نبـــراس للطاقة
Nebras Power
Jordan

ريادة طاقة المستقبل
Pioneering Future Energy

Nebras power IPP1/Jordan Emergency Response & Communication Plan

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1.0 Purpose

The purpose of this procedure is to specify the requirements for the development, implementation, and practice of the Emergency Response and Communication. This procedure will assist Nebras power IPP1/Jordan for identifying business specific potential emergency situations (natural or man- made), develop appropriate response plans to mitigate the risk (Health, Safety, Environmental and Business) and practice those plans to ensure the business is ready to respond to emergency situations.

2.0 Definition

Contract Person - Any person contracted to work on behalf of an Nebras power IPP1/Jordan and directly supervised by an Nebras power IPP1/Jordan.

Dangerous Substances - Substances accidentally released in such a quantity as may result in serious harm to life, property, or the environment.

Emergency – An emergency is a situation that causing/potential to cause injury to workers, customers, or the public; property damage; business disruption; or environmental impacts. All emergencies require well developed response plans and prompt actions according to those plans to protect the health, safety, or welfare of people, and limit property damage, environment impacts and/or business disruption. For the purpose of this NEBRAS POWER IPP1/JORDAN Standard, emergencies will be classified into three primary categories; natural emergencies (weather, climate, seismic, wild fires, pandemics, etc.), man-made on-site/operational emergencies (explosion, chemical release, fire, etc.) and man-made off-site emergencies (train derailment, chemical release from neighbouring industries, threats of terrorism, etc.).

Emergency Response and Communication Plan (ERCP) - A written detailed program of actions and communications protocols to minimize and mitigate the effects of an emergency.

Emergency Identification and Risk Assessment - The Emergency Identification and Risk Assessment is a process that helps Nebras power IPP1/Jordan to answer the following questions:

- What potential emergencies can affect our business?
- If they occurred, what impacts would those emergencies have on the NEBRAS POWER IPP1/JORDAN and its people?
- Based on those impacts, what capabilities should the NEBRAS POWER IPP1/JORDAN have?

Hazard - A situation with a potential for human injury, damage to property, damage to the environment, or some combination of these.

Responders - Persons identified in the ERCP as being responsible for actions that are intended to minimize the risk, loss, and damage resulting from the emergency. These persons can represent external resources (e.g., ambulance, fire, police, contractors, or neighbouring industries with capabilities) or be the workers or management of NEBRAS POWER IPP1/JORDAN.
Critical Risk: A risk that either has a high likelihood or high severity impact to personnel, assets, and / or operations

Risk - A measure of the probability and severity of an adverse effect to health, property, or the environment. Risk is often estimated considering the probability (frequency) of an adverse event occurrence and the consequences (severity) if that adverse event occurs i.e. the product of "probability (frequency) x consequence (severity)".
Risk Assessment (RA) - The Risk Assessment process helps NEBRAS POWER IPP1/JORDAN to understand their risks associated with potential emergencies and assess the probability and level of capability they need to address those risks. The RA must also consider

the potential for external (off-site) emergencies and natural disasters that present potential impacts to the NEBRAS POWER IPP1/JORDAN and its people.

Residual Risk – The risk level remaining after the implementation of risk controls.

Risk Reduction - The process of reducing risks either by decreasing the chance and/or the consequences of a hazardous event.

3.0 Critical Success Factors

Identification of realistic emergency scenarios was done based on Emergency Identification and Risk Assessment:

- Regular and thorough testing of emergency response procedures.
- Appointment of emergency response and support teams, through effective and regular training and drills/exercises.
- Provision of reliable communication and logistic systems to enable the emergency response teams.
- Obtaining the support and participation from the Civil Defence Department of Amman, Jordan, contractors, other operators, local and national government

4.0 Implementation

- Emergency procedures describing all realistic emergency scenarios and detailing the planned response to each of these
  - A methodology for determining which assets and activities are critical to the Company's operations and business resumption plans for these
  - Normal and emergency backup telecommunications systems covering the whole of NEBRAS POWER IPP1/JORDAN's operations, allowing communication under all realistically foreseeable conditions
  - A programme of drills and exercises affecting all parts of the organization, providing training for personnel, and identifying possible improvements to the system
  - A training programme for key positions within the emergency response organization, and guidance on training and awareness

requirements for the Company as a whole (Mock Drill Plan)

5.0 Responsibilities

5.1 Plant Manager

The ultimate responsibility for emergency response within the perimeter fence of the NEBRAS POWER IPP1/JORDAN is vested in the Plant Manager. The Plant Manager will: -

- Ensure a sound policy is in place with respect to all emergency response matters.
- Lead by example.

When called upon by the Control Room Engineer (CRE) in the Central Control Room, the Plant Manager will be responsible for the logistical support of incident recovery. In the absence of the Plant Manager, the Incident Commander will be responsible.

5.2 EHSS Manager/ Engineer

- Ensure the communication/Reporting mean with local agencies.
- Effective implementation for the current ERCP.

5.3 Incident Assessor

One of Shift Plant Engineers or any other NEBRAS POWER IPP1/JORDAN Employee can be an Incident Assessor who needs to go to the Incident location with any kind of communication media. Incident Assessor will be the person designated at the time of incident by the Incident Commander. At the incident scene he/she will assess the situation, relaying information back to the Incident Commander in Central Control Room and requesting the relevant support service or plant shut down as required.

5.4 Incident Commander (IC) (Day or nightshift)

Two Control Room Engineers (CRE's) will be on duty on any shift whether day or night shift. In the event of an incident occurring one CRE will designate himself as the Incident Commander (IC). He will inform to his Incident Assessor through any kind of communication method to reach to the incident location.
The Incident Assessor will assess the situation and report back to the Incident Commander at Central Control Room with present status and any required actions or back up support teams.
It is essential that within the control room there will be a board to display at a prominent location showing the names of who will function as what within the Emergency response roles to prevent confusion.
The board will display the names of fire fighters, medic first aiders/paramedics and support team personnel
The board will indicate who will be responsible for what position on a monthly rota.

In the event of an incident occurring, the IC will sound the alarm for attention and make an announcement over the Public Addressing system. This will alert all personnel on the plant to the fact that an incident has occurred and that support teams should place themselves on stand-by and that office personnel and contractors may be required to evacuate to the nearest Assembly Point.

It is of the utmost importance that all personnel are aware that no phone calls may be made to the central control room at this stage as this will block the telephone lines and reduce the possibility of the IC performing his duties efficiently

The IC is responsible for alerting the designated Fire Fighters/ First Aiders on requirement of the Incident Assessor and for directing support personal for assistance for announcing the evacuation of nonessential personnel by use of the alarm system to gain attention, supported by the public addressing system. If required IC will be responsible for informing deputy plant manager to alert villagers and if not possible he will contact their (**MOKTAR**) on 0772123380, he will be also responsible for alerting IPP1 EHS manager on: +962 797897020 (or shift charge on 0799074488).

In the event of the incident escalating further it will be the responsibility of the Incident Commander upon confirmation from Incident Assessor to call for further assistance by phone and inform the Plant Manager of the current situation.

Once the situation has been brought under control, the IC will be responsible to sound the "all clear" alarm followed by an announcement over the PA to affirm the situation is "safe"

5.5 Administration Manager

Responsible for the co-ordination of office functions during an emergency and the transportation of personnel whether overseas or internally Amman.

5.6 Log Keeper

The second CRE on shift shall designate as log keeper, who is dedicated to maintaining the emergency control room log. The log should be maintained in a specific Emergency Response Logbook and in the event of a serious incident, a flip chart which will be visible to all team members. Major decisions or confirmed events and information should be summarised on a separate board or chart.

Note: In case of One CRE in the shift he/she may take this action upon himself due to the low level of manning.

5.7 Evacuation Controllers (Head counters)

Enough trained evacuation controllers will be available for each shift. IC will designate the Evacuation Controllers to the Assembly points. During the sounding of the evacuation alarm, the evacuation controller is responsible for directing the people to evacuate the Plant and report to the nearest Assembly Point. Evacuation controllers in assembly points will conduct the headcounts and inform to CCR log keeper. Log Keeper need to cross check with the day's attendance list and in the event of people being missing, Log keeper is responsible to communicate to Evacuation Controllers.

It is imperative that each NEBRAS POWER IPP1/JORDAN employee shall ensure they log onto site using Fingerprint sign or sign into the site register and for contractors and visitors to sign in at Security gate.
It is also the responsibility of the NEBRAS POWER IPP1/JORDAN staff to make themselves familiar with the direction of the wind by observing the windsocks on site and to be aware of the location of their designated assembly points.

