

Environmental and Social Monitoring Report

Project Number: 43903-014
Quarterly Report (Apr - Jun 2017)
June 2017

Pakistan: Uch-II Power Project

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

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UCH-II POWER (PRIVATE) LIMITED

**OPERATIONAL PHASE
ENVIRONMENTAL AND SOCIAL MONITORING REPORT
Q2-2017**

(April 01, 2017 – June 30, 2017)



UCH-II POWER (PRIVATE) LIMITED

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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)	<i>Location of project/business</i>	Dera Murad Jamali, Baluchistan, Pakistan
(ii)	<i>Nature</i>	Operation & Maintenance of low BTU gas fired combined cycle power plant.
(iii)	<i>Scale/size</i>	404 MW (ISO Gross Rating) 2 Gas Turbines x 01 Steam Turbine
(iv)	<i>Date of construction/operation commencement</i>	Construction activities commenced in July 2011. Project achieved Commercial Operation Date (COD) on April 4, 2014. after successful completion of Reliability Run Test on April 3, 2014
(v)	<i>Name, designation and signature of person responsible for preparing/reviewing the report</i>	Fida Muhammad Khan, Manager HSE Uch-II / Waseem Ellahi Plant General Manager
B Relevant Environmental Permits or Compliance Certificates		
(i)	<i>Summary of permit conditions & media(s) covered</i>	"No Objection Certificate issued by BEPA"
(ii)	<i>Issue by which government Agency</i>	Baluchistan Environmental Protection Agency (BEPA)
(iii)	<i>Issuance date and duration of validity</i>	December 9, 2010 – BEPA also issued Confirmation of compliance under PEPA Regulation 2000 in April 2014. Copy of BEPA confirmation of compliance attached as Appendix-H.
(iv)	<i>Renewal requirements</i>	None
C Incidents of Violations or Non-Compliance		
(i)	<i>Recorded date and responsible agencies</i>	None in Q-2 2017
(ii)	<i>Nature of non-compliance</i>	No reportable incident to authorities recorded during Q2 - 2017
(iii)	<i>Violation or non-compliance based on what environmental standards and regulations</i>	N/A
(iv)	<i>Recorded dates and authorities</i>	During the period Q2 - 2017, EHS related observations of minor nature recorded during routine site monitoring. Log with corrective actions attached as Appendix A.
(v)	<i>Media or community reactions (if any)</i>	None in Q-2 2017
(vi)	<i>Corrective actions, deadlines, identification of responsible parties</i>	Short term corrective actions identified through regular site H&S walks. Please refer to Appendix A.
	<i>(a) short-term: remedial action</i>	Please refer to Appendix A
	<i>(b) long-term: preventative measures</i>	None in Q-2 2017
D Incidents of Environmental and Safety Accidents		
(i)	<i>Incident recorded dates and responsible agencies,</i>	None in Q-2 2017 Attached Appendix-L describes Health Safety & Environmental Leading and Lagging indicators.
(ii)	<i>Scale of damage and injury (if any)</i>	None in Q-2 2017
(iii)	<i>Authorities in charge of investigation/recording</i>	Uch-II Management responsible for recording and investigation.
(iv)	<i>Media or community reactions (if any)</i>	None in Q-2 2017
(v)	<i>Corrective actions, deadlines, identification of responsible parties</i>	None in Q-2 2017
	<i>(a) short-term: remedial action</i>	None in Q-2 2017
	<i>(b) long-term: preventative measures</i>	None in Q-2 2017
E Labour Relations and Conditions		
(i)	<i>Nature of labour dispute or grievance</i>	None in Q-2 2017
(ii)	<i>Legal requirements, Permit conditions and renewal requirements</i>	None in Q-2 2017

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(iii)	<i>Authorities in charge of investigation/recording</i>	Uch-II Management responsible for recording and investigation.
(iv)	<i>Media or community reactions (if any)</i>	None in Q-2 2017
(v)	<i>Corrective actions, deadlines, identification of responsible parties</i>	N/A
(vi)	<i>Labour relations and living conditions for construction labour force</i>	Large portion of construction labour camp decommissioned after completion of project phase and major chunk of EPC labour demobilized. Only warranty team is at site residing inside owner's housing compound with satisfactory living conditions.
F	Environmental Capacity	
(i)	<i>Staff capacities in environmental management (as relevant)</i>	<p>Uch-II O&M Environmental Staff Consists of;</p> <ul style="list-style-type: none"> (i) 01 Manager HSE (ii) 01 Senior Manager Operations (iii) 01 Manager Operations (iv) 01 Deputy Manager Chemical (Effluent treatment, analysis & Spill Response) (v) 02 HSE Officer (vi) 02 Senior Chemists (Effluent treatment, analysis & Spill Response) (vii) 01 Chemical Assistants (Effluent treatment & Spill Response) (viii) 01 Manager Admin / PR (ix) 01 Manager Colony & Security (x) 01 Deputy Manager HR <ul style="list-style-type: none"> • 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)	<i>Degree of awareness of: (i) environmental management, (ii) health and safety, (iii) environmental laws and regulations</i>	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)	<i>Training programs carried out</i>	<p>Training and awareness sessions on Safety Rules for Acceptors & Designated Person, Work at Height, Hazard Identification & Risk Assessment, First Aid Refresher, QHSE Policy, Control of smoking Policy, Drug and alcohol policy, Good catch and Near Miss Reporting procedure, Point of Work Risk Assessment, Heat illness carried out with O&M and Contractor staff.</p> <ul style="list-style-type: none"> • Pre Job TBTs conducted on regular basis. • Weekly Fire drills performed by O&M Team
(iv)	<i>Needs assessment of environmental management capacity (as relevant)</i>	All positions filled as per O&M staffing plan.
(v)	<i>Compliance audits carried out</i>	None in Q-2 2017
G	Stakeholder Consultation/CSR Activities	
(i)	<i>Details of consultations, if any, with local communities, nongovernmental organizations, civil society groups, and other stakeholders, including affected people</i>	<p>Health Care</p> <ol style="list-style-type: none"> 1. Continued operations of 10 water filtration plants 2. Operational support for the Emergency Care Center, DHQ Hospital Dera Murad Jamali was continued during Q-2 2017 <p>Education</p> <ol style="list-style-type: none"> 3. 14 trainees from the local community were hired under UPL's fully funded technical and non-technical apprenticeship program at Uch power station. 4. Quarterly operational support to three TCF-Uch Primary and 1 TCF-Uch Secondary schools continued. The schools continue to be a source of quality education for the local community.
(ii)	<i>Describe efforts to promote community relations and local development for inhabitants of the project area.</i>	<p>No communities migrated or effected residing in the vicinity of project site due to facility setup.</p> <p>Community is engaged during consultative meetings for CSR initiatives via the District Administration office to focus the program. A few permeant features of the program are the continued operational support towards the following projects funded by Uch;</p> <ul style="list-style-type: none"> (i) Quality Primary (3) and Secondary (1) schools built in collaboration with The Citizens Foundation (TCF). At present the schools educate over 1,200 students from Dera Murad Jamali and adjacent areas. (ii) A 14 bed fully equipped Emergency Care Center at the DHQ Hospital, Dera Murad Jamali. The Hospital (iii) 10 water filtration plants for the provision of clean drinking

