

NTPC VIDYUT VYAPAR NIGAM LIMITED

VARANASI HARIT KOYLA PARIYOJANA

MSW TO TORRIFIED CHARCOAL PLANT

NEAR 50 MLD STP, RAMANA

VARANASI (UP)- 221011

VENDOR: MACAWBER BEEKAY PVT.LTD.

On Site Emergency Plan

**As per Schedule 11 of Manufacture, Storage & Import of Hazardous
Chemical Rules 1989 (Amended in 1994 & 2000)**

(February, 2024)

Carried out by

BBC Tech Associates

5/22 Vikas Khand, Gomti Nagar, Lucknow (UP) 226010

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NAME AND ADDRESS OF THE FACTORY WHERE ON SITE EMERGENCY PLAN CARRIED OUT:

Shri ASHISH RANJAN SR. MANAGER (NVVN) SITE: NTPC VIDYUT VYAPAR NIGAM LTD. ADDRESS: VARANASI HARIT KOYLA PARIYOJANA (MSW TO TORREFIED CHARCOAL PLANT), NEAR 50 MLD STP RAMANA, VARANASI (UP)-221011 VENDOR - MACAWBER BEEKAY PVT. LTD	SIGN & SEAL
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ACKNOWLEDGEMENT

The enclosed-On Site Emergency Plan as per Schedule-11 of Manufacture, Storage & Import of Hazardous Rules, 1989 for the ***NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.*** is based on the studies carried out in the month of February, 2024 and the information provided by the Management. The officials of the plant gave whole-hearted co-operation during the studies and completion of the report so that all the observations could be made freely.

We express our sincere thanks to the management of ***NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.*** for their co-operation & unstinted help without which the preparation of “**On-Site Emergency Plan**” could not have been possible. The courtesy extended to our team is highly appreciated.

For BBC Tech Associates

(Auth. Sign)

1. NAME AND ADDRESS OF THE PERSON FURNISHING THE INFORMATION: -

Shri ASHISH RANJAN

SR. MANAGER (NVVN)

NTPC VIDYUT VYAPAR NIGAM LTD.

VARANASI HARIT KOYLA PARIYOJANA

(MSW TO TORREFIED CHARCOAL PLANT), NEAR 50 MLD STP RAMANA, VARANASI (UP)-221011

2. KEY PERSONNEL OF THE ORGANIZATION AND RESPONSIBILITIES ASSIGNED TO THEM IN CASE OF AN EMERGENCY: -

The following persons have been designated in the plant for tackle of any emergency and their responsibilities and duties are as under:

a. Chief Incident Controller (CIC)	Mr. Ashish Ranjan, Sr. Manager (NVVN)
b. Works Incident Controller (IC)	Mr. Rama Krishna, Manager-O&M (MBPL)
c. Site Incident Controller (SIC)	Mohd. Haris, Deputy Manager (MBPL)
d. Other Key persons	
Liaison Coordinator – Civil Authorities	Mr. Rakesh Tripathi, Liasoning Officer (MBPL)
Fire, Rescue & Safety Coordinator	Mr. Abhishek Gupta (Safety), Mr. Suraj Yadav (Safety)
Medical Coordinator	Medical Officer
Transport & Facilities Coordinator	Mr. Rakesh Tripathi, Liasoning Officer (MBPL)
Maintenance Coordinator	Site In charge (MBPL)
Electrical coordinator	Site In charge (MBPL)
Communication Coordinator	HR Head (MBPL)
Public Relations Coordinator	HR Head (MBPL)
Traffic & Security Coordinator	Head Security
e. Essential Key Persons	Shift In charge & Operators of each section
	Shift In charge & Mechanical Personnel
	Shift In charge & Electrical Personnel
	Firemen & Security Guards
	Trained First Aiders
	Drivers

NTPC Vidyut Vyapar Nigam Limited, Ramna, Varanasi (U P) Vendor - Macawber Beekay Pvt. Ltd.

List of Key Persons

Sr. No.	Emp Name	Designation	Contact No.
1.	Mr. Ashish Ranjan	Sr. Manager (NVVN)	9650998313
2.	L. Ramakrishna	Manager (MBPL)	9025995149
3.	Mr. MD. Haris	Deputy Manager (MBPL)	9580903350
4.	Chanchal Mukherjee	Astt. Manager	6392367233
5.	Mr. Ajay Katiyar	Shift In- Charge	7888474354
6.	Mr. Deepak Kumar	Security Head	9616869075
7.	Mr. Rakesh Tripathi	Sr. Liaison Officer	9161660022
8.	Mr. R. K. Mishra	HR Head	9964105952
9.	Mr. Suraj Yadav	Safety Officer	9369076955
10.	Mr. Abhishek Kumar Gupta	Safety Officer	7654066152

Support Team to Chief Incident Controller (CIC)

Sr. No.	Name (Shri/Smt.)	Designation	Mobile
1	L. Ramakrishna	Manager	9025995149
2	Md. Haris	Dy. Manager	9580903350
3	Chanchal Mukherjee	Astt. Manager	6392367233
4	Amit Shakya	Astt. Manager	6388943500

Support Team to Works Incident Controller (WIC)

Sr. No.	Name (Shri/Smt.)	Designation	Mobile
1	Md. Haris	Dy. Manager	9580903350
2	Chanchal Mukherjee	Astt. Manager	6392367233
3	Amit Shakya	Astt. Manager	6388943500
4	Abhishek Kr. Gupta	Safety Officer	7654066152
5	Suraj yadav	Safety Officer	9369076955
6	Ajay Katiyar	Shift In charge	7888474354
7	Ajay Kumar	Desk Operator	7000190153

8	Nilesh Kumar Singh	Engg- Mechanical	7237034350
9	Dinesh Yadav	Electrician	8109864855
10	Vinit Pandey	Operator- Grab Crane	7376229714

Support Team to Maintenance Co-Ordinator

Maintenance Team:

Sr. No.	Name (Shri/Smt.)	Designation	Mobile
1	Ajay Katiyar	Shift In charge	7888474354
2	Ajay Kumar	Desk Operator	7000190153
3	Jitender Dubey	Operator	9708068170
4	Amit Giri	Supervisor	9532011316
5	Anil Singh	Sr. Technician	8382091339
6	Nilesh kr. Singh	Engg- Mechanical	7237034350

Support Team to Fire, Rescue & Safety Coordinator

Fire & Rescue Team:

Sr. No.	Name (Shri/Smt.)	Designation	Mobile
1	Abhishek Kr. Gupta	Safety Officer	7654066152
2	Suraj Yadav	Safety Officer	9369076955
3	Jitender Dubey	Operator	9708068170
4	Nilesh Kr. Singh	Engg- Mechanical	7237034350
5	Ravi Shankar Yadav	Operator	9718159089
6	Sumit Yadav	supervisor	7275965335
7	Rahul Singh	Operator	8318758150

Support Team to Communication Coordinator

Communication Team:

Sr. No.	Name (Shri/Smt.)	Designation	Mobile
1	Rakesh Tripathi	Sr. Liasoning Officer	9161660022
2	Ram Krishna Mishra	Sr. Executive	9964105952

Support Team to Traffic & Security Coordinator

Security Team:

Sr. No.	Name (Shri/Smt.)	Designation	Mobile
1	Rakesh Tripathi	Sr. Liasoning Officer	9161660022
2	Ram Krishna Mishra	Sr. Executive	9964105952

Support Team to Fire, Rescue & Safety Coordinator

Safety Team:

Sr. No.	Name (Shri/Smt.)	Designation	Mobile
1	Abhishek Kr. Gupta	Safety Officer	7654066152
2	Suraj yadav	Safety Officer	9369076955

In accordance with the organization structure, the personnel in-charge of each of the above functions responds to the Chief Incident Controller (CIC), who is overall in-charge of the Plant. Each function is staffed with a team, the size and composition of which depend on the task required to be carried out during the emergency and the size of facility. These teams then operate according to the instructions provided by the CIC and within the purview of prewritten guidelines to accomplish their task. Some of these teams mainly operate in the Emergency Control Room (ECR) and others would operate in the field or in other part of the Plant.

FUNCTIONS OF DESIGNATED PERSONS

Chief Incident Controller (CIC)

Responsibilities and duties of Chief Incident Controller (CIC)

On receipt of the information regarding the emergency inside the plant premises will go to the Emergency Control Room (ECR) and will resume overall responsibilities for the Plant. The CIC responsibilities will include: -

1. Final authority on all matters related with declaration of emergency, firefighting, rescue operation, calling outside for assistance, transportation, liaison, evacuation, media, all clear signal for emergency, etc.
2. Ensure that all key personnel are called.
3. Continuously review and assess possible developments to determine the most probable course of action.
4. Consultation with various teams as to whether shutting down of the plant or any section of the plant is required.
5. Direct the shutting down of plants and their evacuation in consultation with the work incident controller and key personnel.
6. Ensure that traffic movement within the work premises is well regulated.
7. After consultation with appropriate team leader (coordinator) and on the basis of the recommendation of team leaders inform to Govt. officials like fire brigade, police, medical, pollution control board, factory inspector etc.
8. Ensure the accounting for personnel.
9. Assessments of the magnitude of the situation and to decide whether the employees are to be evacuated from the assembly points to identified shelter place.
10. Ensure that casualties are receiving adequate attention. Arrange for additional help if required and ensure that relatives are informed.
11. In the case of emergencies, which involve risk to outside areas from materials, blown with wind, monitor the wind direction and take decision of evacuation of neighboring population with the help of government authority. The overall action will be under the leadership of district administration.
12. CIC Assist the district administration and provide advice on possible effects on areas outside the work premises to the District Administration.
13. Where the emergencies prolonged, arrange for the relief of site personnel and the provision of catering facilities.
14. Issue authorized statement to the news media and ensures that evidence is preserved for inquiry to be conducted by the Statutory Authorities.
15. To look after rehabilitation of affected persons on discontinuation of emergency.

Note:

1. The Chief Incident controller will wear a distinct colour helmet so that he could be identified easily.
2. The responsibility of CIC will be performed by the In-charge of each shift in each section respectively after normal / general shift working hours till the arrival of CIC or his alternative.