5.8 First Aider/Paramedic:

On morning shift there is a certified nurse in the clinic will act the first aider, in the other shifts there will be trained first aid/Paramedic persons. During emergencies the Incident Commander will direct the first aiders/paramedics in conjunction with the Incident Assessor to summon support teams to assist with stretcher bearing, deployment of the emergency vehicle etc.

5.9 Fire fighters

Sufficient number of employees from each department will be trained as fire fighters.. During an emergency the first responder will assume the role of team leader upon arrival at the scene of the fire and ensure that proper firefighting and rescue techniques are employed in the effective execution of emergency activities.
Upon the arrival of the Incident Assessor at the scene he will assess the situation and co-ordinate with the IC who will request third party assistance Civil Defence Department, Amman, Jordan

5.10 The Individual Employee

An essential element of an effective emergency response system is the individual awareness and behaviour of personnel. Each employee is responsible for observing the rules and regulations applicable to him as set out in this manual, and to seek advice from his Team Leader if in doubt.
He is responsible for being fully conversant with all procedures and practices relevant to his job.

Notification of emergencies in goes through two telephone number's which are **201 & 202**. These methods of communication will connect to the Central Control Room wherever the caller may be, the CRE will then sound the alarm to alert the response team. It is of the utmost importance that all personnel are aware of this, and of the immediate actions on encountering an emergency.

Information to Third Parties

One aspect of the individual employee's responsibilities stands out: that of ensuring that no false information is released to any outside party. It is essential that information is verified as correct and suitable for release by senior personnel. To this end **all employees** are instructed to decline to respond to any queries regarding emergencies or incidents from any party other than their own line or known emergency response personnel.
Any statement to third parties shall be made only by the Plant Manager or his designate.

5.11 Primary Response Team (dayshift)

The Site Emergency Response Team is tasked with managing all activities to respond to the emergency situation. Each team member shall therefore be familiar with all procedures, arrangements and contacts within their work area that may be relevant in the event of an emergency.

The primary response team member's names shall be posted on a white board in the central control room for each shift period.

The Incident Commander and Log Keeper during an emergency shall maintain a log of their own actions. This is particularly important when assistance is called in from third parties so that an accurate record of commitment can be established. A detailed log of events is also important for debriefing so that procedures and systems can be analysed and improved if needed.

5.11 Primary Response Team (Nightshift & Weekends)

It is recognised that the plant is manned to a minimum during nightshift and weekends and that the night shift team will be afforded full training in emergency response capability.
However, in the event of an incident occurring during the nightshift or at weekends and escalating into a major/multiple incident further support will be needed from within NEBRAS POWER IPP1/JORDAN.

5.12 Primary Support Team

All dayshift support teams will be taken from the maintenance teams and will provide 24hour cover if needed.

Emergency Response Team is being updated and shared with all team members on annual basis based on the training provided. The updated Emergency Response Team List will be pasted on Safety board at Administration Building, CCR, and Maintenance Office.

All Support team members shall always ensure that information is readily available on how to contact local contractors and service companies within their discipline who can assist with emergency response and information about manpower and equipment which these contractors can supply. This equipment may include but not be limited to; -

- Cranes for lifting
- Cutting equipment
- Extra security (in the event of unwanted media attention)
- Camp beds (in the event of a long-term incident)
- Transportation (multiple injuries to Hospital)

This also applies to outside normal office hours, weekends and holidays etc.

5.13 Emergency Equipment's

Various equipment's like AED, Eye wash, First Aid boxes, Full body Harness, SCBA, Spill Kits, Fire alarm system, Siren Testing (Public address) system, DC & Emergency Exit Light , Gas detection system, Fire Extinguishers & Fire suits equipment's (..etc.) will be used to deal with emergencies. The inspection and maintenance of the equipment's will be as per Plant Inspection Matrix
Emergency Equipment's Location:

Equipment	Location
First Aid Box	CCR, Admin., Complex & Lab.
SCBA	CCR & Lab.
Firefighting Suits	WWT Control Room
Satellite Phone	
Eye Wash	WWP, WTP, Chemical Shed, Battery rooms, Lab.,
AED	CCR
Public address	CCR
Spill Kits	WWP, WTP, Chemical & Haz. Sheds, Battery rooms, Lab., BSDG, Dosing room, Transformers, Diesel Area, Workshops & STG

5.14 Emergency Operating & Incident Command Centre

All the emergencies will be manged in one operating centre which is the Central Control Room- CCR.

5.15 Emergency Identification and Risk Assessment

The business has set the below Potential Emergency Scenarios and made the required risk assessment for each scenario as the below:

S. No	Emergency Scenario	Risk Associated	Existing Control

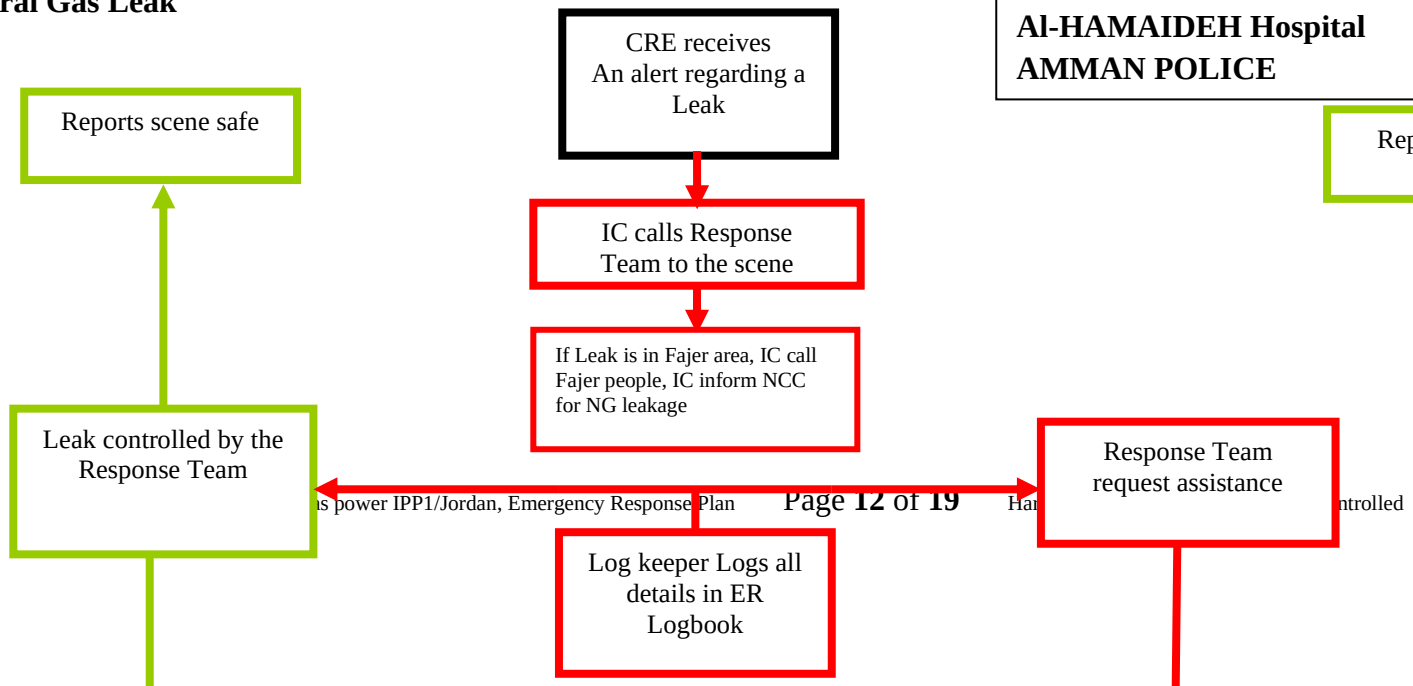
1.	Gas Leak	Significant Impact on the business (Property and People) if it occurred. (Fire, Explosion, Toxicity…etc)	LOTO system is followed before starting job in Gas sources, Gas detectors are provided and controls in place to trip gas valve. Training is being provided on regular basis. Mock Drills are being conducted, Piping color coding is in place, only authorized people are allowed to enter engine hall and GPRS, explosion proof tools are used, one Safe Natural Gas Work Procedure is established and to be implemented
2.	Fire	Fire has a significant Impact on the business (Property and People) if it occurred. Therefore, it is being highly considered when any activity is going on at the plant, and many control measures were addressed.	No Smoking policy. Signs installed. Smoking is only allowed at designated point at site. These smoking points are enclosed rooms. Fire detecting and protecting system and Foam Fire Fighting system in place. CCR has FM200/Inergen Gas protection. Safety signs and awareness and safety induction for workers, area is kept clean of flammable material. Oily drainage system which ensures that any spilled oil goes to oil separator. All firefighting equipment checked as per monitoring, measurement and inspection plan. emergency response plan. drills are carried out. Trained Staff.
3.	Medical Response	Medium Impact on the People (Injuries / Life Threats)	First Aid Kits all over the site, Medical Clinic with specialized nurse and doctor, Trained Staff on First Aid and CPR, AED Device is available, CDD Centre is only 7 minutes far, Proper type of PPEs
4.	Terrorist Threat	Significant Impact on the business (Property and People) if it occurred. (Fire, Explosion, Life Threats…etc)	Trained Security Guard, CCTV System on plant boundary, Mock Drills were conducted, Trained Staff.
5.	Chemical Spill	Significant Impact on the business (Property and People) if it	All Chemicals are properly stored in a designated shelter, Storage tanks have 110% volume Secondary