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		water to the community (iv) Trainee program where students get an opportunity to hone their skills at the power station. Uch also contributes to the relief efforts during natural calamities. Total spend figures for Uch will be updated at the end of year after the completion of all projects earmarked for the year.	
(iii)	Project procedures for (a) hiring and (b) acquisition of goods and services	UPL prefers hiring human resource from local area at all levels. Attached Appendix-I provided the local - Balochistan staff ratio at UPL site (including O&M employees & contractors staff).	
(iv)	Provide List of grievances and status of grievance resolution	None in Q-2 2017	
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 Q-2 2017 is attached as Appendix-B. Results of ambient air quality and annual vehicles exhaust emission testing will be provided in Q4-2017 report.
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 Q-2 2017. 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 Q-2 2017.
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 Q-2 2017.
4	Noise and vibration	Plant high noise areas highlighted	Plant noise monitoring data (ambient & occupational noise levels) for Q-2 2017 is indicated in Appendix-E. Issue of high noise levels around plant equipment is explained in Section-I of this report.
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 Q-2 2017. Methodology for computation of the CO ₂ 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



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		issues).
I	Summary Assessment of Client Performance and Recommendations	
<p>Project Commercial Operation commenced on April 4, 2014 after completion of Reliability Run Test on April 3, 2014.</p> <p>Total Power Generation for Q-2 2017 remained 699.715 GWh.</p> <p><u>Update Status on Pending Issues:</u></p> <ul style="list-style-type: none">- Work was in progress for rectification of high noise level inside CCR and made suspended till 2018 scheduled outage due to location derived hazards.- RO Plant is successfully running under supervision of Uch-II O&M team with some minor issues managed by O&M Team <p><u>Positive Achievements:</u></p> <ul style="list-style-type: none">- No environmental incident / breach reported in Q2-2017. There were no employees or contractors Lost Time Incident recorded during the period under review.- World Day for Safety and Health at Work 2017 was organized and celebrated at power station. Manager HSE gave Presentation on Safety statistics & some important incidents during last 3 years followed by Station Manager addressed over recent Uch-II LTA March 2017. Safety talk with contractors & employees and HSE Duty Pledge by all contractors and employees were also performed during the event.- Management Safety Moments (MSM) on “Road Risk & Safety Rules (LOTO)” were performed by CEO Rodak Ali Iqbal, which clearly reflects the devoted commitment to HSE management from the highest levels within the company.- During Q2-2017, HSE site monitoring walks, fresh eyes observations, tool box talks, in house safety trainings, point of work risk assessments carried out as per plan and number increased as compared to Q-1 2017.- The Health Safety & Environment trainings on different topics were delivered during Q-1 2017. Considering the extreme weather conditions, special emphasizes was given on trainings and awareness session related to Heat Illness and first aid refresher courses.		

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

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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

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Appendix-A ***Uch-II Site Monitoring Summary Q2-2017*** ***Corrective Actions***

Monitoring Period		Q2, 2017	
Monitoring Conducted by		Uch-II Staff	
Corrective Actions By		Uch-II Maintenance & Operation Departments	
S. No	Findings	Corrective Actions	Compliance Status (as of Jun 30, 2017)
01	Manual Call point found installed close to the pathway near the ST transformer. Caution tape needs to be applied around the conduit to enhance the visibility.	Reflective type caution tape applied over the conduit to enhance the visibility.	Completed
02	HVAC duct piece with sharp edges found near the admin building entrance door. Sharp piece was made removed from the location but however routine inspection should be performed to check the strength of such joints.	Inspection routine of HVAC duct has been set in maximo and being followed regularly.	Completed
03	Plastic bucket and wooden logs placed outside a container near Uch-II CCR, area dusting and housekeeping also required.	Materials removed and area housekeeping performed to ensure the tidiness.	Completed
04	Near Sub-station # 14, electrical cables are passing through the road towards Evaporation pond. Caution Tape is their but not visible from inside the vehicle while approaching toward sub-station.	Ramp was provided so that vehicle can easily move from that area.	Completed
05	All excavated soil from the excavated pit near 220 Kv Tower was stored at the edges of excavated pit which may leads towards the collapse of pit.	Excavated soil was removed immediately and all exposed area made secured with rigid barrication.	Completed
06	Service/Fire Water tank Wind socks was found deteriorated and weathered off which required to be replaced with new one.	Deteriorated and weathered of wind sock replaced with new one.	Completed
07	Miscellaneous material is placed in disorganized way on roof of CCR which need proper stacking or housekeeping. Moreover, Sharpe edges of metallic material may also lead towards damaging of roof treatment.	All scrap and loose materials removed from the CCR roof and housekeeping performed.	Completed
08	Electric cable insulation of one of the air conditioning unit is found damaged due to extreme weather condition.	Damaged part of insulation was made repaired.	Completed
09	Drain pipe of HRSG-1 sampling analyzer container at ground level is creating tripping and falling on the ground	Modification was done to reroute the drain pipe from being exposed to anyone one and creating tripping and	Completed

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	hazards.	falling hazards.	
10	Fire extinguisher was found uninspected at pat feeder substation 13 area. Also fire extinguisher was not fixed with wall and placed on ground.	Fire extinguisher Inspection was carried out and also fire extinguisher was fixed with wall.	Completed
11	Life-Saving Rules board poorly hanged on Uch-II warehouse wall which may fall down on ground and can lead towards any untoward situation.	Life-Saving Rules safety board was immediately fixed to prevent it from falling.	Completed
12	Area excavated for installation of HSE statistics board was spotted exposed and unprotected.	Rigid barrication was applied to protect the exposed area.	Completed

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Appendix-B

Period: Q2 - 2017

GTs Stack Emissions

Q2, 2017						
Stack Emissions	Units	Average GT-1	Average GT-2	Average Both GTs	NEQS Limits	WB / IFC Guidelines
Exhaust Temp.	°C	116.5	115.3	115.9	-	-
Particulate Matter	mg/Nm ³	0.31	3.11	1.71	500	50
SO ₂	mg/Nm ³	1.4	0.36	0.88	400	N/A
SO ₂	Metric ton/d			0.25	100	-
NO _x *	mg/Nm ³	52.1	27.2	39.6	400	152 (at 15% excess O ₂ level)
NO _x	lb/MMBTU			0.11	0.2	-

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

CO₂ Produced

Q2, 2017			
	Monthly Average [Tons]	Total Quantity [Tons]	Total Quantity [Kg/KWh]
CO ₂ Produced (including CO ₂ in fuel gas)	181,384.7	544,154.29	0.77
CO ₂ Produced (excluding CO ₂ in fuel gas)	101,825.1	305,475.26	0.43

YTD 2017 (i.e. up to Q2 2017)		
	YTD – Total Tons of CO ₂ Produced	YTD – Average KgCO ₂ /KWh
CO ₂ Produced (including CO ₂ in fuel gas)	999,207.22	0.78
CO ₂ Produced (excluding CO ₂ in fuel gas)	560,931.17	0.43

