





AES Jordan PSC
Emergency Preparedness and Response

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	Document No – EMS/PRO/009	Date: 30 Mar 2011

Name	Date	Signature
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Reviewed By: EHS Manager	26-12-2009	
Approved By: Plant Manager	31-12-2009	
Reviewed By: Biplob Kumar Dhar (No Change was done)	30-12-2010	
Reviewed By: Biplob Kumar Dhar	30-03-2011	
Approved By: Plant Manager	31-03-2011	
Reviewed By: Mohammad Alqudah (No Change was done)	03-Jan-2012	
Reviewed By: Mohammad Alqudah (No Change was done)	06-Jan-2013	
Reviewed By: Mohammad Alqudah (No Change was done)	06-FEB-2014	
Reviewed By: Mohammad Alzaghal (No Change was done)	Jan-2015	
Reviewed By: Mohammad Alzaghal (No Change was done)	Jan-2016	
Reviewed By: Anas Hayajneh (No Change was done)	Jan-2017	
Next Review: Jan 2018		

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EMS /PRO/009: Emergency Preparedness and Response

1.0 Purpose/Scope:

- The purpose of emergency preparedness and response is to recognize and plan for appropriate responses to an emergency so that safety and environmental risks associated with emergency may be prevented.
- Prepare individuals working inside the plant so that they can respond effectively in the following:
 - Potential Risk Assessment
 - Fire detection and Alarm System
 - System for Intervention and Actions to control any incident
 - Emergency Evacuation Procedure/Drills in order to meet the emergency situations like Bomb Threatening Message or Terror Act/Threat etc...

2.0 Activities Affected:


All areas and departments

3.0 Forms Used:

None

4.0 References:

- EMS/PRO/001 Environmental Aspects
- EMS/PRO/003 Objectives, Targets and Programs

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- EMS/PRO/006 Communication
- EMS/PRO/012 Non-conformity and Corrective and Preventive Action
- AES Jordan PSC, Amman East Power Plant Safety Manual Ref: OSH/PLN/002 - Emergency Response Plan

5.0 Definitions:

- 5.1 Environmental Incident or Emergency Situation: environmental releases that require an emergency response
- 5.2 Emergency Response: actions taken by personnel outside of the immediate work area to address an environmental incident.


6.0 Procedure:

- 6.1 Potential environmental incidents and emergencies likely to occur at the facility shall be identified by the Environmental Management Team and documented according to EMS/PRO/001: (Environmental Aspects) and Emergency Response and Planning requirements.
- 6.2 Where applicable, regulatory agencies shall be notified by the Business EHS Coordinator (EHS Manager/EHS Engineer) of environmental incidents.
- 6.3 See AES Jordan PSC, AEPP Safety Manual’s Safety Procedure 2 for complete Emergency Preparedness and Response plan [OSH/PLN/002].

7.0 Description :

Plant Description:

Facility Name	AES Jordan PSC Amman East Power Plant
Site Address	Al Madhona St.- Al Manakher Village, Amman 11181
Responsible Site Official	Meftaur Rahman

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Title	Plant Manager
Phone Number	+96264293201
Facility Description	Electric Power Generation
Date Operation Started	25 th July'2008

EMERGENCY TELEPHONE NUMBERS:

Notification Contacts:

Meftaur Rahman +96264293201
Plant Manager, Amman East Power Plant +962796099511 (cell)

Oil Spill Contact:
Mohammad Al Qudah +96264293200; Ext:112
EHS Manager +962797897020

Fire/Police/Ambulance: 199,911

Jamil Totanji Hospital +96264020090
Sahab

Ahmad Hamaida Hospital +96264785555

Al Bashir Hospital +96264753101

Ministry of Environment: +96265560113

Clean-up Contacts:

Saif Station +962795426436

Ghazi Alkaraki +962788855327

Rizeq Rizeq Lutfi +962779998881



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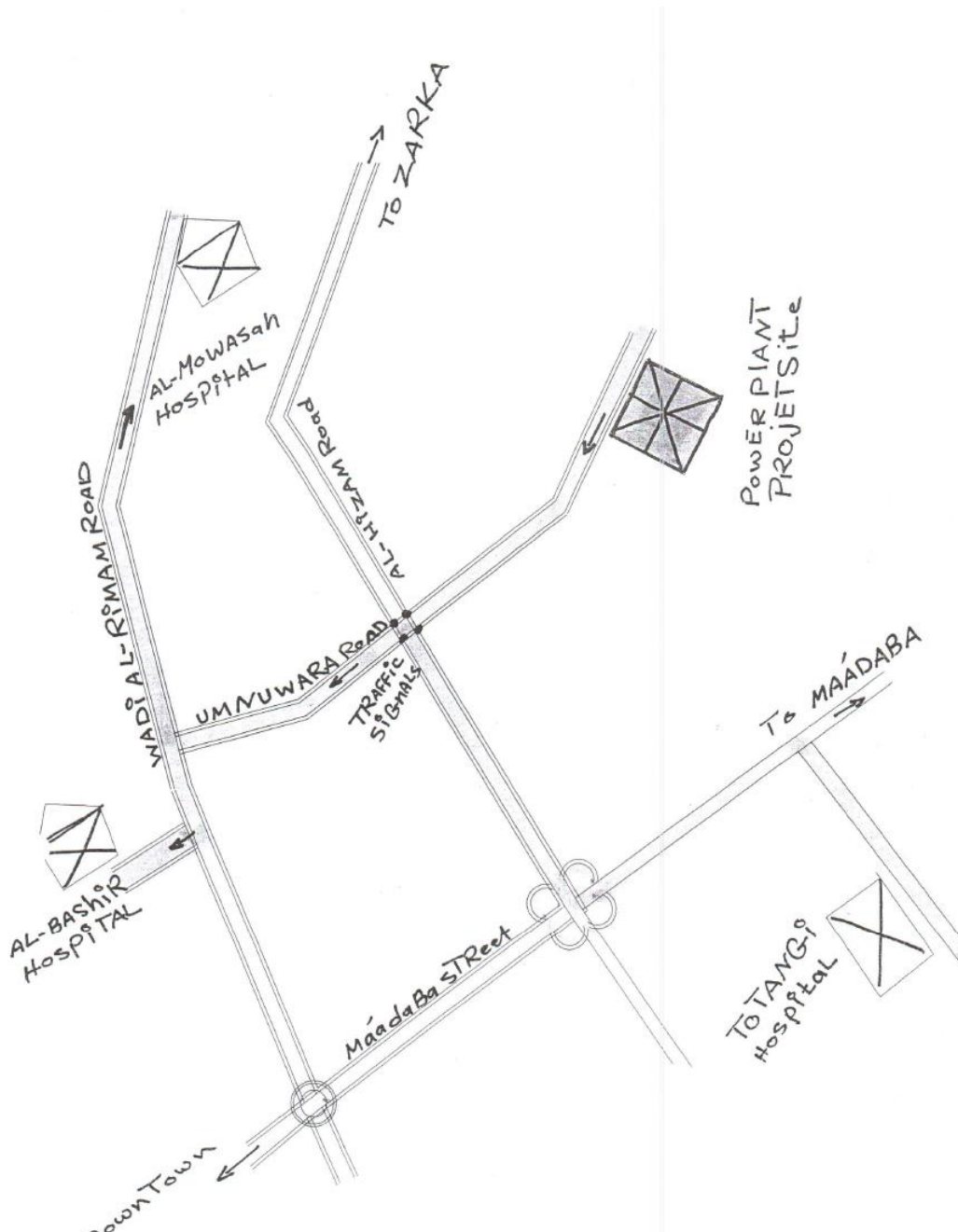
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Plant Location:




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Types of chemical being used in the plant:


- 1) Hydrochloric Acid (33%)
- 2) Sodium Hydroxide (46%)
- 3) CorTrol OS 5601
- 4) Steamate NA1324
- 5) OptiSpere HP5455
- 6) Lubricating Oil
- 7) Diesel Oil
- 8) Thinner
- 9) Corshield NT 4209 as corrosion inhibitor
- 10) Spectrus NX1164 as Biocide
- 11) Painting cans
- 12) 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

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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
Desel 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

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	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
Neutra lizatio n Pit	Acid Storage Tank 2	6.0	3.0	m3
	Caustic Storage Tank	5.0	3.4	m3
Chemi cal Dosing Area	Ammonia Tank	1.0	0.4	m3
	Hydrazine Tank	1.0	0.6	m3
	Phosphate Tank	1.0	0.5	m3
	Chemical Storage Shelter	50.0	5.9	m3


