Environmental and Social Monitoring Report

Project Number: 43903-014 (Loan 2722)
March 2020

PAKISTAN: Uch-II Power Project
ENVIRONMENTAL AND SOCIAL MONITORING REPORT (FY-2019)

Prepared by UCH-II POWER (PRIVATE) LIMITED.

OPERATIONAL PHASE

ENVIRONMENTAL AND SOCIAL MONITORING REPORT

FY-2019

(January 01, 2019 – December 31, 2019)

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A	Project/Business Name and Summary Information	
	Development of 404 MW Gas Fired Combined Cycle Power Plant by Uch-II Power (Private) Limited	
(i)	*Location of project/business*	Dera Murad Jamali, Baluchistan, Pakistan
(ii)	*Nature*	Operation & Maintenance of low BTU gas fired combined cycle power plant.
(iii)	*Scale/size*	404 MW (ISO Gross Rating) 2 Gas Turbines x 01 Steam Turbine
(iv)	*Date of construction/operation commencement*	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)	*Name, designation and signature of person responsible for preparing/reviewing the report*	Fida Muhammad Khan, Manager HSE Uch-II / Waseem Ellahi Plant General Manager
B	**Relevant Environmental Permits or Compliance Certificates**	
(i)	*Summary of permit conditions & media(s) covered*	"No Objection Certificate issued by BEPA"
(ii)	*Issue by which government Agency*	Baluchistan Environmental Protection Agency (BEPA)
(iii)	*Issuance date and duration of validity*	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)	*Renewal requirements*	None
C	**Incidents of Violations or Non-Compliance**	
(i)	*Recorded date and responsible agencies*	None in Year 2019
(ii)	*Nature of non-compliance*	No reportable incident to authorities recorded during year 2019
(iii)	*Violation or non-compliance based on what environmental standards and regulations*	N/A
(iv)	*Recorded dates and authorities*	During the year 2019, EHS related observations of minor nature recorded during routine site monitoring. Log with corrective actions attached as Appendix A.
(v)	*Media or community reactions (if any)*	None in year 2019
(vi)	*Corrective actions, deadlines, identification of responsible parties*	Short term corrective actions identified through regular site H&S walks. Please refer to Appendix A.
	(a) short--term: remedial action	Please refer to Appendix A
	(b) long-term: preventative measures	None in year 2019
D	**Incidents of Environmental and Safety Accidents**	
(i)	*Incident recorded dates and responsible agencies,*	a) On 3rd June 2019 about 11:35 Hrs, fire alarm appeared Zone 4 SS-14 in CCR on fire protection panel. Immediately instructed to field supervisor to visit the location. Meanwhile inform to fire team leader. At SS-14 heavy smoke found when door was slightly opened. Main supply breaker from SS-11 (11BCA01GS003) opened from DCS and rack out locally so supply cut off towards SS-14. Fire and electrical teams arrived at location and opened all doors of SS-14. Take necessary actions by Fire and EMD team. It was found that cable terminations (power& control supplies) of distribution feeder for waste water pump 1 (14BJA01GS0023) heat up which caused mild smouldering & smoke, SS-14 ventilated and area cordon off to avoid unauthorised entry. Area cleared by fire team at 12:20 hrs. Work order raised to EMD for inspection, cleaning and fault rectification of 14 BJA MCC in SS-14. Attached Appendix-L describes Health Safety & Environmental Leading and Lagging indicators.
(ii)	*Scale of damage and injury (if any)*	a) Motor cables got heated up and burnt, whereas motor was found out to be in healthy condition. Feeders for waste water pump-1 and filter feed pump-2 disconnected and removed for repairing.
(iii)	*Authorities in charge of investigation/recording*	Uch-II Management responsible for recording and investigation.
(iv)	*Media or community reactions (if any)*	None in year 2019

(v)	*Corrective actions, deadlines, identification of responsible parties*	None in year 2019
	(a) short--term: remedial action	None in year 2019
	(b) long-term: preventative measures	None in year 2019
E	**Labour Relations and Conditions**	
(i)	*Nature of labour dispute or grievance*	None in year 2019
(ii)	*Legal requirements, Permit conditions and renewal requirements*	None in year 2019
(iii)	*Authorities in charge of investigation/recording*	Uch-II Management responsible for recording and investigation.
(iv)	*Media or community reactions (if any)*	None in year 2019
(v)	*Corrective actions, deadlines, identification of responsible parties*	N/A
(vi)	*Labour relations and living conditions for construction labour force*	Project construction phase is completed and all EPC labour demobilized.
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 Senior Manager Operations (iii) 01 Manager Operations (iv) 01 Deputy Manager Chemical (Effluent treatment, analysis & Spill Response) (v) 01 Assistant Manager HSE (vi) 01 HSE Officer (vii) 02 Senior Chemists (Effluent treatment, analysis & Spill Response) (viii) 01 Chemical Assistants (Effluent treatment & Spill Response) (ix) 01 Manager Admin / PR (x) 01 Manager Colony & Security (xi) 01 Deputy Manager HR • Dedicated total 12 Personnel • Overall organizational structure of Uch-II O&M Environmental and social team and Health & Safety 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*	Training and awareness sessions on Integrated Management Systems – IMS", Work At Height Related Hazards, Point Of Work Risk Assessment (Take-5), Stand By Man (SBM) for Confined Spaces, UPL Safety Rules Training Session, Road and Vehicle Safety", Heat Related Illness" and IOSH Managing Safely, First Aid Refresher Training, IOSH Working Safely and Confined Space Procedure awareness session were carried out with O&M and Contractor staff. • Pre Job TBTs conducted on regular basis. • Weekly Fire drills performed by O&M Team • Pre Job Point of Work Risk Assessment conducted on regular basis.
(iv)	*Needs assessment of environmental management capacity (as relevant)*	All positions filled as per O&M staffing plan.
(v)	*Compliance audits carried out*	Surveillance Audit of ISO 14001 was conducted by 3rd party in year 2019 Corporate Environmental Audit was conducted by 3rd party in year 2019
G	**Stakeholder Consultation/CSR Activities**	
(i)	*Details of consultations, if any, with local communities, nongovernmental organizations, civil society groups, and*	Uch (Uch I and Uch II) has a robust CSR program in place for the welfare of local community. The program is focused towards health, education, promotion of sports and relief efforts during natural calamities. Every year, Uch continues to fund its recurring initiatives to sustain its CSR investments besides undertaking new projects

	other stakeholders, including affected people	to ensure continued development of the area. Multiple stakeholders were engaged in 2019 for execution of CSR initiatives. These stakeholders included The Citizens Foundation (nonprofit organization), District Health Department, Layton Rahmatulla Benevolent Trust (NGO), District Cricket Association Nasirabad, District Football Association Nasirabad, District Administration office and educational institutes.
(ii)	*Describe efforts to promote community relations and local development for inhabitants of the project area.*	No communities located in the vicinity of the project had to migrate or were affected by the setup. In 2019, Uch spent in excess of US$ 320,000 on its CSR initiatives. During the year, Uch continued to support its flagship programs, which include: 1. Three (3) Primary and one (1) Secondary schools built in collaboration with The Citizens Foundation (TCF) that have an enrollment of over 1,500 students from Dera Murad Jamali (DMJ) and adjacent areas. 2. A fourteen (14) bed fully equipped modern Emergency Care Center at the DHQ Hospital, Dera Murad Jamali. 3. Twelve (12) water filtration plants that provide clean drinking water to over thirty thousand (30,000) people daily. 4. Trainee program where students get an opportunity to hone their skills at the power station. Currently eighteen (18) trainees are enrolled in the program. Separately an agreement for establishment of Community Eye Health Center (CEHC) at the District Headquarter (DHQ) Hospital DMJ was signed between Uch and Layton Rahmatulla Benevolent Trust (LRBT), a non-governmental organization (NGO) fighting blindness in Pakistan. Under the three year agreement, CEHC is providing free eye treatment to the local community including checkups, medicines and surgeries. Over three thousand (3,000) patients visited the clinic for free check ups and two hundred ninety two (292) free surgeries were performed at the nearest LRBT facilities. Uch also provided free transportation for the surgeries. Uch organized a two day free medical camp in District Headquarter (DHQ) Hospital Dera Allah Yar and DHQ Hospital DMJ in which over 1,500 (fifteen hundred) underprivileged members of the local community received free check ups and medicines. The camps were organized in collaboration with District Health Department and the medical staff (including 06 doctors and 03 paramedics) was engaged from the reputed Agha Khan University Hospital. Local district officials, representatives from the district health department and media were present during the camps. Uch carried out renovation of district cricket and football grounds and donated chairs and benches for the sitting area of the cricket ground. As part of its recurring initiatives, like previous years, Uch also sponsored the annual sports tournaments including inter district and inter school sports competitions in District Nasirabad. The sports competitions witnessed a big turnout and they were highly appreciated by the local community. Uch upgraded water drinking and sanitary facilities of four (4) local schools and colleges to improve the learning conditions for students and donated classroom and laboratory furniture to Girls Inter College besides six (6) water coolers to TCF Uch schools. Uch continued its need based higher education scholarship program for Balochistan domiciled students. Under this initiative, thirty seven (37) students enrolled in Bolan Medical College, BUET Khuzdar and IBA Sukkur were awarded scholarships. Uch is in the process of developing a 12 bed female ward in the DHQ Hospital DMJ. The facility layout development and workflow designing has been done after a comprehensive needs assessment. The construction will be carried out in 2020 and 2021
(iii)	*Project procedures for (a) hiring and (b)*	UPL prefers hiring human resource from local area at all levels. Attached Appendix-I provided the local - Balochistan staff ratio at UPL site (including

	acquisition of goods and services	O&M employees & contractors staff).	
(iv)	*Provide List of grievances and status of grievance resolution*	None in year 2019	
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	Gas Turbines Stack emissions monitored through CEMS. Air Emissions data (HRSGs stacks) for year 2019 is attached as Appendix-B. Results of ambient air quality and annual vehicles exhaust emission testing for year 2019 are being provided as an Appendix-B.
2	*Water (surface and ground water)*	None	Overall compliance with EMP (as applicable against specific parameters) in place. Attached is Appendix C, indicating water consumption data for year 2019. Waste water generated is treated at water treatment plant and waste water treatment plant before disposal to evaporation pond. A brief description of waste water treatment is provided in Appendix C. Attached Appendix C-I indicate waste water qualitative and quantitative data for year 2019.
3	*Waste generation and management*	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 year 2019.
4	*Noise and vibration*	Plant high noise areas highlighted	Plant noise monitoring data (ambient & occupational noise levels) for year 2019 is indicated in Appendix-E.
5	*Occupational health and safety*	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	*Community safety and security*	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	*CO_2 emissions by the Project*		CO_2 emissions data indicated in Appendix-B for year 2019. Methodology for computation of the CO2 produced by the plant is provided in the Appendix-B).
8	*Environmental and Social Management Plan, including IFC E&S Action Plan (September 29, 2010)*		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 year 2019 remained 2538.202 GWh.

Positive Achievements:

- No environmental incident / breach reported in year-2019;
- Uch-II achieved a milestone of 1000 days LTA free and 1.5 million safe manhours;
- Uch-II Power Private Limited attain the certification of ISO 9001:2015, 14001:2015 & ISO 45001:2018;
- Uch-II Complex Outage 2019 successfully concluded without any significant health, safety or environmental inciden;.
- Awareness sessions on “Integrated Management Systems – IMS” through external sources was arranged at site for increasing the awareness level of employees regarding the structure and functionality of Environment Management System & Occupational Health & Safety Management System;
- IOSH Managing Safety Course version 5.0 conducted on site. 05 Managers and Engineers on site attended the session and awarded with completion certificates;
- Organized ENGIE wellbeing event (Better Me Week) at Site from 16th to 19th September 2019. Presentation on wellbeing best practises in UCH Perspective was also delivered to MESCAT region during event;
- Uch Power (Private) Limited won the 16th Annual Environmental Excellence Award 2019 presented by NFEH (National Forum for Environment & Health) 4th time in a row;
- Multiple awareness sessions on Heat Stroke & basic First Aid were provided to employees & contractor to combat high heat index during summer. Additionally, Industrial Work Umbrella, Cooling Towel & Cooling Neckband also provided;
- HSE trainings were provided to the employees and contractor staff on regular basis by utilizing internal and external resources. 1,975 face-to-face trainings hours were recorded. 30 trainings on different HSE topics were delivered to employees & contractors through internal resources, whereas 06 different trainings were provided by engaging external resources;
- Organized & Celebrated “EARTH HOUR 2019” as a part of global Environmental initiatives of taking positive actions on Global Warming;
- Work Tricycles added for Uch Plant as a part of ENGIE Environmental Initiative (ZERO-Carbon) and Uch Power Environmental objective 2019 of reducing use of carbon fuel and health improvement.
- Conducted trainings on "Arc Flash Protection", “Awareness and Understanding of PHA/HAZOP”, “Accident/Incident Investigation with Root Cause Analysis”, Awareness sessions on IMS & IMS Internal Auditor, ”Business continuity management and Crises Management” and firefighting & rescue were also conducted through external resources;
- IOSH Working Safely Course V 5.0 has been conducted at site for Employees & Contractor’s key staff members by Manager HSE UPL Mr. Fida Khan and successful participants were awarded with certificates;
- Crisis Management Exercise performed on site. Responsible heads from Plant site and Head Office CRISIS MANAGEMENT TEAM participated in the activity.
- ENGIE HSE Campaign of Year 2019 Last Minute Risk Assessment (LMRA) launched at site by providing awareness session to employees & contractor key staff;

Acronyms

BEPA	Balochistan Environmental Protection Agency
CCR	Central Control Room
COD	Commercial Operation Date
CO_2	Carbon Dioxide
dB	Decibel
ECC	Emergency Care Center
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
LRBT	Lyton Rehmatulla Benevolent Fund
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
TCF	The Citizen Foundation
Uch-I	Uch Power Station
Uch-II	Uch-II Power (Private) Limited
WHO	World Health Organization