Total Power Generation for Q-2 2017 is 699.715 GWh
YTD Power Generation is 1279.123 GWh

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CO₂ Calculation Methodology

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

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

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

Heating values

Constituents	HHV (dry) MJ/kg	LHV (dry) MJ/kg
Carbon Dioxide	0	0
Nitrogen	0	0
Methane	55.4850	49.9995
Ethane	51.8645	47.4742
Propane	50.3414	46.3418
Isobutane	49.5135	45.7279
N-Butane	49.5135	45.7279
Isopentane	48.9996	45.3419
N-Pentane	48.9996	45.3419
Hexanes	48.6694	45.0907

HHV (dry)	LHV (dry)
0	0
0	0
371.0400	334.3574
17.3783	15.9073
9.2798	8.5426
3.2713	3.0212
3.4823	3.2160
1.4024	1.2977
1.0606	0.9814
0.8388	0.7772

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

For calculating CO₂ emissions the following formula is:



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

Whereas 01 MJ = 1055.056 x MMBTU

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

Energy Usage

Energy Usage Q2-2017

Parameters	Units	Apr-17	May-17	Jun-17
Fuel Gas Consumed	m3	108,602,765.30	114,202,988.72	91,943,396.11
Hours of Operation	Hours	672.7	744	720

Ambient Air Quality Data

Q2, 2017

Parameters	Units	Monitoring Location: Close to Main Gate of Uch Power Station	NEQS Limits
		24 Hour Average Concentration	
CO	mg/m ³	1.6	5 mg/m ³ (limit for 8 hours)
NO	μg/m ³	8.8	40 μg/m ³ (limit for 24 hours)
NO ₂	μg/m ³	0.1	80 μg/m ³ (limit for 24 hours)
SO ₂	μg/m ³	4.0	120 μg/m ³ (limit for 24 hours)

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Vehicle Exhaust Emissions

Frequency of vehicle exhaust emissions testing is defined as “Annually” in the EMP and will be carried out in October 2017.

Heavy Metals Emissions

Semi Annual Heavy Metals Emissions

Frequency of heavy metal emission testing is defined as Semi-annually in EMP. In 2017, heavy metal testing was performed in June 2017 and now this would be carried out in September 2017 and results would be shared in Q3 report accordingly.

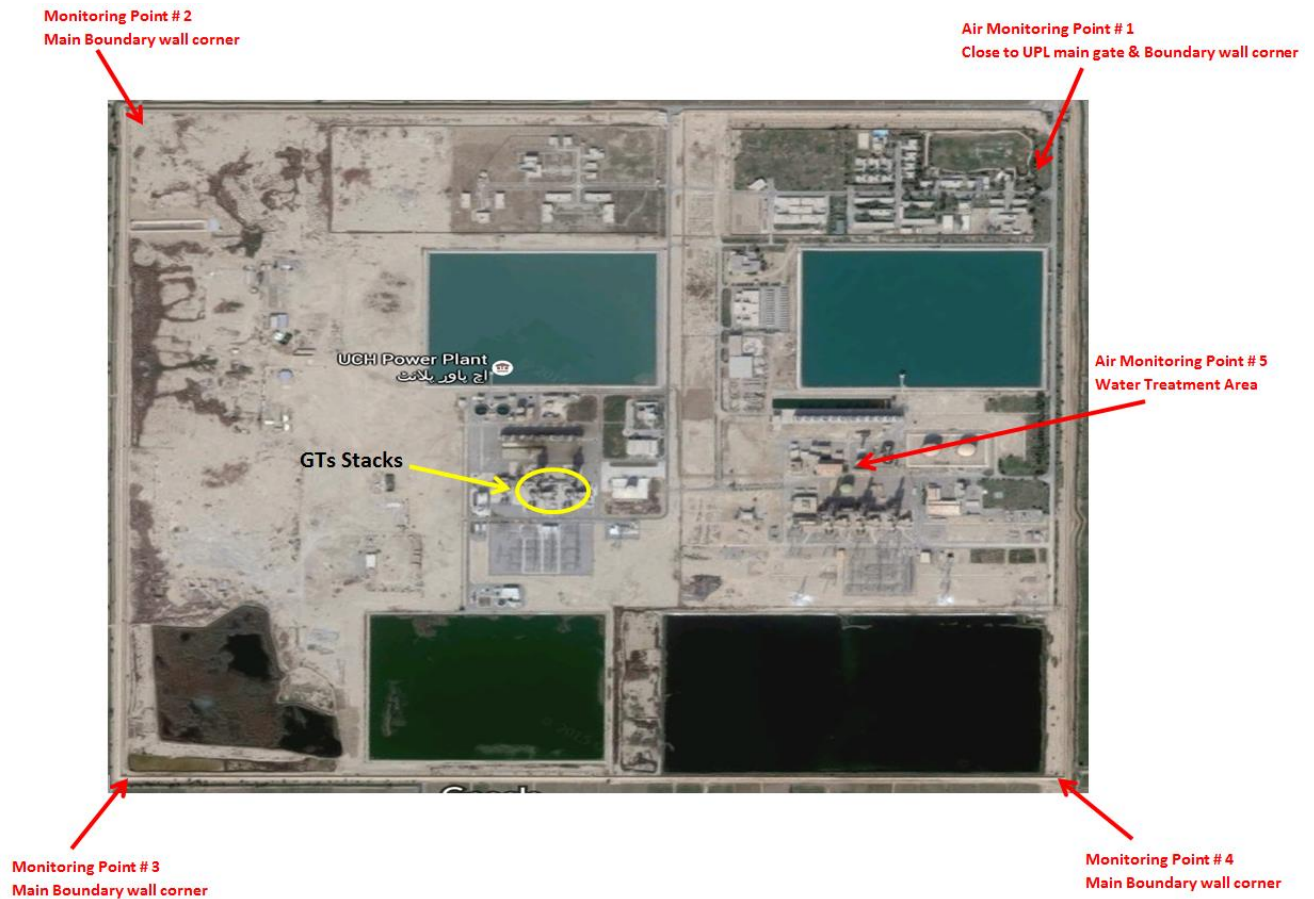
GT Stack - Q2, 2017

S. No	Parameters	Method	Unit	Results
1	Mercury (Hg)	USEPA - 29	mg / Nm ³	<01.25
2	Cadmium (Cd)	USEPA - 29	mg / Nm ³	<05.00
3	Arsenic (As)	USEPA - 29	mg / Nm ³	<66.25
4	Antimony (Sb)	USEPA - 29	mg / Nm ³	<40.00
5	Zinc (Zn)	USEPA - 29	mg / Nm ³	<02.50
6	Lead (Pb)	USEPA - 29	mg / Nm ³	<52.50

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Appendix B-I

Location Map – Ambient Air Quality Monitoring Points



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Appendix C

Raw Water Treatment Plant:

