

SCIC-SCDF DIALOGUE SESSION 2017

Sharing of Good Practices – SME Perspective

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20 Nov 2017



LTH Core Businesses

Transportation & Distribution



Chemical Warehousing & In-plant Logistics



Warehouse Facility



33 Penjuru Lane

- Completed in 4th Quarter of 2007
- Design and constructed to meet SS532 code
- Storage of DG & Non-DG cargos with a total of 230,000sqft



121 Banyan Drive

- ❖ Design and constructed to meet SS532 code
- ❖ Integrated facility with warehouse and yard storage
- ❖ Storage of DG & Non-DG cargos under one roof
- ❖ Total of 700,000sqft
- ❖ Combination of conventional and high racking system
- ❖ Open yard storage for DG and non-DG bulk cargoes



Warehouse Facility



146 Gul Circle

- Started in March 2016
- 6 storey ramp-up warehouse for storage of DG & Non-DG cargos with a total of 430,000sqft
- Covered bulk storage for DG ISO Tanks



Fire Safety Design

Fire Compartment / Wall in accordance with SS532

- ❖ 4-hour Fire Rated Compartment Wall
- ❖ Epoxy flooring preventing chemical penetration



Fire Safety Design

Electrical

Electrical system in accordance with NFPA 70 & SS254

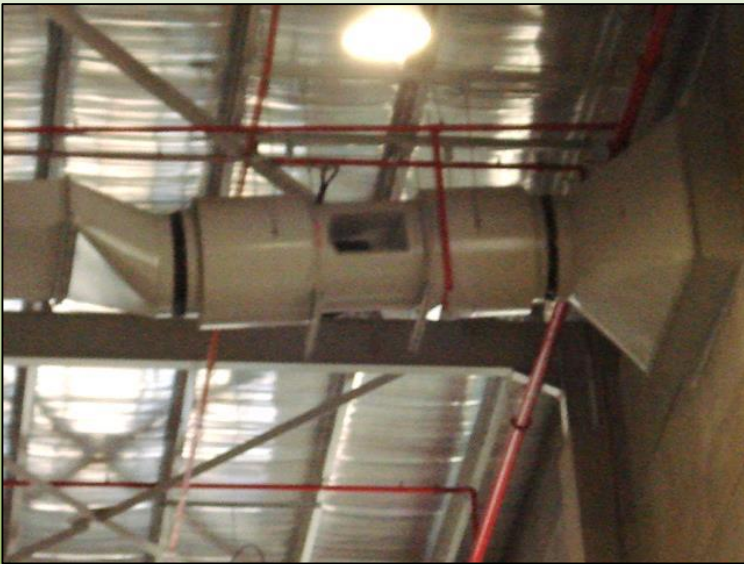
Electrical apparatus for explosive gas atmosphere



