PREAMBLE

ALBERT EINSTEIN says that "CONCERN FOR MAN HIMSELF AND HIS SAFETY MUST ALWAYS FORM THE CHIEF INTEREST OF ALL TECHNICAL ENDEAVOUR: NEVER FORGET THIS IN THE MIDST OF YOUR DIAGRAMS AND EQUATIONS"

The above quotation speaks about the importance of safety. Whatever the job a person or an organization takes up, the focus should be about safety of self or of the organization.

safety means not getting exposed to harm, safety is controlling of high risk in activities, so also safety is loss control. In totality, safety is a systematic approach in the control of activities, so as to avoid unwanted incidents and achieving good work environment.

When systematic approach is practiced, it needs to be checked periodically for its effective functioning. The Devi Sea foods ltd situated at Singarayakonda, Prakasam district, is engaged in frozen shrimps'exports. The industry isabout25yearsold.The Management of Devi Sea foods ltd wanted to establish & implement good safety practices in their organization and thereby effectively controlling their activities, so as to avert unwanted incidents and to improvise its work environment.

Good safety practices are a very visible way of showing that the organization does value the people working with them, so also, it will be workplace that's not only safer but more productive as well.

Before implementing safety practices, the organization wanted to evaluate its existing safety functioning and accordingly to fulfill any gaps.

Safety audit is a good tool, for evaluating the functioning and guiding the organization in complying with the deficiencies that are outcome of the audit. Audits review safety programs, policies, and procedures to check that they cover employee job tasks and hazards. They are structured and effective

(review of the total factory which emphasizes the need for good housekeeping and planned maintenance) way of preventing incidents and Controlling safety hazards.

The Devi Sea foods ltd wanted to evaluate the safety performance in its activities, hence, arranged to conduct external Safety Audits by a reputed external agency, followed by compliance of audit recommendations. Accordingly, the task of conducting the audit for the year-2020 has been entrusted to SS Engineers.

SS Engineers feels it as an honor for obtaining the above assignment and expresses their thanks to the Management for giving the opportunity.

The objective of audit is to look into the various activities and safety performance of the organization and to focus on any deviations from compliance of legal requirements, follow up of good work practices and assisting the organization in the continual improvement of its OHS performance. Audit also focuses on the best practices implemented by the organization.

The audit recommendations given the report which can be viewed as an aid to Management, for continual improvement and not as any fault-finding exercise.

Once again SS Engineers expresses its sincere thanks to the Unit Head and other HODs of Devi Sea foods ltd and the associate plant personnel for their support and assistance extended during the course of this external safety auditing.

July 2020
Singarayakonda

For
SS Engineers

CONTENTS

EXECUTIVE SUMMARY

- Devi Sea Foods Ltd is about 25 years old and one of the shrimps exporting company and growing strong marketwise by exporting its specialized shrimps to global market.

- One of the present-day requirements for entering the global market is about the Health, Safety and Environment bridge or management Plan of the organization.

- Though some safety measures are being followed, the organization needs to implement safety requirements or to establish safety health environment management system and to inculcate the safety culture among the work force of the organization.

- Top management has to define and authorize the organization's Occupational Health & Safety policy. So as to show its commitment in establishing the occupational health and safety in the plant. The policy is to be displayed to and deployed among the employees.

- Periodical review. Compliance regarding applicable statutory andother regulations, found satisfactory.

- To inculcate safety culture among employees, numbers of training programs are to be conducted. Annual training calendar is to be prepared based on the competence evaluation, training needs evaluation and accordingly trainings are to be scheduled.

- Motivational and other promotional measures for proving HSE performance are to be practiced;

- Incident reporting and investigation is to be strengthened. Investigation should focus on evaluating the root cause and recommendations to address the root cause so as to avoid recurrence.

- First aid center has been provided.

- Bio medical waste storage and disposal practice is to be established.

- Work permit system, LOTO system, standard operating procedures and standard maintenance procedures are to be established.

- For ensuring the effective functioning of the Safety activities, top management has to establish safety department. Safety officer is made responsible in coordinating the safety activities.

- Review of Safety Management System and Site-specific observations and recommendations are given in detail in this report for implementations as per the priority the organization.

M/S DEVI SEA FOODS LIMITED

GT ROAD, SINGARAYAKONDA

PRAKASAM DISTRICT-523101

ANDHRA PRADESH

1.INTRODUCTION

M/S. Devi Sea Foods Ltd, Aqua Products Export Division is an established plant in R.S. No.57817 at Singarayakonda, Prakasam District of Andhra Pradesh State. It is located near highway connecting Chennai to Kolkata. Cultured Shrimps are received from Machilipatnam,Repalli, Guntur, kakinada,Nellore, Gudur, Kavali, Ongole, Chirala&Repalli by trucks. After Deheading Shrimps are packed and preserved under frozen condition forwhich Ammonia refrigeration is used. Packed shrimps are being exported to USA, Australia, Japan, Canada, South Africa and Asian countries through Krishnapatnam & Visakhapatnam port. Dailytrucks of cultured shrimps are received, and containers of processed sea foodsare dispatched.

Qualified and experienced Officers are engaged to guide manufacturing activity.

Wide gates are provided for movement of men and material.

APPCB has given consent for manufacturing following products.

Frozen Shrimps	: 12 MTD
Waste Shrimp head	: 7.5 MTD
Area of Factory	: 5.78 Acres

Working Hours

Office and staff

General Shift	: 09.00 Hrs to 18.00 Hrs

Plant Operation

Shift – A	: 06.00 Hrs to 14.00 Hrs
Shift - B	: 14.00 Hrs to 22.00 Hrs
Shift - C	: 22.00 Hrs to 06.00 Hrs

Neighborhood Activity

East	: Railway track and Somarajupalli village
West	: Grand Trunk Road and open lands
North	: Tobacco Godown and Ware house
South	: Open land and Green Belt

Nearest facilities are as follows: -

1. Railway station	:Singarayakonda
2. Police Station	:Singarayakonda
3. Fire Station	:Tangutur
4. Hospital	:Singarayakonda

Activities of Plant:

i. To receive Cultured Shrimps

ii. Receiving other chemicals for utilities

iii. Processing of Shrimps for preservation (Frozen shrimp) and waste shrimp head

iv. Inspection

v. Storage and dispatch to Customers

2. Scope and Objectives of study

i. The scope of the study is carrying out safety audit pertaining to Plant operations related to receiving, storing of chemicals, Shrimps and manufacturing activities of plant

ii. Main purpose of Safety audit is to verify the installation under schedule8 of Manufacture, Storage and Import of Hazardous Chemical Rules and verifying activities as per IS: 14489-1998.

iii. To check fire protection facilities and safety systems

iv. To check operating /maintenance procedures, work practices are as per those stipulated in the manuals and standards

v. To check on security, training, preparedness for handling emergencies and disaster management etc.

vi. To check the compliance of statutory regulations, standards, codes, and previous safety Audit findings.