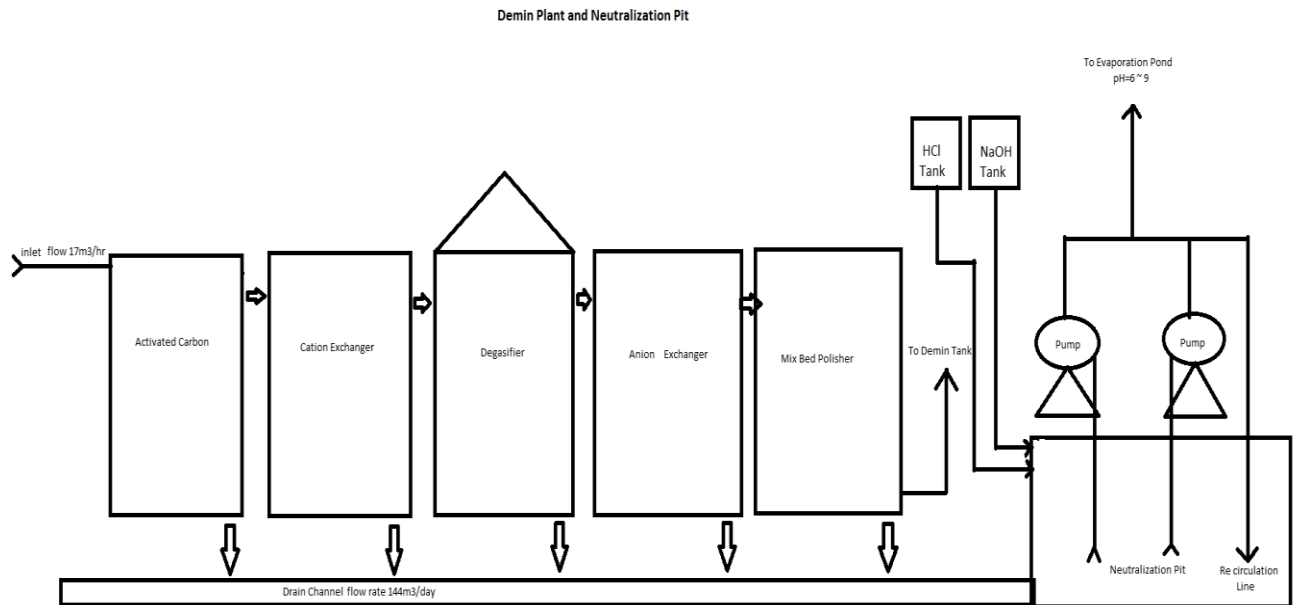
Raw water is supplied to Uch-II site from the Pat Feeder canal located approximately 3km away from site through a pipeline. Raw water is stored in a raw water storage pond. Raw water is pumped from the storage pond via pumps to clarifiers. Clarified water is forwarded via a surge tank for cooling water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



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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.

UCH-II POWER (PRIVATE) LIMITED

Parameters for one train of RO are as below:

Feed water Quantity = 80m³/ hr.

Feed water pH = 8.0

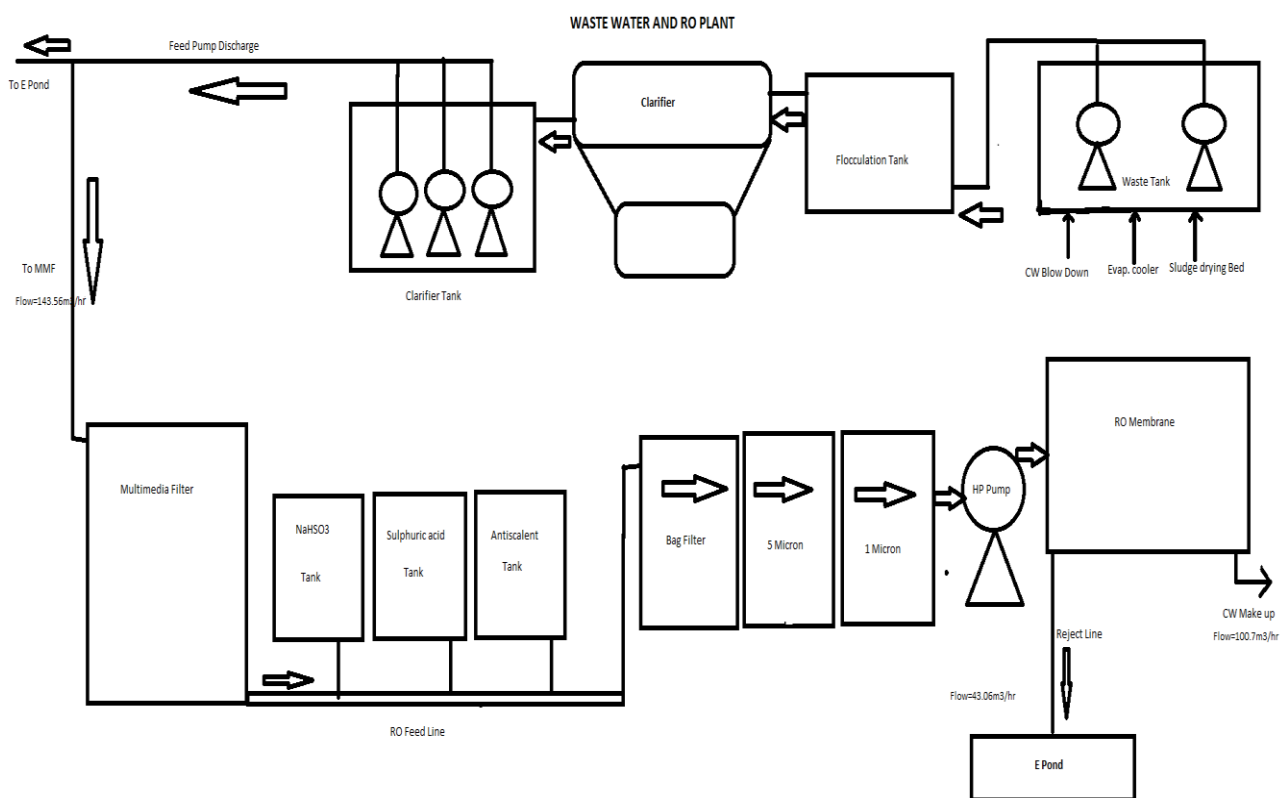
Feed water conductivity = 2694 us/cm

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

Q2-2017

Cooling water

Location: Cooling tower discharge point

Parameters	Units	Apr-17	May-17	Jun-17	NEQS Limits
Temp	°C	31	32	31	40
pH	pH	8.26~8.37	7.6 ~8.37	7.5~7.61	6 to 10

Sewage Treatment Plant

Location: Sewage treatment discharge point

Parameters	Units	Apr-17	May-17	Jun-17	NEQS Limits
pH	pH	7.60	8.16	7.5	6 to 10
TSS	mg/liter	8	6	17	150
BOD	mg/liter	1.5	1.57	11	80
COD	mg/liter	27	13	48	150

Process Water Treatment Plant

Closed Cooling Water (CCW)

Parameters	Units	Apr-17	May-17	Jun-17	NEQS Limits
pH	pH	9.44	9.41	9.2	6 to 10
TSS	mg/liter	1	1	1	150
Cl-	mg/liter	< 1.0	< 1.0	<1.0	1000
Metals (Fe)	ppb	40	42	53	



