Asphalt Characteristics

ASPHALT SPILL RESPONSE WORKSHOP

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Specific Gravity

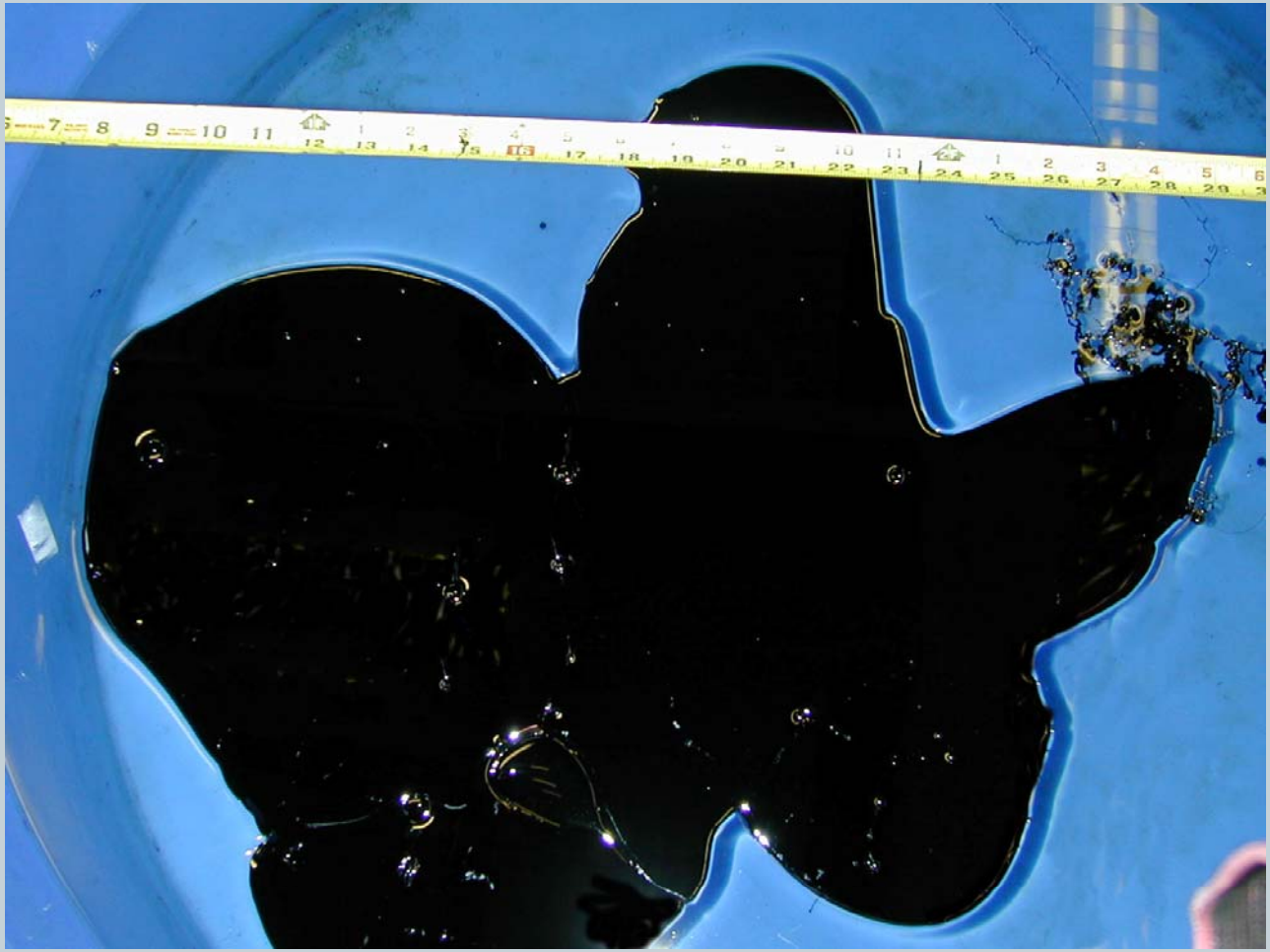
- Close to 1.0 at room temperature
- Most paving grade asphalts ~ 1.01-1.04 at 60°F
- Changes with temperature
- Volumetric coefficient of thermal expansion:

  $\approx 3.855 \times 10^{-4}$ /°F
- Will determine sinking point

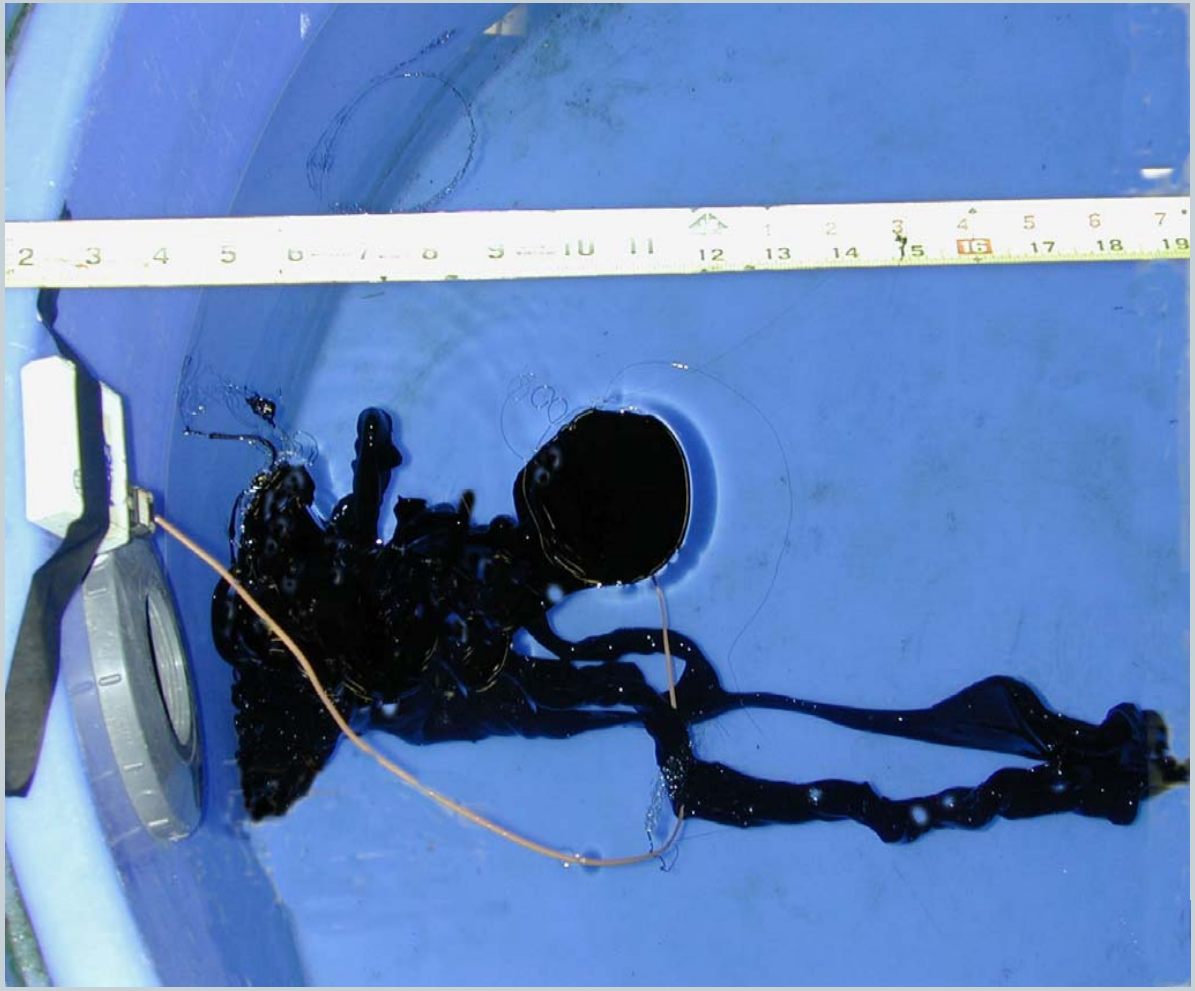
Summer 2009 Research

- Objectives:
  - Gather information on previous spills (case studies)
  - Laboratory study to evaluate behavior of liquid asphalt spilled into water
- Laboratory Study
  - PG 64-28 asphalt (G_b=1.045) heated to 270°F
  - Tub of water at ambient temperature
  - Quart or Gallon size pours: below surface to 24” high
  - Instrument with thermocouples
  - Evaluate shape & behavior over time

