



Environmental and Social Quarterly Monitoring Report

Project Number: 43903 (Loan 2722)
December 2013

PAKISTAN: Uch-II Power Project Environmental and Social Development Quarterly Monitoring Report (Q4 2013)

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Asian Development Bank

ENVIRONMENTAL AND SOCIAL MONITORING REPORT

Q4 - 2013

A Project/Business Name and Summary Information		
Development of 404 MW Gas Fired Combined Cycle Power Plant by Uch-II Power (Private) Limited		
(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. Overall project progress at end of Q4 FY2013 is 98.47% against the revised Extension Of Time (EOT) planned progress of 100%. 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 & 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 Q4-2013
(ii)	<i>Nature of non-compliance</i>	No reportable incident to authorities recorded during Q4-2013.
(iii)	<i>Violation or non-compliance based on what environmental standards and regulations</i>	N/A
(iv)	<i>Recorded dates and authorities</i>	During Q4-2013, 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 Q4-2013
(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 Q4-2013
D Incidents of Environmental and Safety Accidents		
(i)	<i>Incident recorded dates and responsible agencies,</i>	None in Q4-2013
(ii)	<i>Scale of damage and injury (if any)</i>	None in Q4-2013
(iii)	<i>Authorities in charge of investigation/recording</i>	EPC contractors site management and HSE team is responsible for reporting and investigating the incidents
(iv)	<i>Media or community reactions (if any)</i>	None in Q4-2013
(v)	<i>Corrective actions, deadlines, identification of responsible parties</i>	None in Q4-2013
	<i>(a) short-term: remedial action</i>	None in Q4-2013
	<i>(b) long-term: preventative measures</i>	None in Q4-2013
E Labour Relations and Conditions		
(i)	<i>Nature of labour dispute or grievance</i>	None reported by EPC in Q4-2013
(ii)	<i>Legal requirements, Permit conditions and renewal requirements</i>	None in Q4-2013
(iii)	<i>Authorities in charge of</i>	EPC contractor responsible for managing its labour relations and conditions

	<i>investigation/recording</i>	
(iv)	<i>Media or community reactions (if any)</i>	None in Q4-2013
(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 Q4-2013. 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.</p> <p>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 & 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>
F	Environmental Capacity	
(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 carrying out regular site HSE induction as per their procedure for its entire staff as well as subcontractors. Specific in house trainings regarding safety during commissioning slip trip falls, housekeeping, manual handling, work at height protocols, hot jobs, first aid and other relevant topics carried out by EPC Health & Safety management team. Altogether a total of 360 workers trained on different EHS topics in Q4-2013.</p> <p>HIV/AIDs/STD awareness sessions are also conducted with site work force in Q4-2013 as per HSE training plan. Please refer to Appendix C</p> <p>Appendix C (<i>EPC In house Training Statistics Q4- 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 2 nd biannual HSE audit FY-2013 is performed in November-2013. Appendix D (Corrective Action Plan Matrix) EMP November-2013 Biannual Audit - updated December 2013)
G	Stakeholder Consultation/CSR Activities	
(i)	<i>Details of consultations, if any, with local communities, nongovernmental organizations, civil society groups, and other stakeholders, including affected people</i>	None has been conducted in Q4-2013
(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 Q-4, 2013. No migration / movement of communities residing in the vicinity of project site.
(iii)	<i>Project procedures for (a) hiring and (b)</i>	EPC labour hiring procedure in place. Historical data of the labor hired in construction activities is presented in attached