Appendix-A ***Uch-II Site Monitoring Summary Year-2019***

Corrective Actions

Monitoring Period		**Year, 2019**	
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, 2019)
01	Emergency Exit Sign & Emergency Light required to be fixed on the Emergency Doors of the fire service pump house building.	Emergency Exit Sign & Emergency Light be fixed on the Emergency Doors of the fire service pump house building.	Completed
02	Panic bar has not been installed on Emergency Exit doors of fire service water pump house building. Panic bars needs to be fixed on the required doors of building as per building Emergency Exit routes defined in map.	Panic bar fixed on Emergency Exit doors of fire service water pump house building.	Completed
03	Risk assessment needs to be reviewed and hearing damage hazard should be mentioned along with control measures and hearing protection safety sign need to be fixed in the fire service pump house building and surrounding areas.	Risk assessment of fire service pump house building has been reviewed and high noise hazards incorporated. Additionally, safety signs fixed at and around fire service pump house building area.	Completed
04	Cladding sheets having sharp edges were observed scattered at HRSG 1&2 bottom level platform area, apparently the working team didn't install them back on the pipework.	Cladding sheet fixed back at pipe rack area.	Completed
05	Chemical splash protection screens should be installed around the chemical dosing skid near Cooling Water chemical dosing system.	Chemical splash protection screens installed around the chemical dosing skid.	Completed
06	In workshop, protection guard of Bench Drill was tied with binding wire. This can lead to serious accident due to dismantling of guard.	Binding wire removed and guard fixed permanently with screw.	Completed
07	During routine site inspection, drill machine and welding machine being used for hotwork activity were found without inspection tags. Additionally, no fire extinguisher was available in the working area during hot work.	A detailed Tool Box Talk was carried out with entire working crew on the importance of safety measures during hotwork activity.	Completed
08	It has been observed that wind sock installed at fuel gas station found deteriorated and need replacement.	Deteriorated wind sock replaced with new ones.	Completed
09	Area Risk Assessment sheet is not	Area risk assessment sheet fixed at	Completed

	available at entrance of Chemical lab. Additionally, manual lock installed need to be removed to avoid any emergency situation in case anyone from outside locked the door unintentionally.	entrance furthermore, manual lock fixed outside the emergency door removed.	
10	Safety Sign board installed at the front of Condensate Extraction pumps was found damaged.	Damaged safety signboard replaced with the new ones.	Completed
11	Near Uch-II maintenance workshop, the AC drain pipe is laid improperly (in the middle of walkway) and covered with concrete work which is creating tripping and falling on the ground hazard.	The drain pipes were rerouted through conduit to mitigate tripping and falling hazards.	Completed
12	A lighting pole foundation bolts were observed partially opened, which needs to be tightened immediately.	The foundation bolts were tightened and lighting pole was made secure.	Completed
13	Cable trench raised portion near instrument air compressor tank is broken, which may cause tripping and falling hazards.	Repair work was carried out to mitigate the tripping and falling hazards.	Completed
14	Trash bin near H2SO4 / Hypo unloading area is without cover. The garbage inside bin may spread if bin is filled with trash.	New waste bin placed at H2SO4 unloading station area.	Completed
15	The safety sign pole installed in front of Cooling Water pump house is found damaged due to high wind.	Reinforcement of damaged safety sign was carried out through civil work.	Completed
16	Waste bin door was found damaged of waste bin placed near Raw Water Pretreatment unloading station.	Damaged waste bin replaced with new one.	Completed
17	It has been observed that drums filled with transformer oil were placed on wooden pallets without provision of secondary containment.	Filled drums moved from the area and placed at dedicated chemical storage area.	Completed
18	Electrical cables at the doors of Gas Turbines auxiliary compartments were placed on the sharp edge. This may cause damaged to power cables further resultant into electrocution hazards.	Power cables were rerouted to avoid any unintentional or accidental damage.	Completed
19	Access platform placed at HRSG 1 for operating valves do not have guardrails for fall protection.	Access platform removed from the location, guard rail fixed by fabrication team and platform fixed at HRSG-1.	Completed
20	Debris is accumulated in the storm	Cleaning of storm water channel	Completed

	water channel. It is important that storm water channel should remain clean to handle storm water in case weather forecast change.	was performed and all waste collected from storm channel.	
21	Glass door installed at Admin Building was without anti shatter membrane, which is posing a hazard of sever injury.	Door panel was protected with anti-shatter membrane.	Completed
22	Empty barrels are placed with barricading near storm water channel and storm water pit. These barrels may fell into the channel/pit by wind and may cause restriction in flow in channel.	Empty barrels placed near storm water channel were removed and placed at dedicated storage area. Additionally, mesh installed around storm water channel railing.	Completed
23	Improper placement of material in open shade was observed which could lead towards a trip hazard.	Scattered material properly placed and stacked and housekeeping was carried out.	Completed
24	At Pat Feeder Canal water intake area, contractor workers were observed working without mandatory PPE (safety glasses).	Contractor supervisor and their working crew called on site, a detailed Tool Box talk conducted on the importance of wearing safety glasses.	Completed
25	The general waster bin placed near Raw Water Pretreatment dosing skid found overflowed and waste scattered on ground.	Housekeeping was carried out and waste removed from the bin and disposed of at landfilled area.	Completed
26	Vehicles and bicycles are being parked in newly built parking area; however, there are chances of striking / Collision of vehicle and bicycles during reverse parking.	A separate parking stand for bicycles fabricated and advised all cyclist to park their bicycle at dedicated stand.	Completed
27	Fire water system Valves are being locked open with cable ties. This practice needs to be reviewed, as they might get deteriorated and break due to brittleness caused by the sunlight.	Practice of utilizing cable tie reviewed and metallic lock and chain provided to Operation team as a replacement for cable tie.	Completed
28	Fire extinguisher inspection tag of fire extinguisher fixed at the entrance of demineralization building was found on the ground.	Re inspection of fire extinguisher was carried out by fire team and new inspection tag fixed.	Completed
29	Spare Main Cooling Water motor wooden box needs to be properly sealed to avoid ingress of water during rain. Additionally, it needs to be placed in covered yard.	Motor removed from the area and shifted to covered storage yard.	Completed

Appendix-B

Period: Year-2019

GTs Stack Emissions

Q1-2019						
Stack Emissions	**Units**	**Average GT-1**	**Average GT-2**	**Average Both GTs**	**NEQS Limits**	**WB / IFC Guidelines**
Exhaust Temp.	°C	112.6	112.1	112.3	-	-
Particulate Matter	mg/Nm3	0.1	0.0	0.05	500	50
SO2	mg/Nm3	0.6	16.3	8.4	400	N/A
SO2	Metric ton/d			0.07	100	-
NOX *	mg/Nm3	67.4	63.9	65.6	400	152 (at 15% excess O2 level)
NOX	lb/MMBTU			0.10	0.2	-
Q2-2019						
Stack Emissions	**Units**	**Average GT-1**	**Average GT-2**	**Average Both GTs**	**NEQS Limits**	**WB / IFC Guidelines**
Exhaust Temp.	°C	110.7	111.1	110.9	-	-
Particulate Matter	mg/Nm3	0.74	0.17	0.45	500	50
SO2	mg/Nm3	0.30	20.7	10.5	400	N/A
SO2	Metric ton/d			0.11	100	-
NOX *	mg/Nm3	55.1	55.8	55.4	400	152 (at 15% excess O2 level)
NOX	lb/MMBTU			0.10	0.2	-
Q3-2019						
Stack Emissions	**Units**	**Average GT-1**	**Average GT-2**	**Average Both GTs**	**NEQS Limits**	**WB / IFC Guidelines**
Exhaust Temp.	°C	111.4	111.4	111.4	-	-
Particulate Matter	mg/Nm3	0.21	0.00	0.10	500	50
SO2	mg/Nm3	6.43	14.48	10.4	400	N/A
SO2	Metric ton/d			0.14	100	-
NOX *	mg/Nm3	38.4	30.1	34.2	400	152 (at 15% excess O2 level)
NOX	lb/MMBTU			0.10	0.2	-

Q4-2019						
Stack Emissions	**Units**	**Average GT-1**	**Average GT-2**	**Average Both GTs**	**NEQS Limits**	**WB / IFC Guidelines**
Exhaust Temp.	°C	113.7	113.9	113.8	-	-
Particulate Matter	mg/Nm3	0.18	0.26	0.22	500	50
SO2	mg/Nm3	0.65	20.23	10.4	400	N/A
SO2	Metric ton/d			0.02	100	-
NOX *	mg/Nm3	52.7	52.6	52.6	400	152 (at 15% excess O2 level)
NOX	lb/MMBTU			0.10	0.2	-

*** The actual concentrations of NOx are at 15 % excess O2 levels**

CO2 Produced

Q1, 2019			
	Monthly Average [Tons]	Total Quantity [Tons]	Total Quantity [Kg/KWh]
CO2 Produced (including CO2 in fuel gas)	193,144.3	579,432.9	0.78
CO2 Produced (excluding CO2 in fuel gas)	108,426.6	325,279.8	0.43

Q2, 2019			
	Monthly Average [Tons]	Total Quantity [Tons]	Total Quantity [Kg/KWh]
CO2 Produced (including CO2 in fuel gas)	190,195.31	570,585.93	0.78
CO2 Produced (excluding CO2 in fuel gas)	106,771.11	320,313.34	0.43

Q3, 2019			
	Monthly Average [Tons]	Total Quantity [Tons]	Total Quantity [Kg/KWh]
CO2 Produced (including CO2 in fuel gas)	185,964.60	557,893.81	0.79
CO2 Produced (excluding CO2 in fuel gas)	104,396.09	313,188.28	0.44

Q4, 2019			
	Monthly Average [Tons]	Total Quantity [Tons]	Total Quantity [Kg/KWh]
CO2 Produced (including CO2 in fuel gas)	96,600.05	289,800.1	0.79
CO2 Produced (excluding CO2 in fuel gas)	54,228.96	162,686.8	0.44

YTD 2019 (i.e. up to Q4 2019)		
	YTD – Total Tons of CO2 Produced	YTD – Average KgCO2/KWh
CO2 Produced (including CO2 in fuel gas)	1,997,712.74	0.78
CO2 Produced (excluding CO2 in fuel gas)	1,121,468.22	0.44

Total Power Generation for Year 2019 is 2538.202 GWh

CO_2 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_2H_6	1.11432
Propane	C3H8	0.41803
I-Butane	C4H10	0.11367
N-Butane	C4H10	0.121
I-Pentane	C5H12	0.03967
N-Pentane	C5H12	0.0300
Hexane	C6H14	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
Carbon Dioxide	0	0
Nitrogen	0	0
Methane	55.4850	49.9995
Ethane	51.8645	47.4742

HHV (dry)	LHV (dry)
0	0
0	0
371.0400	334.3574
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 MJ/kg	368.1007 MJ/kg	MJ/mole of gas
			14.06795	12.69988	

For calculating CO_2 emissions the following formula is:

CO_2 Tons = $\frac{\text{Gas Consumed MJ / LCV (MJ/Kg) X Total wt of CO2}}{\text{(Molecular wt of Gas Kg x 1000)}}$

Whereas 01 MJ = 1055.056 x MMBTU

If we have consumed Natural Gas = 1,830,729.00 MMBTU than Natural Gas than Total CO_2 Generated including CO_2 in Gas will be 190,667.7481 Tons and 107,528.5354 Tons excluding CO_2 in gas.

Energy Usage

Energy Usage Q1-2019

Parameters	Units	Jan-19	Feb-19	Mar-19
Fuel Gas Consumed	m3	116,618,967.54	100,876,499.95	116,619,817.05
Hours of Operation	Hours	704.67	608.96	716.98

Energy Usage Q2-2019

Parameters	Units	Apr-19	May-19	Jun-19
Fuel Gas Consumed	m3	102,002,094.60	118,180,358.45	109,587,611.41
Hours of Operation	Hours	638.32	744.00	718.16

Energy Usage Q3-2019

Parameters	Units	July-19	Aug-19	Sep-19
Fuel Gas Consumed	m3	110,985,330.95	107,103,657.64	105,070,791.24
Hours of Operation	Hours	738.09	723.12	702.45

Energy Usage Q4-2019

Parameters	Units	Oct-19	Nov-19	Dec-19
Fuel Gas Consumed	m3	66,814,165.42	33,361,775.75	67,595,144.04
Hours of Operation	Hours	442.23	232.18	449.62

Ambient Air Quality Data

Q1, 2019

Parameters	Units	**Monitoring Location:** Close to Main Gate of Uch Power Station **24 Hour Average Concentration**	NEQS Limits
CO	mg/m^3	1.1	5 mg/m^3 (limit for 8 hours)
NO	$\mu g/m^3$	0.0	40 $\mu g/m^3$ (limit for 24 hours)
NO_2	$\mu g/m^3$	2.0	80 $\mu g/m^3$ (limit for 24 hours)
SO_2	$\mu g/m^3$	6.0	120 $\mu g/m^3$ (limit for 24 hours)
PM_{10}	$\mu g/m^3$	84.4	150 $\mu g/m^3$ (limit for 24 hours)

Q2, 2019

Parameters	Units	**Monitoring Location:** Close to Main Gate of Uch Power Station **24 Hour Average Concentration**	NEQS Limits
CO	mg/m^3	1.8	5 mg/m^3 (limit for 8 hours)
NO	$\mu g/m^3$	4.5	40 $\mu g/m^3$ (limit for 24 hours)
NO_2	$\mu g/m^3$	0.2	80 $\mu g/m^3$ (limit for 24 hours)
SO_2	$\mu g/m^3$	3.8	120 $\mu g/m^3$ (limit for 24 hours)
PM_{10}	$\mu g/m^3$	129.7	150 $\mu g/m^3$ (limit for 24 hours)

Q3, 2019

Parameters	Units	**Monitoring Location:** Close to Main Gate of Uch Power Station **24 Hour Average Concentration**	NEQS Limits
CO	mg/m^3	3.5	5 mg/m^3 (limit for 8 hours)
NO	$\mu g/m^3$	9.1	40 $\mu g/m^3$ (limit for 24 hours)
NO_2	$\mu g/m^3$	0.0	80 $\mu g/m^3$ (limit for 24 hours)
SO_2	$\mu g/m^3$	5.8	120 $\mu g/m^3$ (limit for 24 hours)
PM_{10}	$\mu g/m^3$	78.2	150 $\mu g/m^3$ (limit for 24 hours)

Q4, 2019

Parameters	Units	**Monitoring Location:** Close to Main Gate of Uch Power Station **24 Hour Average Concentration**	NEQS Limits
CO	mg/m^3	3.1	5 mg/m^3 (limit for 8 hours)
NO	$\mu g/m^3$	9.2	40 $\mu g/m^3$ (limit for 24 hours)
NO_2	$\mu g/m^3$	0.1	80 $\mu g/m^3$ (limit for 24 hours)
SO_2	$\mu g/m^3$	4.0	120 $\mu g/m^3$ (limit for 24 hours)
PM_{10}	$\mu g/m^3$	98.1	150 $\mu g/m^3$ (limit for 24 hours)

Vehicle Exhaust Emissions

Frequency of vehicle exhaust emissions testing is defined as "Annually" in the EMP and was carried out in December 2019.