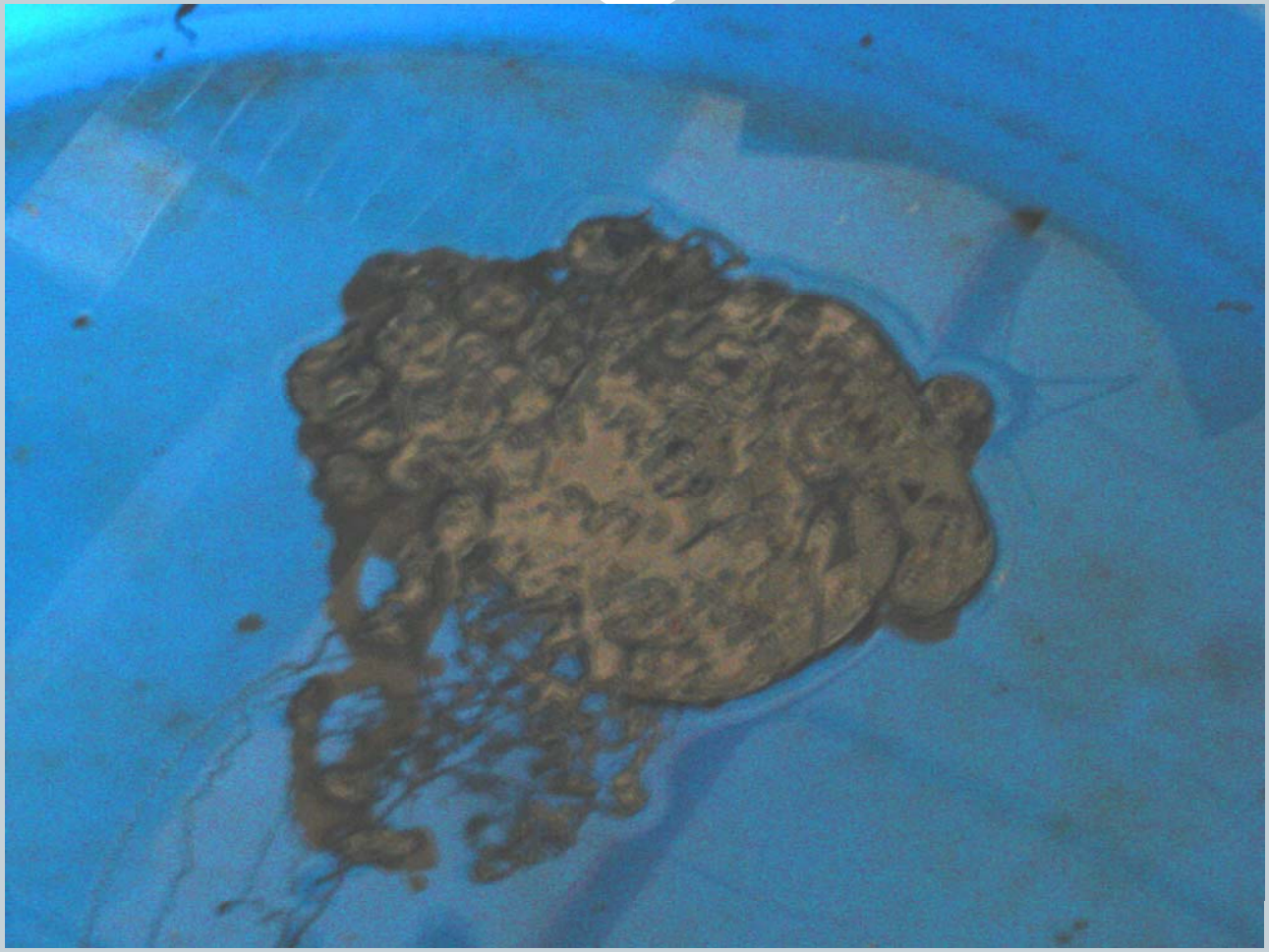
Gallon from Surface



Quart from 8” Above Surface



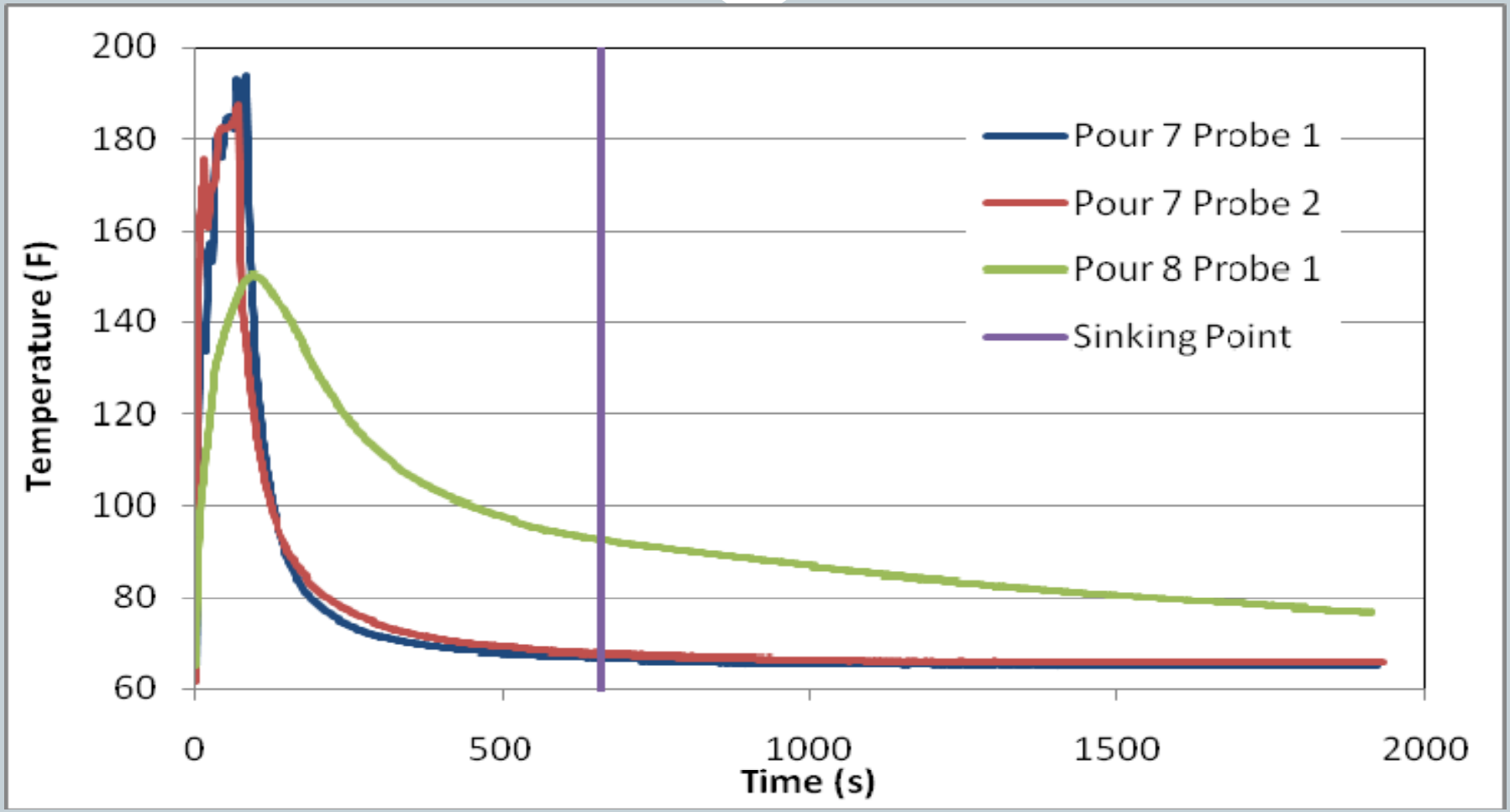
Quart from 24” Above Surface