UCH-II POWER (PRIVATE) LIMITED

Heat Recovery Steam Generator # 1 (HRSG-1)

Parameters	Units	Apr-17	May-17	Jun-17	NEQS Limits
pH	pH	9.61~9.82	9.4~9.79	9.38~9.80	6 to 10
TSS	mg/liter	< 1	< 1	< 1	150
Cl-	mg/liter	< 0.1	< 0.1	< 0.1	1000
Metals (Fe)	ppb	9	7	7	

Heat Recovery Steam Generator # 2 (HRSG-II)

Parameters	Units	Apr-17	May-17	Jun-17	NEQS Limits
pH	pH	9.42~9.87	9.2~9.89	9.29~9.81	6 to 10
TSS	mg/liter	< 1	< 1	< 1	150
Cl-	mg/liter	< 0.1	< 0.1	< 0.1	1000
Metals (Fe)	ppb	11.5	7	8	

Discharge Point RO Reject

Parameters	Units	Apr-17	May-17	Jun-17	NEQS Limits
pH	pH	7.8	RO remains out of service	6.6	6 to 10
TSS	mg/liter	1		1	150
Cl-	mg/liter	1136		980	1000
Metals (Fe)	ppb	0.13		0.34	

UCH-II POWER (PRIVATE) LIMITED

Evaporation Pond

Location: Effluent flowing to evaporation pond

Parameters	Units	Apr-17	May-17	Jun-17	NEQS Limits
BOD	mg/liter	0	1.5	0.6	80
COD	mg/liter	24	34	18	150
Cl-	mg/liter	280	276	280	1000
metals (Fe, Zn)	mg/liter	0.17+0.18	2.2+0.02	0.4+0.13	Fe 8.0 & Zn 5.0
Temp	°C	33	35	34	40
pH	pH	7.96	8.23	7.02	6 to 10
TSS	mg/liter	12	21	13	150
Oil & grease	mg/liter	1.1	0.8	0.95	10

Surface Drains

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

Parameters	Apr-17	May-17	Jun-17
Appearance & condition of oil & grease	No water in drains	No water in drains	No water in drains

Water Usage

Location: Pat Feeder Canal intake point

Water usage (m3)	Apr-17	May-17	Jun-17
	138,950	143,850	508,140

UCH-II POWER (PRIVATE) LIMITED

Appendix-D

Q-2 2017

Waste Type	Units	Apr-17	May-17	Jun-17
Used oil	Ltr	350	10	5
Metal	Kg	1	8	26
Paper/ Plastic/ Glass	Kg	52	77	22
Wood & Food Waste	Kg	332	515	312
Oil Filters & Oily Rags	Kg	600	84	71
Used Batteries, wet/dry cells	Nos	5	1.5	2
Old Tyres	Nos	0	0	0

UCH-II POWER (PRIVATE) LIMITED

Appendix-E

Occupational Noise Monitoring			Average Noise Monitoring Results (dB) A
S. No	Location of Equipment	Guarantee limits	Q2, 2017
1	East side of pump "A" at Raw Water Pumping Station	85 (dB) A	84.2
2	East side of pump "B" at Raw Water Pumping Station	85 (dB) A	–
3	South Side of potable water supply pump "A"	85 (dB) A	75.6
4	South Side of CT Basin Makeup Pump "A"	85 (dB) A	82.1
5	East Side of CT Basin Makeup Pump "B"	85 (dB) A	–
6	West side of DM distillation pump "B"	85 (dB) A	–
7	South side of Hot Well make up pump "B"	85 (dB) A	78.8
8	East side of Service Water pump "A"	85 (dB) A	86.7
9	North Side of CT at ground level close to cell #02	85 (dB) A	88.6
10	North Side of CT at ground level close to cell #04	85 (dB) A	88.3
11	North Side of CT at ground level close to cell #06	85 (dB) A	88.5
12	South Side of CT at ground level close to cell #08	85 (dB) A	88.9
13	East Side of Cooling Tower fan motor # 6(10PAB01-AN006)	85 (dB) A	83.9
14	East Side of Cooling Tower fan motor # 8 (10PAB01-AN008)	85 (dB) A	84.1
15	East Side of Fire water pump house with door close & Diesel pump running	85 (dB) A	72.6
16	North Side of Fire water pump house with door close & Diesel pump OFF	85 (dB) A	71.4
17	West side of HSD Decanting point # 3	85 (dB) A	62.5
18	North Side of HRSG-2 main stack	85 (dB) A	72.2
19	North side of GT -2 Generator	85 (dB) A	80.5
20	South side of GT -2 turbine combustion chamber	85 (dB) A	83.2
21	North side of GT -2 PEECC	85 (dB) A	71.6
22	South side of boiler feed pump "B" (HRSG-2)	85 (dB) A	90.6
23	South side of boiler feed pump "A" (HRSG-2)	85 (dB) A	–
24	South side of GT -1 PEECC	85 (dB) A	73.7
25	South side of GT -1 turbine combustion chamber	85 (dB) A	82.2
26	West side of GT -1 Generator	85 (dB) A	79.4
27	South side of GT -1 turbine compartment (shaft) entrance door	85 (dB) A	79.6
28	North Side of HRSG-1 main stack	85 (dB) A	73.3
29	West side of HRSG-1 at bottom close to HRSG duct entrance	85 (dB) A	84.1
30	West Side of Cooling water pumping station	85 (dB) A	83.6
31	West Side of CW pump "B" in cooling water pumping station	85 (dB) A	–
32	North Side of CW pump "B" in cooling water pumping station	85 (dB) A	–
33	West Side of CW pump "C" in cooling water pumping station	85 (dB) A	87.8
34	North Side of CW pump "C" in cooling water pumping station	85 (dB) A	88.2
35	West Side of Auxiliary CW pump # 1 in cooling water pumping station	85 (dB) A	90.1
36	East Side of Auxiliary CW pump # 1 in cooling water pumping station	85 (dB) A	94.4
37	West Side of Auxiliary CW pump # 2 in cooling water pumping station	85 (dB) A	–

UCH-II POWER (PRIVATE) LIMITED

38	East Side of Auxiliary CW pump # 2 in cooling water pumping station	85 (dB) A	–
39	North Side of CCW pump "B"	85 (dB) A	85.6
40	North Side of CCW pump "A"	85 (dB) A	–
41	North Side of instrument Air Compressor "A"	85 (dB) A	–
42	East Side of instrument Air Compressor "B"	85 (dB) A	82.4
43	North Side of instrument Air Compressor "B"	85 (dB) A	81.0
44	North Side of Boiler Feed Pump # 1 at HRSG-1 Bottom	85 (dB) A	–
45	North Side of Boiler Feed Pump # 2/B at HRSG-1 Bottom	85 (dB) A	90.8
46	East side of Steam Turbine	85 (dB) A	88.8
47	West side of Oil cooler in lube oil console skid for STG	85 (dB) A	94.4
48	West side of Steam Turbine	85 (dB) A	88.5
49	Waste Water Treatment plant near pump station	85 (dB) A	59.6
50	North Side of workshop	85 (dB) A	57.5
51	West side of HRSG-2, duct entrance	85 (dB) A	86.2
52	South Side of EDG	85 (dB) A	65.7
53	West Side of EDG	85 (dB) A	61.2
54	South side of sand filter pump B	85 (dB) A	–
55	South side of sand filter pump A	85 (dB) A	–

High Noise Around Plant Equipment:

Work was in progress for rectification of high noise level inside CCR and made suspended till 2018 scheduled outage due to location derived hazards.

