

Environmental and Social Monitoring Report

Project Number: 43903-014
Quarterly Report (Oct - Dec 2015)
December 2015

Pakistan: Uch-II Power Project

Prepared by Uch-II Power (Private) Limited for the Asian Development Bank.

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OPERATIONAL PHASE ENVIRONMENTAL AND SOCIAL MONITORING REPORT Q4-2015



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>	Operation & Maintenance of low BTU 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. Project achieved Commercial Operation Date (COD) on April 4, 2014. after successful completion of Reliability Run Test on April 3, 2014
(v)	<i>Name, designation and signature of person responsible for preparing/reviewing the report</i>	Fida Muhammad Khan, Manager HSE Uch-II / Waseem Ellahi Plant General Manager
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 – BEPA also issued Confirmation of compliance under PEPA Regulation 2000 in April 2014. Copy of BEPA confirmation of compliance attached as Appendix-H.
(iv)	<i>Renewal requirements</i>	None
C Incidents of Violations or Non-Compliance		
(i)	<i>Recorded date and responsible agencies</i>	None in Q4-2015
(ii)	<i>Nature of non-compliance</i>	No reportable incident to authorities recorded during Q4-2015.
(iii)	<i>Violation or non-compliance based on what environmental standards and regulations</i>	N/A
(iv)	<i>Recorded dates and authorities</i>	During Q4-2015, 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 Q4-2015
(vi)	<i>Corrective actions, deadlines, identification of responsible parties</i>	Short term corrective actions identified through regular site H&S 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 Q4-2015
D Incidents of Environmental and Safety Accidents		
(i)	<i>Incident recorded dates and responsible agencies,</i>	None in Q4-2015
(ii)	<i>Scale of damage and injury (if any)</i>	None in Q4-2015
(iii)	<i>Authorities in charge of investigation/recording</i>	Uch-II Management responsible for recording and investigation.
(iv)	<i>Media or community reactions (if any)</i>	None in Q4-2015
(v)	<i>Corrective actions, deadlines, identification of responsible parties</i>	None in Q4-2015
	<i>(a) short-term: remedial action</i>	None in Q4-2015
	<i>(b) long-term: preventative measures</i>	None in Q4-2015
E Labour Relations and Conditions		
(i)	<i>Nature of labour dispute or grievance</i>	None in Q4- 2015
(ii)	<i>Legal requirements, Permit conditions and renewal requirements</i>	None in Q4-2015
(iii)	<i>Authorities in charge of investigation/recording</i>	Uch-II Management responsible for recording and investigation.

UCH-II POWER PLANT**IPR-GDF-SUEZ**

(iv)	Media or community reactions (if any)	None in Q4-2015	
(v)	Corrective actions, deadlines, identification of responsible parties	N/A	
(vi)	Labour relations and living conditions for construction labour force	Large portion of construction labour camp decommissioned after completion of project phase and major chunk of EPC labour demobilized. Only warranty team is at site residing in dormitories with satisfactory living conditions.	
F	Environmental Capacity		
(i)	Staff capacities in environmental management (as relevant)	Uch-II O&M Environmental Staff Consists of; (i) 01 Manager HSE (ii) 01 Deputy Manager Chemical (Effluent treatment, analysis & Spill Response) (iii) 01 Assistant Manager Chemical (Effluent treatment, analysis & Spill Response) (iv) 01 Assistant Manager HSE (v) 01 HSE Officer (vi) 02 Senior Chemists (Effluent treatment, analysis & Spill Response) (vii) 01 Chemical Assistants (Effluent treatment & Spill Response) • Dedicated total 08 Personnel • Organization structure of Uch-II O&M Environmental team is attached as Appendix-G.	
(ii)	Degree of awareness of: (i) environmental management, (ii) health and safety, (iii) environmental laws and regulations	Project O&M phase H&S Management plan and all other Environmental applicable & relevant Laws and regulations orientation to O&M team on regular basis. Owner (Uch-II) project HSE department continues managing O&M phase. Very well updated on all the relevant HSE laws and regulations.	
(iii)	Training programs carried out	<ul style="list-style-type: none">• Training sessions on Environment Management Plan Awareness, Confined Space, Basic Firefighting, Safe Forklift Operation, Point of Work Assessment, Responsibilities of Fire Wardens, Hazard Identification & Risk Assessment, and Safe Rigging carried out with O&M and Contractor staff.• Pre Job TBTs conducted on regular basis.• Weekly Fire drills performed by O&M Team	
(iv)	Needs assessment of environmental management capacity (as relevant)	All positions filled as per O&M staffing plan.	
(v)	Compliance audits carried out	None in Q4-2015	
G	Stakeholder Consultation/CSR Activities		
(i)	Details of consultations, if any, with local communities, nongovernmental organizations, civil society groups, and other stakeholders, including affected people	None has been conducted in Q4-2015	
(ii)	Describe efforts to promote community relations and local development for inhabitants of the project area.	No communities migrated or effected residing in the vicinity of project site due to facility setup. Uch-II is located within UPL boundary where UPL (owner of Uch-II) maintained a comprehensive CSR local community outreach and social development program since last many years. Main community development segments include; (i) Standardized primary education schools (ii) Modernized Emergency care centre (iii) 08 Drinking water treatment plants (iv) Internship and Trainee engineers program (v) Roads construction, calamity relief and free medical camps.	
(iii)	Project procedures for (a) hiring and (b) acquisition of goods and services	UPL prefers hiring human resource from local area at all levels. Local – Balochistan O&M employees ratio 22%	
(iv)	Provide List of grievances and status of grievance resolution	None in Q4-2015.	
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
I	Air	None	Gas Turbines Stack emissions monitored through CEMS. Air Emissions data (HRSGs stacks) for quarter under review attached as Appendix-B. Results of ambient air quality and annual vehicles