Countermeasures:

Engineering Control:

- 1) 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.
- 2) All the leakages from the oil filled transformers are collected underground of the transformers. They can be directed to oily waste water treatment plant.
- 3) All chemical tanks & containers are equipped with secondary containment & connected to chemical waste water treatment plant.
- 4) All the drain & vent points of oily systems are collected in sumps & sent to oily wastewater plant for further treatment.
- 5) The unloading area of diesel oil are designed to collect oil spill during unloading & sent to oily waste water treatment plant.
- 6) All the tanks are equipped with high & low level alarms & displayed at control room with buzzer.

Administrative Control:

- 1) MSDS's have been placed in all the places where tanks & drums are located.

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- 2) Spill kits have been provided at strategic locations of plant where possibilities of spillages are high.
- 3) Quarterly inspection of the spill kit is in place.
- 4) Daily plant round up by plant engineers is in place.
- 5) HMIS labels for all the drums & tanks are in place.
- 6) Transportation of chemical & oil drums are carried out by listed authorized persons only.
- 7) Key plant personnel are trained on emergency preparedness should a spill occurs.
- 8) In plant mock drill for chemical spillage.
- 9) Joint drill arrangement is in plant with CDD for various emergency scenario including chemical & oil spill.

PPE:

- 1) All unloading activities are carried out wearing proper chemical suit.
- 2) 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

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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 and then on to a retention basin.	Up to 10,293 Gallons	Slow leak to Instantaneous

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

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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

SECURITY

Facility Fencing

Amman East Power Plant 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.

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

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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

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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.

In case of a spill:

Chemical Spills on the AES Jordan PSC AEPP 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 AES Jordan PSC AEPP 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 the these chemicals on the Plant in this eventuality.


1.1 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.

Cautions: Do not under any circumstances add water to acid for dilution as it will react by boiling and spitting.

6.1 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.

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1.2 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.

1.3 Anti Scalent

Anti-Scalent Should be prevented from entering drains. Absorb in vermiculite, dry sand or earth and place in to 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.

6.2 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.


6.3 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.

6.4 Corrshield NT 4209 as corrosion inhibitor :

May cause moderate irritation to the skin. Severe irritant to the eyes.

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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.

6.5 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.

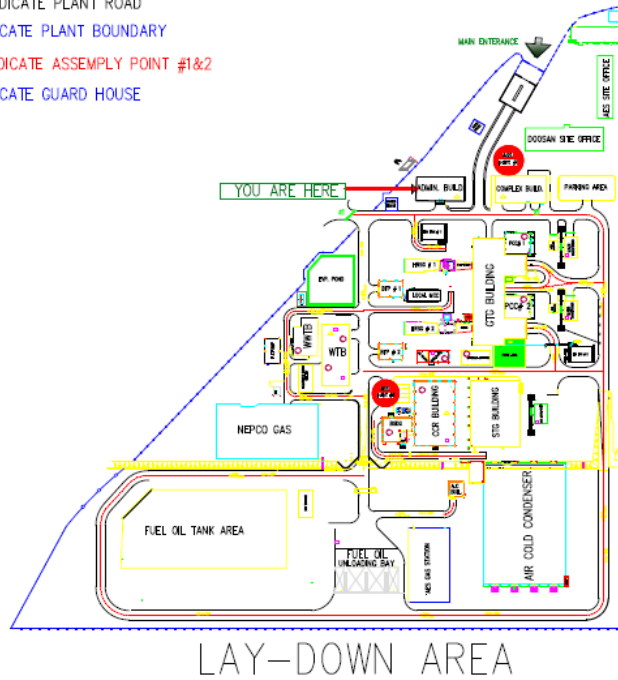
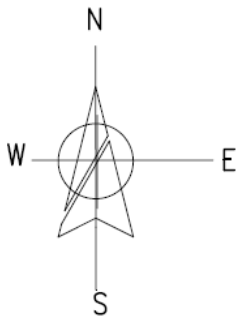
Corrosive to skin. Skin sensitizer with delayed onset of symptoms. Corrosive to the eyes. Mists/aerosols cause irritation to the upper respiratory tract.


