring and suppression with water sprinkling on-going on the vehicles movement tracks / roads both on & offsite.
2	<i>Water (surface and ground water)</i>	None	Overall compliance with EMP (as applicable against specific parameters) in place. Attached is Appendix E, indicating waste water analysis and water consumption record FY 2013.
3	<i>Waste generation and management</i>	None	Waste generated at site is being collected, segregated and quantified. Hazardous waste generally comprised of used oils, oily filters & rags etc. is disposed off site through a recycling waste contractor on regular basis. Attached is Appendix E indicating waste generation record FY 2013.
4	<i>Noise and vibration</i>	None	EPC contractor monitoring ambient & occupational noise levels on monthly basis. Attached is Appendix E indicating occupational and ambient noise monitoring results FY 2013.
5	<i>Occupational health and safety</i>	None	Monitoring of Health & Safety Key performance Indicators done by EPC. Site medical center / officer maintaining workers health records for reported cases.
6	<i>Community safety and security</i>	None	Community safety and security are ensured at project site through effective implementation of mitigation measures proposed by project environmental management plan. The mitigation measures include; development of traffic management plan to minimize disturbances to local communities, established a grievance redress management system to handle and resolve any community complaints that arise during construction and operation phase, limiting the non-local staff within the boundary wall of power plant to avoid project workforce and community interaction. EPC contractors SOP for security arrangements is also in place.
7	<i>CO<sub>2</sub> emissions by the Project</i>		4644.477 tons of CO <sub>2</sub> for site Diesel Gens sets and vehicular CO <sub>2</sub> emissions for construction site reported in Year 2013 by EPC contractor. Calculations based upon total Diesel fuel used for the same purpose by EPC and its

			subcontractors. Total volume of fuel (HSD) consumed FY 2013 = 1,757,563 litres approx.  Assumptions used in total calculating CO2 emissions provided in Appendix F.
8	<i>Environmental and Social Management Plan, including IFC E&amp;S Action Plan (September 29, 2010)</i>		Project H&S plan and EMP implementation and monitoring in place by EPC contractor.  Attached Appendix H summarizes the compliance status of mitigation measures for E&S plan (Ref Appendix A Table 4-1 of EIA)  ESAP Update: OGDCL and NTDC's EIA has been completed. BEPA issued NOC to OGDCL in April 2013.

## I Summary Assessment of Client Performance and Recommendations

The planned construction activities have almost completed for BOP as well as Power Island except for some minor works. Engineering and procurement phase for the project has come to a close. GTG-1 first fire, synchronization, fuel change over test, and full load test completed. HRSG-II Steam blowing completed with HRSG-I steam blowing under progress. STG mechanical erection and pre-commissioning activities have been completed.

All Electrical Systems including step up transformers have been energized and commissioned whereas Distributed Control System Control cold loops checks completed.

Raw water pumping station (at Pat feeder Canal) completed and pond filling is underway. Cooling tower, circulating water, closed loop cooling water system has been put into operation with final commissioning checks underway. HSD Tank and associated fire protection system completed.

### H&S Activities

Uch-II Project has overall recorded 11.22 million man hours till Dec-2013. An unfortunate fatal accident occurred in June-2013 just after achieving 7.6 million safe man hours. Since then 3.62 million man hours have been recorded till Dec-2013.

Regular day and night H&S monitoring walks performed by Uch-II HSE team to supervise the project activities, highlighted the shortcomings to EPC contractor through safety walk reports and ensured their timely close out. Uch-II deployed additional resources for effective H&S supervision against increased workforce & parallel works and maintained zero tolerance on non-conformances.

HSE team performed biannual HSE audit of site in March and November-2013 to gauge the HSE performance of EPC contractor. Audit reports were shared with EPC contractor for close out of suggested corrective actions. Uch-II initiated development of Health & Safety procedures for operational phase of the project. EPC implemented PTW / LOTO system for commissioning phase of the project. PTW trainings carried out by EPC for associated commissioning team (engineers & supervisors) and construction labor safety induction for awareness of risks associated with energized systems. Sign postings at energized and commissioned areas that come under PTW scope carried out by EPC contractor.

Emergency Response Procedure covering scenarios for emergency response/ mitigation measures in case of fire, spills, explosion and medical emergency etc. is developed and implemented.

Uch-II arranged H&S trainings for O&M team with regards to H&S Risk Management (Spill response, Accident root cause analysis, Advanced First aid, IOSH working safely) While HSE trainings provided to workers and supervisory staff by EPC HSE Dept. as per training plan. HSE site monitoring, joint safety walks, hygiene and housekeeping inspections carried out as per plan.

No other significant Environmental & Social issues to report.

**Uch-II Site Monitoring Summary FY-2013****Appendix-A****Corrective Actions**

Monitoring Period	<b>Q1, 2013</b>
Monitoring Conducted by	HSE Uch-II
Corrective Actions By	EPC Contractor