Works Incident Controller (WIC)

Responsibilities and duties of Works Incident Controller (WIC)

1. As soon as he will reach the emergency site and take charge from SIC (Site Incident Controller).
2. He will assess the situation and shut down the plant if not done so and declare Emergency as required.
3. Inform to Chief Incident Controller.
4. Assemble the Fire Fighting team, Repair Team, Rescue Team and arrange necessary safety equipments for them.
5. Ensure that all non-essential workmen in the affected area evacuate to the appropriate assembly point.
6. Ensure for head count at assembly point is done and identify the any person is missing.
7. Ensure that the affected area is searched for unattended casualties.
8. Ensure that the paths for evacuation are clear and in night emergency lighting arrangement is adequate.
9. Keep in touch with the different teams and advise them regarding the method of control to be used.
10. Inform Occupation Health Centre for emergency treatment.
11. Keep the Chief Incident controller informed periodically about the progress made.
12. Give an All-Clear Signal when the emergency has been controlled.
13. Preserve all evidences so as to facilitate any inquiry into the cause and circumstances, which caused the emergency.
14. Prepare a detailed report.

Site Incident Controller (SIC)

Responsibilities and duties of Site incident controller (SIC)

On receipt of information; he will immediately rush to the incident site with appropriate safety measures. After knowing the incident, the SIC will assess the magnitude and decide whether it is a major emergency or is likely, if so, he will immediately activate the Onsite emergency plan. He will also inform to CIC / WIC. He will assume the duty of the WIC till WIC arrives, following will have to:

1. Initiate emergency control actions and ensure the activation of emergency services.
2. Direct instructions to shut down all operations within the affected area consideration priorities for safety of personnel, minimum damage to the people, plant, property and the environment.
3. He will also direct for shut down and evacuation of the other plant areas; if required.

4. Ensure key personnel have been summoned. He will also ensure that the rescue & firefighting operations started, until the arrival of the firefighting crew & rescue team.
5. He should direct evacuation of non-essential workers to assembly areas and ensure that all non-essential workers/staff of the affected area have been evacuated to safer places.
6. Organize search of casualties in the affected area (if any) and send them to safe area/medical center for first aid and medical relief.
7. Assess continuously all possible development.
8. Setup communication points and establish continuous contact with emergency control center relating to failure of electric supply and there by public address system (PAS) and internal telephones.
9. Give advice and information as requested to the emergency services.
10. Report to CIC / WIC and keep him informed of developments.
11. Provide advice and information to firefighting and rescue personnel, external fire services and other emergency services as and when they arrive at the incident site and coordinate with them.
12. Take action to preserve the evidence for the further inquiry, into the cause and circumstance which have caused or escalated the emergency.

Liaison Coordinator – Civil/ Statutory authorities

Responsibilities and duties of Liaison Coordinator – Civil/ Statutory Authorities

He will proceed to control room on hearing alarm and maintain communication with incident controller.

1. He will pass information to the site Incident controller / Works Incident controller accordingly
Liaison with Civil authorities
2. All in outside help as required
3. Arrange transport for victims to hospitals, if required take help from neighboring industries
4. Assign official at the hospitals to look after the needs of affected personnel under treatment
5. Coordinate with Finance for necessary funds required to cater the needs
6. Ensure that relatives of affected personnel informed and record maintained
7. Mobilize Company's vehicles for emergency purpose
8. Arrange transport for victims to hospital
9. Arrange refreshment for personnel engaged in controlling emergency & rescue operations.
10. Keep in contact with Works Incident Controller / Assembly Point Coordinator ensures all communication links in function.

Maintenance Coordinator

Responsibilities and duties of Maintenance Coordinator

Rush to the Control Room on receiving message.

He will ensure that personnel of engineering department are in a position to undertake urgent maintenance jobs.

1. Assess the situation from the angle of help that may be needed to tackle the emergency in consultation with Incident and Emergency Controllers
2. On specific request from key personnel if required get necessary equipment like, Forklifts, Welding and Cutting Sets etc. as needed for tackling the emergency and make available required personnel to operate above facilities
3. On specific request from key personnel if required keep workshop & Stores facilities open with necessary personnel throughout emergency to cater any need for repairs or supply of additional equipment
4. Keep in constant touch with Emergency/Incident/Rescue Controller for any assistance to them
5. Make arrangements for fabricating temporary bypass line, providing blinds etc.
6. Keep liaison with Emergency, Incident and Maintenance Controller and Coordinate activities required in the field of instrumentation.

Electrical Coordinator

Responsibilities and duties of Electrical Coordinator

Rush to the Control Room on receiving message.

He will ensure that personnel of engineering department are in a position to undertake urgent maintenance jobs.

1. Assess the situation from the angle of help that may be needed to tackle the emergency in consultation with Incident and Emergency Controllers.
2. Keep in constant touch with Emergency/Incident/Rescue Controller for any assistance to them
3. Ensure that electricity of the affected area is cut off, if required by the Incident Controller
4. Make arrangement for temporary lighting/emergency lighting to affected areas, shelters and other places of assembly
5. Arrange for isolation/ restoration of electric supply as necessary
6. Keep liaison with Emergency, Incident and Maintenance Controller
7. Ensure critical power supply is available to Fire Hydrant Pump & other Utility services as requirement.

Responsibilities and duties of Other Key Persons

Fire, Rescue & Safety Co-Ordinator

Responsibilities and duties Fire, Rescue & Safety Coordinator

1. Ensure the availability of all safety equipment's and PPE.
2. Arrange for the search of missing persons.
3. Guide the firefighting team to control the spread of fire.
4. Arrange for further equipment /assistance for firefighting if necessary.
5. Arrange for containment /diversion of spills and chemicals, draining of effluent generation during firefighting, emergency operations etc.
6. Ensure the pressure in hydrant line and ensure the diesel level in diesel operated fire pump and water level in water reservoir.
7. Guide Firefighting team in rescuing operations of the victims.
8. Transport injured person to the Occupational Health Center.
9. To remove any unwanted material from fire site.
10. Ensure that the on-site emergency operations are carried out safely.
11. Ensure the preservation of evidences for the investigation of the incident.
12. Investigate the emergency/accident to find out the causes and to suggest remedial measures.
13. Provide technical input to the CIC/WIC/ Coordinator of emergency team during handling of emergency.

Medical Coordinator

Responsibilities and duties

1. Inform the Occupational Health Center to be ready for receiving the injured persons.
2. Ensure the safe transport of the injured persons to the Occupational Health Center.
3. Ensure proper first aid for injuries in the Occupational Health Center.
4. Mobilize additional medical facilities at incident site if required.
5. Guide the medical team members and involve them in giving first aid to the injured persons.
6. Arrange shifting of injured person in nominated hospital, if required.
7. Any other work assigned by CIC/WIC.

Transport & Facilities Coordinator

Responsibilities and duties-

1. Arrange transport requirement at incident site as required by Fire & rescue team for transport of injured person.
2. Arrange vehicles to bring the key personnel from their residence.
3. Arrange transport for shifting of necessary equipment and materials to the emergency location.
4. Arrange additional transport if required.

5. Provide necessary requirements from the store.
6. Provide the list of the items stored in the stores to the WIC.
7. Any other work assigned by CIC/WIC/ Liaison Coordinator.

Communication Coordinator

Responsibilities and duties -

1. Rush to the emergency control center after getting information.
2. Assess the situation in consultation with CIC/WIC/SIC and ensure that casualties get adequate transport / medical help.
3. Make arrangement to shift all the persons to the safest place and injured person to the nearest hospitals if required.
4. Assess “Law & Order” situation.
5. Inform Press, TV / Radio, Local authorities about the severity of situation in close coordination with CIC.
6. Inform the district authority / local police station in case their help is required for evacuation of personal / preserving law and order.
7. Evacuation from adjoining areas and village with the help of government authority, if required.
8. Remain in touch with CIC & WIC- inform him about the situation.

Public Relations Coordinator

Responsibilities and duties -

1. Maintain good relation with nearby industries/villages.
2. Ensure that the emergency in the plant does not get adverse publicity.
3. Establish and maintain good relationship with the Govt. agencies, large scale industries in the area and media.
4. Give report to press and public with the concurrence of the CIC.
5. Any other work assigned by WIC.

Traffic & Security Coordinator

Responsibilities and duties

1. Main gate and other gates to be closed to restrict further entry of visitors/vehicles.
2. Fire tenders and ambulance from mutual aid agencies shall be allowed inside.
3. Prepare a report on number of labors and visitors admitted inside the company at that time and send it to emergency control center.
4. Post security personal in different area to stop the movement of vehicle and direct the drivers to reach safe assemble point/Emergency shelters.
5. Allow emergency coordinators and emergency team members to reach incident site.

6. Post security people to go round the plant to guide the security staff and to regulate the movement of visitors/labors/ Vehicles.
7. Send some of the guards to incident site to assist the firefighting team.
8. Ensure all unwanted/non-essential people are assembled at assembly point and head count will be done.

RESPONSIBILITIES AND DUTIES OF ESSENTIAL KEY PERSONS

On hearing the siren for emergency, they will perform following duties:

Supervisors/Operators of each section of the shift

- Will remain calm and cool, they will show no panic.
- Will shut down the plant/equipment in a safe manner and will process to the emergency control room for further instructions.
- Will follow the instruction given by CIC or WIC.

Operator communication Service

- Will maintain the all-communication equipment functional.
- Will Maintains an assuring and calming attitude during periods of emergency in order to avoid unnecessary delays by communicating emergency.
- Will inform to all key personnel about the emergency.
- Will Monitor and respond to a variety of technical systems and alarms

First Aiders

- Will ensure that all the medicines are available in the first aid boxes.
- Will give first aid to all affected persons.
- Will send the injured person to Hospital/District hospital/Nursing Home, if required.

Maintenance/ Electrical personnel

- Will rush at site with maintenance team for attending the leakage/isolation/repair etc.
- Will shut down the plant/equipment in a safe manner with the help of supervisors/operators of concerning section.
- Will provide emergency equipment in readiness in case required.
- Will disconnect the electric supply of the affected area.
- Will provide lighting the keep emergency generator ready, if required.