Ambient Noise Monitoring			Average Noise Monitoring Results (dB) A
S. No	Noise Monitoring Locations	Guarantee limits	Q2, 2017
1	Main gate Uch-II	70 (dB) A	51.1
2	Check Post # 3 (at boundary wall)	70 (dB) A	52.6
3	Check Post # 5 (at boundary wall)	70 (dB) A	49.1
4	Check Post # 7 (at boundary wall)	70 (dB) A	48.4

UCH-II POWER (PRIVATE) LIMITED

Compliance Status of EMP Control Measures Q2-2017

APPENDIX-F

UCH-II PROJECT

Environmental / Social Impacts	Control & Mitigation Measures	Monitoring Frequency	Responsibility	Compliance Status
Air Emissions	<ul style="list-style-type: none"> - Stack emissions monitoring in place through CEMS (Continues Emission Monitoring System) - Annual third party stack emissions and ambient air quality testing - Monitoring compliance with National Environmental Quality Standards 	<ul style="list-style-type: none"> - Monthly - Annually 	Uch-II O&M team	Complied
Plant Noise	<ul style="list-style-type: none"> - Noisy equipment are placed inside the acoustic enclosure - Availability of silencers at intake and exhaust channels - Plant routine noise monitoring in place - High noise areas are identified and high noise signage displayed to enhance awareness 	Monthly	Uch-II O&M team	Complied
Waste Water	<ul style="list-style-type: none"> - Uch-II is zero liquid discharge facility - Waste streams generated from plant (sanitary waste water, cooling tower blow down, demin regeneration waste water, oily waste water etc.) disposed off into onsite evaporation pond after required treatment - Waste water sampling, analysis and test record being maintained - Compliance monitoring and reporting in place 	Daily	Uch-II O&M team	Complied
Water Sourcing	<ul style="list-style-type: none"> - Fresh surface water sourced from Pat Feeder Canal as per project design and irrigation permits from Government of Balochistan - Water consumption monitoring on monthly basis - Water conservation – Reuse from waste Reverse osmosis Plant 	On going	Uch-II O&M team	Complied
Hazardous Materials	<ul style="list-style-type: none"> - Segregation of hazardous waste - Separate storage area for hazardous wastes - Hazardous waste disposal through waste contractor - Hazardous waste quantification on monthly basis and record being maintained - Regular inspection of storage areas 	Monthly	Uch-II O&M team	Complied
Solid Waste Management	<ul style="list-style-type: none"> - Waste Management Procedure in place - Color coded waste bins available at different plant locations for different waste types - Designated land fill area for disposal of food / kitchen waste - Non Hazardous waste quantification on monthly basis and record being maintained 	Monthly	Uch-II O&M team	Complied
Occupational Health and Safety				
Electrical Hazards	<ul style="list-style-type: none"> - Permit to work / Lock out Tag out procedure in place. All electrical isolations are ensured before performing any activity on energized systems - Access to high voltage areas (electrical substations, 220 KV switchyard, panel rooms etc.) is controlled - Electrical safety signage displayed in respective areas to enhance the risk awareness of staff 	Ongoing on regular basis	Uch-II O&M team	Complied

UCH-II POWER (PRIVATE) LIMITED

Confined Space Entry	<ul style="list-style-type: none"> - Identification of all confined spaces at plant - Confined Space entry procedure in place covering all confined space associated risks and control measures - Regular confined space training sessions with staff - Training sessions on Responsibilities of Standby Man 	Ongoing on regular basis	Uch-II O&M team	Complied
Machine Guarding	<ul style="list-style-type: none"> - Moving and rotating parts of plant equipment are properly guarded to eliminate the risk of entanglement and injury - Permit to work / Lock out Tag out procedure in place to ensure the safety of staff working in plant equipment - All kinds of plant and machinery inherent dangers to workers are mitigated through engineering controls and safety devices 	Ongoing on regular basis	Uch-II O&M team	Complied
Eye Head and Foot Protection	<ul style="list-style-type: none"> - Mandatory and Job specific personal protective equipment are provided to all staff and contractors working at plant - A procedure for provision, use & maintenance of PPEs in place - Open toe shoes are not allowed inside the plant area - PPEs awareness signage displayed at prominent locations at plant - Regular monitoring of PPEs compliance - Contractors and visitors safety induction program in place 	Ongoing on regular basis	Uch-II O&M team	Complied
Fire and Explosion Hazards	<ul style="list-style-type: none"> - Portable fire extinguishers are available throughout the plant area and buildings as per design layout and clearly identifiable - Inspection of fire extinguishers on monthly basis - Fire water system composed of fire water storage tanks, fire water pumps, fire water ring main (hydrants, monitors) available as per design and clearly marked - Emergency exits are well marked luminaries - Emergency response plan in place - No smoking policy in place 	Ongoing on regular basis	Uch-II O&M team	Complied
Housekeeping	<ul style="list-style-type: none"> - Regular housekeeping drives program in place - Regular safety walks and housekeeping inspections - Lock out Tag out procedure in place 	Ongoing on regular basis	Uch-II O&M team	Complied
Chemical Exposure	<ul style="list-style-type: none"> - Respirators are made available to staff works in chemical areas - Regular inspection of work areas and storage areas to detect any leakages/ spillage - Safe movement of chemicals and fuels - Spill emergency response procedure 	Ongoing on regular basis	Uch-II O&M team	Complied
Noise Levels	<ul style="list-style-type: none"> - Provision of ear defenders (ear muff, ear plugs) to staff - High noise safety signage displayed around noisy equipment to enhance awareness - Awareness session with workers on High Noise Risks and Control Measures 	Ongoing on regular basis	Uch-II O&M team	Complied
Heat Related Stress / Illness	<ul style="list-style-type: none"> - Provision of cooling neck bands to employees, shaded rest areas for workers and cold drinking water facilities during summer season - Rest break system is ensured during works in hot weather - Heat Stress awareness session with staff 	Ongoing on regular basis	Uch-II O&M team	Complied

UCH-II POWER (PRIVATE) LIMITED

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)



UCH-II POWER (PRIVATE) LIMITED



Fire Equipment at Plant and Emergency Exits



UCH-II POWER (PRIVATE) LIMITED

UCH-II ENVIRONMENTAL AND SOCIAL ACTION PLAN (ESAP)