			exhaust emission testing are provided in Appendix-B.
2	<i>Water (surface and ground water)</i>	None	Overall compliance with EMP (as applicable against specific parameters) in place. Attached is Appendix C, indicating water consumption data. Waste water generated is treated at water treatment plant and waste water treatment plant before disposal to evaporation pond. Appendix C indicates waste water qualitative and quantitative data for the period under review.
3	<i>Waste generation and management</i>	None	Solid waste managed through onsite land fill for Bio degradable and household waste. Recyclable waste provided to recycling contractor. Solid waste record indicated in Appendix-D for the period under review.
4	<i>Noise and vibration</i>	Plant high noise areas highlighted	Plant noise monitoring data (ambient & occupational noise levels) indicated in Appendix-E. Issue of high noise levels around plant equipment is also explained in Appendix-E.
5	<i>Occupational health and safety</i>	None	Monitoring of Health & Safety Key performance Indicators by Uch-II in place. Well-equipped UPL Site medical center with Medical officer and 02 nurses available 24/7 for medical treatment & emergencies. Annual medical surveillance program for UPL employees in place.
6	<i>Community safety and security</i>	None	Community safety during road travel is ensured through driver's awareness and training program. The non-local staff within the boundary wall of power plant sensitized for taking care of local norms and customs and avoiding unnecessary interaction with local community.
7	<i>CO₂ emissions by the Project</i>		CO ₂ emissions data indicated in Appendix-B for the period under review. Methodology for computation of the CO ₂ produced by the plant is provided in the Appendix-B)
8	<i>Environmental and Social Management Plan, including IFC E&S Action Plan (September 29, 2010)</i>		Project H&S plan and EMP implementation and monitoring maintained throughout project phase. Attached Appendix-F summarizes the compliance status of mitigation measures for E&S plan for Operational Phase for the period under review. (Ref Table 4-2 of EIA and Table 6-3 of EMP, both tables integrated into Appendix-F to avoid repetition of issues)

I Summary Assessment of Client Performance and Recommendations

Project Commercial Operation commenced on April 4, 2014 after completion of Reliability Run Test on April 3, 2014. Total Power Generation for the period under review remained 695.23 GWh.

Areas of concern:

- High noise around some plant equipment.
- Waste water treatment (RO Plant) commissioning in progress by EPC and not yet handed over to O&M. The issue has been taken up with EPC contractor as post COD major rectification items

Positive Achievements:

Uch-II completed its first 01 million safe man hours without LTI in December 2015. There were no employees or contractors Lost Time Incident recorded during the quarter. No environmental incident is reported in the period under review.

HSE site monitoring walks, Permit to work audits and housekeeping inspections carried out as per plan. EPC Contractors' activities were closely monitored to ensure compliance with health & safety plan and procedures. Firefighting equipment monthly inspections, weekly fire drills, tool box talks, fresh eyes observations, point of work risk assessments carried out. No other significant Environmental & Social issues to report.

Acronyms

BEPA	Balochistan Environmental Protection Agency
CCR	Central Control Room
COD	Commercial Operation Date
CO ₂	Carbon Dioxide
dB	Decibel
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
PEPA	Pakistan Environment Protection Agency
EPC	Engineering Procurement Construction
ESAP	Environment and Social Action Plan
E&S	Environmental and Social
GOB	Government of Balochistan
GOP	Government of Pakistan
GWh	Giga watt hours
HRSG	Heat Recovery Steam Generation
HSD	High Speed Diesel
HSE	Health Safety & Environment
H&S	Health and Safety
m ³	Cubic Meter
MSDS	Material Safety Data Sheet
MW	Mega Watt
NEQS	National Environment Quality Standards
NOC	No Objection Certificate
OGDCL	Oil and Gas Development Company Limited
O&M	Operation and Maintenance
pH	Hydrogen Ion Concentration
PPE	Personal Protective Equipment
PTW	Permit to Work
RA	Risk Assessment
RO	Reverse Osmosis
SOP	Standard Operating Procedure
SS	Sub Station (Electrical)
ST	Steam Turbine
TBT	Tool Box Talk
Uch-I	Uch Power Station
Uch-II	Uch-II Power (Private) Limited
WHO	World Health Organization

