RISK ASSESSMENT RPORT FOR THE "EXPANSION AND MODIFICATION OF MOLASSES BASED DISTILLERY PLANT FROM 60 KLPD TO 70 KLPD THROUGH PROCESS MODIFICATION IN ITS EXISTING DISTILLERY PLANT"

At

Sy. Nos. 49/2B/1 & 2, 57/2D & 2E, 58/1B, 58/1A/3,
66/4D, 85/2, 87, 93/2/3, 95/1 & 107/2,
Siddapur village, Jamkhandi Taluk,
Bagalkot District, Karnataka State.

Project Proponents

M/s. Siddapur Distilleries Limited (SDL),
Siddapur village, Jamkhandi Taluk,
Bagalkot District, Karnataka State.

RISK ASSESSMENT STUDIES

1.1 INTRODUCTION
1.2 RISK ASSESSMENT AND HAZARD ANALYSIS

1.2.1 INTRODUCTION

Hazard analysis involves the identification and quantification of the various hazards (unsafe Condition) that exist in the plant. On the other hand, risk analysis deals with the identification and quantification of the risk, the plant equipment and Personnel are exposed to, due to accidents resulting from the hazards present in the plant.

Risk analysis follows hazard analysis (Risk = Hazard x Probability of occurrence). It involves identification and assessment of risks to the plant personnel and neighboring populations. This requires a thorough knowledge of failure probability, credible accident scenario, vulnerability of population etc. Much of this information is difficult to procure. Consequently, the risk analysis is confined to maximum credible accident studies. The subsequent sections shall address the identification of various hazards and risks in the operations, which will give a broad identification of risks involved.

Activities requiring assessment of risk due to occurrence of most probable instances ofHazard and accident are both onsite and off-site.

On-site

- Housekeeping practices requiring contact with solid and liquid wastes
- Emission/spillage etc. from storage & handling

Off-site

- Exposure to pollutants/emission released from storage related activities
- Contamination due to accidental releases or normal release in combination with Natural hazard

1.2.2 MANUFACTURING TECHNOLOGY:

The industry has adopted continuous fermentation process with yeast recycle, which is a highly sophisticated and specialized system, developed by internationally famous M/s. Mojj Engineering Systems Ltd., Pune. Industry is now changing over to more efficient system of manufacturing 'Fed Batch'. This would ensure best quality spirit with reduced steam consumption and minimum quantity spent wash (effluent). The process descriptions are in 2nd chapter.

1.2.3 IDENTIFICATION OF HAZARDS

The following types of hazards are identified.

- Fire in Electric Panels, Oil room, molasses storage and alcohol storage.

To deal with the above emergencies, the Emergency Plan is prepared.

1.2.4 MANAGEMENT PLAN

Rectified spirit and ENA is managed as per the manufacture, storage and import of hazardous chemical rules, 1989, the flammable chemical is categorized into the following three categories.

Class I A:

Liquids having flash point below 73°F and boiling point below 100°F.

Class I B:

Liquid having flash pint at or above 140°F and below 200°F.

Rectified spirit and ENA based on the above classification and properties fall under Class I B flammable liquid.

To ensure safe operation of the plant, the company has carried out the risk assessment study with the following objectives.

1.2.5 OBJECTIVE & SCOPE

The objective of the study is to carry out risk analysis and prepare disaster management plan/emergency preparedness plans.

The risk analysis/assessment study covers the following:

(a) Identification of potential hazard due storage of molasses.

(b) To identify the major hazards relating to fire explosion and toxicity due to hazardous chemicals storage and handling (Finished Products).

(c) To visualize maximum credible accident scenarios. Assess the overall damage potential of the identified hazardous events and impact zones from the accident scenarios.

(d) Suggestions and recommendations on the minimization of the accident possibilities on people and property.

(e) To analyze and quantify primary and secondary effects and damage potentials of the identified maximum credible accident scenarios using mathematical and analytical models.