3. Methodology

Auditors have visited plant accompanied throughout the tour by Mr.G.Mohan Babu, General Manager, E.Seenaiah, Mechanical In charge and Mr. D. Mallikarjuna, Electrical In charge and surveyed all areas of plant during July 2020.

Facilities related to operational practices, operational instructions, Fire protection system, Emergency management procedures, electrical system, lightening, personal protective equipment, housekeeping, safety management and safety promotional activities are studied.

Plant maintenance, products handling, storage and accident trends and On-site emergency procedures are also reviewed.

Existing safety system is assessed.

Safety features of critical equipment and Condition monitoring studied in detail. Material safety data sheets and Risk analysis are reviewed for physical and chemical properties of the products.

Post Audit Activity

Findings are appreciated to Mr. G. Mohanbabu, General Manager, and his team members at the end of audit.

The procedures used in the audit were consistent with the general state of the art of Safety auditing and the best professional judgment of the audit team members.

4. ManPower

SHIFT	MALE	FEMALE	TOTAL
General Shift	71	267	338
A - Shift	56	75	131
B - Shift	60	61	121
C - Shift	16	0	16
Total	**203**	**403**	**606**

*Data provided by management

5. Accident Statistics

Period

Accident Statistics	2017	2018	2019
Time lost accidents	Nil	Nil	Nil
Non-Reportable	Nil	Nil	Nil
Fire Accidents	Nil	Nil	Nil

*Till date of Audit

6. Power

Power requirement for the plant is being obtained from APTRANSCO 11KV line

Transformer: 2000 KVA X 2

Emergency power exists as given below.

D.G. Sets: 725 KVA & 500 KVA

7. Communications

Following facilities are provided.

i. Telephones with STD facility

ii. Cell Phones

iii. Emergency Alarm at cold storage rooms

iv. Walky-talkies

8. Water

Water Tank Capacity : 1,15,000 Ltrs

Water sump : 50 KL X 2

Water is drawn from ground through bore wells - 1, 15, 000 Ltrs

Effluent allowed : 95,000 Ltrs

Domestic effluent :10,000 ltrs

9. Firefighting facilities:

Water is stored in tanks : 115 KL

The water network is laid in closed loops to ensure multi-directional flow in the system

The system is designed for minimum of 7kg/cm^2 residual pressure.

In case of major emergency, Fire Services - A.P. Government, Tangutur will be utilized.

Fire Extinguishers are maintained at all operating floors. Fire hydrant system is connected to overhead tank.

10. Safety Measures

Emergency switches are installed for shut down of ammonia compressors and pumps.

Inter distance between Offices Operating areas and Ammonia are maintained as per plans approved.

The plant is designed, fabricated and commissioned by organizations that have vast experience in the field.

Control valves, pressure gauges, level indicators, temperature gauges are checked periodically.

Pressure vessels are checked by competent person approved by Government of Andhra Pradesh.

11. Emergency Control Centre and Assembly points

Emergency Control Centre is located at Admin building.

All Key personnel are identified with their designations.

Respective department In-Charges are identified as Site Controller /Incidental controller.

Anybody noticing fire can raise alarm.

The vacant area near Dining hall and dispensary is designated as Assembly Point.

The Emergency control center are to be equipped with the followings: -

Black board

Factory layout, showing control room, Ammonia storage.

Detailed layout of water line.

Fire organization chart.

Recording facility.

Wind Sacks

Wind sacks - 4 Nos are installed at different locations

12.Emergency Alarm

Electrical siren is installed

Emergency alarms are installed and they can be operated from processing hall, carton store room& cold storage unit

Machine room person located at plant will communicate the message after verification.

13. Emergency Shutdown

Emergency procedures for shutdown of individual or group of equipment or plant to be prepared.

14. All Clear

After the completion of Emergency, siren will be sounded 4 times with a gap of half a minute to indicate all clear under the instructions of the Site Controller.

15. Machinery /Sections

Ammonia machine Room	--- Ammonia Compressors
	---Ammonia receivers
	---Pump vessels/ Accumulator
	---Oil separators
Processing plant /Area	---IQF Freezers
	---Plate freezers
Ice Plant	---Flake ice & Tube ice units
Electrical	---Switch yard
	---Transformer, PCC, MCC, DG Sets

Pumps

Bore wells

Control Room

Carton storage

Canteen

Water Treatment

Effluent plant and Office

16. Raw materials and chemicals

Shrimps	: 25 tons
Ammonia received	: 500 kgs
HSD	: 500 liters
Liquid Chlorine	: 500 Liters
Soap oil	: 500 liters
Phenol	: 500 liters
Urea	: 50 Kg x 2
DAP	: 50 Kg x2
Cartons	: 3 loads

17. Process

The plant mainly consists of : Shrimps processing

Ammonia handling in the plant

Ammonia handling in Ice plant

Utilities

Effluent Treatment Plant and Offices

Process Flow Chart

Receiving

|

Purified Water-Washing

|

Checking - store at chill room in case of delay at less than 4°C

|

Weighment Acid Icing

|

Pre-Process - WasteDisposal

(De head/Peel/Devein)

|

Grading

|

Checking

|

Purified Water - Washing

|

Color Sorting

|

Weighing

|

Setting

|

Purified water - Glazing

|

Freezing in plateto attain core temp.-18°.C

Freezer

|

Packing Approved packing material

|

Store at -18°C or

Below at Frozen store

|

Unapproved lotsreject

Inspection &

Testing Approved lots

|

Shipment of Approved lots

Receiving section: Fresh Raw Head-on shrimp is procured from approved Suppliers and brought to factory in clean crates/ boxes by insulated trucks. On arrival of raw material, the source code number is given a purchase date, center / Supplier's number. After receiving ice is removed and all

shrimp washed with chilled water thoroughly. Then washed raw material will be shifted to pre-processing section.