Parameter	Units	NEQS Limit	Vehicle #						
			PVA-16	PVA-013	PVA-014	PVA-015	PVA-011	Crane	Forklift
CO	%	06	0.02	0.02	0.01	0.01	0.04	0.06	0.05
Smoke	Ringleman Scale	02	01	01	01	01	01	02	02
Noise	dB (A)	85	69.7	66.2	75.5	70.6	72.9	77.5	78.1

Heavy Metals Emissions

Semi Annual Heavy Metals Emissions

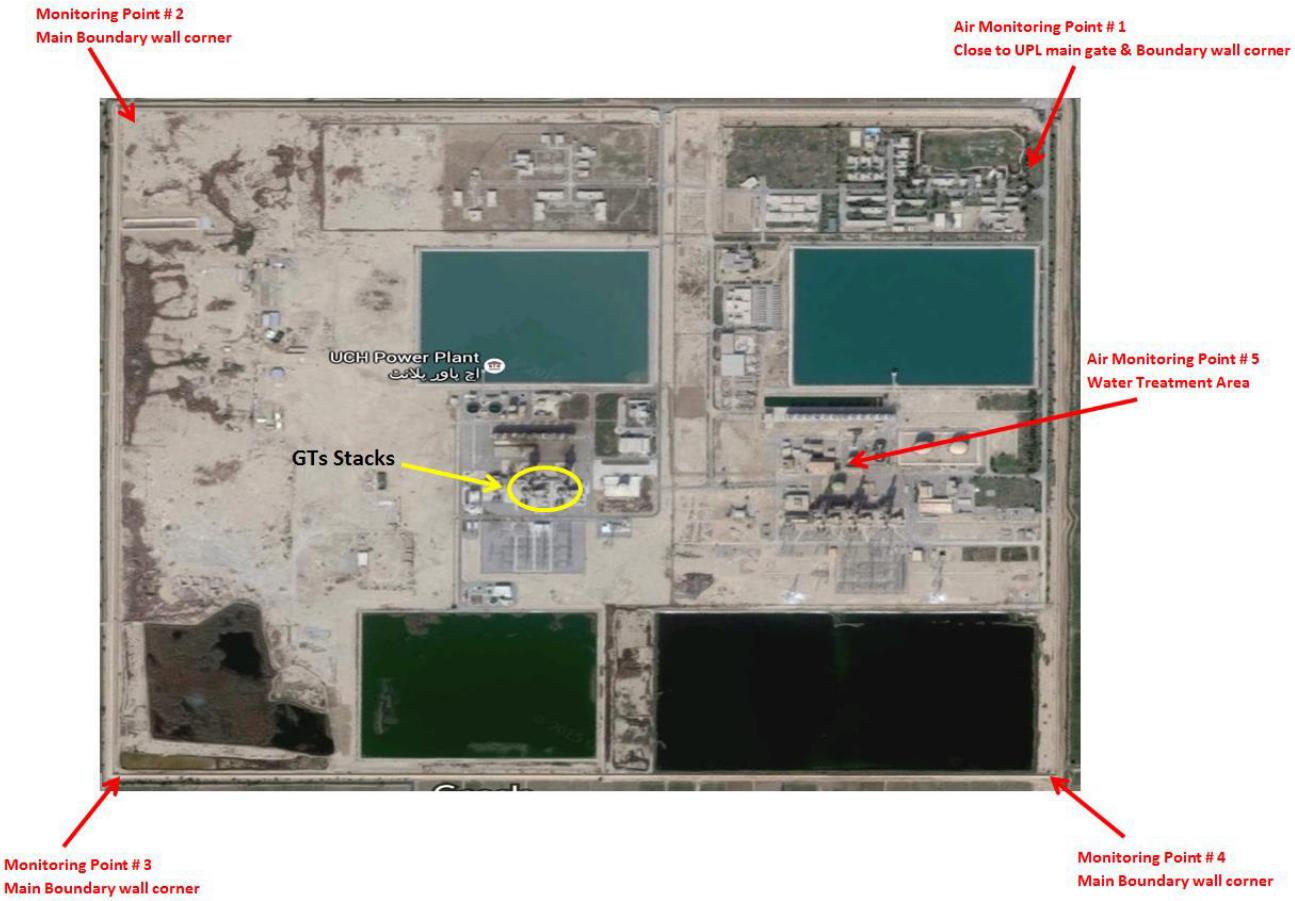
Frequency of heavy metal emission testing is defined as Semi-annually in EMP. In 2019, heavy metal testing was performed in June 2019 & December 2019. Results for year 2019 are as followed.

Q2, 2019				GT-1	GT-2
S. No	Parameters	Method	Unit	Results	Results
1	Mercury (Hg)	USEPA - 29	mg / Nm3	<0.001	<0.001
2	Cadmium (Cd)	USEPA - 29	mg / Nm3	<0.005	<0.005
3	Arsenic (As)	USEPA - 29	mg / Nm3	<0.071	<0.071
4	Antimony (Sb)	USEPA - 29	mg / Nm3	<0.005	<0.005
5	Zinc (Zn)	USEPA - 29	mg / Nm3	<0.003	<0.003
6	Lead (Pb)	USEPA - 29	mg / Nm3	<0.056	<0.056

Q4, 2019				GT-1	GT-2
S. No	Parameters	Method	Unit	Results	Results
1	Mercury (Hg)	USEPA - 29	mg / Nm3	<0.001	<0.001
2	Cadmium (Cd)	USEPA - 29	mg / Nm3	<0.005	<0.005
3	Arsenic (As)	USEPA - 29	mg / Nm3	<0.071	<0.071
4	Antimony (Sb)	USEPA - 29	mg / Nm3	<0.043	<0.043
5	Zinc (Zn)	USEPA - 29	mg / Nm3	<0.003	<0.003
6	Lead (Pb)	USEPA - 29	mg / Nm3	<0.056	<0.056

Appendix B-I

Location Map – Ambient Air Quality Monitoring Points



Appendix C

Raw Water Treatment Plant:

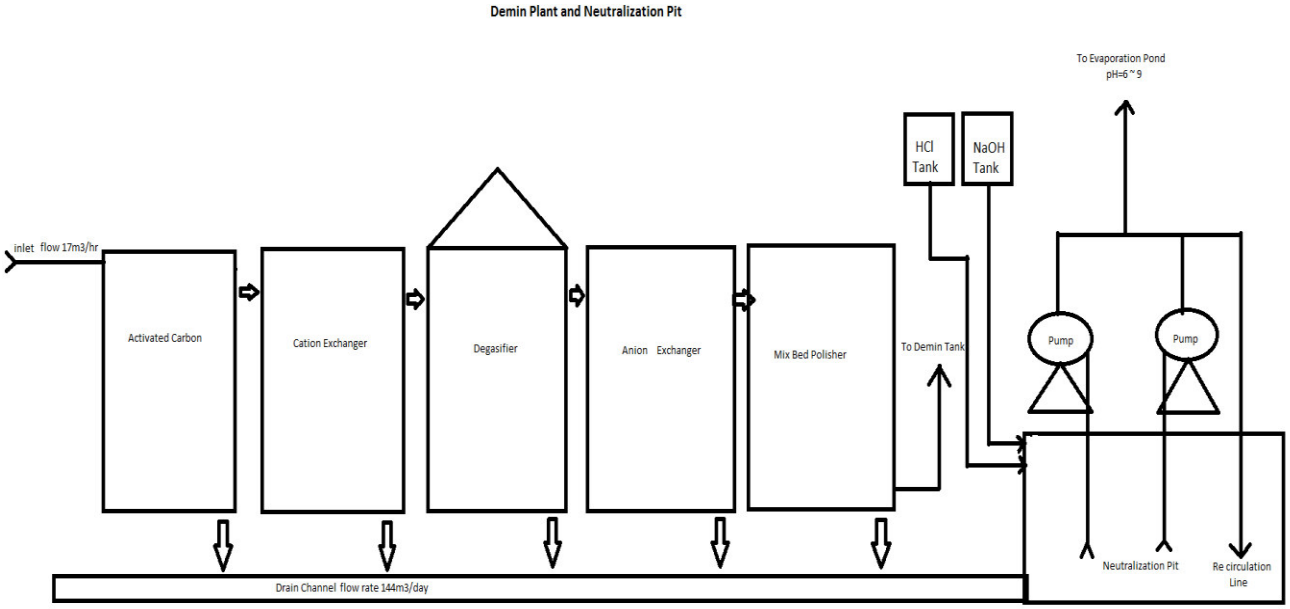
Raw water is supplied to Uch-II site from the Pat Feeder canal located approximately 3km away from site through a pipeline. Raw water is stored in a raw water storage pond. Raw water is pumped from the storage pond via pumps to clarifiers. Clarified water is forwarded via a surge tank for cooling water make-up, to the service water tank and to the potable water plant.

The water treatment demineralization building has two trains. Each train is comprised of carbon filter, cation bed, de-gasifier, anion and mixed bed. Regeneration of the resin beds use HCL and NaOH which is stored in bund tanks.

Treatment of Demin Plant Regenerated Wastewater:

Chemical waste from raw water pretreatment area and wastewater produced in demineralization building by backwashing of activated carbon filters, regeneration of Cation and Anion exchangers is collected in neutralization pit (10GCK01 BB010).

As acidic and alkaline effluent is collected in neutralization pit, pH of accumulated effluent is neutralized itself. However for variation in pH acid and caustic dosing system with pH controller is provided. A recirculation line is provided with effluent transfer pumps for uniform mixing of the chemicals. Once pH is neutralized in the pit, the effluent is discharged to evaporation pond through Effluent Transfer Pumps (10GCK01 AP019/020). Pumps start/stop is manual and would trip at low level in neutralization pit. Manual change over in case of fault of pumps is provided



Sanitary Wastewater:

Sanitary wastewater generated from plant, residential colony and offices first pass through the screen channel containing bar and mechanical screens for removal of any floating materials. Trash free wastewater is collected in the Sanitary Wastewater Tank (10GRK01 BB001). This tank serves the purpose of liquid holdup and pumping to the aeration tank (10GRC01 BB002). Two submersible pumps (10GRK01 AP001/002) are installed in the tank. Pumps start /stop at liquid level (HLL/LLL) and a level switch (LS 10GRK01CL101) is provided for automatic operation of submersible pumps. Manual change over in case of fault of pumps is provided.

Aeration Tank:

This unit supports the bacterial growth. Air is continuously supplied in this unit for biological reaction. Moreover this method of aeration offers the potential for high efficiency because bubbles of air rising through the water are continually exposed to fresh liquid surfaces maximizing water surface per unit of air.
The organic matter in the effluent is oxidized by the bacteria and is converted into harmless CO2 gas. Two air blowers (10GRC01 AN001/002) are provided for aeration in the aeration tank (10GRC01 BB002).A portion of the settled biomass from secondary clarifier (10GRD01AT002) is recycled back to maintain the desired concentration of cells in the aeration tank. The sludge recycling is achieved by continuously blowing air inside the liquid media in secondary clarifier.

Secondary Clarifier:

This is also called sedimentation tank. The purpose of secondary clarifier (10GRD01 AT002) is to remove the microorganism by sedimentation process. Hopper shaped secondary clarifier is provided for collection of sludge in the center for onward pumping for recycling and disposal as well.

The settled sludge in the secondary clarifier is continuously recycled in the aeration tank (10GRC01 BB002). Supernatant also referred as treated effluent is drawn from an effluent weir to the chlorination tank (10GRK01 BB004).

Chlorination Tank:

Chlorination Tank (10GRK01 BB004) is provided for disinfection of the treated effluent. Partition walls with opening at the end are provided for proper mixing of chlorine in the effluent for disinfection. Sodium Hypochlorite is used for disinfection.

Two pumps (10GRN01 AP003/004) are provided for chemical dosing. Sodium Hypochlorite dosing pumps are interlocked with sanitary wastewater pumps (10GRK01 AP001/002), however dry run protection is provided by level switch (LS 10GRN01CL101). Operation of pumps is continuous. Manual change over in case of fault of dosing pump is provided. The final treated water from this tank is then transferred to the evaporation pond.

Waste Water Treatment & RO.

Cooling tower blow down waste stream is sent to an onsite industrial wastewater tank where it is mixed with other wastewater streams from evaporative cooler and sludge drying bed water. Wastewater from industrial wastewater tank is transferred to a clarifier where clarified water and sludge is separated and transferred to clarifier tank and sludge drying bed respectively.

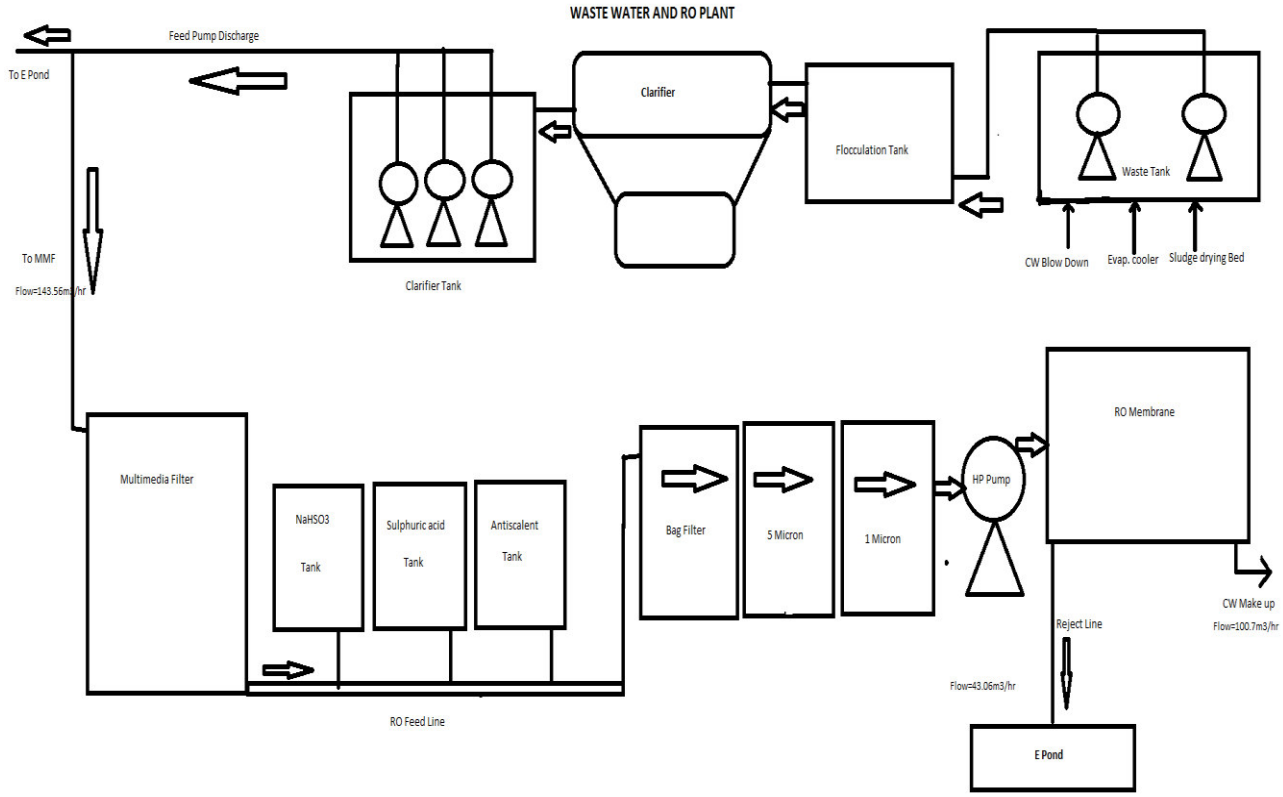
Clarified water first filtered through the multimedia filters and then passes through Reverse Osmosis (RO) membranes. Filtered water from RO is transferred to the CW system for reuse, whereas concentrate from RO is discharged to the evaporation pond for final disposal. pH of RO reject is 7~8 and no further treatment is required.

