

# Sinking floating roof of large oil storage tank

*JOIFF 26-6-2017*

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van Gansewinkel



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ABENGOA BIOENERGY



kemira

LYONDELL

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TEAM  
TERMINAL BY



# *The call for help*

- **Date; 31 October 2008, 8.30 hours**
- **Message to the fire brigade emergency centre; “Sinking floating roof in a oil tank at oil storage and refinery complex**
- **First responding unit;**
  - **Industrial fire fighting unit (extended firefighting vehicle with pump capacity of 6000 l/min and 4000 l of foam)**
  - **Duty Officer**

# *The call for help part.2*

- **Within 10 minutes ‘sinking of the roof’ confirmed. Product is the flammable liquid Naphta.**
- **Officer on call scales up with;**
  - 1 industrial firefighting unit
  - 1 foam concentrate unit of 10 m<sup>3</sup>

# *Situation when firetruck arrived*

- The roof was still sinking which was paired with a lot of noise and deformation of the tank.
- Fixed firefighting systems were destroyed.
- Several people were running away from the tank.





# *First considerations*

21.000 m<sup>3</sup> naphtha in a 34 meter diameter tank with a height of 23 meter.

- Was ignition possible?
  - Yes, possible by the sinking roof.
- Can ignition be prevented?
  - Yes, by applying foam;



# *First considerations*

- **What are the risks of applying the foam?**
  - Possibility of ignition by static electricity???
- **Can these risks be constrained?**
  - Yes, by the way of applying.
  - Yes, a starting fire can be extinguished immediately because enough resources were available.



0802

0702

0703

0703

0704

MAES



# *Considerationstype of equipement needed*

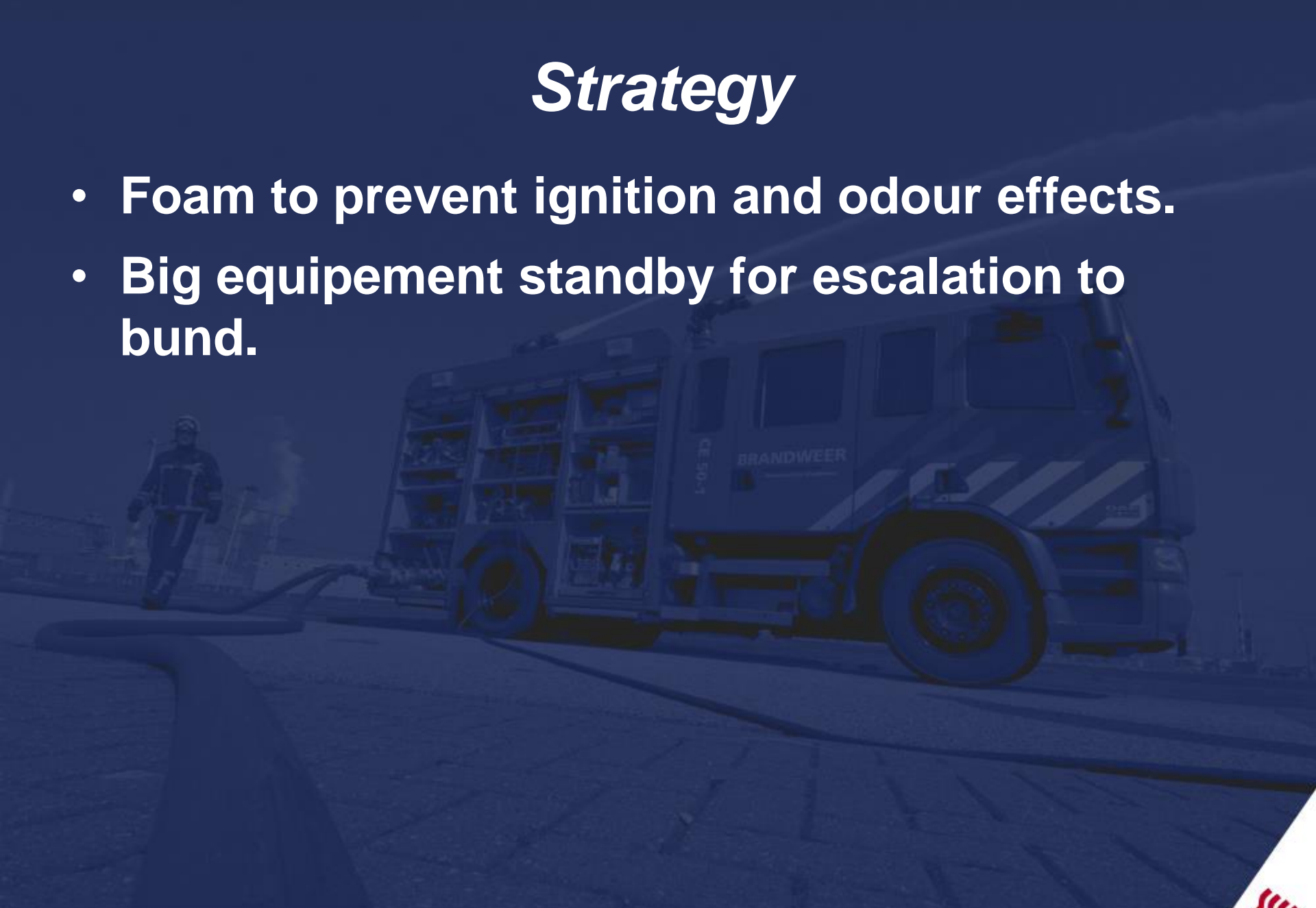
- **Size of the tank doesn't need the big equipement:**
  - Height 23 m
  - Diameter 34 m
  - Surface ca. 900 m<sup>2</sup>
  - Content 21000 m<sup>3</sup>
  