Fire Safety Design

Ventilation in accordance with SS532

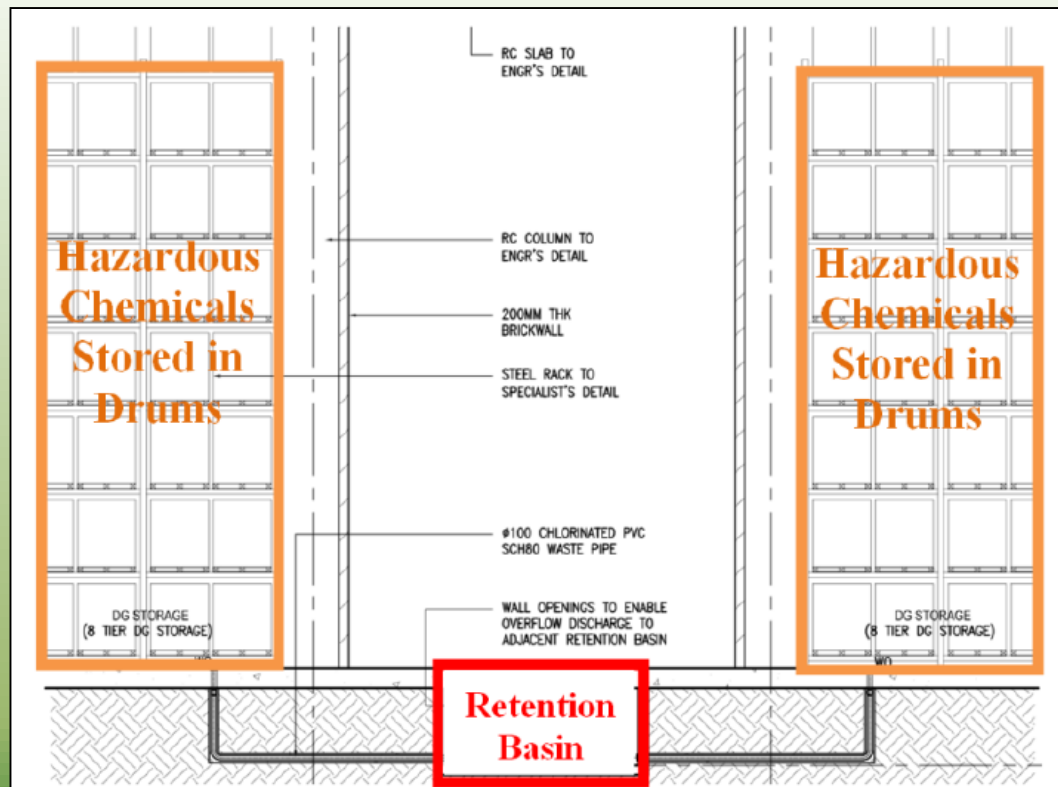
The warehouse is equipped with local exhaust ventilation system to prevent accumulation of vapour within the warehouse.



Fire Safety Design

Spillage Control in accordance with SS532

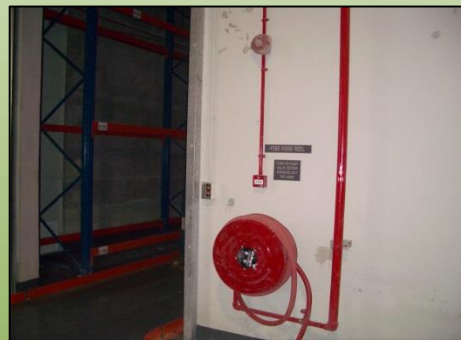
- ❖ Area: 15,557 m²
- ❖ Capacity maximum (61,632 drums)
- ❖ Spill containment volume: 680 m³



Fire Safety Design

Fire Fighting Facilities in accordance with SS532

- ❖ Foam sprinkler integrated with fire alarm system
- ❖ Hose-reel
- ❖ Fire extinguisher
- ❖ Emergency call-point



Fire Safety Design



High racking storage system

High racking storage are equipped with in-rack foam sprinkler



Emergency Response

CERT Requirement

- It is one of the standard referred to Section 10.11 of the SS532

Elements of a Successful ER Execution

- Calm & Steadfast Mind
- Prompt Response
- Well-equipped CERT Facilities
- Well-drilled CERT team
- Strong Logistics Backup



Emergency Response

Objective of ER Plan

- To have an effective and efficient incident command system.
- To establish an efficient and well trained on-site emergency organization

ER Plan developed based on:

- SCDF
- NEA
- Industry Practices



Emergency Response - Training



Classroom Training,
Drills, Field Exercise



Improve operability and operator's confidence

Normal operations should not cause outbreak of fire or pollution to the environment.

LTH adopt the following basic principles for design and operations standard referred to SS532 and other relevant codes:

- ❖ The whole site is fenced and secured;
- ❖ Adequate technical measures taken against fires;
- ❖ Special attention to early fire detection, tanks and pipes are protected against heat and have means to extinguish spill or pool fires, via sprinkler or portable foam or powder fire-fighting equipment;



Improve operability and operator's confidence

- ❖ All spills and accidents will be filed and reported to serve for better future anticipation.
- ❖ No flammable, hazardous and/or odorous gases are vented during warehousing.



