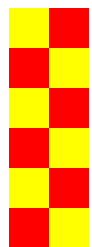




# **SCDF**

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# **Risk-Based Inspection (RBI) Approach for Petroleum & Flammable Materials (P&FM) Storage Tanks**

**11 October 2024**

# Current Requirement

Tests required for **both new and in-service** P&FM storage tanks:

- Hydrostatic or equivalent test report;
- Pressure test report of the piping and fittings connected to the tank; and
- Radiographic or equivalent test reports.

Note: All test reports must be endorsed by a Professional Engineer



# Problem Statement

Feedback received through SCIC:

- The prescriptive intervals were too restrictive for **in-service** storage tanks, and should consider international standards for a risk-based inspection approach.
- One-size-fits-all approach leads to unnecessary costs, downtime or missed opportunities to detect earlier issues in higher-risk tanks.



# Summary of Changes

- SCDF worked with P&FM Storage Workgroup, supported by SCIC, to consider an equivalent inspection regime for licence applications.
- 2 approaches allowed to fulfill licensing requirements to ensure P&FM storage tank integrity and safe use:
  1. Follow current requirements of prescribed hydrostatic, radiographic and pressure tests intervals; or
  - Inform SCDF during licence renewal application that the company intends to adopt a RBI approach to ensure storage tank integrity and safety. Based on requirements set out in the Code of Practice, appropriate intervals are set out for the conduct of detailed visual inspections, Non-destructive Tests (NDTs).



# Comparison of Fixed Interval Inspection vs RBI

## Fixed Interval Inspection

- Fixed intervals (e.g. 5/10 years)
- Same schedule for all tanks
- Downtime of tanks can be anticipated well ahead due to the fixed intervals
- May work better for smaller tanks and smaller companies with lesser storage tanks, as they will just need to focus on the fixed intervals as directed.

## Risk-Based Inspection

- Based on risk assessment
- Flexible, tailored to each tank's risk profile
- Potentially less number of inspections needed throughout the tank's lifespan
- Aligned with international standards (e.g. API 653)
- More suitable for companies well-versed in a risk-based methodology, as there are varied scenarios to consider for different risk profiles.



# RBI Certification Approach

In discussion with industry, a 2-level certification approach will be adopted:

- Level 1: Inspection conducted by inspectors with accepted Codes of Practice (ACoP) certification. The inspectors can be companies' employees.
- Level 2: External Professional Engineer (Mechanical engineer) with ACoP certification will be engaged by company to review and endorse the findings/testing methods/inspection intervals. To be carried out on a yearly basis. A summary report (refer to next slide) of RBI findings is to be submitted during licence application.
- SCDF may audit the inspection interval reports for each tank(s) during licensing site inspection.

Accepted Codes of Practice (e.g. API 653) can be referenced on SCDF website.



# Sample of Assessment Report Required

P&FM STORAGE TANK INSPECTION SUMMARY (Jun-2014 to Jul 2015)												
File Reference Number: xxxxxx												
Company Name: ABC Pte Ltd												
P&FM Storage Address: xx Gul Road Singapore xxxxxx											Date: Jan 2013	
S/N	Tank No	P&FM Stored	QTY in Litres	Date of Inspections carried out				Inspection techniques & Non-destructive tests (as applicable)	Inspection and testing Codes / Standards / Procedures	Internal Inspection Interval	Next Internal Inspection Date	Remarks (if any)
				Routine in-service patrol (frequency)	External visual inspection	Ultrasonic thickness inspection	Internal Inspection					
1	Tank #1	Naphtha	10,000,000	daily / weekly /monthly	Jan-13	Jun-13	Jun-14	VI,MFL,MT,PT,UTG	reference to API 653 and Company procedure			
2	Tank #2	Fuel Oil	5,000,000	daily / weekly /monthly	Apr-14	Aug-14	Mar-10	VI,MFL,MT,PT,UTG	reference to API 653 and Company procedure			
3	Tank #3	Methanol	15,000,000	daily / weekly /monthly	Jun-12	Jan-11	Aug-07	VI,MFL,MT,PT,UTG	reference to API 653 and Company procedure			
Abbreviation:												
1. VI-Visual Inspection, MFL- Magnetic Flux Leakage Scan , MT-Magnetic Particle Test , PT- Penetrant Test, UTG-Ultrasonic Thickness Gauging												
2. API-American Petroleum Institute, EEMUA- Engineering Equipment and Materials User Association												
Prepared by:					Reviewed & Approved by:			Endorsed by:				
Designation:					Designation:			Professional Engineer				
Company:					Company:			Company & Stamp:				

# Timeline

- The introduction of the RBI inspection intervals regime has been included in the upcoming P&FM Regulations Amendment.
- Circular will be issued out to inform industry when the amended regulations has been published, by Q4 2024.
- For queries on the RBI regime, email [koh\\_wen\\_xi@scdf.gov.sg](mailto:koh_wen_xi@scdf.gov.sg)



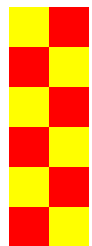




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## **Proposed Class Licensing Regime for Premises Storing Petroleum and Flammable Materials (P&FM)**

# Current Requirement

- Under the Fire Safety Act, any person who wishes to store regulated P&FM above the exemption quantity must apply for a P&FM storage licence.
- Companies will submit an online application to SCDF with the supporting documents and details of the P&FM to be stored. SCDF will then conduct site inspection and ensure all requirements are met before issuing the licence . This process is repeated for subsequent licence renewals.