COMPLIANCE MATRIX FOR OPERATIONAL PHASE

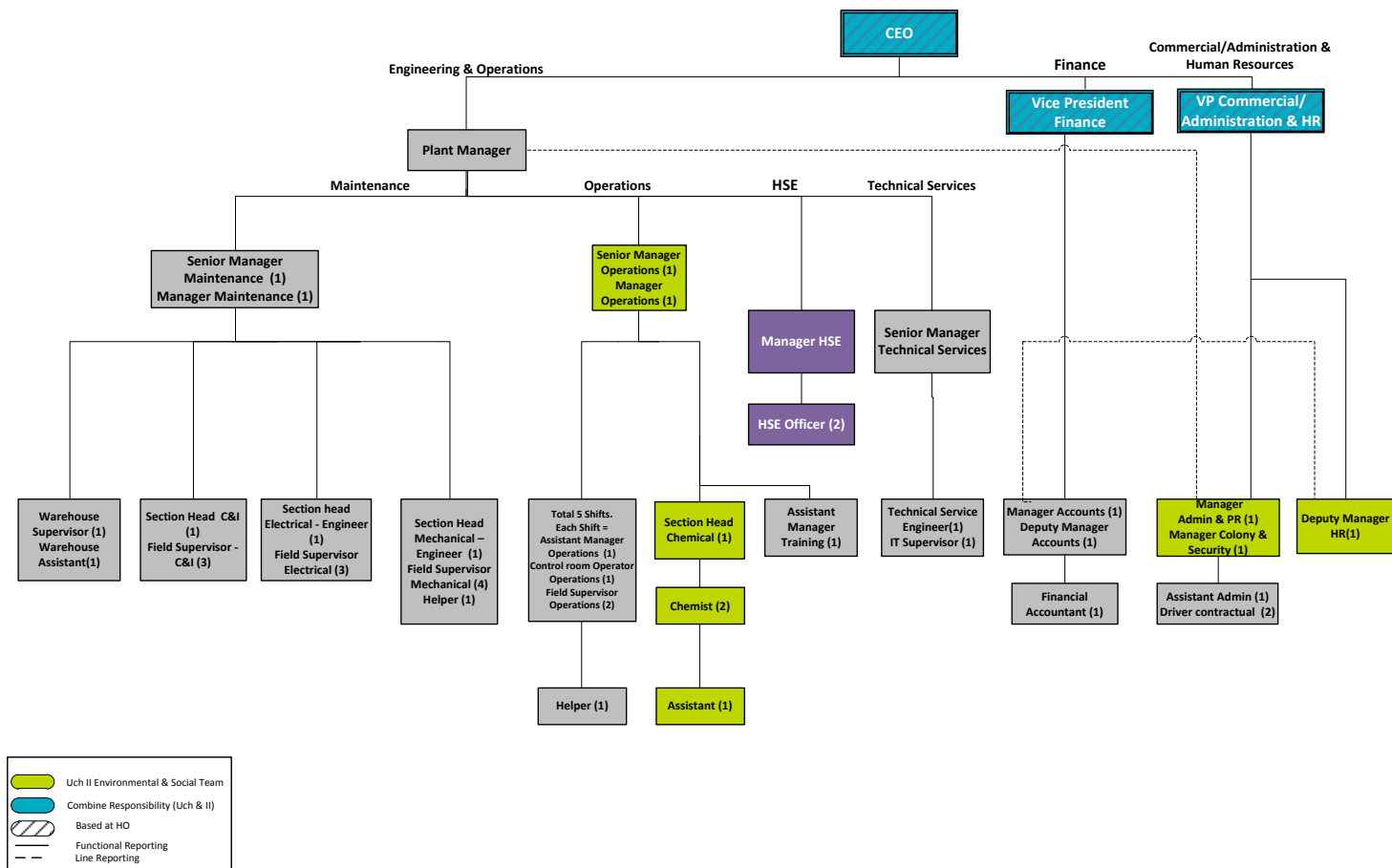
Compliance status of E&S Action Plan items relevant to the operational phase of Uch-II is provided below.

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

UCH-II POWER (PRIVATE) LIMITED

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)

UCH-II POWER (PRIVATE) LIMITED

APPENDIX H

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



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

To,

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

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

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

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

(Naseer Khan Kashani)
Director General

Master file.

Incoming

Sent To:	PM, BS, FK, RI
Date Received	22-04-14
Mail Reg. No.	78 LAI
File No./Divider Name	
Doc. to be Archived	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Fax <input checked="" type="checkbox"/>	Doc. Sealed <input type="checkbox"/>
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UCH-II POWER (PRIVATE) LIMITED

APPENDIX I

Q2-2017 UPL Site - Local Employment Ratio

Category		Total Strength	Local / Baluchistan	Local Employment Ratio
O & M Staff	Technical (Plant Operations & Maintenance)	152	24	24.0%
	Warehouse		03	
	Office Staff		05	
	Drivers		05	
Site Contractor Workers		456	192	42%
Others (TCF Schools, Hospitals Dera Murad Jamali)		113	113	100%

1. Recruitment and Hiring Procedure

Appendix. J

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.

Human Resources

Standard Operating Procedures

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.

Human Resources

Standard Operating Procedures

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 (Annexure B1-2) 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.

Human Resources

Standard Operating Procedures

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;

Human Resources

Standard Operating Procedures



- 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.


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Appendix. K

Uch Power Station Procedure Emergency Response Plan (ERP)

Action		Name / Designation	Signature	Date
Produced		J Finlay/Project Engineer		24 May 09
Verified		Ashok Kumar/Deputy Opts Mgr		26 May 09
Approved		J McLoughlin/Plant Manager		31May 09
Latest Revision Summary				
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)
01-01-2012	2.1	Section 3 and Company logo and name	Mian Sharif (SCE)	Waseem Ellahi (PM)
13-08-2014	2.2	Procedure reviewed, sec 6.2 names / contact numbers updated, company name and logo updated	Mian Sharif (SCE)	Waseem Ellahi (PM)
22-11-2015	3.0	Procedure Revised, Section 4.0, 5.0 & 6.7.1 and Change of Company Logo updated	Fida Khan	WE. Plant Manager
20-11-2016	3.0	Reviewed no change	Fida Khan	WE Plant Manager

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 user's responsibility to ensure they are working with
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1.0 PURPOSE

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.

2.0 SCOPE

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.

3.0 REFERENCES

GDF Suez procedure H&S PROC/005-M

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


GDF Suez procedure H&S PROC/005-M

4.0 DEFINITIONS

The terms below are defined as follows:-

UPS

Uch Power Station.

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UPL

Uch 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**.

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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)

5.0 RESPONSIBILITIES

The following personal responsibilities apply:-

Plant Manager

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

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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.

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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.

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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** 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 takes into account the highest standards of safety. Nevertheless procedures are necessary to respond to and control any emergency that should arise.


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The purpose of this document is to set out measures to be taken by all staff at Uch Power Plant 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			

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6.2.1 Uch Power Plant Contacts

Waseem Illahi 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 Mngr. Security & PR	TEL OFFICE TEL HOME	214 314
Doctor	TEL OFFICE TEL HOME	447 368

6.2.2 PLANT ADDRESS

Uch Power Plant
Dera Murad Jamali
District Nasirabad

STATION PHONE NUMBERS

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Control Room Direct Line 0838 711755

Shift Charge Engineer 222

Shift Charge Engineer Hand Phone 222

Control Room Fax Number 0838 711754

Station Internal Emergency Number **333**

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.