(f) To localize the emergency and, eliminate it; and

(g) Elimination will require prompt action by operations and works, emergency staff using, for example, fire–fighting equipment, water sprays etc. Minimizing the effects may include rescue, first aid, evacuation, rehabilitation and giving information promptly to people living nearby.

(h) To provide guidelines for disaster management plant for onsite an emergency preparedness plan for offsite emergency bases on the above study.

Risk assessment studies have been carried out to assess the work case scenarios of the plant operations and to formulate a Disaster Management Plan.

Table: - 1.1 Final Product Storage

SL.NO.	Types of Chemicals stored	Number of tanks	Capacity(BL)
1	Rectified Spirit	Bulk storage-01 Receiver-03	956785.50 226170.00
2	Extra Neutral Alcohol	Bulk storage-03 Bulk storage-01 Bulk storage-01 Receiver-03	956785 (Each) 250000 190000 182124
3	Impure Spirit	Bulk storage-01 Receiver-03	99702 63612
4	Total Alcohol	Bulk storage-01 Receiver-03	153195 63612
5	Fuel Alcohol (Ethanol)	Bulk storage-01 Bulk storage-02 Receiver-03	858721.50 950000(Each) 182124
6	Denature Spirit	Tanks-02	75390
7	Molasses	Day storage-01 M.S Storage Tank-03	750MT 1100MT 6500MT(Each)

RECTIFIED SPIRIT AND EXTRA NEUTRAL ALCOHOL.

Rectified Spirit and Extra Neutral Alcohol are colorless volatile liquid with alcohol odor. The main characteristics are furnished below.

Table: - 1.2 characteristics of Rectified Spirit and Extra Neutral Alcohol

Sl.no.	Physical State	Liquid
1	Appearance	Clear
2	Colour	Colourless
3	Physical form	Volatile liquid
4	Odour	Alcohol adour
5	Taste	Burning tste
6	Molecular weight	46.07
7	Molecular formula	$C\text{-}H_3\text{-}C\text{-}H_2\text{-}O\text{-}H$
8	Boiling Point	172°F (78°C)
9	Freezing point	- 179°F (- 117°C)
10	Vopour pressure	40 mm Hg @ 19°C
11	Specific gravity	0.789
12	Water solubility	Soluble
13	Volatility	100%
14	Odour threshold	5 – 10 ppm
15	Viscosity	1.22 – 1.41 cp @ 20°C
16	Solvent solubility	Benzene, Ether, Acetone, Chloroform, Methanol, Organic Solvents.

ENA is similar to rectified spirit in properties and hazards. Hence a combine quantity of 70 KLD which includes ENA and Rectified Spirit has been considered for risk analysis.

Details of storage conditions and hazardous nature of the rectified spirit and ENA are given below.

Table: - 1.3 STORAGE CONDITION AND HAZARDOUS NATURE

Hazardous chemical	Physical state	Material of construction	Storage pressure	Hazardous Nature
Molasses	Liquid (viscous)	MS	Atmospheric	Flamable and acidic
Rectified Spirit	Liquid	MS	Atmospheric	Flammable & Toxic
ENA	Liquid	MS	Atmospheric	Flammable & Toxic

The probable fire hazard in the plant areas of rectified spirit and ENA storage and handling. In case of leaks, invisible vapour spread easily and be set on fire by ignition sources.

Therefore, it is important to control eliminate all potential ignition sources in areas that might lead to ignition of vapor. All forms and types of energy can be considered a potential ignition source. The potential ignition sources are

Open flames	-	Electrical wiring / devices
Smoking	-	Heat sources / hot surfaces
Welding and cutting	-	friction
Sparks and arcs	-	static sparks

Following are some of the precautions that will be taken to minimize the probability of ignition.