  - Bund ca. 8300 m<sup>2</sup>

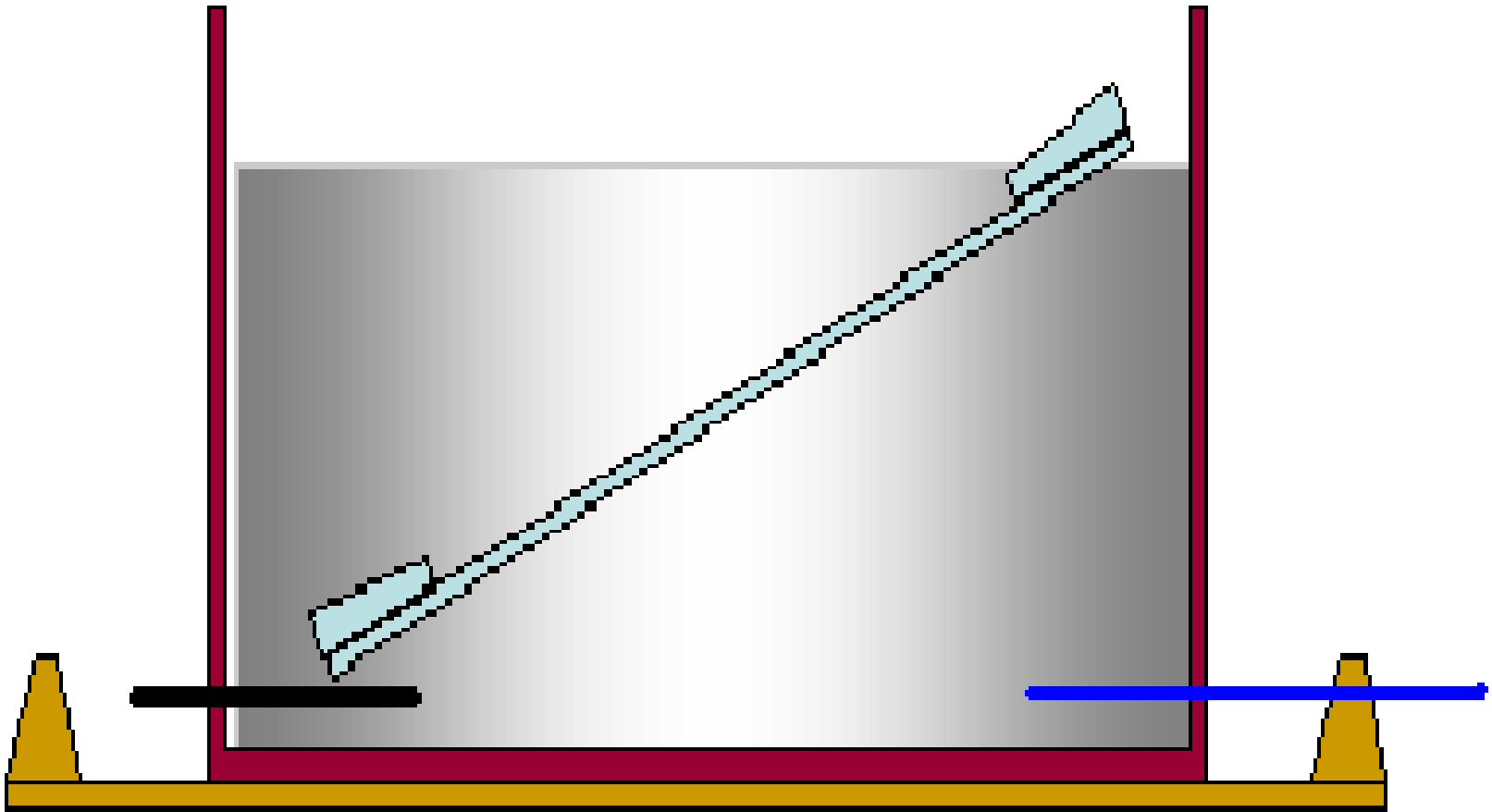




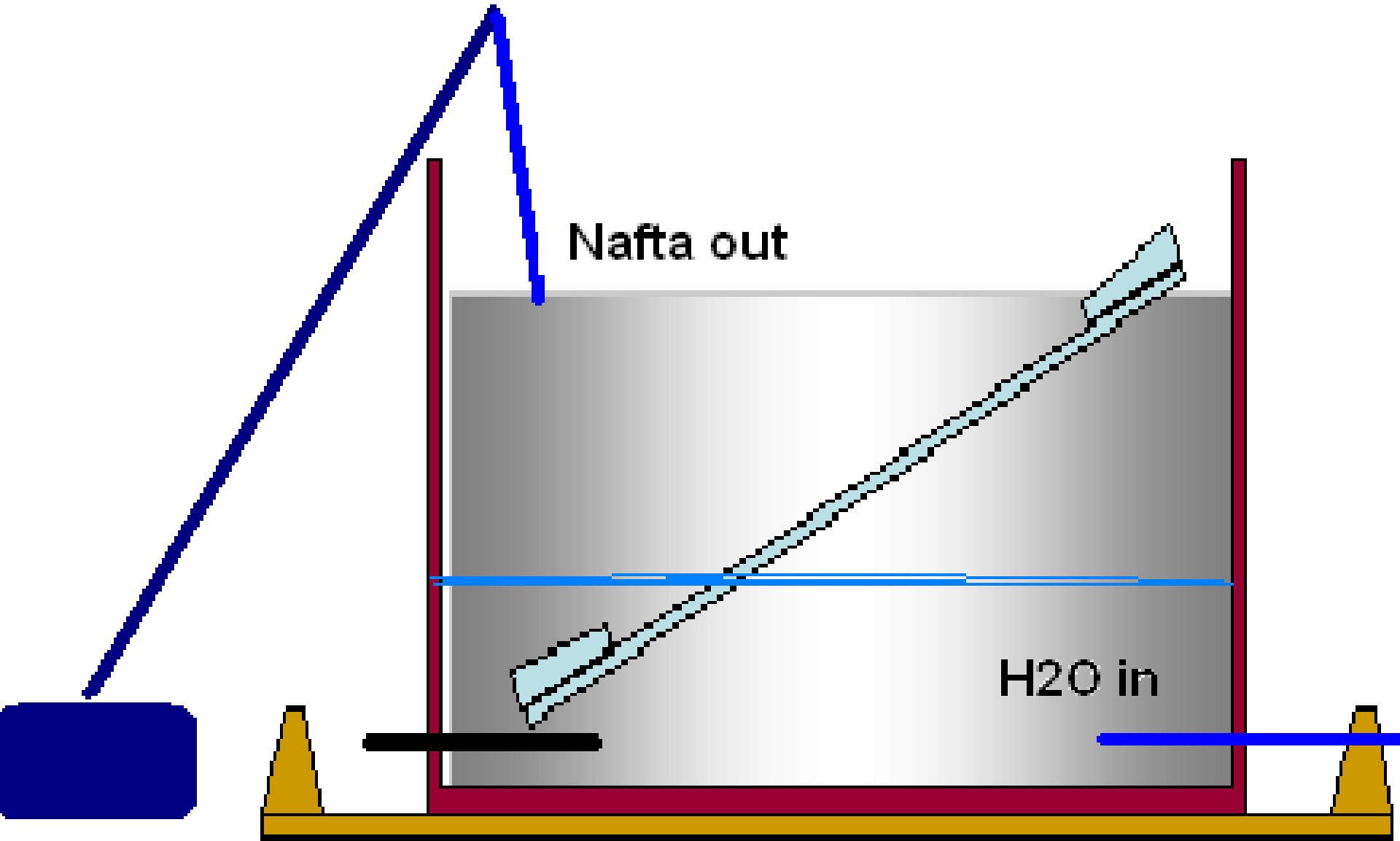
# Strategy

- Foam to prevent ignition and odour effects.
- Big equipment standby for escalation to bund.