Fire men & Security guard

- Will proceed to accident area.
- Will report to Fire & Rescue Coordinator
- Will start fire-fighting operations as per direction of the Fire & Rescue Coordinator.
- Will coordinate the Fire Crew of the District Authority in controlling the situation.
- Will prevent the entry of unauthorized person.
- Will keep the road and main gate free from obstacles for clear passage to the evacuation procedures.

Drivers

- Will available at the vehicle (Ambulance/Fire tender/staff car etc.)
- Follow instruction given by the coordinator of respective team.

Responsibilities and Duties of the Workers

The workers who have not been defined any role and duties in an emergency situation should not gather around the accidents site as this would result in a chaotic situation at the site. These people should remain at the assembly point and wait for instruction from the Chief Incident controller/ Works Incident controller, as and when he requires their service.

Other Functions and Personnel

Following functions are required to be carried out in order to tackle the emergency effectively.

- (1) Plant control/shut down function
- (2) Fire and/or Rescue function
- (3) Traffic control
- (4) Co-ordination through Emergency Control Room (ECR)
- (5) Head count of personnel at Assembly Points (APs)
- (6) Rescue, First-Aid & Casualty Clearance
- (7) Communication outside the Plants
- (8) Testing & updating the plan
- (9) Activities at unaffected areas

Plant Control and Shut Down

Team

A team shall be responsible to control the operations in the plant or shut it down as per the advice of the Chief Incident Controller (CIC). The senior-most person of the plant available at the time of emergency would lead the team. The team would include from maintenance, operation, and utility including mechanical fitters/ maintenance personnel, electrician and pipe fitter pump operators, etc.

Functions

A) Team Leader

- (1) Know and understand Safe Operating Procedures (SOPs) for controlling or shutting down various operations.
- (2) Ensure that the team members also know and understand the SOPs.
- (3) Guide the team in efficiently controlling/shutting down the operations in consultation with the WMC through SIC.
- (4) Keep the contact details of all the team members handy especially for any specific operation vis-à-vis person so that they can be contacted when not on duty.
- (5) Ensure that sufficient number of different categories of skilled personnel is available and used for the purpose.
- (6) Ensure own safety and the safety of team members.

B) Team Members

- (1) Know, understand, and follow SOPs in doing the work under the direction of the leader.
- (2) Ensure that each team member can be contacted in case of emergency.

3. OUTSIDE ORGANIZATION IF INVOLVED IN ASSISTING DURING ON-SITE EMERGENCY:

(a) Type of accidents

EMERGENCY LEVELS

To make Disaster Management Plan as effective as possible, three emergency levels are defined based on the magnitude of incidents and the risk they pose to the **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.** and the population in the vicinity.

EMERGENCY LEVEL – I

The incident and its magnitude are small and pose risk only to that portion of the plant where the incident has occurred and its immediate surroundings, requiring a possible safe shutdown of the plant and evacuation of non-essential plant personnel from those portions of the plant at risk. The rest of the plant may continue to operate normal, while remaining on standby alert.

EMERGENCY LEVEL – II

The incident and consequence are of moderate magnitude and pose risk to the entire plant and a limited area outside the plant. The plant will be evacuated of all non-essential personnel and will be shutdown safely. The demarcated limited areas outside the plant are also evacuated while the remaining portion of the vulnerable zone is put on alert.

EMERGENCY LEVEL –III

The incident and its magnitude are of such higher magnitude that they pose a risk to the plant and the entire vulnerable zone outside the plant. The plant is shutdown safely and evacuated of all non-essential personnel. The entire vulnerable zone is also evacuated.

EVACUATION DISTANCES

Based on the emergency levels defined as above, general criteria for evacuation distance for each emergency level may be as follows:

Emergency Level	Evacuation Distance
Level I	Up to 0.5 km
Level II	Up to 2.0 km
Level III	Beyond 2 km up to 5 km maximum up to 10 km

(b) Responsibility assigned

In the event of emergency following shall be notified or called as given in the table below:

Sr. No.	Emergency	Level-1	Level-II	Level-III
1.	District Magistrate	Inform	Inform	Call
2.	Assistant Labour Commissioner	Inform	Inform	Call
3.	SDM	Inform	Inform	Call
4.	District Telephone Office	Inform	Inform	Inform
5.	Sr. Superintendent of Police	Inform	Inform	Call
6.	Fire Station	Inform	Call	Call
7.	Chief Medical Officer	Inform	Inform	Call
8.	Hospitals	Inform	Inform	Call
9.	Factories Inspector	Inform	Inform	Inform
10.	Pollution Control Board	Inform	Inform	Inform
11.	U.P. State Electricity Board	Inform	Inform	Inform

IMPORTANT CONTACT NUMBERS OF LOCAL AUTHORITIES

Sr. No.	Name	Contact No.
1.	DM (Varanasi)	05422502626, 9454417579
2.	A.D.M Varanasi	9454417030
3.	SSP (Varanasi)	05422502644

4.	SP (Varanasi)	05422414141
5.	CMO (Varanasi)	05422310168
6.	Police Station	100
7.	Chief fire officer	9454418347
8.	Fire Station	101, Bhelupur – 9454418604, Chetganj – 9454418602
9.	All-in-One Emergency Number	112
10.	Emergency & Disaster Management Services	108
11.	Ambulance	102
12.	Nearest Hospital (GANGA RAM)	9219675562, 7880740223
13.	Maxwell Hospital	7897991775
14.	Trauma Centre (BHU)	0542-2366073, 2366092)

All coordination with outside agencies will be done by Communication Team Leader. Other agencies will establish communication either with Communication Team Leader.

4. DETAILS OF LIAISON ARRANGEMENT BETWEEN THE ORGANIZATIONS.

In the event of massive release of flammable/ toxic material in **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.**, the outside population shall be affected in the down wind direction at the time of incident. In such an event help shall be taken from outside agencies. The organizations shall be involved are as follows:

- (a) State and Local Authorities
District Magistrate
- (b) Factories Inspectorate
Director of Factories
- (c) Environmental Agencies
Member Secretary Pollution Control Board represented by District Environment Engineer.
- (d) Fire Department
Fire officer
- (e) Police Department
District Superintendent of Police
Inspector of Police,
- (f) Public Health Department
Medical Officer,

(I) STATE AND LOCAL AUTHORITIES

The District Magistrate shall be the higher authority (Chief Offsite Response Coordinator) of the “Off Site Emergency Plan” for the ***NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.*** In the absence of District Magistrate, Additional District Magistrate (ADM) shall be the Chief Off Site Response Coordinator.

In order to handle the emergency in an effective manner the chief coordinator shall follow the following procedure:

Communication about the incident to all the state Government/Central Government Departments such as Factory Inspectorate, District Revenue officer, Pollution control Board, District Fire Brigade, State Police, Health, Transport & Communication services, Red Cross, Social organization etc.

- Mobilization of civil services
- Medical treatment and health services
- Management of disaster from control room
- Dissemination of information
- Requisition for transport
- Rescue operations
- Evacuation
- Provision of essential services
- Sanitation and water supply
- Rehabilitation
- Relief and compensation
- Reporting

(II) FACTORY INSPECTORATE

In order to minimize the chances of occurrence of incidents the Factory Inspectorate ensure that industry should have the Emergency procedure for materials being handled, stored and processed, and Risk Assessment report of the plant.

In the event of any mishap at the ***NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.***, Factory Inspectorate shall do investigations for the causes of incident. For this purpose, the ***NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.*** shall provide necessary information to Factory Inspectorate. The factory inspectorate also organizes safety training and courses for plant personnel.

(III) ENVIRONMENTAL AGENCIES

At the time of emergency, the environmental agencies will proceed on the following lines:

- Monitoring activities of disposal of chemicals to avoid land and atmospheric pollution.
- Implementation of prescribed procedures for storage of hazardous materials.
- Evaluation of environmental impact of accidents.

The above items are the functional responsibilities and the **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.** will submit necessary report and data to the board. If any accident occurred the **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.** shall provide all data and help to evaluate the impact.

(IV) FIRE DEPARTMENT

The District Fire officer, upon notification of an emergency will follow the following procedures:

- Sound the appropriate alarm.
- Dispatch fire tender with Firemen to the scene.
- The fire officer at the scene shall be with other protective and firefighting equipments which may be necessary. District Fire Officer shall direct field activities until the emergency is over.
- At the scene the Fire officer will carry out the followings:
 - a) Consult the Site Incident Controller for technical advice to extinguish fire and to help the evacuation.
 - b) Direct Firemen, rescue work and fire control.
 - c) Identify the dangerous zone inside the plant.
 - d) Ensure enough barricades.
 - e) Request for assistance or special services that may be required.

(V) POLICE DEPARTMENT

The Superintendent of Police upon being notified of an emergency, will immediately arrange the following:

- A. Dispatch the Radio Car to the scene of emergency.
- B. General plant evacuation orders to permit exit of all employees.
- C. Allow to the emergency works those holding official passes only, automobile passes and passes stamped “EMERGENCY” as approved or issued either by Site Controller, Chief off Site Response Coordinator of the persons authorized by them.
- D. He will allow going about the emergency works only those employees accompanied by or personally identified and authorized by holders of official, automobile of emergency passes.
- E. The police chief will ensure that outside aid as summoned either by Site Controller or Chief Coordinator is met at the main gate.

(VI) PUBLIC HEALTH DEPARTMENT

At the time of emergency, The District Chief Medical officer will coordinate with ***NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.*** The Chief Medical Officer at the time of emergency will function on following lines:

- a. Decide the location of primary medical center and will look into possibility of utilizing the plant as Field Medical Center.
- b. Decide the place for additional/alternate medical center if emergency so demands.
- c. Allocate doctors, nurses, technicians, first aid personal and ambulance drivers to specific jobs from other hospitals.
- d. Ensure sufficient inventory of medical supplies and equipment.
- e. Depending upon type of casualties at the at the plant site/or the neighboring population, he will prepare kit or list of medical supplies to be taken by his staff to field medical center or alternate medical center.
- f. Ensure prepare lighting for field medical center and alter net medical center.
- g. Decide additional vehicles needed in addition to number of vehicles available to transport casualties. He will convey his request for additional vehicles to Chief Off Site Response Controller.
- h. Arrange adequate number of First-Aid attendants.
- i. Give tips to his term meets to quickly identify the fatalities and shell communicate and Site controller or the persons authorized by them.
- j. Ensure that report of each injured person is prepared which highlights cause of injury such as fire or impact of some object, etc.
- k. Establish continuous contact with medical supply houses for procurement of medicines.