- Electrical equipment and wiring should be suitable for preventing hazard.
- If a heating operation is necessary, use only indirect heating methods.
- Do not allow any open flames, hot surfaces, radiant heat sources or friction and spark producing equipments in flammable liquid areas.
- Provide grounding and bonding for all equipment handling using these liquids.
- At high atmospheric temperature, there is chances of molasses overflow from storage tank. Tank is provided with tank form and arrangement will be in place for water spraying and cooling of the tank.

Establish a maintenance programme to assure that all equipment and safety controls are functioning satisfactorily.

1.2.6 IDENTIFIED HAZARDS

Identification of possible hazards

In order to identify hazardous units and segregation of plant and storage units, he following two methods for hazard identification have been followed.

1. Identification based on Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 of Government of India.
2. Identification involving relative rating technique through fire explosion and toxicity Index.

Fire explosion and toxicity indexing is a rapid ranking method for identifying the degree of hazard.

The basic objective that characterize fire explosion and toxicity index are :

- Identification of equipment within the plant that would contribute to the initiation or escalation of accidents.
- Quantification and classification of the expected damage potential of fire explosion and toxicity index in relative terms.
- Determination of area of exposure.

In preliminary hazard analysis, rectified spirit and ENA are considered to have toxic and fire hazards. The application of FETI would help to make a quick assessment of the nature and quantification of the hazard in these areas.

Before hazard indexing is applied, the installation in question is subdivided into logical, independent elements or units. The unit is logically characterized by the nature of the process that taken place in it.

Fire explosion and toxicity index is a product of material factor and hazard factor. Material facto represents the flammability and reactivity of the chemicals. The hazards factor itself is a product of general process and special process hazard.

Respective material factor general hazard factors, special process hazard factors are computed using standard procedure of awarding penalties based on storage, handling and reaction parameters.

Material factor is a measure of intrinsic rate of potential energy release from fire and explosion produced by combustion or other chemical reaction.

General process hazard; plant activities which contribute to a significant enhancement of potential for fire and explosion have been identified and the measured values of penalties have been added to obtain the value of general process hazard as given in DOWs fire & Explosion index hazard classification guide.

SPECIAL PROCESS HAZARD

The special process hazard includes the factor that contribute the probability and occurrence of accident. They are

- process temperature
- low pressure
- operation in or near flammable range
- operating pressure
- low temperature
- quantity of flammable and toxic material
- corrosion and erosion
- leakage, joints.

Classification of hazard into categories

By comparing the indices fire and or toxicity to the criteria in the following table the unit in the question classified in one of the three categories established for this purpose.

DOWs fire and explosion index hazard classification

Table: - 1.4 Degree of Hazard for F & E I

F & EI range	Degree of Hazard
01 – 60	Light
61 – 91	Moderate
97 – 127	Intermediate
128 – 158	Heavy
159 and above	Severe

1.2.7 HAZARD ANALYSIS

Preliminary hazard analysis is used to identify typical and often relatively apparent risk sources and damage events in a system. Based on the preliminary hazard identification, the storage and handling facilities of RS and ENA has been recognized a distinctive and relatively evidential risk source.

Hazards of significant nature whose consequence potential is of work consideration and wherein a specified area or where more number of personnel likely to be present etc., are considered in identifying the hazards. Considering the plant, the significant hazard could be hazard related to storage and handling of rectified spirit and ENA.

Preliminary Hazard Analysis – storage.

Loading and unloading from storage and forwarding of RS and ENA may lead to containment failure for various reasons. Such situation can cause fires or explosions depending upon the situation.

Maximum Credible Accident Analysis

Maximum credible accident Analysis is one of the methodologies evolved to identify works credible accident with maximum damage distance which is still believed to be probable. The analysis does not include quantification of probability. The following is an attempt in that direction.

Hazardous substance may be released as a result of failures or catastrophes, causing damage to the surrounding area. The physical effects resulting from the release of hazardous substances can be calculated by means of models. The results thus obtained though modeling are used to translate the physical effects in terms of injuries and damage to exposed population and environment.