<b>S. No</b>	<b>Findings</b>	<b>Corrective Actions</b>
1	A fork lifter observed carrying scaffold pipes without warning lights and horn <ul style="list-style-type: none"><li>• Transport hazard</li><li>• Unsafe practice and strike hazard</li></ul>	Issue addressed to E&P dept. for maintenance of fork lifter and work supervisor is advised to use flatbed truck for such transportation
2	Domestic waste (kitchen/food waste) thrown out near Hyundai mess <ul style="list-style-type: none"><li>• Non-compliance of waste management plan</li></ul>	Hyundai is communicated to clear the area and to organize the disposal of food waste at designated area
3	Oil seepage observed from air compressor standing at service water tank area <ul style="list-style-type: none"><li>• Unsafe condition</li><li>• Soil contamination</li></ul>	E&P team is notified to rectify the seepage fault of compressor
4	A scaffold platform found without green tag and was being used by workers to access cooling tower suction basin <ul style="list-style-type: none"><li>• Unsafe condition</li><li>• Un-inspected scaffold</li></ul>	Immediately called the Scaffold Incharge for inspection of platform and to ensure the availability of tag
5	Grinding work on a pipe spool was in progress at power island. A fire extinguisher placed nearby found empty / discharged <ul style="list-style-type: none"><li>• Unsafe condition / Fire hazard</li></ul>	Site HSE coordinator is informed to replace the empty extinguisher with healthy one and advised to ensure the same at all hot job locations
6	PPEs non-compliance by a contractor driver at power island observed. He was found without wearing safety shoes and hard hat <ul style="list-style-type: none"><li>• PPEs non compliance</li></ul>	Area Incharge and site HSE coordinator is notified and advised to ensure strict PPEs compliance by subcontractors
7	At water treatment area, a trench observed without having fall barriers around <ul style="list-style-type: none"><li>• Unsafe condition</li><li>• Fall hazard</li></ul>	Hard barriers around the trench arranged by area supervisor
8	A single plank was used over cable trays for crossing purpose posing fall hazard <ul style="list-style-type: none"><li>• Unsafe condition &amp; Fall Hazard</li></ul>	Recommended area supervisor to provide double plank for safe crossing
9	A dumper was engaged at GT area for unloading soil. However, no bank was available with dumper <ul style="list-style-type: none"><li>• Unsafe practice</li></ul>	Counseling with dumper operator carried out and advised to ensure the availability of bank man for safe movement of heavy vehicle

S. No	Findings	Corrective Actions
10	At top platforms of HRSG, some openings found exposed since no gratings were placed over them <ul style="list-style-type: none"> <li>Unsafe condition</li> <li>Fall hazard</li> </ul>	Issue addressed to piping supervisor and scaffold supervisor and hard barriers installed around pointed locations to eliminate risk of falling
11	A torn out mesh net installed around sand blasting yard was unable to restrict dust dispersion <ul style="list-style-type: none"> <li>Unsafe condition</li> <li>Dust hazard</li> </ul>	Area supervisor and HSE team is notified. A proper tarpaulin cover around sand blasting yard has been installed to eliminate dust hazard
12	Crane was engaged in lifting works at power island whereas no barrication was in place to restrict unauthorized entry in the area <ul style="list-style-type: none"> <li>Unsafe condition</li> <li>Non-compliance of heavy lift plan</li> </ul>	Lifting Incharge and site HSE coordinator is advised to ensure the barrication at all lifting locations
13	Unbounded waste material (debris, wood, plastic, iron rods etc.) observed at GT condenser area <ul style="list-style-type: none"> <li>Housekeeping Issue</li> </ul>	Area supervisor is communicated to clear off the area and ensure the implementation of waste management procedure in his area

Monitoring Period	<b>Q2, 2013</b>
Monitoring Conducted by	HSE Uch-II
Corrective Actions By	EPC Contractor

S. No	Findings	Corrective Actions
1	<p>A scaffolder observed not wearing safety harness while dismantling scaffolding pipes at a height of approx. 08 feet. According to him, safety harness is not provided to him.</p> <ul style="list-style-type: none"> <li>PPEs Non compliance</li> <li>Falling Hazard</li> </ul>	<p>On the spot counseling carried out with scaffolder.</p> <p>Work supervisor is instructed to arrange safety harness and ensure the availability of harness for every work at height job in his jurisdiction.</p>
2	<p>At power island area, a very unsafe crossing observed over a cable trench. Iron planks are used for purpose which is neither balanced nor properly clamped. Worker frequently used this crossing and there is a risk of imminent fall.</p> <ul style="list-style-type: none"> <li>Unsafe Condition / Falling Hazard</li> </ul>	<p>DCS mechanical team in coordination with site scaffolding In-charge installed proper scaffold bridge for secure crossing.</p>
3	<p>At power island, 02 safety sign boards found dismantled and in deteriorated condition.</p> <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	<p>Site safety coordinator is instructed to arrange for proper installation of safety sign boards at power island and replace the damaged sign boards with healthy one.</p>
4	<p>At piping fabrication work shop, a gas cylinder found without safety cap.</p> <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	<p>Fabrication workshop supervisor to ensure the availability of cap for gas cylinders.</p>
5	<p>Unbounded waste material found near gas cylinder storage at mechanical workshop (structure).</p> <ul style="list-style-type: none"> <li>Housekeeping Issue</li> </ul>	<p>Site safety coordinator is informed to arrange for immediate waste removal.</p>
6	<p>At clarifier area, 02 gas cylinders placed in an unsafe condition posing obstruction and strike hazard.</p> <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	<p>Area supervisor is instructed to ensure the cylinder storage in safe position and to use cylinder stand/trolley.</p>
7	<p>Iron rods, cables, wooden material found scattered in area between cooling tower suction basin and piping fabrication workshop.</p> <ul style="list-style-type: none"> <li>Tripping Hazard</li> <li>Housekeeping Issue</li> </ul>	<p>Site safety coordinator is informed to arrange for immediate waste removal.</p>
8	<p>At mechanical workshop (structure), a worker observed without gloves while performing the job.</p> <ul style="list-style-type: none"> <li>PPEs non compliance</li> </ul>	<p>Workshop supervisor is advised to ensure PPEs compliance at his area.</p>



Monitoring Period	<b>Q3, 2013</b>
Monitoring Conducted by	HSE Uch-II
Corrective Actions By	EPC Contractor