Appendix-A **Uch-II Site Monitoring Summary Q4-2015**
Corrective Actions

Monitoring Conducted by	Uch-II Staff
Corrective Actions By	Uch-II Maintenance & Operation Departments

S. No	Findings	Corrective Actions	Compliance Status (as of Dec 31, 2015)
01	At water treatment area, leakage observed from a carboy containing paint. The carboys were placed without secondary containment.	Paint shifted to another carboy, area was cleaned and contractor is instructed to place the carboys over secondary containment.	Completed
02	A big size reptile fell into the neutralization pit and suspected entry route found the drain channel coming from Demin building. At few points there are openings in channel since the slabs are not properly fitted over and misaligned.	Rectification done. Openings in the drain channels are sealed and slab covers properly fitted over the drain channels.	Completed
03	HSD main storage tank, the floor of the secondary containment bund is having parting planes from where HSD (in case of spillage) can go down to soil.	The gaps between parting planes closed and sealed by cement work.	Completed
04	While the work on NaOCl piping was in progress, a contractor worker found without wearing chemical gloves.	The work is stopped temporarily and tool box talk conducted with working party over the importance of PPEs at work.	Completed
05	A metallic drum placed at the top platform of HRSG was being used as a waste bin.	Drum removed from the area and maintenance team is informed to place waste skip (if required in the area.)	Completed
06	Wind Sock installed at fuel gas station area found deteriorated and damaged.	Wind sock replaced with new one.	Completed
07	Access door of raw water pond found open, door should be locked to restrict the un-authorized entry.	Notified to Operation staff and door locked.	Completed
08	House Keeping of raw water pumping station area is required.	Housekeeping performed.	Completed
09	HSD leakage observed from HSD pipeline passing through a trench in front of GT-02 near HSD heaters.	Drain valve of HSD line inside the trench was identified malfunctioned. Drain valve was made corrected and dead plug was also installed to prevent the recurrence of such leakage in future.	Completed

10	Exposed battery terminals of fire water pump require the cover or rubber caps.	Rubber caps provided over exposed battery terminals.	Completed
11	Wild growth (dry bushes) present at waste water treatment area and required removal.	Wild growth removed	Completed
12	Emergency exit door inside CCR first floor found locked.	Door locked open and asked maintenance team for arrangement of door panic bars.	Completed
13	Waste water treatment area, no MSDS is available at Acid and Anti-scalant tank.	MSDS pasted over the tanks	Completed
14	A dry powder fire extinguisher installed at Gate # 3 found depressurized.	Replaced with Pressurized one.	Completed

Appendix-B

Period Q-4 2015

Fuel Type: Low Btu Gas

GTs Stack Emissions

Stack Emissions	Units	Average GT-1	Average GT-2	Average Both GTs	Limits
Exhaust Temp.	°C	119	118.3	118.6	NEQS
Particulate Matter	mg/Nm ³	9.0	1.14	5.07	500
SO ₂	mg/Nm ³	0.40	0.82	0.61	400
SO ₂	Metric ton/d			0.01	100
NO _x	mg/Nm ³	63.76	64.37	64.06	400
NO _x	lb/MMBTU			0.11	0.2

CO₂ Produced

	Unit	Monthly Average	Total Quantity
CO ₂ Produced (including CO ₂ in fuel gas)	[Tonnes]	181,588.13	544,764.4
CO ₂ Produced (excluding CO ₂ in fuel gas)	[Tonnes]	101,939.24	305,817.74

CO₂ Calculation Methodology

- 1.0 Monthly average Natural Gas quality data is obtained from Gas chromatograph indicating Natural gas constituents in %age.
- 2.0 Mole fraction of constituents is calculated and CO₂ weight is obtained.
- 3.0 The monthly gas consumption data is obtained from flow computers available at gas station in MMBTU.