File Ref No. \_\_\_\_\_ Lic No : l \_\_\_\_\_  
Submission No. \_\_\_\_\_

**REPUBLIC OF SINGAPORE**  
**SINGAPORE CIVIL DEFENCE FORCE**

**THE FIRE SAFETY ACT 1993**  
**(PART 6)**  
CONTROL OF PETROLEUM AND FLAMMABLE MATERIALS

PETROLEUM & FLAMMABLE MATERIALS STORAGE LICENCE

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Licensee (Name and Address)

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Licence to store petroleum & flammable materials and respective quantity :

1. Flammable Materials (Liquid) - 134 Litres

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Premises authorised for storage of petroleum and flammable materials :

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Period of Licence	Licence fee
01-NOV-2024 TO 31-OCT-2027	552.0

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This licence is granted subject to Act and the Regulations relating to the said purpose now and from time to time hereafter in force.

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MUHATHIR BIN MOHAMAD  
for COMMISSIONER  
SINGAPORE CIVIL DEFENCE FORCE  
(This is a computer generated letter. No signature is required)

17-Sep-2024  
Date of Issue

# Problem Identified

- No additional lever of regulatory platform to regulate the low-risk P&FM premises.
- SCDF explored the licensing schemes used by other government agencies and will be adopting a new class licensing scheme.

	P&FM Storage Licence	Exemption Order
<b>Risk Profile</b>	High to moderate risk	Very low risk
<b>Degree of Stringency</b>	<ul style="list-style-type: none"><li>&gt; Meet conditions under P&amp;FM licence regime</li><li>&gt; Checked for compliance before (re)issuing licence;</li><li>&gt; Enforceable</li></ul>	<ul style="list-style-type: none"><li>&gt; Exempted from all P&amp;FM regulatory requirements</li></ul>
<b>Fee</b>	Based on quantity	Not applicable
<b>Length of Licence</b>	1 to 3 years	Not applicable



# Expanding SCDF's Regulatory Toolkit

	P&FM Storage Licence	[New] Class Licence	Exemption Order
<b>Risk Profile</b>	High to moderate risk	Low risk	Very low or minimal risk
<b>Degree of Stringency</b>	<ul style="list-style-type: none"> <li>&gt; Meet conditions under P&amp;FM licence regime</li> <li>&gt; Checked for compliance before (re)issuing licence; and</li> <li>&gt; Enforceable</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Meet conditions under class licence regime;</li> <li>&gt; No approval required and automatically licensed; and</li> <li>&gt; Enforceable</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Exempted from all P&amp;FM regulatory requirements</li> </ul>
<b>Fee</b>	Based on quantity	Nominal admin fee	Not applicable
<b>Length of Licence</b>	1 to 3 years	No expiry (until revoked/ de-registered)	Not applicable



# Low risk premises identified

## 1 Construction site

- > Temporary work sites.
- > Usually only store diesel and acetylene. No public access and low risk of fire spread.
- > Exempted from fire safety plans submission.

## 2 Cat C and D Laboratories

- > Classified by SS641 as low / minimal fire hazard.
- > Only P&FM for day-to-day use are allowed to be stored within the lab, while excess P&FM must be stored in a proper chemical storage area.

## 3 Petrol Station

- > Only underground storage tanks are allowed.
- > Dispensing activities are carried out under controlled setting.

## 4 Buildings storing only diesel used for emergency generator

- > Limited to 1,000 litres per tank with adequate fire safety provisions in accordance with Fire Code.
- > Only used when emergency generator kicks in.

# Class Licensing Framework

- One-time Online Registration
  - One-time online registration with a nominal admin fee.
  - Provide essential company information and inventory details.
  - Acknowledge compliance to class licence criteria and requirements.
  - Submit a new registration if there are any changes to the information submitted.
- Annual Audit
  - SCDF will conduct annual audit (random selection of companies for audit)
- Consequences of Non-compliance
  - Non-compliance may result in either enforcement for offences under class licence regulations and/or revocation of the class licence.



# Benefits

- Simplify the process to store P&FM for low-risk groups
- Reduce regulatory compliance cost for the industry by minimizing burden, without compromising safety standards
- Promotes a framework where businesses take greater responsibility for adhering to safety and regulatory standards
- Improve efficiency of regulatory oversight with fewer resources



# Timeline

- Class licensing regime plan proposed to take effect by Q2 2026, considering the need to amend the Fire Safety Act and Regulations.
- Allow up to 3 years transition period (until expiry of P&FM licence) for existing licensees.
- Will engage affected P&FM licensees to share more on the requirements closer to date.





# Q&A



**RESTRICTED**