S. No	Findings	Corrective Actions
1	A dumper found at site with faulty reverse horn and rotary light. <ul style="list-style-type: none"> <li>Housekeeping Issue</li> </ul>	Dumper sent out of work area and driver is instructed to rectify the reverse horn and rotary light.
2	Scaffold pipes, debris, empty drums and other waste material found in area front of steam turbine. <ul style="list-style-type: none"> <li>Housekeeping Issue</li> </ul>	Issue addressed and housekeeping performed by civil team.
3	Working inside confined space observed at steam turbine condenser transition. Confined space protocols were not followed. No CS checklist, entry log, standby man etc. were available. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	EPC HSE team is informed about the non-compliance and advised to visit the workplace and ensure the compliance of confined space protocols before resuming the job.
4	Heavy construction machine (loader) was being operated without availability of banks man. <ul style="list-style-type: none"> <li>Non-compliance of TMP</li> </ul>	Stop the operation. Excavator operator arranged the banks man and resumed the job.
5	Civil labor performing masonry work under supervision of their supervisor at GT-2 without wearing safety gloves. <ul style="list-style-type: none"> <li>Non-compliance of PPEs</li> </ul>	Supervisor is counseled and instructed to ensure full PPEs compliance of his work staff.
6	Near CCR, hydro test area was not barricaded and no safety signs displayed. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	Hydro test supervisor is advised to ensure safe work protocols, arrange to install hard barriers and post appropriate safety signs.
7	Hot job was being performed in between HRSG-II and HSD tank without following hot work protocols. JSA was not available at work place, fire extinguisher found empty. <ul style="list-style-type: none"> <li>Unsafe practice</li> </ul>	Job supervisor and HSE engineer are instructed to perform job safety analysis of the job and arrange healthy fire extinguisher.
8	Along with switch yard fence, un-identified gas cylinders were placed in a shed. Caps of few cylinders were also missing. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	Identification tags on all cylinders are required to be pasted. Issue addressed to site management.
9	Fire extinguisher with damaged discharge nozzle and CO2 fire extinguisher without inspection tag found at waste water treatment area. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	Informed to site HSE coordinator. Fire extinguishers replaced with healthy ones.
10	A temporary crossing platform at GT-1 area found without inspection scaffold tag. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	Scaffold inspector inspected the platform and tagged the crossing.

11	An open / un barricaded pit at GT-2 area observed posing a fall hazard. <ul style="list-style-type: none"> <li>Fall Hazard</li> </ul>	Hard barrier installed around the pit.
12	Poor housekeeping observed along a cable trench at HRSG-II area. <ul style="list-style-type: none"> <li>Housekeeping Issue</li> </ul>	Housekeeping performed by civil team.
13	Non-compliance of work at height protocols observed at power island. Workers without latching safety harness observed working at top. <ul style="list-style-type: none"> <li>Non-compliance of work at height protocols</li> </ul>	The issue is addressed to site management. Meeting with execution team conducted by site HSE team to ensure full implementation and strict control of work at height protocols.
14	Hot work was being performed at fabrication workshop and HRSG-1 and HRSG-II areas without availability of fire extinguisher at job locations. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	The issue is addressed to site management. Site HSE team ensured the availability of sufficient fire extinguishers for work site.
15	Lifting activity was being performed near shuttering workshop without barricading the area. <ul style="list-style-type: none"> <li>Unsafe Condition / Act</li> </ul>	Lifting supervisor is advised to barricade the area to restrict the entry of unconcerned personnel.
16	Electrical cables of a welding plant placed near CCR found damaged. <ul style="list-style-type: none"> <li>Electrical Hazard</li> </ul>	Damaged cables have been replaced.
17	Workers found without wearing PPEs inside RO building. <ul style="list-style-type: none"> <li>Non-compliance of PPEs</li> </ul>	TBT carried out with workers.
18	Unbounded waste material (debris, waste electrical cables etc.) found at gas conditioning skid area. <ul style="list-style-type: none"> <li>Housekeeping Issue</li> </ul>	Housekeeping of the area performed.
19	An excavated trench (5 feet deep approx.) at gas conditioning skid area found without hard barrication around. <ul style="list-style-type: none"> <li>Fall Hazard</li> </ul>	Informed site HSE coordinator. Barricade installed around the trench.
20	Poor illumination observed around a hot job performed during night at power island area. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	Informed to night safety supervisor. Sufficient lighting arrangements around the hot job ensured.

Monitoring Period	<b>Q4, 2013</b>
Monitoring Conducted by	HSE Uch-II
Corrective Actions By	EPC Contractor