However other streams such as bypass line from filter feed pumps (10GNK02 AP007/008), effluent of pump sump (10GNK01 BB003) and overflow of clarified water tank (10GNK02 BB007) also be drained to evaporation pond occasionally.

Parameters for one train of RO are as below:

Feed water Quantity = 80m3/ hr.
Feed water pH = 8.0
Feed water conductivity = 2694 us/cm
Product water (Permeate) quantity= 53.9 m3/hr.
Product water (Permeate) conductivity = <280 us/cm.
Recovery = 70%

Waste Water & RO Plant - Single Line Diagram



UCH-II POWER (PRIVATE) LIMITED

Appendix-C I

FY-2019

Cooling water

Location: Cooling tower discharge point

Parameters	Units	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	NEQS Limits
Temp	°C	28.58	28.26	27.5	29.6	30.8	34.2	35.2	35.4	35.6	33.3	28.8	27.4	40
pH	pH	7.63	7.61	7.62	7.69	7.63	7.63	7.61	7.62	7.61	7.63	7.65	7.63	6 to 10
TDS	mg/lit	1623	1693	1735	1737	1727	1659	1619	1639	1548	919	1419	1596	3500

Sewage Treatment Plant

Location: Sewage treatment discharge point

Parameters	Units	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	NEQS Limits
pH	pH	6.47	6.57	6.9	7.5	6.9	8.0	7.6	7.5	7.0	7.5	7.4	6.9	6 to 10
TSS	mg/liter	14	24	21	15	6	2	10	10	3	25	4	10	150
TDS	mg/liter	636	605	545	592	652	528	504	546	369	399	433	471	3500
BOD	mg/liter	4.3	4.1	5.1	37	5.9	5.6	8.4	6.5	4.3	12	2	2	80
COD	mg/liter	14	65	33	30	19	14	21	62	6.9	7.2	6	39	150

Process Water Treatment Plant

Closed Cooling Water (CCW)

Parameters	Units	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	NEQS Limits
pH	pH	9.10	9.22	9.26	9.21	9.2	9.21	9.25	9.27	9.18	9.16	9.1	9.05	6 to 10
TSS	mg/liter	1	1	1	1	1	1	1	1	1	1	1	1	150
TDS	mg/liter	1673	1617	1652	1421	1449	1414	1708	1533	1407	1442	1400	1180	3500
Cl-	mg/liter	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1000
Metals (Fe)	ppb	33	66	70	38	42	34	40	22	16	14	28	78	

Heat Recovery Steam Generator # 1 (HRSG-1)

Parameters	Units	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	NEQS Limits
pH	pH	9.58 ~ 9.89	9.53~9.82	9.52~9.88	9.52~9.9	9.41~9.74	9.39~9.72	9.35~9.74	9.31~9.79	9.52~9.9	9.54~9.98	9.36~9.84	9.29~ 9.74	6 to 10
TSS	mg/liter	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	150
Cl-	mg/liter	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1000
Metals (Fe)	ppb	8	15	7	7	14	13	13	15	6	8	10	11	

Heat Recovery Steam Generator # 2 (HRSG-II)

Parameters	Units	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	NEQS Limits
pH	pH	9.58 ~ 9.89	9.5~9.85	9.52~9.88	9.5~9.84	9.42~9.72	9.40~9.73	9.31~9.72	9.31~9.81	9.49~9.89	9.52~9.96	9.39~9.86	9.34~9.78	6 to 10
TSS	mg/liter	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	150
Cl-	mg/liter	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1000
Metals (Fe)	ppb	8	14	8	7	11	12	14	15	7	8	10	11	

Discharge Point RO Reject

Parameters	Units	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	NEQS Limits
pH	pH	7.4	7.4	7.5	7.60	7.45	7.50	7.38	7.59	7.50	7.60	7.35	7.20	6 to 10
TSS	mg/liter	0	0	0	0	0	0	0	0	0	0	0	0.00	150
TDS	mg/liter	4480	5131	4620	4816	5089	4655	4396	4753	4137	4081	3577	4200	3500
Cl-	mg/liter	1153	1410	1065	1136	1242	1286	1100	1242	1047	1065	910	1110	1000
Metals (Fe)	ppb	0.108	0.139	0.110	0.149	0.09	0.11	0.08	0.18	0.11	0.08	0.16	0.20	

Evaporation Pond

Location: Effluent flowing to evaporation pond

Parameters	Units	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	NEQS Limits
BOD	mg/liter	5.2	2.2	4.7	6.4	1.3	4.9	8.3	5.7	2.1	1.1	1.2	2	80
COD	mg/liter	5	17	41	28	19	4.0	41	35	4.8	19	12	14	150
Cl-	mg/liter	215	935	998	177	639	923	745	781	617	298	816	171	1000
metals (Fe, Zn)	mg/liter	0.84 + 0.1	0.3+0.06	0.28+0.08	0.36+0.1	0.8+0.06	1.1+0.03	0.98+0.07	1.1+0.07	0.59+0.1	0.9+ 0.26	1.2+ 0	0.52+0	Fe 8.0 & Zn 5.0
Temp	°C	19.1	20.4	22.2	23.7	28.7	31	31.7	32.4	30.6	27.5	26	21.5	40
pH	pH	6.7	7.55	7.9	7.66	7.2	6.8	7.1	7.08	7.89	8.40	7.65	7.98	6 to 10
TSS	mg/liter	13	7	22	27	20	9	39	25	7	15	14	6	150
TDS	mg/liter	1036	2499	2674	872	1904	2559	1904	1974	1946	2016	2121	452	3500
Oil & grease	mg/liter	1	0.8	0.3	0.2	0.15	0.26	0.0	1	0.65	0.4	Nil	Nil	10

Surface Drains

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

Parameters	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
Appearance & condition of oil & grease	No water in drains	No water in drains	No water in drains	No water in drains	No water in drains	No water in drains	No water in drains	No water in drains	No water in drains	No water in drains	No water in drains	No water in drains

Water Usage

Location: Pat Feeder Canal intake point

Water usage (m3)	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
Raw Water Canal Intake Point	230,902	172,466	293,474	95,854	-	306,554	406,319	414,188	375,395	334,770	128,928	267,921
Water reuse through RO	34,330	32,221	36,592	30,614	35,411	34,248	35,974	34,095	34,979	12,822	7,027	19,376
Water usage in colony	6,592	5,926	7,001	7,159	10,112	10,092	10,239	10,494	9,689	9,427	8,740	11,483
Water disposal into Evaporation Pond	26,793	25,172	27,551	24,514	31,213	29,901	31,081	31,318	29,981	23,974	13,293	24,664

Appendix-D

FY - 2019

Waste Type	Units	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
Used oil	Ltr	24.00	72.75	56.00	267.00	5.50	25.00	11.50	26.50	49.00	27.00	14.00	37.00
Metal	Kg	12.1	14.5	15.1	11.2	11.0	9.0	9.5	0.8	5.5	3.0	22.3	18.8
Paper/ Plastic/ Glass	Kg	178.0	209.5	225.5	224.5	201.3	220.3	224.3	177.3	249.0	260.3	202.8	221.3
Wood & Food Waste	Kg	321.3	268.0	299.8	486.3	234.4	309.5	767.5	246.0	307.0	304.2	281.2	412.1
Oil Filters & Oily Rags	Kg	3.5	2.5	4.5	26.5	8.5	4.0	14.0	25.8	4.0	152.0	16.0	91.5
Used Batteries, wet/dry cells	Nos	1.0	0.1	-	-	120.2	-	1.3	-	0.5	443.0	396.7	0.1
Old Tyres	Nos	1.00	3.00	1.00	4.00	1.00	-	6.00	4.00	3.00	3.00	8.24	82.00

Appendix-E

Occupational Noise Monitoring			Average Noise Monitoring Results (dB) A			
S. No	Location of Equipment	Guarantee limits	Q1, 2019	Q2, 2019	Q3, 2019	Q4, 2019
1	East side of pump "A" at Raw Water Pumping Station	85 (dB) A	82.3	82.3	83.5	81.9
2	East side of pump "B" at Raw Water Pumping Station	85 (dB) A	_	84.8	82.9	_
3	South Side of potable water supply pump "A"	85 (dB) A	72.5	71.9	_	_
4	South Side of CT Basin Makeup Pump "A"	85 (dB) A	78.5	86.8	_	_
5	East Side of CT Basin Makeup Pump "B"	85 (dB) A	_	83.3	74.9	84.5
6	West side of DM distilation pump "B"	85 (dB) A	70.3	72.6	_	_
7	South side of Hot Well make up pump "B"	85 (dB) A	83.8	_	_	74.8
8	East side of Service Water pump "A"	85 (dB) A	85.3	86.8	85.6	84.6
9	North Side of CT at ground level close to cell #02	85 (dB) A	81.2	79.7	80.1	78.6
10	North Side of CT at ground level close to cell #04	85 (dB) A	80.8	80.3	80.0	80.1
11	North Side of CT at ground level close to cell #06	85 (dB) A	81.3	79.8	79.1	79.9
12	South Side of CT at ground level close to cell #08	85 (dB) A	80.0	78.8	78.8	78.6
13	East Side of Cooling Tower fan motor # 6 (10PAB01-AN006)	85 (dB) A	84.8	84.0	81.3	85.0
14	East Side of Cooling Tower fan motor # 8 (10PAB01-AN008)	85 (dB) A	86.6	84.2	87.3	_
15	East Side of Fire water pump house with door close & Diesel pump running	85 (dB) A	72.6	_	_	73.4
16	North Side of Fire water pump house with door close & Diesel pump OFF	85 (dB) A	65.3	63.5	74.9	73.5
17	West side of HSD Decanting point # 3	85 (dB) A	65.3	63.9	64.0	64.1
18	North Side of HRSG-2 main stack	85 (dB) A	73.5	70.4	72.8	74.6
19	North side of GT -2 Generator	85 (dB) A	78.0	74.2	74.0	77.7
20	South side of GT -2 turbine combustion chamber	85 (dB) A	88.9	89.0	88.1	88.9
21	North side of GT -2 PEECC	85 (dB) A	73.9	74.1	78.7	77.9
22	South side of boiler feed pump "B" (HRSG-2)	85 (dB) A	87.1	_	90.8	84.2
23	South side of boiler feed pump "A" (HRSG-2)	85 (dB) A	_	84.5	_	_
24	South side of GT -1 PEECC	85 (dB) A	75.1	75.1	77.6	75.7
25	South side of GT -1 turbine combustion chamber	85 (dB) A	86.7	84.3	86.1	83.2
26	West side of GT -1 Generator	85 (dB) A	74.2	83.4	77.2	76.8
27	South side of GT -1 turbine compartment (shaft) entrance door	85 (dB) A	90.3	88.5	88.9	89.4
28	North Side of HRSG-1 main stack	85 (dB) A	73.5	76.6	73.3	73.8
29	West side of HRSG-1 at bottom close to HRSG duct entrance	85 (dB) A	79.0	82.7	80.8	79.2
30	West Side of Cooling water pumping station	85 (dB) A	79.1	82.9	80.7	77.0
31	West Side of CW pump "B" in cooling water pumping station	85 (dB) A	86.3	86.1	88.0	87.2
32	North Side of CW pump "B" in cooling water pumping station	85 (dB) A	88.9	85.1	85.0	84.3
33	West Side of CW pump "C" in cooling water pumping station	85 (dB) A	84.2	_	_	_
34	North Side of CW pump "C" in cooling water pumping station	85 (dB) A	87.3	_	_	_
35	West Side of Auxiliary CW pump # 1 in cooling water pumping	85 (dB) A	94.3	85.6	_	_
36	East Side of Auxiliary CW pump # 1 in cooling water pumping	85 (dB) A	87.3	89.3	_	_
37	West Side of Auxiliary CW pump # 2 in cooling water pumping	85 (dB) A	_	_	86.4	85.2

38	East Side of Auxiliary CW pump # 2 in cooling water pumping	85 (dB) A	_	_	91.5	90.1
39	North Side of CCW pump "B"	85 (dB) A	84.6	81.2	_	_
40	North Side of CCW pump "A"	85 (dB) A	_	76.3	85.4	_
41	North Side of instrument Air Compressor "A"	85 (dB) A	_	_	80.8	79.5
42	East Side of instrument Air Compressor "B"	85 (dB) A	82.5	83.0	_	_
43	North Side of instrument Air Compressor "B"	85 (dB) A	79.3	83.3	_	_
44	North Side of Boiler Feed Pump # 1 at HRSG-1 Bottom	85 (dB) A	86.3	85.3	_	82.6
45	North Side of Boiler Feed Pump # 2/B at HRSG-1 Bottom	85 (dB) A	82.3	80.2	86.7	85.1
46	East side of Steam Turbine	85 (dB) A	80.4	82.0	86.4	86.7
47	West side of Oil cooler in lube oil console skid for STG	85 (dB) A	80.4	80.4	81.5	81.8
48	West side of Steam Turbine	85 (dB) A	80.1	86.2	84.1	86.7
49	Waste Water Treatment plant near pump station	85 (dB) A	61.9	56.6	58.9	60.1
50	North Side of workshop	85 (dB) A	61.4	57.0	56.1	59.9
51	West side of HRSG-2, duct entrance	85 (dB) A	53.9	75.6	78.4	78.8
52	South Side of EDG	85 (dB) A	62.4	66.4	66.5	66.9
53	West Side of EDG	85 (dB) A	65.8	63.9	61.8	61.8
54	South side of sand filter pump B	85 (dB) A	75.8	73.0	74.8	75.5
55	South side of sand filter pump A	85 (dB) A	73.1	73.5	71.7	73.9