		occurred. (Fire, Explosion, Government Penalties…etc)	Containment, Spill kits are available all over the site, Eyewash station are available, Proper Drainage system, Trained Staff.
6.	Natural Disaster	Medium Impact with low probability as Jordan is a stable control in the regard,	Trained Staff, Proper Assembly Points, deferent type of out boundary communications (Mobile Phone, Satellite Phones…etc)
7.	Pandemics	Medium Impact as Jordan is a stable control in the regard,	Trained Staff, Awareness sessions, strong commitment with the governmental instructions, BCP Plan in place,

6.0 Potential Emergency Situations:

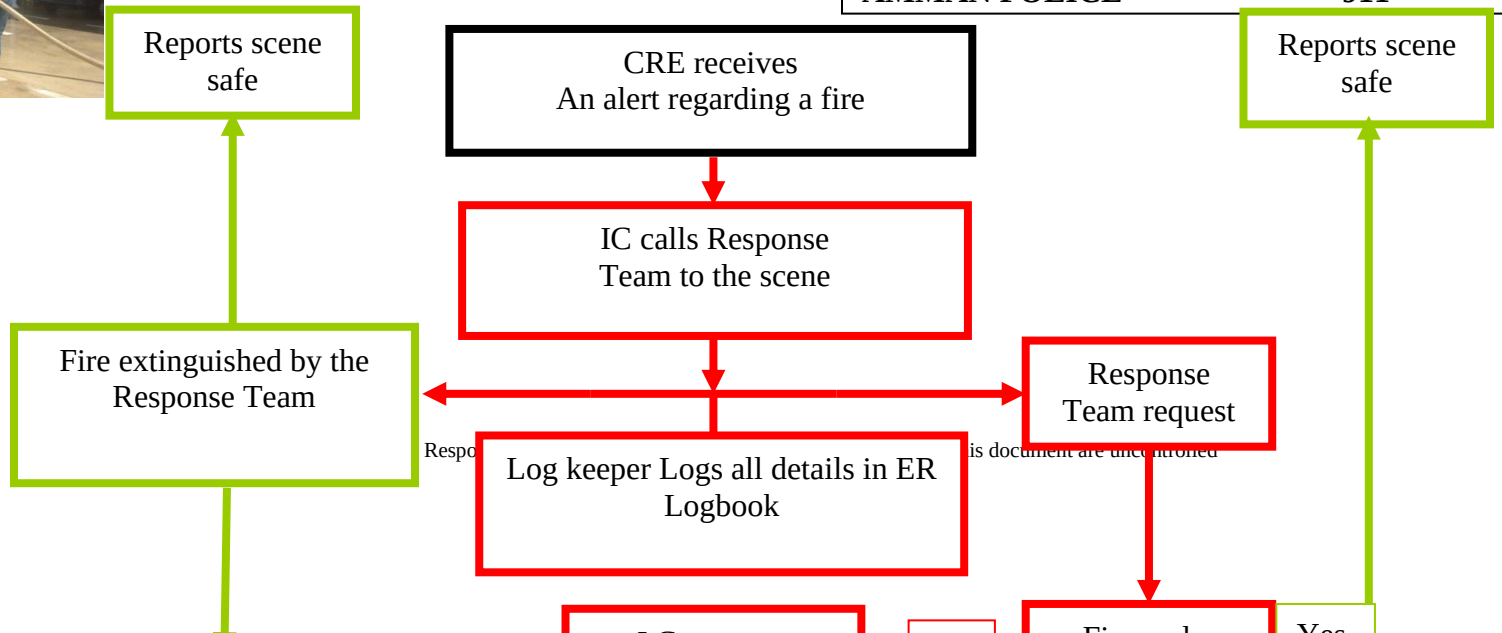
6.1 Natural Gas Leak

EMERGENCY No	
CCR	201& 202
CIVIL DEFENCE	911
ALBASHEER HOSPITAL	06 - 4775111
Al-HAMAIDEH Hospital	06-4785555
AMMAN POLICE	911



6.2 FIRE RESPONSE

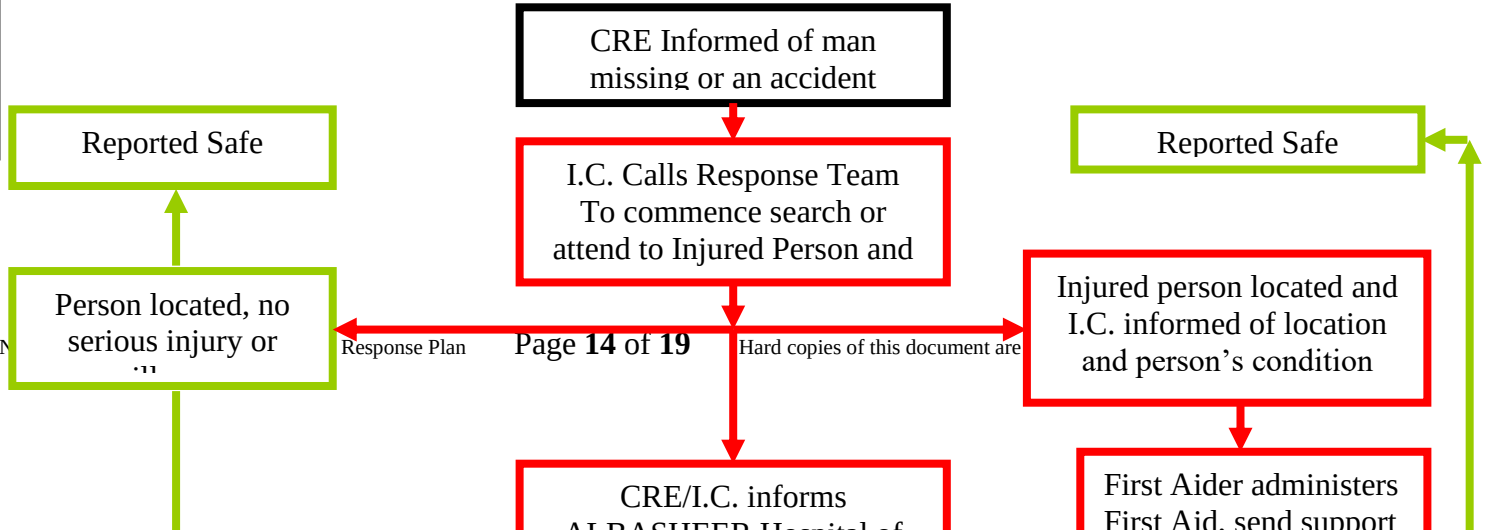
EMERGENCY No	
CCR	201& 202
CIVIL DEFENCE	911
ALBASHEER HOSPITAL	06 - 4775111
Al-HAMAIDEH Hospital	06-4785555
AMMAN POLICE	911



6.3 MEDICAL RESPONSE

EMERGENCY No

CCR	**201& 202**
CIVIL DEFENCE	**911**
ALBASHEER HOSPITAL	**06 – 4775111**
Al-HAMAIDEH Hospital	**06-4785555**
AMMAN POLICE	**911**



6.4 TERRORIST THREAT

CRE/I.C. informed of suspicious Activity or strange device on site

CRE/I.C. requests all people to evacuate from the building & the site. The only Assembly point is near the main gate (if threat is near the main gate I.C will decide where the Assembly Point is)

I.C. contacts bomb disposal Squad on the above numbers

Make area safe until Bomb Squad arrive

Bomb Squad Arrival

Bomb Squad will search for

Reported safe

EMERGENCY NUMBERS

CCR

201& 202

AMMAN POLICE: 911

BOMB SQUAD CAN BE CONTACTED BY PHONING THE AMMAN POLICE: 911

6.5 CHEMICAL SPILLS

EMERGENCY No	
CCR	**201 & 202**
CIVIL DEFENCE	**911**
ALBASHEER HOSPITAL	**06 - 5665131**
Al-HAMAIDEH Hospital	**06-4785555**
AMMAN POLICE	**911**

Types of chemical being used in the plant:

- Hydrochloric Acid (33%)
- Sodium Hydroxide (46%)
- CorTrol OS 5601
- Steamate NA1324

- OptiSperse HP5455
- Lubricating Oil
- Diesel Oil
- Thinner
- Corrshield NT 4209 as corrosion inhibitor
- Spectrus NX1164 as Biocide
- Painting cans
- Housekeeping materials.