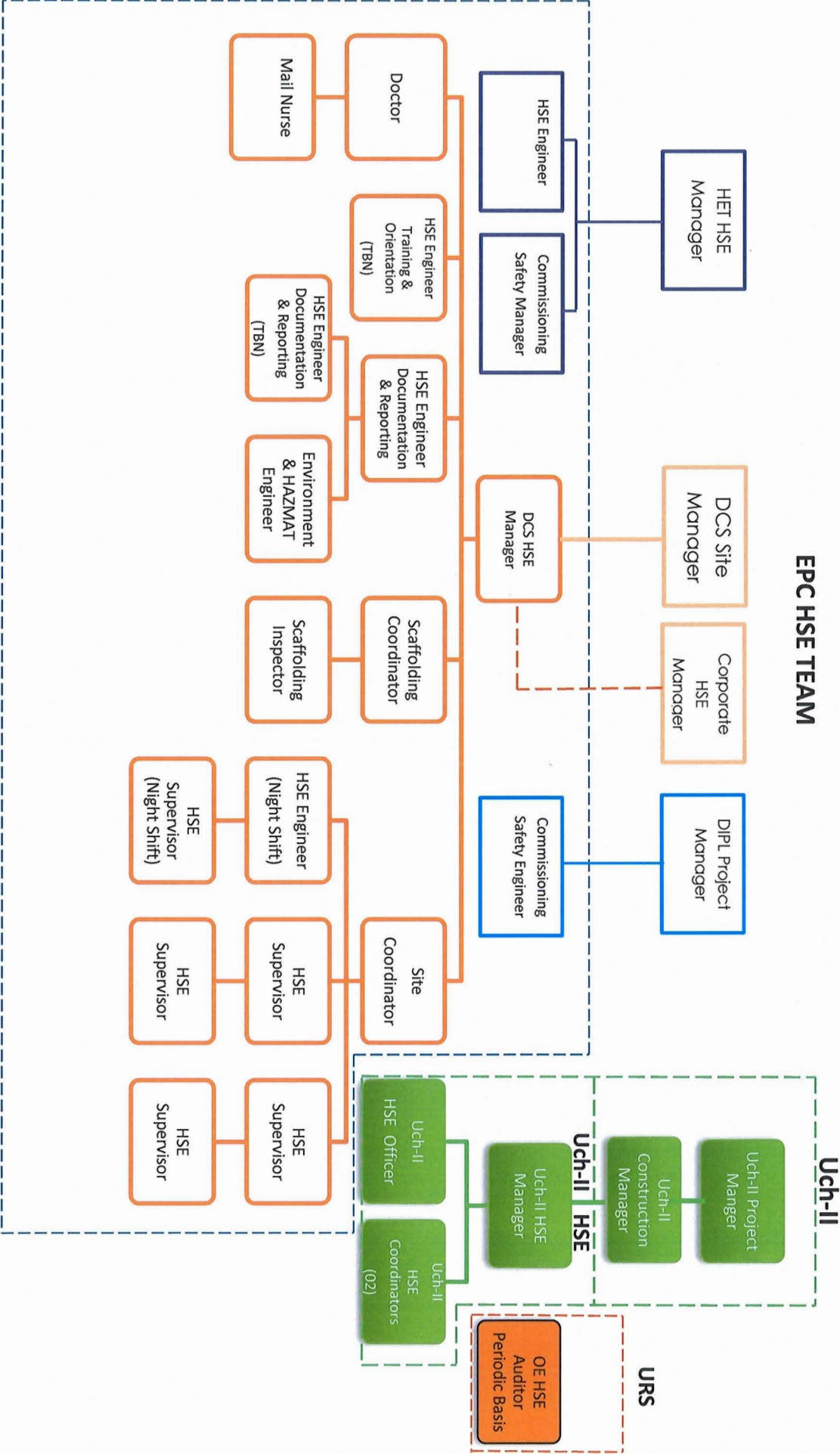
S. No	Findings	Corrective Actions
1	No warning signs and MSDS posted in the HCL drum storage area at site. <ul style="list-style-type: none"> <li>Unsafe Chemical Storage</li> </ul>	Area commissioning engineer is informed, MSDS and the relative signs arranged at storage location.
2	Damaged power cables were spotted in stagnant water near the HRSG-1 area creating risk of electrocution. <ul style="list-style-type: none"> <li>Electrical Hazards</li> </ul>	Issue addressed to the job supervisor. Damaged cables replaced with correct one and cables re-routed.
3	Subcontractor workers were performing job inside a confined space, no SBM (standby man) was available neither the entry log was maintained. <ul style="list-style-type: none"> <li>Non-compliance of CS protocols</li> </ul>	Confined Space training session conducted for Sub Contractor team.
4	A dumper spotted near gas conditioning skid area with faulty rotary light. <ul style="list-style-type: none"> <li>Unsafe condition</li> </ul>	Faulty rotary light rectified.
5	At steam turbine area, a worker found standing at scaffolding platform without anchoring the lanyard. <ul style="list-style-type: none"> <li>Non-compliance of work at height protocols</li> </ul>	TBT conducted with worker to realize him the importance of safety harness.
6	Cable termination was being in progress at the bottom of the HRSG-2 without sufficient lighting. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	Spot lights provided by the E & P team to continue the activity.
7	Workers were holding the checkered plate without using the gloves. Due to sharp edges of plate there was high risk of cut injury to hands. <ul style="list-style-type: none"> <li>Non-compliance of PPEs</li> </ul>	Job supervisor was instructed to arrange safety gloves for the workers and ensure full compliance of PPEs.
8	Un-inspected power grinder without earthing found inside the condensate extraction pumps area. <ul style="list-style-type: none"> <li>Electrical Hazard</li> </ul>	E&P in-charge was informed. Grinder was removed for inspection and earthing.
9	Fenced door of commissioned (live) unit auxiliary transformer GT-1 found open. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	HET commissioning safety engineer was informed and door was get locked.
10	Unsecure handling of gas cylinder (without trolley stand) observed in structure fabrication workshop. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	Workshop supervisor conducted TBT with his staff for safe handling of gas cylinders.
11	Hot Work was being performed in Structure fabrication workshop in the absence of fire extinguisher. <ul style="list-style-type: none"> <li>Unsafe Condition</li> </ul>	Site HSE team is informed to ensure the availability of fire extinguishers at all hot work locations.

12	<p>Worker without using helmet (mandatory PPE's) was spotted inside the cable trench near the EDG performing cleaning job.</p> <ul style="list-style-type: none"> <li>• Non-compliance of PPEs</li> </ul>	TBT carried out with worker regarding the use of mandatory PPE's.
13	<p>Drilling activity was being performed by the workers inside the shuttering workshop. No use of face shield spotted as small metal particles which were continuously being ejected from drilling activity has enough potential to create harm to worker's eyes.</p> <ul style="list-style-type: none"> <li>• Non-compliance of PPEs</li> </ul>	Job supervisor was strictly advised to ensure the compliance of PPEs, arrange the safety goggles and face shield for workers before the resumption of activity.
14	<p>Workers were executing the civil work job near the open pit around the R O building area.</p> <ul style="list-style-type: none"> <li>• Unsafe Condition/ Fall hazard</li> </ul>	Informed to Site HSE team and hard barriers fixed around the pit.
15	<p>Poor housekeeping observed near the Demin Building area, where used shuttering materials, cotton waste, scaffolding materials spotted creating tripping hazards.</p> <ul style="list-style-type: none"> <li>• Housekeeping Issue</li> </ul>	Housekeeping of the area performed by the civil team.
16	<p>A fire extinguisher found without inspection tag at gas conditioning skid area.</p> <ul style="list-style-type: none"> <li>• Unsafe Condition</li> </ul>	Information passed to site HSE coordinator. Inspection tag was fixed with fire extinguisher after being inspected by inspector.
17	<p>Outside admin building, front cover of a power distribution board found open crating risk of electrocution for the workers working nearby.</p> <ul style="list-style-type: none"> <li>• Unsafe Condition</li> </ul>	Information passed to the site HSE coordinator to take the corrective action.