	acquisition of goods and services	Appendix-G.	
(iv)	Provide List of grievances and status of grievance resolution	None in Q-4 2013. Grievance redress mechanism, LPU & GRTG in place.	
H	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		
	Parameter	Issue	Status
1	Air	None	Dust monitoring and suppression with water sprinkling on-going on the vehicles movement tracks / roads both on & offsite.
2	Water (surface and ground water)	None	Overall compliance with EMP (as applicable against specific parameters) in place. Attached is Appendix E, indicating waste water analysis and water consumption record Q4-2013.
3	Waste generation and management	None	Waste generated at site is being collected, segregated and quantified. Construction site sewage water disposal arranged to DMJ municipal area. Attached is Appendix E indicating waste generation record for Q4-2013.
4	Noise and vibration	None	EPC contractor monitoring ambient & occupational noise levels on monthly basis. Attached is Appendix E indicating occupational and ambient noise monitoring results.
5	Occupational health and safety	None	Monitoring of Health & Safety Key performance Indicators done by EPC. Site medical center / officer maintaining workers health records for reported cases.
6	Community safety and security	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	CO ₂ emissions by the Project		755.25 tons of CO ₂ for site Diesel Gens sets and vehicular CO ₂ emissions for construction site reported during Q-4 2013 by EPC contractor. Calculations based upon total Diesel fuel used for the same purpose by EPC and its subcontractors. Assumptions used in total calculating CO2 emissions provided in Appendix F.
8	Environmental and Social Management Plan, including IFC E&S Action Plan (September 29, 2010)		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 May 2013.
I	Summary Assessment of Client Performance and Recommendations	
<p>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 by end of December 2013. STG mechanical erection and pre-commissioning activities have been completed.</p> <p>All Electrical Systems including step up transformers have been energized and commissioned whereas Distributed Control System Control cold loops checks completed.</p> <p>Raw water pumping station (at Pat feeder Canal) completed and pond filling currently 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. 3.51 million liters of HSD has been procured and decanted.</p> <p><u>H&S Activities</u></p> <p>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 thru safety walk reports and ensured their timely close out. No significant safety incidents occurred during the period under review.</p> <p>HSE team performed 2nd biannual HSE audit of site in mid of November-2013 to gauge the HSE performance of EPC contractor. Audit report has been 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. Compliance of PTW system during commissioning phase is ensured through safety monitoring walks, regular review of risk assessments and permit to works. Sign postings at energized and commissioned areas that come under PTW scope carried out by EPC contractor.</p> <p>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.</p> <p>No other significant Environmental & Social issues to report.</p>		

Uch-II Site Monitoring Summary Q4-2013**Appendix-A****Corrective Actions**

Monitoring Conducted by	HSE Uch-II
Corrective Actions By	EPC Contractor

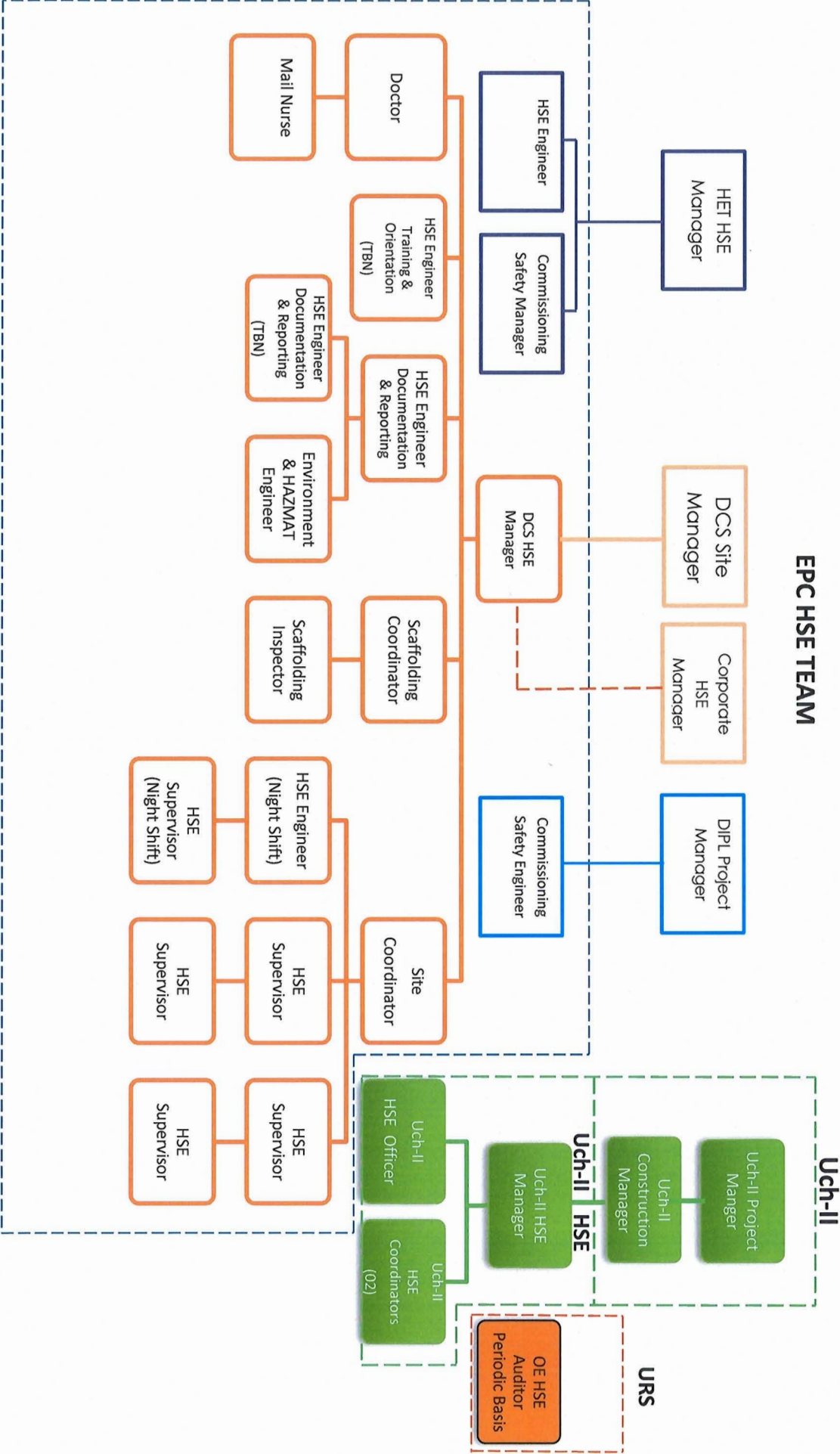
S. No	Findings	Corrective Actions
1	No warning signs and MSDS posted in the HCL drum storage area at site. <ul style="list-style-type: none">• Unsafe Chemical Storage	Area commissioning engineer is informed, MSDS and the relative signs arranged at storage location.
2	Damaged power cables were spotted in stagnant water near the HRSG-1 area creating risk of electrocution. <ul style="list-style-type: none">• Electrical Hazards	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">• Non-compliance of CS protocols	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">• Unsafe condition	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">• Non-compliance of work at height protocols	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">• Unsafe Condition	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">• Non-compliance of PPEs	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">• Electrical Hazard	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">• Unsafe Condition	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">• Unsafe Condition	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	Site HSE team is informed to ensure the availability of fire extinguishers at all

