



ASPECTS OF SHELL'S APPROACH TO STORAGE TANK FIRE PROTECTION FOR THE PEARL GTL PROJECT

Institute of Risk Management

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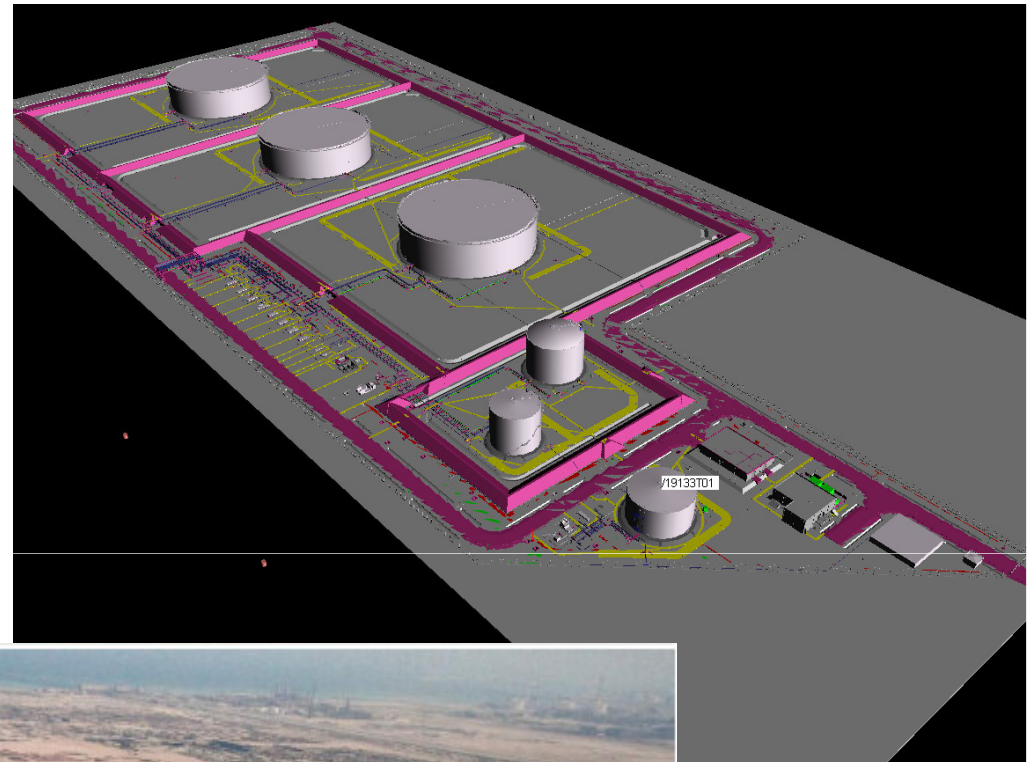
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CONTENT OF PRESENTATION

- Introduction
- Shell approach to atmospheric storage tank fire risk management
- Examples of storage tank fire protection equipment used at Pearl GTL
 - Semi-fixed rim seal fire fighting system
 - Sub-surface foam injection system
 - Foam and water supply
 - Cooling water for exposure protection

INTRODUCTION

Pearl GTL Harbour Tank Farm
5 hydrocarbon storage tanks



Pearl GTL Main Site
31 hydrocarbon storage tanks



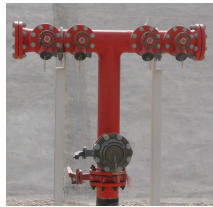
SHELL APPROACH TO ATMOSPHERIC STORAGE TANK FIRE RISK MANAGEMENT

- Selection of tank design appropriate for the product to be stored
 - Floating roof tank, fixed roof tank, fixed roof tank with internal floating cover
- Impermeable bunds with 110% capacity. Large tanks with volatile products in single bunds.
- Good separation between tanks to prevent escalation.
- Independent level measurement with automatic shut-off of inlet valves on high risk tanks.
- Rim seal fire detection and fire retardant rim seal material for floating roof tanks.
- No fixed fire fighting systems on low risk tanks, e.g. base oil tanks.
- Semi-fixed rim seal fire fighting systems for floating roof tanks.
- Semi-fixed sub-surface foam injection systems for selected fixed roof tanks.
- Back-up cooling of exposed surfaces by water monitors.
- No fixed fire fighting systems for full surface fires in tanks or bunds. Reliance on mobile fire fighting systems from RLIC Fire and Rescue and Mutual Aid.