Below is the location of the chemicals & oils being used in the plant with their capacities:

Area	Tank Name	Nominal Capacity	Available Capacity	Unit
GT 1	Lube Oil Tank	11.5	8.4	m3
	Control Oil Tank	400.0	256.0	Litr
	Diverter Damper Hydraulic Oil Tank	250.0	250.0	Litr
	False Start Drain Tank	1.4	0.5	m3
	Fuel Oil Drainage Tank	10.1	6.6	m3
	Main Transformer Oil Capacity	71000.0	71000.0	Litr
	UAT Oil Capacity	11000.0	11000.0	Litr
GT 2	Lube Oil Tank	11.5	8.6	m3
	Control Oil Tank	401.0	264.7	Litr
	Diverter Damper Hydrollic Oil Tank	250.0	250.0	Litr
	False Start Drain Tank	1.4	0.5	m3
	Fuel Oil Drainage Tank	10.1	5.8	m3
	Main Transformer Oil Capacity	71000.0	71000.0	Litr
	UAT Oil Capacity	11000.0	11000.0	Litr
STG	Lube Oil Tank	8.0	5.6	m3

	Control Oil Tank	810.0	462.9	Litr
	Main Transformer Oil Capacity	69800.0	69800.0	Litr
Fuel Oil Tanks and Unloading Area	Fuel Oil Tank 1	14500.0	2034.6	m3
	Fuel Oil Tank 2	14500.0	10572.4	m3
	Waste Oil Shelter	816.0	21.8	m3
BSDG	BSDG Tank	16.0	10.6	m3
LVDG	LVDG Tank	2.3	1.5	m3
LVDG	LVDG Batteries	8 Batteries	8 Batteries	8
Diesel Fire Fighting Pump (DFFP)	DFFP Tank	1.4	1.0	m3
Water Treatment	R/O Cleaning Tank	1.4	0.0	m3
	Scale Inhibitor	200.0	17.8	Litr
	Acid Injection Tank for R/O	200.0	76.4	Litr
	Caustic Injection Tank for MBE	500.0	164.6	Litr
	Acid Injection Tank for MBE	500.0	386.0	Litr
Waste Water Treatment	Alume Feeding Tank	5.0	0.8	m3
	Polymer Dissolving Tank	5.0	4.4	m3
	Polymer Injection Tank	1.5	0.4	m3
	Acid Injection Tank	1.5	0.4	m3
	Caustic Injection Tank	1.5	0.5	m3
	Neutralization Basin	282.5	98.2	m3

	Chemical Basin	351.0	262.5	m3
	Effluent Basin	30.2	2.9	m3
	Oily Collection Basin	36.0	26.9	m3
	Hazardous Waste Shelter	720.0	0.0	m3
Neutralization Pit	Acid Storage Tank 2	6.0	3.0	m3
	Caustic Storage Tank	5.0	3.4	m3
Chemical Dosing Area	Steamate Tank Ammonia Old)	1.0	0.4	m3
	Cortrol Tank (Hydrazine Old)	1.0	0.6	m3
	Optisperse Tank (Phosphate Old)	1.0	0.5	m3
	Chemical Storage Shelter	50.0	5.9	m3

Countermeasures:

Engineering Control:

- Diesel Oil storage Tank has secondary containment of 110%. The outlet from the dyke is controlled by a discharge valve. In case of rain-water, the discharge is directed to storm water drain.
- All the leakages from the oil filled transformers are collected underground of the transformers. They can be directed to oily waste-water treatment plant.
- All chemical tanks & containers are equipped with secondary containment & connected to chemical waste-water treatment plant.
- All the drain & vent points of oily systems are collected in sumps & sent to oily wastewater plant for further treatment.
- The unloading area of diesel oil are designed to collect oil spill during unloading & sent to oily waste-water treatment plant.
- All the tanks are equipped with high- & low-level alarms & displayed at control room with buzzer.

Administrative Control:

- MSDS's have been placed in all the places where tanks & drums are located.
- Spill kits have been provided at strategic locations of plant where possibilities of spillages are high.
- Quarterly inspection of the spill kit is in place.
- Daily plant rounds up by plant engineers is in place.
- HMIS labels for all the drums & tanks are in place.
- Transportation of chemical & oil drums are carried out by listed authorized persons only.
- Key plant personnel are trained on emergency preparedness should a spill occurs.

- In plant mock drill for chemical spillage.
- Joint drill arrangement is in plant with CDD for various emergency scenario including chemical & oil spill.

PPE:

- All unloading activities are carried out wearing proper chemical suit.
- In case of ammonia solution preparation, ammonia vapor cartridge is used for personal protection.

Potential Spill Scenario:

Aboveground Storage of Drums:
Seventy 55-Gallon Capacity

Potential Event	Spill Direction	Volume Released	Spill Rate
Oil Storage Area Complete failure of a full drum	Into area drains on the north leading to a containment sump.	Up to 55 Gallons	Slow to Instantaneous
Hazardous Waste Storage Area Complete failure of a full drum	Into area drains on the west leading to waste water treatment area.	Minor	Slow

Lube Oil System:
500 – 12,000 litre Capacity

Potential Event	Spill Direction	Volume Released	Spill Rate
GT1&2	A spill would be directed away from the	Up to 9,000 litre	Slow leak to Instantaneous

Potential Event	Spill Direction	Volume Released	Spill Rate
	power block into area drains. The drains convey material to a below grade oil water separator and then the water is pumped to a retention basin.		
ST	A spill would be directed away from the power block into area drains. The drains convey material to a below grade oil water separator and then the water is pumped to a retention basin.	Up to 12,000 litre	Slow leak to Instantaneous

Electrical Transformers:
Mineral Oil
11000 – 70,000 litre Capacity

Potential Event	Spill Direction	Volume Released	Spill Rate
GT 1&2 & ST	Flow to area drains of transformers. Then to an oil water separator	Up to 10,293 Gallons	Slow leak to Instantaneous

	and then on to a retention basin.		

Battery Rooms (GT1&2, ST&BSDG):

- GT Battery room contain 108 batteries each battery is 4.5 liter capacity with a total of 486 liter of acid
- ST battery room contain 348 batteries each battery is 3.5 liter capacity with a total of 1218 liter of KOH
- BSDG Battery room contain 48 batteries each battery is 4.5 liter capacity with a total of 216 liter of acid

Engineering Control:

- All batteries rooms have a secondary containment of 110%.
- All batteries rooms are closed and only authorized persons are entering
- Preventive maintenance job is done on all batteries in a regular manner
- All batteries rooms are ventilated
- GT battery rooms are equipped with hydrogen sensors

PPE:

- The use of PPE is as per the MSDS of the batteries
- MSDS is available at each battery room
- Warning and PPE signs are in place on each battery room door

Drain and Flow Valves

Flow and drain valves that allow direct flow from any tank or vessel are labeled and maintained in the closed position when not operating or not in a standby mode.

Oil Pump Controls

Oil transfer pumps are de-energized and cannot be turned on except by an authorized operator. Site security assures that no unauthorized persons are allowed onto the plant and operational personnel conduct rounds to check for security related events.

Out-of-Service Pipelines
Petroleum deliveries are performed by contractors who deliver product from the supplier. Deliveries consist of 55-gallon drums and infrequent tank truck deliveries. The loading and unloading connections for tank truck deliveries are securely capped or blind flanged to minimize the possibility of a release.

Facility Lighting
Overall facility illumination is designed to eliminate darkened areas within the facility so that night spills could be readily observed and vandalism is discouraged. Area lighting is appropriate for the type of work conducted in the area and was designed with consideration of prompt discovery of releases occurring during the evening.