	<p>extinguisher.</p> <ul style="list-style-type: none"> • Unsafe Condition 	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"> • Non-compliance of PPEs 	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"> • Non-compliance of PPEs 	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"> • Unsafe Condition/ Fall hazard 	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"> • Housekeeping Issue 	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"> • Unsafe Condition 	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"> • Unsafe Condition 	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

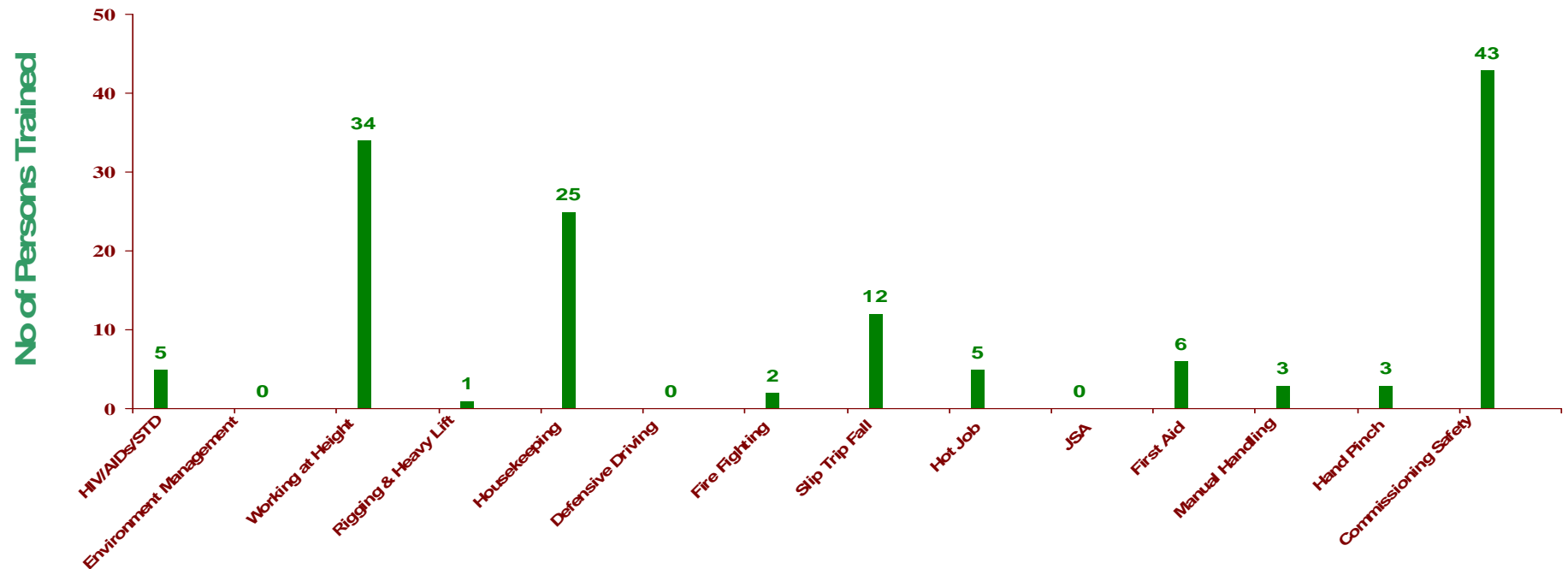
EPC (Descon) In house HSE Training Record