Typical monthly computation data is as follows;

Data from Gas Chromatograph		
Gas Constituents		Moles %
Carbon Dioxide	CO ₂	36.00976667
Nitrogen	N ₂	20.44097333
Methane	CH ₄	41.68367
Ethane	C ₂ H ₆	1.11432
Propane	C ₃ H ₈	0.41803
I-Butane	C ₄ H ₁₀	0.11367
N-Butane	C ₄ H ₁₀	0.121
I-Pentane	C ₅ H ₁₂	0.03967
N-Pentane	C ₅ H ₁₂	0.0300
Hexane	C ₆ H ₁₄	0.0200
Molar Total	----	100.0

Manual Calculations					
Molecular weight	Fraction of Gas Mole	Wt	Moles of CO ₂ Generated	Wt of CO ₂	
44.0098	0.360098	15.847826	44	15.84430	
28.01348	0.204410	5.726228	0	0.00000	
16.04276	0.416837	6.687211	44	18.34081	
30.06964	0.011143	0.335072	88	0.98060	
44.09652	0.004180	0.184338	132	0.55180	
58.1234	0.001137	0.066069	176	0.20006	
58.1234	0.001210	0.070329	176	0.21296	
72.15028	0.000397	0.028620	220	0.08727	
72.15028	0.000300	0.021645	220	0.06600	
86.17716	0.000200	0.017235	264	0.05280	
	0.9999	28.984573		36.3366	Incl CO ₂ in gas
				20.4923	Excl CO ₂ in gas

Heating values

Constituents	HHV (dry) MJ/kg	LHV (dry) MJ/kg	HHV (dry)	LHV (dry)
Carbon Dioxide	0	0	0	0
Nitrogen	0	0	0	0
Methane	55.4850	49.9995	371.0400	334.3574
Ethane	51.8645	47.4742	17.3783	15.9073
Propane	50.3414	46.3418	9.2798	8.5426
Isobutane	49.5135	45.7279	3.2713	3.0212
N-Butane	49.5135	45.7279	3.4823	3.2160
Isopentane	48.9996	45.3419	1.4024	1.2977
N-Pentane	48.9996	45.3419	1.0606	0.9814
Hexanes	48.6694	45.0907	0.8388	0.7772

407.7535 368.1007 MJ/mole of gas
 MJ/kg MJ/kg
 14.06795 12.69988

For calculating CO₂ emissions the following formula is:

$$\text{CO}_2 \text{ Tons} = \frac{\text{Gas Consumed MJ} / \text{LCV (MJ/Kg)} \times \text{Total wt of CO}_2}{(\text{Molecular wt of Gas Kg} \times 1000)}$$

Whereas 01 MJ = 1055.056 x MMBTU

If we have consumed Natural Gas = 1,830,729.00 MMBTU than Natural Gas than Total CO₂ Generated including CO₂ in Gas will be 190,667.7481 Tons and 107,528.5354 Tons excluding CO₂ in gas.

Energy Usage

Parameters	Units	Oct-15	Nov-15	Dec-15
Fuel gas consumed	m ³	107,560,100.89	102,458,539	106,531,916.43
Hours of Operation	Hours	673.15	715.98	709.73

Ambient Air Quality Data

Parameters	Units	Monitoring Location: Uch Power Station	NEQS Limits
		24 Hours Average Concentration	
CO	mg/m ³	6.2	5 mg/m ³ (limit for 8 hours)
NO	μg/m ³	7.4	40 μg/m ³ (limit for 24 hours)
NO ₂	μg/m ³	0.1	80 μg/m ³ (limit for 24 hours)
SO ₂	μg/m ³	4.1	120 μg/m ³ (limit for 24 hours)
PM (10)	μg/m ³	23	150 μg/m ³

Annual Vehicle Exhaust Emissions

Parameter	Units	NEQS Limit	Vehicle #						
			CU-0636	PVA-013	PVA-014	PVA-015	PVA-016	PVA-017	Forklift
CO	%	06	0.01	0.03	0.01	0.02	0.02	0.02	0.01
Smoke	Percentage	40 %	16.10	18.70	11.50	4.50	10.70	4.10	23.80
Noise	dB (A)	85	79	72.8	73	71.3	72.4	73.8	83.4

Heavy Metals Emissions

Stack's heavy metal emission test results shall be provided in Environmental and Social Monitoring Report of Q-1, 2016.

Appendix-C

Q4-2015

Cooling water

Location: Cooling tower discharge point

Parameters	Units	Oct-15	Nov-15	Dec-15	NEQS Limits
Temp	°C	31	30	28	40
pH	pH	8.3 - 8.37	8.25 - 8.35	8.28 - 8.4	6 to 10

Sewage Treatment Plant

Location: Sewage treatment discharge point

Parameters	Units	Oct-15	Nov-15	Dec-15	NEQS Limits
pH	pH	7.46	7.86	7.65	6 to 10
TSS	mg/liter	30	12	16	150
BOD	mg/liter	18	22	2.8	80
COD	mg/liter	30	21	28	150

Process Water Treatment Plant

Closed Cooling Water (CCW)