Ambient Noise Monitoring			**Average Noise Monitoring Results (dB) A**			
S. No	**Noise Monitoring Locations**	**Guarantee limits**	**Q1, 2018**	**Q2, 2019**	**Q3, 2019**	**Q4, 2019**
1	Main gate Uch-II	70 (dB) A	56.0	48.7	48.2	54.9
2	Check Post # 3 (at boundary wall)	70 (dB) A	57.5	49.1	48.7	53.8
3	Check Post # 5 (at boundary wall)	70 (dB) A	56.6	49.3	47.9	54.6
4	Check Post # 7 (at boundary wall)	70 (dB) A	51.9	53.3	52.9	49.7

Compliance Status of EMP Control Measures FY-2019

APPENDIX-F **UCH-II PROJECT**

Environmental / Social Impacts	Control & Mitigation Measures	Monitoring Frequency	Responsibility	Compliance Status
Air Emissions	- 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	- Monthly - Annually	Uch-II O&M team	Complied
Plant Noise	- 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	- 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	- 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	On going	Uch-II O&M team	Complied
Hazardous Materials	- 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	- 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	- 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	- 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	- 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	- 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	- 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	- 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	- 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	- 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	- 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

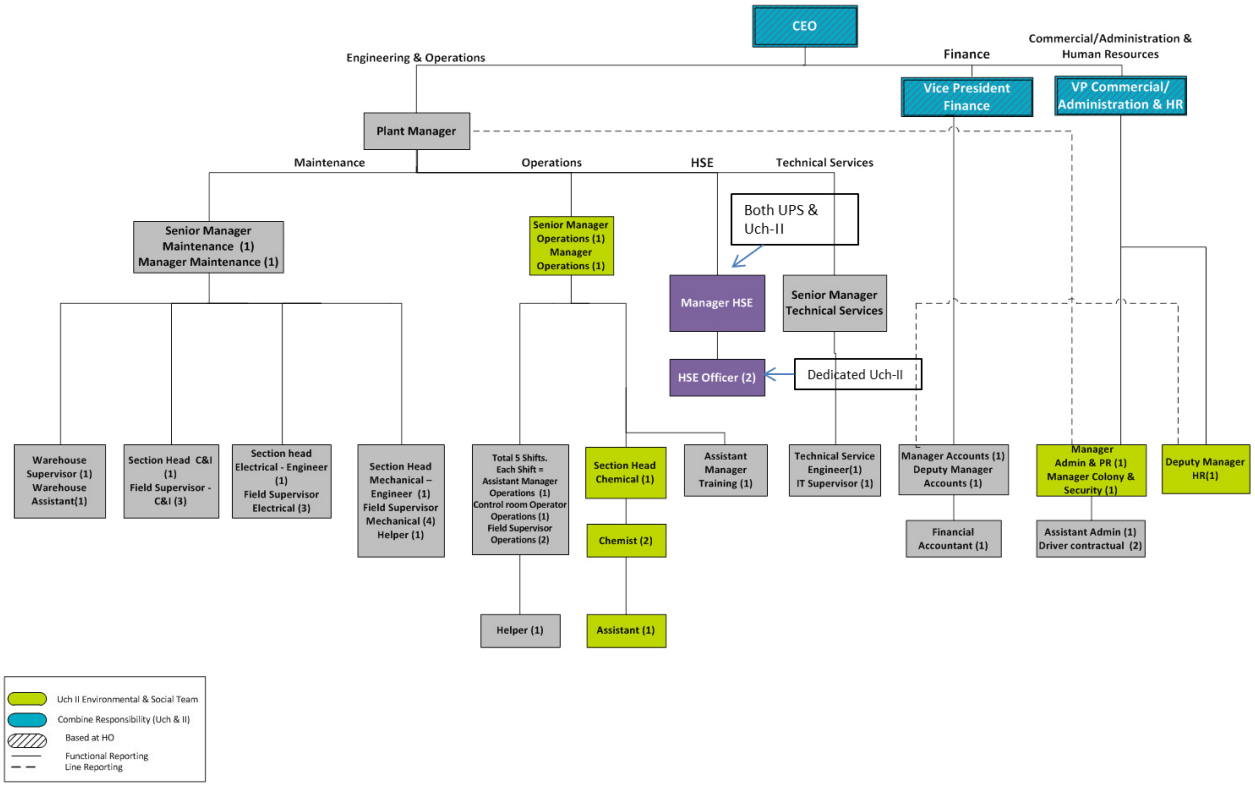
UCH-II ENVIRONMENTAL AND SOCIAL ACTION PLAN (ESAP)

COMPLIANCE MATRIX FOR OPERATIONAL PHASE

Compliance status of E&S Action Plan items relevant to the operational phase of Uch-II is provided below.

No.	Action	To be verified by:	Schedule	Status
PS1-2	Update the Environmental Management Plan (Appendix A of the January 2010 EIA) based on the final arrangements of the Operation & Maintenance, and implement.	A copy of the updated Environmental Management Plan including detailed monitoring program for the operational phase.	Update: Before the Commercial Operations Date. Implement: During the operational phase.	Completed. The first table of this Appendix-F is a combination / integration of following two tables. Table 4-2of EIA: Environmental management and monitoring plan, operational phase Table 6-3of EMP: Mitigation Plan for Operation Phase This table indicates the environmental aspects to be monitored by O&M team for operation phase as per the requirements mentioned in EIA and EMP. It also explains the control and mitigation measures implemented by Uch-II, monitoring frequencies and status of compliance.
PS2-1	Establish and implement the labor hiring policy and procedure (including local employee hiring criteria) in line with IFC Performance Standard #2.	Copy of the local employee hiring procedure.	Construction phase: Before first disbursement. Operational phase: 6 months before the Commercial Operations Date.	Completed. A copy of local employee hiring policy is attached as Appendix-J.
PS3-1	Incorporate the Company into the UPS Emergency Preparedness and Response Plan.	Copy of the Emergency Preparedness and Response Plan to cover both UPL and the Company operations.	Before commercial operation of the Company.	Completed. Emergency Response Procedure is in place. Appendix K

Appendix. G **Uch II Organogram (Power Station)**



For Uch-II Project, the Owner (Uch-II) has appointed an O&M team comprising management / staff from UPL (Uch-I) with shared responsibilities. So this is basically a one team (Owner & O&M) directly reporting to Plant General Manager of UPL (Uch-I & Uch-II)

APPENDIX H

Attention: MR FIDA KHAN SB
M&S USE

OFFICE OF THE DIRECTOR GENERAL BALOCHISTAN
ENVIRONMENTAL PROTECTION AGENCY
GOVERNMENT OF BALOCHISTAN
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, FH, RL
Date Received		22-04-14
Mail Reg. No.		98 Ali
File No./Divider Name		
Doc. to be Archived		Yes ✓ No
Fax ✓	Doc.	Sealed
ned to		
from		

Apr. 22 2014 02:27PM P1 FAX NO. : 9202484 FROM : A

APPENDIX I

FY-2019 UPL Site - Local Employment Ratio

Category		Total Strength	Local / Baluchistan	Local Employment Ratio
O & M Staff (UPS & Uch-II)	Technical (Plant Operations & Maintenance)	147	24	25.1%
	EHS Staff		00	
	Warehouse		03	
	Office Staff		05	
	Drivers		05	
Site Contractor Workers (UPS & Uch-II)	EHS Staff (02 HSE Trainee Eng. + 01 HSE Assistant.	456	03	42.3%
	Other Staff (Local contractors & Security)		190	
Others (TCF Schools, Hospitals Dera Murad Jamali) CSR Initiative only		113	113	100%

1. Recruitment and Hiring Procedure

1.1 Employee Requisition

When a position is created, a formal request using Employee Requisition Form (Annexure B1-1), detailing the requirements including attributes of the persons; the required level of qualifications and experience; and nature/status of employment (i.e. permanent, temporary or casual), shall be submitted to the HR Department by the relevant HoD at the Head Office. In case of UPS recruitment, the HoD shall obtain written recommendation from the Plant Manager, prior to submission to HO HR. Salary offer to the selected individual will be made as per the comp & ben policy of the company. VP C,A &HR should ensure internal equity before making the offer.

Any new hiring must be in accordance with the 'Staff Strength' sanctioned by the CEO for each Department.

1.2 Position Description

The HR representative and respective HoD will jointly prepare a position description and document therein the complete job profile including responsibilities and tasks required to be performed along with the line of reporting. This document will be endorsed by the respective HoD/FH.

1.3 Recruitment

The HR Department will initiate the process of identifying suitable candidates. In this regard, the following methods may be adopted;

1.3.1 Employee/Counter Parties Referrals

HoDs and/or other Employees may refer people they know either due to their association with the Company, or personally, for the vacancy/position. This may include persons deputed on certain assignments with the Company in the past with whom the respective HoD/other Employee has interacted with and are accordingly in a position to reasonably assess them.

1.3.2 Executive Search Agencies

The HR Department may request any executive search agency to provide a list of the most suitable candidates along with their resumes, for a specific position based upon Position Description.

1.3.3 Vacancy Announcement/Advertisement

In case a suitable candidate has not been identified using the methods mentioned above, it is the responsibility of the HR department in consultation with HoD, to advertise the position externally once approval of VP C, A & HR has been obtained.

Advertisement will be in a Daily Newspaper, having circulation, preferably nationwide and /or advertised on the internet and shall give the candidates adequate time to apply.

Contents of the advertisement should include the position's job description, required qualification & experience etc. The HR Manager/Representative and the HoD shall coordinate and finalize the contents of the advertisement.

1.3.4 Internal Transfer

If any existing employee is considered suitable and qualified for the position, he/she will have the opportunity to apply provided that this will not in any way adversely impact his/her existing Department.

1.3.5 Hiring of Relatives

The Company shall not allow the hiring of close relatives (parents, siblings, children, spouses and spouse siblings,) of existing Employees. Board approval is required for any exceptions.

1.4 Selection

UPL applies a merit based criteria in its selection process. The competency of a particular job applicant who meets the primary eligibility criteria shall be assessed in terms of his/her "knowledge, skills and attitude" in order to identify the individual best suited to fill the job vacancy.
As a broader policy for hiring human resources, UPL endeavors all efforts for employing local manpower with in O&M teams and contractual staff provided they qualify selection process and stipulated criteria. During hiring process, if two equivalent candidates have same relevant experience and educational credentials, preference will be given to local human resource.
The selection process will proceed as follows:

1.4.1 Defining Evaluation Criteria

The HR Department, in close consultation with the respective HoD, will frame-out evaluation criteria which will include behavioral competencies, interpersonal skills, job specific attributes, qualifications, previous job history, experience, present and expected salary, etc.

1.4.2 Screening of Resumes/Short listing

The HR Department will review the resumes received and short list the most suitable candidates for interviewing, in consultation with the respective HoD.

1.4.3 Initial Telephonic Interviews

Candidates short listed from the screening for positions at Head Office will be called by the HR Department. A representative of the HR Department along with the HoD, after giving a brief introduction of the organization and the vacancy, shall conduct a telephonic interview and will initially evaluate:

i. The candidates basic communication skills; and
ii. Reason for switching his/her current job, if relevant.

For positions above the Associate level, the Functional Head may also form part of the Interviewing Panel.

During the telephonic interview all candidates should be informed that they will be contacted within a specified time, if selected for the formal interview.

1.4.4 Interview Pre-requisites

If the candidate's communication skills/reasons for switching are determined to be satisfactory, then he/she shall be called for a formal interview. Candidates have to fill in Employment Application Form (AnnexureB1-2) before the interview. The interview shall be scheduled on the time & date agreed by the HR department and the respective HoD (Interviewing Panel) and shall be jointly conducted by the interviewing panel. Candidates must be informed of:

i. Any documents which the candidates are required to bring along;
ii. Duration of the interview; and
iii. Venue of the interview (Head Office or UPS)

At least one day prior to the interview, the HR representative shall ensure that the interviewing panel has all the requisite documentation to facilitate the interviewing process. These may include, but are not limited to:

i. Interview Schedule;
ii. Position Description of the vacancy;
iii. CV for each candidate;
iv. Interview Questions; and
v. Candidate Scoring Sheet (Annexure B1-3).

1.4.5 The Interview

A good interview is two-fold to ensure that hiring at UPL is effective i.e., it assesses the suitability of the candidate for the respective job, and demonstrates to the candidate that UPL presents one of the best career opportunities for him/her.

The preliminary interview will be conducted by the HR department to assess soft skills; degrees; and work experience certificates. Second interview will be carried out by the interview committee for detailed evaluation of the candidate. The committee shall compose of at a minimum, an HR representative and the relevant HoD. The interviewers shall review the candidate's performance during the interview and arrive at a decision:

i. Using a common rating system of the Candidate Scoring Sheet, without making assumptions;
ii. Relying on answers given/behaviour demonstrated;
iii. Keeping all the information in context and not focusing on any one or two issues; and
iv. Making an assessment based on the candidate's attitude and interests, observed during the interview.

1.4.6 Written Test

Candidates further short-listed in the interview will also be required to appear in a written test to demonstrate his/her language, perceptions, communication and drafting skills. He/she shall also be asked to indicate his/her minimum acceptable salary. Tests shall be checked and scored by the HR Department. The results along with the interviewing panel's recommendations shall be documented on the Candidate Scoring Sheets.

Not more than five candidates shall be short listed on the comparative sheets. Unsuccessful candidates should be informed within ten days of their application.

1.4.7 Candidates Travelling Expenses

As a goodwill gesture, UPL will bear the travelling expenses of all such candidates who are not residents of Islamabad or Dera Murad Jamali, as the case may be. Admin Department will arrange or reimburse expenses as per Company policy.

1.4.8 Reference and Background Checks

The short listed candidates will be asked to provide professional/personal references who may be contacted by UPL. In this respect past employers or colleagues (in case of employee referrals) may be contacted. UPL also retains the right to conduct background security clearance checks.

1.4.9 Final Interview

After the interviews have been completed, the HR Department will consolidate the views of the interviewing panel.

In case of recommendation, not more than three candidates shall be short listed for the final interview. The HR Manager shall schedule the final interview for the short listed candidates with the final authorities as per financial Delegations, whose decision will be conclusive.

1.5 Hiring

If the Employee is successful in his/her interview(s) and the Company decides to culminate the recruitment process by offering employment to the candidate, the below procedures must be followed:

1.5.1 Employment Offer

The HR Department will provide a copy of draft employment contract outlining the terms and conditions of the employment including the status of employment (i.e. permanent, contractual, and temporary); the remuneration package being offered; and joining date, to the selected candidate. The VP C, A & HR will confirm the terms and conditions on offer for this role to the HR Department before the draft employment contract is issued.