The probable fire hazard in the plant is in the area of RS and ENA storage and handling. It is proposed to store about 40 days production both the products within a common dyke of 40 X 55 mts. As worst case it is assumed that the entire contents are leaked out. In the event of spilling its contents though a small leakage or due to rupture of the pipeline connecting the tank and on ignition fire leakage or due to rupture of the pipeline connecting the tank and on ignition fire will eventuate forming pool fire. In order to assess the radiation levels, heat radiation model has been sued the algorithm of the models is based on the formulae published in the yellow book by the TNO, Netherlands. Details of the model are given below

Heat radiation model – pool fire

The heat load on objects outside the burning pool of liquid can be calculated with the heat radiation model. This model uses average radiation intensity, which is dependent on the liquid. Account is also taken of the diameter to height ration of the fire, which depends on the burning liquid. In addition, the heat load is also influences by the following factors:

- Distance from the fire
- The relative humidity of the air (water vapour has a relatively high heat absorbing capacity).
-

The scenario is taken in Ethanol storage area. The Ethanol storage yard, the bulk storage yard is 900 m^2.

Chemical Data:

- Chemical Name : Ethanol
- Molecular Weight : 46.07 g/mol
- TEEL-1 :3000 ppm
- TEEL-3000 ppm TEEL- 3 :3300 ppm
- IDLH :3300ppm
- LEL: 43000ppm UEL :190000 ppm
- Ambient Boiling Point : 76.5 C
- Vapor Pressure at Ambient Temperature : 0.16 atm
- Ambient Saturation Concentration :171,881ppm or 17.2%

Atmospheric Data: (Manual Input of Data)

- Wind : 7.5 miles/hour from e at 3 meters
- Ground Roughness : open country
- Cloud Cover : 0 tenths
- Air Temperature : 38 c
- Stability Class :C
- No Inversion Height
- Relative Humidity :30%

Source Strength:

- Leak from hole in vertical cylindrical tank
- Flammable chemical is burning as it escapes from tank
- Tank Diameter: 9.5 meters Tank Length :13.5 meters
- Tank Volume :957 cubic meters
- Tank contains liquid – Internal Temperature :38 c
- Chemical Mass in Tank: 733 tons, Tank is 90% full
- Circular Opening Diameter: 5 inches
- Opening is 0.81 meters from tank bottom
- Max Flame Length; 6 meters
- Burn Duration: limited the duration to 1 hour
- Max Burn Rate: 36.9 Kilograms/min
- Total Amount Burned: 2,217 kilograms
- Note: The chemical escaped as a liquid and formed a burning puddle.
- The puddle spread to diameter of 5.3 meters.

Threat Zone

Threat modeled: Thermal radiation from pool fire

- Red: less than 10mts (10.9yards) – (10.0 kw/sq m) = potentially lethal within 60 sec
- Orange: 11mts – (5.0 kw/sq m) = 2nd degree burns within 60 sec)
- Yellow: 15mts – (2.0 kw/sq m) = pain within 60 sec)

CONSEQUENCES ANALYSIS

Consequences analysis is a part of hazard analysis and it provides a relative measure of likelihood and severity of various possible hazardous events and enable those responsible to focus on the potential hazards. For practical purposes, the risk analysis may be based on subjective common-sense evaluation. Thus, this study concerns itself with the adverse effects of accidental and short-term release of hazardous materials on people in the surrounding area. The long-term effects of continuous pollutant release are not dealt with.

Failure data

• Process Control Failure	3.0 e (-) 5 per hour
• Process Control Valve	2.4 e (-) 6 per hour
• Alarm	4.6 e (-) 5 per hour
• Leakage at largest storage tank	3.0 e (-) 5 per hour
• Leakage of pipeline (150mm dia) full bore	8.0 e (-) 8 per meter per year
• Leakage of pipeline (150mm dia) 20% rupture	2.6 e (-) 8 per meter per year
• Human Failure	1.8 e (-) 3 per demand

1.2.8 PROBABILITY OF OCCURRENCE OF IDENTIFIED HAZARDS

The probability and consequences for each identified hazard event considering the method and procedure of plant operation and existing infrastructure for hazard control is evaluated.