Accumulated Rainwater Drainage
Rainwater from the open drain is discharged into an open wadi. Rainwater from secondary containment is not discharged outside unless it has been inspected for potential oil contamination

Effluent Treatment Facilities
All the spilled oil at site is being treated at oily wastewater treatment plant. Oily waste water is treated at oil separator. Skimmed oil from the separator is sent outside by authorized contractors of ministry of environment .Spill from other chemicals are treated at chemical waste water plant.

TRANSFER OPERATIONS, PUMPING, AND IN-PLANT PROCESSES

Pipe Supports
Pipe supports have been designed to minimize corrosion (painted surfaces) and are protected from motorized equipment.

Piping and Valve Inspections
All aboveground piping and valves are examined daily by facility personnel to assess their condition and written records are kept on a weekly basis.
The facility does not contain aboveground piping that may be endangered by vehicle traffic. It is protected with signage.

Vehicle Warning
The facility has no aboveground piping or oil transfer operations that may be endangered by vehicle traffic. Accordingly, warnings are not necessary.

TRANSFER OPERATIONS, PUMPING, AND IN-PLANT PROCESSES

Out-of-Service Piping
This facility has no out of service buried piping .

Pipe Supports
Pipe supports have been designed to minimize corrosion (painted surfaces) and are protected from motorized equipment.

Piping and Valve Inspections
All aboveground piping and valves are examined daily by facility personnel to assess their condition and written records are kept on a weekly basis.
The facility does not contain aboveground piping that may be endangered by vehicle traffic. It is protected with signage, bollards, and

Vehicle Warning
The facility has no aboveground piping or oil transfer operations that may be endangered by vehicle traffic. Accordingly, warnings are not necessary.

Chemical Spills on the Nebras power IPP1/Jordan are not considered to be a major threat due to good segregation of all chemicals, all stored to the guidelines of the information depicted on the Material Safety Data Sheets (MSDS).
A further very prominent aspect of control of the Chemical hazards is the state of art engineering during design. The mechanical process recovery has enabled accidental spills of chemicals to be reduced to As Low As is Reasonably Practicable (ALARP) which is compliant with International Risk Management Regulations.

Spills on Nebras power IPP1/Jordan are likely to be minor spill such as a drum of chemicals punctured by the forklift, therefore this procedure will address the more hazardous of these chemicals on the Plant in this eventuality.

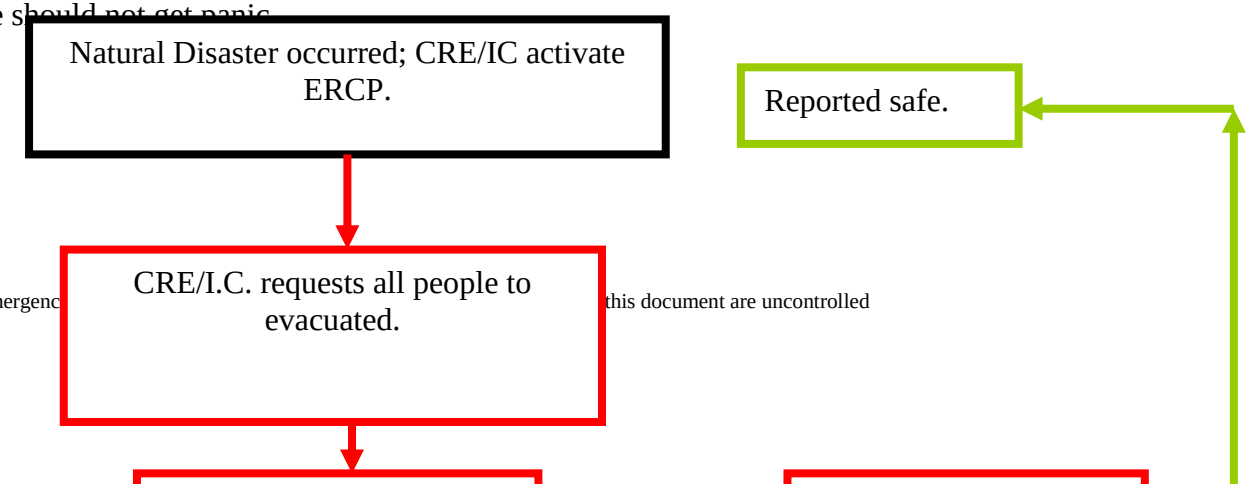
- **Hydrochloric Acid**
  - Wear PPE. Contain and recover liquid where possible. Neutralise with lime then absorb with dry sand and place in a chemical waste container.
    - **<u>Cautions:</u> Do not under any circumstances add water to acid for dilution as it will react by boiling and spitting.**
- **CorTrol. OS 5601**
  - Wear recommended PPE as per MSDS. Remove any source of ignition. May cause slight irritation to the skin. May cause slight Irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract. Neutralise by diluting with water. After neutralisation, transfer to a secure vessel for disposal.
- **Sodium Hydroxide**
  - Severe irritant: Residues from spills can be diluted with water and neutralised with diluted Hydrochloric Acid. Package them in a suitable container for disposal.
- **Anti Scalent**
  - Anti-Scalent Should be prevented from entering drains. Absorb in vermiculite, dry sand or earth and place into containers. Collect and reclaim or dispose in sealed containers in licensed waste. Containers with collected spillage must be properly labelled with correct contents and hazard symbols.
- **Steamate NA1324**
  - Stop leak or spill if you can do so without risk. Ventilate area. Carefully use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit. Corrosive. Absorbed by skin. Corrosive to the eyes. Vapours, gases, mists and/or aerosols cause irritation to the upper respiratory tract.
- **OptiSperse HP5455**
  - Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit.
  - May cause slight irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.
- **Corrshield NT 4209 as corrosion inhibitor :**
  - May cause moderate irritation to the skin. Severe irritant to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

- Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.
- Water contaminated with this product may be sent to a sanitary sewer
- Treatment facility, in accordance with any local agreement, a permitted
- Waste treatment facility or discharged under a permit.

- **Spectrus NX1164 as Biocide:**
  - Keep spills and clean-up residuals out of municipal sewers and open bodies of water. Adsorb the spill with spill pillows or inert solids such as clay or vermiculite and transfer contaminated materials to suitable containers for disposal. Deactivate spill area with freshly prepared solution of 5% sodium bicarbonate and 5% sodium hypochlorite in water. Apply solution to the spill area at a ratio of 10 volumes deactivation solution per estimated volume of residual spill to deactivate any residual active ingredient. Let stand for 30 minutes. Flush spill area with copious amounts of water to chemical sewer (if in accordance with local procedures,
  - Permits and regulations). DO NOT add deactivation solution to the
  - Waste pail to deactivate the adsorbed material.
  - Water contaminated with this product may be sent to a sanitary sewer
  - treatment facility, in accordance with any local agreement, a permitted
  - waste treatment facility or discharged under a permit.
  - Corrosive to skin. Skin sensitizer with delayed onset of symptoms.
  - Corrosive to the eyes. Mists/aerosols cause irritation to the upper
  - respiratory tract.

6.6 Natural Disaster (Earthquake):

- evacuate to an open area
- the use of elevator is not allowed
- evacuation should be in a calm way, people should not get panic
- Wait for further Instructions.



6.7 Pandemics

- Teleworking
- Playbook, Plans & Policies
- Follow the Local regulations
- gathering in groups

7.0 Communication Plan

7.1 Communication Methods:

- Internal Land Line Network
- Cell Phones
- PA
- Satellite Phone (All of these methods monitored & maintained by IT manager)
- Zain Mass communication

7.2 Telephone Response to Enquiries

The IC/Log Keeper should respond to enquiries regarding an incident in the following manner, dependent upon the current situation; -

- We have no knowledge of an incident within our operations, however, should we be informed of such an occurrence, may I have your name and phone number and we will get back to you.
- We are aware of a minor incident having occurred, but details have yet to be confirmed. May I have your name and phone number and we will get back to you when we have more information.
- We have reports of an incident. However, we have a highly trained emergency response team on location at this moment in time assessing the situation. May I have your name and phone number, and we will get back to you when we have confirmed information.