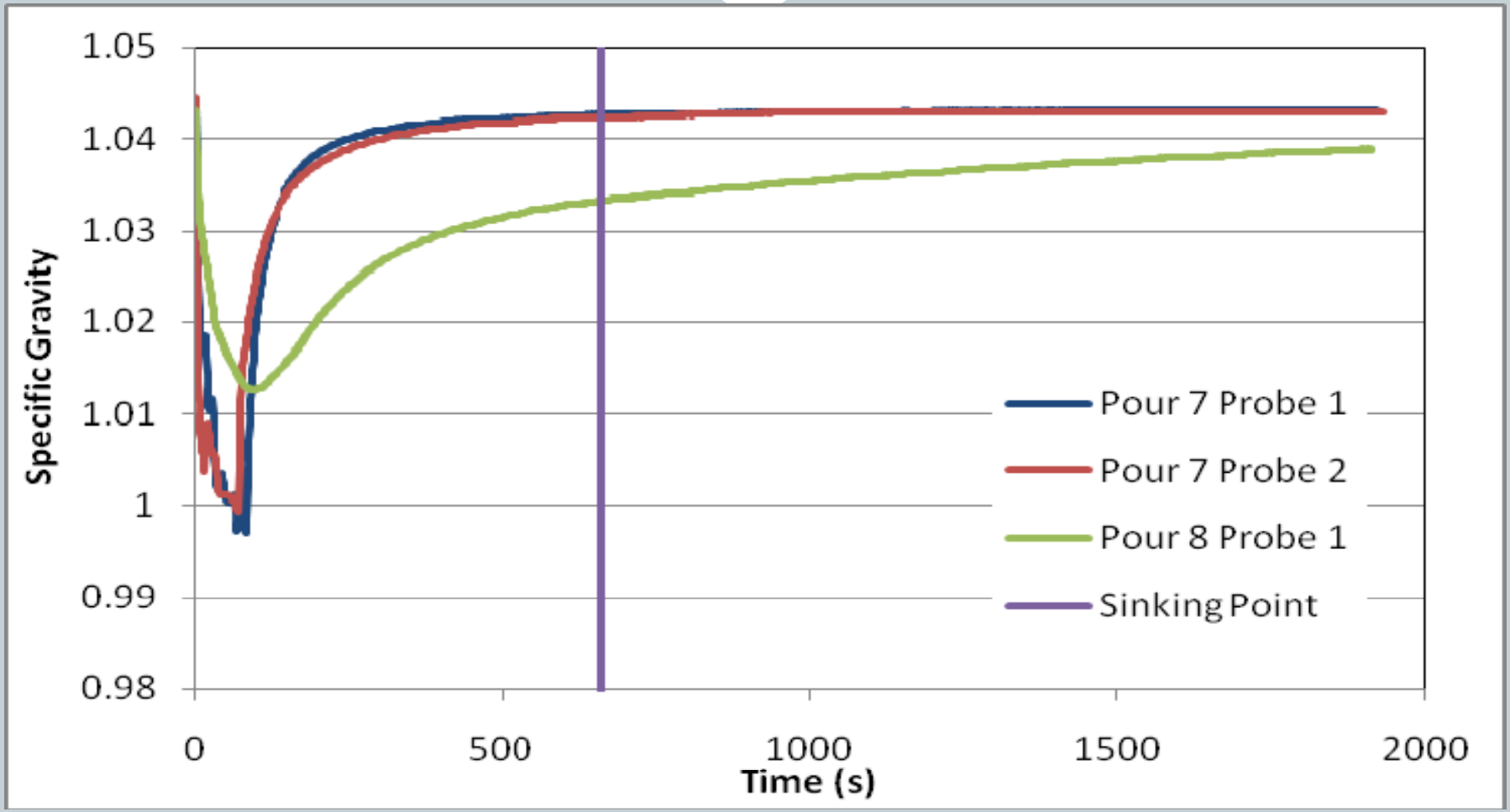
Observed Behavior

- Pancake shape (1/8” to ¼” thick)
- Higher pours form more strings, entrapped air
- Edges cool first and start to sink
- Eventually whole pancake sinks
- Thermocouple wire influenced results
- No measured change in water bath temperature

Typical Temperature Data



Corresponding Specific Gravity Change



Discussion