The employment is subject to verification of the references provided by the candidate and successful clearing of the general medical examination. HR department will arrange pre-employment medical examination (examinations will be arranged at designated medical facility at Islamabad or elsewhere and provide hospital reference letter to the candidate. UPL will bear the pre-employment medical expenses.

1.5.2 Employment Contract

Upon acceptance of the employment offer, the HR Department will issue a formal employment contract which will be signed by HR Function Head. The candidate will be requested to return the signed copy of the employment contract within 3 working days to indicate his/her acceptance.

1.5.3 Change of Residence

Local UPS staff after joining are not allowed to shift their residence to another city as this will affect R&R cycle of the individual(s) and subsequent requirement of backup for the position.

1.5.4 Employment Orientation Package

Upon receipt of the signed copy of the Employment Contract, the HR Department will forward an information package to the new hire which will include the following:

i. Employee Record Form;
ii. Health Questionnaire Form (HQF);
iii. Direct Deposit Authorization Form;
iv. Account Opening Form along with a Company letter for opening the salary account with the scheduled bank;
v. Fact Book of the Company;

vi. Position Description for the new hire;
vii. UPL Standard Operating Procedures ('SOPs');
viii. Ethics Charter (to be signed by the Employee);
ix. Anti Bribery Policy Statement (to be signed by the Employee); and
x. Code of Conduct.

UCH POWER STATION PROCEDURE

EMERGENCY RESPONSE PLAN

ACTION	NAME / DESIGNATION	SIGNATURE	DATE
PRODUCED	J Finlay/Project Engineer		24.05.2009
REVIEWED	Ashok Kumar/Deputy Opts Mgr		26.05.2009
APPROVED	J McLoughlin/Plant Manager		31.05.2009

REVIEW / REVISION HISTORY

DATE	REV	DESCRIPTION OF CHANGE	PRODUCED	APPROVED
01-Sep-2009	1.1	For changes, compare Rev. 1.0	J Finlay	J McLoughlin
03-Sep-2009	1.2	For changes, compare Rev. 1.1	P Hogan	J Finlay
08-Feb-2010	1.3	Section 6.2.1 updated	Hasan Abbas	J McLoughlin
22-Mar-2010	1.4	Section 6.2.1 updated. Ops Mgr changed to SMR.	Paul Greenwood	J McLoughlin
11-Oct-201	2.0	For changes, compare with Rev. 1.4	Atique Ahmed (SMR)	Hasan Shehryar Malik (PM)
01-Jan-2012	2.1	Section 3 and Company logo and name	Mian Sharif (SCE)	Waseem Ellahi (PM)
13-Aug-2014	2.2	Procedure reviewed, sec 6.2 names / contact numbers updated, company name and logo updated	Mian Sharif (SCE)	Waseem Ellahi (PM)
22-Nov-2015	3.0	Procedure Revised, Section 4.0, 5.0 & 6.7.1 and Change of Company Logo updated	FIDA KHAN	WE PLANT MANAGER
20-Nov-2016	3.0	REVIEWED, NO CHANGE	FIDA KHAN	WE PLANT MANAGER
20-Nov-2017	3.0	REVIEWED, NO CHANGE	FIDA KHAN	WE PLANT MANAGER
20-Nov-2018	3.0	REVIEWED, NO CHANGE	FIDA KHAN	WE PLANT MANAGER
13-Jun-2019	3.1	SECTION 1, 2, 3, 4, 5 & 6 REVISED AND UPDATED	FIDA KHAN	WASEEM ELLAHI (PM)

This procedure is a key element in the Integrated Management System which drives continual improvement in all aspects of our business including Quality, Health & Safety and Environment.

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It is the users' responsibility to ensure they are working with the latest approved version.

TABLE OF CONTENTS

1 PURPOSE

This procedure outlines the process for the identification of legal and other requirements relating to Health, Safety, & Environment (HSE) to ensure we meet our compliance obligations for operation of Uch Power Station.

The purpose of this procedure is:

- To provide a prompt and co-ordinated response during an unexpected event that will ensure the protection of the staff, the plant, the public and the environment.

- To list the foreseeable hazards and emergencies that could arise and provide procedures or guidelines to be adhered to and outline the responsibilities and actions to be taken by designated company staff.

- To ensure an effective mode of communications between company staff, between company staff and the relevant authorities for the co-ordination and management of the response to an emergency.

2 SCOPE

This procedure applies to all activities carried out at Uch Power (Private) Limited and Uch-II Power (Private) Limited.

The procedure covers, recognizing the types of emergency that could occur, providing information and instructions for company staff, allocation of resources and co-ordination with off site emergence services.

3 REFERENCE / ASSOCIATED DOCUMENTS

H&S PROC/005-M	ENGIE procedure
	Electrical and Mechanical Safety Rules (SR-EM)

ER-PR-002	Actions in the Event of a Bomb Threat
ER-PR-003	Security Emergency Evacuation Plan
ER-PR-004	Medical Emergency Evacuation Plan
ER-PR-005	Actions in the Event of a Fire

4 DEFINITIONS / ACRONYMS

UPS	UCH POWER STATION
UPL	UCH POWER (PRIVATE) LIMITED
UCH-II	UCH-II POWER (PRIVATE) LIMITED
CCR	Central Control Room
OGDCL	Oil & Gas Development Corporation Limited.
NPCC	National Power Control Centre
SCE	Shift Charge Engineer on duty
AE Operations	Associate Engineer (The shift CCR operator on duty).
FIRE WARDEN	A nominated person, who will perform his duties as a lead Fire Warden at assigned buildings or colony areas.
ADMIN FIRE WARDEN	A nominated person, normally located in the Administration Building, as the Fire Warden.
Workshop & Warehouse FIRE WARDEN.	A nominated person, normally located in the Workshops & Warehouse Building, as the Fire Warden
COLONY FIRE WARDEN	A nominated person, normally located in the Colony, as the Fire Warden.
Deputy FIRE WARDEN	A nominated person, normally located in the Colony, Administration Building, Workshop or Warehouse Building, as Deputy Fire Warden.
COMPETENT PERSON	An individual who has sufficient technical knowledge and/or experience, to enable him to avoid DANGER and has been authorised in writing, by an appropriate officer of UPL, to carry out duties specified which may include receipt, transfer and clearance of specified SAFETY DOCUMENTS.
CONTRACTORS REPRESENTATIVE	An individual nominated by his company to represent the company.
DANGER	A risk to health or of bodily injury.

DRABC	D Assess the DANGER of the situation to the casualty and yourself. R Check the response (consciousness) of the casualty. A Check that the casualties airways are clear. B Check the casualties breathing. C Check the casualties circulation, check for a pulse.
FIRE TEAM LEADER	The FIRE TEAM MEMBER nominated as FIRE TEAM LEADER, whose name is listed on the CCR FIRE TEAM LEADER notice board.
FIRE TEAM MEMBER	A trained person who is an active member of the UPS Fire Team.
SECURITY MANAGER	A UPL designated sub-contractor employed to manage the Security Team responsible for safeguarding the UPS site. SPILLAGE HANDLING TEAM LEADER The UPL person nominated to lead the UPS Spillage Handling Team.
EMERGENCY ASSEMBLY POINT:	Car Park area at the Administration building entrance. Colony behind the Medical Centre. Back Up (At CCR car park)

5 RESPONSIBILITIES

The following personal responsibilities apply: -

Plant Manager

For reviewing all Plant Emergency Plan reports and approving where appropriate, the recommendations put forward.

Safety Management Representative

For the periodic review of this procedure.
For issuing a report with recommendations as necessary, on all incidents to the Plant Manager.
For liaison with the Emergency Services as necessary following the return to normal conditions.
For coordinating Plant Emergency Plan drills on a regular basis.
For ensuring that a written and/or photographic record of training and drills are kept for audit purposes.

Assistant Manager Administration

For keeping the staff attendance and visitors books up to date.
For ensuring communication with the CCR/security staff is available following the decision to evacuate the plant during normal office hours.

SCE

The SCE will take the role of Emergency Coordinator.
For carrying out the initial assessment of the situation, taking command of the incident locally and taking the appropriate action.
For completing and forwarding an event report to the Senior Operations Manager.
For completing an Accident Report Form as per Procedure SF-PR-011 if a person is injured.

AE Operations

The AE Operations (Control Room Operator) will take the role of Emergency Communicator as the central point for the receipt and making of all internal and external phone calls and two-way radio calls in the CCR.
For relaying of information to and from the SCE and to the Emergency Teams.
For sounding the plant fire alarm and calling the appropriate Emergency Services.
For keeping an up-to-date list of the emergency phone numbers in the CCR.
For the weekly testing of the building and plant emergency alarms.

FIRE TEAM LEADER

To collect information from the SCE and make a quick plan to:

a) fight any fire or

b) execute any rescue operation, if this is the declared emergency, or if any one is found missing in the roll call.

ADMIN FIRE WARDEN

Responsible for the ensuring that the Administration Building office staff is accounted for.

Responsible to examine the Administration Building, in the company of any fire team or shift personnel members, to determine that the Administration Building is safe after the risk assessment of the facts.

Responsible for the roll call at the plant EMERGENCY ASSEMBLY POINT and liaison with the SCE.

If the FIRE WARDEN is going to be absent from the building for more than a day, he should notify his deputy to ensure his duties are covered.

WORKSHOP & WAREHOUSE FIRE WARDEN

Responsible to ensure the evacuation of all occupants from Workshop & Warehouse Buildings.

Responsible to examine the Workshop & Warehouse Buildings, in the company of any fire team or shift personnel members, to determine that the Workshop & Warehouse Buildings are safe after the risk assessment of the facts.

If the Workshop & Warehouse Buildings FIRE WARDEN is going to be absent from the building for more than a day, he should notify his deputy to ensure his duties are covered.

COLONY FIRE WARDEN

Responsible for ensuring that the Colony inhabitants are accounted for.

Responsible to examine the Colony, in the company of any fire team or shift personnel members, to determine that the Colony is safe after the risk assessment of the facts.

Responsible for the roll call at the colony EMERGENCY ASSEMBLY POINT and liaison with the SCE.

If the Colony FIRE WARDEN is going to be absent from the building for more than a day, he should notify his deputy to ensure his duties are covered.

DEPUTY FIRE WARDEN

Responsible for coordinating with FIRE WARDEN that the buildings occupants staff is accounted for.

Responsible to examine the Administration Building, in the company of any fire team or shift personnel members, to determine that the his assigned area is safe after the risk assessment of the facts.

When the evacuation alarm sounds, the Deputy Fire Warden should check that the Fire warden is available. If not, he should undertake the FIRE WARDEN's duties.

Responsible for the roll call at the plant EMERGENCY ASSEMBLY POINT and liaison with the SCE.

SECURITY MANAGER

For informing the bomb disposal team and local police.
For liaising with the Emergency Services as necessary following the return to normal conditions.

CHEMICAL / OIL SPILLAGE RESPONSE TEAM LEADER

To lead the Spillage Handling Team to cope with an environmental emergency.

LINE MANAGER

For ensuring, in the event of a plant evacuation, that all their staff are accounted for and relaying this information to the SCE.

CONTRACTORS REPRESENTATIVE

For ensuring, in the event of a plant evacuation, that all their staff are accounted for and relaying this information to the FIRE WARDEN.

ALL PERSONNEL

To be vigilant at all times and notifying the CCR telephone 333 for UPL & 666 for UCH-II on discovering a fire or other emergency covered by this procedure.
To comply with this Procedure.

6 PROCEDURE

6.1 Introduction

The design, construction and operation of Uch Power Plant & UCH-II Power Plant takes into account the highest standards of safety. Nevertheless procedures are necessary to respond to and control any emergency that should arise.

The purpose of this document is to set out measures to be taken by all staff at Uch Power Station in the event of an emergency.

Given the varied circumstances which might arise, it is impractical to document every detailed action to be taken in every emergency. Instead this EMERGENCY RESPONSE PLAN (E.R.P.) provides a clear and concise reference of important actions for the foreseeable emergency situations. An easy to follow flow chart for Emergencies is given in Appendix 1. Emergency Action Plans have been developed to deal with localized plant incidents and are maintained on the LAN.

6.2 Names and Contact Numbers

Position	Plant	Colony	Outside Line
Emergency (CCR)	333	333	0838711755
Emergency (CCR Uch-II)	666	666	0838711755
Plant Manager	212	312	0838612966
Sr. Manager Maintenance	609	315	300 088 5686
Senior Operations Manager	208	308	300 0720105 03028510114
Manager Administration / Colony Security	637 615	737 314	03008520981 03033330555
Operations Manager	208	308	0838612962
Shift Charge Engineer	222, 223, 281	-	0838711755
Manager HSE	279	719	03028510214
Security Manager	510	510	
Deputy Commissioner Nasirabad			0838711683
Fire Fighting Brigade – DMJ	-	-	-
UPS Medical Center	444, 447,	386, 445, 347	03332802022 03007358424 03002870171
Civil Hospital – DMJ			0838710603
Additional Security Post at UPS	518		

Sadder Thana – DMJ			0838710639 0838710057 08387110167
Sub Divisional Magistrate(SDM) - DMJ			

6.2.1 Uch Power Plant Contacts

Waseem Ellahi Plant Manager	TEL OFFICE TEL HOME	212 312
Mohammad Abbas Sr. Manager Maintenance	TEL OFFICE TEL HOME	226 326
Allah Warayo Maintenance Manager	TEL OFFICE TEL HOME	205 305
Major Security Manager	TEL OFFICE	510
Syed Aamir Adnan Sr. Operations Manager	TEL OFFICE TEL HOME	208 308
Ahmed Ali (EMR) Sr. Manager TS	TEL OFFICE TEL HOME	211 311
Atique Ahmed (SMR) Operations Manager	TEL OFFICE TEL HOME	225 325
Hassan Abbas (QMR) DM C&I	TEL OFFICE TEL HOME	207 307
Aslam Hashmi DM Electrical	TEL OFFICE TEL HOME	206 306
Suhail Ahmed DM Chemical	TEL OFFICE TEL HOME	227 327
Shams Iqbal DM Mngr. Admin. & HR	TEL OFFICE TEL HOME	216 316
Tariq Jamali	TEL OFFICE	214

Mngr. Security & PR	TEL HOME	314
Doctor	TEL OFFICE TEL HOME	447 368

6.2.2 PLANT ADDRESS

Uch Power Plant
Dera Murad Jamali
District Nasirabad

STATION PHONE NUMBERS

Control Room Direct Line 0838 711755

UPL Shift Charge Engineer 222

UCH-II Shift Charge Engineer Hand Phone 281

Control Room Fax Number 0838 711754

UPL Station Internal Emergency Number 333

UCH-II Station Internal Emergency Number 666

6.2.3 OUTSIDE EMERGENCY CONTACTS

	DMJ	Sukkur	Karachi	
Area Code	0838	071	021	
Civil Hospital/ Ambulance	710603 NIL	5623699 115	9215740 115	
Fire Brigade	-	16	16	
Police Station	710057 NIL	5630210 15	NIL 15	
DPO	710598	9310560		
Railway	117	117	117	
Irrigation Dept.	710533	NIL	NIL	

6.3 Definition of an Emergency

6.3.1 Incident

An event, usually injury, fire or spillage, with the potential to cause or causing minor injury or minor internal damage that can be handled using the station internal resources without calling for external help. Poses no external threat and can be fully contained within the station site.
Examples: Minor cuts and bruises, small fires that can be put out with extinguishers or 2" hose reel, small spillages.