Parameters	Units	Oct-15	Nov-15	Dec-15	NEQS Limits
pH	pH	8.8 - 9.87	9.1 - 9.12	9	6 to 10
TSS	mg/liter	1	1	1	150
Cl-	mg/liter	< 1	< 1	< 1	1000
Metals (Fe)	ppb	37 - 500	115	177 - 195	

Heat Recovery Steam Generator # 1 (HRSG-1)

Parameters	Units	Oct-15	Nov-15	Dec-15	NEQS Limits
pH	pH	9.44 - 9.78	9.5 - 9.72	9.47 - 9.72	6 to 10
TSS	mg/liter	< 1	< 1	< 1	150
Cl-	mg/liter	< 1	< 1	< 1	1000
Metals (Fe)	ppb	12	7	9	

Heat Recovery Steam Generator # 2 (HRSG-2)

Parameters	Units	Oct-15	Nov-15	Dec-15	NEQS Limits
pH	pH	9.51 - 9.74	9.45 - 9.72	9.35 - 9.72	6 to 10
TSS	mg/liter	< 1	< 1	< 1	150
Cl-	mg/liter	< 1	< 1	< 1	1000
Metals (Fe)	ppb	12	7	11	

Discharge Point RO Reject

Parameters	Units	Oct-15	Nov-15	Dec-15	NEQS Limits
pH	pH	RO Plant out of service / Under commissioning			
TSS	mg/liter				
Cl-	mg/liter				
Metals (Fe)	ppb				

Evaporation Pond

Location: Effluent flowing to evaporation pond

Parameters	Units	Oct-15	Nov-15	Dec-15	NEQS Limits
BOD	mg/liter	0.1	0	0.2	80

COD	mg/liter	27	9	25	150
Cl-	mg/liter	276	208	212	1000
metals (Fe, Zn)	mg/liter	1.78, 0.05	1.6, 0.02	1.34, 0.05	Fe 8.0 & Zn 5.0
Temp	°C	27	28	22.5	40
pH	pH	8.42	8.28	8.1	6 to 10
TSS	mg/liter	18	18	40	150
Oil & grease	mg/liter	1.78	0	0	10

Surface Drains

Location: Within 100m of turbines, WTP, Workshops /stores, oil water separator discharge

Parameters	Oct-15	Nov-15	Dec-15
Appearance & condition of oil & grease	No water in drains	No water in drains	No water in drains

Water Usage

Location: Pat Feeder Canal intake point

Water usage (m ³)	Oct-15	Nov-15	Dec-15
	355,025	260,315	200,987

Appendix-D

Q-4 2015

Uch-II Waste Generation Statistics				
Waste Type	Unit	Oct-15	Nov-15	Dec-15
Used oil	Ltr	48	50	33
Metal	Kg	32	15	9
Paper/ Plastic/ Glass	Kg	262	52	65
Wood & Food Waste	Kg	514	400	298
Oil Filters & Oily Rags	Kg	36	15	25
Used Batteries, wet/dry cells	Nos	6	2	4
Old Tyres	Nos	0	0	2

Appendix-E

Occupational Noise Monitoring		Q4-2015	
S. No	Noise Monitoring Location of Equipment	Guarantee Limits (dB) A	Average Noise Monitoring Results (dB)A
01	East side of pump "A" at Raw Water Pumping Station	85	82.9
02	South Side of potable water supply pump "A"	85	81.3
03	South Side of CT Basin Makeup Pump "A"	85	80.9
04	South side of Hot Well make up pump "B"	85	77.1
05	East side of Service Water pump "A"	85	86.0
06	North Side of CT at ground level close to cell #02	85	86.2
07	North Side of CT at ground level close to cell #04	85	86.5
08	North Side of CT at ground level close to cell #06	85	86.2
09	South Side of CT at ground level close to cell #08	85	82.1
10	East Side of Cooling Tower fan motor # 6(10PAB01-AN006)	85	84.9
11	East Side of Cooling Tower fan motor # 8 (10PAB01-AN008)	85	85.0
12	East Side of Fire water pump house with door close & Diesel pump Running	85	87.3
13	North Side of Fire water pump house with door close & Diesel pump Running	85	65.8
14	West side of HSD Decanting point # 3	85	63.4
15	North Side of HRSG-2 main stack	85	74.0
16	North side of GT -2 Generator	85	80.4
17	South side of GT -2 turbine combustion chamber	85	82.3
18	North side of GT -2 PEECC	85	72.2
19	South side of boiler feed pump "B" (HRSG-2)	85	86.4
20	South side of boiler feed pump "A" (HRSG-2)	85	88.0
21	South side of GT -1 PEECC	85	73.6
22	South side of GT -1 turbine combustion chamber	85	81.9
23	West side of GT -1 Generator	85	85.0
24	South side of GT -1 turbine compartment (shaft) entrance door	85	90.2
25	North Side of HRSG-1 main stack	85	75.5
26	West side of HRSG-1 at bottom close to HRSG duct entrance	85	87.0
27	West Side of Cooling water pumping station	85	84.0
28	West Side of CW pump "B" in cooling water pumping station	85	86.8
29	North Side of CW pump "B" in cooling water pumping station	85	86.4
30	West Side of CW pump "C" in cooling water pumping station	85	88.8
31	North Side of CW pump "C" in cooling water pumping station	85	87.2
32	West Side of Auxiliary CW pump # 1 in cooling water pumping station	85	88.5
33	East Side of Auxiliary CW pump # 1 in cooling water pumping station	85	96.7
34	West Side of Auxiliary CW pump # 2 in cooling water pumping station	85	84.0
35	East Side of Auxiliary CW pump # 2 in cooling water pumping station	85	91.0
36	North Side of CCW pump "B"	85	81.2
37	North Side of CCW pump "A"	85	81.7
38	North Side of instrument Air Compressor "A"	85	82.3
39	East Side of instrument Air Compressor "B"	85	84.1
40	North Side of instrument Air Compressor "B"	85	83.6
41	North Side of Boiler Feed Pump # 1 at HRSG-1 Bottom	85	87.0
42	East side of Steam Turbine	85	86.0
43	West side of Oil cooler in lube oil console skid for STG	85	88.0
44	West side of Steam Turbine	85	89.0
45	Waste Water Treatment plant near pump station	85	54.9
46	North Side of workshop	85	55.1
47	West side of HRSG-2, duct entrance	85	85.0
48	South Side of EDG (Off Position)	85	79.0