(VII) LOCAL COMMUNITY RESOURCES

(a) Transportation Department

The transport officer, will assist during emergency in the following manner:

- Establish traffic control zones in the area.
- Co-ordinate efforts of police force.
- Establish plans for the control of traffic in and out of the ***NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.*** Establish identification system of passes needed for personnel going in and out of plant during emergency.
- Establish plans for necessary personnel and equipment to pass through road blocks.

(b) Communication

Fast communication is the essence of crisis management. The emergency Control rooms will be set up at the **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.** and at office of District Magistrate for central co-ordination. The control rooms will provide with adequate communication facilities.

Executive Engineer, Telephones will provide necessary hot line Facilities in addition to the normal telephone facilities provide. He will arrange to provide quick communication of all incoming and outgoing calls.

(c) Accommodation for Evacuated Public during Emergency

The inter-mediate collage /degree collage in area are ideal as temporary Shelter camps. These colleges have easily access by roads. They have adequate manpower and facilities to meet the requirement of an emergency.

(d) Explosive Department Role

The chief controller of Explosive (CCOE) department allies welcome to the plant site after the incident is over and will collect information to investigate the reasons of incident and give recommendation to avoid recurrence of such incident.

(e) Role of Railway department

In the event of occurrence of incident, the railway authorities will be requested to divert all incoming trains on other alternate routes. In case the train is already halted at the time of accident the passengers will be requested to follow the same instructions as the public.

(VIII) COMMUNICATION

a. Communication Systems

On declaration of an emergency, the Emergency control Center that is to be used the **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.** for the **Chief Offsite Response Coordinator (CORC)** will be provided with adequate telephones that can be used for internal and external communication.

In the event that telephones fail, external communications will be maintained through the police wireless system. In fact, the police wireless system is most reliable communication network.

Short distance communication within the vulnerable zone or outside may also be done using walkie-talkies.

(b) Telephone Numbers

Important telephone numbers should be available at Emergency Control Room (ECR).

(c) Transport

In the initial phases of the emergency, use of transport vehicles will be minimal. As the emergency progresses, the *NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.* and police vehicles, ambulances and other government and private vehicles will be pressed into service. State transport buses may also requisition, if necessary.

(d) Evacuation

Evacuation procedures in the vulnerable zone should be initiated within 10-minute declaring emergency. They will follow all instructions already mentioned in onsite emergency plan in previous chapter.

Evacuees should leave all belongings, lock their homes or shops, and shut all doors and windows to prevent vapour entrainment and proceed to the nearest roadblock point or temporary shelter, in a direction perpendicular to wind flow. From the roadblock points, the police transport all evacuees may to the closest temporary shelter camp.

(IX) MANAGEMENT

A designated camp manager with adequate assistance will manage each camp. An emergency at the *NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.* is not expected to last for more than a few hours. Elaborate arrangements for overnight stay are not required. Arrangements will however, be made to keep children, particularly infants, and old people as comfortable as possible. Each shelter will have a telephone. In an emergency, a police jeep with a wireless set should be posted at each shelter.

(X) HEAD COUNT

The names and addresses of all evacuees will be noted at the shelters. A separate list of missing persons will be made. Evacuees wishing to leave the camp to stay with relatives or friends may do so after informing the authorities of their intention and where they are allowed to go. Under no circumstances will they be allowed to go back to the vulnerable zone until the all-clear signal is given.

Based on the head count an information provided by the evacuees *NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.*, teams and the police shall search for missing persons in the vulnerable zone as soon as is practicable.

(XI) LAW AND ORDER

The Police will be responsible for maintaining law and order in the vulnerable zone during the emergency. They should ensure that:

1. No crowding occurs outside the plant.
2. Orderly evacuation is executed.
3. The vulnerable zone is cordoned off and sealed.
4. The property of the evacuees is guarded.
5. No one, except authorized response personnel, enter the vulnerable zone until the all Clear signal is given.
6. Re-entry into the vulnerable zone after the all-clear signal is sounded.

(XII) DECLARING VULNERABLE ZONE SAFE

Before sounding of all clear signal, the SIC should certify that vulnerable zone and each confined space, home, shop, go down, etc., particularly the depressed portions, are free from entrapped gases or vapors. He may take such certification after the On-site Response Team monitors the vulnerable zone with hand held gas detectors or exploiters and finds that the vapour/gas levels pose no danger.

(XIII) EMERGENCY RESPONSIBILITIES

The **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.** being in the best position to do so, will take responsibility for containment, control and spill cleanup, in the vulnerable zone, of any fallout of an incident arising from the plant the **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.** will also take the responsibility to monitor open and confined spaces (homes, shops) after a vapour/gas cloud has been transported in the vulnerable zone and, on being satisfied that there is no danger, will certify the area to be safe. the **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.** may be assisted in this task by external agencies.

(XIV) ALL CLEAR SIGNAL

On the advice of the plant SIC, the Chief Incident Controller (CIC) may declare off-site emergency to have ended. A continuous loud siren from the **NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.** for 3 minutes will announce this. Radio and television broadcast to this effect will also be made along with re-entry procedures into the vulnerable zone.

(XV) RESETTLEMENT

When the 'all clear signal' is given, all evacuees may again reassemble at the temporary shelter camps. They may be transported village-wise back to their homes by the police. Homes may be opened in the

presence of police. The police may record missing valuables, if any, of each evacuee as he enters his home.

(XVI) PUBLIC STATEMENTS

The CORC is the only person authorized to make public statements on the off-site arrangements. He may depute this task to another member of the team.

(XVII) ON-GOING INCIDENT ANALYSIS

The CORC may designate the task of recording progress of the emergency and damage to life and property to a member of his committee to avoid reoccurrence of such incident.

5. INFORMATION ON THE PRELIMINARY HAZARD ANALYSIS:

(a) Type of accidents

Man made	Natural Calamities	Extraneous
Heavy Leakage	Flood	Riots/Civil Disorder/ Mob
Fire	Earth Quake	Attack
Explosion	Cyclone	Terrorism
Failure of Critical Control	Outbreak of Disease	Sabotage
system	Excessive Rains	Bomb Threat
Design deficiency	Tsunami	War / Hit by missiles
Unsafe acts		Abduction
In-adequate maintenance		Food Poisoning/ Water
		Poisoning

The types of accidents possible in the plant are listed below:

a. Fire and explosion

Fire in storage area, Electrical Fire

b. Release of toxic gas

There is no toxic gas

c. Ingestion

There is no toxic liquid

d. Work injuries

Work injuries during jobs involving work at heights, transportation etc. an adequate precaution has been taken in transportation of material.

e. Skin burns and injuries

Contact with hot surface, materials etc. during materials handling.

f. Runaway reactions

There are no runaway reactions

g. Spillage

There are no hazardous chemical.

(b) System elements or events that can lead to a major accident

All accidents can be attributed to one or more of the following:

- Unsafe acts
- Unsafe conditions
- Uncontrollable circumstances

All unsafe acts and conditions can be eliminated by gaining a better understanding of the common causes of accidents and thereby decreasing the possibilities of accidents. Since practically, all accidents are caused by unsafe acts and conditions, most accidents can be prevented.

Hence, it is essential to recognize various potential hazards as well as hazardous areas so that remedial measures can be planned accordingly.

In spite of identification of various hazards and various precautions to be observed, following are some of the familiar unsafe acts and unsafe conditions, which can lead to a disaster.

1. UNSAFE CONDITIONS:

- Design deficiency
- Equipment failure
- Corrosion
- Operational abnormalities
- Improper preventive maintenance practices
- Poor house keeping
- Spill / fire

2. UNSAFE ACTS:

- Living with the problem
- Refusing to discuss the problem
- Obstructing solution to the problem
- Non-identification of the problem
- Inadequate commitment
- Eliminating Safety rules and regulations

(c) HAZARDS

Basically, there are two types of hazards associated with the plant, which are as under: -

- Fire Hazard
- Explosion hazard

Considering the nature of processes and use of hazardous materials in those processes and storage of toxic and flammable materials, it has been visualized that likely danger may occur in the areas given below:

Category of failure scenarios	Disaster prone area
General	1. Fire in plant 2. Cable catching fire
Rare	Machinery collapse
Remote	Natural Calamity

(d) Safety relevant components

- Plant site is located away from the residential area.
- Pollution control Board has granted a “No objection certificate”
- Electrical motors are properly earthed and bounded.
- Manual controls are rigidly exercised to avoid deviation of process parameters.
- Separate and well –ventilated storage provided for flammable / toxic materials and away from operational area.
- Various cautionary notice and posters clearly explaining the hazards have been conspicuously displayed in the plant premises.
- Generators have been provided to run the critical devices, emergency, lighting etc. in case of power failure.

- Adequate water supply is provided in all the areas of firefighting.
- Placement of personal protective equipments in sufficient quantity and good condition of various important plant areas.
- Safety work permit system is followed for different types of jobs.
- Colour-coding as per IS practiced and enforced at site.
- All the equipments are designed with adequate safety considerations
- All the hazardous process has safety considerations
- Check charts are maintained for the hazardous operations.
- Breakdown/periodical maintenance /preventive maintenance schedule is followed.

Regular training is given to all plant personnel and contract workers. It is ensured that all employees undergo rigorous training in the use of fire extinguishers, to save valuable time at the event of fire. In addition to the firefighting, employees are imparted specialized training to ensure safety during their routine plant operations. Generally, the safety officer conducts these training programs.

6. DETAILS ABOUT THE SITE

BRIEF DESCRIPTION OF MANUFACTURING PROCESS:

SYSTEM DESCRIPTION:

A **waste-to-energy** plant is a waste management facility that converts wastes to produce Char. Which can be further used as a coal in conventional thermal plant. This type of plant is sometimes called a Waste-to-energy, municipal waste conversion, energy recovery, or resource recovery plant.