Improve operability and operator's confidence



- ❖ No gases are vented at the drumming area - scrubber;
- ❖ All chemicals are transferred from the ISO tanks to the drumming machines by hose;
- ❖ The filled drums are then transferred to the warehouse for storage.

Improve operability and operator's confidence

- ❖ Storage is rack-up to 9 tiers on very narrow aisles.
- ❖ Each aisle will be separated into partitioned rows classified by their hazardous storage conditions.



Regulatory Compliance

- Safety & Health Management System
- HSE Policy
- Risk Assessment
- Safe Work Procedure
- Licensing



Regulatory Compliance

- ❖ All Petroleum and Flammable Materials (PFM) would have appropriate PFM Storage Licence.
- ❖ As such, the amount of PFM stored would not exceed the specified quantities from the licence issued by SCDF.

Good Practice - Inspection

Fire safety non-compliances remain prevalent

❖ Ensure and enhance fire safety within premises through self regulation



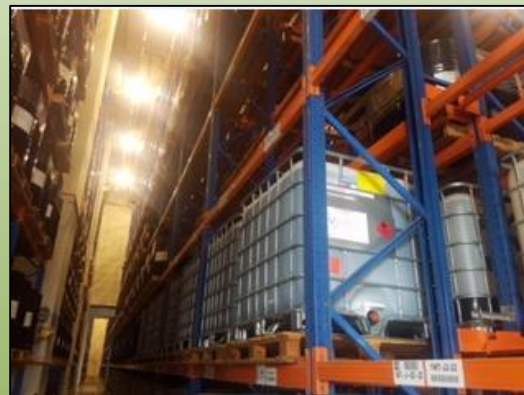
Diesel stored above Level 1



Spent substances kept over long period of time



Combustibles stored together with PFM



PFM stored in Plastic IBC



Obstruction to fire fighting provisions



Good Practice – Tool Box Meeting

Daily tool-box meeting conducted on various topics

- TBM - ACCIDENT REPORTING
- TBM - Basic Electrical
- TBM - Chemical Safety
- TBM - Fire Extinguisher
- TBM - FIRE SAFETY
- TBM - Forklift (Blind Spot)
- TBM - Forklift Safety Rules
- TBM - GHS Label Requirements
- TBM - Haz Com - Chemical Hazards & Effects
- TBM - Haz Com - Corrosive
- TBM - Haz Com - Exclamation Mark
- TBM - Haz Com - Exploding Bomb
- TBM - Haz Com - Flame
- TBM - Haz Com - Flame Over Circle
- TBM - Haz Com - Gas Cylinder
- TBM - Haz Com - Health Hazard
- TBM - Haz Com - Skull & Crossbones
- TBM - Housekeeping for Safety
- TBM - Ladder Safety
- TBM - Lock-out & Tagout
- TBM - Maintaining Safe Exit Routes
- TBM - Manual Lifting
- TBM - Means of Egress
- TBM - PPE
- TBM - PPE Eye Protection
- TBM - PPE Hand Protection (Chemicals)
- TBM - PPE Safety Foot Protection
- TBM - PPE Safety Helmet
- TBM - Spill Control
- TBM - Warehouse Safety
- TBM - Work at Heights
- TBM - Forklift Safety



Good Practice - Information Technology



- ❑ Single Order Entry
- ❑ Order Routing – WMS/TMS
- ❑ Integrated Order Billing
- ❑ Consolidated Invoice Generation
- ❑ Track and Trace