High Noise Around Plant Equipment:

Higher noise levels pertains to BOP (Balance of Plant) equipment including cooling water pumps and auxiliary cooling water pumps etc. The matter of high noise has already been taken up with EPC Contractor. The high noise levels have not been accepted by owners and Currently the matter is taken up with EPC contractor for demonstrating noise levels acceptable as per contract and National Environmental Quality Standards. The matter is still unresolved and pending with EPC contractor. Mitigation measures like in house awareness and high noise signage posted on all areas. All employees have ear muffs and ear plugs available as basic personal protective equipment.

Ambient Noise Monitoring		Q4-2015	
S. No	Noise Monitoring Locations	Guarantee limits	Average Noise Monitoring Results (dB)
1	Main gate Uch-II	70 (dB) A	51.9
2	Check Post # 3 (at boundary wall)	70 (dB) A	48.2
3	Check Post # 5 (at boundary wall)	70 (dB) A	48.4
4	Check Post # 7 (at boundary wall)	70 (dB) A	50.1

Compliance Status of EMP Control Measures Q4-2015

Appendix-F

Uch-II Project

Environmental / Social Impacts	Control & Mitigation Measures	Monitoring Frequency	Responsibility	Compliance Status
Air Emissions	<ul style="list-style-type: none"> - Stack emissions monitoring in place through CEMS (Continues Emission Monitoring System) - Annual third party stack emissions and ambient air quality testing - Monitoring compliance with National Environmental Quality Standards 	<ul style="list-style-type: none"> - Monthly - Annually 	Uch-II O&M team	Complied
Plant Noise	<ul style="list-style-type: none"> - Noisy equipment are placed inside the acoustic enclosure - Availability of silencers at intake and exhaust channels - Plant routine noise monitoring in place - High noise areas are identified and high noise signage displayed to enhance awareness 	Monthly	Uch-II O&M team	Complied
Waste Water	<ul style="list-style-type: none"> - Uch-II is zero liquid discharge facility - Waste streams generated from plant (sanitary waste water, cooling tower blow down, demin regeneration waste water, oily waste water etc.) disposed off into onsite evaporation pond after required treatment - Waste water sampling, analysis and test record being maintained - Compliance monitoring and reporting in place 	Daily	Uch-II O&M team	Complied
Water Sourcing	<ul style="list-style-type: none"> - Fresh surface water sourced from Pat Feeder Canal as per project design and irrigation permits from Government of Balochistan. - Water consumption monitoring on monthly basis - Water conservation – Reuse from waste Reverse osmosis Plant. (waste water plant not yet handed over to O&M by EPC) 	Applicable after RO plant handover	Uch-II O&M team	After RO plant handover
Hazardous Materials	<ul style="list-style-type: none"> - Segregation of hazardous waste - Separate storage area for hazardous wastes - Hazardous waste disposal through waste contractor - Hazardous waste quantification on monthly basis and record being maintained - Regular inspection of storage areas 	Monthly	Uch-II O&M team	Complied
Solid Waste Management	<ul style="list-style-type: none"> - Waste Management Procedure in place - Color coded waste bins available at different plant locations for different waste types - Designated land fill area for disposal of food / kitchen waste - Non Hazardous waste quantification on monthly basis and record being maintained 	Monthly	Uch-II O&M team	Complied