The following criteria is adopted related to ignition probabilities:

For instantaneous releases, immediate ignition may occur 0.25 times. There could be delayed vapor cloud explosions for such releases, towards residential area 0.9 times. Flash fire probability is 0.5.

When the release, continuous, the chance of immediate ignition is 0.1 and delayed ignition is 0.75.

A directional probability of 0.2 is considered with regard to wave propagation direction in case of explosions.

Table: - 1.5 IGNITION SOURCES OF MAJOR FIRES

Electrical wiring	23%
Smoking	18%
Friction – bearing / broken parts	10%
Overheated materials	08%
Hot surfaces – boilers – lamps	07%
Burner flame – torch	07%
Combustion sparks	05%
Spontaneous ignition	04%
Cutting, welding	04%
Exposure fires	03%
Incendiaries	02%
Mechanical sparks	02%
Molten substances	01%
Chemical action	01%
Static charge	01%
Lightning	01%
Miscellaneous	01%

1.2.9 SITE SPECIFIC CONSEQUENCES

In order to assess the site-specific consequences, information pertaining to the site such as nearest habitation, nearest industry etc. was collected.

The population density located at a distance of 3 km from the plant is collected. Site specific consequence analysis of failure cases are carried out with the objective to study how many persons are involved in an accident and are likely to get affected, or how large is the area which is likely to be destroyed or rendered unusable so that a true assessment of the safety of the plant can be made.

Consequences of Heat radiation – RS and ENA storage tanks failure

Failure of RS and ENA storage tanks showed 100%, 50% and 01% lethality upto a distance of less than 65m due to radiation intensity of 37.5 kw/m^2, 25.5 kw/m^2 and 12.5 kw/m^2. Radiation of this intensity will cause damage to process equipment.

1.2.10 SAFETY MEASURES FOR STORAGE & HANDLING OF ALCOHOL

The alcohol will be directly fed to the M S Storage tank and no manual handling will be involved which will reduce the risk of spillage in the storage area. Following precautionary measures would be taken for safety:

- **HANDLING AND STORAGE;**

For Storage and handling following precautions will be taken:

(i) Keeping away from oxidizers, heat and flames.
(j) Avoidance of plastics and rubber coatings in the storage area.
(k) Tank form area will be provided with dyke wall around to contain spillage if any.
(l) well ventilation,
(m) Use of approved respirator if air contamination is above acceptable level.
(n) Grounding of the container to eliminate static electric sparks.

In case of any emergency following measures would be taken:

FIRST AID MEASURES: For Skin contact, Eye contact, & Inhalation.

FIRE FIGHTING MEASURES:

- Use of extinguishing media such as water, dry chemicals (BC or ABC powder), CO, Sand, dolomite, etc.,
- Foam System for fire fighting will be provided to control fire from the alcohol storage tank. The foam thus produced will suppress fire by separating the fuel from the air (oxygen), and hence avoiding the fire & explosion to occur in the tank.
- Foam would blanket the fuel surface smothering the fire. The fuel will also be cooled by the water content of the foam.
- The foam blanket suppresses the release of flammable vapours that can mix with the air.
- Special Fire Fighting Procedures; Keeping the fire upwind. Shutting down of all possible sources of ignition, keeping of run-off water out of sewers and water sources.
- Avoidance of water in straight hose stream which will scatter and spread fire. Use of spray or fog nozzles will be promoted,
- Hazardous Decomposition Products: gases of Hydrogen Sulphide (H_2S) & Carbon Dioxide (CO_2).

ACCIDENTAL RELEASE MEASURES:

For Spill Clean-up - Ventilation, Shutting off or removal of all possible sources of ignition. Use paper towels to absorb the spillages and evaporate in safe place like fume hood and burning of these towels in a safe manner, use of respiratory and/or liquid-contact protection by the Clean-up personnel will be promoted.