Deheading and Washing

Deheading conveyors are provided to Dehead the shrimps. Head waste is sent for disposal. Headless shrimp is sent for size grading. After Deheading shrimp is washed thoroughly and iced in crates to maintaintemperature less than4^{0} C
They are preprocessed and conveyed to grading tables for grading by the Graders.

Processing section: Grading Machines are provided for grading of shrimps.. After grading shrimps will be weighed and arranged in pans. The graded material is sorted from species mix, black spot etc and then washed to remove foreign matters, veins, legs, antennae etc. The graded material will be packed as per the requirement of the customer or as per the Export specification. E.g.; 6/8, 8/12, 13/15, 16/20, 21/25, 26/30, 31/40, 41/50,51/60,61/70, 71/90, 91/110 and every crate contains 4.54 Kgs (10Lbs).
For example, in 16/20 grade 16-20 pieces per pound and they are arranged in a slab of four pounds.

Soaking:

The material is then soaked with 96% of water, 2% Sodium-Try-Polyphosphate (STPP) and 2% of Salt for 60 minutes as per buyer specification.

Feeding and Freezing:

The treated shrimps are then collected from soaking tub and set on the IQF Belt, which takes it in to the IQF Freezer. Freezing is done by the flow freeze, where the cool air freezes the product by standard ammonia refrigeration at minus 40 Degree Celsius.

Glazing and Glazing hardening:

After freezing, the product is conveyed to the glazer where the chill water having temperature of 2^0c -4^0c is sprayed through nozzles which is adjusted as per the required glaze percent (as per Buyer's specification).

After glazing, the product is passed through a conveyor to the glaze hardener. Glaze hardening is done by the flow freeze where the glaze is hardened by the cooled air using standard Ammonia Refrigeration.

Weighing, Primary packing and Metal detection:

After glaze hardening, shrimp is weighed and packed in polythene bags as per buyer specification. Shrimp with polythene bags are passed through metal detector to eliminate small metal fragments if present

Final Packing:

After passing metal detector, polythene bags are packed in Master cartons and sent to cold storage.

Cold Storage: The packed cartons are then stored in the cold store at a temperature of -18^0 C. or below until shipment.

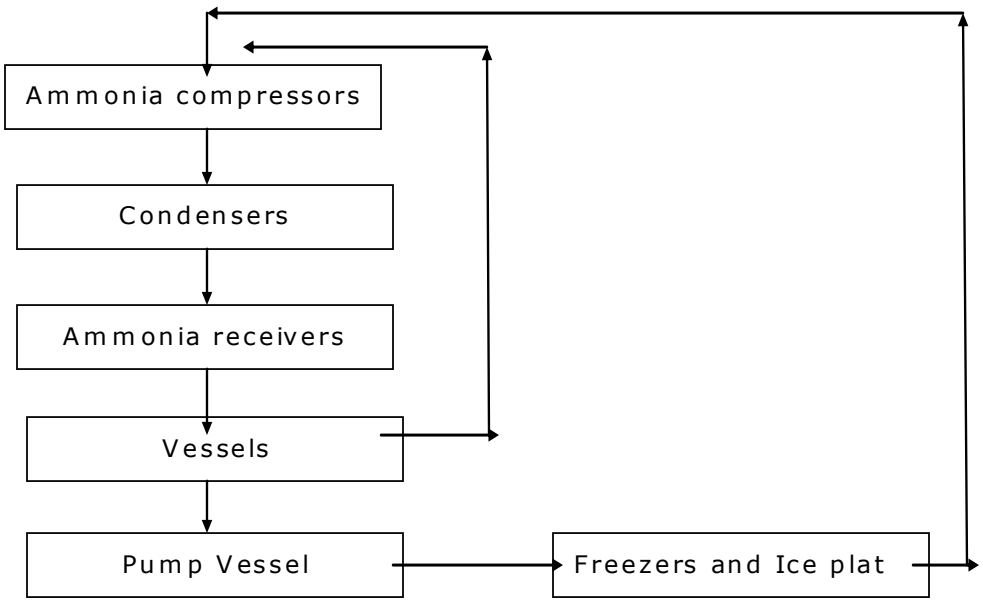
Shipment:

Shipment is done using refrigerated containers maintaining temperature at -18^0 C. or below and shipped out as per purchase order

ETP: Plant is designed to treat 100KLD. Effluent water is allowed to flow through screens. All solid material is removed and flow is allowed by gravity to oil and fat removal tank. Over flow is allowed in to equalizer tank. Later over flow is allowed into the aeration storage tank, Clarifier number one and Clarifier number two. Aeration is ensured by air. Over flow of the aeration tank is allowed in to the Clarifiers and clear water is discharged on land for gardening.

Sludge is shifted to beds for drying and later used as manure.

Ammonia Flow Line



Following equipment are installed in the ammonia refrigeration system

Ammonia receivers- (6000Kgs, 6000 Kgs, 3000 Kgs and 1500 Kgs)

Condensers (4Nos)

Vessels (5 Nos)

Ammonia Compressors - 07

Each Ammonia receiver is equipped with Ammonia liquid inlet line, Ammonia outlet line, Safety valve with isolation valve, pressure gauge and liquid level indicator.

Safety valves discharge is left at Operating area.

Provision exists for charging ammonia into the Vessel / Equipment line.

Ammonia is circulated into refrigeration purpose.

Ammonia gas is lighter than air and diffuses moderately into the atmosphere.

The solubility of ammonia in water is fairly large (30- 50%), so water can be put on leaky ammonia cylinder or tanker,