Occupational Health and Safety				
Electrical Hazards	<ul style="list-style-type: none"> - Permit to work / Lock out Tag out procedure in place. All electrical isolations are ensured before performing any activity on energized systems - Access to high voltage areas (electrical substations, 220 KV switchyard, panel rooms etc.) is controlled - Electrical safety signage displayed in respective areas to enhance the risk awareness of staff 	Ongoing on regular basis	Uch-II O&M team	Complied
Confined Space Entry	<ul style="list-style-type: none"> - Identification of all confined spaces at plant - Confined Space entry procedure in place covering all confined space associated risks and control measures - Regular confined space training sessions with staff - Training sessions on Responsibilities of Standby Man 	Ongoing on regular basis	Uch-II O&M team	Complied
Machine Guarding	<ul style="list-style-type: none"> - Moving and rotating parts of plant equipment are properly guarded to eliminate the risk of entanglement and injury - Permit to work / Lock out Tag out procedure in place to ensure the safety of staff working in plant equipment - All kinds of plant and machinery inherent dangers to workers are mitigated through engineering controls and safety devices 	Ongoing on regular basis	Uch-II O&M team	Complied
Eye Head and Foot Protection	<ul style="list-style-type: none"> - Mandatory and Job specific personal protective equipment are provided to all staff and contractors working at plant - A procedure for provision, use & maintenance of PPEs in place - Open toe shoes are not allowed inside the plant area - PPEs awareness signage displayed at prominent locations at plant - Regular monitoring of PPEs compliance - Contractors and visitors safety induction program in place 	Ongoing on regular basis	Uch-II O&M team	Complied
Fire and Explosion Hazards	<ul style="list-style-type: none"> - Portable fire extinguishers are available throughout the plant area and buildings as per design layout and clearly identifiable - Inspection of fire extinguishers on monthly basis - Fire water system composed of fire water storage tanks, fire water pumps, fire water ring main (hydrants, monitors) available as per design and clearly marked - Emergency exits are well marked luminaries - Emergency response plan in place - No smoking policy in place 	Ongoing on regular basis	Uch-II O&M team	Complied
Housekeeping	<ul style="list-style-type: none"> - Regular housekeeping drives program in place - Regular safety walks and housekeeping inspections - Lock out Tag out procedure in place 	Ongoing on regular basis	Uch-II O&M team	Complied

Chemical Exposure	<ul style="list-style-type: none"> - Respirators are made available to staff works in chemical areas Regular inspection of work areas and storage areas to detect any leakages/ spillage - Safe movement of chemicals and fuels - Spill emergency response procedure 	Ongoing on regular basis	Uch-II O&M team	Complied
Noise Levels	<ul style="list-style-type: none"> - Provision of ear defenders (ear muff, ear plugs) to staff - High noise safety signage displayed around noisy equipment to enhance awareness - Awareness session with workers on High Noise Risks and Control Measures 	Ongoing on regular basis	Uch-II O&M team	Complied
Heat Related Stress / Illness	<ul style="list-style-type: none"> - Provision of cooling neck bands to employees, shaded rest areas for workers and cold drinking water facilities during summer season - Rest break system is ensured during works in hot weather - Heat Stress awareness session with staff 	Ongoing on regular basis	Uch-II O&M team	Complied

Mitigation Measures – Photographs

Noise Signage at High Noise Equipment and Areas



Color Coded Waste Bins at different plant location



Safety Awareness Signage (PPEs, Housekeeping, Chemicals and Electrical Hazards)