Radiation intensity of 4.5 kw/m^2 which causes first degree burns when exposed for 20 seconds will extend to a maximum distance of 14 m from the edge of the pool. Therefore, the pool fire scenario of storage tank farm does not call for offsite damage. However, the major effect will be on the onsite SDL personnel.

Table: - 1.6 FIRE EXTINGUISHERS AND FIRE ALARM AVAILABLE IN THE PLANT

Sl No	Type	Capacity	Total No's
01	CO_2	09 kgs	03
02	ABC	10 Kgs	18
03	ABC	02 Kgs	05
04	Mechanical Foam	09 lts	05
05	DCP	22.5 Kgs	02

1.2.11 FUNCTIONS OF EMERGENCY ORGANISATION

A. Site Controller.

Chief : Chief Executive Officer

Deputy : Production Manager.

He has control over the entire operation and retains the overall responsibility of the factory and employees. On receiving the information about emergency depending upon the gravity of the situation visits the emergency site. If required contacts Government agencies like Inspectorate of Factories, Pollution Control Board, Police, Fire, etc. Keeping in constant touch with incident controlled to have latest status of emergency situation.

B. Incident Controller:

Chief : Production Manager

Deputy : Shift Chemist – production

He controls all the activities during emergency, right from declaring the emergency till all clear signal is given. Immediately on getting the information about emergency he rushes to the

emergency site, studies the situation, if required. Advises the emergency coordinator at control room to declare emergency. Advises the plant manager for partial and total evacuation. Advises the electrical department head for plant shut down. Advises security and welfare department to get fire tender and ambulance. Keeps the site controller with the updated information about the emergency situation. After hearing from the shop floor emergency coordinator (shift manager) that everything has come to normal he will advise the control room to give "All clear signal". Immediately on hearing about the emergency siren should check with the control room and ensure the smooth evacuation of the employees of respective departments

Production Manager

1. Immediately on hearing the emergency siren he should inform the incident controller and get instructions from him.
2. Ensure the smooth evacuation of the production hall.
3. Guides the combat and rescue teams in handling emergency situation and rescuing the injured persons.
4. Assists the emergency coordinator at the control room in head counting at the safe assembly points.
5. After ensuring that the emergency has come to normal he briefs the incident controller about the evacuation, injured/missing persons and the outcome of head count.

Security Supervisor:

1. On learning about the emergency from control room he will consult head of personnel and rush to the scene of emergency with his team and take control situation.
2. As per the instruction of incident he will arrange for blowing intermittent siren to indicate declaration of emergency.
3. Controls the mob at emergency and keep the unwanted persons away.
4. Arrange for firefighting by his crew.
5. Ensures that the approach road to scene of emergency is free from men, material and vehicles to assist the movement of fire tender ambulance etc.
6. When everything comes to normal, on the advised of incident controller he will arrange for giving all clear signal by blowing long siren.

Officer in charge at control room:

He plays a very important and vital role since following duties lie with him.

1. Maintaining all the important records.
2. Blowing siren to declare emergency and give all clear signal as per the instruction of incident controller.
3. Guiding the external agencies like government bodies, fire tender and ambulance.

4. Conducting head count at safe assembly point in association with shift supervisor.
5. Ensuring that nobody leaves the factory premises during emergency without proper authority.
6. Control room will be the center of activity in collecting and passing on the information.
7. Immediately on learning about the emergency he should inform site controller, incident controller, head of personnel and security supervisor.

Noise Pollution and its control

Noise is described as unwanted sound. Noise exposure affects a human being many ways depending upon the intensity of noise, its frequency and exposure duration. The sources of noise in the distillery is the conveyer systems, DG set and steam blow. The DG set is housed in an acoustic enclosure. The noise pollution and risk is minimal. This industrial noise is controlled by timely maintenance of the equipments, use of Personal Protection Equipments. The green belt around the industry is also contributing to the reduction of noise to outside the plant.