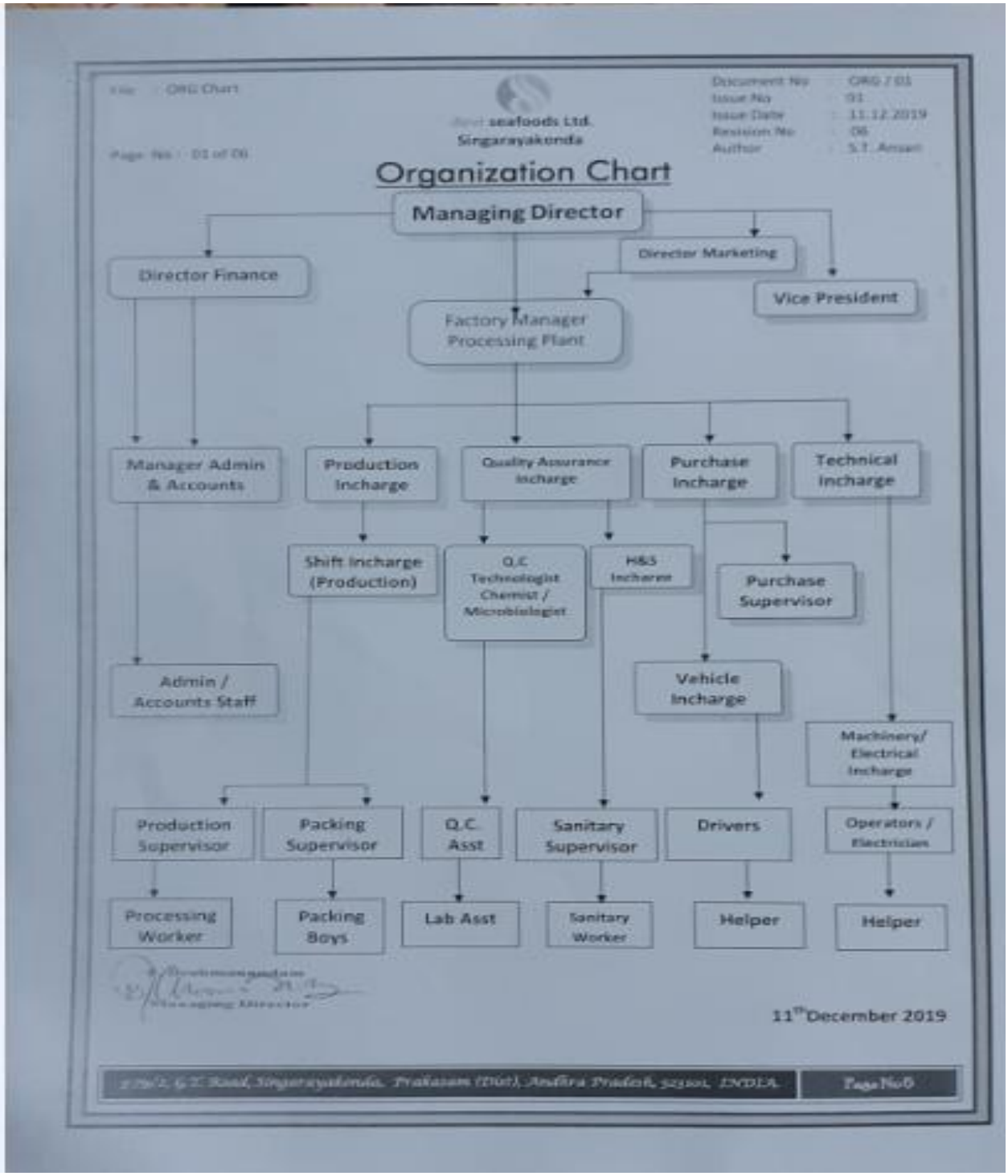
Temperature over 70°C is likely to cause bursting of the cylinder. Ammonia can be neutralized with dilute hydrochloric acid.

It has low coefficient of thermal expansion.

Ammonia cylinders are filled only up to 51% with liquid ammonia.

HSD Storage

HSD is used to run the diesel engine Sets to generate power. The regular power supply to the entire complex is maintained with the help of AP TRANSCO.


seafoods Ltd.
Singarayakonda
Organization Chart
Managing Director
Director Finance
Director Marketing
Vice President
Factory Manager
Processing Plant
Manager Admin & Accounts
Production Incharge
Quality Assurance Incharge
Purchase Incharge
Technical Incharge
Shift Incharge (Production)
Q.C Technologist Chemist / Microbiologist
H&S Incharge
Purchase Supervisor
Admin / Accounts Staff
Vehicle Incharge
Machinery/ Electrical Incharge
Production Supervisor
Packing Supervisor
Q.C Asst
Sanitary Supervisor
Drivers
Operators / Electricians
Processing Worker
Packing Boys
Lab Asst
Sanitary Worker
Helper
Helper
11th December 2019

2. GENERAL HOUSE KEEPING

1. House keeping

Factory and yard tidy: Section 11 of the Factories Act prescribes that every factory shall be kept clean and free from effluvium arising from any drain, privy or other nuisance.

Road facilities are maintained in clean and good condition.

Observations

- The organization has developed system to deal with waste material.
- Areas of responsibility for cleaning are defined.

2. Noise

Care is taken during designing the plant to minimize the noise generation. DG Sets and Compressors are separated from working area to minimize exposure to noise levels.

Observations

1. Personnel in the proximity of DG set area are to be provided with necessary PPE.
2. Noise level generated is to be monitored.
3. Noise level record to be maintained.

Ventilation

Section 13 of the Factories Act 1948 requires that effective and suitable provisions shall be made in every workroom for adequate ventilation by the circulation of fresh air and prevent injury to health.

Ventilation is to be adequate especially where dust and fumes are present as per section 14 of the factories Act 1948.

Proper maintenance of filters is carried out.

Observations

i. Details of checks of filters are to be recorded.

ii. Fugitive emissions are to be controlled at DG sets.

iii. Ventilation record to be developed.

4. Scrap and refuse bin removal system:

Section 11(a) of the Factories act in particular prescribes the need to remove dirt and refuse on a daily basis.

Scrap bins are to be marked and cleaned regularly. For oily material, lids are to be provided for bins.

5. Plant Hygiene facilities:

The Factories Act 1948 has laid down provisions in respect of drinking water, Lavatories and urinals and spittoons under section 18, 19 and 20 respectively. The facilities are provided and maintained in clean and hygienic conditions to ensure health of the employees.

Observations

- Checks are to be done on the following and record to be maintained
- Lavatories, urinals, washbasins conditions
- Control over cleaning team.

6. Pollution; Air, ground and water

Industrial processes create residue discharges, which pollute water, air, ground or public disposal systems with consequent adverse effects on the health of persons, the environment and the ecology.

Smoke, fumes -Stack heights are taken above building height.

Dust, dumps, disposal-Bins provided for collecting and disposes dust.

Process sewage -Spill control arrangement is made at all operating

Floors and drains are allowed to pass through collection pit.

Observations

Stack monitoring to be done.

7. **Illumination**

Section 17 of the Factories Act 1948 requires that employees are working or passing shall be provided and maintained sufficient and suitable lighting, natural or artificial or both.

Natural lighting is optimum with no glare and Windows to be kept clean. Artificial lighting to be adequate, especially for night work, emergencies and at the bottom of conveyor belt.

Observations

1.Periodical cleaning and replacing the lamps in order to ensure that intended illumination levels to be maintained.