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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.

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- 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 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

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

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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 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.

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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
EXPLOSION	Workshop and Stores Buildings 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

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	Transformers Lubricant Storage Chemical Storage WTP Area and Laboratory
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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

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	Lifting and Handling
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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

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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

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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 staunches, 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 shock
- 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

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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;

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- 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.

UPL'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.

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UPL 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.

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.

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.

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**. 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**. 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**.

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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 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

All other events: continuous alarm


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 call, all other calls should be made on the 222 or 223 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**.

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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 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 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 and collect all the available information from the **AE** (CCR Operator).

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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 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)**.

6.8 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

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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.

6.11 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.

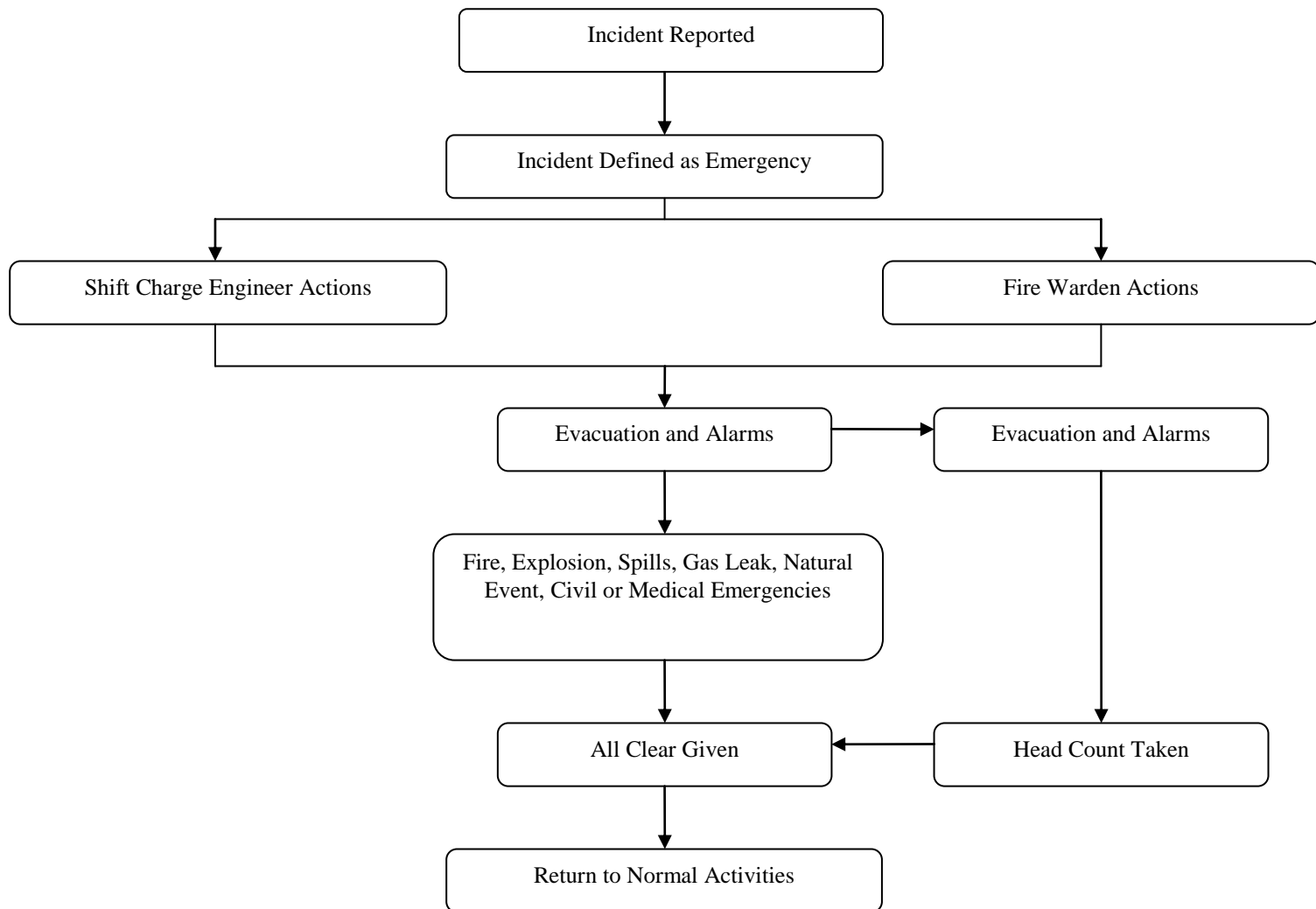
7 APPENDICES


Appendix 1: Flow Chart for Emergencies

Appendix 2: Emergency Evacuation Report

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Appendix 1: Flow Chart for Emergencies



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Appendix 2:

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



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Indicator Type	HSE Key Performance Indicators	Corporate Benchmark Yearly Basis	Q2 - 2015	Q2 - 2016	Q2 - 2017
Lagging H&S Indicators	Average Number of Employees	-	54.00	54.00	56.00
	Number of Hours Worked by Employees	-	30,685	29,318	29,099
	Number of Hours Worked by Contractors	-	113,705	112,091	89,838
	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	0	0	0
	Contractors Occupational Lost Time Accident	0	0	0	0
	Total Employee Days Lost due to Employee Occupational	0	0	0	49
	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	0
	Contractor Medically Treated Incident	1	0	1	0
	Employee First Aid Treatment	2	0	0	0
	Third Party First Aid Treatment	0	0	0	0
	Contractor First Aid Treatment	2	0	0	1
	LTAFR	0.10	0.00	0.00	0.00
	TRAFR	-	0.00	0.71	0.00



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Indicator Type	HSE Key Performance Indicators	Corporate Benchmark Yearly Basis	Q2 - 2015	Q2 - 2016	Q2 - 2017
Leading H&S Indicators	High Potential Serious Incidents or High Potential Near Misses/Near Hits	-	2	0	1
	Unsafe Act or Unsafe Conditions reported	-	180	175	152
	Near Miss & Unsafe Acts/ Conditions closed	-	177	197	166
	Near Miss & Unsafe Acts/ Conditions closeout Ratio	> 95%	98.33	112.57	109.21
	Number of Safety Walks	-	38	25	26
	Number of Toolbox Talks	-	190	248	166
	Number of Fresh Eyes Observations	-	49	40	40
	Point of Work Risk assessments performed	-	271	348	279
	Instinct Safety Modules Successfully Completed	-	118	79	31
	Permits to Work issued	-	181	336	379
	Permits to Work issued in accordance with task risk assessment control measures	-	181	336	379
	Emergency Drills performed	1	0	0	0
	Health Promotion Programmes	-	0	0	0
	Health Monitoring or Surveillance Analysis	1	0	0	0
	Boundary monitoring performed	12	3	3	3
	Safety Audits performed	12	11	0	1
	Number of Significant Environmental Incidents	0	0	0	0