Uch-II (404 MW – ISO) CCGT Power Project

Appendix B

HSE Management Organization Structure



Uch-II	04
EPC Total Strength	21
EPC Position Vacant	2
TBN	To be nominated

## Appendix C

### EPC In house HSE Training Record

FY 2013

Training Topics	Q1, 2013	Q2, 2013	Q3, 2013	Q4, 2013	Total		
HSE Induction	820	840	405	221	2286		
HIV/AIDs/STD Awareness			38	5	43		
Environmental Management	42	83	53		178		
Working at Height	82	722	613	34	1451		
Rigging & Heavy Lifting	86	14	111	1	212		
Housekeeping				25	25		
Defensive Driving	4	8	30		42		
Fire Fighting	55	41	72	2	170		
Slip Trip Fall	15	22		12	49		
Confined Spaces	54	39	85		178		
HAZMAT	13				13		
Hot Job	100	88		5	193		
JSA	40	14			54		
First Aid	26	29	20	6	81		
Manual Handling	19	22		3	44		
Hand Pinch	92	12		3	107		
Radiography Safety	17				17		
Commisioing Safety & PTW	14	32	137	43	226		
Scaffolding	10	20			30		
						FY-2013	5399



## Appendix D

### Corrective Action Plan Matrix (EMP Biannual Audit March2013)

No	EMP Action Item	Responsibility	Planned Finish Date	Status 05 May 2013	Remarks	Status 31 July 2013
<b>1</b>	<b>Environment Management System</b>					
1.1	<u>Environmental Policy Uch II Project Construction Site</u>					
	Environmental policy Uch-II is required to be signed by current site manager	EPC	25-04-2013	COMPL	Environmental policy is updated	Compliant
<b>2</b>	<b>Environmental KPIs</b>					
2.1	<u>HSE Inductions</u>					
	A mechanism to be established to ensure that all subcontractors of Hyundai & DIPL approaching at site for commissioning activities shall go thru safety induction program	EPC	05-05-2013	Action Awaited	A meeting carried out between EPC Contractor and Uch-II / O.E to finalize induction mechanism of commissioning team	Compliant
<b>3</b>	<b>Dust Control at Construction Site</b>					
3.1	<u>Water Sprinkling at Site</u>					
	More regular water sprinkling is required at dusty locations and tracks to minimize dust dispersion	EPC	30-04-2013	COMPL	Water sprinkling performed twice a day (morning and evening)	Compliant
<b>4</b>	<b>Equipment and Machinery / Vehicle Exhaust</b>					
4.1	<u>Exhaust Emission Testing</u>					
	Third party emission testing of vehicles and construction machinery / equipment is due	EPC	10-05-2013	Action Awaited	Third party emission testing is in progress	Compliant
<b>5</b>	<b>Solid Waste Management</b>					
5.1	<u>Kitchen waste &amp; Recyclable material</u>					
	EPC contractor to make arrangements for offsite disposal of waste through a certified waste contractor	EPC	10-05-2013	Action Awaited	Waste is being disposed offsite by EPC Contractor	Compliant
<b>6</b>	<b>Machinery</b>					
6.1	<u>Machinery Inspection</u>					
	In-house inspection of subcontractors' heavy machinery and cranes to be performed on monthly basis	EPC	10-05-2013	COMPL	Machinery inspection at E&P workshop is regularized on monthly basis	Compliant

<b>7</b>	<b>Fuel and Chemical Handling</b>					
7.1	<u>Storage Facility</u>					
	Paints and thinners to be stored at proper designated storage area with availability of fire detection system	EPC	10-05-2013	Action Awaited	Combustibles (paints / thinners) shifted to proper designated store. Fire detectors has been installed as per recommendations	Compliant
7.2	<u>Safety Signage</u>					
	Safety signs / posters needs to be enhanced at fuel / chemical storage area	EPC	05-05-2013	COMPL	Safety signage is increased at storage facility	Compliant
<b>8</b>	<b>Housekeeping</b>					
8.1	<u>Waste Collection</u>					
	Regular collection of hazardous and non-hazardous waste generated to be ensured at work areas	EPC	05-05-2013	COMPL	Regular housekeeping on daily basis is ensured at site	Compliant



## Corrective Action Plan Matrix (EMP Biannual Audit November 2013)

No	EMP Action Item	Responsibility	Planned Finish Date	Status 01 Dec 2013	Remarks	Status 31 December 2013
<b>1</b>	<b>Dust Control at Construction Site</b>					
1.1	<u>Dust Emissions</u>					
	High dust emissions observed on track leading from Descon residential camp to site offices. Regular water sprinkling (twice a day) is required to suppress dust emissions.	EPC	30-11-2013	COMPL	Regular water sprinkling two times a day is being performed	Compliant
<b>2</b>	<b>Solid Waste Management</b>					
2.1	<u>Waste Disposal &amp; Housekeeping</u>					
	Sufficient color coded skips are not available at site different locations for waste disposal.	EPC	30-11-2013	Action Awaited	Skips for hazardous and non-hazardous waste are provided at highlighted locations	Compliant
2.2	HRS-2 area found littered with discarded materials such as scaffold tubes, shuttering material and metal waste. Housekeeping of the area required.	EPC	30-11-2013	COMPL	Housekeeping performed	Complaint
2.3	Unbounded waste material including debris, planks, discarded PVC pipes, iron rods etc. found in between ST and Suction Basin area. Housekeeping of the area required.	EPC	30-11-2013	COMPL	Housekeeping performed	Complaint
2.4	Heaps of kitchen waste found dumped at back side of HET residential camp. EPC to remove the waste and dispose as per waste management procedure.	EPC	30-11-2013	Action Awaited	Waste removal in progress	In Progress
<b>3</b>	<b>Construction Noise</b>					
3.1	<u>Ambient Noise Monitoring</u>					
	Ambient noise monitoring at security gate area is not being performed.	EPC	30-11-2013	COMPL	Noise level monitoring being carried out	Compliant
<b>4</b>	<b>Fuel and Chemical Handling</b>					
4.1	<u>Improper Storage</u>					