2.Record is to be maintained for

*Windows clean, adequate, unobstructed, and free from glare

*Light adequate, correctly positioned, and clean.

*Illumination level

8. **Access**

a) Raw material is handled and unloaded at process hall with roads for access and safety.

b) Alternative access is provided for each facility so that it can be approached for firefighting in the event of blockage on one route.

c) Road widths and turning radii at road junctions are to be studied to facilitate movement of the fire fighting vehicles in the event of emergency.

d) Access is provided to all places where workers need to work.

e) Roads separating blocks have facilities for vehicle movement.

9. **Material Handling and storage**

Equipment is available for handling materials.

Workers having experience are appointed on hazards associated with ammonia handling.

Workers are following safe procedures for storage of materials. Maintenance department draws the required material from stores for plant utility.

Cotton waste, grease, lubricants is drawn from Stores.

Stores

Material is stacked neatly.

Adequate clearance is provided between the sides and tops of stacks.

Observations

*Gap to be maintained between cartons and wall

10. Colour-coding

The identification of plant, contents of pipelines, moving machine Parts and other accident potential areas by painting or banding them in uniform, standard colors are followed.

Following colors are adopted for equipment / pipelines.

Material	**Colour**
Ammonia Liquid	yellow
Ammonia vapour	Light yellow
Ammonia hot vapour	Red
Water	Blue
Fire water	Red

11. **Labeling of Shut-Off Valves, Switches and Isolators**

All valves, switches, isolators, etc. are to be suitably identified and labeled.

12. **Transportation**

Training to be given to truck drivers regarding speed restrictions and understanding of cautionary boards that are displayed in the plant.

security must check lorries / trucks while allowing inside for ensuring safety.

3. SAFETY ORGANISATION

1. **Management Philosophy**

Health and Safety policy is signed on 01-06-2018 by the Managing Director.

Policy is to be made available to all concerned in written form.

Health and Safety Policy is to be issued in Telugu language in addition to other language.

Mechanical In charge is responsible for operations and safety in their area of operations.

Manager HR is coordinator of safety activities.

He is reporting to General Manager.

They are empowered to stop unsafe practices.

Representative copy of Health and Safety policy is enclosed.

Observation

1. Organizational set up to carry out the declared policy clearly assigned the responsibility at different levels for implementation.

2. Health and Safety policy is to be displayed at the entrance of gate to have good publicity and information.

2. Safety Committee Meetings

Safety Committee was formed having equal representation of management and workers.

Life of the committee is two years and frequency of meeting is once in quarter.

Committees are required to promote active participation of employees in EHS management,

3. Accident reporting, investigation and analysis

A register of all injuries was maintained. A description of the accident and its cause is valuable.

Accident Statistics	**2017**	**2018**	**2019**
Time Lost Accidents	Nil	Nil	Nil
Non-Reportable	Nil	Nil	Nil
Fire Accidents	Nil	Nil	Nil

*As on Audit date

Observations

In the absence of accidents, incidents and near miss are to be analyzed by department wise and source

4. Safety Inspections

Observation of proper work performance provides opportunity for Positive reinforcement, while sub-Standard performance provides information for corrective action for possible modification of job procedures.

5. **Safety Educations and Training**

An occupier has a duty to provide information instruction, training and supervision to ensure health and safety of all workers at work and Section 111-

Training needs are to be identified.

Any additional training or qualifications required by the staff is to be provided through on-site courses carried out by competent persons.

Evaluation of the effectiveness of the training provided is to be carried out.

Employees (Technicians/ Engineers) are trained during induction programme.

Observations

1. Training schedule is to be prepared and followed.
2. Officers are to be trained for carrying out internal audits and on hazards.
3. Mock drill (firefighting) was conducted on Feb 2020

7. **Safety communication, Motivation / Promotion**

Suggestion scheme is to be introduced.

Suitable Publicity/Recognition/Rewards is to be given for suggestions accepted and implemented.

Observations

Written instructions on the safety precautions to be followed are to be displayed.

8. **First Aid**

Doctor S.Venkateshwara Rao, MBBS, service is available.

First-aid boxes are provided and maintained covering plant and utilities.

Pre-employment medical checks up and periodical health checks details are to be recorded.

Observations

*Antivenom injections are to be maintained for any emergency.

4. TECHNICAL ASPECT

1.Hazards

1. Nip points of belt conveyors and drives,
2. Fire accidents at Carton/Packing material storage
3. Fire hazard at switch yard
4. Vehicles movement
5. Electrical short circuits /shock
6. Spillage of ammonia / HSD
7. Fall/trips/slips

Explosion Hazards:

a) Transformer (Oil cooled).

b) Pressure vessels

Experienced operators are engaged for operation of plant

Fire extinguishers of DCP, Carbon dioxide, ABC are maintained at plant

Overhead water tank is connected to condensers/Evaporators of ammonia handling system for cooling purpose.

Gauges are provided for monitoring pressure and temperature of Ammonia receivers.

Alarms/ tripping system maintained for Cold storage rooms.

Observations

1. Water sprinkler provision to be provided for cube ice ammonia receiver as per existing sprinkler system at machine room.
2. Ammonia detectors are provided and maintained at Ammonia plant.
3. SCBA and other PPE to be shifted from machine room to Security or any free accessibility.

Preparatory section

I. Passages are to be marked.

II. Care to be taken while handling crates

Grading and Freezers

1. Freezers structure is to be bonded being moisture area. Similarly, all equipment Structure is to be bonded.

   Emergency bell is maintained at Cold storage rooms.

DG sets/ MCC Panel

Separate rooms are provided for Electrical maintenance.

Observations

*HSD transfer pump motor to be replaced with Flame proof motor to avoid untoward incidents if any short circuit.

*Unwanted material to be removed from MMCC and control rooms.

Hazard Control -House keeping

	Ratings * Not meeting Requirement	Meeting Good
- Operating areas	-	Yes
- Workshops& Maintenance	Yes	-
- Stores / go downs / yards	-	Yes
- Effluent treatment facilities	-	Yes
- Ammonia Receivers	-	Yes
- Storm water channels	-	Yes
- Utility operations	-	Yes
- Electrical substation	-	Yes
- Fire water tank /Reservoir	-	Yes

Machine guarding

- Rotary equipment in operating Areas/ Presses	-	Yes

General Safety feature

- Unprotected Floor openings Protected	-	Yes
- Slippery defective floors	-	Yes
- Stairway surfaces	-	Yes
- Adequate illumination	-	Yes
- Ventilation	-	Yes
- Cross-over over piping	-	Yes
- Platforms/Hand rails	-	Yes
- All intrinsic safety devices	-	Yes

2. **Safe systems and operating procedures**

Emergency shutdown points to shut down the operations are to be provided. This will help to stop Plant in case of any emergency in the plant area.