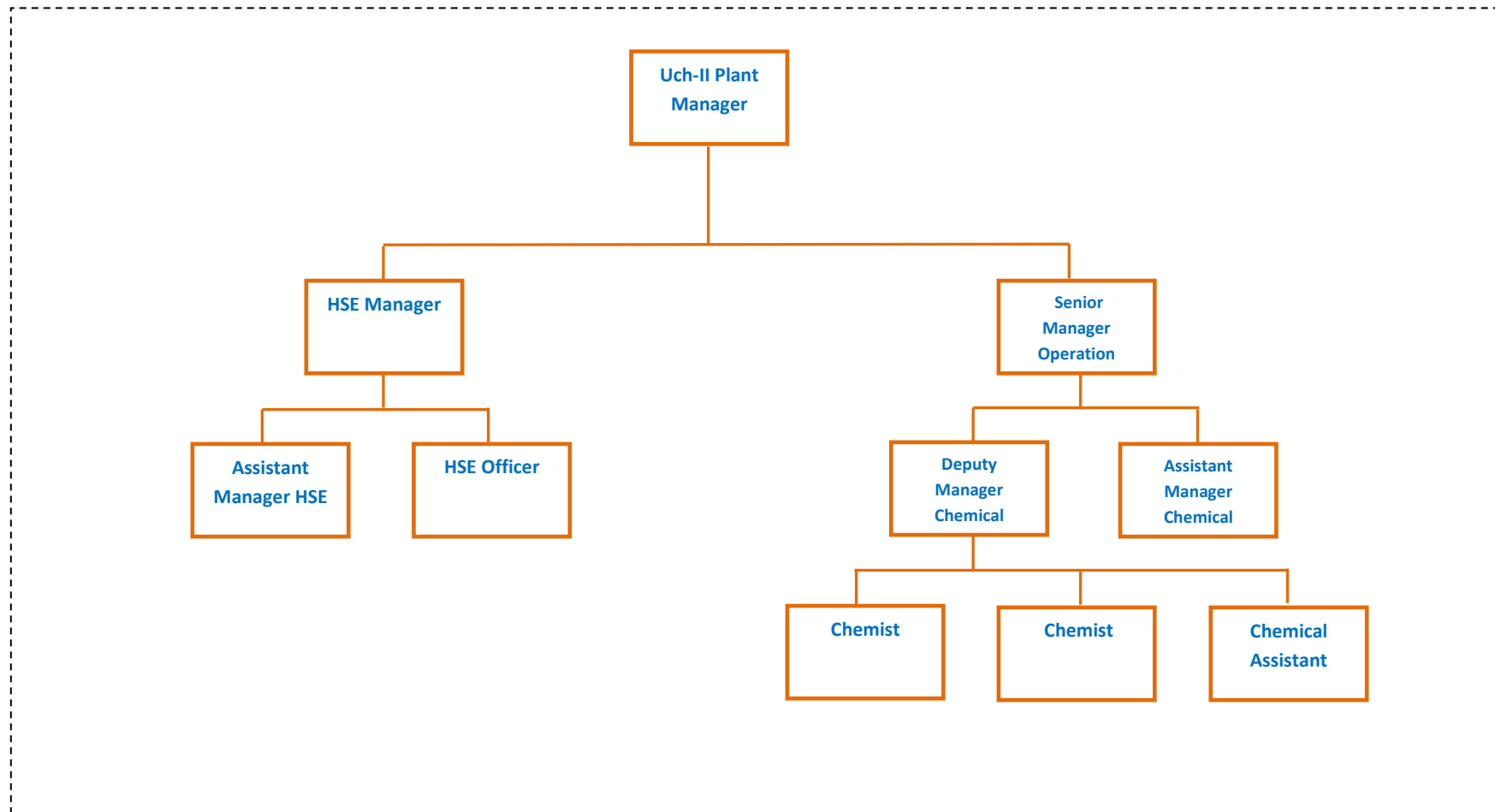
Fire Equipment at Plant and Emergency Exits



Appendix-G

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

Uch-II Environmental Team - Organization Structure



Total Dedicated members	08
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Appendix H

Attention: MR FIDA KHAN SB
MAG USE
OFFICE OF THE DIRECTOR GENERAL BALUCHISTAN
ENVIRONMENTAL PROTECTION AGENCY
GOVERNMENT OF BALUCHISTAN
SAMUNGLI ROAD QUETTA



Office: 081-9201840 Fax: 081-9201180 Email: epa_baluchistan@yahoo.com
No. DG (EPA)/ 4688 /2014 Dated: 22-04- /2014

To,

Mr. Babar Saeed Khan,
Construction Manager
48, Khayabar-e-Iqbal, Main Margalla Road
F-7/2 Islamabad-400 Pakistan
Tel: - +92512654901-4, Fax:-+92512654905

Subject;- Request for Confirmation of Compliance under BEPA
IEE/EIA Regulation 2000.

With reference to your letter No.2.7.8/(BEPA)/Corr dated 18th January, 2014 and to convey the approval of this Agency for the commencement of operation and commissioning of Combined Cycle subject to the conditions as already conveyed vide letter No. DG(EPA)/ 6269-72 dated 09-12-2010.

2. Furthermore, under section 14(1) of IEE/EIA Regulations, 2000, the proponent is supposed to submit regular auditing and reporting in order to mitigate and manage the environmental impacts for the life of project.


(Naseer Khan Kashani)
Director General

Master file.

Incoming

Sent To:	PM, BS, FK, RI		
Date Received	22-04-14		
Mail Reg. No.	98 LAU		
File No./Divider Name			
Doc. to be Archived	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Fax <input checked="" type="checkbox"/>	Doc. <input type="checkbox"/>	Sealed <input type="checkbox"/>	
Forwarded to			
Forwarded from			

Apr. 22 2014 02:27PM P1

FAX NO. : 9202484

FROM : A