6.3.2 Emergency

An event, usually injury, fire, spillage or explosion, with the potential to cause or causing major injury (any injury causing lost time beyond the day of the accident) or damage that will require the help of outside agencies and /or with the potential to pose a threat external to our site.

Examples: Major cuts. Injuries to head, neck or back. Larger fires or spillages, floods, storms or sabotage.

6.4 General Emergency Procedures

6.4.1 Safety of Public

Uch Power Plant is built and operated to standards which ensure that the public will not be at risk from its operations. However if the safety of the general public should become a concern in the event of an emergency, the police should be informed immediately as they have the authority to take the appropriate action.

6.4.2 Safety of Staff

In any emergency the first priority is to remove staff from all sources of danger, to make sure that all are accounted for and to summon medical help as quickly as possible for those staff who need it.

To achieve this, the following are essential:-

1) Speedy evacuation and assembly of personnel at the EMERGENCY ASSEMBLY POINT.

2) Ensure all staff is accounted for and uninjured.

3) Isolate all sources of further danger, machinery, electrical, gas, hydrogen, oil, etc.

In order to ensure all people present on site are accounted for a head count will be conducted at the EMERGENCY ASSEMBLY POINT. Department managers, section head and contractors competent persons will report to the FIRE WARDEN. In addition attendance records and visitors records will be used to verify head count if required.

6.4.3 Safety of Plant

The second priority is the safety of the plant. Having ensured that all staff is safe and well, action must be taken quickly to minimize the damage that may be caused to the plant by the emergency.

To achieve the safety the following are essential:-

1) Shut down endangered plant quickly.

2) Isolate all sources that could add to the danger, electrical, gas, oil, etc.

3) Quickly tackle emergency with equipment and resources available, until help arrives.

6.4.4 Emergency Services

It is vital to the safety of personnel and plant that the emergency services are called quickly. It is better to call them out and find that they are not needed, than to wait and then find they are badly missed.

The gate security should be informed that the emergency services are coming as they can inform them of the nature and extent of the emergency, where they should report to and provide them with a copy of the E.R.P.

When the emergency services arrive on site they shall assume charge of the emergency and UPL & UCH-II staff shall provide them with whatever assistance and advice they require.

When first calling the emergency services, they should be informed of the following,

NAME OF STATION: UCH POWER PLANT / UCH-II POWER PLANT

LOCATION: Dera Murad Jamali
District Nasirabad

PHONE NUMBER: + 92 838 711740-9

NUMBER AND NATURE OF INJURED PERSONS

TYPE NATURE AND EXTENT OF FIRE OR SPILLAGE

NATURE AND EXTENT OF OTHER HAZARDS

6.4.5 Security

Gate security should be informed of the emergency. They will need to know its nature, its location, what emergency services are on the way and where they should direct them when they arrive.

They should hand over a copy of the E.R.P. to the emergency services when they arrive. They should restrict access to the site to UPL staff and emergency services only. They should ensure that no members of the public gain access to the site.

6.4.6 Senior Operations Manager

The senior manager available onsite should be informed as early as possible of the nature and extent of the emergency so as he can assist the Shift Charge Engineer in handling the situation.

6.4.7 Media

At no time is any member of UPL and UCH-II staff to enter into discussion with or make comments to any members of the radio, television or newspapers. If any member of the media makes contact with you, they are to be politely referred to the Plant Manager or Acting Plant Manager.

6.5. Specific Emergency Types

6.5.1 Introduction

In order to identify the important actions to be taken in an emergency, it is necessary to classify emergencies by their nature, threat and location.

Actions to be taken in response to emergencies are based on the following four essentials,

1) Understand the nature of the threat. Unless the threat is correctly evaluated then resulting action may be inappropriate.

2) Minimize the risk to people, environment and equipment. The severity of the damage is lessened if the exposure is reduced.

3) Contain the threat to avoid escalation. It is difficult to safely combat any threat if the situation is unstable.

4) Eliminate the threat by appropriate action.

6.5.2 Types of Hazard or Emergency

The possible types of emergencies that could occur are set out below.

Type of Hazard or Emergency	Possible locations or events
FIRE	Central Control Building Administration Building Workshop and Stores Building Ancillary Building Fuel Storage Tank Fuel Handling Systems Gas Turbine/Generator Steam Turbine/Generator HRSG Gas Receiving Station Hydrogen Building Transformers Electrical Switchgear Emergency Diesel Generator Laboratory and WTP Building Workshop and Stores Buildings Ancillary Building Distillate Fuel Storage Tank Distillate Fuel Handling Systems
	Workshop and Stores Buildings

EXPLOSION	Chemicals Storage Area Ancillary Building Distillate Fuel Storage Tank Distillate Fuel Handling Systems HRSG Gas Turbine/Generator Steam turbine generator Gas Receiving Station Hydrogen Building Transformers Electrical Switchgear Emergency Diesel Generator Battery Charging Area Bottled Gas Storage Area Air Receivers

Type of Hazard or Emergency	Possible Locations or Events
SPILLS	Workshop and Stores Building Distillate Fuel Storage Tank Distillate Fuel Handling Systems Gas Turbine Steam Turbine Transformers Lubricant Storage Chemical Storage WTP Area and Laboratory

Type of Hazard or Emergency	Possible Locations or Events
GAS LEAK	Gas Receiving Station Gas Lines Gas Turbine GT,ST/Generators Hydrogen Building Chemical Storage WTP Area and Laboratory Bottled Gas Storage

Type of Hazard or Emergency	Possible Locations or Events
CIVIL	Riot Bomb Sabotage Theft

Type of Hazard or Emergency	Possible Locations or Events
NATURAL EVENT	Storms Lightning Flooding Earthquake

Type of Hazard or Emergency	Possible Locations or Events
MEDICAL EMERGENCY	Electric Shock Slips and Falls Machinery Failure Steam Leakage Chemical Leakage Burns Falling Objects Lifting and Handling

6.6 Specific Emergency Summaries

6.6.1 Leaks without Fire

In this case there is the risk of an explosion or a fire if the leakages ignite. Further there is the risk that toxic gases may injure individuals and /or hamper the remedial efforts. Where gases involved are lighter than air the leakages tend to rise, limiting the risk of encountering an ignition source or endangering people. Gases heavier than air can fall to ground, drift with the wind and poison individuals not in the immediate area or be ignited by remote means.

Containing the threat means that sources of ignition must be avoided, particularly downwind/downstream of the incident. It is essential therefore that ignition sources are eliminated, particularly electrical, liquids are not allowed to spread, good ventilation is obtained and vehicles are prevented from entering any gas cloud. Wind socks which indicate wind direction are provided at strategic locations.

Minimizing the risk can be achieved by reducing the leaking quantities by depressurizing gas leaks and isolating as far as possible, and by the use of protective equipment.

Eliminating the risk involves dispersing the remaining gas by water spray and covering flammable liquids with foam.

6.6.2 Fires and Explosions

In this case the major risk is that the situation escalates due to damage from the fire. This can manifest itself in either adjacent tanks catching fire, cable racks or oil/gas pipes becoming conduits for the fire.

The effect of heat radiation is to warm adjacent surroundings. In the case of a flame the radiation depends principally upon the flame temperature, which may be as low as 400 deg C at the base of the flame, rising to 900 deg C in the upper reaches. This means that the radiation profile is variable, being relatively low below the flame, and rising rapidly when level with the flame or above the flame.

In the case of people, a human body can stand some 1.5 kw/m2 for extended periods without protection. This means that an unprotected person can approach within 50 meters of an elevated fire, for example to operate sub surface foam injection.

With regard to equipment, any warming above 250 deg C may result in internal ignition of hydrocarbons. In general cooling will only be required if the equipment is within 15 meters of the flame.

Containing the fire thus involves ensuring that there is sufficient water cooling on adjacent surroundings. Spread should be avoided by ensuring any drain paths for hydrocarbons are closed and any free hydrocarbons are covered with foam.

Minimizing the risks includes depressurizing any high pressure equipment, reducing liquid levels at risk by pumping liquid to a safe location, isolating electrical supplies.

Once the fire is under control, elimination of the threat involves extinguishing the fire. Care should be taken that burning liquids or gases are not extinguished until the source of the leak has been stopped, otherwise an explosive gas cloud will be formed.

For materials below their boiling points the fire only burns in the vapour. This is generated by radiation from the flame above. Interrupting the heat radiation completely will thus extinguish the fire. This can only really be effective for hydrocarbons if foam is used, as water simply sinks beneath the hydrocarbon. Further, use of water on hydrocarbon fires can be dangerous. In the later stage of a fire the water may boil under the hydrocarbon surface, resulting in dramatic escalation in burning rates.

It is important to know that the fire will not be extinguished unless the foam coverage is total. Attempting to extinguish a fire with insufficient foam will be simply wasteful.

6.6.3 Spillage

The major threats in an oil spill or chemical spill emergency are:

- Disruption to the integrity of essential public services
- Disturbance to the ecology of wildlife and marine habitats
- The effects on ecology, social amenities and commercial interests.
- The effects of disposal of contaminated spoil

Central to any estimation of a spill threat is the size and nature of the spill, its likely direction of movement and the area and nature of the potential impact.

6.6.4 Medical Emergency

In a medical emergency the aim is to maximize patient care. The major difficulty is that there is potentially a balance of risk to be considered if patient care is delayed then the condition may deteriorate. Alternatively, premature movement before stabilization of the patient may also cause deterioration in condition.

Where injuries are relatively mild, then initial treatment by a First Aider, followed by expert medical assessment is generally appropriate.

Where injuries are severe, initial first aid is important, particularly in ensuring breathing airways remain open, any bleeding is staunched, and neck/spine injuries are immobilized. Expert medical treatment will then follow.

A major injury should be potentially assumed if there is;

- Any loss of consciousness
- Burns to face/breathing passages
- Burns affecting more than 15% of the body
- Evident bone fractures
- Major bleeding
- Electric shook
- Suspected spinal/neck/head injuries

At all times consideration must be given to relatives and families of the injured person, particularly by maintaining confidentiality until next of kin have been informed and informing them promptly and humanely in order to avoid additional distress.

6.6.5 Bomb Threat

Of all emergency situations, the bomb threat is the most difficult to assess. Hoax phone calls are a realistic possibility which have occurred elsewhere, nevertheless in view of the potential impact all bomb threats must be considered seriously.

In assessing the degree of threat, cognizance should be taken of any pertinent background circumstances, for example whether the Company has recently attracted adverse publicity, or taken a stance which might aggravate certain groups or individuals. To the extent that this may make the threat more credible.

An important input to the threat assessment is the information route for the threat and anything gleaned by the recipient, particularly with regard to timing, location, nature and motivation. The receiver should therefore make every attempt to achieve maximum information regarding the threat.

If the threat appears to be credible to Senior Management then action will be considered to minimize the risk. This will include;

- Inform appropriate authorities
- Evacuation of non essential personnel

- Closing down the plant

If a suspicious object is found during a search then evacuation will be ordered where the location poses a threat to the safety of individuals. The size of the object found should give an estimate of the threat it poses. As bombs may be detonated by radio, all radio operation should cease.

6.6.6 Civil Disturbance

The major threats in a civil disturbance are;

- Personal violence against individuals
- Objects thrown at people, buildings and equipment
- Difficulties in free passage of individuals to/from work

In order to minimize the effect of these, security should be maximized and the station should be manned by the minimum key staff, with all other personnel being on standby at home.

Arrangements should be made to minimize outside movements, for example, by changing temporarily to longer shift working, and/or placing people in accommodation on site.

The safety of employees families should be considered if they are affected by the employees continued presence at the plant.

6.6.7 Flood

The major threats in case of a flood are;

- Personal safety of individuals
- Damage to buildings and equipment
- Difficulties in free passage of individuals to/from work

In order to minimize the effect of these, security should be maximized and the station should be manned by the minimum key staff, with all other personnel and families leaving site.

Due to the low elevation of the site and the numerous culverts and basements, it would be necessary to shutdown and electrically isolate the plant. Spillage from oil and chemical storage areas and tanks should also be considered

Arrangements should be made to minimize outside movements, for example, by changing temporarily to longer shift working, and/or placing people in accommodation on site.

6.7 Actions in Emergencies

6.71 General

This procedure covers all situations where a coordinated emergency response is required. This may be a situation involving one or more of the following emergencies listed above summarised as:

- Security/Civil
- Fire/Explosion
- Medical
- Leakage/Spillage
- Natural Emergency

Plant evacuation maybe necessary without prior warning when such an event occurs.

UPS's policy is that on hearing the Plant Emergency Alarm, all personnel with the exception of the duty shift staff are to immediately evacuate the plant or residential areas within the Colony.

Personnel evacuating an area should use the nearest exit and report to the EMERGENCY ASSEMBLY POINT without delay or stopping to collect personal belongings.

No person should re-enter risk areas, return to the workplace or residential areas until the all clear or other instructions have been given by the Sr. Operation Manager / SCE or through nominated Wardens, as appropriate.

UPL / UCH-II shift staff will operate the plant as normal until the situation is assessed by the SCE and further instructions issued.

ADMIN FIRE WARDEN will, if the incident occurs in office hours, contact the AE (CCR Operator) for confirmation of the roll call on the CCR telephone 222 or 223 for UPL & 281 or 259 for UCH-II.

WORKSHOP & WAREHOUSE FIRE WARDEN will, if the incident occurs in office hours, contact the AE (CCR Operator) for confirmation of the roll call on the CCR telephone 222 or 223 for UPL & 281 or 259 for UCH-II.

COLONY FIRE WARDEN will, if the incident occurs in or outside of office hours, contact the AE (CCR Operator) for confirmation of the roll call on the CCR telephone 222 or 223 for UPL & 281 or 259 for UCH-II.

