



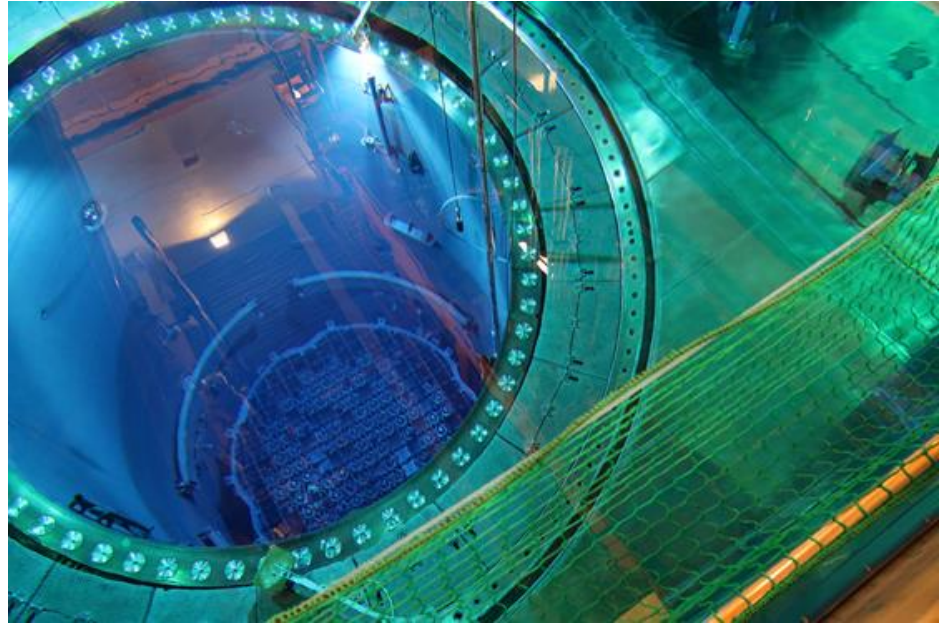
# Incident with exposure to high dose rate

When the RP tech's instrument is faulty

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# Agenda

1. Background
2. Instrument
3. Aftermath

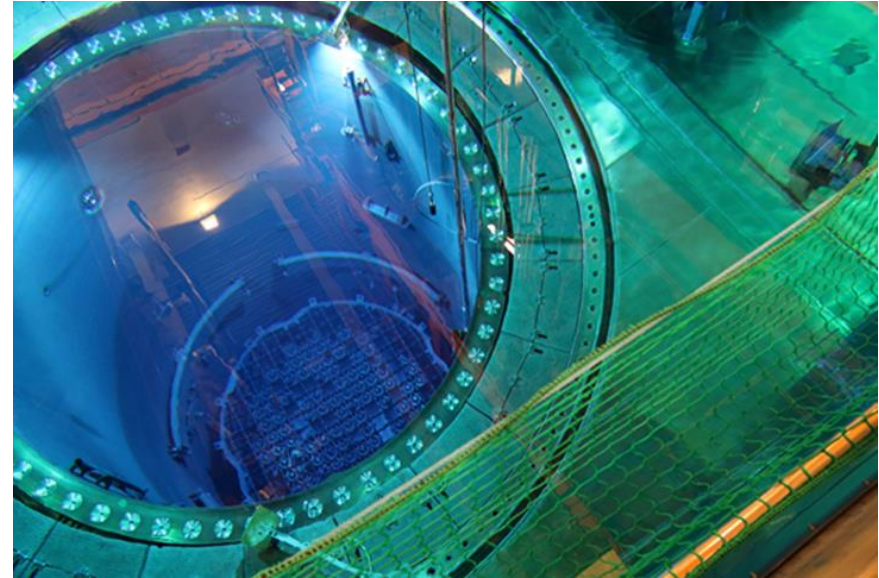




# Background

# Cleaning the cavity

- Friday afternoon, November 29, 2019, a routine job
- Changing the filterbag in the cleaning equipment has to be done manually.
- Highly experienced staff on all positions
- RP tech measuring dose rate with instrument