	Oil drums stored improperly without any secondary containment near the Oil console for STG. EPC to ensure proper storage and provide secondary containment.	EPC	30-11-2013	COMPL	Oil drums relocated to E&P shop and placed with secondary containment underneath	Compliant
4.2	HCL storage area found littered with a resin which was creating risk of slip and trip for the workers moving around.	EPC	27-11-2013	COMPL	Storage area cleaned by removing the resin	Compliant
4.3	Un-labeled chemical cans were kept in the ST generator building. Identification of chemicals along with MSDS required.	EPC	30-11-2013	COMPL	Labeling of chemical cans carried out and MSDS provided at location	Compliant
<b>5</b>	<b>Transport Hazard</b>					
5.1	A bulldozer with faulty reversing audible system was performing the activity near the suction basin.	EPC	27-11-2013	COMPL	Audible system fault rectified	Compliant

## Appendix E

### Uch-II Waste Generation Statistics

Waste Type	Unit	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Used oil	Ltr	540	575	545	530	540	450	460	420	1470	1040	800	630
Metal	Tons	5	2	3	1	0.8	1	0.5	0.25	0.25	0.23	0.15	0.08
Paper/ Plastic/ Glass	Kg	1805	1858	1920	1840	1889	1942	2101	1223	1976	1094	1244	927
Empty Cement Bags	Tons	5.4	3.5	3.35	3.5	2.34	1.27	1.08	0.67	1.6	0.9	0.75	0.65
Food Waste	Tons	6.8	7.3	7.2	6.9	7.1	7.3	7.9	4.6	7.4	4.1	4.7	3.5
Waste Water	m <sup>3</sup>	3745	3360	3968	3472	3550	3775	3846	4400	3840	2880	3360	2976
Oil Filters & Oily Rags	Kg	19	20	210	45	40	38	44	60	80	30	15	10
Used Batteries	Nos	0	0	28	0	0	0	0	6	2	4	2	1
Old Tyres	Nos	0	0	13	0	0	0	0	0	0	4	0	0

### Uch-II Waste Water Analysis

Parameters	NEQS Limit	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
pH	6--9	7.7	7.1	7.5	7.24	7.9	7.2	7	6.88	7.5	6.5	7	7.2
COD (ppm)	150	111	140	178	182	139	148	110	149	113	142	137	113
BOD (ppm)	80	50	68.6	53.7	61.3	67	52	48	51	67	65	49.3	50

### Uch-II Water Consumption Record

Water Type	Unit	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Raw Water	m <sup>3</sup>	4811	3029	2520	2402	4899	5000	4043	4471	4925	4527	4520	4694
Potable Water	m <sup>3</sup>	2000	1919	3343	3172	3645	3000	3452	3248	3228	3653	3600	2477
Total Consumption	m <sup>3</sup>	6811	4948	5863	5574	8544	8000	7495	7719	8153	8180	8120	7171

### Ambient Noise Levels (Decibels)

Location / Area	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
North East Corner	58	46	47	44	44	48	40.6	45.5	45	47	46	47
North West Corner	58	45	46	43	47	49	42	43	42	45	43	44
South East Corner	45	50	49	46	46	42	45	47.8	47	47	46	45
South West Corner	47	56	55	43	40	45	49	45	44	45	45	46

**Q1, 2013 Occupational Noise Levels (Decibels)**

Location / Equipment	Unit	Jan-13	Feb-13	Mar-13
Air Compressor	Decibel (dB)	90	86	87
Power Grinder	dB	93.5	93	90
Dumper	dB	66.5	69	71
Tractor (HRSG Area)	dB	83.5	80	76
Transit Mixer	dB	89.5	75	82
Genset. (Fabrication workshop)	dB	85	82	83
Loader	dB	83	76	79
Excavator	dB	88	80	76
Mechanical Crane-1 (315 Ton)	dB	75	70	81
Scaffolding joint repair area	dB	69	-	-

**Q2, 2013 Occupational Noise Levels (Decibels)**

Location / Equipment	Unit	Apr-13	May-13	Jun-13
Concrete Pump	Decibel (dB)	77	79	82
Genset. (Batching Plant)	dB	85	87	85
Tractor (HRSG Area)	dB	79	81	76
Transit Mixer	dB	80	78	81
Genset. (Fabrication workshop)	dB	81	85	86
Structure Workshop	dB	70	77	82
HRSG-II Area	dB	73	70	68
Mechanical Crane-1 (450 Ton)	dB	71	76	75

<b>Q3, 2013 Occupational Noise Levels (Decibels)</b>				
<b>Location / Equipment</b>	<b>Unit</b>	<b>Jul-13</b>	<b>Aug-13</b>	<b>Sep-13</b>
Camp Genset	Decibel (dB)	88	90	89
Excavator	dB	76	77	79
HRSG-II	dB	82	78	76
Transit Mixer	dB	77	77	78
Road Ruler	dB	78	--	75
Genset (Cooling Towers)	dB	91.5	90	88
Warehouse (Inside building)	dB	54	53.5	53
Admin Building (ground floor)	dB	58	59	58

<b>Q4, 2013 Occupational Noise Levels (Decibels)</b>				
<b>Location / Equipment</b>	<b>Unit</b>	<b>Oct-13</b>	<b>Nov-13</b>	<b>Dec-13</b>
Fabrication Workshop Genset	Decibel (dB)	76	78	80
Site Genset (Near cooling towers)	dB	78	88	--
Batching Plant Genset	dB	85	89	83
Transit Mixer	dB	77	79	79
Admin Building (Ground floor)	dB	58	58	60
Admin Building (First floor)	dB	64	59	65
Steam Turbine Area	dB	82	80	85
HRSG-1	dB	89	76	77
HRSG-2	dB	88	78	76
GT-1	dB	87	75	76
GT-2	dB	87	76	75

## Appendix-F

### Diesel to CO<sub>2</sub> conversion Methodology

Standard diesel fuels generally contain around 87% carbon by weight, the rest being hydrogen and other very minor components. The amount of carbon in a liter of diesel fuel varies, but this only affects the total CO<sub>2</sub> production slightly.