Noise levels in various areas.

Office / Administrative Block	Min levels	:	45 dB
	Max Levels	:	55 dB

Permissible limits for Noise Intensity:

WHO has recommended 75 dB as exposure limit to in industrial noise. The BIS recommended the acceptable noise level in an industrial area between 45 and 60 dB. The threshold limit value under occupational safety and health is 85 dB for 8 hours, 90 dB for 4 hours, 95 dB for 2 hours and 100 dB for 01 hour and 110 dB for 15 min per day.
Sound beyond 80 dB harms hearing system and it can be regarded as pollution. The latest noise a man hears without discomfort is thus 80 dB.

The workers engaged in such locations are provided with ear muffs to have additional safety noise nuisance.

<u>1.2.12 EMERGENCY CONTROL CENTER:</u>

Chief : Production Manager
Deputy: Supervisor – production
A place inside the premises is identified as emergency control room. The room will be open and active for 360 days round the clock. A responsible person should be made in-charge of the control room. The control room plays a very key role as it has to maintain important records like address

and telephone numbers of company senior executives, government district authorities, services like fire brigade, police, ambulance, etc, plant layout drawing, firefighting system drawing, copy of onsite emergency plan, list of personal protective equipments etc.,

The security officer at the main gate is declared as the emergency control room and the security supervisor at the control room is one of the emergency coordinators. His duties are list under function of emergency organization members.

SAFE ASSEMBLY POINT:

The area near the main gate is designated as the safe assembly point. During emergency situation, all the employees assemble here to safety point of view and also to facilitate head counting.

NOTICING OF EMERGENCY:

When an emergency situation arises in the factory it will be noticed by the employees of security guard who is on rounds – immediately he will inform the supervisor of the control room either in person or over telephone – the location and the magnitude of emergency.

They in turn, without waiting any time, informs the personnel manager who is the incident controller. Immediately the incident controller would rush to scene of emergency and studies the situation and briefs the site controller over phone. With the concurrence of the site controller over phone, with the concurrence of the site controller he declares emergency.

Assessing the situation, the incident controller advises the heads of the production person for shut down. He also instructs the security supervisor to put off the fire.

DECLARATION OF EMERGENCY:

After taking the decision to declare emergency the incident controller advises the emergency coordinator at the control room to blow the siren intermittently to blow the siren for 20 seconds and switch off for 5 seconds. Like this it is done for 5 times to caution the employees that the emergency is declared.

EMERGENCY SIREN:

The security supervisor or the guard will sound the emergency siren or alternative hooter following instructions received from the incident / site controller. Intermittent hooting will be made continuously three minutes to declare emergency the purpose is to advise personnel that emergency has occurred in the plant and to assemble at safe assembly point.

SHUTTING DOWN OF THE PLANT:

In the event of any fire or explosion, shutting down of the plant is a must to ensure:

- Minimize loss of life, plant & machinery.
- Easy & quick evacuation of employees.
- Tackle the fire with water.

Incident controller in consultation with the site controller will decide plant shut down. The incident controller would advise the electrical department head to cut off power supply to plant & machinery except to emergency lighting.

EVACUATION OF PERSONNEL :

Chief : Production Manager
Deputy : Security In charge

This is a very important activity during emergency, for this the employees should be well acquainted with the code of emergency siren – intermittent siren. To make the employees get acquainted with emergency situation regular mock drills are carried out.

ACCOUNTING OF PERSONNEL :

Chief : Production Manager
Deputy : Security In charge

During emergency situation account of personnel / head counting should be carried out at safe assembly point to ensure that nobody is missing/trapped inside the plant. The head counted should tally with the number of employees present and number of visitors who visited the factor. The shift manager with the assistance of security supervisor at control room and rescue team does counting.