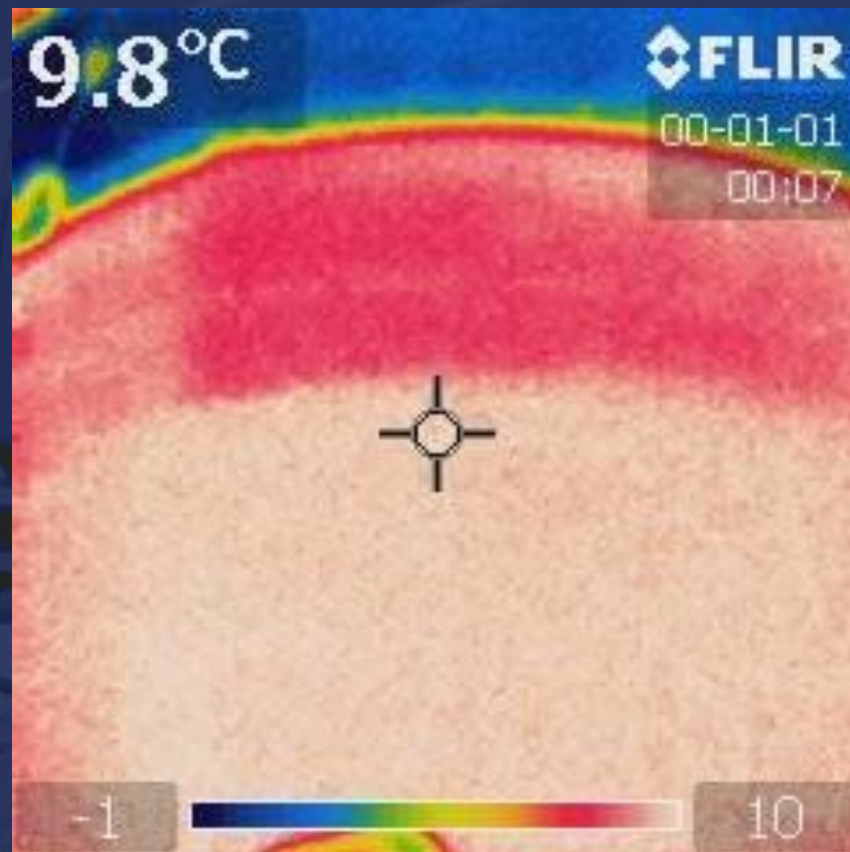
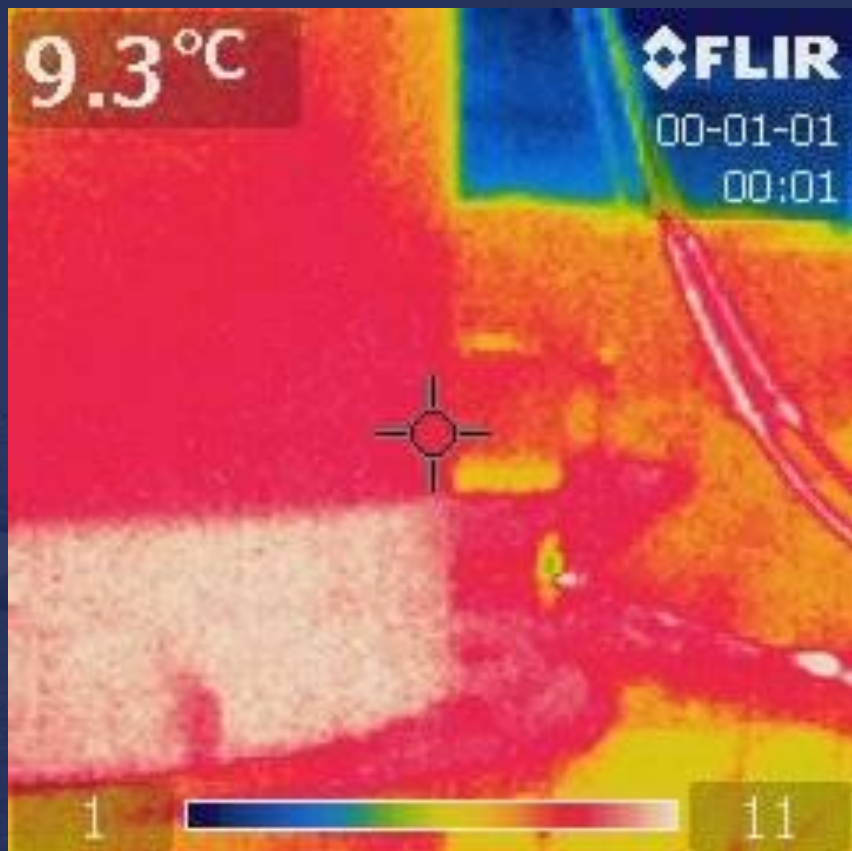








# Visualisation of the level of the tank.





# Results

- After 7 days the tank was completely filled with water;
- The naphta could be re-used;
- During the incident most operations could be continued within one hour
- number of personnel involved: 273
- >100 m<sup>3</sup> foam concentrate used

# *Questions?*