Q-4 2013

Training Topics	Oct-13	Nov-13	Dec-13	Total
HSE induction	29	129	63	221
Environmental Management				
Working at Height	18	15	1	34
Rigging & Heavy Lifting			1	1
Housekeeping			25	25
Defensive Driving				
Fire Fighting		2		2
Slip Trip Fall		12		12
Hot Job			5	5
JSA				
First Aid			6	6
Manual Handling		3		3
Hand Pinch		3		3
Commissioning Safety	1	16	26	43
HIV / AIDS / STD Awareness		3	2	5

Q-4 2013

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Appendix D

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
1	Dust Control at Construction Site					
	<u>Dust Emissions</u>					
1.1	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
2	Solid Waste Management					
	<u>Waste Disposal & Housekeeping</u>					
2.1	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
3	Construction Noise					
	<u>Ambient Noise Monitoring</u>					
3.1	Ambient noise monitoring at security gate area is not being performed.	EPC	30-11-2013	COMPL	Noise level monitoring being carried out	Compliant
4	Fuel and Chemical Handling					
	<u>Improper Storage</u>					
4.1	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
5	Transport Hazard					
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	Oct-13	Nov-13	Dec-13
Used oil	Ltr	1040	800	630
Metal	Tons	0.23	0.15	0.08
Paper/ Plastic/ Glass	Kg	1094	1244	927
Empty Cement Bags	Tons	0.9	0.75	0.65
Food Waste	Tons	4.1	4.7	3.5
Waste Water	m ³	2880	3360	2976
Oil Filters & Oily Rags	Kg	30	15	10
Used Batteries	Nos	4	2	1
Old Tyres	Nos	4	0	0

Uch-II Waste Water Analysis

Parameters	NEQS Limit	Oct-13	Nov-13	Dec-13
pH	6--9	6.5	7	7.2
COD (ppm)	150	142	137	113
BOD (ppm)	80	65	49.3	50

Uch-II Water Consumption Record

Water Type	Unit	Oct-13	Nov-13	Dec-13
Raw Water	m ³	4527	4520	4694
Potable Water	m ³	3653	3600	2477
Total Consumption	m ³	8180	8120	7171

Ambient Noise Levels (Decibels)				
Location / Area	Unit	Oct-13	Nov-13	Dec-13
North East Corner	Decibels (dB)	47	46	47
North West Corner	dB	45	43	44
South East Corner	dB	47	46	45
South West Corner	dB	45	45	46

Occupational Noise Levels (Decibels)				
Location / Equipment	Unit	Oct-13	Nov-13	Dec-13
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
Warehouse (inside building)	dB	54	--	70
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

Waste Contractor

The Contractor responsible for offsite waste disposal is M/S Nazir Ahmed Solangi.

Third Party for Emission Testing

PERAC RESEARCH AND DEVELOPMENT FOUNDATION (PRDF)
Karachi-Pakistan

Appendix-F

Diesel to CO₂ 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 CO₂ production slightly.

- 1 liter of diesel typically weighs 0.83kg (the density is 830 kg/m³)
- 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 CO₂, 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 CO₂.

- So 01 liter of diesel fuel produces about 2.65 kg of CO₂.

Actual diesel consumed at site in Q4, 2013 = 284,999 liters

Total CO₂ produced = $284999 \times 2.65 = 755,247$ Kg

Equivalent Tons of CO₂ produced = 755.25 tons

Reference used in the diesel to CO2 conversion methodology



Calculating CO₂ emissions

CO₂ 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 CO₂ 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 CO₂. 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.)^[1.]

Finally, to calculate the CO₂ emissions from a gallon of fuel, the carbon emissions are multiplied by the ratio of the molecular weight of CO₂ (m.w. 44) to the molecular weight of carbon (m.w.12): 44/12.

CO₂ 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

CO₂ 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 ¹.