- 1 liter of diesel typically weighs 0.83kg (the density is 830 kg/m<sup>3</sup>)
- about 87% of this is carbon, so one liter of diesel contains  $0.83 \times 87\%$   
= 0.722 kg of Carbon.
- Each atom of carbon weighs 12 atomic units. When it combines with two atoms of Oxygen in the combustion process it becomes CO<sub>2</sub>, which weighs 44 atomic units.

The 0.722 kg of carbon in the original fuel then becomes  $0.722 \times 44/12$   
= 2.65 kg of CO<sub>2</sub>.

- So 01 liter of diesel fuel produces about 2.65 kg of CO<sub>2</sub>.

Actual diesel consumed at site in Year 2013 = 1,757,563 liters

Total CO<sub>2</sub> produced =  $1757563 \times 2.65 = 4,657,541$  Kg

Equivalent Tons of CO<sub>2</sub> produced = 4644.477 tons (approx.)

## Reference used in the diesel to CO<sub>2</sub> conversion methodology



### Calculating CO<sub>2</sub> emissions

CO<sub>2</sub> production is related to the amount of fuel combusted and the fuel's carbon content. A lesser consideration is the fraction of the carbon oxidized, which is assumed to be 100 percent for emissions from transportation. The formula for CO<sub>2</sub> emissions from fossil fuels is Fuel Combusted X Carbon Content Coefficient X Fraction Oxidized X (44/12).

The [Intergovernmental Panel on Climate Change](#) (IPCC) guidelines for calculating emissions inventories require that an oxidation factor be applied to the carbon content to account for a small portion of the fuel that is not oxidized into CO<sub>2</sub>. For all oil and oil products, the oxidation factor used is 0.99 (99 percent of the carbon in the fuel is eventually oxidized, while 1 percent remains un-oxidized.)<sup>[1.]</sup>

Finally, to calculate the CO<sub>2</sub> emissions from a gallon of fuel, the carbon emissions are multiplied by the ratio of the molecular weight of CO<sub>2</sub> (m.w. 44) to the molecular weight of carbon (m.w.12): 44/12.

CO<sub>2</sub> emissions from a gallon of gasoline = 2,421 grams x 0.99 x (44/12) = 8,788 grams = 8.8 kg/gallon = 19.4 pounds/gallon or litre equivalent

CO<sub>2</sub> emissions from a gallon of diesel = 2,778 grams x 0.99 x (44/12) = 10,084 grams = 10.1 kg/gallon = 22.2 pounds/gallon or litre equivalent <sup>1</sup>.

GHG emissions are typically reported in terms of CO<sub>2</sub> equivalent (CO<sub>2</sub> Eq.) to provide a common unit of measure, and because CO<sub>2</sub> is the most prevalent of all GHGs. Other GHGs are converted into CO<sub>2</sub> equivalent on the basis of their global warming potential (GWP), for example 1 kilogram of another GHG may be estimated to have the same radiative forcing effect as a much larger number of kilograms of CO<sub>2</sub>. Guidelines are given in the IPCC 4<sup>th</sup> Assessment report

Transportation sources emit several other compounds that are believed to have an indirect effect on global warming but are not considered greenhouse gases. These substances include ozone, carbon monoxide, (CO) and aerosols. Scientists have not yet been able to quantify their impact with certainty, and these compounds are not included in the transportation GHG emissions estimates. For example, Ozone traps heat in the atmosphere and prevents a breakdown of CH<sub>4</sub>, but its lifetime in the atmosphere varies from weeks to months, making it difficult to estimate net radiative forcing effects. CO<sub>2</sub> on the other hand stays in the atmosphere for over 100 years before breaking down. CO indirectly affects global warming by reacting with atmospheric constituents that would otherwise destroy CH<sub>4</sub> and ozone. Aerosols are small airborne particles or liquid droplets that have both direct and indirect effects on global warming. The most prominent aerosols are sulfates and black carbon, or soot. Sulfate aerosols also have some cooling effect by reflecting light back into space. Traffic related black carbon is however considered to be a major pollutant and of growing concern for health reasons, in particular in Asia.

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<sup>1</sup> Note: These calculations and the supporting data have associated variation and uncertainty. Some agencies use other values in certain circumstances, and in some cases it may be appropriate to use a range of values

Prepared for the Climate Change section, Advocacy, UITP web site [www.uitp.org](http://www.uitp.org)

**Appendix-G****Number of Workers Engaged in UCH II Construction Activities**

Q1-2013						Q2-2013				
	Local (Baluchistan Province)	Local (Rest of Pakistan)	Expatriate	Female Wokers	Total	Local (Baluchistan Province)	Local (Rest of Pakistan)	Expatriate	Female Wokers	Total
<b>Skilled</b>	34	1358	28	0	1420	25	1446	28	0	1499
<b>Unskilled</b>	177	377	0	0	554	108	392	0	0	500
<b>Total</b>	211	1735	28	0	<b>1974</b>	133	1838	28	0	<b>1999</b>

Q3-2013						Q4-2013				
	Local (Baluchistan Province)	Local (Rest of Pakistan)	Expatriate	Female Wokers	Total	Local (Baluchistan Province)	Local (Rest of Pakistan)	Expatriate	Female Wokers	Total
<b>Skilled</b>	22	1500	30	0	1552	13	874	51	0	938
<b>Unskilled</b>	92	315	0	0	407	77	159	0	0	236
<b>Total</b>	114	1815	30	0	<b>1959</b>	90	1033	51	0	<b>1174</b>