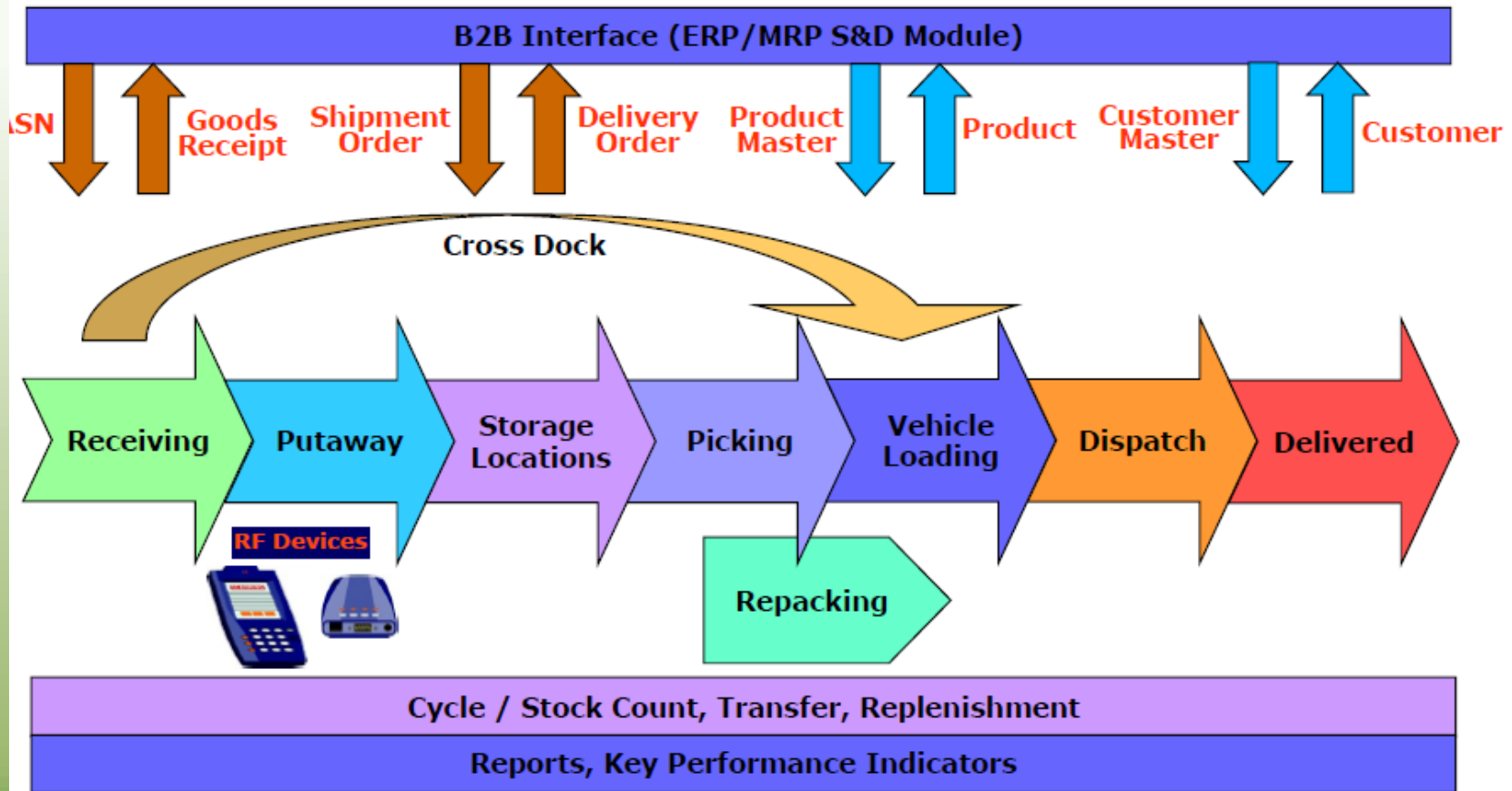
- ❑ Integrated System -Container Trucking, Loose Cargo & Bulk
- ❑ Transport Management of Import/Export, LCL, Bulk
- ❑ Assisted & Auto Planning



- ❑ Warehouse & Inventory Management
- ❑ Drumming Process
- ❑ Warehouse Visibility
- ❑ Batch Barcode Scanning
- ❑ Customisable Pick/Put Strategies

Good Practice - Information Technology

WMS-Online Summary





**Thank You for
your Time**