Proposed waste-to-energy plant is very different from the trash incinerators that were commonly used now a days. Unlike modern ones, those plants usually did not remove hazardous or recyclable materials before burning. These incinerators endangered the health of the plant workers and the nearby residents, and most of them did not generate electricity.

Waste-to-energy generation is being increasingly looked at as a potential energy diversification strategy. Waste-to-energy plants are similar in their design and equipment with other thermal power plants. Although first, the waste is brought to the facility. Then, the waste is sorted to remove recyclable (Metals), inert materials and moisture by means of magnetic, eddy current separator and dryer respectively. The waste is then stored until it is time for conveying towards reactor for torrefication. WTE facility is based on Torrefaction technology, which is a thermochemical treatment of RDF at 200 to 350 °C. It is carried out under atmospheric pressure and in the absence of oxygen, i.e., with no air.

During torrefaction volatile gases produces which being sent to burner for to maintain better stoichiometric ratio and for better efficiency.

In terms of volume, waste-to-energy plants incinerate 30 to 35 percent of waste. Sometimes, the residue ash is clean enough to be used for some purposes such as raw materials for use in manufacturing cinder blocks or for road construction.

Further produced char is bind to form pellets by means of mixer which added water and binder in correct proportion for better formation of pellets.

The char pallets are then conveyed through bucket elevator for further storage and truck unloading.

Waste receiving shed

Waste receiving shed includes truck unloading area and waste pit area.

Waste arrives in waste receiving shed by means of tipper truck by Varanasi Municipal Corporation and weight of loaded truck on weigh bridge (50 Ton) can be measured while entering in the premises. Which is provided at the entry point of the facility.

Waste unloading area is provided with automatic operated gate which can be operated by push button and remote switch so that driver alone can open the gates and enter into waste receiving shed. And also provided with enough area for truck driver for their adjustment, reversal and unloading at various tipping bay. However, 6 nos. of tipping bay provided to ensure better and safe operation.

The area is also provided with sufficient ventilation and odour control in order to maintain fresh and fragmented air.

Waste pit area is provided to handle 3 days storage capacity of 800MT per day of plant capacity. And the facility is completely closed, and negative draft is provided by means of suitable ventilation system.

Waste pit area equipped with waste grab crane (60TPH) which is mounted over an EOT crane for mix and pick the garbage in pit. Grab cranes carry the waste to feeding hopper operating through the control panel provided at the side wall of the pit to ensure better visibility of the operator of entire area.

Control room is equipped with camera, HMI screen and joystick with seat for the operator to operate the crane with easy manoeuvrability.

Waste pit area also equipped with methane sensor to sense accumulation of explosive gas at LEL and radioactive sensor is provided to sense radioactive material.

Waste segregation facility

In waste segregation area the equipment is removing or separating the unwanted material such as metal, non-metal, inert, mud and moisture (Leachate) by means of magnetic separator, eddy current separator, Ballistic separator, and shredder.

Segregation area consist of feed hopper, in which garb crane drop garbage into feed hopper which is mounted at the inlet of dryer cum bag opener. Here the wet waste is dried into drum type dryer to remove moisture.

Initially Drum dryer is heated by burner using Bio mass as fuel and volatile gas is used in burner of dryers as a fuel once VG generation starts from torrefaction process at reactor.

Further the waste is feed to the ballistic separator by dryer through belt conveyor which separates the inert and metal from the dry waste at first discharge and dry waste further feed to shredder by second discharge.

The dry waste further converted into small pieces i.e., up to 90mm by means of shredding machine mounted beneath the second discharge of the ballistic separator.

The inert and metals feed through the separate conveyor from first discharge of ballistic separator, Metal is separated through the magnetic separator and stored in metal silo (12 ton).

Inert is separated through the eddy current which will further stored in inert and mud silo (120ton).

RDF received through the discharge of shredder which will further convey to RDF Silo with hopper (120 Cu.M) for further processing.

Waste conversion to char facility

Waste conversion to char facility consist of RDF hopper and reactor with its auxiliaries.

RDF hopper is placed at inlet of reactor, while RDF is fed into RDF hopper from shredder through belt conveyors.

Further feedstock is fed into the reactor drum where it will be processed in closed chamber in absence of oxygen which converts RDF into charcoal by means of torrefaction technology.

Arrangements are provided to prevent oxygen entering reactor and causing unwanted combustion of char.

During the torrefaction process, volatile gases are driven off from the feedstock, creating a potential pressure build-up within the chamber. That's why system is provided with suitable pressure transmitter and temperature sensors. Volatile gases captured and reuse in dryer cum bag opener and Reactor burner so that it won't release directly into the atmosphere.

Heating of the torrefaction chamber is achieved by use of burning of fuel (Bio Mass/Volatile gas).

To maintain the temperature of torrefaction chamber. The same is equipped with series of thermocouple to identify hot and cold regions inside the chamber. This will also inform us where the temperature would not reach sufficient torrefaction temperatures.

In order to maintain the required temperature within the chamber insulation is added to the exterior walls of the reaction chamber. Additionally, insulation will serve the purpose to limit the surface temperature below 60Deg C anywhere (where human exposure is possible) in the plant due to safety concern. Further this will also ensure efficient use of heat. Moreover, cooling tower with heat exchanger is provided to maintain the temperature of the system.

Char is further cooled down into last part of the reactor before taking out of the reactor in powdered (Pulverized) form.

Auxiliary of the reactor are as follows

1. Control Air Ratio - Able to shut-down combustion or provide excess air
2. Sufficient Mixing of Air and Fuel- System have mechanism for flame stabilization which is required for complete combustion.
3. Ignite Fuel Mixture- System have fail safe ignition system which is required for combustion of fuel mixture.
4. Prevent Backflow- System have a mechanism to prevent oxygen from entering reactor and causing unwanted combustion of char.
5. Transport Exhaust Gas to Heat Exchanger- heat for the torrefaction reaction.
6. Burner- Burner system have all the safety provision as per industry regulation/norms.
7. Ash Handling System- System have an Ash handling system for ash generated in case of combustion of solid fuels.

Char conversion to charcoal pellets facility

Char conversion to pellets consists of mixer and pelletiser (Briquetting Machine).

Powdered charcoal is screened after discharge from reactor then further fed into Briquetting machine which is mixed here with binder and water to shape the char.

Once the char mixed properly with binder and water, this further fed to pelletiser (Briquetting Machine) for the formation of briquettes. The briquettes further then conveyed to briquette dryer.

NVVN shall provide raw water (150m³/day) for to fulfil the requirement of process.

Write-up of char unloading

Char unloading system consist of two sets of Char pellet dryer, 2 sets of bucket elevator and 2 nos. of Charcoal pellets silo.

Two sets of dryers are provided to achieve better quality of dry charcoal pellets which help boiler to attain better efficiency while coal firing.

After drying the charcoal, briquettes are fed into char pellet silo through conveyor and bucket elevator.

Finally, the charcoal briquettes (coal) are loaded into trucks by means of discharge gate valve (situated beneath the silo) for further use in boiler.

The char collection module is provided to carry material away from the heat of the reactor and to provide some cooling before it is removed from the system. The functions of char collection module are follows:

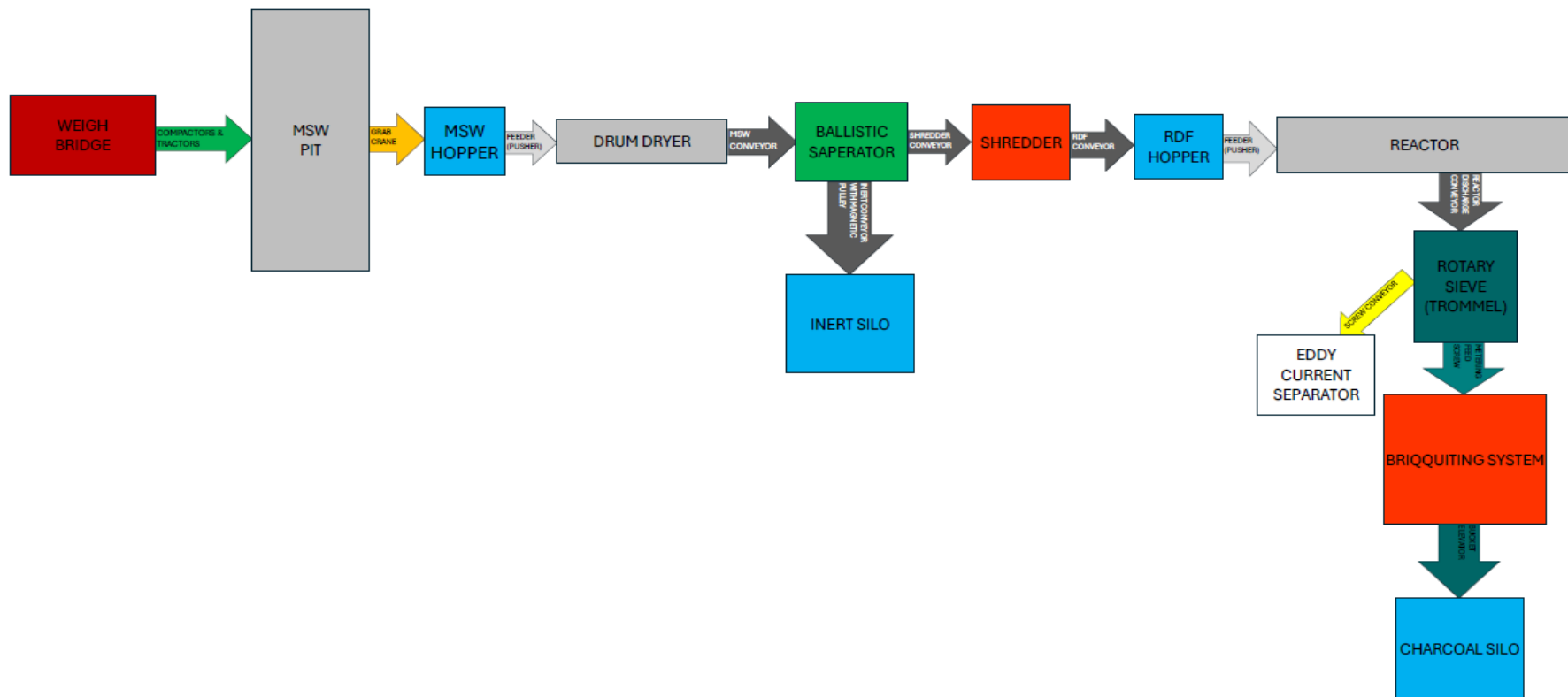
1. Storage Capacity- Facility will have minimum storage capacity of three days (assuming 16 hours of operation in a day) to store the torrefied charcoal.
2. Forced Cooling of Char – System is having forced cooling arrangement for torrefied charcoal as Char will combust if exposed to oxygen when above 200°C/ignition temperature. This will also provide the ease of char handling and reduce the time required for complete torrefaction process.
3. Shield Char from Weather- Charcoal Silo is having weatherproof shield to prevent excess moisture and other contaminants from affecting the torrefied charcoal.