EXAMPLES OF STORAGE TANK FIRE PROTECTION EQUIPMENT USED AT PEARL GTL – RIM SEAL FIRES



3% AFFF/AR foam from mobile foam pod



Water from ring main hydrant

To extinguish rim seal fire



Pours foam down tank walls

Via standard hoses to -

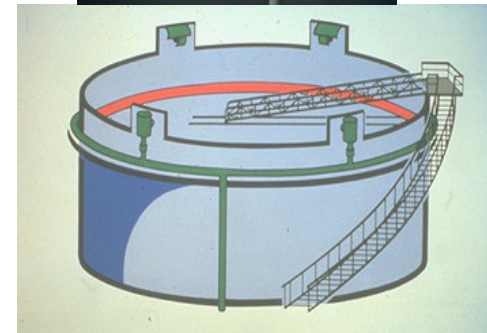


Fire truck for mixing

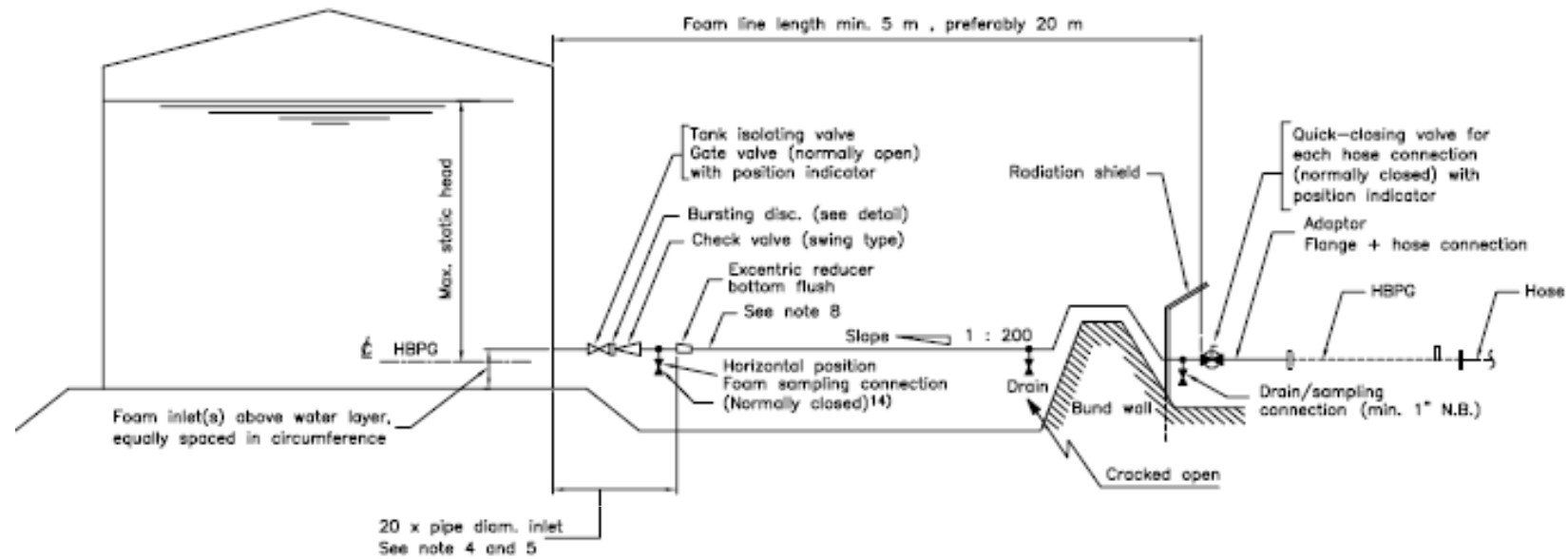
Via standard hoses to -



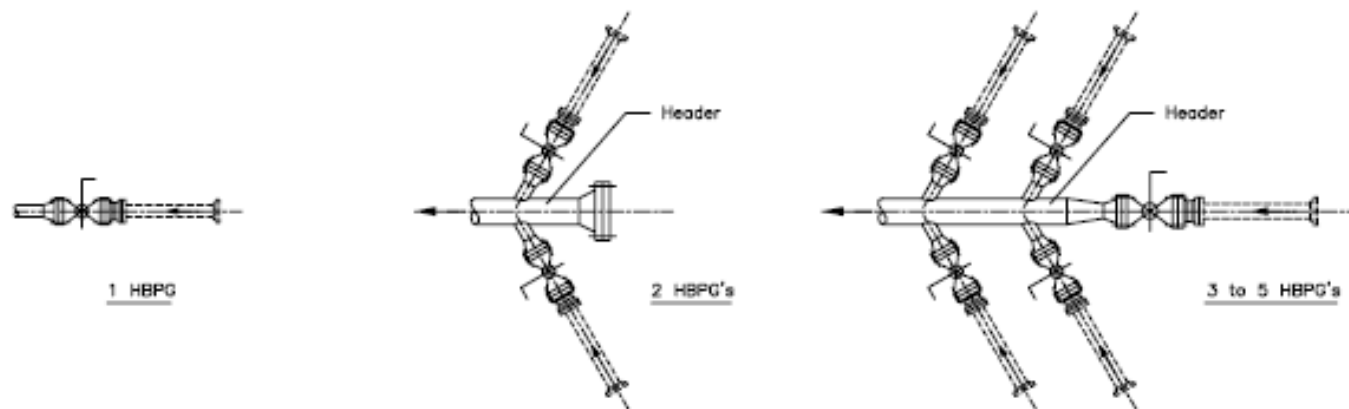
Fixed finished foam supply piping



SUBSURFACE FOAM INJECTION FOR FIXED ROOF TANKS



FIXED ROOF STORAGE TANK



WATER MONITORS PROVIDE COOLING OF EXPOSED SURFACES



Q & A