First aid firefighting equipment is provided.

Procedure of safe operations are to be developed for all operations.

3. **Work permit system**

A work permit is basically a document permitting work to be carried out in areas or locations that are inherently dangerous and require the application of additional stringent safety precautions.

As per the plant all the work to be carried out in connection with the plant has to be performed under Supervision.

Following operations are considered under work permit

Hot work at plant

Working at height

Confined space areas

Excavation works

Demolish works

At present job is being done under supervision.

Observations

Detailed information about the working of Safety permit system is to be circulated for the jobs covered.

4. Environment

Air (Prevention & Control of Pollution) Act, 1981 and Environmental Protection Rules,1986, Second Amendment Rules 1993are applicable to factory.

Water (Prevention & Control of Pollution) Act, 1974, and amended 1988, and Environmental Protection Rules, 1986, Second Amendment Rules 1993, are "applicable to factory". Noise at the boundary is within the specified levels.

Observations

1. Nature and quantity of effluent discharges is identified.

5. **Waste disposal System**

Waste generated at factory consists largely of waste oil, empty containers used packing materials, and waste.

Almost all the wastes are sent for reclamation and recycling of resources, abiding by statutory requirements.

Non-hazardous solid waste is segregated into categories, such as, recyclable, reusable and biodegradable.

6. **Personal Protective Equipment:**

Section 36 and 87 of the Factories act prescribes the need of protection of all persons from different occupational hazards.

Assessment is carried out to identify the requirement of various PPEs at different locations in the premises.

Regular inspection by the users and random checks by Officers are to be carried out. Eye and body showers are to be provided at Chemical storage areas

Safety Harness (Safety belts) double line yard for work at height, etc. is to be ensured.

SCBA set is maintained at Ammonia handling.

Observations

Procedure for cleaning and maintenance of PPE is to be displayed.

7. **Emergency Control measures and emergency Control Centre**

The factory has prepared on-site emergency plan to control disasters.

Emergency Control Centre is located at the Office.

Leaks of ammonia, spillage from flanges/ fire hazards, Bomb threats and Food poison are considered in On- Site emergency plan.

All the concerned personnel are informed of their responsibilities.

Emergency response plans identify the roles, responsibilities and action to be taken in the event of an emergency. The plans also identify communication requirements

These plans are to be tested at regular intervals.

Wind sacks are provided.

Assembly point located at dining room and near Dispensary.

Observations

1. Floor plans indicating the locations of fire extinguishers, hydrants, critical valves, main electrical switches, escape routes etc. in each area should be displayed at appropriate locations throughout the premises.

8. **Mutual Aid**

At present mutual aid is only with Government agencies.

Written understanding of various co-coordinators, succession showing alternate persons is to be incorporated in mutual aid document.

The duties of various coordinators and team members are to be defined.

9. **Communication System**

The means of communicating emergency in the plant is

i. Mobile phones and

ii. Loud hailer

iii. Walky-talkies'

10. **Electricity**

Electrical installation, designed as per standards, using approved components.

Electrical system design and maintenance is in accordance with the-

IE Acts and Rules,

National Electric Code,

National Building Code and

Relevant IS standards.

System inspected by Government representative as per IE Rule 46 and maintained as per written schedules.

Transformer is maintained along with HT breakers.

Major works (e.g. work permit jobs, switchboard maintenance, transformer maintenance, etc.) are subject to final safety inspections and written approvals, prior to excitation.

As per IE Rules, rule 35, every medium, high and extra high voltage installation is affixed with permanently in a conspicuous position a danger notices in English and the local language, with a sign of skull and bones. Accordingly, action is taken by management.

Each breaker is provided with shrouded manual emergency trip push button, ON/OFF indication, operation counter and spring charged / discharged counter Circuit breakers, instrument transformers, bus bars, etc. are housed in separate compartments, All relays, switches, lamps, etc, are located in separate compartment on front of the panel.

Adequate size of earth bus bar, either of same material as main bus or copper, is provided throughout the length of switchboard, internally.

In accordance with Section 36 A, Factories Act, in all confined areas electric appliances used must be 24 V. and same is to be ensured.

Access to all installations is controlled. Only authorized personnel are allowed.

Transformer

Body of transformer Is earthed using two distinct earth electrodes.

Neutral is earthed using two distinct earth electrodes.

Silica gel is maintained.

Oil drain is provided with valve and dummied for draining transformer oil.

In case of fire there is no provision for collecting oil into sump.

Transformer oil is checked on 20.05.2018for dielectric strength and acidity. Representative copy is enclosed.

Earthling System

All motors, panels, distribution boards, etc. are provided with two separate connections to earth, from opposite ends.

All earth connections visible (to extent possible) for inspection.

Observations

1. Electrical maintenance and repair work on electrical equipment are to be covered by LOTO and work permit system.
2. Earth resistance are measured once in every month. Representative copy of earth measurement is enclosed.
3. Transformer oil should be checked once in every year.

Electrical switch yard/PCC

1. Names of approved and authorized supervisor and wire man /electrician list is to be displayed at PCC room.
2. All persons connected to electrical jobs are to be trained in First aid.

Lightning protection system

protection against direct strikes is available at switch yard.

Cabling system

All cables in outdoor areas are armored type or laid in metallic conduits pipes.

Armor of multiword cables is earthed at both ends.

Portable Electrical equipment

All portable electrical equipment to be identified and details are to be recorded in a register.

Storage and issue are to be controlled

Observations

1. Details of location of earth pit, resistance measured, and date of measurement are to be displayed at every earth pit.
2. Electrical measuring equipment should be calibrated by third party.

11. **Plant layout and area classification**

The layout of plant is good. Material flow, ventilation, Inter distance between storages and operating plants, storm water drainages and equipment operations sequence etc. considered in the lay out.

12. **Pressure vessels (Fired and UN fired)**

Ammonia receivers, Condensers are installed and connected to system.

Air receivers are of standard make.

Observation

Vessels used in the plant are checked by competent person approved by the Director of Factories, Government of Andhra Pradesh once six months.

Representative copy issued by Competent person Mr. G. Lakshmi Narayana is enclosed.