Auxiliary Systems

Auxiliary systems consist of Hot air generator, cooling tower, chimney, ash handling system, leachate treatment plant, effluent treatment plant, firefighting system, ventilation system, air conditioning system, flue gas monitoring system, air quality monitoring system.

For automation of plant, the system is operated through PLC system.

WTE to Green Charcoal Process diagram/ process flow chart



(a) Location of dangerous substances

There are no dangerous substances stored in the plant

(b) Seat of key personnel

Sr. No.	Emp Name	Designation	Contact No.
1.	Mr. Ashish Ranjan	Sr. Manager (NVVN)	9650998313
2.	L. Ramakrishna	Manager (MBPL)	9025995149
3.	Mr. MD. Haris	Deputy Manager (MBPL)	9580903350
4.	Chanchal Mukherjee	Astt. Manager	6392367233
5.	Mr. Ajay Katiyar	Shift In- Charge	7888474354
6.	Mr. Deepak Kumar	Security Head	9616869075
7.	Mr. Rakesh Tripathi	Sr. Liaison Officer	9161660022
8.	Mr. R. K. Mishra	HR Head	9964105952
9.	Mr. Suraj Yadav	Safety Officer	9369076955
10.	Mr. Abhishek Kumar Gupta	Safety Officer	7654066152

(c) Emergency Control Room

An Emergency Control Room (ECR) is situated in adjacent to Security control room well equipped with adequate means of communication to areas inside and outside the plant. The men in the relevant areas of the plant are also will provide with suitable equipment enabling them to organize emergency efficiently.

The Emergency Control Room equipped with:

- Site Plan
- Emergency Organization Chart
- List of important telephone numbers
- Emergency transportation facility
- Copy of onsite emergency plan
- Plant layout drawing, electrical drawing, Fire hydrant lines drawing and escape route drawing
- Emergency light

7. DESCRIPTION OF HAZARDOUS CHEMICALS AT PLANT SITE:

(a) Chemicals (Quantities and toxicological data)

No Hazardous Chemicals used in then plant.

(b) TRANSFORMATION IF ANY, WHICH COULD OCCUR -

No run-away reaction takes place in any of the process.

(c) PURITY OF HAZARDOUS CHEMICALS -

No Hazardous Chemicals used in then plant.

8. LIKELY DANGERS TO THE PLANT: -

No Hazardous Chemicals used in then plant.

9. ENUMERATE EFFECTS OF: -

(i) Stress and strain caused during normal operation:

Installation of all equipment, pipelines, buildings and other facilities in the entire complex has been done as per good engineering practices. The plant is subjected to continuous monitoring in the form of surveillance and checks in the control room and locally in the form of hourly inspection tours through the plants to check for normalcy in working conditions.

Alarm and trip settings of initiating instruments are checked in the instrument test bench by simulating the set values. Critical equipments are checked during every startup. Complete logic system is tested by simulation during shutdown. However, logic system for critical machinery and equipment is checked during the startup.

Based on predictive maintenance technique and information, preventive maintenance schedule is drawn. The predictive maintenance schedule includes vibration monitoring of rotary equipment, condition monitoring of anti-friction bearings, leak detection in gas lines, skin temperature measurement using infrared pyrometers, thickness measurement of equipment and piping.

The tanks are inspected and pressure tested to meet the statutory requirements. The pressure safety valves are calibrated on test bench, during shutdown, for ensuring accurate setting of PSVs.

Well-trained and experienced persons, in accordance with the standard procedures and observing relevant codes and standards, carry out maintenance and repair work. Since flammable, corrosive and

toxic materials are handled, all care has been exercised in the design of equipment. The process equipment has been designed according the relevant international codes/standards.

Material of construction is on the nature of chemicals handled and maximum temperature of the mass in the Tanks. Pipelines are fabricated considering the nature of the material handled and safe height. Taking all these factors into consideration, it is fair to mention that, no adverse effect is envisaged due to stress and strain caused during normal operation

(ii) Fire and explosion inside the plant and effect if any, of fire and explosion outside.

The potential of fire & explosion in Factory has existed and the effect of such fire & explosion not goes beyond the plant premises and not causes the outside fire & explosion.

10. DETAILS REGARDING: -

i) Warning, alarm and safety and security systems.

All moving machinery, compressors, lifting equipment, storage Tanks of hazardous chemicals, tankers etc. are provided within built design and safety measures to meet any abnormality in operation. All moving parts are adequately guarded. Extensive instrumentation has been provided on equipment, storage Tanks, to check excessive pressure, temperature, level, etc. Preventive maintenance of all machinery storage tanks is being done on regular basis. Schedule inspection and maintenance of lifting tackles, machinery and Storage Tanks is carried out. Proper attention is paid to maintain good housekeeping. For this purpose, housekeeping competition has been introduced at our works to promote safety and team spirit among the employees. The members of housekeeping committee do Housekeeping monitoring.

The plant layouts are well thought out plan and keep in view of safety standards of spacing of storage, plant machinery etc. Access to plant area is by main roads generally laid in straight lines. The work areas are clearly worked out and separated from movement areas. The chlorine tonner has the necessary inbuilt safety device. The international design standards have been followed.

ii) Alarm and hazard control plans in line with disaster control and hazard control planning, ensuring the necessary technical and organizational precautions;

Various controls loops have been provided in Plant for safe & convenient working of the system. It has been ensured that these interlocks & controls are in line to control any unforeseen variation of process parameters. Low level, high level, high temperature & pressure alarms have been provided wherever necessary to inform the operating personnel for taking appropriate time & control the situation from escalating into unsafe condition.

The Plant has provided several trips, interlocks & alarms to avoid any process parameters deviations, which may lead to a serious hazard in the plant.

Emergency Mitigation Procedures

1. FIRE

ACTION IN CASE OF FIRE

1. On noticing a fire, shout FIRE, FIRE loudly.
2. Immediately on hearing the shouts, ascertain the location and nature of the fire. Ring up the gate, Shift Executive and inform them about the fire and its location. Security will blow the fire siren. This siren sound will be unique. (Pulsed siren - On and off at an interval of 5 sec for 120 sec).
3. Until further help comes, check the nature of the fire, pick the appropriate extinguishers, and try to put out the fire.

On hearing about the fire:

1. The Security Guard will blow the fire siren.
2. Other security guards will rush to the site of the fire and pick the appropriate extinguishers and try to put out the fire.

On hearing the fire siren:

1. The emergency procedure will be set into operation.
2. The Emergency Controller and the Incident Controller will have a team of trained personnel, security Supervisor/ Guards to assist them to fight the fire.
3. The Emergency Controller will send from the people available on site and carry out the following:
 - a) If people are entrapped, guide them to safety and rescue anyone who may get injured / trapped.
 - b) Fight the fire with appropriate fire extinguishers.
4. In case the Emergency Controller feels necessary he will call Fire Brigade and other help to ensure that there are no adverse effects on the process and to take care of process abnormalities.

SPECIFIC FIRES AND HOW TO FIGHT THEM

- i) Before using any firefighting means be sure about type and source of fire else it can result in further issues.
- ii) Clear off surrounding material from the area of fire since these can catch and spread the fire.
- iii) Do not use wet extinguishers for electrical fires. These can lead to electrical shock and death.
- iv) Use sand to collect liquids and dispose off safely.
- v) Always direct firefighting water, liquid, powder or gas at the base of the fire.
- vi) Do not assume fire is out at first glance, check thoroughly before giving all clear.

PLASTICS AND PAPER

Plastics and paper include material such as outer packing of beer bottles, labels, outer packing of new bottles etc. used in our factory. These can result in A type fire which can be easily put off by Water or Water CO2 fire extinguisher.

However, even after flames disappear from such fires smoldering remains can re-ignite. Carefully lift and probe the leftover from the fire and put off all residues. Thoroughly drench all material with large amounts of water. Dangerous fumes may be given off from plastic fires. Use nose mask.

HIGH SPEED DIESEL / GREASE OR OIL FIRES

Since oil is lighter than water it floats on top and continues to burn hence water cannot be used to put off this fire. Use Foam or DCP extinguisher to fight HSD fires. They will cut off oxygen supply by coating the surface and prevent spread of fire. If there are more tanks of HSD / oil nearby get them away from the fire. In case of very big tanks continuously keep them cool by drenching with water else, they may explode. This is called “B” type fire and recommended fire extinguisher is Chemical foam.

ELECTRICAL FIRES

These can develop because of short circuit or improper wiring etc.

As soon as fire is noticed, first put off the main switch to isolate power supply.

Do not ever use any wet type of extinguisher or water for such fires since one can get a fatal shock in such a case. Use DCP or CO2 fire extinguisher.