7.3 EMERGENCY TELEPHONE NUMBERS:

- **Notification Contacts:**

Feras Hammad +96264293200 Ext:133
Executive Manager +962796401352 (cell)

- **Oil Spill Contact:**

  Company name: Caribbean for oils.
  Company GM: Mr. Sufian 0795654038.
  Loading Coordinator: 0795721048

  Mohammad Al Qudah +962 797897020
  HSE Manager

- **Fire/Police/Ambulance:** 199,911

Jamil Totanji Hospital- SAHAB +96264020090
Ahmad Hamaida Hospital +96264785555
Al Bashir Hospital +96264753101
Ministry of Environment: +96265560113

- **Clean-up Contacts:**

Ahmad Yaseen +962795133828

Typical for oil waste Treatment +962795513148

Mazen Hijazi +962775600600

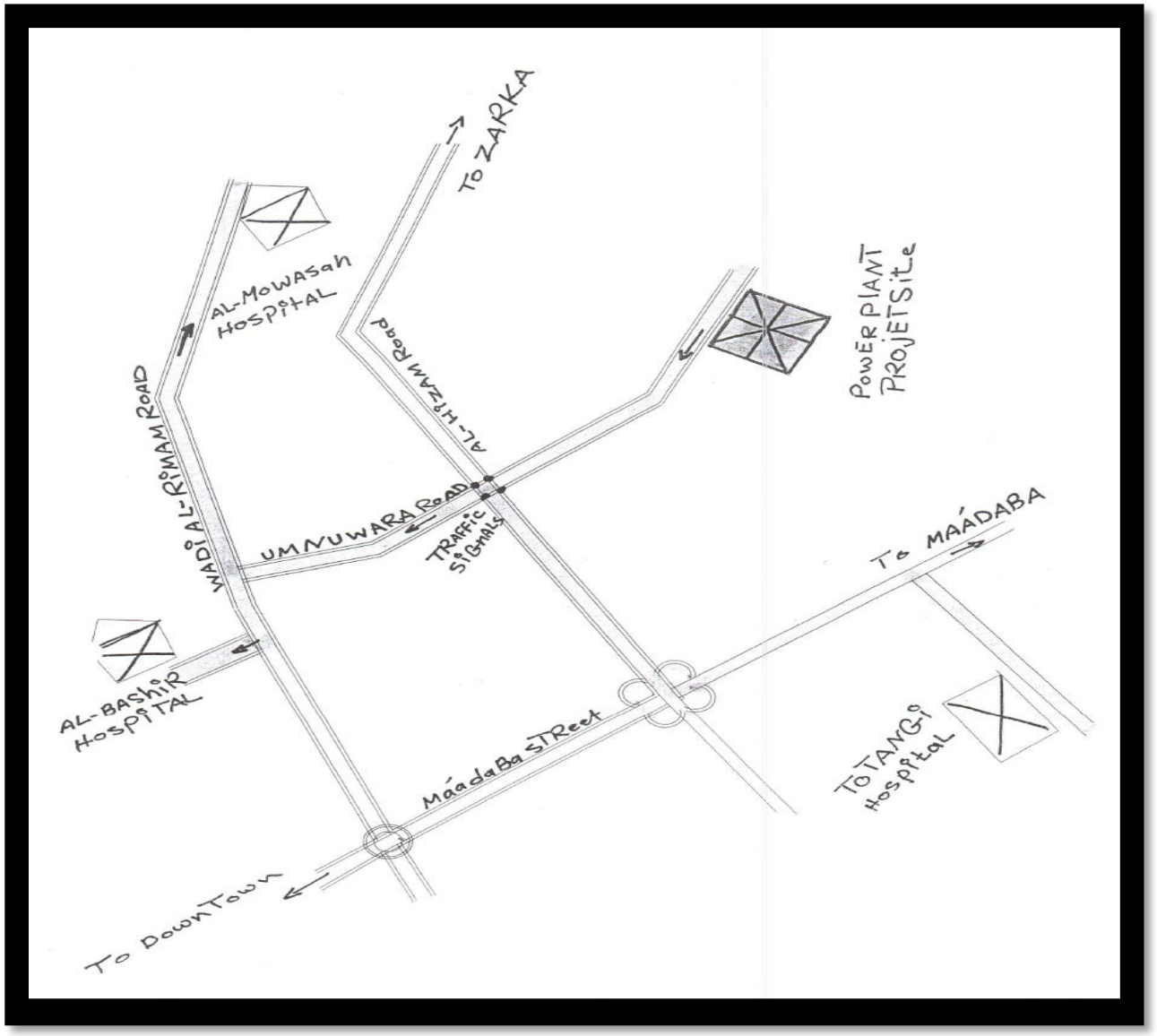
Mohammad Abed Assi +962795414198

8.0 SECURITY

Facility Fencing

Nebras power IPP1/Jordan is surrounded by a six-foot chain link fence topped with triple strand barbed wire. A single entrance is manned by a security guard 24 hours per day, 365 days per year. In addition to the control over the entrance, operations personnel

conduct rounds during each shift that include checking security measures. The entire site (including site borders) is completely covered by CCTV system with recording 24/7, the system is monitored by both security guards & CCR engineers.
Security guards are trained against ERCP.
Plant Location:



9.0 Program Administration

9.1 Training

- All people at the site must be familiarized on the business specific ERCP as part of the site orientation before start working at the site.
- Refresher familiarization training must be provided to all people at a minimum once in every two years or whenever changes are introduced to the ERCP.
- NEBRAS POWER IPP1/JORDAN employees identified in the ERCP with specific roles must be thoroughly familiar with the business specific ERCP, their roles and responsibilities.
- All involved people must be provided with initial and periodic training on operation and maintenance on emergency response and communication devices.
- Training and retraining in First Aid, with Trauma Kit, CPR, use of AED, First Response Team and rescue procedures, shall be provided all relevant specific to their roles.
- The NEBRAS POWER IPP1/JORDAN shall certify in writing that employee training has been completed and is being kept up to date. The certification shall contain Nebras power IPP1/Jordan each employee's name and dates of training.

9.2 Audit & Updating

The ERCP shall be audited according to NEBRAS POWER IPP1/JORDAN External and Internal audit standard & reviewed and updated:

a. At minimum once in a year, or
b. Whenever changes are introduced plant or its processes.

10.0 Records

Records shall be retained consistent with EMS/PRO/013.

References:

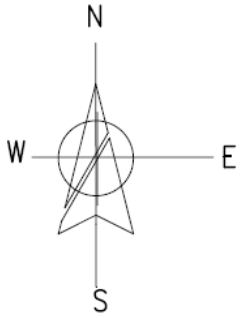
This NEBRAS POWER IPP1/JORDAN Safety Standard was developed using the following publications as the source of the requirements contained herein:

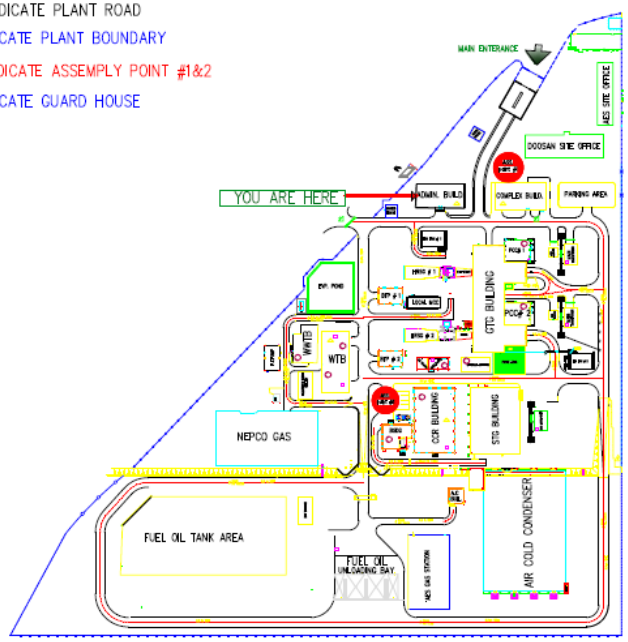
1. Occupational Safety and Health Administration (OSHA) 29 CFR 1910.38 paragraph (a) through (f) Emergency Action Plans.
2. Canadian Standards Association (CSA) Standard CAN/CSA-Z731-95, Emergency Planning for Industry.
3. Commission of European Communities, Emergency Planning for Industrial Hazards.