# Instrument



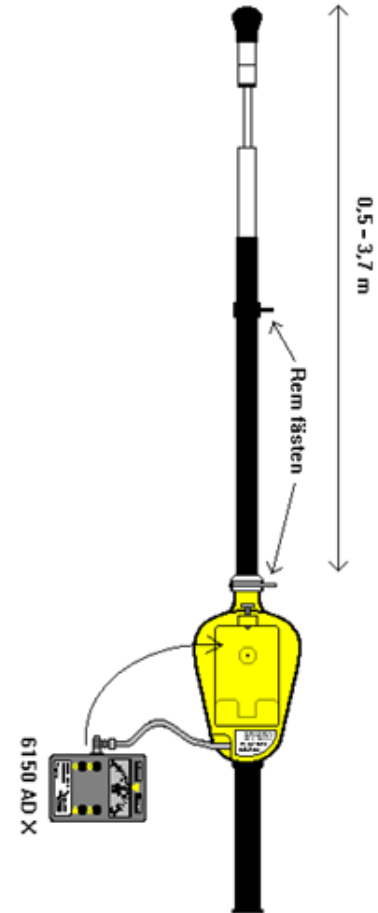
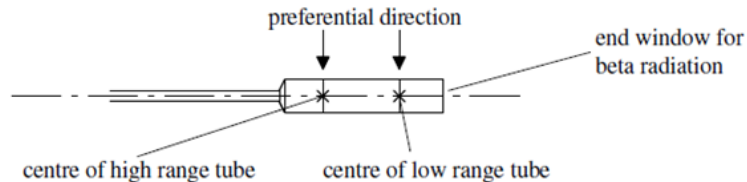
# The instrument

- Automess 6150 AD-t

Measuring range: 0,1  $\mu\text{Sv/h}$  - 10  $\text{Sv/h}$   
Low range: 0,1  $\mu\text{Sv/h}$  - 10  $\text{mSv/h}$   
High range: 1  $\text{mSv/h}$  - 10  $\text{Sv/h}$

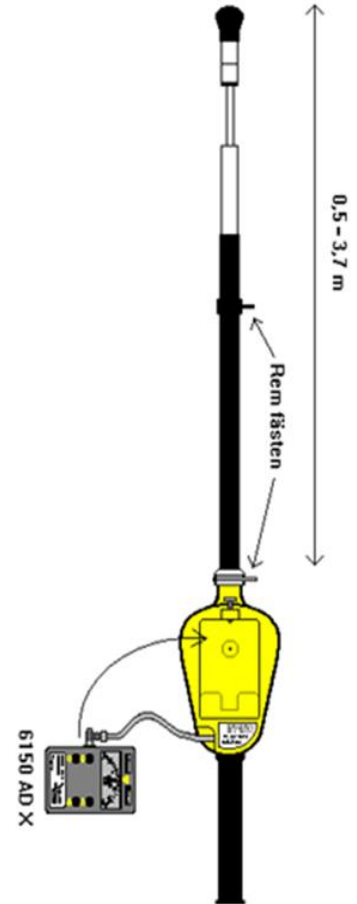
Energy range: 65  $\text{keV}$  - 1,3  $\text{MeV}$  (low range tube)  
65  $\text{keV}$  - 3  $\text{MeV}$  (high range tube)

Detector: 2 GM-tube. (ZP 1400 (LDR), ZP 1300 (HDR))



# Deficiencies in the use of the instrument

- Function test before use, but only for the low dose rate tube
- We didn't have a source to do a function test of the high dose rate tube, that was a known problem for many years
- RP tech used the instrument without full understanding of its properties.



A person wearing a white lab coat is holding a complex, metallic mechanical device. The scene is illuminated with a strong blue light, creating a clinical or industrial atmosphere. The background shows a grid-like pattern, possibly a control panel or a window. The word "Aftermath" is overlaid in large white text.

# Aftermath



# Aftermath

- Highest individual dose was 1,70 mSv, well under our yearly limit of 20 mSv. Verified by both EPD and TLD.
- The same person got exposed to a dose rate of 1,73 Sv/h (EPD).
- Incident classed as INES 1 according to both Forsmark and SSM.
- Gamma spectrometry showed that Co-60 was the main source.



# Aftermath

- Sources to do function tests of the high dose rate tube purchased
- Reinforced training for RP technicians
- Sorting out old instruments that often need repairs
- A comprehensive review of questions regarding radiation protection in pre job briefings





**Thank you for listening**