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6.7.2 Actions on Discovering an Emergency Situation

Initiate the emergency alarm by operating the nearest break-glass unit, if appropriate, and / or

Contact the CCR by radio or from any internal phone by dialling 333 for UPL & 666 for UCH-II. Give the AE (CCR Operator) the following information:

- Your name
- Location of emergency
- Type and extent of emergency
- Confirm if casualties are involved

6.7.2 Action on Discovering a Fire

Initiate the Fire alarm by operating the nearest break-glass unit, if appropriate, and / or

Contact the CCR by radio or from any internal phone by dialling 333 for UPL & 666 for UCH-II. Give the AE (CCR Operator) the following information:

- Your name
- Location of Fire
- Type and extent of Fire
- Confirm if casualties are involved

Only attempt to fight the fire if it is small, it presents little risk and you are confident you can deal with it quickly by the correct use of the appropriate extinguisher or hose. Appendix A gives a description of the various portable fire extinguishers and their uses.

If you are unable to fight the fire safely, retreat to the closest EMERGENCY ASSEMBLY POINT.

6.7.3 Action on Discovering a Casualty

- Assist with basic First Aid, if trained, using 'DRABC'. Do not move the casualty unless to leave him would endanger his life i.e. fire or chemical hazard etc.
- Do not attempt to remove a casualty from an electrical hazard unless you are trained to do so or the power has been isolated.

6.7.4 Action by the SCE

The SCE shall go directly to the location of the incident to appraise the situation in order to make appropriate decisions.

The SCE shall direct and coordinate the emergency teams upon their arrival on the plant site giving as much assistance as possible.

To this end the SCE will invoke the appropriate procedure listed below, in consultation with the Sr. Operations Manager and Plant Manager.

- ER-PR-002 Bomb Threat Procedure
- ER-PR-003 Emergency Evacuation Plan
- ER-PR-004 Medical Emergency Evacuation Plan
- ER-PR-005 Actions in the Event of a Fire

6.7.5 Action by the AE (CCR Operator)

On receipt of the 333 / 666 call, he will communicate the details of the emergency to the SCE and if advised, sound the appropriate plant Emergency Alarm:

Hostile attack: Alternating Alarm. Action: Stay indoors, until all clear continues long alarm sounds and than Muster at relevant muster point.

All other events: Continuous Alarm. Action: all personnel Gather at relevant Muster point

The AE (CCR Operator) shall remain in the CCR to direct the Emergency Teams to the location of the incident.

All communication shall be to the AE (CCR Operator) who shall communicate with the SCE at the site of the emergency. With the exception of the initial 333 / 666 call, all other calls should be made on the 222 or 223 for UPL & 281 or 259 for UCH-II extensions.

He will receive and make incoming and outgoing internal and external phone calls and two-way radio calls in the CCR.

He will keep record of all such calls for coordination purposes.

If the CCR is to be evacuated, the AE (CCR Operator) will contact NPCC and OGDCL if possible, prior to initiating the STATION EMERGENCY SHUTDOWN SEQUENCE and then report to the nearest EMERGENCY ASSEMBLY POINT.

6.7.6 Action by the ADMIN FIRE WARDEN and/or COLONY FIRE WARDEN

The Fire Wardens should carry out a quick survey of the Administration building and/or the Colony areas in escort of a FIRE TEAM MEMBER.

He will make sure that the evacuation in the Administration and/or the Colony buildings is completed.

The Fire Wardens shall complete roll calls at the EMERGENCY ASSEMBLY POINT(S), and liaise with the SCE via the POWER 2 if necessary.

The Fire Wardens will call the POWER 2 and confirm that a roll call has been carried out and that all personnel on the plant site are accounted for at the EMERGENCY ASSEMBLY POINT(S).

6.7.7 Action by the FIRE TEAM LEADER

The FIRE TEAM LEADER shall call 333 / 666 or via radio Channel 4 and collect all the available information from the AE (CCR Operator).

If the emergency requires the response of the Fire Team the FIRE TEAM LEADER will take appropriate action to extinguish the fire using all available fire fighting equipment, with help of his Fire Team as per his experience and fire fighting procedures.

If any person is missing he will make search parties and start searching.

During fire fighting operations he will liaise with the SCE via the POWER 2 if necessary.

If the emergency does not require the response of the Fire Team, the Fire Team will stand down at the nearest EMERGENCY ASSEMBLY POINT to await further instructions from the POWER 2.

6.7.8 Action by the Medical Team Leader

The Medical Team Leader shall call 333 for UPL & 666 for UCH-II and collect all the available information from the POWER 2.

Take appropriate action to assist any casualty(ies) using all the available medical equipment with the help of his medical team as per his experience and first aid procedures.

During first aid he will liaise with the SCE via the AE (CCR Operator) if necessary.

If the emergency does not require the response of the Medical Team, the Medical Team will stand down at the nearest EMERGENCY ASSEMBLY POINT to await further instructions from the POWER 2.

6.7.9 Action by the SECURITY MANAGER

The SECURITY MANAGER shall call 333 for UPL & 666 for UCH-II and collect all the available information from the AE (CCR Operator).

Take appropriate action to assist the situation using all the available equipment as per his experience, and security procedures.

During the emergency he will liaise with the SCE via the AE (CCR Operator) if necessary.

If the emergency does not require the response of the Security Team, the Security Team will stand down at the nearest EMERGENCY ASSEMBLY POINT to await further instructions from the POWER 2.

6.7.10 Action by the SPILLAGE HANDLING TEAM LEADER

The SPILLAGE HANDLING TEAM LEADER shall call 333 for UPL & 666 for UCH-II and collect all the available information from the AE (CCR Operator) Take appropriate action to contain the environmental situation using all the available equipment as per his experience and the Environmental Management System procedures.

During this he will liaise with the SCE via the AE (CCR Operator) if necessary.

If the emergency does not require the response of the Environmental Response Team, then they will stand down at the nearest EMERGENCY ASSEMBLY POINT to await further instructions from the AE (CCR Operator)

6.7.11 Action by all employees, contractors and contractors

All personnel including UPL employees, Contractors and visitors to follow following actions when hearing following Siren Alarms.

Alternating Sound Alarm Hostile attack:

Action: Stay indoors and keep yourself safe until all clear continues long alarm sounds and then gather at relevant muster point.

Continuous Sound Alarm All other events:

Action: all personnel Gather at relevant Muster point

6.8 BACK UP EMERGENCY ASSEMBLY POINT

In the event that the EMERGENCY ASSEMBLY POINT in front of the Administration building is unsafe to use then a back up EMERGENCY ASSEMBLY POINT in the CCR car park will be utilized. The decision to assemble at the backup EMERGENCY ASSEMBLY POINT will be taken by the SCE.

6.9 TERMINATION OF EMERGENCY

As the emergency situation diminishes, consideration should be given to its termination. A major portion of the site may only be conditionally safe, due to the presence of waste materials and/or equipment/material damage. Decide whether to maintain standby facilities until final inspection and clean up.

The levels of clean up also require to be considered. If a large quantity of waste is involved it is preferable to have agreed this disposal previously, rather than face later dispute.

After the incident has terminated it is important to ensure that all the available information is collected as soon as possible. The facts require to be collected in

order to ascertain whether any significant lessons can be learned. An Emergency Evacuation report (see Appendix 2, should be completed to cover the evacuation. In the event of the wider emergency, further information should cover the events leading up to the emergency and the handling of the emergency at site. Any interviews need to be carried out immediately after the emergency, before recall is influenced by others and media reports. A factual summary should thus be prepared by the Plant manager or Acting plant manager.

6.10 E.R.P. Review and Update.

The Emergency Response Plan is to be reviewed and updated to correct deficiencies or omissions and to reflect changes in emergency response resources and capabilities, which will occur from time to time.

A review shall be carried out every six months or after the following circumstances or conditions if deemed to be required:

After the occurrence of an emergency
A drill or desktop exercise
A change in operational procedures
Major modification or addition of new equipment

Updates and amendments to the E.R.P can be performed after every review. All updates or amendments are to be approved by the Plant Manager.

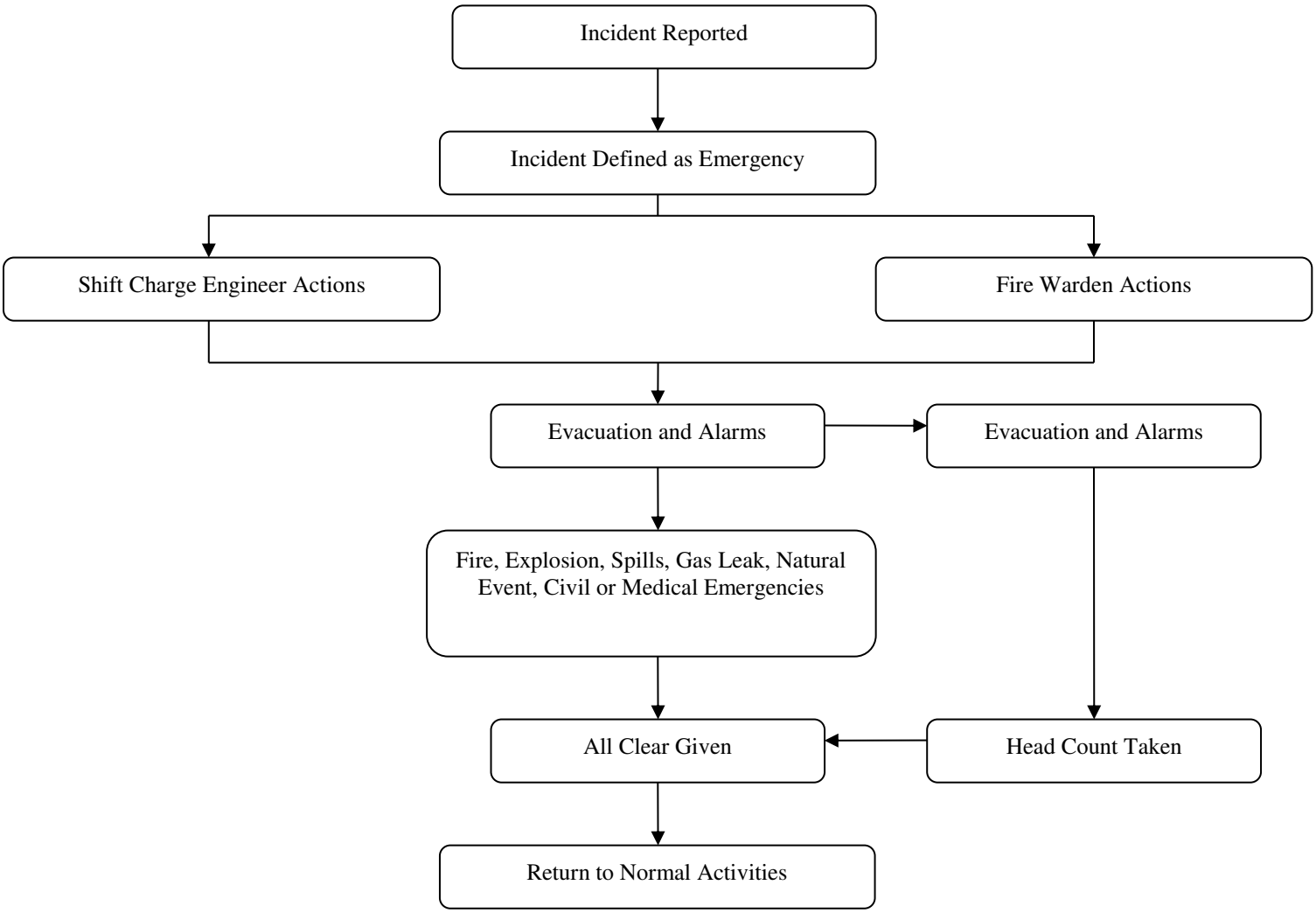
All updates and amendments are to be recorded in the Amendment List of the E.R.P.

7 APPENDIX

Appendix 1: Flow Chart for Emergencies

Appendix 2: Emergency Evacuation Report

Appendix 1: Flow Chart for Emergencies



Appendix 2:

See Document Template **ER-PR-001-001 Emergency Evacuation Report Template.dot**

Uch-II Power (Proivate) Limited

Appendix-L

Indicator Type	HSE Key Performance Indicators	Corporate Benchmark Yearly Basis	Year 2017	Year 2018	Year 2019
Lagging H&S Indicators	Average Number of Employees	-	57	58	57
	Number of Hours Worked by Employees	-	126,520	133,108	127,570
	Number of Hours Worked by Contractors	-	379,922	425,495	423,973
	Employee Occupational Fatality	0	0	0	0
	Contractor Occupational Fatality	0	0	0	0
	Third Party Fatality	0	0	0	0
	Employee Occupational Lost Time Accident	0	1	0	0
	Contractors Occupational Lost Time Accident	0	0	0	0
	Total Employee Days Lost due to Employee Occupational Lost Time Accidents	0	60	0	0
	Employee Fatality on the way to/from Work (Commuting)	0	0	0	0
	Employee Lost Time Accident on the way to/from Work	0	0	0	0
	Employee Occupational Diseases	0	0	0	0
	Employee Medically Treated Incident	1	0	0	0
	Third Party Medically Treated Incident	-	0	0	0
	Contractor Medically Treated Incident	1	0	1	0
	Employee First Aid Treatment	3	0	0	0
	Third Party First Aid Treatment	-	0	0	0
	Contractor First Aid Treatment	3	2	1	0
	Vehicle Accidents	-	0	0	0
	LTAFR	1.00	1.97	0.00	0.00

Uch-II Power (Proivate) Limited

Appendix-L

Indicator Type	HSE Key Performance Indicators	Corporate Benchmark Yearly Basis	Year 2017	Year 2018	Year 2019
Leading H&S Indicators	High Potential Serious Incidents or High Potential Near Misses/Near Hits	-	2	1	1
	Unsafe Act or Unsafe Conditions reported	-	671	1,014	940
	Near Miss & Unsafe Acts/ Conditions closed	-	646	994	917
	Near Miss & Unsafe Acts/ Conditions closeout Ratio	> 95%	96.3	98.0	97.6
	Number of Safety Walks	-	120	138	137
	Number of Toolbox Talks	-	758	1,533	1,507
	Number of Fresh Eyes Observations	-	157	206	157
	Point of Work Risk assessments performed	-	1,193	2,576	3,948
	Instinct Safety Modules Successfully Completed	-	381	774	789
	Permits to Work issued	-	1,714	1,939	2,533
	Permits to Work issued in accordance with task risk assessment control measures	-	1,714	1,939	2,533
	Emergency Drills performed	1	1	0	1
	Health Promotion Programmes	-	0	0	0
	Health Monitoring or Surveillance Analysis	1	0	0	0
	Boundary monitoring performed	12	12	12	12
	Safety Audits performed	12	4	4	2
	Number of Significant Environmental Incidents	0	0	0	0