Attachment A: Facility Diagram

AMMAN EAST POWER PLANT

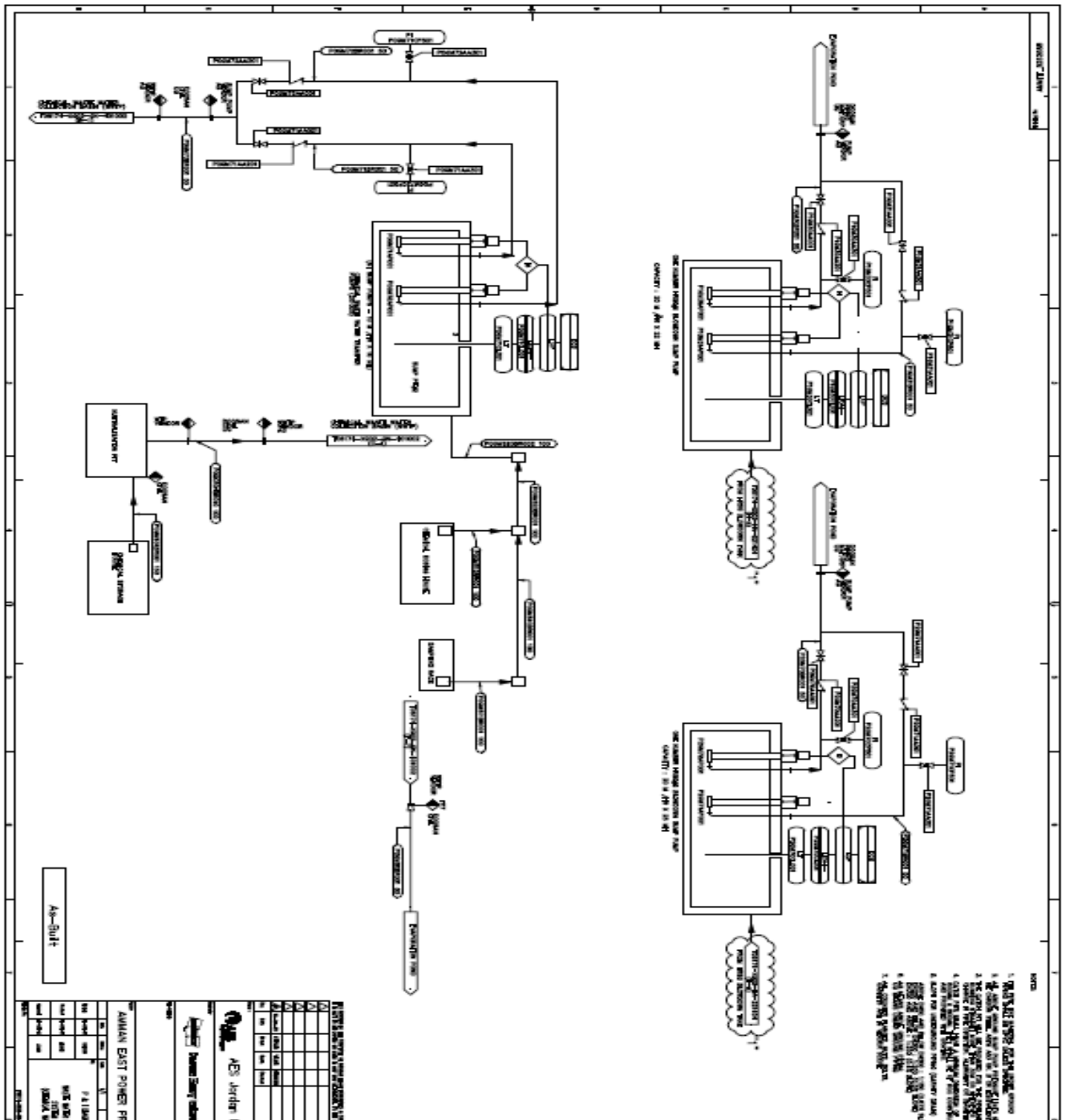
- BLACK LINE INDICATE PLANT ROAD
- BLUE LINE INDICATE PLANT BOUNDARY
- RED CIRCLE INDICATE ASSEMPLY POINT #1&2
- BLUE BOX INDICATE GUARD HOUSE
- FIRST AID BOX
- EYE WASH
- SPILL KIT





LAY–DOWN AREA

Attachment 2: Chemical wastewater drainage piping



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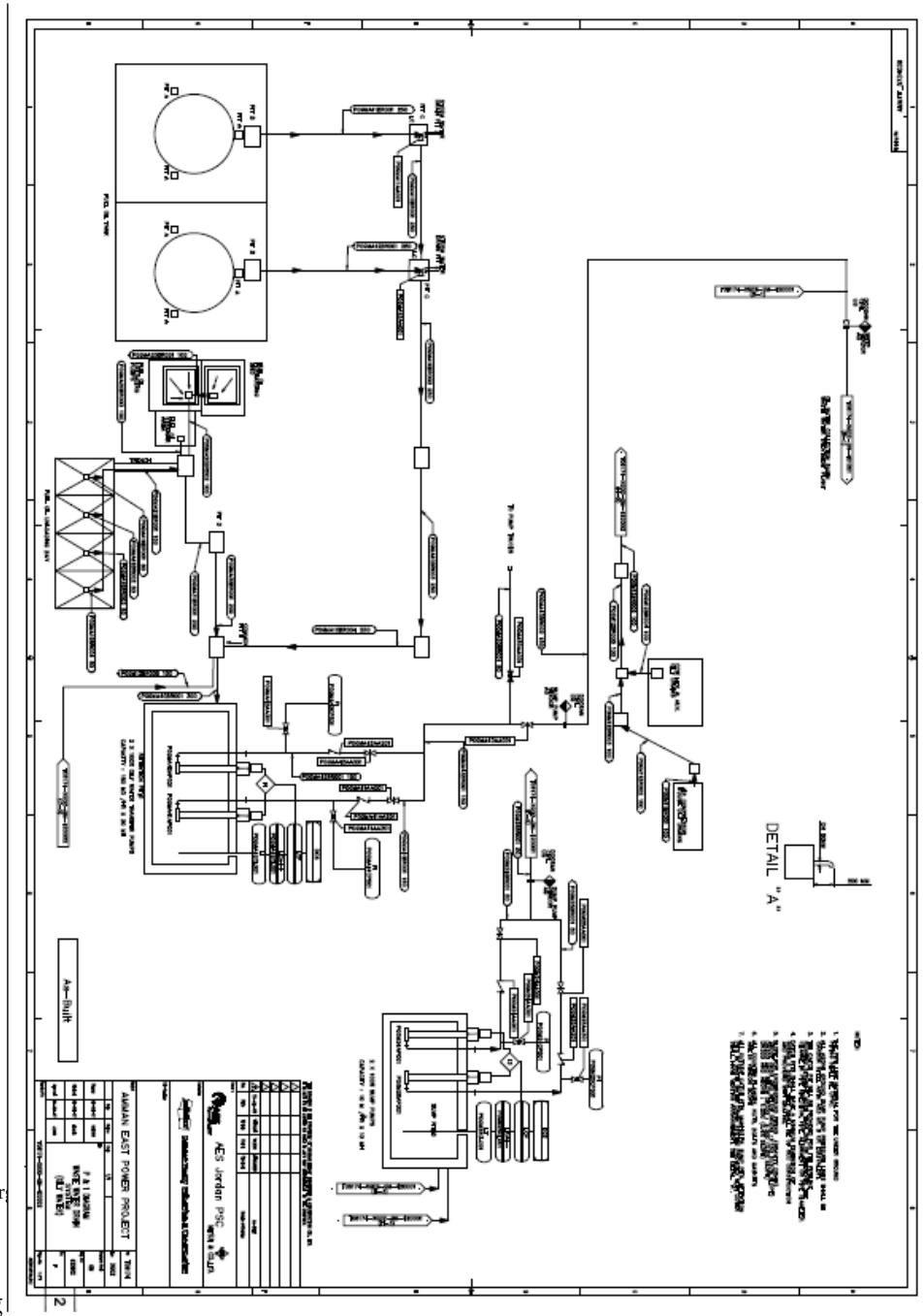

Attachment 3: Oily wastewater drainage piping

Revision / Changes record

No.	evision No.	Reference No.	Details of Change	Date	Approved By
1	1.0	**OSH/PLN/002**		30 June 2009	PM
2	1.1	**NEBRAS POWER P1/JORDANJ/ERP/001**		13 Sep 2009	PM
3	1.2	**NEBRAS POWER P1/JORDANJ/ERP/002**		15 Jan 2010	PM
4	0.0	EW NEBRAS POWER IPP1/JORDAN Standard **NEBRAS POWER 1/JORDAN-STD-BRS03**	Corp. STD Update, Safety & Environmental Emergency Response Plans were merged and all new requirements were set as per the standard	June 2021	MQ

Nebras Power IPP4 / Jordan PSC Monitoring and Measurement

Name	Date	Signature
Prepared by: Aamer Shamim HSE Manager	15-May-2014	
Reviewed by: Khaled Salameh Deputy Plant Manager	20-Jun-2014	
Approved by: Meftaur Rahman Executive Manager	25-Jun-2014	
Reviewed By : HSE Committee	1-July-2015	
Reviewed By : HSE Department	20.Aug.2016	
Reviewed By : HSE Department	15.Dec.2017	
Reviewed By : E&I Department	15.Dec.2018	
Reviewed By : E&I Department	15.Dec.2019	
Reviewed By : E&I Department	15.Dec.2022	
Next Review: Dec.2025		

EMS/PRO/ 010 Monitoring and Measurement

1.0. Purpose/Scope:

The main purpose of this procedure is to follow the standard guideline for the measurement and monitoring of the Regulatory required parameters and fully comply with our permits.