CONTROLLING THE EMERGENCY:

Chief : Production Manager
Deputy : Supervisor Production

Our company has a set of people who are trained to control the emergency. It is decided that for purpose of control of the hazard and immediate repair etc., a “work incident controller” will be identifies. The work incident controller will work under the declarer of emergency and will be in-charge of the various teams looking after both the rescue and control operations.

ARRANGEMENT FOR MEDICAL TREATMENT:

In our industry, first-aid facility is provided with suitable medicines and also has got the tie up with the hospital for getting the treatment if the person has seriously injured. The nearby hospitals are listed and suitable arrangements are within the factory to the need.

First Aid Box Locations

1. Security Room
2. Production Room

INFORMATION TO THE RELATIVES OF INJURED:

The relatives of injured will be informed by emergency coordinator. The employees residential address fill will be available at the emergency control center. The communication to the relatives of injures will be passed through telecom or by a messenger. The clear status of the injured person will be communicated to his relatives.

INFORMATION TO GOVERNMENT AUTHORITIES:

In case of onsite emergency, the information of accident will be passed to the Deputy Commissioner, Directorate of Factories & Boilers, Police department, Fire Brigade, Electrical Inspectorate, Karnataka State Pollution Control Board and its local officers immediately over telecom or through telegram. The company will implement the advice of local authorities in improving the safety in dealing with the event. The authorities will be requested for protecting the lives of the employees and the property of the employees and also for arrangement for evacuation of personnel outside the plant.

IMPLEMENTATION FOR REPAIR OF SAFETY GEARS:

The repair works will be taken up after the incident is over during these process employees are provide with necessary safety appliances and work permits. The declarer / controller of emergency shall prepare the list of safety tools, safety gear and other implements required to control the emergency situation in respect of fire, explosion, electrical short circuiting. The detailed report shall be prepared and submitted to the higher authorities by the head of the department.

ACTION PLAN / TRAINING:

Company management has imparted training for both rescue and repairs and proper frequent rehearsals also conducted. Such action plans are:

To evacuate the persons, unnecessary in that section. Sooner they grasp the situation/hazard, they will issue instruction to the helping hands to curb/control the situation. In case of fire, fire

brigade will be called. Along with the fire brigade, the trained workers in the firefighting procedure and organize controlling/extinguishing the fire.

With a view to ensure that declarer / controller of emergency shall have assistance that is required at his/their disposal at the time of occurrence of the emergency, following teams of personnel are formed to take up positions when the situation arises.

LAW AND ORDER:

Company will inform to the nearby police station for taking control of law and order situation, if any in the plant or in its vicinity, which things are out of reach.

ALL CLEAR SIGNAL:

The shift managers after thorough check of the plant and scene of emergency shall appraise the incident controller, in turn the incident controller after ascertaining that everything has come to normalcy shall advise the security supervisor at control room to blow a long siren indicating the employees can return to their work places.

All clear signal is given by blowing the siren continuously for 120 seconds or through mouth at assembly point.

1.3 SOCIAL IMPACT ASSESSMENT, R&R ACTION PLANS

A. SOCIAL IMPACT ASSESSMENT

Social Impact Assessment is link to Socio – Economic Benefit to the people living around the project. The development of the Industry shall be without affecting the social status of the people and it shall mitigate the adverse impact. The present proposal is only a change in the process of manufacturing to produce more and to reduce pollution. Therefore, the proposed project will continue to benefit it the agriculturalist in terms of utilization of their produce that is sugarcane in the factory and in return they get treated water from sugar plant and the compost from the distillery. The Industry under the corporate social responsibility have under taken various activities for the benefit of the people around these activities will continue for the welfare of the society.

The product produced not only cater to the States alcohol demand both for potable and Industrial use beside use of ethanol for blending with motor spirit.

B. R&R ACTION PLANS

The existing land is sufficient for the expansion proposal also & therefore no re-settlement & re-habilitation is envisaged.