13. **Condition Monitoring and New equipment review**

Periodical maintenance planned.

Tests such as non-destructive tests, vibration analysis, welding inspections, noise level, illumination level and ventilation monitoring are to be planned as part of maintenance.

Calibrated instruments and gauges are maintained.

Observations

Condition monitoring is to be planned.

14. **Lifting machines and tackles**

All Lifting machines and tackles are identified and recorded.

Competent person approved by Government of Andhra Pradesh services is utilized for inspection, testing and certification of lifting tackle.

Observations

Date of testing and date of next due date is to be exhibited on the equipment

15. **Mobile equipment and vehicle traffic**

All mobile equipment is in good condition.

Road signs such as traffic warning and cautionary signs are to be mounted on roads.

3. FIRE PROTECTION FACILITIES

1. **General**

Adequate access is available around the buildings and plant to provide access for refighting.

The plant is protected against fire hazards and it is equipped with the following fire protection systems.

Water lines

Spray water system at ammonia storage

Portable Fire extinguishers

observations

Instructions to shout 'FIRE, FIRE FIRE 'are to be displayed at all Working areas.

Core fire squads are to be formed area wise and be given comprehensive training in firefighting.

2. **Fire Water Pump house**

The primary source of water is bore well and water is stored in sumps and Overhead Tank

Observations

Fire water pumps with electrical driven, Fire hoses, Fire water storage system are maintained.

Diesel pump is to be installed for fire emergency while power failure.

3. **Fire Fighting Equipment**

Periodical inspection, maintenance and testing of fire extinguishers are carried out.

All extinguishers are to be allotted a serial number and location by which it shall be referred to in records.

The following details are to be labeled on the body of each equipment

Serial Number

Location

Date of last refilling

Date of last annual inspection.

Due date of refilling.

Fire alarm Details:

1. A Machine room is provided battery operated fire alarm system.
2. All processing areas are provided emergency door with emergency lamp

Fire alarm system

Comprehensive fire alarm system is to be designed.

Exits

Minimum two exits are available for every section to go out of the building in the event of fire.

Travel distance to reach the nearest exit is not exceeding 30 M.

No exit doorway is less than 1m in width and 2 m in height

Observations

Emergency Exits and escape routes are to be clearly marked with radium sticker.

Use of standard EXIT signs, directional arrows and symbols should be made throughout the premises.

Fire Risk Assessment:

On site emergency plan is prepared and documentation is maintained. Telephone numbers of Emergency control room, local fire brigade, ambulance, nearby hospitals, police, and members of fire safety organization are to be displayed at strategic locations in the premises.

Observations

Fire drills and Mock drills is organized periodically.

Security systems

Security team is available in the premises at all times, to prevent pilferage, thefts, vandalism, and industrial espionage, violation of fire protection rules, use of alcohol and drugs etc. both by employees and outsiders.

Installation has boundary wall/fence as per prescribed norms

Visitors/contractor personnel are allowed by security or under guidance of employees such that they do not trespass into none permitted areas.

Assessment of adequacy of spill control

All water spillages are directed towards collection pit of ETP

4. STATUTORY RULES AND APPROVALS

Details of approvals received from statutory authorities are furnished below

S.No.	Description	Order No	Valid Up to
1.	Factory license	Regd No: 57817 License No: DCIF-ASECOLIC/3/2020-SA-IOF H.P. : 3445 HP max workers: 1000 By deputy chief inspector Of factories, Ongole	In-Force
2.	Consent and authorization order No: Order for discharging Effluent, Emissions from Chimney and Hazardous Waste authorization	P- 16/APPCB/ZO-VJA/CFO/ W&A/2016-477 dated 01-06-2017 by Join Chief env engineer APPCB, Ongole	
3.	The water cess act 1977:D.No 4-276 dated 15.02.2020		

LIST OF RECORDS

The Following records are maintained

On-site emergency plan.

Record of firefighting equipment

Health record of employees

Record of waste disposal

Material safety data sheets

Approval from statutory authorities Factory Inspectorate & APPCB)

Reports of pressure vessels and Lifting tackles

Environmental (air, water) Monitoring

The following records are to be maintained at factory:

01. Record of plant safety inspections.

02 In service inspection manuals and records

03. Safe operating procedures Maintenance & Shut down for various operations.

04. Condition monitoring record of equipment

05 Training schedule

06. Calibration and testing records.

07.Near miss incident record

RECOMMENDATIONS

Safety Organization

1. Organizational set up to carry out the declared policy clearly assigning the responsibility at different levels for implementation is helpful even though it is mentioned in the administration. Health and Safety policy to be displayed at the entrance of factory.
2. Equal representation is ensured for workers participation in Safety committee

Training

Plant safety rules, Guide lines and video cassettes on handling fire and leaks of ammonia is to be dealt during the training program.

Schedule of training programme is to be prepared for employees particularly involved in ammonia operations.

Officer responsible for Safety and Fire prevention is to be trained on fire prevention control techniques.

Workers are to be trained on hazards associated with Chemicals which they are handling.

All employees responsible for the operation of the plant are to be trained in the following.

**The properties of ammonia and the behavior of liquefied gas.

**The action to be taken in the event of a spillage of ammonia.

**The correct use of all types of protective equipment, fire extinguishers and breathing apparatus,

Safety inspections

Records of Safety inspections are to be maintained.

Internal audit is to be planned involving Safety committee members as a team

Fire

1.The location, number and types of portable fire Extinguishers available indicated on a plant layout.

2.All firefighting system and equipment history sheets are to be maintained.

3.Instructions to shout FIRE, FIRE FIRE are to be displayed at all working areas.

4.Core fire squads are to be formed area wise and be given comprehensive additional training in use of fire hydrants, sprinkler control valve operations, use of trailer pumps and rescue etc.

5.Floor plans indicating the locations of fire extinguishers, hydrants, critical valves main electrical switches, escape routes etc. in each area should be displayed at appropriate locations.

6. Though there is redundant power supply is there in case of power failure by way of captive power generation, consider providing a Diesel driven pump set for fire water system.

7.Firefighting drills to be held at least once in every period of 2 months.

8. Automatic smoke detection and fire alarm system to be installed throughout the plant

Emergency

1.Emergency Control Centre is to be equipped with contents as per On-site emergency plan.

2.Mock drill, is to be conducted once in six months involving mutual aid members.