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Attachment A:
Facility Diagram

AMMAN EAST POWER PLANT

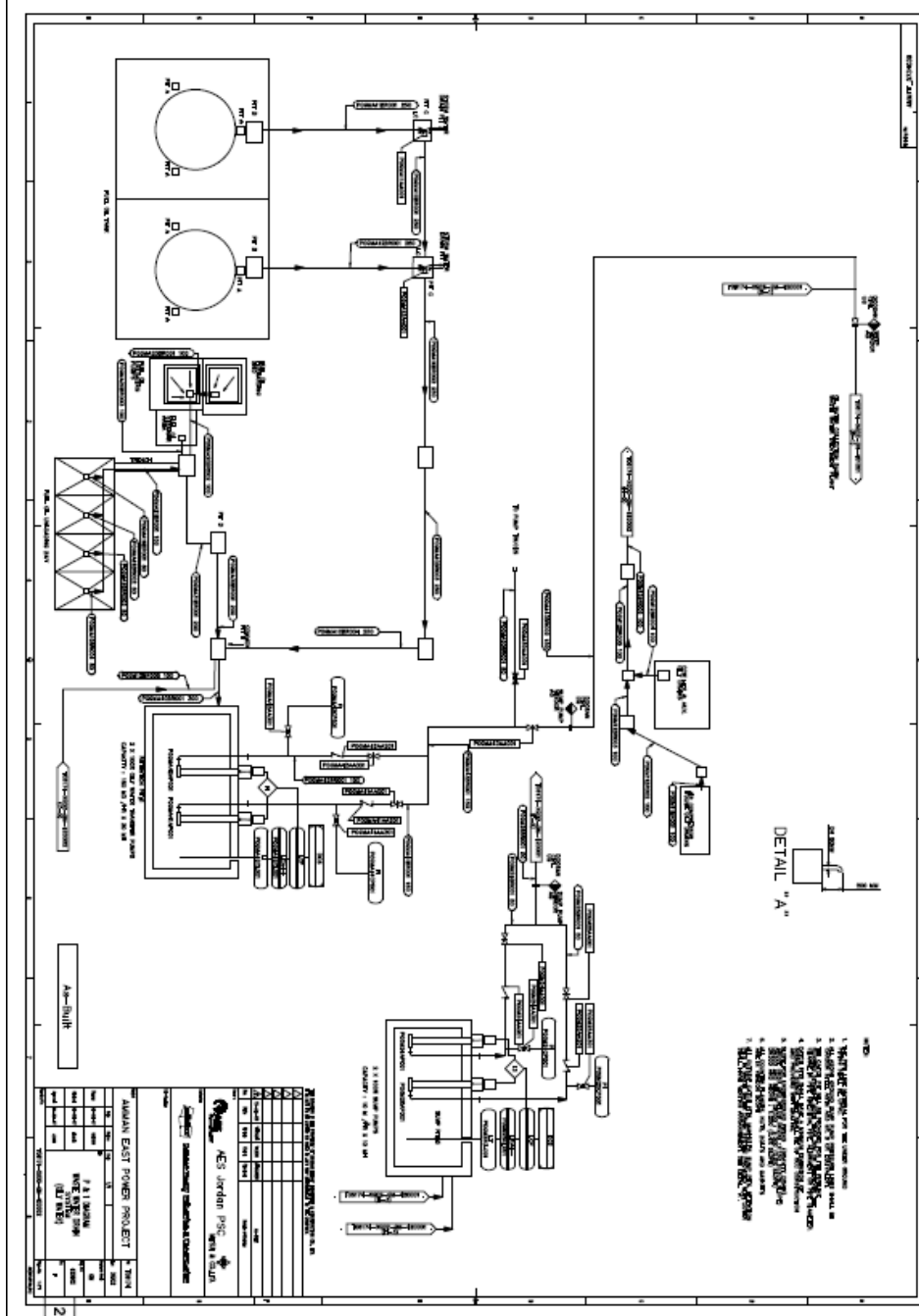
- BLACK LINE INDICATE PLANT ROAD
- BLUE LINE INDICATE PLANT BOUNDARY
- RED CIRCLE INDICATE ASSEMBLY POINT #1&2
- BLUE BOX INDICATE GUARD HOUSE
- △ - FIRST AID BOX
- - EYE WASH
- - SPILL KIT



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Attachment 2:
Chemical waste water drainage piping

Attachment 3: Oily waste water drainage piping



8.0 Records:

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

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