GHG emissions are typically reported in terms of CO₂ equivalent (CO₂ Eq.) to provide a common unit of measure, and because CO₂ is the most prevalent of all GHGs. Other GHGs are converted into CO₂ 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 CO₂. Guidelines are given in the IPCC 4th 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 CH₄, but its lifetime in the atmosphere varies from weeks to months, making it difficult to estimate net radiative forcing effects. CO₂ 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 CH₄ 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.

¹ 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

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

Q1-2012						Q2-2012					Q3-2012				
	Local (Baluchistan Province)	Local (Rest of Pakistan)	Expatriate	Female Wokers	Total	Local (Baluchistan Province)	Local (Rest of Pakistan)	Expatriate	Female Wokers	Total	Local (Baluchistan Province)	Local (Rest of Pakistan)	Expatriate	Female Wokers	Total
Skilled	8	616	17	0	641	12	703	17	0	732	19	648	17	0	684
Unskilled	71	35	0	0	106	102	99	0	0	201	130	138	0	0	268
Total	79	651	17	0	747	114	802	17	0	933	149	786	17	0	952

Q4-2012						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	Local (Baluchistan Province)	Local (Rest of Pakistan)	Expatriate	Female Wokers	Total
Skilled	27	942	17	0	986	34	1358	28	0	1420	25	1446	28	0	1499
Unskilled	157	290	0	0	447	177	377	0	0	554	108	392	0	0	500
Total	184	1232	17	0	1433	211	1735	28	0	1974	133	1838	28	0	1999

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
Skilled	22	1500	30	0	1552	13	874	51	0	938
Unskilled	92	315	0	0	407	77	159	0	0	236
Total	114	1815	30	0	1959	90	1033	51	0	1174

Compliance Status of EMP Control Measures Q4-2013

Appendix-H

Uch-II Project

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

	<ul style="list-style-type: none"> Cooling Tower blow down, Demin plant regenerated waste water, Sanitary wastewater, Oily wastewater and Sludge from clarifiers 			
Camp Effluent	- Provision of proper septic tanks for construction camp effluents	Ongoing (throughout the project phase)	EPC Contractor	Complied
Hazardous & Non Hazardous Waste Management	<ul style="list-style-type: none"> Segregation of hazardous & non hazardous waste Waste storage at designated areas Waste quantification on monthly basis Non-hazardous waste disposal to proper landfill Hazardous waste disposal through approved waste contractor 	Monthly	EPC Contractor	Complied
Disturbance to Wild Life	<ul style="list-style-type: none"> Preying and hunting is prohibited at Uch-II site for all kind of animals and birds Any incident reported shall be investigated & controlled. 	Ongoing (throughout the project phase)	EPC Contractor / Uch-II	Complied
Community & Power Plant Workers Safety	<ul style="list-style-type: none"> Following traffic and heavy load movement plan Monitoring safety hazards arising from traffic nuisance Taking corrective actions to prevent reoccurrence. 	Ongoing (throughout the project phase)	EPC Contractor / Uch-II	Complied
Traffic Disturbance	<ul style="list-style-type: none"> Use of national highway for transportation Traffic rush hours avoided for transportation of heavy loads Follow speed limit rules 	Ongoing (throughout the project phase)	EPC Contractor	Complied
Local Employment Conflicts	- Providing employment to labors, & semi-skilled local population	Ongoing (throughout the project phase)	EPC Contractor	Complied
Archaeological & Cultural Resources	<ul style="list-style-type: none"> Monitoring excavation activities carefully Upon discovering any remains of archeological significance immediately informing Uch-II and preserving them 	Ongoing (throughout the project phase)	EPC Contractor / Uch-II	Complied
Project/Community Interface	<ul style="list-style-type: none"> Non local project staff house in construction camp within boundary of power plant Grievance handling procedure developed to handle community social & environmental complaints 	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	Work at Height, Confined Spaces, Manual Handling Techniques, Hand Injuries/Pinch Points, Slip Trip Fall Hazards, Chemical & Fuel Handling, Hot Job Safety, Fire Fighting
Q2-2013	272	Burns First Aid, Health & Hygiene, Work at Height / Use of Scaffold, Confined Spaces, Grinder Safety, Defensive Driving, Slip Trip Fall Hazards, Manual Handling Techniques
Q3-2013	107	Commissioning Safety, HAZMAT , Spill Response, Work at Height / Use of Scaffold, Confined Spaces, Fire Fighting
Q4-2013	135	Excavation Safety, Use of PPEs , Slip Trip Fall Hazards, Work at Height /Use of Scaffold, Manual Handling