FIRE TYPES AND EXTINGUISHING METHODS

CLASSIFICATION OF FIRE

Class of Fire	Fire	Fuel Extinguishing Method
Class – A	Fires involving ordinary combustible, Materials like wood, paper, textiles etc	Cooling effect of water is essential for extinguishing the fire, DCP, CO2
Class – B	Fires involving the flammable liquids like oils, solvents, petroleum products, varnishes, paint etc.	Blanketing effect Foam, DCP type extinguisher for extinguishing the fires
Class – C	Fires involving the gaseous substances under pressure i.e LPG, DA etc	Dilution of the burning gas at a very high fast rate is essential with DCP / CO2
Class - D	Fires involving Reactive Chemicals, Active metals like magnesium, aluminum, potassium, zinc etc.	The burning metal is reactive to water and require special extinguishing media and technique
Class-E	Fires involving energized Electrical Equipments	Smothering effect with DCP / CO2 is essential for extinguishing the fires

2. Snake Bites

After a natural disaster, snakes may have been forced from their natural habitats and move into areas where they would not normally be seen or expected. When you return to your home, be cautious of snakes that may have sought shelter in your home. If you see a snake in your home, immediately call the animal control agency in your county.

Signs of Snake Bites

If you have to walk in garden, you may feel a bite, but not know that you were bitten by a snake. You may think it is another kind of bite or scratch. Pay attention to the following snake bite signs:

Depending on the type of snake, the signs and symptoms may include:

- A pair of puncture marks at the wound
- Redness and swelling around the bite

- Severe pain at the site of the bite
- Nausea and vomiting
- Laboured breathing (in extreme cases, breathing may stop altogether)
- Disturbed vision
- Increased salivation and sweating
- Numbness or tingling around your face and/or limbs

Action in case of someone is bitten by a Snake

- If you or someone you know are bitten, try to see and remember the colour and shape of the snake, which can help with treatment of the snake bite.
- Keep the bitten person still and calm. This can slow down the spread of venom if the snake is poisonous.
- Stop lymphatic spread of venom - bandage firmly, splint and immobilize. The limb, which has been affected by the bite, should be immobilized with splint.
- Victim to keep the hand as close to the level of the heart as possible - this reduces the flow of venom to major areas. A compression bandage (as firm as you would put on a sprained ankle) should cover the entire limb with the splint. The wrapping should start from the digits and extend till armpit in case of hands and groin in case of bite to the leg.

Seek medical attention as soon as possible.

Action NOT To do if you or Someone Else is bitten by a Snake

- Do not pick up the snake or try to trap it (this may put you or someone else at risk for a bite).
- Do not apply a band over the mouth of bite.
- Do not slash the wound with a knife.
- Do not suck out the venom.
- Do not apply ice or immerse the wound in water.
- Do not drink alcohol as a pain killer.
- Do not drink caffeinated beverages.
- Do not wash with potassium permanganate.

3. Electric Shock

Action in case of electric shock:

Danger to the rescuer:

- If you suspect someone has received an electric shock you must ensure all power sources are isolated before you can treat the casualty.
- Insulate yourself from the ground with books / newspapers / rubber matting.
- Use an object of low conductivity i.e. a wooden broom or rolled up newspaper, to push away the power source

High voltage

Overhead power cables are an example of a power source generating high voltage electricity. High voltage electricity has the ability to 'jump' or 'arc' up to distances of 18 metres or over. If faced with a casualty resulting from high voltage electricity:

Do not approach. Stay at least 25 metres away from the casualty until the power has been switched off by an authorized Electrician.

Low voltage

If faced with a casualty who is in the process of receiving an electric shock you should:

Attempt to turn the power off at the mains.

Remove any cables/power tools etc., still in contact with the casualty.

Action to be taken

Check whether the casualty is conscious

1. Ask "hello, can you hear me" and call their name if you know it.
2. Ask in both the casualty's ears to open their eyes.
3. Pinch an ear lobe or gently tap the shoulders.
4. Shout for HELP!
5. DO NOT move the casualty unless the environment or situation is dangerous.
6. Rush to the hospital.

FIRST AID in case of breathing normally:

1. LOOK for the rise and fall of the chest.
2. LISTEN for sounds of breathing.
3. FEEL for air on your cheek.
4. Carry this out for up to 10 seconds.

FIRST AID in case of breathing abnormally:

1. Check for any other obvious injuries.
2. Remove sharp objects from pockets.
3. Turn the casualty into the recovery position.
4. Place the nearest arm at a right angle to the body.
5. Draw the furthest arm across the chest and place the back of the hand across the cheek.
6. Keep this here whilst you raise the furthest leg by grasping the top of the knee.
7. Gently pull on the knee so that the casualty pivots over onto their side facing you.
8. The casualty should be fully over and stable.
9. Re-check the airway, breathing and circulation.
10. Draw up the leg at a 90-degree angle.
11. Check for continued breathing.

Burns

Exposure to electricity can cause burns to the skin and, in severe cases, internal organs. In such cases the electricity may, for example, enter via a hand and leave via the feet causing 'entry' and 'exit' burns.

Conscious casualties

Cool burns for a minimum of 10 minutes under cold water.

Unconscious casualties

Cool the burn with wet dressings after placing them in the recovery position. Rush to immediate medical attention.

DO NOT

- Burst any blisters.
- Apply adhesive dressings.
- Remove damaged skin.
- Apply ointments/creams.
- Cover with 'fluffy' dressings.
- Affix dressing too tightly.
- Apply butter/fats/margarine.
- Remove damaged clothing.
- Apply ice

4. NATURAL CALAMITIES

Hazards are dangerous conditions with potential for injury, loss of life, and/or damage to property, agriculture, or environment. Based on how they originate hazards could be

- 1) Natural, and
- 2) Unnatural.

Natural Hazards are these are with geological, meteorological, and biological origin. While earthquakes and landslides are examples of geological hazards, storms, floods, lightning, are examples of meteorological hazards. Unnatural Hazards are these are human caused – either due to human error or deliberate acts by human beings. eg: Wars, riots, sabotage, terrorist attacks etc. Unnatural hazards also include hazards of technological origin eg: explosion, fire, transport etc.

4.1 EARTHQUAKE

An earthquake is a series of vibrations or trembling on the earth's crust caused by the release of huge, accumulated strain energy or by the sudden movement along an existing fault line. The movement along a fault line results from constant gradual movement of the tectonic plates that make up the earth's crust, which causes stress to build up in its rock layers. The Indian plate is known to be moving in the north – north – east direction and colliding with the Eurasian plate along the Himalayas.

An **epicenter** is the point on the surface of the earth vertically above the place of origin of an earthquake. The **magnitude** of an earthquake is a quantity to measure the size of an earthquake in terms of its energy and is independent of the place of observation. This magnitude is measured on the basis of ground motion recorded by an instrument called a **seismograph** and is expressed in **Richter Scale**.

Earthquakes are unpredictable and strike without warning. They range in strength from slight tremors to great shocks lasting from a few seconds to as long as five minutes. They are known to come in a series over a period of several days.

Earthquake shocks may damage or demolish buildings or other structures. Electricity, water and sewer mains may be damaged. Most of the earthquake casualties result from falling objects or debris, leaving many people dead, injured or homeless.

The Indian Meteorological Department (IMD) is the national agency for detecting and locating earthquakes and evaluation of seismicity in different parts of the country.

CLASSIFICATION OF EARTHQUAKES

Earthquakes can be classified from slight to very great depending on the magnitude measured on the Richter scale.

- SLIGHT UPTO 4.9 ON THE RICHTER SCALE.
- MODERATE 5.0 TO 6.9.
- GREAT 7.0 TO 7.9.
- VERY GREAT 8.0 AND ABOVE.

India has been divided into five seismic zones with respect to severity of earthquakes. Of this Zone V is seismically the most active region, where earthquakes of magnitude 8 or more could occur. Zone I is seismically the least active region.

EARTHQUAKE: EMERGENCY HANDLING PROCEDURE

Instructions to employees on how to respond when a quack hit the site

- The moment the slightest tremors are felt, in the form of rumblings/vibrations on floor/walls/roof, all employees in the factory building to collect at the open site designated as fire assembly point, exiting through the designated exits and the emergency exits.
- Electrician to immediately shut off power at main distribution board.
- A quick roll calls to be arranged at the assembly point by the authorized person.
- The duration of the quake is not predictable, and the intensity varies. Nobody to re-enter the building before the incident controller gives a clearance.

DURING THE EARTHQUAKE.

- If indoors stay there. There could be falling debris outside.
- Take cover under an internal doorframe, sturdy table or bench.
- Keep away from windows, glasses, chimneys overhead fittings and tall furniture.
- If in high rise buildings, stay clear of windows and outer walls. Get under a desk near a pillar or internal wall. Do not use the elevator.
- In crowded areas, do not rush for doors. Stay clear of roof and wall fittings.
- If outside keep well clear of buildings, walls power lines, trees etc.
- If near tall buildings shelter from falling debris under strong archways or doorways of buildings. Don't stand under awnings or parapets as they may collapse.
- If in a vehicle stop in the open until shaking stops. Beware of fallen/low hanging power lines and damage to roads overpasses or bridges.

AFTER THE EARTHQUAKE

- Check for injuries, administer first aid and do not move seriously injured unless in danger.
- Do not use telephone unless there is a serious injury or fire. (To avoid line congestion).
- Turn off electricity, gas and water. Check for gas or fuel leaks before lighting matches.
- Check for water or sewerage leaks, broken electrical wiring etc.
- Check for cracks and damage including roof chimneys and foundation.
- Be prepared for aftershocks.
- Do not waste food and water, as supplies may be interrupted.
- Listen to local radio for warnings and advice.
- Avoid driving unless for emergency. (Keep streets clear for emergency vehicles).
- Do not go sightseeing or enter damaged buildings. Stay calm and help others if possible.

END OF EMERGENCY

The emergency team to address the following:

- The team can order the workers to go back into the factory to resume normal operations after fully convincing themselves that the tremors/quake has stopped and that nothing of any consequence has taken place to the building structure/machinery/electrical installations etc. An “all clear” signal needs to be given after thoroughly assessing the situation.

4.2 Cyclones and Floods

Floods occur when water covers land, which is normally dry. This may be due to prolonged or heavy rainfall, severe thunderstorm, heavy monsoon rains or cyclones. Other less common causes could be a dam failure, sudden snow melt or rapid sea water flooding.