Also all of the Regulatory required parameters (as well as guaranteed parameters) have to be submitted to the World Bank and all lenders as per the common term agreement.

- Stack Emission
- Evaporation pond water analysis Report
- Ambient air quality monitoring report

2.0. Scope:

The procedure describes the list of guaranteed parameters and how to monitor the above and the frequency of report.

3.0. Responsibilities:

3.1. (EHS Manager/EHS Engineer):

- Retain all environmental incidents and investigation reports for a minimum of five calendar years following the end of the year to which they relate.
- Ensures all the environment related reporting to lenders and local authorities.
- Maintain the "Log of all environmental incidents and reporting to internal and external concerned parties.

3.2. Executive Manager:

The Executive manager or designee will approve and be responsible for all notifications made outside of the Nebras Power IPP4 / Jordan PSC,

3.3. Instrument and Control Engineers:

Instrument and control Engineers are responsible for monitoring and calibrating Environmental Monitoring Equipment.

4.0. Procedure: Calibration and Maintenance of Environmental Monitoring Equipment

4.1. Relevant areas and departments shall ensure that environmental monitoring equipment is calibrated and maintained at a frequency consistent with manufacturers' recommendations, or at least every 6 months if those recommendations are unknown. Relevant areas and departments shall maintain calibration and maintenance records as necessary to prove conformance with this procedure.

4.2. Calibration and maintenance of environmental monitoring equipment shall be addressed in area and department preventative maintenance programs, where applicable, or in local work practices, if desired.

4.3. Business EHS Manager/engineer will maintain a list of EMS equipment requiring calibration and the corresponding calibration frequency.

4.4. **(Refer to the attached QA/AC Program for Calibration and Maintenance of Environmental Monitoring Equipment).**

5.0. Monitoring and measurement:

Environmental Aspect	Parameters Monitored	Frequency of Monitoring	Monitoring Equipment
DF-Engines stack emissions	NOx, CO, Sox and Dust	Continuous	On-line monitors
Treated effluent	BOD, COD, pH, TDS Ammonical Nitrogen, TSS	As needed, as it is a ZERO discharge plant	Outside certified Lab analysis
Workplace and ambient noise	Sound pressure level	Once in year	Sound pressure level meter
Ambient air quality	NOx, SOx, PM_{10}	Continuous	By onsite Monitoring station.

HSE Monitoring, Measurement and Inspection plans defined all the HSE Monitoring. IFC limits are defined in EIA and ESMMP.

In addition to the on-line/ automated monitoring system following monitoring systems are in place:

- Raising Near Miss
- EHS walk down
- Regular site visit by PE's during their shift and reporting of any leak, spill immediately.

5.1. Stack Emission Limits

TABLE 6.2: EMISSION GUIDELINES (mg/Nm^3)

Parameter	*World Bank / IFC Guidelines**	
NO_x	740	
SO_2	585 or use of 1% or less S in fuel	
PM_{10} / $PM_{2.5}$	50	
CO	---	

The World Bank / IFC Guidelines for Thermal Power Plants states that plants should meet emission targets for at least 95% of the time that the plant unit is operating. The remaining 5% is assumed to be for startup, shutdown, emergency fuel use and unexpected incidents.

5.2. Ambient Air

TABLE 5.1: JORDANIAN EMISSION STANDARDS FOR AMBIENT AIR QUALITY (1140/2006) – PARTS PER MILLION (PPM), MICROGRAMS PER CUBIC METRE OF AIR (µg/m^3)

Pollutant	*Averaging Period*	*Maximum Limit*	*Number of Exceedences*
NO_2	1 hour	0.21 ppm* (400 µg/m^3)	3 times during any consecutive 12 months
	24 hours	0.08 ppm (150 µg/m^3)	3 times during any consecutive 12 months
SO_2	1 hour	0.3 ppm (786 µg/m^3)	3 times during any consecutive 12 months
	24 hours	0.14 ppm (370 µg/m^3)	Once during any consecutive 12 months
PM_{10}	24 hours	120 µg/Nm^3	3 times during any consecutive 12 months
$PM_{2.5}$	24 hours	65 µg/Nm^3	3 times during any consecutive 12 months
CO	1 hour	26 ppm (30279 µg/m^3)	3 times during any consecutive 12 months
	8 hours	9 ppm (10481 µg/m^3)	3 times during any consecutive 12 months
TSP	24 hours	260 µg/m^3	3 times during any consecutive 12 months
H_2S	1 hour	0.030 ppm (42 µg/m^3)	3 times during any consecutive 12 months
	24 hours	0.010 ppm (14 µg/m^3)	3 times during any consecutive 12 months

5.3. Jordanian Waste Water Limits

TABLE 5.7: JORDANIAN WASTE WATER STANDARDS (JS:202/2007)

Parameter	*Maximum Allowable Limit * (Irrigation for green scaping land, fruitful tree and side road)*	*Maximum Allowable Limit * (Discharge to wadi)*
BOD_5	200	60
COD	500	150
DO	-	≤ 2
TSS	200	60
pH	6 – 9 SU	6 – 9 SU
NO_3	45	80
T-N	70	70
Color	-	15 PCU
Turbidity	-	15 NTU
Escherichia coli	1000 MPN/100 ml	1000 MPN/100 ml
Intestinal Helminthes Eggs	≤ 1 Eggs/l	≤ 1 Eggs/l
FOG	8	8
Phenol	< 0.002	< 0.002
MBAS	100	25
TDS	2000	2000
PO_4-P	30	15
Cl	400	350
SO_4	500	300
NH_4	-	5
HCO_3	400	400
SAR	9	9
TOC	-	55
CN	0.1	0.05
Ba	-	1
Al	5	2
As	0.1	0.05
Be	0.1	1
Cu	0.2	1.5
Fe	5	5
Li	0.075	2.5
Mn	2	2
Mo	0.01	0.01
Ni	0.2	0.2
Pb	0.2	0.2
Se	0.05	0.05
Cd	0.01	0.01
Zn		5
Cr	0.1	0.1
Hg	0.002	0.002
V	0.1	0.1
Co	0.05	0.05

5.4. World Bank Waste Water Limits

TABLE 5.8: THE WORLD BANK / IFC EFFLUENT DISCHARGE LIMITS

Parameter	*mg/L, except pH and Temperature*
pH	6-9
Total Suspended Solids (TSS)	50 mg/l
Oil and grease	10 mg/l
Total residual chlorine	0.2 mg/l
Chromium – Total (Cr)	0.5 mg/l
Copper (Cu)	0.5 mg/l
Iron (Fe)	1.0 mg/l
Zinc (Zn)	1.0 mg/l
Lead (Pb)	0.5 mg/l
Cadmium (Cd)	0.1 mg/l
Mercury (Hg)	0.005 mg/l
Arsenic (As)	0.5 mg/l
Temperature increase by thermal discharge from cooling system.	• Site specific requirement to be established by the Environmental Assessment. • Elevated temperature areas due to discharge of once-through cooling water (e.g. 1 Celsius above, 2 Celsius above, 3 Celsius above ambient water temperature) should be minimized by adjusting intake and outfall design through the project specific Environmental Assessment depending on the sensitive aquatic ecosystems around the discharge point.
Note: Applicability of heavy metals should be determined in the Environmental Assessment. Guideline limits in the Table are from various references of effluent performance by thermal power plants.	

5.6. Noise level under (WB guideline)

The noise level emissions associated with the operation of the power station complied with the industrial and commercial category emission of 70 dB(A) when measured at the boundary fence. For Jordanian Limit it will be 75 dB(A) day time and 65 dB(A) night time

Nebras Power IPP4 / Jordan PSC has accepted the World Bank noise limit (70 dBA) for the daytime, and the Jordanian limit (65 dBA for the nighttime.

6.0. Records:

Records shall be retained consistent with EMS/PRO/013.

7.0. Revision / Changes record:

Sr. No.	Revision No.	Reference No.	Details Of Change	Date	Approved By
1					