3.Also following details are to be indicated during on site Emergency drill on aboard visible to all persons.

i. Emergency level

ii. Evacuation distance

iii. Location of incident

iv. Other locations at risk

V. Which direction to evacuate in

vi. Usable assembly points

First- Aid and Occupational Health Centre

Organization is maintaining the first aid center effectively and tie up with the nursing homes and hospitals at Singarayakonda.

Periodical health checks are to be conducted for all employees handling ammonia /chemicals. Audiometric test to be conducted for employees, exposed to high noise areas e.g.: DG set and Ammonia compressors

Personal protective equipment

It was noted, that though the PPE, such as helmet, safety shoe etc., have been provided by the employer, the usage by employees on field is not evident. It is recommended that the organization should enforce the usage of the safety PPE by all the employees working in the plant area. Awareness in the use of PPE should be imparted to all employees working in the plant area.

Employees are to be adequately instructed on the correct use and maintenance of the Personal protective equipment.

Following personal protective equipment is to be maintained in sound working condition

i.Cartridge seperators

i.SABCSets/Sparecylinder

ii.Eyewash towers

Operations

1. Overall housekeeping is satisfactory at all plants, all the walkways within the plant area are found clearly marked with isle, platforms and railings are found in good condition. However, it is recommended to have periodic inspection to monitor the condition of the same.
2. Display Dos &Don'ts of Ammonia handling at the area.

3. Provide Material Safety Data Sheet (MSDS) and impart awareness on properties of Ammonia to the persons working at the area.
4. Mark flow directions and identification of lines on the ammonia and other gas piping.
5. Work permit system is to be introduced for all hazardous work.
6. A key to the standard color coding to be followed in the plant is to be prominently displayed at strategic positions
7. All the instruments like pressure &temperature gauges, transmitters, Instruments and alarms switches should be tested periodically.
8. LOTO system to be implemented for critical electrical maintenance works.
9. All the Interlocking systems should be tested periodically.
10. Building stability to be checked once in three years.
11. Operating schedules, Plant startup, and plant shut down and change mode procedures are to be prepared and required to give the training for the operating personals.
12. Critical equipment history cards to be maintained.
13. Noise, illumination and ventilation study to be done once in three months
14. Flash back arrestors to be fitted for LP and HP regulators.
15. ELCB to be connected for welding machine incoming power source.

General observations:

- Mechanical in Charge looks after the implementation and maintenance of the SHE system. It is suggested that the safety department may be further strengthened by providing Manager –safety for the effective maintenance of the existing SHE systems and the related documentation.
- Periodic awareness on the use of portable fire extinguishers is to be imparted to all the concerned / identified employees and for some of the identified contract employees.
- A system of imposing penalty may be considered for repeated violations and performance of work in hazardous manner by the contractor / his workmen.

ABBREVIATIONS

A.P.	Andhra Pradesh
BIS	Bureau of Indian standards
FLP	Flame proof Fittings
HSD	High Speed diesel
ISO	International Organization for Standardization
MCC	Motor Control Centre
MSIHC	Manufacture, Storage and Import of Hazardous Chemicals
OH & S	Occupational Health & Safety
OISD	Oil Industry Safety Directorate
P&I	Process and Instrumentation diagram
PPE	Personal protective equipment
SCBA	Self contained breathing apparatus
SOP	safe operating Procedures
TAC	Tariff Advisory Committee
TREMCARD	Transport emergency Card
UPS	Uninterrupted Power supply
ELCB	Earth leak circuit breaker
LOTO	Lack out and tag out

M/S DEVI SEA FOODSLIMITED
MULAGUNTAPADU, SINGARAYAKONDA
PRAKASM DISTRICT-524401.A.P

Environmental Health and Safety Committee

Health and Safety committee is reconstituted for promoting Safety and health in the factory. Following persons are nominated and committee shall meet once in three months.

Name

Responsibilities

Assisting and co-operating with the management in achieving the aims and objectives outlined in the Health and Safety Policy of the company

Dealing with all matters concerning health; safety and environment and to arrive at practicable solutions to problems encountered;

Creating safety awareness amongst all workers;

Undertaking educational, training and promotional activities;

Discussing reports on safety, environmental and occupational health surveys, safety audits, risk assessment, emergency and disaster management plans and implementation of the recommendations made in the reports.

Carrying out health and safety surveys and identify causes of accidents and

Reviewing the implementation of the recommendations made by it.

Frequency of meeting : Three months

Tenure : Two years

Place :Singarayakonda
Date: 16.07.202O

M/s Devi Sea Foods Ltd

CONCLUSION

It is well-known fact that incidents do happen when huge activity goes on in any massive production unit based on man-machinery interface. The management should implement appropriate methods to avoid / reduce the severity of the incidents. This is only possible by opting well-accepted safe operation philosophy, by imparting training, improvement of workmen attitudes, behavior and proactive approach of Senior and Middle management. As a whole, it is inculcating the safety culture among the employees of the organization.

The Management of DEVI SEA FOODS LIMITED – Singarayakonda has implemented good safety health and environment and other management systems. They have developed and implementing safe and environmentally friendly practices and gained number of laurels.

In order to maintain the HSE system with achievements made in the past, extra efforts are needed on the part of the area managers. They should lead their people, working under them, to be vigilant all the time and their behaviors should be reinforced again and again to achieve the desired goal of zero incidents.

As audit observations are based on random samples, a few of the areas where hazard potential existed are given in this report. Similar hazards may arise in their work area, in future. They should strengthen the safety system to identify the hazards on their own and take control measures. The hazard potential pointed out in this report is from the experiences of the auditors, who have the personal knowledge of such incidents.

The line managers have the technical capability and personal interest to maintain a safe working environment. Their talents should be utilized to achieve the desired / set goals in the field of health, safety and environment.

DISCLAIMER

As mentioned earlier, this audit is based on random sampling only and few of the areas where hazard potential existed are given in this report.

Also the suggestions given in the report are based on the observations made and on the prevailing situations at the time of audit and on the interaction with the plant personnel and basing on the professional experience of the auditors.

Users of this report are informed that this report cannot be a substitute for qualified engineering analysis. Any changes or modifications carried out basing on the suggestions are to be further reviewed under Management of change before actual change or implementation and expert guidelines are to be sought wherever required.

SS Engineers and its auditors do not hold any legal obligation in case of occurrence of any incident / accident / emergency in the plant while implementing the recommendations.

The validity of this report is one year from concluding date of the Audit or next External Safety Audit due as per Statutory Requirements.

July- 2020 For SS Engineers

SINGARAYAKONDA. (G.Lakshminarayana)