

GTR #13 (Phase 2)

FIRE TEST DEFINITION

Task Force 4 Status

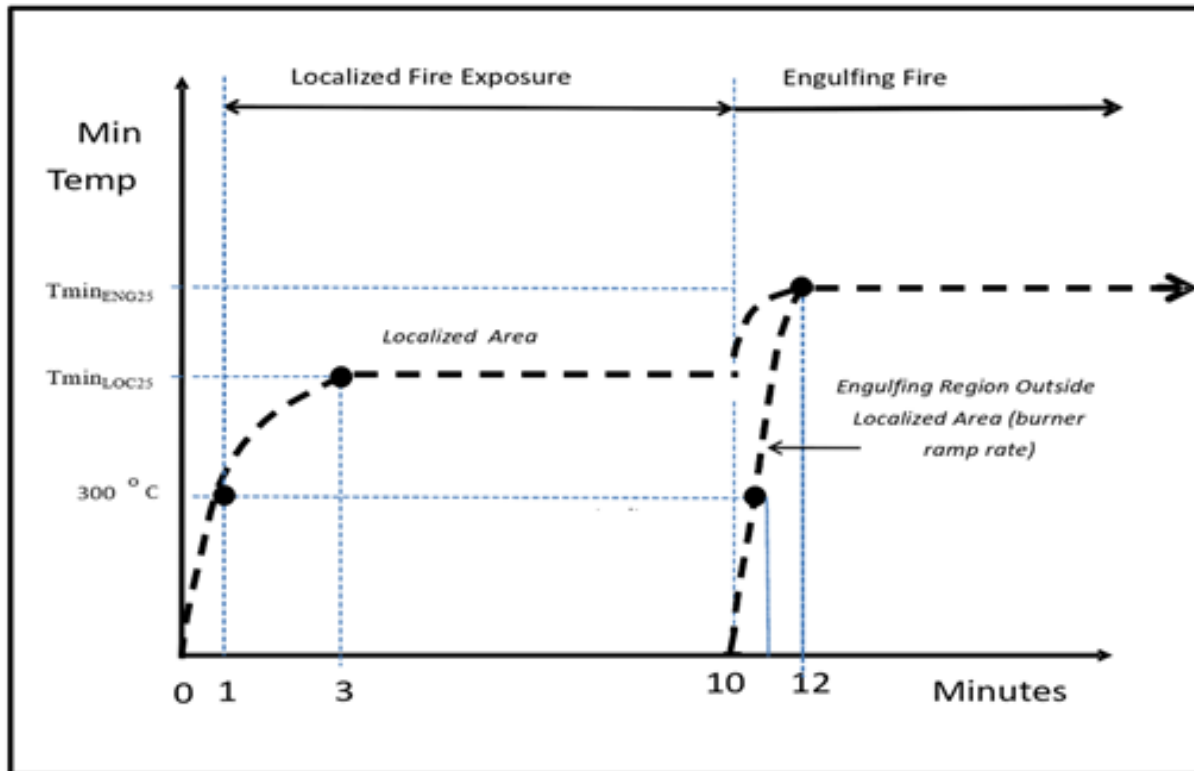
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Background

FIRE EXPOSURE TEST IN CURRENT GTR #13

- Builds on excellent CNG experience
- Localized fire stage added based on on-road experience in the US.
 - Challenges the ability of TPRD(s) to sense fire and to activate.



GTR #13 PHASE 2

TF4 OBJECTIVES

- Address variability noted in fire test results at various test sites.
- Ensure test method is applicable up to heavy-duty vehicles

STATUS

- Burner configuration selected for uniform temperatures and stable operation.
 - LPG fuel nozzles with air pre-mix for stable operation.
 - Nozzles located every 50mm on 5 fuel rails for uniformity.
 - Burner width fixed at 500mm regardless of cylinder diameter.
- LPG settings defined based on JARI testing.
 - Temperature measurements from JARI vehicle fire tests used to establish equivalent fire exposure in localized and engulfing fire stages..
- “Time out” added to the fire test to accommodate venting through container surfaces or well protected containers that do not need TPRDs to prevent rupture.
 - Test terminates at 30 minutes for light duty vehicles and 60 minutes for heavy duty vehicles.
 - Additional ultimate strength test required at 180% NWP to demonstrate adequate stress rupture withstand for emergency response.
- Need for separate bonfire test (under 6.2.5.2) eliminated based on decision to allow freedom to rotate or translate the CHSS under test, even when vehicle-specific features are included.
- Working draft of proposed changes to the fire test has been prepared and is being reviewed by TF4.

OPEN ITEMS

- Finalization of fire test method for cylindrical containers.
 - Selection of fuel flow (heat release) settings, particularly for the engulfing fire stage.
 - Extension of engulfing fire from the localized fire zone -- two directions or one?
 - Maximum length of engulfing fire zone – 1.65m or greater?
 - Definition of container cooldown if the fire test times out.
 - Harmonization of terminology with TF3.
- Determination of adjustments (if any) for conformable containers.
 - Should length or width of burner be different from cylinders?
 - Other changes?
- Round-robin testing to confirm repeatability of test results world-wide.