## Compliance Status of EMP Control Measures FY-2013

### Appendix-H

### Uch-II Project

<b>Environmental / Social Impacts</b>	<b>Control &amp; Mitigation Measures</b>	<b>Monitoring Frequency</b>	<b>Responsibility</b>	<b>Compliance Status</b>
<b>Construction Noise</b>	<ul style="list-style-type: none"> <li>- Regular maintenance of machinery to reduce construction noise</li> <li>- Use acoustic panels around high noise machines</li> <li>- Monthly monitoring of Uch-II ambient &amp; occupational noise</li> </ul>	Monthly	EPC Contractor	Complied
<b>Dust Emissions</b>	<ul style="list-style-type: none"> <li>- Daily monitoring of dust on roads and excavation areas</li> <li>- Water sprinkling at dusty areas / roads on daily basis</li> <li>- Use of dust masks by labor working in the dusty areas</li> </ul>	Daily	EPC Contractor	Complied
<b>Land Use</b>	<ul style="list-style-type: none"> <li>- Land update kept minimum required and restricted to existing compound area and within existing water supply pipeline</li> </ul>		EPC Contractor / Uch-II	Complied
<b>Water Sourcing</b>	<ul style="list-style-type: none"> <li>- Water consumption monitoring on monthly basis</li> <li>- Water conservation</li> </ul>	Monthly	EPC Contractor / Uch-II	Complied
<b>Vehicles &amp; Equipment Emissions Testing</b>	<ul style="list-style-type: none"> <li>- Periodic maintenance / tuning of all vehicles used during project</li> <li>- Third party emissions testing as per defined frequency</li> </ul>	Baseline when vehicle / equipment inducted in pool & subsequently after every year	EPC Contractor	Complied
<b>Soil and Land Contamination</b>	<ul style="list-style-type: none"> <li>- Fuel, lubricants and chemical storage in covered bunded areas</li> <li>- Regular inspection of work areas and storage areas to detect any leakages/ spillage</li> <li>- Safe movement of chemicals and fuels</li> <li>- Spill emergency response procedure</li> </ul>	Daily	EPC Contractor	Complied
<b>Drainage &amp; Storm Water Run-off</b>	<ul style="list-style-type: none"> <li>- Provision of proper drainage system at camp area and site area</li> <li>- Provision of storm water drainage system at entire site</li> <li>- Provision of following drainage system for power plant and all drains will discharge into evaporation pond after required treatment</li> </ul>	Ongoing (throughout the project phase)	EPC Contractor / Uch-II	Complied

	<ul style="list-style-type: none"> <li>Cooling Tower blow down, Demin plant regenerated waste water, Sanitary wastewater, Oily wastewater and Sludge from clarifiers</li> </ul>			
<b>Camp Effluent</b>	- Provision of proper septic tanks for construction camp effluents	Ongoing (throughout the project phase)	EPC Contractor	Complied
<b>Hazardous &amp; Non Hazardous Waste Management</b>	<ul style="list-style-type: none"> <li>Segregation of hazardous &amp; non hazardous waste</li> <li>Waste storage at designated areas</li> <li>Waste quantification on monthly basis</li> <li>Non-hazardous waste disposal to proper landfill</li> <li>Hazardous waste disposal through approved waste contractor</li> </ul>	Monthly	EPC Contractor	Complied
<b>Disturbance to Wild Life</b>	<ul style="list-style-type: none"> <li>Preying and hunting is prohibited at Uch-II site for all kind of animals and birds</li> <li>Any incident reported shall be investigated &amp; controlled.</li> </ul>	Ongoing (throughout the project phase)	EPC Contractor / Uch-II	Complied
<b>Community &amp; Power Plant Workers Safety</b>	<ul style="list-style-type: none"> <li>Following traffic and heavy load movement plan</li> <li>Monitoring safety hazards arising from traffic nuisance</li> <li>Taking corrective actions to prevent reoccurrence.</li> </ul>	Ongoing (throughout the project phase)	EPC Contractor / Uch-II	Complied
<b>Traffic Disturbance</b>	<ul style="list-style-type: none"> <li>Use of national highway for transportation</li> <li>Traffic rush hours avoided for transportation of heavy loads</li> <li>Follow speed limit rules</li> </ul>	Ongoing (throughout the project phase)	EPC Contractor	Complied
<b>Local Employment Conflicts</b>	- Providing employment to labors, & semi-skilled local population	Ongoing (throughout the project phase)	EPC Contractor	Complied
<b>Archaeological &amp; Cultural Resources</b>	<ul style="list-style-type: none"> <li>Monitoring excavation activities carefully</li> <li>Upon discovering any remains of archeological significance immediately informing Uch-II and preserving them</li> </ul>	Ongoing (throughout the project phase)	EPC Contractor / Uch-II	Complied
<b>Project/Community Interface</b>	<ul style="list-style-type: none"> <li>Non local project staff house in construction camp within boundary of power plant</li> <li>Grievance handling procedure developed to handle community social &amp; environmental complaints</li> </ul>	Ongoing (throughout the project phase)	EPC Contractor / Uch-II	Complied

**Appendix-I**

Un-skilled Workers Training Record		
	No of workers Trained	Nature of Trainings Provided
Q1-2013	149	<b>Work</b> at Height, <b>Confined</b> Spaces, <b>Manual</b> Handling Techniques, <b>Hand</b> Injuries/Pinch Points, <b>Slip</b> Trip Fall Hazards, <b>Chemical</b> & Fuel Handling, <b>Hot</b> Job Safety, <b>Fire</b> Fighting
Q2-2013	272	<b>Burns</b> First Aid, <b>Health</b> & Hygiene, <b>Work</b> at Height / Use of Scaffold, <b>Confined</b> Spaces, <b>Grinder</b> Safety, <b>Defensive</b> Driving, <b>Slip</b> Trip Fall Hazards, <b>Manual</b> Handling Techniques
Q3-2013	107	<b>Commissioning</b> Safety, <b>HAZMAT</b> , <b>Spill</b> Response, <b>Work</b> at Height / Use of Scaffold, <b>Confined</b> Spaces, <b>Fire</b> Fighting
Q4-2013	135	<b>Excavation</b> Safety, Use of <b>PPEs</b> , Slip Trip Fall Hazards, <b>Work</b> at Height /Use of Scaffold, <b>Manual</b> Handling