Flash Floods: Flash floods result due to relatively short, intense bursts of rainfall, often from thunderstorms. This can occur in our city and poses the greatest threat to life. People are often swept away when swirling floodwaters enter. Significant property damage also occurs. On many occasions there is very less reaction time, which is the reason for severe loss of property, livestock and life.

FLOODS: EMERGENCY HANDLING PROCEDURE

- Be aware of the nearest safe location.
- Listen to the local radio for information/flood warning.
- Move fuel, chemicals, hazardous waste to high, secure places.
- Protect/relocate equipment and stocks to safer places.
- As a preparation for evacuation, turn off electricity, water, gas pipelines. Keep sandbags ready to prevent flooding of low-lying areas.

IN CASE OF EVACUATION

- Keep a torch, portable radio handy. Reasonable stocks of fresh water, first aid kits are a must.
- A waterproof bag to carry valuables.
- Do not eat food, which has been in contact with floodwater, and boil all water until supplies have been declared safe.
- Avoid walking even in shallow water as it may be contaminated.

AFTER THE FLOOD

- Do not switch on electricity until safety checked.
- Beware of snakes, scorpions that may have moved to dry areas in your house.
- Ensure thorough clean-up of any contaminated material.

4.3 SOCIAL CALAMITIES

Included in this category are Bomb Threat, Riots and vandalism.

BOMB THREATS could be genuine or false, and many a time they turn out to be a hoax. Unscrupulous elements with the intention of creating a panic tend to resort to such hoax calls. Confirmed militants however resort to such deeds with the intention of destruction and to strike terror. It would therefore be prudent to assess the genuineness of bomb threats. The threats are usually through phone calls, giving very little time to react, or through mail, giving a certain date of an explosion that could occur. It is very rare that the caller will identify himself, and the messages sent through any messenger, for fear of easy identification.

The following preparedness is recommended to handle bomb threats:

1. Caller identification facility to be activated to the site telephone.
2. The local Police station to be intimated immediately on receipt of such calls. The police are trained to handle such threats and have access to special bomb detection and disposal squads.
3. The lives of the people are most important and on the receipt of such threats, the site emergency team will need to take a call to evacuate the site, with the employees assembling at the site emergency assembly point. An employee to be clearly informed about the threat and panic has to be minimized.
4. The all-clear signal to be given only with the police authorization.

iii) Reliable measuring instruments, control units and servicing of such equipments.

All the measuring instruments are calibrated through in-house master instruments and all the master instruments are calibrated from NABL certified agency. If there is found any deviation beyond the limit then such instruments are repaired and then calibrated before re used or replace immediately with new one.

iv) Precautions in designing of the foundation and load bearing parts of the building.

All the necessary precaution is taken during the construction of building as per the guideline and IS Standard. All the structural building lay out are approved by concerned authority and availing the structural stability certificate by competent person / civil engineers.

All constructions have been designed and installed by reputed engineering organisations as per good engineering practices. All necessary precautions have been taken regarding the designing of the foundation and load bearing parts of the building. The foundations have been designed taking in to consideration the seismic zone.

v) Continuous Surveillance of Operations.

(a) On stream inspection:

It is very essential to make regular inspection of the plant especially in the hazardous area at frequent intervals.

(b) Shut Down Inspection:

The various sections of the plants shall be closed at different intervals depending upon their intensity of hazard and detailed inspections shall be carried out by the factory engineers with the assistance of their technical staff and sectional heads of the area. Any damaged part of the machine/equipments shall be immediately replaced or property repaired as the case may be before the plant is allowed to run.

(c) Electrical Equipments.

Electrical equipments and wiring shall be maintained in good conditions. All the electrical wiring in process is corrosion proof. The electrical equipments are suitably earthed to avoid any electrical injury and mishap penning caused due to short circuit, friction static charges etc. All alarms, instruments, trips and interlocks will be tested periodically. The cable will be tested for electrical continuity tests. Tanks are tested as per schedule; the pipe line and Tanks thickness testing will be subjected to testing as per statutory requirements.

(d) Safety Audit

The management is very much safety conscious. The plant carries out periodic safety audits through External agency and internal routine safety audit at the plant by the safety officer.

vi) Maintenance and Repair Work According to the Generally Recognized Rules of Good Engineering Practices.

a) On stream inspection:

It is very essential to make regular inspection of the plant especially in the hazardous area at frequent intervals.

b) Shut Down Inspection:

The various sections of the plants shall be closed at different intervals depending upon their intensity of hazard and detailed inspections shall be carried out by the factory engineers with the assistance of their technical staff and sectional heads of the area. Any damaged part of the machine/equipments shall be immediately replaced or properly repaired as the case may be before the plant is allowed to run.

c) Electrical Equipments:-

Electrical equipments and wiring shall be maintained in good conditions. All the electrical wiring in process is corrosion proof. The electrical equipments are suitably earthed to avoid any electrical injury and mishap opening caused due to short circuit, friction static charges etc.

All alarms, instruments, trips and interlocks will be tested periodically. The cable will be tested for electrical continuity tests. Tanks are tested as per schedule; the pipe line and storage tanks thickness testing will be subjected to testing as per statutory requirements.

d) Identification of vital record of the factory and methods to safe guard them in event of emergencies

At plant all the important document / drawings are kept in Almirah on which titles of important document is written. In the event of fire these documents shall be moved to safely first. All execution will be made aware so that anyone who is available can take out these important documents from almirah.

e) Safe Work Permit and Confined Space Entry

At Plant a safety work permit system is followed to control the behavior and unsafe act of employee. All new maintenance/ repair work having high potential of accident / injury have been identified and covered under Safety Work Permit System.

11. DETAILS OF COMMUNICATION FACILITIES AVAILABLE DURING EMERGENCY AND THOSE REQUIRED FOR AN OFF-SITE EMERGENCY.

The telephone and mobile phones is primary mode of communication service. In case of emergency PA system are available. Hooters are available for sounding emergency

12. DETAILS OF FIRE FIGHTING AND OTHER FACILITIES AVAILABLE AND THOSE REQUIRED FOR AN OFF-SITE EMERGENCY.

1. Emergency Siren

Emergency siren is sounded to declare emergency situation.

Emergency alarm: Pulsed siren (Pulsed siren - On and off at an interval of 10 seconds three times).

All clear: Single long siren The Emergency Controller or Incident controller shall give all clear signals by coded siren, when the emergency has been brought under control. All clear signal will be the continuous blowing of siren for three minutes.

2. Assembly points

DETAILS OF ASSEMBLY POINT

Assembly Point No.	Location
1.	Front of Main Entrance Near Security Gate
2.	Horticulture Area Near E.T.P/L.T. P
3.	Near Fire Fighting Pump House Area
4.	Outside CMCS Building

3. Emergency Evacuation Procedure

1. On hearing emergency siren carries out emergency shutdown procedure.
2. Leave the building by the safest route.
3. Go to designated assembly point Assemble at the designated assembly point.
4. Under no circumstances any person except authorized persons involved in the firefighting /rescue operation, emergency team members and first aiders should leave the assembly point during the emergency.
5. If any person is away from his section at the time of emergency, he/she must leave that place after hearing emergency siren and rush to the designated assembly point.

*In case there is an obstruction on the road, or a person is unable to walk he/she can go to the nearest assembly point and report.

6. After hearing all clear siren leaves the assembly point and go to your workplace.

4. Wind Socks

LOCATION OF WIND SOCKS:

Location of Wind Sock: At the roof of Building

5. First aid Boxes:

Sr. No.	Equipment	Location
1	First Aid Box	Security Gate
2	First Aid Box	Grab Crane Control Room
3	First Aid Box	Production Area
4	First Aid Box	CMCS Building/Main Control Room

6. Fire Fighting Details:

Fire Fighting System Details

- ❖ No. Of hydrant – 27 nos
- ❖ No. of fire extinguisher- 51

Sr. No.	TYPE	QUANTITY
1	DCP (1 kg)	01
2	DCP (4 kg)	02
3	DCP (5 kg)	10
4	DCP (6 kg)	05
5	DCP (25kg)	10
6	DCP FIRE BALL (3 kg)	03
7	DCP FIRE BALL (5 kg)	04
8	Co2 (4.5 kg)	11
9	Co2 (9 kg)	05
Total		51

- ❖ No. of Sprinkler in MSW Pit Area.
- ❖ No. of fire storage tank 02 no's (**Capacity 500 KL each**)
- ❖ No. of Pump -06 no's Make by **FLOWMORE LIMITED**

PUMP DETAILS

Qty.	Type	FIG	SUC.	DISH	CAPACITY	T.D.H	PUMP INPUT	SPEED
01 nos	H E S	5624	50	32	22Mq/Hr.	88 Mtr.	11.22 KW	2920 RPM
01 nos	H E S	5624	50	32	22Mq/Hr.	88 Mtr.	11.22 KW	2920 RPM
01 nos	H S C	F5826	150	125	273 Mq/Hr.	88 Mtr.	87.23 KW	1485 RPM
01 nos	H S C	F5826	150	125	273 Mq/Hr.	88 Mtr.	87.23 KW	1485 RPM
01 nos	H S C	F5826	150	125	273 Mq/Hr.	88 Mtr.	87.23 KW	1500 RPM
01 nos	H S C	F5826	150	125	273 Mq/Hr.	88 Mtr.	87.23 KW	1500 RPM

13. DETAILS OF FIRST AID AND HOSPITAL SERVICES AVAILABLE AND ITS ADEQUACY.

In *NTPC Vidyut Vyapar Nigam Limited, Vill. – Ramna, Varanasi (U. P.) Vendor - Macawber Beekay Pvt. Ltd.* having First Aid Centre equipped with all necessary medicine.

Nearest Hospital Details

1.	Ambulance	102
2.	Govt. Hospital	
3.	Ganga Ram Hospital 24X7	9219675562, 7880740223
4.	Maxwell Hospital	7897991775
5.	Trauma Centre (BHU)	0542-2366073, 2366092)

List of First-Aiders

Sr. No.	Name of First-Aiders
1	Mr. Jitendra Dubey
2	Mr. Ajay Katiyar
3	Mr. Suraj Yadav
4	Mr. Abhishek Kumar Gupta